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# **PRECAUTION**

## **PRECAUTIONS**

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

#### WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

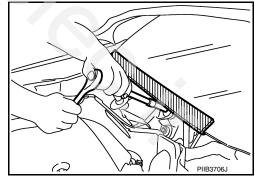
Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the
  ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with
  a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing
  serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



## Precautions for Removing Battery Terminal

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When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- · Never disconnect battery terminal while engine is running.

### **PRECAUTIONS**

### < PRECAUTION >

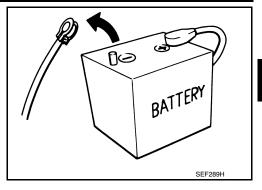
### [MR FOR NISMO RS MODELS]

 When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

 For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

> D4D engine : 20 minutes YS23DDT : 4 minutes HRA2DDT : 12 minutes YS23DDTT : 4 minutes K9K engine : 4 minutes ZD30DDTi : 60 seconds ZD30DDTT : 60 seconds M9R engine : 4 minutes

R9M engine : 4 minutes V9X engine : 4 minutes YD25DDTi : 2 minutes



#### NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

 After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

#### NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- · Example of high-load driving
- Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
- Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

#### NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

#### NOTE:

The removal of 12V battery may cause a DTC detection error.

## On Board Diagnostic (OBD) System of Engine and CVT

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

#### **CAUTION:**

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair
  or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will
  cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)
- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to <u>PG-6</u>, "<u>Harness Connector</u>".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube
  may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system,
  etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

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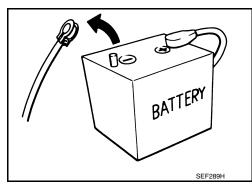
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## **General Precautions**

Always use a 12 volt battery as power source.

- · Do not attempt to disconnect battery cables while engine is runnina.
- Before connecting or disconnecting the ECM harness connector, turn ignition switch OFF and disconnect negative battery cable. Failure to do so may damage the ECM because battery voltage is applied to ECM even if ignition switch is turned OFF.
- Before removing parts, turn ignition switch OFF and then disconnect battery ground cable.



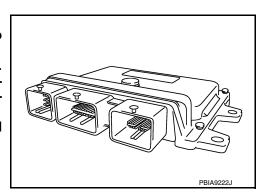
- Do not disassemble ECM.
- · If a battery cable is disconnected, the memory will return to the ECM value.

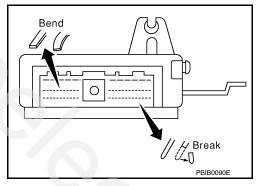
The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.

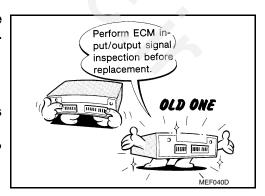
- · If the battery is disconnected, the following emission-related diagnostic information will be lost within 24 hours.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values
- · When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).

Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.

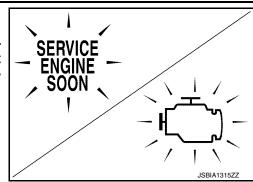
- **Securely connect ECM harness connectors.** A poor connection can cause an extremely high (surge) volt
  - age to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs, etc.
- Keep engine control system parts and harness dry.
- Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly. Refer to EC-96, "Reference Value".
- · Handle mass air flow sensor carefully to avoid damage.
- Do not clean mass air flow sensor with any type of detergent.
- Do not disassemble electric throttle control actuator.
- · Even a slight leak in the air intake system can cause serious incidents.
- Do not shock or jar the camshaft position sensor (PHASE), crankshaft position sensor (POS).





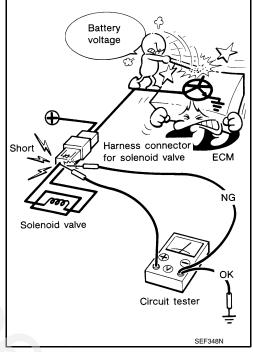


 After performing each TROUBLE DIAGNOSIS, perform DTC CONFIRMATION PROCEDURE or Component Function Check. The DTC should not be displayed in the DTC Confirmation Procedure if the repair is completed. The Component Function Check should be a good result if the repair is completed.

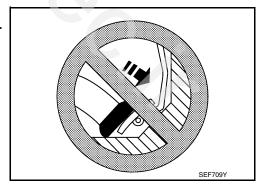


 When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.
 Accidental contact of probes will cause a short circuit and

Accidental contact of probes will cause a short circuit and damage the ECM power transistor.



- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.
- Do not depress accelerator pedal when starting.
- Immediately after starting, do not rev up engine unnecessarily.
- Do not rev up engine just prior to shutdown.



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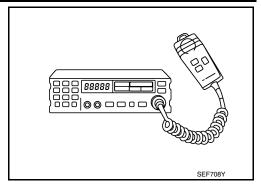
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### **PRECAUTIONS**

### < PRECAUTION >

### [MR FOR NISMO RS MODELS]

- When installing C.B. ham radio or a mobile phone, be sure to observe the following as it may adversely affect electronic control systems depending on installation location.
- Keep the antenna as far as possible from the electronic control units.
- Keep the antenna feeder line more than 20 cm (8 in) away from the harness of electronic controls.
   Do not let them run parallel for a long distance.
- Adjust the antenna and feeder line so that the standing-wave ratio can be kept smaller.
- Be sure to ground the radio to vehicle body.



# **PREPARATION**

# **PREPARATION**

# **Special Service Tools**

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## NOTE:

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name		Description
(J-44321) Fuel pressure gauge kit	LEC642	Checks fuel pressure
(J-44321-6) Fuel pressure adapter	LBIA0376E	Connects fuel pressure gauge to quick connector type fuel lines.
KV10120000 Fuel tube adapter		Measures fuel pressure
ommercial Servic	ce Tools	INFOID:000000012197

## **Commercial Service Tools**

Tool name (TechMate No.)		Description	N
Leak detector i.e.: (J-41416)		Locates the EVAP leak	N O
EVAP service port adapter i.e.: (J-41413-OBD)	S-NT703	Applies positive pressure through EVAP service port	P
	S-NT704		

## **PREPARATION**

### < PREPARATION >

# [MR FOR NISMO RS MODELS]

Tool name (TechMate No.)		Description
Fuel filler cap adapter i.e.: (J-42909)		Checks fuel tank vacuum relief valve opening pressure
	ALBIA1353ZZ	
Socket wrench	19 mm (0.75 in) More than 32 mm (1.26 in)	Removes and installs engine coolant temperature sensor
Oxygen sensor thread cleaner i.e.: (J-43897-18) (J-43897-12)	Mating surface shave cylinder	Reconditions the exhaust system threads before installing a new oxygen sensor. Use with antiseize lubricant shown below.  a: 18 mm diameter with pitch 1.5 mm for Zirco nia Oxygen Sensor  b: 12 mm diameter with pitch 1.25 mm for Tita nia Oxygen Sensor
Anti-seize lubricant i.e.: (Permatex <sup>TM</sup> 133AR or equivalent meeting MIL specifica- tion MIL-A-907)	S-N1779	Lubricates oxygen sensor thread cleaning tool when reconditioning exhaust system threads.

# SYSTEM DESCRIPTION

# COMPONENT PARTS ENGINE CONTROL SYSTEM

ENGINE CONTROL SYSTEM : Component Parts Location

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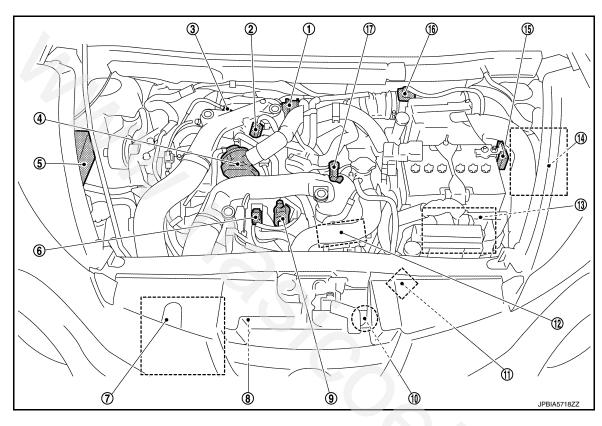
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### ENGINE ROOM COMPARTMENT



- Boost control actuator
- 4. Recirculation valve
- 7. Inter cooler
- 10. Cooling fan motor
- 13. ECM
- 16. Mass air flow sensor (with intake air temperature sensor 1)

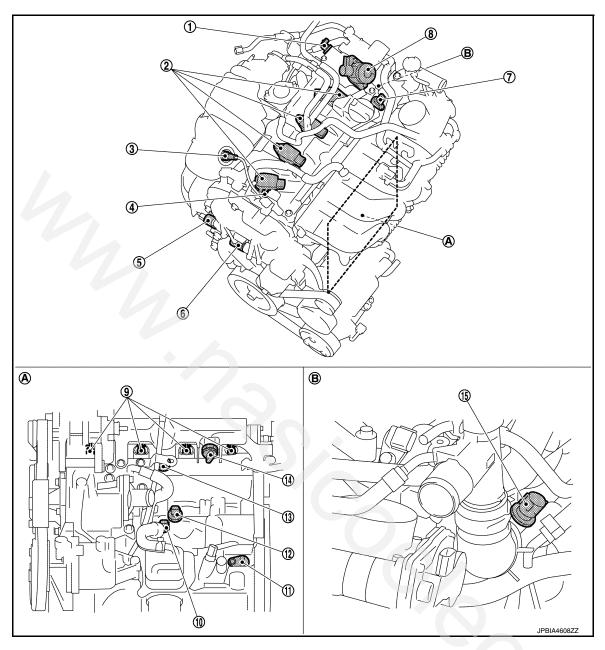
- Turbocharger boost control solenoid 3. valve
- 5. Relay box
  - · Fuel injector relay
  - Fuel pump relay
- Refrigerant pressure sensor Refer to HAC-7, "Component Parts Location".
- 11. Cooling fan control module
- 14. IPDM E/R
  Refer to PCS-5, "Component Parts
  Location".
- 17. Turbocharger boost sensor (with intake air temperature sensor 2)

A/F sensor 1

6.

- EVAP canister purge volume control solenoid valve
- 9. EVAP service port
- 12. Electric throttle control actuator (with built in throttle position sensor and throttle control motor)
- 15. Battery current sensor (with battery temperature sensor)

ENGINE COMPARTMENT



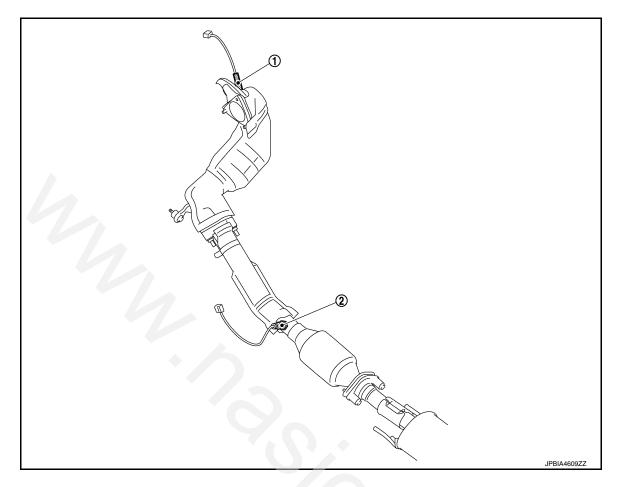
- Exhaust valve timing control position sensor
- 4. PCV valve
- 7. Camshaft position sensor (PHASE)
- 10. Engine oil temperature sensor
- 13. Knock sensor
- A. Cylinder block left side

### **EXHAUST COMPARTMENT**

2WD

- 2. Ignition coil (with power transistor)
- 5. Exhaust valve timing control solenoid valve
- 8. High pressure fuel pump
- 11. Crankshaft position sensor (POS)
- 14 Fuel rail pressure sensor
- B. Engine rear end

- 3. A/F sensor 1
- Intake valve timing control solenoid valve
- 9. Fuel injector
- 12. Engine oil pressure sensor
- 15. Engine coolant temperature sensor



1. A/F sensor 1

2. Heated oxygen sensor 2

AWD

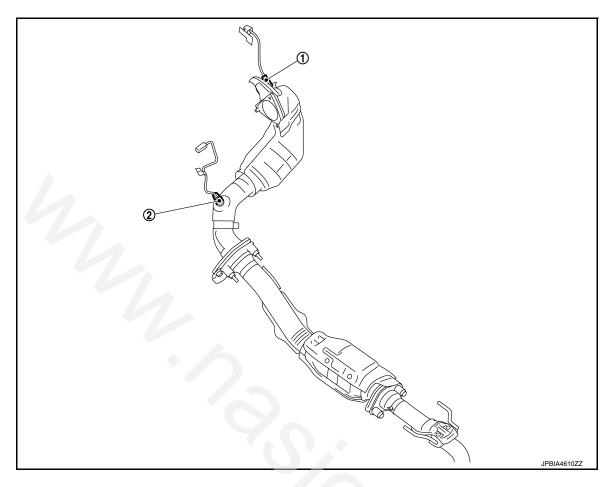
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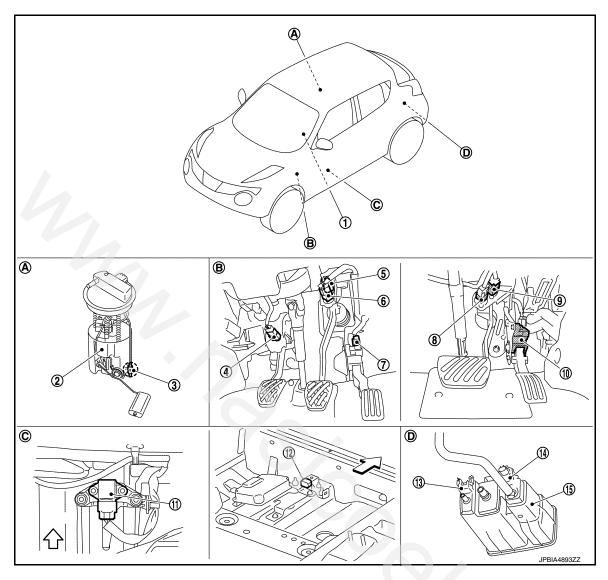
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1. A/F sensor 1

2. Heated oxygen sensor 2

### **BODY COMPARTMENT**



- 1. ASCD steering switch
- 4. Clutch pedal position switch (with M/T models)
- 7. Accelerator pedal position sensor (with M/T models)
- Accelerator pedal position sensor (with CVT models)
- 13. EVAP control system pressure sensor 14.
- A. Under of right side second seat
- D. Fuel tank rear

- Fuel level sensor unit, fuel filter and fuel pump assembly
- 5. Brake pedal position switch (with M/T models)
- Brake pedal position switch (with CVT models)
- 11. G sensor (with 2WD models)
- 14. EVAP canister vent control valve
- B. Periphery of pedals

- 3. Fuel tank temperature sensor
- Stop lamp switch (with M/T models)
- Stop lamp switch (with CVT models)
- G sensor (with AWD models)
- 15. EVAP canister
- Under of left side front seat

# ENGINE CONTROL SYSTEM : Component Description

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Component	Reference
ECM	EC-33. "ECM"
Accelerator pedal position sensor	EC-33. "Accelerator Pedal Position Sensor"

Revision: November 2015 EC-31 2016 JUKE

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## **COMPONENT PARTS**

# [MR FOR NISMO RS MODELS]

Component	Reference
Electric throttle control actuator	
Throttle control motor	EC-33, "Electric Throttle Control Actuator"
Throttle position sensor	
Ignition coil with power transistor	EC-34. "Ignition Coil With Power Transistor"
Fuel injector	EC-35, "Fuel Injector"
High pressure fuel pump	EC-35. "High Pressure Fuel Pump"
Fuel rail pressure sensor	EC-36, "Fuel Rail Pressure Sensor"
Low pressure fuel pump	EC-36, "Low Pressure Fuel Pump"
Fuel tank temperature sensor	EC-36, "Fuel Tank Temperature Sensor"
Fuel level sensor	EC-36, "Fuel Level Sensor"
Mass air flow sensor	EC-37, "Mass Air Flow Sensor (With Intake Air Temperature Sen
Intake air temperature sensor 1	sor 1)"
Turbocharger	
Boost control actuator	EC-37, "Turbocharger"
Turbocharger boost control solenoid valve	
Turbocharger boost sensor	EC-38, "Turbocharger Boost Sensor (With Intake Air Temperature
Intake air temperature sensor 2	Sensor 2)"
Engine coolant temperature sensor	EC-39, "Engine Coolant Temperature Sensor"
Crankshaft position sensor	EC-39, "Crankshaft Position Sensor (POS)"
Camshaft position sensor	EC-40. "Camshaft Position Sensor (PHASE)"
Intake valve timing control solenoid valve	EC-40. "Intake Valve Timing Control Solenoid Valve"
Exhaust valve timing control position sensor	EC-40, "Exhaust Valve Timing Control Position Sensor"
Exhaust valve timing control solenoid valve	EC-41, "Exhaust Valve Timing Control Solenoid Valve"
Air fuel ratio (A/F) sensor 1	EC-41, "Air Fuel Ratio (A/F) Sensor 1"
Heated oxygen sensor 2	EC-41. "Heated Oxygen Sensor 2"
Knock sensor	EC-42, "Knock Sensor"
Engine oil pressure sensor	EC-42, "Engine Oil Pressure Sensor"
Engine oil temperature sensor	EC-43. "Engine Oil Temperature Sensor"
Cooling fan	EC-43. "Cooling Fan"
EVAP canister purge volume control solenoid valve	EC-43, "EVAP Canister Purge Volume Control Solenoid Valve"
EVAP canister vent control valve	EC-44, "EVAP Canister Vent Control Valve"
EVAP control system pressure sensor	EC-44, "EVAP Control System Pressure Sensor"
Battery current sensor	EC-44, "Battery Current Sensor (With Battery Temperature Sen-
Battery temperature sensor	sor)"
Malfunction indicator lamp (MIL)	EC-45, "Malfunction Indicator lamp (MIL)"
Oil pressure warning lamp	EC-45. "Oil Pressure Warning Lamp"
Refrigerant pressure sensor	EC-45, "Refrigerant Pressure Sensor"
Stop lamp switch	
Brake pedal position switch	EC-45, "Stop Lamp Switch & Brake Pedal Position Switch"
Clutch pedal position switch	EC-46, "Clutch Pedal Position Switch"
ASCD steering switch	EC-46, "ASCD Steering Switch"
	EC-46. "Information Display"

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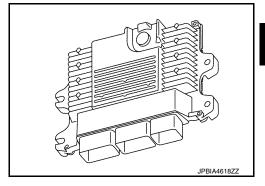
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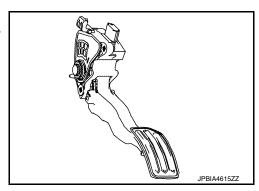
ECM INFOID:000000012197626

The ECM consists of a microcomputer and connectors for signal input and output and for power supply. The ECM controls the engine.



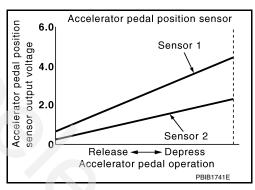
## Accelerator Pedal Position Sensor

The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.



Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.

Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.



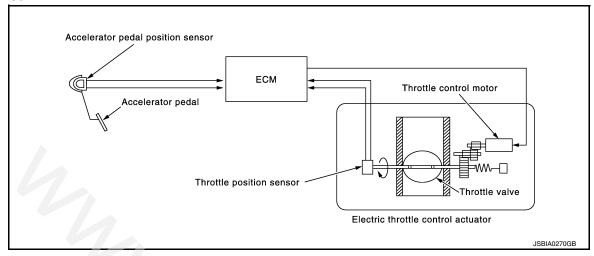
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## Electric Throttle Control Actuator

**OUTLINE** 

Revision: November 2015 EC-33 2016 JUKE

Electric throttle control actuator consists of throttle body, throttle valve, throttle control motor and throttle position sensor.



#### THROTTLE CONTROL MOTOR RELAY

Power supply for the throttle control motor is provided to the ECM via throttle control motor relay. The throttle control motor relay is ON/OFF controlled by the ECM. When the ignition switch is turned ON, the ECM sends an ON signal to throttle control motor relay and battery voltage is provided to the ECM. When the ignition switch is turned OFF, the ECM sends an OFF signal to throttle control motor relay and battery voltage is not provided to the ECM.

#### THROTTLE CONTROL MOTOR

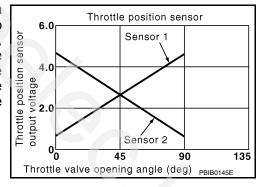
The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

### THROTTLE POSITION SENSOR

The throttle position sensor responds to the throttle valve movement.

The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



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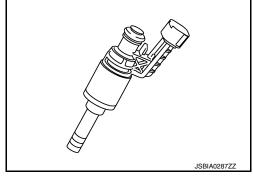
## Ignition Coil With Power Transistor

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.

JPBIA4613ZZ

**Fuel Injector** INFOID:0000000012197630

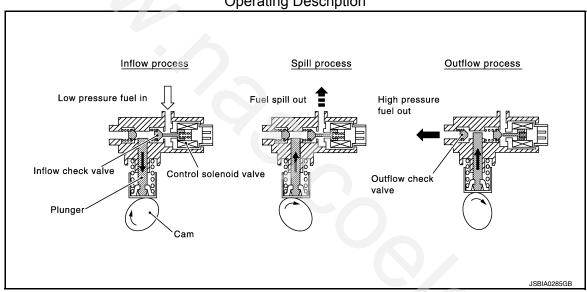
For the fuel injector, a high pressure fuel injector is used and this enables a high-pressure fuel injection at a high voltage within a short time. The ECM is equipped with an injector driver unit and actuates the fuel injector at a high voltage (approximately 65 V at the maximum).



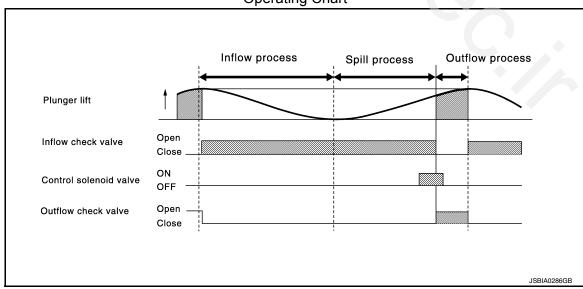
# High Pressure Fuel Pump

The high pressure fuel pump is activated by the exhaust camshaft. ECM controls the high pressure fuel pump control solenoid valve built into the high pressure fuel pump and adjusts the amount of discharge by changing the suction timing of the low pressure fuel.

### Operating Description



### **Operating Chart**



**EC-35 Revision: November 2015 2016 JUKE**  EC

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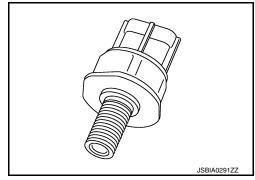
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### Fuel Rail Pressure Sensor

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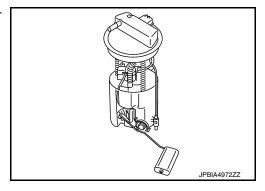
The fuel rail pressure (FRP) sensor is placed to the fuel rail and measures fuel pressure in the fuel rail. The sensor transmits voltage signal to the ECM. As the pressure increases, the voltage rises. The ECM controls the fuel pressure in the fuel rail by operating high pressure fuel pump. The ECM uses the signal from fuel rail pressure sensor as a feedback signal.



# Low Pressure Fuel Pump

INFOID:0000000012197633

The low pressure fuel pump is integrated with a fuel pressure regulator and a fuel filter. This pump is build into the fuel tank.

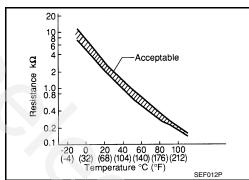


#### INFOID:0000000012197634

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## **Fuel Tank Temperature Sensor**

The fuel tank temperature sensor is used to detect the fuel temperature inside the fuel tank. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the fuel temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



### <Reference data>

Fuel Level Sensor

Fluid temperature [°C (°F)]	Voltage* [V]	Resistance $[k\Omega]$
20 (68)	3.5	2.3 - 2.7
50 (122)	2.2	0.79 - 0.90

<sup>\*:</sup> These data are reference values and are measured between ECM terminals.

The fuel level sensor is mounted in the fuel level sensor unit.

The sensor detects a fuel level in the fuel tank and transmits a signal to the combination meter. The combination meter sends the fuel level sensor signal to the ECM via the CAN communication line.

It consists of two parts, one is mechanical float and the other is variable resistor. Fuel level sensor output voltage changes depending on the movement of the fuel mechanical float.

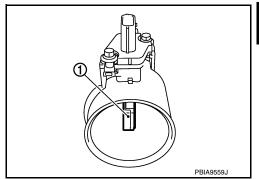
# Mass Air Flow Sensor (With Intake Air Temperature Sensor 1)

INFOID:0000000012197636

# MASS AIR FLOW SENSOR

The mass air flow sensor (1) is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The mass air flow sensor controls the temperature of the hot wire to a certain amount. The heat generated by the hot wire is reduced as the intake air flows around it. The more air, the greater the heat loss.

Therefore, the electric current supplied to hot wire is changed to maintain the temperature of the hot wire as air flow increases. The ECM detects the air flow by means of this current change.



# **INTAKE AIR TEMPERATURE SENSOR 1**

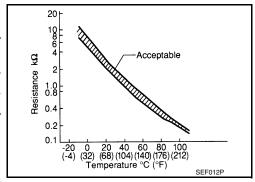
The intake air temperature sensor 1 is built-into mass air flow sensor. The sensor detects intake air temperature and transmits a signal to the ECM.

The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.

#### <Reference data>

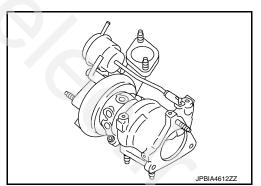
Intake air temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

<sup>\*:</sup> These data are reference values and are measured between ECM terminals.



# Turbocharger

Turbocharger boost is controlled by adjusting the pressure to the diaphragm of the boost control actuator.



# TURBOCHARGER BOOST CONTROL SOLENOID VALVE

Turbocharger boost control solenoid valve is ON/OFF duty controlled by ECM.

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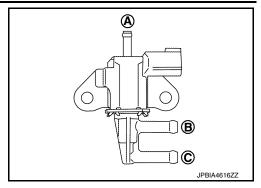
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# [MR FOR NISMO RS MODELS]

And it adjusts the pressure in the diaphragm of the boost control actuator. The longer the turbocharger boost control solenoid valve is ON, the higher the boost is increased.

- A. From boost pipe
- B. To boost control actuator
- C. To Air cleaner

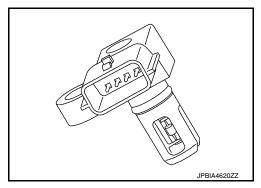


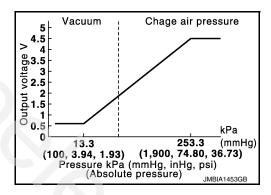
# Turbocharger Boost Sensor (With Intake Air Temperature Sensor 2)

INFOID:0000000012197638

# TURBOCHARGER BOOST SENSOR

The turbocharger boost sensor detects the pressure of the outlet side of the intercooler. When increasing the pressure, the output voltage of the sensor to the ECM increases.





#### **INTAKE AIR TEMPERATURE SENSOR 2**

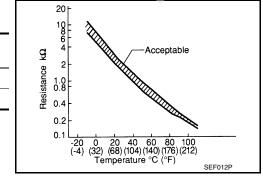
The intake air temperature sensor 2 is built-into turbocharger boost sensor. The sensor detects intake air temperature and transmits a signal to the ECM.

The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.

#### <Reference data>

Intake air temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
25 (77)	3.3	1.800 - 2.200
80 (176)	1.2	0.283 - 0.359

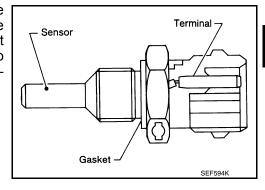
<sup>\*:</sup> These data are reference values and are measured between ECM terminals.



INFOID:0000000012197639

# **Engine Coolant Temperature Sensor**

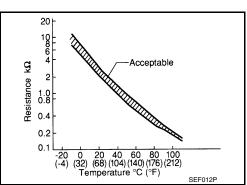
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



#### <Reference data>

Engine coolant temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260

<sup>\*:</sup> These data are reference values and are measured between ECM terminals.



#### INFOID:0000000012197640

# Crankshaft Position Sensor (POS)

The crankshaft position sensor (POS) is located on the oil pan facing the gear teeth (cogs) of the signal plate. It detects the fluctuation of the engine revolution.

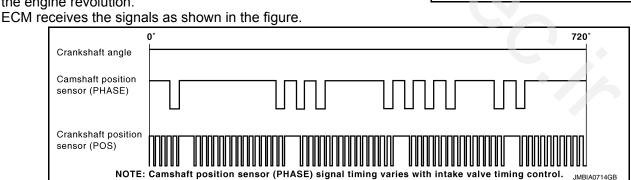
The sensor consists of a permanent magnet and Hall IC.

When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor

The ECM receives the voltage signal and detects the fluctuation of the engine revolution.



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# Camshaft Position Sensor (PHASE)

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The camshaft position sensor (PHASE) senses the retraction of intake camshaft to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position.

When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

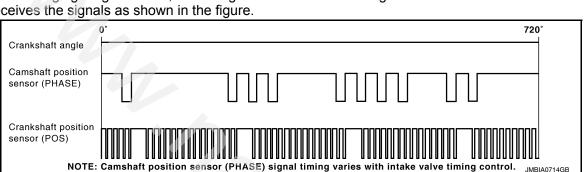
The sensor consists of a permanent magnet and Hall IC.

When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

ECM receives the signals as shown in the figure.



# Intake Valve Timing Control Solenoid Valve

INFOID:0000000012197642

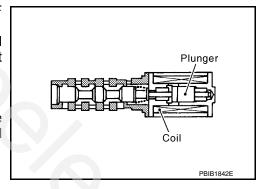
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The intake valve timing control solenoid valve changes the oil amount and direction of flow through intake valve timing control unit or stops oil flow.

The longer pulse width advances valve angle.

The shorter pulse width retards valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the intake valve angle at the control position.



INFOID:0000000012197643

# Exhaust Valve Timing Control Position Sensor

Exhaust valve timing control position sensor detects the protrusion of the signal plate installed to the exhaust camshaft front end.

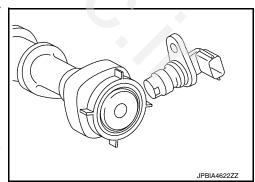
This sensor signal is used for sensing a position of the exhaust camshaft.

The sensor consists of a permanent magnet and Hall IC.

When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to

Due to the changing magnetic field, the voltage from the sensor changes.



# **Exhaust Valve Timing Control Solenoid Valve**

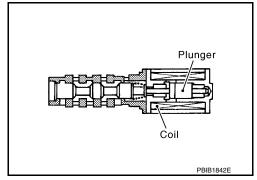
Exhaust valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The exhaust valve timing control solenoid valve changes the oil amount and direction of flow through exhaust valve timing control unit or stops oil flow.

The longer pulse width retards valve angle.

The shorter pulse width advances valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the exhaust valve angle at the control position.



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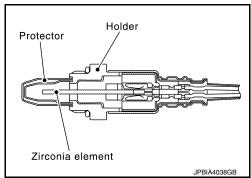
# Air Fuel Ratio (A/F) Sensor 1

# DESCRIPTION

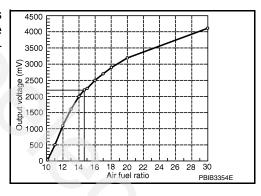
The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement  $\lambda = 1$ , but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide  $\lambda$  range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.



Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of approximately 760°C (1,400°F).



#### A/F SENSOR 1 HEATER

A/F sensor 1 heater is integrated in the sensor.

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element within the specified range.

# Heated Oxygen Sensor 2

INFOID:0000000012197646

DESCRIPTION

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# **COMPONENT PARTS**

# < SYSTEM DESCRIPTION >

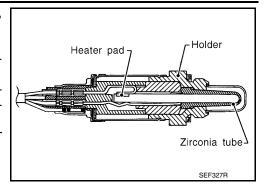
#### [MR FOR NISMO RS MODELS]

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1 V in richer conditions to 0 V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



# **HEATED OXYGEN SENSOR 2 HEATER**

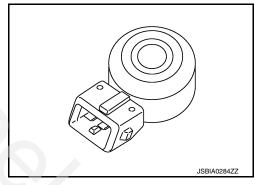
Heated oxygen sensor 2 heater is integrated in the sensor.

The ECM performs ON/OFF control of the heated oxygen sensor 2 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

Engine speed	Heated oxygen sensor 2 heater
Above 3,600 rpm	OFF
Below 3,600 rpm after the following conditions are met.  Engine: After warming up  Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load	ON

Knock Sensor

The knock sensor is attached to the cylinder block. It senses engine knocking using a piezoelectric element. A knocking vibration from the cylinder block is sensed as vibrational pressure. This pressure is converted into a voltage signal and sent to the ECM.

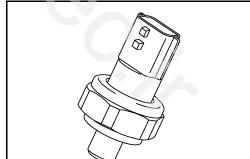


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# Engine Oil Pressure Sensor

The engine oil pressure (EOP) sensor is detects engine oil pressure and transmits a voltage signal to the ECM.



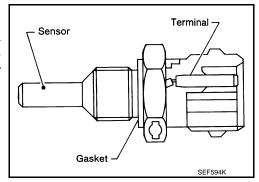
Revision: November 2015 EC-42 2016 JUKE

# [MR FOR NISMO RS MODELS]

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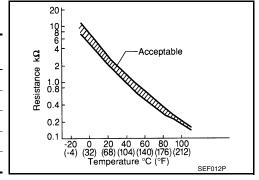
# **Engine Oil Temperature Sensor**

The engine oil temperature sensor is used to detect the engine oil temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine oil temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



#### <Reference data>

Engine oil temperature [°C (°F)]	Voltage* (V)	Resistance (kΩ)
-10 (14)	4.4	7.0 - 11.4
20 (68)	3.5	2.37 - 2.63
50 (122)	2.2	0.68 - 1.00
90 (194)	0.9	0.236 - 0.260
110 (230)	0.6	0.143 - 0.153



<sup>\*:</sup> These data are reference values and are measured between ECM terminals.

# Cooling Fan

# COOLING FAN CONTROL MODULE

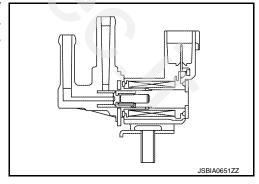
Cooling fan control module receives ON/OFF pulse duty signal from IPDM E/R. Corresponding to this ON/OFF pulse duty signal, cooling fan control module sends cooling fan motor operating voltage to cooling fan motor. The revolution speed of cooling fan motor is controlled by duty cycle of the voltage.

#### **COOLING FAN MOTOR**

Cooling fan motor receives cooling fan motor operating voltage from cooling fan control module. The revolution speed of cooling fan motor is controlled by duty cycle of the voltage.

# **EVAP Canister Purge Volume Control Solenoid Valve**

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



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# **EVAP Canister Vent Control Valve**

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The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

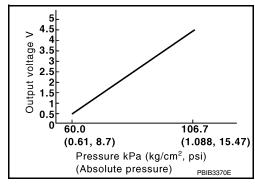
When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.

# Spring Valve Coil O-ring Plunger Canister side PBIB1263E

INFOID:0000000012197653

# **EVAP Control System Pressure Sensor**

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



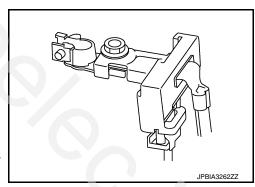
# Battery Current Sensor (With Battery Temperature Sensor)

INFOID:0000000012197654

# **OUTLINE**

The power generation voltage variable control enables fuel consumption to be decreased by reducing the engine load which is caused by the power generation of the generator.

Based on sensor signals, ECM judges whether or not the power generation voltage variable control is performed. When performing the power generation voltage variable control, ECM calculates the target power generation voltage based on the sensor signal. And ECM sends the calculated value as the power generation command value to IPDM E/R. For the details of the power generation voltage variable control, refer to CHG-8, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM: System Description".



#### **CAUTION:**

Never connect the electrical component or the ground wire directly to the battery terminal. The connection causes the malfunction of the power generation voltage variable control, and then the battery discharge may occur.

#### BATTERY CURRENT SENSOR

The battery current sensor is installed to the battery negative cable. The sensor measures the charging/discharging current of the battery.

#### BATTERY TEMPERATURE SENSOR

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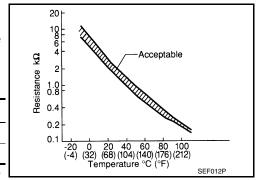
Battery temperature sensor is integrated in battery current sensor. The sensor measures temperature around the battery.

The electrical resistance of the thermistor decreases as temperature increases.

#### <Reference data>

Temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
25 (77)	3.333	1.9 - 2.1
90 (194)	0.969	0.222 - 0.258

<sup>\*:</sup> These data are reference values and are measured between battery temperature sensor signal terminal and sensor ground.



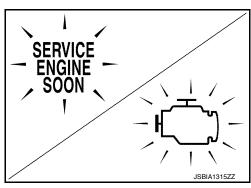
# Malfunction Indicator lamp (MIL)

The Malfunction Indicator lamp (MIL) is located on the combination meter.

The MIL will illuminate when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, the MIL should turn OFF. If the MIL remains illuminated, the on board diagnostic system has detected an engine system malfunction.

For details, refer to <u>EC-81</u>, "<u>DIAGNOSIS DESCRIPTION</u>: <u>Malfunction Indicator Lamp</u> (MIL)".



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# Oil Pressure Warning Lamp

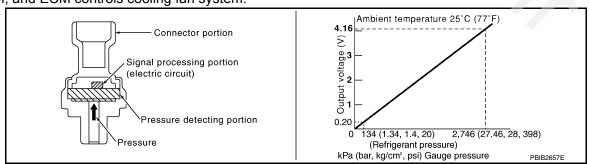
Oil pressure warning lamp is located on the combination meter. It indicates the low pressure of the engine oil and the malfunction of the engine oil pressure system.

Combination meter turns the oil pressure warning lamp ON/OFF according to the oil pressure warning lamp signal received from ECM via CAN communication.



# Refrigerant Pressure Sensor

The refrigerant pressure sensor is installed at the condenser of the air conditioner system. The sensor uses an electrostatic volume pressure transducer to convert refrigerant pressure to voltage. The voltage signal is sent to ECM, and ECM controls cooling fan system.



# Stop Lamp Switch & Brake Pedal Position Switch

INFOID:0000000012197658

Stop lamp switch and brake pedal position switch are installed to brake pedal bracket. ECM detects the state of the brake pedal by those two types of input (ON/OFF signal).

# **COMPONENT PARTS**

# < SYSTEM DESCRIPTION >

# [MR FOR NISMO RS MODELS]

Brake pedal	Brake pedal position switch	Stop lamp switch	
Released	ON	OFF	
Depressed	OFF	ON	

# Clutch Pedal Position Switch

INFOID:0000000012197659

When the clutch pedal is depressed, the clutch pedal position switch turns OFF and the clutch pedal position switch signal is sent to the ECM. The ECM judges the clutch pedal conditions via the signal (ON or OFF).

# **ASCD Steering Switch**

INFOID:0000000012197660

ASCD steering switch has variant values of electrical resistance for each button. ECM reads voltage variation of switch, and determines which button is operated.

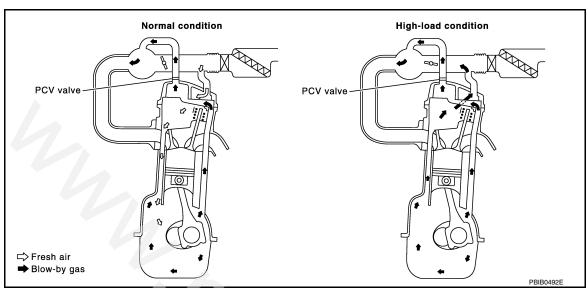
# Information Display

INFOID:0000000012197661

The operation mode of the ASCD is indicated on the information display in the combination meter. ECM transmits the status signal to the combination meter via CAN communication according to ASCD operation.

# STRUCTURE AND OPERATION

# Positive Crankcase Ventilation



This system returns blow-by gas to the intake manifold.

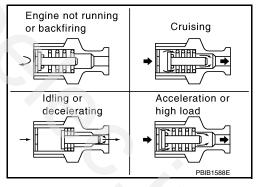
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the PCV valve.

Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air. The ventilating air is then drawn from the air inlet tubes into the crankcase. In this process the air passes through the hose connecting air inlet tubes to rocker cover.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve. The flow goes through the hose connection in the reverse direction.

On vehicles with an excessively high blow-by, the valve does not meet the requirement. This is because some of the flow will go through the hose connection to the air inlet tubes under all conditions.



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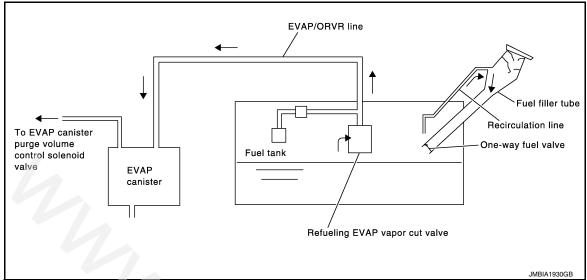
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# On Board Refueling Vapor Recovery (ORVR)

INFOID:0000000012197663



From the beginning of refueling, the air and vapor inside the fuel tank go through refueling EVAP vapor cut valve and EVAP/ORVR line to the EVAP canister. The vapor is absorbed by the EVAP canister and the air is released to the atmosphere.

When the refueling has reached the full level of the fuel tank, the refueling EVAP vapor cut valve is closed and refueling is stopped because of auto shut-off. The vapor which was absorbed by the EVAP canister is purged during driving.

#### **WARNING:**

When conducting inspections below, be sure to observe the following:

- Put a "CAUTION: FLAMMABLE" sign in workshop.
- · Do not smoke while servicing fuel system. Keep open flames and sparks away from work area.
- Be sure to furnish the workshop with a CO<sub>2</sub> fire extinguisher.

#### **CAUTION:**

- Before removing fuel line parts, carry out the following procedures:
- Put drained fuel in an explosion-proof container and put lid on securely.
- Release fuel pressure from fuel line. Refer to EC-586, "Inspection".
- Disconnect battery ground cable.
- Always replace O-ring when the fuel gauge retainer is removed.
- Do not kink or twist hose and tube when they are installed.
- Do not tighten hose and clamps excessively to avoid damaging hoses.
- After installation, run engine and check for fuel leaks at connection.
- Do not attempt to top off the fuel tank after the fuel pump nozzle shuts off automatically.
   Continued refueling may cause fuel overflow, resulting in fuel spray and possibly a fire.

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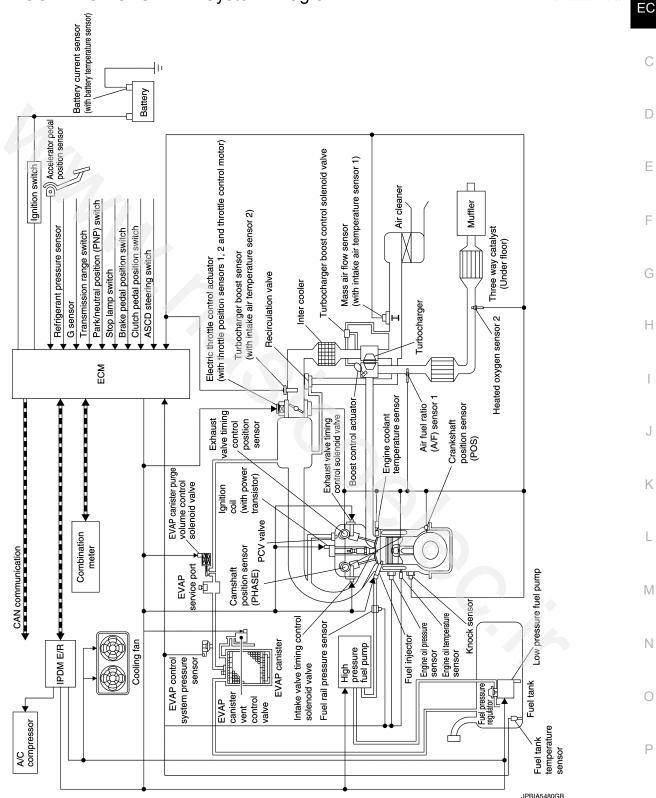
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# **SYSTEM**

**ENGINE CONTROL SYSTEM** 

ENGINE CONTROL SYSTEM: System Diagram



**ENGINE CONTROL SYSTEM: System Description** 

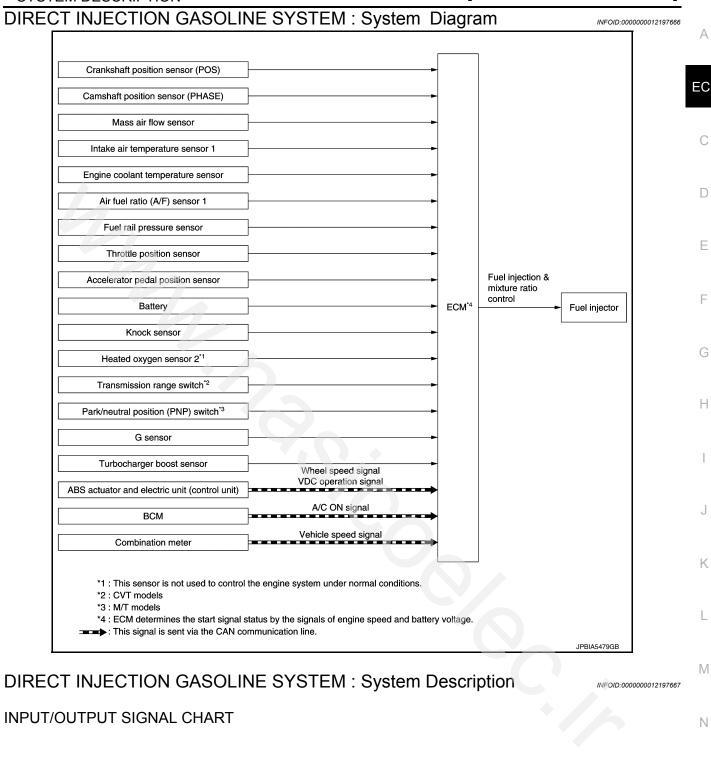
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ECM controls the engine by various functions.

# < SYSTEM DESCRIPTION >

Function	Reference
Direct injection gasoline system	EC-51, "DIRECT INJECTION GASOLINE SYSTEM: System Description"
Fuel pressure control	EC-54, "FUEL PRESSURE CONTROL : System Description"
Electric ignition control	EC-56, "ELECTRIC IGNITION SYSTEM : System Description"
Intake valve timing control	EC-57, "INTAKE VALVE TIMING CONTROL : System Description"
Exhaust valve timing control	EC-58, "EXHAUST VALVE TIMING CONTROL : System Description"
Turbocharger boost control	EC-60, "TURBOCHARGER BOOST CONTROL : System Description"
Engine protection control (Low engine oil pressure)	EC-61, "ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE: System Description"
Fuel filler cap warning system	EC-62, "FUEL FILLER CAP WARNING SYSTEM : System Description"
Air conditioning cut control	EC-63, "AIR CONDITIONING CUT CONTROL : System Description"
Cooling fan control	EC-65, "COOLING FAN CONTROL : System Description"
Starter motor drive control	EC-65, "STARTER MOTOR DRIVE CONTROL : System Description"
Evaporative emission system	EC-66, "EVAPORATIVE EMISSION SYSTEM : System Description"
ASCD (Automatic speed control device)	EC-68, "AUTOMATIC SPEED CONTROL DEVICE (ASCD) : System Description"
Integrated control system	EC-69, "INTEGRATED CONTROL SYSTEM : System Description"
CAN communication	EC-70, "CAN COMMUNICATION : System Description"

# **DIRECT INJECTION GASOLINE SYSTEM**



Sensor		Input signal to ECM	ECM func- tion	Actuator	
Crankshaft position sensor (POS)	Engine speed*	1			
Camshaft position sensor (PHASE)	Camshaft posit	ion			
Mass air flow sensor	Amount of intal	ke air			
Intake air temperature sensor 1	Intake air temp	erature			
Engine coolant temperature sensor	Engine coolant	temperature			
Air fuel ratio (A/F) sensor 1	Density of oxyg	gen in exhaust gas		Fuel injector	
Fuel rail pressure sensor	Fuel rail pressu	ire			
Throttle position sensor	Throttle positio	n			
Accelerator pedal position sensor	Accelerator pe	dal position	Fuel injection & mixture ra- tio control		
Battery	Battery voltage	*4			
Knock sensor	Engine knocking condition				
Heated oxygen sensor 2*1	Density of oxygen in exhaust gas				
Transmission range switch*2	Convenition				
Park/neutral position (PNP) switch*3	Gear position				
G sensor	Inclination angl	е			
Turbocharger boost sensor	Turbocharger boost				
ABS actuator and electric unit (control unit)	CAN communication  • Wheel speed signal • VDC/TCS operation command		1		
ВСМ	CAN commu- nication	A/C ON signal			
Combination meter	CAN commu- nication	Vehicle speed signal	1		

<sup>\*1:</sup> This sensor is not used to control the engine system under normal conditions.

#### SYSTEM DESCRIPTION

The adoption of the direct fuel injection method enables more accurate adjustment of fuel injection quantity by injecting atomized high-pressure fuel directly into the cylinder. This method allows high-powered engine, low fuel consumption, and emissions-reduction.

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed, intake air, fuel rail pressure and boost) from the crankshaft position sensor, camshaft position sensor, mass air flow sensor, fuel rail pressure sensor and the turbocharger boost sensor.

#### VARIOUS FUEL INJECTION INCREASE/DECREASE COMPENSATION

In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

# <Fuel increase>

- During warm-up
- · When starting the engine
- During acceleration
- · Hot-engine operation
- When selector lever position is changed from N to D (CVT models)
- High-load, high-speed operation

#### <Fuel decrease>

- During deceleration
- · During high engine speed operation

<sup>\*2:</sup> CVT models

<sup>\*3:</sup> M/T models

<sup>\*4:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

# **FUEL INJECTION CONTROL**

# Stratified-charge Combustion

Stratified-charge combustion is a combustion method which enables extremely lean combustion by injecting fuel in the latter half of a compression process, collecting combustible air-fuel around the spark plug, and forming fuel-free airspace around the mixture.

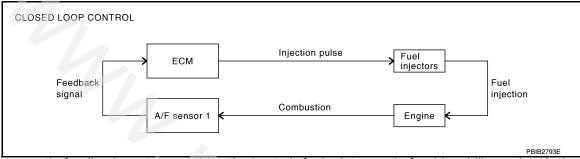
Right after a start with the engine cold, the catalyst warm-up is accelerated by stratified-charge combustion.

# **Homogeneous Combustion**

Homogeneous combustion is a combustion method that fuel is injected during intake process so that combustion occurs in the entire combustion chamber, as is common with conventional methods.

As for a start except for starts with the engine cold, homogeneous combustion occurs.

# MIXTURE RATIO FEEDBACK CONTROL (CLOSED LOOP CONTROL)



The mixture ratio feedback system provides the best air-fuel mixture ratio for driveability and emission control. The three way catalyst (manifold) can better reduce CO, HC and NOx emissions. This system uses A/F sensor 1 in the exhaust manifold to monitor whether the engine operation is rich or lean. The ECM adjusts the injection pulse width according to the sensor voltage signal. For more information about A/F sensor 1, refer to EC-41, "Air Fuel Ratio (A/F) Sensor 1". This maintains the mixture ratio within the range of stoichiometric (ideal air-fuel mixture).

This stage is referred to as the closed loop control condition.

Heated oxygen sensor 2 is located downstream of the three way catalyst (manifold). Even if the switching characteristics of A/F sensor 1 shift, the air-fuel ratio is controlled to stoichiometric by the signal from heated oxygen sensor 2.

Open Loop Control

The open loop system condition refers to when the ECM detects any of the following conditions. Feedback control stops in order to maintain stabilized fuel combustion.

- Deceleration and acceleration
- High-load, high-speed operation
- Malfunction of A/F sensor 1 or its circuit
- Insufficient activation of A/F sensor 1 at low engine coolant temperature
- High engine coolant temperature
- During warm-up
- After shifting from N to D (CVT models)
- When starting the engine

#### MIXTURE RATIO SELF-LEARNING CONTROL

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from A/F sensor 1. This feedback signal is then sent to the ECM. The ECM controls the basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally designed. Both manufacturing differences (i.e., mass air flow sensor hot wire) and characteristic changes during operation (i.e., fuel injector clogging) directly affect mixture ratio.

Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"Fuel trim" refers to the feedback compensation value compared against the basic injection duration. Fuel trim includes "short-term fuel trim" and "long-term fuel trim".

"Short term fuel trim" is the short-term fuel compensation used to maintain the mixture ratio at its theoretical value. The signal from A/F sensor 1 indicates whether the mixture ratio is RICH or LEAN compared to the theoretical value. The signal then triggers a reduction in fuel volume if the mixture ratio is rich, and an increase in fuel volume if it is lean.

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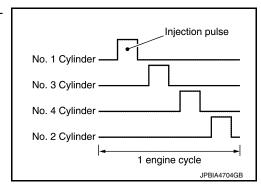
**2016 JUKE** 

"Long-term fuel trim" is overall fuel compensation carried out over time to compensate for continual deviation of the "short-term fuel trim" from the central value. Continual deviation will occur due to individual engine differences, wear over time and changes in the usage environment.

#### **FUEL INJECTION TIMING**

Sequential Direct Injection Gasoline System

Fuel is injected into each cylinder during each engine cycle according to the ignition order.



# STRATIFIED-CHARGE START CONTROL

The use of the stratified-charge combustion method enables emissions-reduction when starting the engine with engine coolant temperature between 5°C (41°F) and 40°C (104°F).

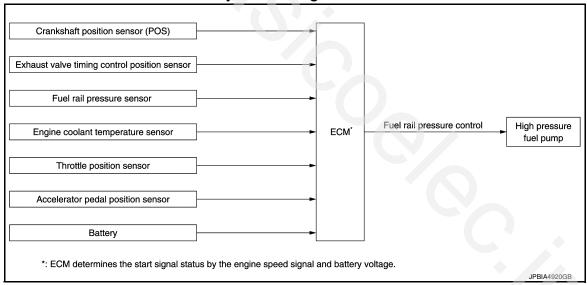
#### **FUEL SHUT-OFF**

Fuel to each cylinder is shut-off during deceleration, operation of the engine at excessively high speed or operation of the vehicle at excessively high speed.

# FUEL PRESSURE CONTROL

# FUEL PRESSURE CONTROL: System Diagram

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# FUEL PRESSURE CONTROL: System Description

INFOID:0000000012197669

INPUT/OUTPUT SIGNAL CHART

# [MR FOR NISMO RS MODELS]

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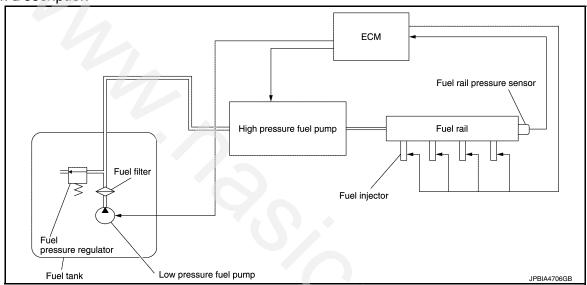
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Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed*			
Exhaust valve timing control position sensor	Camshaft position			
Fuel rail pressure sensor	Fuel rail pressure		High pressure fuel pump	
Engine coolant temperature sensor	Engine coolant temperature	Fuel rail pres- sure control		
Throttle position sensor	Throttle position	Suite control		
Accelerator pedal position sensor	Accelerator pedal position			
Battery	Battery voltage*			

<sup>\*:</sup> ECM determines the start signal status by the engine speed signal and battery voltage.

# System Description



# Low fuel pressure control

- The low fuel pressure pump is controlled by ECM. The pumped fuel passes through the fuel filter and is sent to the high pressure fuel pump.
- Low fuel pressure is adjusted by the fuel pressure regulator.

#### High fuel pressure control

**Revision: November 2015** 

The high pressure fuel pump raises the pressure of the fuel sent from the low pressure fuel pump. Actuated by the exhaust camshaft, the high pressure fuel pump activates the high pressure fuel pump solenoid based on a signal received from ECM, and adjusts the amount of discharge by changing the timing of closing the inlet check valve to control fuel rail pressure.

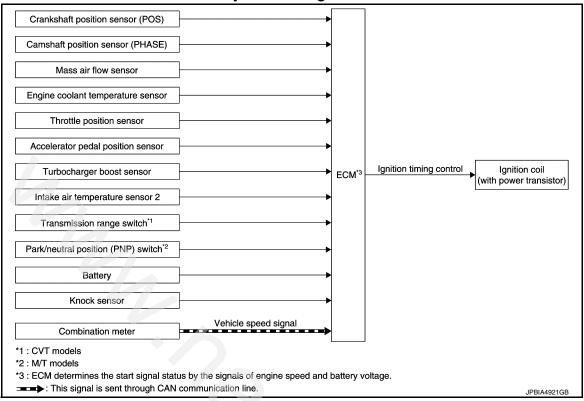
**EC-55** 

# **ELECTRIC IGNITION SYSTEM**

2016 JUKE

# ELECTRIC IGNITION SYSTEM: System Diagram

INFOID:0000000012197670



# **ELECTRIC IGNITION SYSTEM: System Description**

INFOID:0000000012197671

# INPUT/OUTPUT SIGNAL CHART

Sensor	ı	Input Signal to ECM	ECM func- tion	Actuator
Crankshaft position sensor (POS)	Engine speed*3			
Camshaft position sensor (PHASE)	Piston position			
Mass air flow sensor	Amount of inta	Amount of intake air		
Engine coolant temperature sensor	Engine coolan	nt temperature		
Throttle position sensor	Throttle position	Throttle position		Ignition coil (with power transistor)
Accelerator pedal position sensor	Accelerator pedal position			
Turbocharger boost sensor	Turbocharger boost		Ignition tim-	
Intake air temperature sensor 2	Intake air temperature		ing control	
Transmission range switch*1	Gear position	Coor position		
Park/neutral position (PNP) switch*2	Ocal position	Gear position		
Battery	Battery voltage*			
Knock sensor	Engine knocking condition			
Combination meter	CAN communication Vehicle speed signal			

<sup>\*1:</sup> CVT models

# SYSTEM DESCRIPTION

Firing order: 1 - 3 - 4 - 2

<sup>\*2:</sup> M/T models

<sup>\*3:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

# < SYSTEM DESCRIPTION >

The ignition timing is controlled by the ECM to maintain the best air-fuel ratio for every running condition of the engine. The ignition timing data is stored in the ECM.

The ECM receives information such as the injection pulse width and camshaft position sensor (PHASE) signal. Computing this information, ignition signals are transmitted to the power transistor.

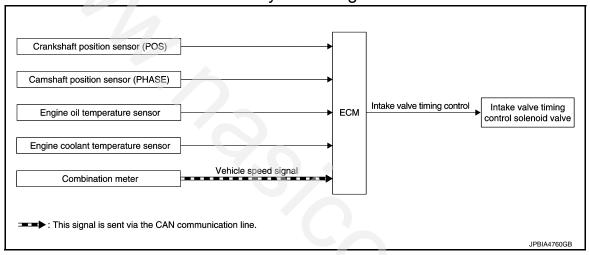
During the following conditions, the ignition timing is revised by the ECM according to the other data stored in the ECM.

- At starting
- During warm-up
- · At idle
- · At low battery voltage
- During acceleration

The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

# INTAKE VALVE TIMING CONTROL

# INTAKE VALVE TIMING CONTROL: System Diagram



# INTAKE VALVE TIMING CONTROL: System Description

## INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM		ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed and piston position			
Camshaft position sensor (PHASE)			Intake valve tim-	Intake valve timing con-
Engine oil temperature sensor	Engine oil temperature			
Engine coolant temperature sensor	Engine coolant temperature		ing control	trol solenoid valve
Combination meter	CAN commu- nication	Vehicle speed		

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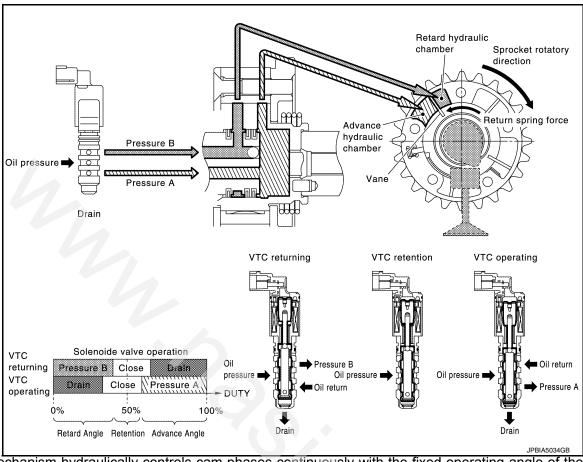
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# SYSTEM DESCRIPTION



This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intakevalve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine coolanttemperature. Then, the ECM sends ON/OFF pulse duty signals to the intake valve timing (IVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the intake valve to increase engine torque in low/mid speed range and output in high-speed range.

# EXHAUST VALVE TIMING CONTROL

# **EXHAUST VALVE TIMING CONTROL: System Diagram**

INFOID:0000000012197674 Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Exhaust valve timing control Exhaust valve timing ECM Engine oil temperature sensor control solenoid valve Exhaust valve timing control position sensor Vehicle speed signal : This signal is sent via the CAN communication line.

**EXHAUST VALVE TIMING CONTROL: System Description** 

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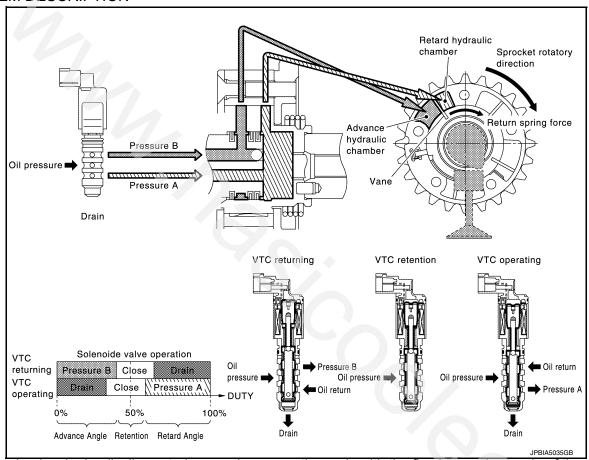
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Sensor	Input signal to ECM		ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed and piston position			
Camshaft position sensor (PHASE)				
Engine oil temperature sensor	Engine oil temperature		Exhaust valve timing control	Exhaust valve timing control solenoid valve
Exhaust valve timing control position sensor	Exhaust valve timing signal			
Combination meter	CAN communication Vehicle speed signal			

# SYSTEM DESCRIPTION



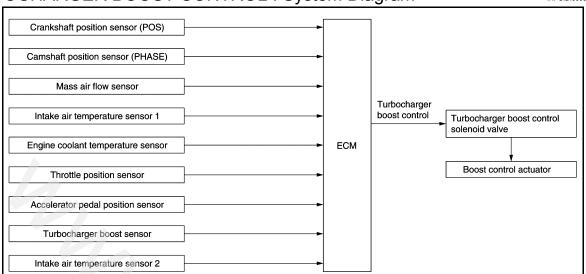
This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the exhaust valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine oil temperature. Then, the ECM sends ON/OFF pulse duty signals to the exhaust valve timing (EVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the exhaust valve to increase engine torque and output in a range of high engine speed.

TURBOCHARGER BOOST CONTROL

2016 JUKE

# TURBOCHARGER BOOST CONTROL: System Diagram



# TURBOCHARGER BOOST CONTROL: System Description

INFOID:0000000012197677

#### INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator		
Crankshaft position sensor (POS)	Engine and d				
Camshaft position sensor (PHASE)	Engine speed				
Mass air flow sensor	Amount of intake air		Turbocharger boost control solenoid valve   Boost control actuator		
Intake air temperature sensor 1	Intake air temperature				
Engine coolant temperature sensor	Engine coolant temperature	Turbocharger boost control			
Throttle position sensor	Throttle position	Control			
Accelerator pedal position sensor	Accelerator pedal position	Accelerator pedal position			
Turbocharger boost sensor	Turbocharger boost				
Intake air temperature sensor 2	Intake air temperature				

#### SYSTEM DESCRIPTION

Depending on driving conditions, the ECM performs ON/OFF duty control of the turbocharger boost control solenoid valve and controls the boost by adjusting the pressure to the diaphragm of the boost control actuator. When driving conditions demand an increase in boost, the ECM prolongs the ON time of the turbocharger boost control solenoid valve and moves the boost control valve towards the closing direction by reducing the pressure in the diaphragm of the boost control actuator. The emission gas to the turbine wheel is then increased. When driving conditions demand a decrease in boost, the ECM shortens the ON time of the turbocharger boost control solenoid valve and moves the boost control valve towards the opening position by increasing the pressure in the diaphragm of the boost control actuator. The emission bypassing to the turbine wheel is then increased. Thus, by performing the most optimal boost control, the ECM improves engine output and response.

#### NOTE:

The boost varies depending on the vehicle and driving conditions.

## **BOOST CONTROL ACTUATOR LINE DRAWING**

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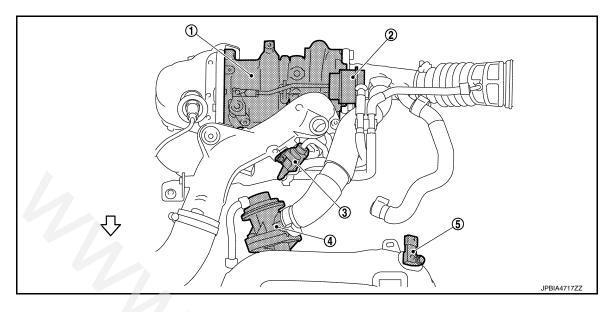
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Turbocharger

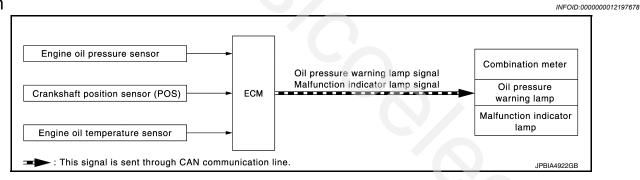
- 2. Boost control actuator
- Turbocharger boost control solenoid valve

- Recirculation valve
- Turbocharger boost sensor (with intake air temperature sensor 2)

⟨□: Vehicle front

# ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE : System Dia-

gram



# ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE: System Description

## INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Engine oil pressure sensor	Engine pressure	Engine protection control	
Crankshaft position sensor (POS)	Engine speed	Oil pressure warning lamp signal	Combination meter  Oil pressure warning lamp
Engine oil temperature sensor	Engine oil temperature	FUel cut control	

#### SYSTEM DESCRIPTION

- The engine protection control at low engine oil pressure warns the driver of a decrease in engine oil pressure by the oil pressure warning lamp a before the engine becomes damaged.
- When detecting a decrease in engine oil pressure at an engine speed less than 1,000 rpm, ECM transmits
  an oil pressure warning lamp signal to the combination meter. The combination meter turns ON the oil pressure warning lamp, according to the signal.

Revision: November 2015 EC-61 2016 JUKE

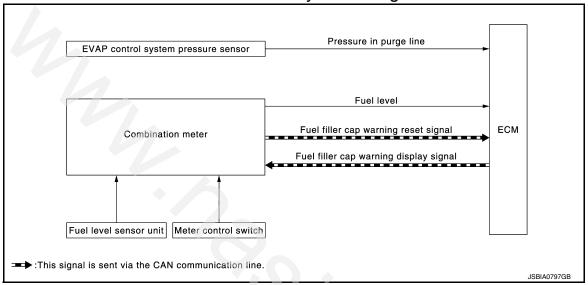
Decrease in engine oil	Engine speed	Combination meter
pressure	Liigilie speed	Oil pressure warning lamp
Detection	Less than 1,000 rpm	ON*
Detection	1,000 rpm or more	ON

<sup>\*:</sup> When detecting a normal engine oil pressure, ECM turns OFF the oil pressure warning lamp.

# FUEL FILLER CAP WARNING SYSTEM

# FUEL FILLER CAP WARNING SYSTEM: System Diagram

INFOID:0000000012197680



# FUEL FILLER CAP WARNING SYSTEM: System Description

INFOID:0000000012197681

# INPUT/OUTPUT SIGNAL CHART

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Unit/Sensor	Input signal to ECM	ECM function
EVAP control system pressure sensor	Pressure in purge line	
Combination mater	Fuel level	Fuel filler cap warning control
Combination meter	Fuel filler cap warning reset signal*	

<sup>\*:</sup> This signal is sent to the ECM via the CAN communication line.

#### Output

Unit	Output signal	Actuator
ECM	Fuel filler cap warning display signal*	Combination meter

<sup>\*:</sup> This signal is sent to the combination meter via the CAN communication line.

#### SYSTEM DESCRIPTION

The fuel filler cap warning system alerts the driver to the prevention of the fuel filler being left uncapped and malfunction occurrences after refueling, by turning ON the fuel filler cap warning display on the combination meter.

ECM judges a refueled state, based on a fuel level signal transmitted from the combination meter.

When a very small leak is detected through the EVAP leak diagnosis performed after judging the refueled state, ECM transmits a fuel filler cap warning display signal (request for display ON) to the combination meter via CAN communication.

When receiving the signal, the combination meter turns ON the fuel filler cap warning display.

# Check fuel filler cap installation condition when the fuel filler cap warning display turns ON.

**Reset Operation** 

The fuel filler cap warning lamp tunes OFF, according to any condition listed below:

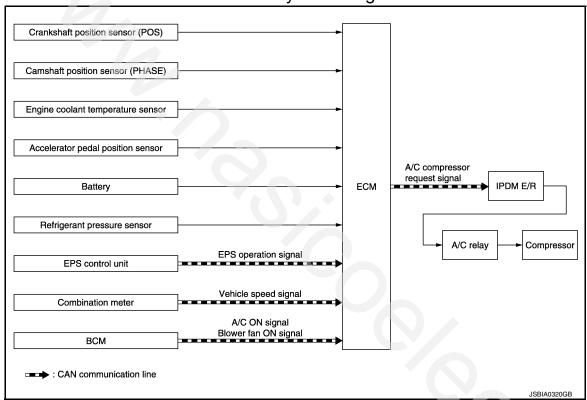
- Reset operation is performed by operating the meter control switch on the combination meter. Refer to <u>MWI-20</u>, "Switch Name and Function".
- When the reset operation is performed, the combination meter transmits a fuel filler cap warning reset signal to ECM via CAN communication. ECM transmits a fuel filler cap warning display signal (request for display OFF) to the combination meter via CAN communication. When receiving the signal, the combination meter turns OFF the fuel filler cap warning display.
- EVAP leak diagnosis result is normal.
- Fuel refilled.
- · DTC erased by using CONSULT.

#### NOTE:

MIL turns ON if a malfunction is detected in leak diagnosis results again at the trip after the fuel filler cap warning display turns ON/OFF.

# AIR CONDITIONING CUT CONTROL

# AIR CONDITIONING CUT CONTROL: System Diagram



AIR CONDITIONING CUT CONTROL: System Description

INPUT/OUTPUT SIGNAL CHART

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Revision: November 2015 EC-63 2016 JUKE

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Sensor	Input Signal to ECM		ECM function	Actuator	
Crankshaft position sensor (POS)	,*				
Camshaft position sensor (PHASE)	Engine speed	Engine speed*			
Engine coolant temperature sensor	Engine coolan	Engine coolant temperature			
Accelerator pedal position sensor	Accelerator pedal position				
Battery	Battery voltage*			IPDM E/R ↓ Air conditioner relay	
Refrigerant pressure sensor	Refrigerant pressure		Air conditioner		
EPS control unit	CAN commu- nication	EPS operation signal	cut control	↓ Compressor	
Combination meter	CAN commu- nication	Vehicle speed signal			
BCM	CAN commu- nication	A/C ON signal			

<sup>\*:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

#### SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used.

Under the following conditions, the air conditioner is turned off.

- When the accelerator pedal is fully depressed.
- · When cranking the engine.
- · At high engine speeds.
- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.
- When engine speed is excessively low.
- When refrigerant pressure is excessively low or high.

# **COOLING FAN CONTROL**

COOLING FAN CONTROL: System Diagram INFOID:0000000012197684 Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Cooling fan speed request signal Engine coolant temperature sensor IPDM E/R Refrigerant pressure sensor ECM Battery Cooling fan Cooling fan control module motor Vehicle speed Combination meter • A/C ON signal A/C evaporator temperature
 Target A/C evaporator temperature
 Blower fan ON signal всм \*: ECM determines the start signal status by the signals of engine speed and battery voltage. : This signal is sent through CAN communication line. JPBIA4759GB

# COOLING FAN CONTROL: System Description

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# INPUT/OUTPUT SIGNAL CHART

Sensor	Inpu	Input signal to ECM		Actuator
Crankshaft position sensor (POS)	F	*		
Camshaft position sensor (PHASE)	Engine speed	Engine speed*		
Engine coolant temperature sensor	Engine coolant	Engine coolant temperature		
Refrigerant pressure sensor	Refrigerant pre	Refrigerant pressure		
Battery	Battery voltage <sup>*</sup>			IPDM E/R
Combination meter	CAN commu- nication	Vehicle speed signal	control ule  Cooling	Cooling fan control mod-
	CAN commu-	A/C ON signal		↓ Cooling fan motor
ВСМ		A/C evaporator temper- ature*		Cooling lan motor
	nication	Target A/C evaporator temperature*		
		Blower fan ON signal*		

<sup>\*:</sup> The ECM determines the start signal status by the signals of engine speed and battery voltage.

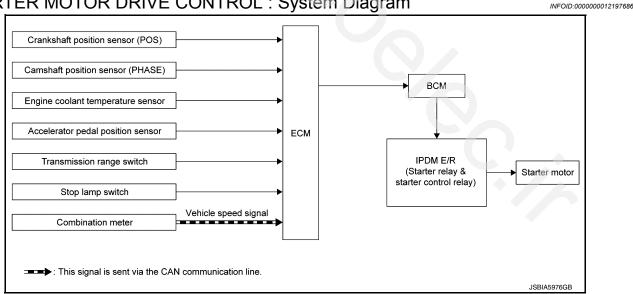
#### SYSTEM DESCRIPTION

ECM controls cooling fan speed corresponding to vehicle speed, engine coolant temperature, A/C ON signal and refrigerant pressure.

Cooling fan control signal is sent to IPDM E/R from ECM by CAN communication line. Then, IPDM E/R sends ON/OFF pulse duty signal to cooling fan control module. Corresponding to this ON/OFF pulse duty signal, cooling fan control module gives cooling fan motor operating voltage to cooling fan motors. Cooling fan speed is controlled by duty cycle of cooling fan motor operating voltage sent from cooling fan control module.

# STARTER MOTOR DRIVE CONTROL

# STARTER MOTOR DRIVE CONTROL: System Diagram



STARTER MOTOR DRIVE CONTROL: System Description

INFOID:0000000012197687

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INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM		ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed     Piston position				
Camshaft position sensor (PHASE)				BCM IPDM E/R (Starter relay & starter control relay)	
Engine coolant temperature sensor	Engine coolant temperature		-		
Accelerator pedal position sensor	Accelerator pedal position		Starter motor drive control		
Transmission range switch	Gear position				
Stop lamp switch	Brake pedal position		-	or control relay)	
Combination meter	CAN commu- nication	Vehicle speed signal			

#### SYSTEM DESCRIPTION

When rapid deceleration occurs during engine runs or idle speed decreases due to heavy load conditions, ECM detects a decrease in idle speed and restarts the engine to secure reliability in handleability by transmitting a cranking request signal to IPDM E/R for activating the starter motor under the following conditions:

- Selector lever: P or any position other than N
- Idle switch: ON (Accelerator pedal not depressed)
- Brake switch: ON (Brake pedal depressed)

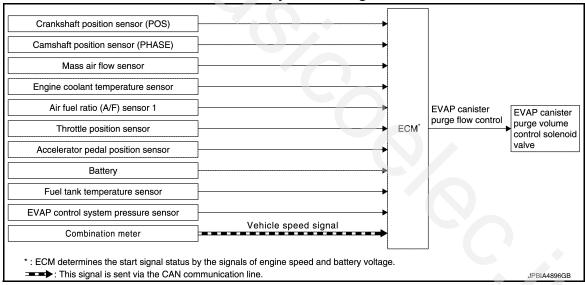
Models with the Intelligent Key System transmit a control signal to IPDM E/R by way of BCM via CAN communication.

IPDM E/R detects an operating state of the starter motor relay and the starter motor control relay and transmits a feed back signal to ECM via CAN Communication.

# **EVAPORATIVE EMISSION SYSTEM**

# **EVAPORATIVE EMISSION SYSTEM: System Diagram**

INFOID:0000000012197688



# **EVAPORATIVE EMISSION SYSTEM: System Description**

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INPUT/OUTPUT SIGNAL CHART

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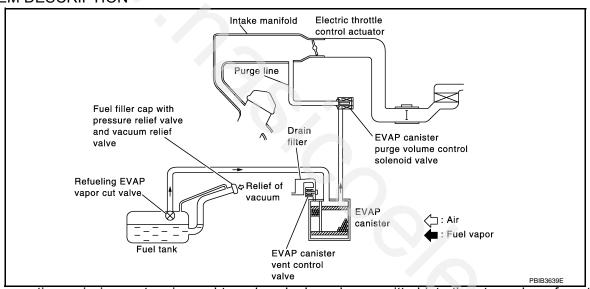
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Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed*			•
Camshaft position sensor (PHASE)	Piston position			
Mass air flow sensor	Amount of intake air			ŀ
Engine coolant temperature sensor	Engine coolant temperature			
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)		EVAP canister purge vol-	
Throttle position sensor	Throttle position	EVAP canister		
Accelerator pedal position sensor	Accelerator pedal position	purge flow control	ume control solenoid valve	
Battery	Battery voltage*			
Fuel tank temperature sensor	Fuel temperature in fuel tank			
EVAP control system pressure sensor	Pressure in purge line			
Combination meter	CAN commu- vehicle speed nication			

<sup>\*:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

#### SYSTEM DESCRIPTION



The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.

The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.

The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.

EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating.

# ALTERNATOR POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

# ALTERNATOR POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM: System Description INFOID:000000012567241

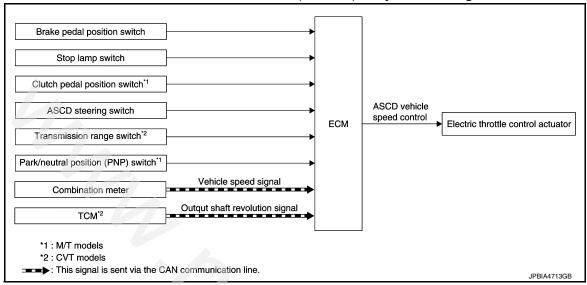
The alternator power generation voltage variable control system controls the amount of power generation, according to a battery loaded condition. ECM judges a battery condition, according to a signal received from the battery current sensor which detects a charge/discharge current. ECM then transmits a signal to IPDM E/R to command power generation via CAN communication. IPDM E/R transmits a power generation control sig-

nal to the alternator so that the system can control the amount of power generation. The voltage of power generation is lowered during battery low-load conditions and boosted under heavy load conditions. In this way, the system reduces the engine load through the adequate power generation control.

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

# AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Diagram

INFOID:0000000012197690



# AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Description

INFOID:0000000012197691

#### INPUT/OUTPUT SIGNAL CHART

Sensor	In	put signal to ECM	ECM function	Actuator
Brake pedal position switch	Duelto madal an austian			
Stop lamp switch	Brake pedal of	Brake pedal operation		
Clutch pedal position switch*1	Clutch pedal operation  ASCD steering switch operation			
ASCD steering switch				Electric throttle control actuator
Transmission range switch*2	0		ASCD vehicle speed control	
Park/neutral position (PNP) switch*1	Geal position	Gear position		actuator
Combination meter	CAN communication Vehicle speed signal			
TCM*2	CAN commu- nication	Output shaft revolution signal		

<sup>\*1:</sup> M/T models

#### BASIC ASCD SYSTEM

Refer to Owner's Manual for ASCD operating instructions.

Automatic Speed Control Device (ASCD) allows a driver to keep vehicle at predetermined constant speed without depressing accelerator pedal. Driver can set vehicle speed in advance between approximately 40 km/h (25 MPH) and 144 km/h (90 MPH).

ECM controls throttle angle of electric throttle control actuator to regulate engine speed.

Operation status of ASCD is indicated by CRUISE indicator and SET indicator in combination meter. If any malfunction occurs in ASCD system, it automatically deactivates control.

Refer to <u>EC-71</u>, "<u>AUTOMATIC SPEED CONTROL DEVICE (ASCD)</u>: <u>Switch Name and Function"</u> for ASCD operating instructions.

#### NOTE:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws. INTEGRATED CONTROL SYSTEM

<sup>\*2:</sup> CVT models

# **INTEGRATED CONTROL SYSTEM: System Diagram**

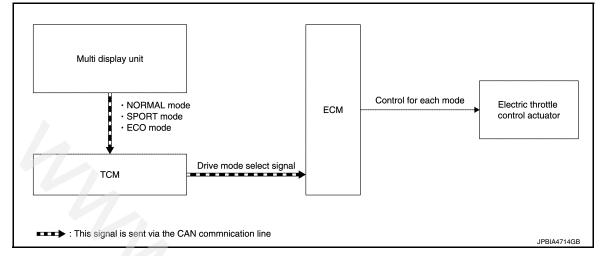
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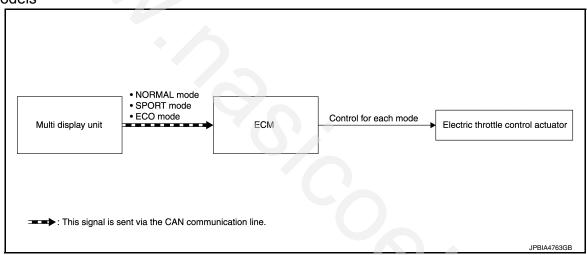
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# CVT models



#### M/T models



# INTEGRATED CONTROL SYSTEM: System Description

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# CVT models

#### System Description

TCM transmits a drive mode select signal to ECM via CAN communication, according to a NORMAL mode signal, SPORT mode signal, or ECO mode signal received from the multi display unit via CAN communication. ECM controls torque and throttle opening angle characteristics appropriate for each mode, based on a received drive mode select signal.

#### NOTE:

- Because of the multi display unit operation, the display may indicate that the mode is switching. However, the mode may not actually switch due to CAN communication error.
- When a CAN communication error occurs between ECM and TCM, the mode switches to NORMAL mode.

#### M/T models

## System Description

ECM controls torque and throttle opening angle characteristics appropriate for each mode, based on a NOR-MAL mode signal, SPORT mode signal, or ECO mode signal received from the multi display unit via CAN communication.

### NOTE:

 Because of the multi display unit operation, the display may indicate that the mode is switching. However, the mode may not actually switch due to CAN communication error.

# < SYSTEM DESCRIPTION >

 When a CAN communication error occurs between ECM and the multi display unit, the mode switches to NORMAL mode.

# Control By Mode

Mode	Control	
NORMAL mode	Offers a better balance of fuel economy and traveling performance.	
SPORT mode	Allows throttle opening angle change and torque control for obtaining reality and acceleration performance appropriate to a winding run.	
ECO mode	Allows throttle opening angle change and torque control for assisting better fuel efficiency.	

# CAN COMMUNICATION

# CAN COMMUNICATION: System Description

INFOID:0000000012197694

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

Refer to <u>LAN-30</u>, "CAN COMMUNICATION SYSTEM: CAN Communication Signal Chart", about CAN communication for detail.

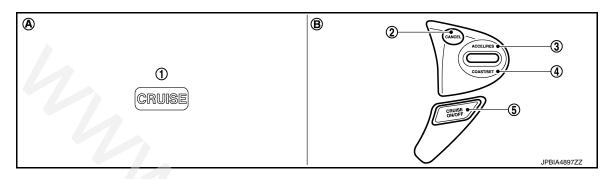
# **OPERATION**

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

# AUTOMATIC SPEED CONTROL DEVICE (ASCD): Switch Name and Function

INFOID:0000000012197695

# SWITCHES AND INDICATORS



- **CRUISE** indicator
- 2. **CANCEL** switch
- 5. ASCD MAIN switch
- COAST/SET switch On the combination meter A.
- On the steering wheel
- ACCEL/RES switch

#### SET SPEED RANGE

ASCD system can be set the following vehicle speed.

Minimum speed (Approx.)	Maximum speed (Approx.)
40 km/h (25 MPH)	144 km/h (90 MPH)

#### SWITCH OPERATION

Item	Function
CANCEL switch	Cancels the cruise control driving.
ACCEL/RES switch	Resumes the set speed.     Increases speed incrementally during cruise control driving.
COAST/SET switch	<ul><li>Sets desired cruise speed.</li><li>Decreases speed incrementally during cruise control driving.</li></ul>
ASCD MAIN switch	Master switch to activate the ASCD system.

#### SET OPERATION

Press MAIN switch. (The CRUISE indicator in combination meter illuminates.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 144 km/h (90 MPH), press COAST/SET switch.

# ACCELERATE OPERATION

If the ACCEL/RES switch is pressed during the cruise control driving, increase the vehicle speed until the switch is released or vehicle speed reaches maximum speed controlled by the system. And then ASCD will keep the new set speed.

#### CANCEL OPERATION

- When any of following conditions exist, the cruise operation is canceled.
- CANCEL switch is pressed
- ASCD MAIN switch is pressed (Set speed is cleared)
- More than 2 switches at ASCD steering switch are pressed at the same time (Set speed is cleared)
- Brake pedal is depressed
- Clutch pedal is depressed or gear position is changed to neutral position. (M/T models)
- Selector lever is changed to N, P or R position (CVT models)
- Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- TCS system is operated

**EC-71 Revision: November 2015 2016 JUKE**  EC

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# **OPERATION**

# < SYSTEM DESCRIPTION >

[MR FOR NISMO RS MODELS]

- When the ECM detects any of the following conditions, the ECM cancels the cruise operation and informs the driver by blinking CRUISE indicator lamp.
- Engine coolant temperature is slightly higher than the normal operating temperature, CRUISE indicator lamp is blinked slowly.

#### NOTE:

Engine coolant temperature decreases to the normal operating temperature, CRUISE indicator lamp stop blinking and the cruise operation is able to work.

- Malfunction for some self-diagnoses regarding ASCD control: CRUISE indicator will blink quickly.
- When ASCD MAIN switch is turned to OFF during the cruise control driving, all of ASCD operations is canceled and vehicle speed memory is erased.

# **COAST OPERATION**

When the COAST/SET switch is pressed during the cruise control driving, decrease vehicle set speed until the switch is released. And then ASCD will keep the new set speed.

#### RESUME OPERATION

- When the ACCEL/RES switch is pressed after the cancel operation other than pressing ASCD MAIN switch
  is performed, vehicle speed is return to last set speed. To resume vehicle set speed, vehicle condition must
  meet following conditions.
- Brake pedal is released
- Clutch pedal is released (M/T models)
- Selector lever is in other than P and N positions (CVT models)
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 144 km/h (90 MPH)

### ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

[MR FOR NISMO RS MODELS]

### ON BOARD DIAGNOSTIC (OBD) SYSTEM

### **Diagnosis Description**

This system is an on board diagnostic system that records exhaust emission-related diagnostic information and detects a sensors/actuator-related malfunction. A malfunction is indicated by the malfunction indicator lamp (MIL) and stored in control module memory as a DTC. The diagnostic information can be obtained with the diagnostic tool (GST: Generic Scan Tool).

### GST (Generic Scan Tool)

When GST is connected with a data link connector equipped on the vehicle side, it will communicate with the control module equipped in the vehicle and then enable various kinds of diagnostic tests. Refer to GI-53. "Description".

### NOTE:

Service \$0A is not applied for regions where it is not mandated.

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# DIAGNOSIS SYSTEM (ECM) DIAGNOSIS DESCRIPTION

### DIAGNOSIS DESCRIPTION: 1st Trip Detection Logic and Two Trip Detection Logic

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When a malfunction is detected for the first time, 1st trip DTC and 1st trip Freeze Frame data are stored in the ECM memory. The MIL will not illuminate at this stage. <1st trip>

If the same malfunction is detected again during the next drive, the DTC and Freeze Frame data are stored in the ECM memory, and the MIL illuminates. The MIL illuminates at the same time when the DTC is stored. <2nd trip> The "trip" in the "Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation. Specific on board diagnostic items will cause the ECM to illuminate or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

x: Applicable —: Not applicable

		М	IL		D.	TC	1st trip DTC		
Items	1st trip		2nd trip		1st trip	2nd trip	1st trip	2nd trip	
	Blinking	Illuminat- ed	Blinking	Illuminat- ed	displaying	displaying	displaying	display- ing	
Misfire (Possible three way catalyst damage) — DTC: P0300 – P0304 is being detected	×	_	_	_	_	_	×	_	
Misfire (Possible three way catalyst damage) — DTC: P0300 – P0304 is being detected	_	)-	×	_	_	×	_	_	
One trip detection diagnoses (Refer to EC-115, "DTC Index".)	_	×	_	_	×	_	_	_	
Except above	_		\ <del>\</del>	×	_	×	×	_	

### DIAGNOSIS DESCRIPTION: DTC and Freeze Frame Data

INFOID:0000000012197699

### DTC AND 1ST TRIP DTC

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic result obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not recur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is saved in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are saved in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

For malfunctions in which 1st trip DTCs are displayed, refer to <a href="EC-115">EC-115</a>, "DTC Index". These items are required by legal regulations to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT.

1st trip DTC is specified in Service \$07 of SAE J1979/ISO 15031-5. 1st trip DTC detection occurs without illuminating the MIL and therefore does not warn the driver of a malfunction.

When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in Work Flow procedure Step 2, refer to <u>EC-148</u>, "Work Flow". Then perform DTC Confirmation Procedure or Component Function Check to try to duplicate the malfunction. If the malfunction is duplicated, the item requires repair.

### FREEZE FRAME DATA AND 1ST TRIP FREEZE FRAME DATA

The ECM records the driving conditions such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed, vehicle speed, absolute throttle position, base fuel schedule and intake air temperature at the moment a malfunction is detected.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data. The data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT or GST. The 1st trip freeze frame data can only be displayed on the CONSULT screen.

### < SYSTEM DESCRIPTION >

### [MR FOR NISMO RS MODELS]

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority		Items							
1	Freeze frame data	Misfire — DTC: P0300 – P0304 Fuel Injection System Function — DTC: P0171							
2		Except the above items							
3	1st trip freeze frame da	ata							

For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was saved in the 2nd trip. After that when the misfire (Priority: 1) is detected in another trip, the freeze frame data will be updated from the EGR malfunction to the misfire. The 1st trip freeze frame data is updated each time a different malfunction is detected. There is no priority for 1st trip freeze frame data. However, once freeze frame data is stored in the ECM memory, 1st trip freeze data is no longer stored (because only one freeze frame data or 1st trip freeze frame data can be stored in the ECM). If freeze frame data is stored in the ECM memory and freeze frame data with the same priority occurs later, the first (original) freeze frame data remains unchanged in the ECM memory.

Both 1st trip freeze frame data and freeze frame data (along with the DTCs) are cleared when the ECM memory is erased.

### DIAGNOSIS DESCRIPTION: Counter System

### RELATIONSHIP BETWEEN MIL, 1ST TRIP DTC, DTC, AND DETECTABLE ITEMS

- When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.
- When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data are stored in the ECM memory, and the MIL will come on.
- The MIL will turn OFF after the vehicle is driven 3 times (driving pattern B) with no malfunction. The drive is counted only when the recorded driving pattern is met (as stored in the ECM). If another malfunction occurs while counting, the counter will reset.
- The DTC and the freeze frame data will be stored until the vehicle is driven 40 times (driving pattern A) without the same malfunction recurring (except for Misfire and Fuel Injection System). For Misfire and Fuel Injection System, the DTC and freeze frame data will be stored until the vehicle is driven 80 times (driving pattern C) without the same malfunction recurring. The "TIME" in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT will count the number of times the vehicle is driven.
- The 1st trip DTC is not displayed when the self-diagnosis results in OK for the 2nd trip.

#### **COUNTER SYSTEM CHART**

Items	Fuel Injection System	Misfire	Other
MIL (turns OFF)	3 (pattern B)	3 (pattern B)	3 (pattern B)
DTC, Freeze Frame Data (no display)	80 (pattern C)	80 (pattern C)	40 (pattern A)
1st Trip DTC (clear)	1 (pattern C), *1	1 (pattern C), *1	1 (pattern B)
1st Trip Freeze Frame Data (clear)	*1, *2	*1, *2	1 (pattern B)

For details about patterns B and C under "Fuel Injection System" and "Misfire", see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

For details about patterns A and B under Other, see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

- \*1: Clear timing is at the moment OK is detected.
- \*2: Clear timing is when the same malfunction is detected in the 2nd trip.

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns for "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"

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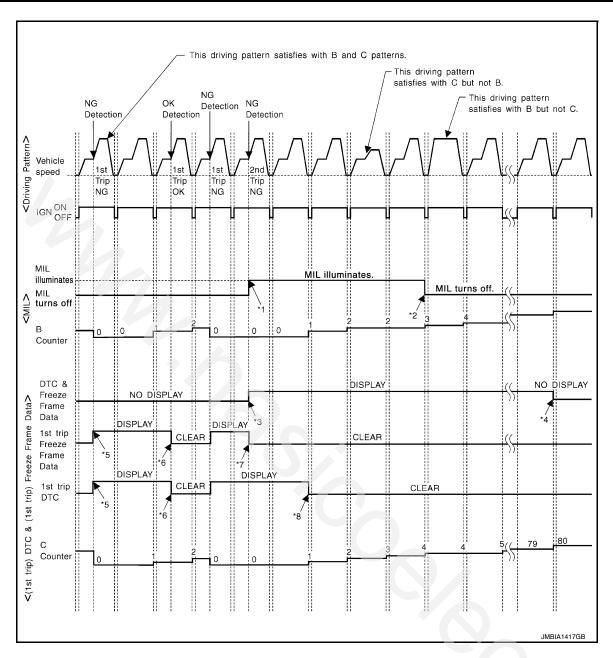
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- \*1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- \*4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- \*7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- \*2: MIL will turn OFF after vehicle is driv- \*3: When the same malfunction is deen 3 times (pattern B) without any malfunctions.
- \*5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- \*8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.
- tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- \*6: The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

Explanation for Driving Patterns for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System"

Driving Pattern B

Refer to EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

Driving Pattern C

Refer to EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

Example:

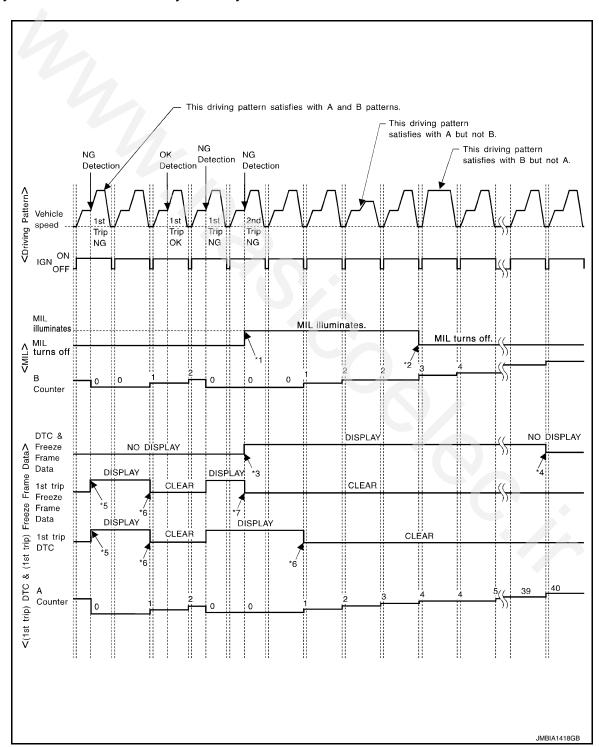
If the stored freeze frame data is as per the following:

Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 – 1,225 rpm, Calculated load value: 27 – 33%, Engine coolant temperature: more than 70°C (158°F)

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns Except For "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"



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- \*1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- \*4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 40 times (pattern A) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- \*7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- \*2: MIL will turn OFF after vehicle is driv- \*3: When the same malfunction is deen 3 times (pattern B) without any malfunctions.
- \*5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- \*6: 1st trip DTC will be cleared after vehicle is driven once (pattern B) without the same malfunction.

Explanation for Driving Patterns Except for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System"

Driving Pattern A

Refer to EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

Driving Pattern B

Refer to EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

### DIAGNOSIS DESCRIPTION: Driving Pattern

INFOID:0000000012197701

#### CAUTION:

Always drive at a safe speed.

### DRIVING PATTERN A

Driving pattern A means a trip satisfying the following conditions.

- Engine speed reaches 400 rpm or more.
- Engine coolant temperature rises by 20°C (36°F) or more after starting the engine.
- Engine coolant temperature reaches 70°C (158°F) or more.
- The ignition switch is turned from ON to OFF.

#### NOTE:

- When the same malfunction is detected regardless of driving conditions, reset the counter of driving pattern
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern A.

#### DRIVING PATTERN B

Driving pattern B means a trip satisfying the following conditions.

- Engine speed reaches 400 rpm or more.
- Engine coolant temperature reaches 70°C (158°F) or more.
- Vehicle speed of 70 120 km/h (44 75 MPH) is maintained for 60 seconds or more under the control of closed loop.
- Vehicle speed of 30 60 km/h (19 37 MPH) is maintained for 10 seconds or more under the control of closed loop.
- · Under the closed loop control condition, the following state reaches 12 seconds or more in total: Vehicle speed of 4 km/h (2 MPH) or less with idling condition.
- The state of driving at 10 km/h (7 MPH) or more reaches 10 minutes or more in total.
- · A lapse of 22 minutes or more after engine start.

#### NOTE:

- Drive the vehicle at a constant velocity.
- When the same malfunction is detected regardless of driving conditions, reset the counter of driving pattern
- · When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern B.

#### DRIVING PATTERN C

Driving pattern C means operating vehicle as per the following:

The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data) ±375 rpm

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### < SYSTEM DESCRIPTION >

[MR FOR NISMO RS MODELS]

Calculated load value: (Calculated load value in the freeze frame data) x (1±0.1) [%] Engine coolant temperature condition:

- When the freeze frame data shows lower than 70°C (158°F), engine coolant temperature should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), engine coolant temperature should be higher than or equal to 70°C (158°F).

- When the same malfunction is detected regardless of the above vehicle conditions, reset the counter of driving pattern C.
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving
- The 1st trip DTC will be cleared when C counter is counted once without the same malfunction after DTC is stored in ECM.

#### DRIVING PATTERN D

Driving pattern D means a trip satisfying the following conditions.

- The state of driving at 40 km/h (25 MPH) reaches 300 seconds or more in total.
- Idle speed lasts 30 seconds or more.
- A lapse of 600 seconds or more after engine start.

#### NOTE:

- When the same malfunction is detected regardless of driving conditions, reset the counter of driving pattern
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern D.

### DIAGNOSIS DESCRIPTION: System Readiness Test (SRT) Code

System Readiness Test (SRT) code is specified in Service \$01 of SAE J1979/ISO 15031-5.

As part of an enhanced emissions test for Inspection & Maintenance (I/M), certain states require the status of SRT be used to indicate whether the ECM has completed self-diagnosis of major emission systems and components. Completion must be verified in order for the emissions inspection to proceed.

If a vehicle is rejected for a State emissions inspection due to one or more SRT items indicating "INCMP", use the information in this Service Manual to set the SRT to "CMPLT".

In most cases the ECM will automatically complete its self-diagnosis cycle during normal usage, and the SRT status will indicate "CMPLT" for each application system. Once set as "CMPLT", the SRT status remains "CMPLT" until the self-diagnosis memory is erased.

Occasionally, certain portions of the self-diagnostic test may not be completed as a result of the customer's normal driving pattern; the SRT will indicate "INCMP" for these items.

#### NOTE:

The SRT will also indicate "INCMP" if the self-diagnosis memory is erased for any reason or if the ECM memory power supply is interrupted for several hours.

If, during the state emissions inspection, the SRT indicates "CMPLT" for all test items, the inspector will continue with the emissions test. However, if the SRT indicates "INCMP" for one or more of the SRT items the vehicle is returned to the customer untested.

#### NOTE:

If permanent DTC is stored or MIL illuminates during the state emissions inspection, the vehicle is also returned to the customeruntested even though the SRT indicates "CMPLT" for all test items, therefore, it is important to check SRT ("CMPLT"), DTC (No DTCs) and permanent DTC (No permanent DTC) before the inspection.

### SRT SET TIMING

SRT is set as "CMPLT" after self-diagnosis has been performed one or more times. Completion of SRT is done regardless of whether the result is OK or NG. The set timing is different between OK and NG results and is shown in the table below.

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			Example								
Self-diagno	osis result	Diagnosis	Ignition cycle $\leftarrow$ ON $\rightarrow$ OFF $\leftarrow$ ON $\rightarrow$ OFF $\leftarrow$ ON $\rightarrow$								
All OK	Case 1	P0400	OK (1)	—(1)	OK (2)	— (2)					
		P0402	OK (1)	—(1)	—(1)	OK (2)					
		P1402	OK (1)	OK (2)	— (2)	— (2)					
		SRT of EGR	"CMPLT"	"CMPLT"	"CMPLT"	"CMPLT"					
	Case 2	P0400	OK (1)	—(1)	—(1)	— (1)					
		P0402	— (0)	— (0)	OK (1)	—(1)					
		P1402	OK (1)	OK (2)	—(2)	— (2)					
		SRT of EGR	"INCMP"	"INCMP"	"CMPLT"	"CMPLT"					
NG exists	Case 3	P0400	OK	OK	_	_					
		P0402	_	_	_	_					
		P1402	NG	_	NG	NG (Consecutive NG)					
		(1st trip) DTC	1st trip DTC	_	1st trip DTC	DTC (= MIL ON)					
		SRT of EGR	"INCMP"	"INCMP"	"INCMP"	"CMPLT"					

OK: Self-diagnosis is carried out and the result is OK.

NG: Self-diagnosis is carried out and the result is NG.

When all SRT related self-diagnoses show OK results in a single cycle (Ignition OFF-ON-OFF), the SRT will indicate "CMPLT". → Case 1 above

When all SRT related self-diagnoses show OK results through several different cycles, the SRT will indicate "CMPLT" at the time the respective self-diagnoses have at least one OK result. → Case 2 above

If one or more SRT related self-diagnoses show NG results in 2 consecutive cycles, the SRT will also indicate "CMPLT". → Case 3 above

The table above shows that the minimum number of cycles for setting SRT as "INCMP" is the number one (1) for each self-diagnosis (Case 1 & 2) or the number two (2) for one of self-diagnoses (Case 3). However, in preparation for the state emissions inspection, it is unnecessary for each self-diagnosis to be executed twice (Case 3) for the following reasons:

- The SRT will indicate "CMPLT" at the time the respective self-diagnoses have one (1) OK result.
- The emissions inspection requires "CMPLT" of the SRT only with OK self-diagnosis results.
- During SRT driving pattern, the 1st trip DTC (NG) is detected prior to "CMPLT" of SRT and the self-diagnosis
  memory must be erased from the ECM after repair.
- If the 1st trip DTC is erased, all the SRT will indicate "INCMP".

#### NOTE:

SRT can be set as "CMPLT" together with the DTC(s). Therefore, DTC check must always be carried out prior to the state emission inspection even though the SRT indicates "CMPLT".

### DIAGNOSIS DESCRIPTION: Permanent Diagnostic Trouble Code (Permanent DTC)

INFOID:0000000012197703

Permanent DTC is defined in SAE J1979/ISO 15031-5 Service \$0A.

ECM stores a DTC issuing a command of turning on MIL as a permanent DTC and keeps storing the DTC as a permanent DTC until ECM judges that there is no presence of malfunction.

Permanent DTCs cannot be erased by using the erase function of CONSULT or Generic Scan Tool (GST) and by disconnecting the battery to shut off power to ECM. This prevents a vehicle from passing the in-use inspection without repairing a malfunctioning part.

When not passing the in-use inspection due to more than one permanent DTC, permanent DTCs should be erased, referring to this manual.

### NOTE:

- The important items in in-use inspection are that MIL is not ON, SRT test items are set, and permanent DTCs are not included.
- Permanent DTCs do not apply for regions that permanent DTCs are not regulated by law.

<sup>-:</sup> Self-diagnosis is not carried out.

### PERMANENT DTC SET TIMING

The setting timing of permanent DTC is stored in ECM with the lighting of MIL when a DTC is confirmed.

### DIAGNOSIS DESCRIPTION: Malfunction Indicator Lamp (MIL)

INFOID:0000000012197704

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When emission-related ECU detects a malfunction in the emission control systems components and/or the powertrain control components (which affect vehicle emissions), it turns on/blinks MIL to inform the driver that a malfunction has been detected.

1. The MIL illuminates when ignition switch is turned ON (engine is not running).

#### NOTE:

Check the MIL circuit if MIL does not illuminate. Refer to <u>EC-575</u>, "Diagnosis Procedure".

When the engine is started, the MIL should go off.

#### NOTE:

If MIL continues to illuminate/blink, perform self-diagnoses and inspect/repair accordingly because an emission-related ECU has detected a malfunction in the emission control systems components and/or the powertrain control components (which affect vehicle emissions).

### On Board Diagnosis Function

INFOID:0000000012197705

#### ON BOARD DIAGNOSIS ITEM

The on board diagnostic system has the following functions.

Diagnostic test mode	Function						
Bulb check	MIL can be checked.						
SRT status	ECM can read if SRT codes are set.						
Malfunction warning	If ECM detects a malfunction, it illuminates or blinks MIL to inform the driver that a malfunction has been detected.						
Self-diagnostic results	DTCs or 1st trip DTCs stored in ECM can be read.						
Accelerator pedal released position learning	ECM can learn the accelerator pedal released position. Refer to EC-160, "Description".						
Throttle valve closed position learning	ECM can learn the throttle valve closed position. Refer to EC-161, "Description".						
Idle air volume learning	ECM can learn the idle air volume. Refer to EC-162, "Description".						
Mixture ratio self-learning value clear	Mixture ratio self-learning value can be erased. Refer to EC-165, "Description".						

#### **BULB CHECK MODE**

### Description

This function allows damage inspection in the MIL bulb (blown, open circuit, etc.).

### **Operation Procedure**

- Turn ignition switch ON.
- The MIL on the instrument panel should stay ON.
   If it remains OFF, check MIL circuit. Refer to <u>EC-575</u>, "<u>Diagnosis Procedure</u>".

### SRT STATUS MODE

#### Description

This function allows to read if ECM has completed the self-diagnoses of major emission control systems and components. For SRT, refer to <u>EC-79</u>, "<u>DIAGNOSIS DESCRIPTION</u>: System Readiness Test (<u>SRT</u>) Code".

#### **Operation Procedure**

- Turn ignition switch ON and wait 20 seconds.
- 2. SRT status is indicated as shown blow.
  - ECM continues to illuminate MIL if all SRT codes are set.

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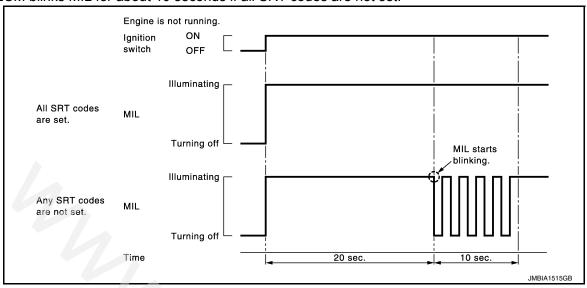
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Revision: November 2015 EC-81 2016 JUKE

ECM blinks MIL for about 10 seconds if all SRT codes are not set.



#### MALFUNCTION WARNING MODE

#### Description

In this function ECM turns on or blinks MIL when it detects a malfunction in the emission control system components and/or the powertrain control components (which affect vehicle emissions) to inform the driver that a malfunction has been detected.

#### Operation Procedure

- 1. Turn ignition switch ON.
- Check that MIL illuminates.
  - If it remains OFF, check MIL circuit. Refer to EC-575, "Diagnosis Procedure".
- Start engine and let it idle.
  - For two trip detection logic diagnoses, ECM turns on MIL when it detects the same malfunction twice in the two consecutive driving cycles.
  - For 1st trip detection logic diagnoses, ECM turns on MIL when it detects a malfunction in one driving cycle.
  - ECM blinks MIL when it detects a malfunction that may damage the three way catalyst (misfire).

### SELF-DIAGNOSTIC RESULTS MODE

#### Description

This function allows to indicate DTCs or 1st trip DTCs stored in ECM according to the number of times MIL is blinking.

How to Set Self-diagnostic Results Mode

#### NOTE:

- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- After ignition switch is turned off, ECM is always released from the "self-diagnostic results" mode.
- 1. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 2. Repeat the following procedure quickly five times within 5 seconds.
  - Fully depress the accelerator pedal.
  - Fully release the accelerator pedal.
- Wait 7 seconds, fully depress the accelerator pedal and keep it depressed for approx. 10 seconds until the MIL starts blinking.

### NOTE:

Do not release the accelerator pedal for 10 seconds if MIL starts blinking during this period. This blinking is displaying SRT status and is continued for another 10 seconds.

4. Fully release the accelerator pedal.

ECM has entered to "Self-diagnostic results" mode.

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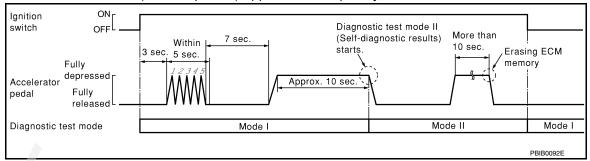
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#### NOTE:

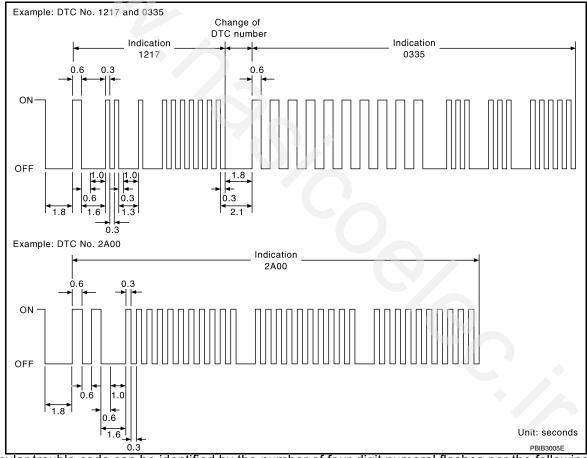
Wait until the same DTC (or 1st trip DTC) appears to completely confirm all DTCs.



How to Read Self-diagnostic Results

The DTC and 1st trip DTC are indicated by the number of blinks of the MIL as shown below.

The DTC and 1st trip DTC are displayed at the same time. If the MIL does not illuminate in diagnostic test mode I (Malfunction warning), all displayed items are 1st trip DTCs. If only one code is displayed when the MIL illuminates in "malfunction warning" mode, it is a DTC; if two or more codes are displayed, they may be either DTCs or 1st trip DTCs. DTC No. is same as that of 1st trip DTC. These unidentified codes can be identified by using the CONSULT or GST. A DTC will be used as an example for how to read a code.



A particular trouble code can be identified by the number of four-digit numeral flashes per the following.

Number	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Е	F
Flashes	10	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16

The length of time the 1,000th-digit numeral flashes on and off is 1.2 seconds consisting of an ON (0.6-seconds) - OFF (0.6-seconds) cycle.

The 100th-digit numeral and lower digit numerals consist of a 0.3-seconds ON and 0.3-seconds OFF cycle. A change from one digit numeral to another occurs at an interval of 1.0-second OFF. In other words, the later numeral appears on the display 1.3 seconds after the former numeral has disappeared. A change from one trouble code to another occurs at an interval of 1.8-seconds OFF.

### < SYSTEM DESCRIPTION >

[MR FOR NISMO RS MODELS]

In this way, all the detected malfunctions are classified by their DTC numbers. The DTC 0000 refers to no malfunction. Refer to <u>EC-115</u>, <u>"DTC Index"</u>.

How to Erase Self-diagnostic Results

By performing this procedure, ECM memory is erased and the following diagnostic information is erased as well.

- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- · Freeze frame data
- · 1st trip freeze frame data
- · System readiness test (SRT) codes
- Test values

#### NOTE:

Also, if a battery terminal is disconnected, ECM memory is erased and the diagnostic information as listed above is erased. (The amount of time required for erasing may vary from a few seconds to several hours.)

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Set ECM in "self-diagnostic results" mode.
- The diagnostic information has been erased from the backup memory in the ECM. Fully depress the accelerator pedal and keep it depressed for more than 10 seconds.
- 7. Fully release the accelerator pedal, and confirm the DTC 0000 is displayed.

### **CONSULT Function**

INFOID:0000000012197706

### **FUNCTION**

Diagnostic test mode	Function
Self Diagnostic Results	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame data can be read and erased quickly.*
Data Monitor	Input/Output data in the ECM can be read.
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT unit.
Active Test	Diagnostic Test Mode in which CONSULT drives some actuators apart from the ECMs and also shifts some parameters in a specified range.
ECU Identification	ECM part number can be read.
DTC Work Support	The status of system monitoring tests and the self-diagnosis status/results can be confirmed.

- \*: The following emission-related diagnostic information is cleared when the ECM memory is erased.
- · Diagnostic trouble codes
- · 1st trip diagnostic trouble codes
- · Freeze frame data
- · 1st trip freeze frame data
- · System readiness test (SRT) codes
- · Test values

#### SELF DIAGNOSTIC RESULTS MODE

Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to EC-115, "DTC Index".

How to Read DTC and 1st Trip DTC

DTCs and 1st trip DTCs related to the malfunction are displayed in "self-diag results".

- When ECM detects a 1st trip DTC, "1t" is displayed for "TIME".
- When ECM has detected a current DTC, "0" is displayed for "TIME".
- If "TIME" is neither "0" nor "1t", the DTC occurred in the past and ECM shows the number of times the vehicle has been driven since the last detection of the DTC.

### < SYSTEM DESCRIPTION >

[MR FOR NISMO RS MODELS]

How to Erase DTC and 1st Trip DTC

### NOTE:

 If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.

If the DTC is not for CVT related items (see <u>EC-115, "DTC Index"</u>), skip step 1.

- Erase DTC in TCM. Refer to TM-190, "CONSULT Function".
- Select "ENGINE" with CONSULT. 2.
- Select "SELF-DIAG RESULTS".
- Touch "ERASE". (DTC in ECM will be erased.)

Freeze Frame Data and 1st Trip Freeze Frame Data

Freeze frame data item*	Description
DIAG TROUBLE CODE [PXXXX]	The engine control component part/control system has a trouble code the is displayed as PXXXX. (Refer to EC-115, "DTC_Index".)
FUEL SYS-B1	"Fuel injection system status" at the moment a malfunction is detected is displayed.
FUEL SYS-B2	One of the following mode is displayed.     Mode2: Open loop due to detected system malfunction     Mode3: Open loop due to driving conditions (power enrichment, deceleration enleanment)     Mode4: Closed loop - using oxygen sensor(s) as feedback for fuel control     Mode5: Open loop - has not yet satisfied condition to go to closed loop
CAL/LD VALUE [%]	The calculated load value at the moment a malfunction is detected is displayed.
COOLANT TEMP [°C] or [°F]	The engine coolant temperature at the moment a malfunction is detected is displayed.
L-FUEL TRM-B1 [%]	"Long-term fuel trim" at the moment a malfunction is detected is displayed.
L-FUEL TRM-B2 [%]	<ul> <li>The long-term fuel trim indicates much more gradual feedback compensation to the base fuel schedule than short-term fuel trim.</li> </ul>
S-FUEL TRM-B1 [%] S-FUEL TRM-B2 [%]	<ul> <li>"Short-term fuel trim" at the moment a malfunction is detected is displayed.</li> <li>The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel schedule.</li> </ul>
ENGINE SPEED [rpm]	The engine speed at the moment a malfunction is detected is displayed.
VEHICL SPEED [km/h] or [mph]	The vehicle speed at the moment a malfunction is detected is displayed.
ABSOL TH·P/S [%]	The throttle valve opening angle at the moment a malfunction is detected is displayed.
B/FUEL SCHDL [msec]	The base fuel schedule at the moment a malfunction is detected is displayed.
INT/A TEMP SE [°C] or [°F]	The intake air temperature at the moment a malfunction is detected is displayed.
INT MANI PRES [kPa]	
COMBUST CONDI- TION	These items are displayed but are not applicable to this model.

<sup>\*:</sup> The items are the same as those of 1st trip freeze frame data.

### DATA MONITOR MODE

### NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

#### Monitored Item

For reference values of the following items, refer to EC-96, "Reference Value".

**EC-85 Revision: November 2015 2016 JUKE**  EC

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-		Monitor It	em Selec-		×: Applicable
Monitored item	Unit		MAIN SIG- NALS	Description	Remarks
ENG SPEED	rpm	×	×	Indicates the engine speed computed from the signal of the crankshaft position sensor (POS) and camshaft position sensor (PHASE).	<ul> <li>Accuracy becomes poor if engine speed drops below the idle rpm.</li> <li>If the signal is interrupted while the engine is running, an abnormal value may be indicated.</li> </ul>
MAS A/F SE-B1	V	×	×	The signal voltage of the mass air flow sensor is displayed.	<ul> <li>When the engine is stopped, a certain value is indicated.</li> <li>When engine is running specification range is indi- cated in "SPEC".</li> </ul>
B/FUEL SCHDL	msec	×	×	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.	When engine is running specification range is indicated in "SPEC".
A/F ALPHA-B1	%		0	The mean value of the air-fuel ratio feedback correction factor per cycle is indicated.	<ul> <li>When the engine is stopped, a certain value is indicated.</li> <li>When engine is running specification range is indicated in "SPEC".</li> <li>This data also includes the data for the air-fuel ratio learning control.</li> </ul>
COOLANT TEMP/S	°C or °F	×	×	The engine coolant temperature (determined by the signal voltage of the engine coolant temperature sensor) is displayed.	When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The engine coolant temperature determined by the ECM is displayed.
A/F SEN1 (B1)	V	×	×	The A/F signal computed from the input signal of the air fuel ratio (A/F) sensor 1 is displayed.	
HO2S2 (B1)	V	×	×	The signal voltage of the heated oxygen sensor 2 is displayed.	G , , ,
HO2S2 MNTR(B1)	RICH/LEAN		×	Display of heated oxygen sensor 2 signal: RICH: means the amount of oxygen after three way catalyst is relatively small. LEAN: means the amount of oxygen after three way catalyst is relatively large.	When the engine is stopped, a certain value is indicated.
VHCL SPEED SE	km/h or mph	×	×	The vehicle speed computed from the vehicle speed signal sent from combination meter is displayed.	
BATTERY VOLT	V			The power supply voltage of ECM is displayed.	

### < SYSTEM DESCRIPTION >

		Monitor Item Selection  ECU IN-PUT SIG-NALS					
Monitored item	Unit			Description	Remarks		
ACCEL SEN 1					ACCEL SEN 2 signal is con-		
ACCEL SEN 2	V			The accelerator pedal position sensor signal voltage is displayed.	verted by ECM internally. Thus, it differs from ECM terminal voltage signal.		
TP SEN 1-B1		×	×		TP SEN 2-B1 signal is con-		
TP SEN 2-B1	V	×	×	The throttle position sensor signal voltage is displayed.	verted by ECM internally. Thus, it differs from ECM terminal voltage signal.		
FUEL T/TMP SE	°C or °F			The fuel temperature (determined by the signal voltage of the fuel tank temperature sensor) is displayed.			
EVAP SYS PRES	V			The signal voltage of EVAP control system pressure sensor is displayed.			
FUEL LEVEL SE	V	×		The signal voltage of the fuel level sensor is displayed.			
START SIGNAL	ON/OFF			Indicates start signal status [ON/OFF] computed by the ECM according to the signals of engine speed and battery voltage.	After starting the engine, [OFF] is displayed regardless of the starter signal.		
CLSD THL POS	ON/OFF	×	×	Indicates idle position [ON/OFF] computed by ECM according to the accelerator pedal position sensor signal.			
AIR COND SIG	ON/OFF	×	×	Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal.			
PW/ST SIGNAL	ON/OFF	×	×	[ON/OFF] condition of the power steering system (determined by the signal sent from EPS control unit) is indicated.			
LOAD SIGNAL	ON/OFF	×	×	<ul> <li>Indicates [ON/OFF] condition from the electrical load signal.</li> <li>ON: Rear window defogger switch is ON and/or lighting switch is in 2nd position.</li> <li>OFF: Both rear window defogger switch and lighting switch are OFF.</li> </ul>			
IGNITION SW	ON/OFF	×	×	Indicates [ON/OFF] condition from ignition switch signal.	- /.		
HEATER FAN SW	ON/OFF	×		Indicates [ON/OFF] condition from the heater fan switch signal.			
BRAKE SW	ON/OFF			Indicates [ON/OFF] condition from the stop lamp switch signal.			
IGN TIMING	BTDC		×	Indicates the ignition timing computed by ECM according to the input signals.	When the engine is stopped, a certain value is indicated.		
COMBUSTION	_			These items are displayed but are not applicable to this model.			
CAL/LD VALUE	%			"Calculated load value" indicates the value of the current airflow divided by peak airflow.			
MASS AIRFLOW	g/s			Indicates the mass airflow computed by ECM according to the signal voltage of the mass airflow sensor.			

		Monitor Ite			
Monitored item	Unit	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
PURG VOL C/V	%			<ul> <li>Indicates the EVAP canister purge volume control solenoid valve con- trol value computed by the ECM ac- cording to the input signals.</li> <li>The opening becomes larger as the value increases.</li> </ul>	
INT/V TIM(B1)	°CA			Indicates [°CA] of intake camshaft advance angle.	
EXHV TIM B1	°CA			Indicates [°CA] of exhaust camshaft advance angle.	
INT/V SOL(B1)	%			The control value of the intake valve timing control solenoid valve (determined by ECM according to the input signals) is indicated. The advance angle becomes larger as the value increases.	
AIR COND RLY	ON/OFF			The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.	
FUEL PUMP RLY	ON/OFF			Indicates the fuel pump relay control condition determined by ECM according to the input signals.	
VENT CONT/V	ON/OFF			The control condition of the EVAP canister vent control valve (determined by ECM according to the input signals) is displayed. ON: Closed OFF: Open	
THRTL RELAY	ON/OFF			Indicates the throttle control motor re- lay control condition determined by the ECM according to the input signals.	
HO2S2 HTR (B1)	ON/OFF			Indicates [ON/OFF] condition of heat- ed oxygen sensor 2 heater determined by ECM according to the input signals.	
ALT DUTY SIG	ON/OFF			The control condition of the power generation voltage variable control (determined by ECM according to the input signals) is indicated.  ON: Power generation voltage variable control is active.  OFF: Power generation	
I/P PULLY SPD	rpm			Indicates the engine speed computed from the input speed sensor signal.	
VEHICLE SPEED	km/h or mph			The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.	
IDL A/V LEARN	YET/CMPLT			Display the condition of Idle Air Volume Learning     YET: Idle air volume learning has not been performed yet.     CMPLT: Idle air volume learning has already been performed successfully.	

### < SYSTEM DESCRIPTION >

		Monitor Ite	em Selec- on		
Monitored item	Unit	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
TRVL AFTER MIL	km/h or mph			Distance traveled while MIL is activated.	
ENG OIL TEMP	°C or °F			The engine oil temperature (determined by the signal voltage of the engine oil temperature sensor) is displayed.	
A/F S1 HTR(B1)	%			<ul> <li>Air fuel ratio (A/F) sensor 1 heater control value computed by ECM according to the input signals.</li> <li>The current flow to the heater becomes larger as the value increases.</li> </ul>	
VHCL SPEED SE	km/h or mph			The vehicle speed computed from the vehicle speed signal sent from combination meter is displayed.	
SET VHCL SPD	km/h or mph			The preset vehicle speed is displayed.	
MAIN SW	ON/OFF			Indicates [ON/OFF] condition from ASCD MAIN switch signal.	
CANCEL SW	ON/OFF			Indicates [ON/OFF] condition from CANCEL switch signal.	
RESUME/ACC SW	ON/OFF			Indicates [ON/OFF] condition from ACCEL/RES switch signal.	
SET SW	ON/OFF			Indicates [ON/OFF] condition from COAST/SET switch signal.	
BRAKE SW1	ON/OFF			Indicates [ON/OFF] condition from brake pedal position switch signal.	
BRAKE SW2	ON/OFF			Indicates [ON/OFF] condition of stop lamp switch signal.	
VHCL SPD CUT	NON/CUT			<ul> <li>Indicates the vehicle cruise condition.</li> <li>NON: Vehicle speed is maintained at the ASCD set speed.</li> <li>CUT: Vehicle speed decreased to excessively low compared with the ASCD set speed, and ASCD operation is cut off.</li> </ul>	
LO SPEED CUT	NON/CUT			Indicates the vehicle cruise condition.     NON: Vehicle speed is maintained at the ASCD set speed.     CUT: Vehicle speed decreased to excessively low, and ASCD operation is cut off.	
AT OD MONITOR	ON/OFF			Indicates [ON/OFF] condition of CVT O/D according to the input signal from the TCM.	For M/T models, always "OFF" is displayed.
AT OD CANCEL	ON/OFF			Indicates [ON/OFF] condition of CVT O/D cancel request signal.	For M/T models, always "OFF" is displayed.
CRUISE LAMP	ON/OFF			Indicates [ON/OFF] condition of CRUISE lamp determined by the ECM according to the input signals.	
SET LAMP	ON/OFF			NOTE: The item is indicated, but not used.	

		Monitor Iter			
Monitored item	Unit	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
FAN DUTY	%			Indicates a command value for cooling fan. The value is calculated by ECM based on input signals.	
ALT DUTY	%			Indicates the duty ratio of the power generation command value. The ratio is calculated by ECM based on the battery current sensor signal.	
BAT CUR SEN	mV			The signal voltage of battery current sensor is displayed.	
A/F ADJ-B1	7-7			Indicates the correction of a factor stored in ECM. The factor is calculated from the difference between the target air-fuel ratio stored in ECM and the air-fuel ratio calculated from A/F sensor 1 signal.	
P/N POSI SW	ON/OFF	×	×	Indicates [ON/OFF] condition from the park/neutral position (PNP) signal.	
INT/A TEMP SE	°C or °F	×	×	The intake air temperature (determined by the signal voltage of the intake air temperature sensor1) is indicated.	
AC PRESS SEN	V			The signal voltage from the refrigerant pressure sensor is displayed.	
FUEL PRES SEN	MPa			Indicates the fuel rail pressure computed by ECM according to the input signals.	
TURBO BST SEN	V			The turbocharger boost sensor signal voltage is displayed.	
ATOM PRES SEN	V			The atmospheric pressure sensor signal voltage is displayed.	
FUEL INJ TIM	deg			Indicates the fuel injection timing computed by ECM according to the input signals.	
FUEL INJ B1	msec			ECM-calculated injection pulse width of the fuel injector on the Bank 1 side.	
EVAP LEAK DIAG	YET/ CMPLT			<ul> <li>Indicates the condition of EVAP leak diagnosis.</li> <li>YET: EVAP leak diagnosis has not been performed yet.</li> <li>CMPLT: EVAP leak diagnosis has been performed successfully.</li> </ul>	
EVAP DIAG READY	ON/OFF			<ul> <li>Indicates the ready condition of EVAP leak diagnosis.</li> <li>ON: Diagnosis has been ready condition.</li> <li>OFF: Diagnosis has not been ready condition.</li> </ul>	
BAT TEMP SEN	V			The signal voltage from the battery temperature sensor is displayed.	
THRTL STK CNT B1	_			NOTE: The item is indicated, but not used.	

### < SYSTEM DESCRIPTION >

		Monitor Ite			
Monitored item	Unit	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
HO2 S2 DIAG1(B1)	INCMP/CM- PLT			Indicates DTC P0139 self-diagnosis (delayed response) condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
HO2 S2 DIAG2(B1)	INCMP/CM- PLT			Indicates DTC P0139 self-diagnosis (slow response) condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
H/P FUEL PUMP DEG	deg			Displays ECM-calculated fuel discharge position of the high pressure fuel pump.	
FUEL PRES SEN V	mV			The signal voltage of FRP sensor is displayed.	
EOP SENSOR	mV			The signal voltage of EOP sensor is displayed.	
ECM TEMP 1 ECM TEMP 2	°C or °F			The ECM temperature is indicated.	
BOOST S/V DUTY	%			The turbocharger boost control sole- noid valve control condition (detem- ined by ECM according to the input signal) is indicated.	
G SENSOR	mV			The signal voltage of G sensor is displayed.	
A/F SEN1 DIAG1 (B1)	INCMP/CM- PLT			Indicates DTC P015A or P015B self-diagnosis condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
A/F SEN1 DIAG2 (B1)	INCMP/CM- PLT			Indicates DTC P014C or P014D self-diagnosis condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
A/F SEN1 DIAG3 (B1)	ABSNT/ PRSNT			Indicates DTC P014C, P014D, P015A or P015B self-diagnosis condition.  ABSNT: The vehicle condition is not within the diagnosis range.  PRSNT: The vehicle condition is within the diagnosis range.	
A/F-S ATMSPHRC CRCT B1	_			Displays a determined value of atmospheric correction factor necessary for correcting an A/F sensor signal input to ECM. The signal used for the correction is an A/F sensor signal transmitted while driving under atmospheric pressure.	

### < SYSTEM DESCRIPTION >

### [MR FOR NISMO RS MODELS]

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Monitored item	Unit	ECU IN- PUT SIG- NALS	MAIN SIG- NALS	Description	Remarks
A/F-S ATMSPHRC CRCT B2	_			Displays a determined value of atmospheric correction factor necessary for correcting an A/F sensor signal input to ECM. The signal used for the correction is an A/F sensor signal transmitted while driving under atmospheric pressure.	
A/F-S ATMSPHRC CRCT UP B1	count			Displays the number of updates of the A/F sensor atmospheric correction factor.	
A/F-S ATMSPHRC CRCT UP B2	count			Displays the number of updates of the A/F sensor atmospheric correction factor.	
SYSTEM 1 DIAG- NOSIS A B1	INCMP/CM- PLT			Indicates DTC P219A self-daiagnosis condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
SYSTEM 1 DIAG- NOSIS B B1	ABSENT/ PRSENT			Indicates DTC P219A self-daiagnosis condition.     ABSENT: Self-diagnosis standby.     PRSENT: Under self-diagnosis.	

### NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically. WORK SUPPORT MODE

### Work Item

Work item	Condition	Usage
IDLE AIR VOL LEARN	The idle air volume that keeps the engine within the specified range is memorized in ECM.	When learning the idle air volume
EVAP SYSTEM CLOSE	Close the EVAP canister vent control valve in order to make EVAP system close under the following conditions.  Ignition switch ON  Engine not running  Ambient temperature is above 0°C (32°F)  No vacuum and no high pressure in EVAP system  Fuel tank temperature is more than 0°C (32°F)  Within 10 minutes after starting "EVAP SYSTEM CLOSE"  When trying to execute "EVAP SYSTEM CLOSE" under the condition except above, CONSULT will discontinue it and display appropriate instruction.  NOTE:  When starting engine, CONSULT may display "Battery voltage is low. Charge battery", even in using charged battery.	When detecting EVAP vapor leak point of EVAP system
FUEL PRESSURE RELEASE	Crank a few times after engine stalls.	When releasing fuel pressure from fuel line
TARGET IGN TIM ADJ*	Idle condition	When adjusting target ignition timing
TARGET IDLE RPM ADJ*	Idle condition	When setting target idle speed
VIN REGISTRATION	In this mode, VIN is registered in ECM.	When registering VIN in ECM

### < SYSTEM DESCRIPTION >

### [MR FOR NISMO RS MODELS]

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Work item	Condition	Usage
SELF-LEARNING CONT	The coefficient of self-learning control mixture ratio returns to the original coefficient.	When clearing mixture ratio self- learning value
G SENSOR CALIBRATION	<ul><li>Park the vehicle on a flat road.</li><li>Adjust pressure in all tires to the specified value.</li></ul>	Calibrates G sensor.
CLSD THL POS LEARN	Ignition on and engine stopped.	When learning the throttle valve closed position
SAVING DATA FOR REPLC CPU	In this mode, save data that is in ECM.	When ECM is replaced.
WRITING DATA FOR REPLC CPU	In this mode, write data stored by "SAVE DATA FOR CPU REPLC" in work support mode to ECM.	When ECM is replaced.

<sup>\*:</sup> This function is not necessary in the usual service procedure.

### **ACTIVE TEST MODE**

### Test Item

Test item	Condition	Judgement	Check item (Remedy)
VENT CONTROL/V	Ignition switch ON (Engine stopped)     Turn solenoid valve ON and OFF with the CONSULT and listen to operating sound.	Solenoid valve makes an operating sound.	Harness and connectors     EVAP canister vent control solenoid valve
ENG COOLANT TEMP	Engine: Return to the original trouble condition     Change the engine coolant temperature using CONSULT.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors     Engine coolant temperature sensor     Fuel injector
FUEL INJECTION	Engine: Return to the original trouble condition     Change the amount of fuel injection using CONSULT.	If trouble symptom disappears, see CHECK ITEM.	Harness and connectors     Fuel injector     Air fuel ratio (A/F) sensor 1
FUEL/T TEMP SEN	Change the fuel tank temperature u	sing CONSULT.	
PURG VOL CONT/V	<ul> <li>Engine: After warming up, run engine at 1,500 rpm.</li> <li>Change the EVAP canister purge volume control solenoid valve opening percent using CONSULT.</li> </ul>	Engine speed changes according to the opening percent.	Harness and connectors     Solenoid valve
FUEL PUMP RELAY	Ignition switch: ON (Engine stopped)     Turn the fuel pump relay "ON" and "OFF" using CONSULT and listen to operating sound.	Fuel pump relay makes the operating sound.	Harness and connectors     Fuel pump relay
IGNITION TIMING	Engine: Return to the original trouble condition     Timing light: Set     Retard the ignition timing using CONSULT.	If trouble symptom disappears, see CHECK ITEM.	Perform Idle Air Volume Learning.
FAN DUTY CON- TROL <sup>*</sup>	Ignition switch: ON     Change duty ratio using CON-SULT.	Cooling fan speed changes.	Harness and connectors     Cooling fan motor     Cooling fan relay     Cooling fan control module     IPDM E/R

### < SYSTEM DESCRIPTION >

### [MR FOR NISMO RS MODELS]

Test item	Condition	Judgement	Check item (Remedy)
ALTERNATOR DUTY	Ignition switch: ON     Change duty ratio using CON- SULT.	Battery voltage changes.	Harness and connectors     Alternator     IPDM E/R
POWER BALANCE	<ul> <li>Engine: After warming up, idle the engine.</li> <li>A/C switch OFF</li> <li>Shift lever: P or N (CVT), Neutral (M/T)</li> <li>Cut off each fuel injector signal one at a time using CONSULT.</li> </ul>	Engine runs rough or dies.	<ul> <li>Harness and connectors</li> <li>Compression</li> <li>Fuel injector</li> <li>Power transistor</li> <li>Spark plug</li> <li>Ignition coil</li> </ul>

<sup>\*:</sup> Leaving cooling fan OFF with CONSULT while engine is running may cause the engine to overheat.

#### DTC WORK SUPPORT MODE

#### Test Item

Test mode	Test item	Corresponding DTC No.	Reference page
EVAPORATIVE SYS-	PURG VOL CN/V P1444	P0443	EC-360
TEM	PURG FLOW P0441	P0441	EC-355
	HO2S2 (B1) P1146	P0138	EC-279
HO2S2	HO2S2 (B1) P1147	P0137	EC-273
	HO2S2 (B1) P0139	P0139	EC-286
A/F SEN1	A/F SEN1 (B1) P1278/P1279	_	
A/F SEINT	A/F SEN1 (B1) P1276	P0130	EC-263

#### SRT & P-DTC MODE

#### SRT STATUS Mode

- For items whose SRT codes are set, "CMPLT" is displayed on the CONSULT screen; for items whose SRT codes are not set, "INCMP" is displayed.
- "SRT STATUS" provides the presence or absence of permanent DTCs stored in ECM memory.

#### PERMANENT DTC STATUS Mode

How to display permanent DTC status

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- Select "PERMANENT DTC STATUS" in "DTC & SRT CONFIRMATION" mode with CONSULT.

#### NOTE

Permanent DTCs stored in ECM memory are displayed on the CONSULT screen to show if a driving pattern required for erasing permanent DTCs is complete (CMPLT) or incomplete (INCMP).

CAUTION:

### < SYSTEM DESCRIPTION >

### [MR FOR NISMO RS MODELS]

Since the "PERMANENT DTC STATUS" screen displays the previous trip information, repeat the following twice to update the information: "Ignition switch OFF", "Wait for more than 10 seconds" and "Ignition switch ON".

CAUTION: Turn ignition switch from O status screen.	N to OFF twice to update the informa	ation on the
PERMANENT DTC	DRIVING PATTERN B	DRIVING PATTERN D
xxxx	INCMP	INCMP
xxxx	CMPLT	INCMP
xxxx	INCMP	CMPLT
xxxx	CMPLT	INCMP
XXXX	INCMP	INCMP
XXXX	INCMP	INCMP

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#### NOTE:

This mode is not used in regions that permanent DTCs are not regulated by law.

#### SRT WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to set the SRT while monitoring the SRT status.

### PERMANENT DTC WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to complete the driving pattern that is required for erasing permanent DTC.

#### NOTE:

This mode is not used in regions that permanent DTCs are not regulated by law.

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## **ECU DIAGNOSIS INFORMATION**

### **ECM**

Reference Value

### VALUES ON THE DIAGNOSIS TOOL

#### NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

- •Numerical values in the following table are reference values.
- •These values are input/output values that ECM receives/transmits and may differ from actual operations. Example:

The ignition timing shown by the timing light may differ from the ignition timing displayed on the data monitor. This occurs because the timing light shows a value calculated by ECM according to signals received from the cam shaft position sensor and other sensors related to ignition timing.

For outlines of following items, refer to EC-84, "CONSULT Function".

Monitor Item	C	ondition	Values/Status
ENG SPEED	Run engine and compare CONSULT	Almost the same speed as the tachometer indication.	
MAS A/F SE-B1	See EC-181, "Diagnosis Procedure"		
B/FUEL SCHDL	See EC-181, "Diagnosis Procedure"		
A/F ALPHA-B1	See EC-181, "Diagnosis Procedure"		
COOLANT TEMP/S	Engine: After warming up		More than 70°C (158°F)
A/F SEN1 (B1)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 2.2 V
HO2S2 (B1)	are met Engine: After warming up	00 rpm quickly after the following conditions en 3,500 and 4,000 rpm for 1 minute and at	0 - 0.3 V ←→ Approx. 0.6 - 1.0 V
HO2S2 MNTR(B1)	Revving engine from idle up to 3,00 are met.     Engine: After warming up     After keeping engine speed betwe idle for 1 minute under no load	LEAN ←→ RICH	
VHCL SPEED SE	Turn drive wheels and compare COI tion.	Almost the same speed as speedometer indication.	
BATTERY VOLT	Ignition switch: ON (Engine stopped	11 - 14 V	
ACCEL SEN 1	Ignition switch: ON	Accelerator pedal: Fully released	0.6 - 0.9 V
ACCEL SEN I	(Engine stopped)	Accelerator pedal: Fully depressed	4.0 - 4.8 V
ACCEL SEN 2*1	Ignition switch: ON	Accelerator pedal: Fully released	0.3 - 4.7 V
ACCEL SEN 2	(Engine stopped)	Accelerator pedal: Fully depressed	1.95 - 2.4 V
	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36 V
TP SEN 1-B1	(Engine stopped) • Selector lever: D (CVT), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75 V
	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36 V
TP SEN 2-B1*	<ul><li>(Engine stopped)</li><li>Selector lever: D (CVT), 1st (M/T)</li></ul>	(Engine stopped)  • Selector lever: D (CVT), 1st (M/T)  Accelerator pedal: Fully depressed	
FUEL T/TMP SE	Ignition switch: ON	Indicates fuel tank tempera- ture.	
EVAP SYS PRES	Ignition switch: ON		Approx 0.5 - 4.6 V
FUEL LEVEL SE	Ignition switch: ON	Depending on fuel level of fuel tank.	
START SIGNAL	Ignition switch: ON → START → ON		$OFF \to ON \to OFF$

Monitor Item	C	Condition	Values/Status
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON
CLSD THE POS	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF
	Fraince After warming up idle the	Air conditioner switch: OFF	OFF
AIR COND SIG	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates.)	ON
DIAMOT CLONIAL	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF
PW/ST SIGNAL	engine	Steering wheel: Being turned	ON
OAD CIONAL	landida suitak ON	Rear window defogger switch: ON and/or Lighting switch: 2nd position	ON
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch and lighting switch: OFF	OFF
GNITION SW	Ignition switch: $ON \rightarrow OFF \rightarrow ON$	1	$ON \to OFF \to ON$
HEATER FAN SW	Engine: After warming up, idle the	Heater fan switch: ON	ON
TEATER FAIN SW	engine	Heater fan switch: OFF	OFF
	Innition quitale CNI	Brake pedal: Fully released	OFF
BRAKE SW	Ignition switch: ON	Brake pedal: Slightly depressed	ON
	Engine: After warming up	Idle	5° - 15° BTDC
GN TIMING	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	30° - 50° BTDC
COMBUSTION		5.	These items are displayed but are not applicable to this model.
	<ul> <li>Engine: After warming up</li> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	Idle	5 - 35 %
CAL/LD VALUE		2,500 rpm	5 - 35 %
	Engine: After warming up	Idle	1.0 - 5.0 g/s
MASS AIRFLOW	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,500 rpm	2.0 - 10.0 g/s
PURG VOL C/V	Engine: After warming up     Selector lever: P or N (CVT),     Neutral (M/T)	Idle (Accelerator pedal: Not depressed even slightly, after engine starting.)	0 - 10 %
	<ul><li> Air conditioner switch: OFF</li><li> No load</li></ul>	2,000 rpm	0 - 20 %
	Engine: After warming up	Idle	−5° - 5°CA
ATA / TIM/D4\	Selector lever: P or N (CVT),		
NT/V TIM(B1)	Neutral (M/T)  • Air conditioner switch: OFF  • No load	2,000 rpm	Approx. 0° - 20°CA
	Engine: After warming up	Idle	-5° - 5°CA
EXH/V TIM B1	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	Around 2,500 rpm while the engine speed is rising	Approx. 0° - 30°CA
	Engine: After warming up	Idle	0 %
NT/V SOL(B1)	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	Approx. 0% - 60 %

### < ECU DIAGNOSIS INFORMATION >

Monitor Item		Condition	Values/Status
	Facility Affactuation and interest	Air conditioner switch: OFF	OFF
AIR COND RLY	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates)	ON
VENT CONT/V	Ignition switch: ON		OFF
FUEL PUMP RLY	For 1 seconds after turning ignitio     Engine running or cranking	n switch: ON	ON
	Except above		OFF
THRTL RELAY	Ignition switch: ON		ON
HO2S2 HTR (B1)	- Engine: After warming up	en 3,500 and 4,000 rpm for 1 minute and at	ON
	Engine speed: Above 3,600 rpm		OFF
ALT DUTY SIG	Power generation voltage variable of	ontrol: Operating	ON
ALI DUTY SIG	Power generation voltage variable c	ontrol: Not operating	OFF
I/P PULLY SPD	Vehicle speed: More than 20 km/h (	12 MPH)	Almost the same speed as the tachometer indication
VEHICLE SPEED	Turn drive wheels and compare CO tion.	NSULT value with the speedometer indica-	Almost the same speed as the speedometer indication
	Engine: supping	Idle air volume learning has not been performed yet.	YET
IDL A/V LEARN	Engine: running	Idle air volume learning has already been performed successfully.	CMPLT
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has illuminated.	0 - 65,535 km (0 - 40,723 miles)
ENG OIL TEMP	Engine: After warming up		More than 70°C (158°F)
A/F S1 HTR(B1)	Engine: After warming up, idle the e (More than 140 seconds after startir		4 - 100 %
SET VHCL SPD	Engine: Running	ASCD: Operating	The preset vehicle speed i displayed
MAINI CIA/	Ignition switch: ON	MAIN switch: Pressed	ON
MAIN SW		MAIN switch: Released	OFF
CANCEL CVA		CANCEL switch: Pressed	ON
CANCEL SW	Ignition switch: ON	CANCEL switch: Released	OFF
DECLINE (ACC CVA)	lauritia a conitata ONI	ACCEL/RES switch: Pressed	ON
RESUME/ACC SW	Ignition switch: ON	ACCEL/RES switch: Released	OFF
SET SW	Ignition quitable ON	COAST/SET switch: Pressed	ON
SE1 SW	Ignition switch: ON	COAST/SET switch: Released	OFF
BRAKE SW1		Brake pedal: Fully released	ON
(Brake pedal position switch)	Ignition switch: ON	Brake pedal: Slightly depressed	OFF
BRAKE SW2 (Stop lamp switch)	Ignition switch: ON	Brake pedal: Fully released	OFF ON
	Ignition quitable ON	Brake pedal: Slightly depressed	
VHCL SPD CUT	Ignition switch: ON		NON
LO SPEED CUT	Ignition switch: ON		NON
AT OD CANCEL	Ignition switch: ON		OFF
AT OD CANCEL	Ignition switch: ON		OFF
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time → at the 2nd time	$ON \to OFF$

### **ECM**

Monitor Item		Condition	Values/Status
SET LAMP	NOTE: The item is indicated, but not used.		
FAN DUTY	Engine: Running		0 - 100 %
ALT DUTY	Engine: Idle		0 - 80 %
BAT CUR SEN	<ul> <li>Engine speed: Idle</li> <li>Battery: Fully charged<sup>*2</sup></li> <li>Selector lever: P or N (CVT), Neu</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	tral (M/T)	Approx. 2,600 - 3,500 mV
A/F ADJ-B1	Engine: Running		-0.450 - 0.330
P/N POSI SW	Ignition switch: ON	Selector lever: P or N (CVT), Neutral (M/T)	ON
		Selector lever: Except above	OFF
INT/A TEMP SE	Ignition switch: ON		Indicates intake air tempera- ture
AC PRESS SEN	Engine: Idle     Both A/C switch and blower fan sv	witch: ON (Compressor operates)	1.0 - 4.0 V
	Engine: After warming up	Idle	Approx. 2.74 MPa
FUEL PRES SEN	Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	2,000 rpm	Approx. 3.0 MPa
TURBO BST SEN	Engine speed: Idle     Selector lever: D (CVT), Neutral (M/T)     Fuel: Premium gasoline	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>The readings of boost in the multi-function meter are the same as the ambient pressure or more.</li> <li>Engine speed: More than 3,000 rpm</li> </ul>	3.07 - 3.15 V
TUNDO BOT OLIN	Engine speed: Idle     Selector lever: D (CVT), Neutral (M/T)     Fuel: Regular gasoline	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>The readings of boost in the multi-func- tion meter are the same as the ambient pressure or more.</li> <li>Engine speed: More than 3,000 rpm</li> </ul>	2.91 - 2.99 V
ATOM PRES SEN	Ignition switch: ON		1.80 - 4.80 V
	Engine: After warming up	Idle	Approx. 30 deg
FUEL INJ TIM	Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	2,000 rpm	Approx. 30 deg
	Engine: After warming up	Idle	Approx. 0.8 msec
FUEL INJ B1	Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	2,000 rpm	Approx. 1.1 msec
EVAP LEAK DIAG	Ignition switch: ON		Indicates the condition of EVAP leak diagnosis.
EVAP DIAG READY	Ignition switch: ON		Indicates the ready condition of EVAP leak diagnosis.
BAT TEMP SEN	Engine: After warming up     Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	Idle	Indicates the temperature around the battery.
THRTL STK CNT B1			

Monitor Item		Condition	Values/Status
	DTC P0139 self-diagnosis (delaye	d response) has not been performed yet.	INCMP
HO2 S2 DIAG1(B1)	DTC P0139 self-diagnosis (delayed cessfully.	d response) has already been performed suc-	CMPLT
	DTC P0139 self-diagnosis (slow re	esponse) has not been performed yet.	INCMP
HO2 S2 DIAG2(B1)	DTC P0139 self-diagnosis (slow recessfully.	esponse) has already been performed suc-	CMPLT
	Engine: After warming up	Idle	Approx. 255 - 275 deg
H/P FUEL PUMP DEG	Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	2,000 rpm	Approx. 255 - 275 deg
	• Engine: After warming up	Idle	Approx. 1,140 - 1,460 mV
FUEL PRES SEN V	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	Revving engine from idle to 4,000 rpm quickly	Approx. 1,300 - 2,900 mV
	Engine: After warming up	Idle	Approx. 1,450 mV
EOP SENSOR	Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	2,000 rpm	Approx. 2,850 mV
ECM TEMP 1	Engine: After cooling     Ignition switch: ON	Indicates the temperature around the ECM.	
ECM TEMP 2	Engine: After cooling     Ignition switch: ON	Indicates the temperature around the ECM.	
		Idle	0 %
BOOST S/V DUTY	Engine: After warming up	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>Engine speed: Below 3,000 rpm</li> </ul>	100 %
		<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>Engine speed: More than 3,000 rpm</li> </ul>	30 - 60 %
G SENSOR	Vehicle is level		Approx. 2,500 mV
A/F SEN1 DIAG1	DTC P015A and P015B self-diagn	osis is incomplete.	INCMP
(B1)	DTC P015A and P015B self-diagn	osis is complete.	CMPLT
A/F SEN1 DIAG2	DTC P014C and P014D self-diagn	INCMP	
(B1)	DTC P014C and P014D self-diagn	CMPLT	
A/F SEN1 DIAG3	The vehicle condition is not within P015A or P015B.	ABSNT	
(B1)	The vehicle condition is within the P015A or P015B.	diagnosis range of DTC P014C, P014D,	PRSNT
A/F-S ATMSPHRC CRCT B1	Engine: After warming up, idle the	engine	Varies depending on vehicle environment.
A/F-S ATMSPHRC CRCT B2	Engine: After warming up, idle the	engine	Varies depending on vehicle environment.
A/F-S ATMSPHRC CRCT UP B1	Engine: Running		Varies depending on the number of updates.
A/F-S ATMSPHRC CRCT UP B2	Engine: Running		Varies depending on the number of updates.
SYSTEM 1 DIAG-	DTC P219A self-diagnosis is incor	nplete.	INCMP
NOSIS A B1	DTC P219A self-diagnosis is comp	olete.	CMPLT
SYSTEM 1 DIAG-	DTC P219A self-diagnosis is on st	andby.	ABSENT
NOSIS B B1	DTC P219A self-diagnosis is unde	r diagnosis.	PRSENT

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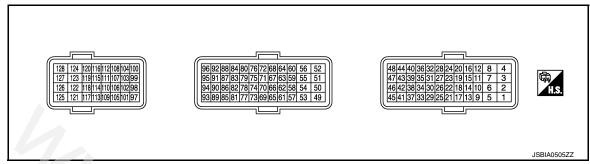
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- \*1: Accelerator pedal position sensor 2 signal and throttle position sensor 2 signal are converted by ECM internally. Thus, they differ from ECM terminals voltage signal.
- \*2: Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

#### TERMINAL LAYOUT



### PHYSICAL VALUES

#### NOTE:

- ECM is located in the engine room left side near battery.
- Connect a break-out box (EG17550000) and harness adapter (EG17550400) between the ECM and ECM harness connector.
- Use extreme care not to 2 pins at one time.
- Data is for comparison and may not be exact.
- Specification data are reference values and are measured between each terminal and ground.
- Pulse signal is measured by CONSULT.

	minal No. re color)	Description		Condition	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
1 (B)	_	ECM ground (Fuel injector)	_	<u> </u>	_	
2 (B)	_	ECM ground (Fuel injector)	_	(-)	_	
3 (G)	Fuel injector No. 1, 4 (HI)  Output  (B)  Fuel injector No. 2, 3 (HI)	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	BATTERY VOLTAGE  (11 - 14 V) ★  100mSec/div  20V/div  JPBIA4718ZZ			
4 (Y)		Fuel injector No. 2, 3 (HI)		[Engine is running] • Engine speed is 2,000 rpm	BATTERY VOLTAGE  (11 - 14 V) *  100mSec/div  20V/div  JPBIA4719ZZ	

	minal No. ire color)	Description		Condition	Value
+	-	Signal name	Input/ Output	Condition	(Approx.)
5 (R)	4	Fuel injector No. 1 (LO)		<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	BATTERY VOLTAGE  (11 - 14 V) ★  100mSec/div  20V/div  300 JPBIA4720ZZ
6 (BR) 7 (W) 8 (R)	1 (B)	Fuel injector No. 2 (LO)  Fuel injector No. 3 (LO)  Fuel injector No. 4 (LO)	Output	[Engine is running] • Engine speed is 2,000 rpm	BATTERY VOLTAGE  (11 - 14 V) ★  100mSec/div  20V/div  JPBIA4721ZZ
9 (W)	_	Sensor ground (Mass air flow sensor, in- take air temperature sensor1)		<u> </u>	_
10 (LG)	_	Sensor ground (Engine coolant temperature sensor)	_	<b>7</b> /0-	_
11 (P)	_	Sensor ground (Engine oil temperature sensor)	_		_
12 (BR)	_	Sensor ground (Refrigerant pressure sensor, EVAP control sys- tem pressure sensor)	_	- ()	_
13 (G)	9 (W)	Mass air flow sensor	Input	[Ignition switch: ON]	0.4 V 0.9 - 1.2 V
				<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine is revving from idle to about 4,000 rpm</li></ul>	0.9 - 1.2 to 2.4 V (Check for linear voltage rise in response to engine being increased to about 4,000 rpm.)
14 (L)	10 (LG)	Engine coolant tempera- ture sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine coolant temperature.
15 (L)	12 (BR)	EVAP control system pressure sensor	Input	[Ignition switch: ON]	0.5 - 4.6 V
17 (Y)	9 (W)	Intake air temperature sensor 1	Input	[Engine is running]	0 - 4.8 V Output voltage varies with intake air temperature.

	ninal No. re color)	Description		Condition	Value
+	-	Signal name	Input/ Output	Condition	(Approx.)
18	44			[Engine is running]  • Warm-up condition  • Idle speed	1.14 - 1.46 V
(GR)	(SB)	Fuel rail pressure sensor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Revving engine from idle to 4,000 rpm quickly</li></ul>	1.3 - 2.9 V
19 (P)	12 (BR)	Refrigerant pressure sensor	Input	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Both A/C switch and blower fan motor switch: ON (Compressor operates)</li> </ul>	1.0 - 4.0 V
21 (W)	127 (B/Y)	A/F sensor 1	Input	[Ignition switch: ON]	2.2 V
22 (Y)	11 (P)	Engine oil temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine oil temperature.
23 (W)	12 (BR)	Sensor power supply (Refrigerant pressure sensor, EVAP control sys- tem pressure sensor)	_	[Ignition switch: ON]	5.0 V
25 (B)	127 (B/Y)	A/F sensor 1	Input	[Engine is running] • Engine speed is 2,000 rpm	1.8 V Output voltage varies with air fuel ratio.
29 (W)	33 (R)	Heated oxygen sensor 2	Input	<ul> <li>[Engine is running]</li> <li>Revving engine from idle to 3,000 rpm quickly after the following conditions are met</li> <li>Engine: after warming up</li> <li>Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load</li> </ul>	0 - 1.0 V
33 (R)	_	Sensor ground (Heated oxygen sensor 2)	_	- 7/2	_
35 (B)	_	Sensor ground (Knock sensor)	_	- 0	-
36 (W)	35 (B)	Knock sensor	Input	[Engine is running] • Idle speed	2.5 V
38 (B)	_	Shield	_	_	*/ <del>-</del> ^
39 (R)	44 (SB)	Sensor power supply (Fuel rail pressure sensor, turbocharger boost sen- sor, engine oil pressure sensor)	_	[Ignition switch: ON]	5.0 V
41	44	Turbocharger boost sen-	Input	[Engine is running]  • Warm-up condition  • Idle speed	1.9 V
(W)	(SB)	sor		<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed is 2,000 rpm</li></ul>	2.0 V

	minal No. re color)	Description		O an elikina	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
43	44	Engine oil pressure sen-	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.3 V★  5mSec/div  2V/div  JPBIA3359ZZ	
(G)	(SB)	SOT	mpat .	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed is 2,000 rpm</li></ul>	2.7 V★  5mSec/div  2V/div  JPBIA3360ZZ	
44 (SB)	_	Sensor ground (Fuel rail pressure sensor, turbocharger boost sen- sor, engine oil pressure sensor)	)-	_	_	
49 (G)	_	Fuel injector driver power supply 1	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)	
50 (B)	_	ECM ground (High pressure fuel pump)	_	-	_	
51 (GR)	127 (B/Y)	Throttle control motor (Open)	Output	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully depressed	3.2 V★ 1mSec/div 5V/div JMBIA0324GB	
52 (BR)	127 (B/Y)	Throttle control motor (Close)	Output	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	1.8 V★ 5mSec/div 5W/div JMBIA0326GB	
53 (BR)	_	Fuel injector driver power supply 2	Input	[Engine is running]  • Warm-up condition  • Idle speed	BATTERY VOLTAGE (11 - 14 V)	
54 (R)	_	High pressure fuel pump driver power supply	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)	

	minal No. ire color)	Description		Condition	Value	А
+		Signal name	Input/ Output	Condition	(Approx.)	
55	50	High pressure fuel pump	Output	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed</li> <li>NOTE:</li> <li>The pulse cycle changes depending on rpm at idle</li> </ul>	BATTERY VOLTAGE  (11 - 14 V) ★  20mSec/div  5V/div  JPBIA4722ZZ	C
(BR)	(B)	(HĬ)		[Engine is running] • Engine speed is 2,000 rpm	BATTERY VOLTAGE  (11 - 14 V) ★  20mSec/div	E F
				Engine speed is 2,000 fpm	5V/div JPBIA4723ZZ  BATTERY VOLTAGE	G
		High pressure fuel pump (LO)	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	(11 - 14 V) ★ 20mSec/div	Н
56	56 127			NOTE: The pulse cycle changes depending on rpm at idle	20V/div JPBIA4724ZZ	J
(Y)	(B/Y)			[Engine is running] • Engine speed is 2,000 rpm	BATTERY VOLTAGE  (11 - 14 V) ★  20mSec/div	K
					20V/div JPBIA4725ZZ	L
58 (G)	_	Sensor power supply [Crankshaft position sensor (POS)]	_	[Ignition switch: ON]	5 V	M
59 (L)	_	Sensor ground [Camshaft position sensor (PHASE), exhaust valve timing control position sensor]	_	_		N
60 (W)	_	Sensor ground [Crankshaft position sensor (POS)]	_	_		Р
62 (B)	_	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5 V	

	minal No. ire color)	Description		0	Value (Approx.)	
+	_	Signal name	Input/ Output	Condition		
63	59		Input	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	1.0 - 2.0★ 10mSec/div 2V/div JPBIA4726ZZ	
(BR)	63 59 Camshaft position sensor (PHASE)	(PHASE)	mput	[Engine is running] • Engine speed is 2,000 rpm	1.0 - 2.0★ 10mSec/div 2V/div JPBIA4727ZZ	
64 (R)	60 (W)	Crankshaft position sensor (POS)	Input	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> <li>[Engine is running]</li> <li>Engine speed: 2,000 rpm</li> </ul>	4.0 V★  5mSec/div  2V/div  JPBIA4728ZZ   4.0 V★  5mSec/div  2V/div  JPBIA4729ZZ	
67 (LG)	59 (L)	Exhaust valve timing control position sensor	Input	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed</li></ul>	1.0 - 2.0★ 50mSec/div 2V/div  JPBIA4730ZZ  1.0 - 2.0★ 50mSec/div	
68 (Y)	_	Sensor power supply (Battery current sensor, battery temperature sen- sor, G sensor)	_	[Ignition switch: ON]	2V/div JPBIA4731ZZ	

Terminal No. (Wire color)		Description		Condition	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
69 (L)	127 (B/Y)	EVAP canister vent control valve	Output	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	
72 (GR)	_	Sensor power supply [Camshaft position sen- sor (PHASE), exhaust valve timing control posi- tion sensor]	_	[Ignition switch: ON]	5 V	
73	127	Turbocharger boost con-	Output	[Engine is running]  • Warm-up condition  • Idle speed	BATTERY VOLTAGE (11 - 14 V)	
(BR)	(B/Y)	trol solenoid valve	Output	[Engine is running]  • Warm-up condition  • Engine speed is 2,000 rpm	8.0 V	
74 (R)	_	Sensor ground (Throttle position sensor 1, 2)	_	_	_	
75	75 74	• /5	<ul> <li>[Ignition switch: ON]</li> <li>Engine stopped</li> <li>Selector lever: D (CVT), 1st (M/T)</li> <li>Accelerator pedal: Fully released</li> </ul>	More than 0.36 V		
(G)	(R)	Throttle position sensor 1	Input	<ul> <li>[Ignition switch: ON]</li> <li>Engine stopped</li> <li>Selector lever: D (CVT), 1st (M/T)</li> <li>Accelerator pedal: Fully depressed</li> </ul>	Less than 4.75 V	
76	76 74	Throws a sition accorded	Input	<ul> <li>[Ignition switch: ON]</li> <li>Engine stopped</li> <li>Selector lever: D (CVT), 1st (M/T)</li> <li>Accelerator pedal: Fully released</li> </ul>	Less than 4.75 V	
(W)	(R)	Throttle position sensor 2	три	<ul> <li>[Ignition switch: ON]</li> <li>Engine stopped</li> <li>Selector lever: D (CVT), 1st (M/T)</li> <li>Accelerator pedal: Fully depressed</li> </ul>	More than 0.36 V	
77 (Y)	127 (B/Y)	Throttle control motor re-	Output	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)	
79 (BG)	87 (BR)	Battery temperature sensor	Input	[Ignition switch: ON]  [Engine is running]  • Battery temperature: 25°C (°F)  • Idle speed	0 - 1.0 V 3.3 V	
80 (G)	87 (BR)	Battery current sensor	Input	[Engine is running]  • Battery: Fully charged*  • Idle speed	2.6 - 3.5 V	
			[Engine is running]  • Warm-up condition  • Idle speed	0 V		
81 (W)	127 (B/Y)	Intake valve timing control solenoid valve	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>When revving engine up to 2,000rpm Quickly</li></ul>	BATTERY VOLTAGE  (11 - 14 V) ★	

### < ECU DIAGNOSIS INFORMATION >

	minal No. ire color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
82 (R) 86 (LG)		Ignition signal No. 1 Ignition signal No. 2	Output -	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	0 - 0.3 V★ 100mSec/div 2V/div JPBIA4733ZZ
90 (P) 94 (SB)	(B/Y)	Ignition signal No. 3 Ignition signal No. 4		<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,000 rpm</li></ul>	0.2 - 0.5 V★ 100mSec/div 2V/div JPBIA4734ZZ
83 (G)	87 (BR)	G sensor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	2.5 V
84 (P)	127 (B/Y)	Fuel tank temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with fuel tank temperature
85 (G)	127 (B/Y)	Exhaust valve timing control solenoid valve	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li><li>[Engine is running]</li></ul>	0 V
` '				Warm-up condition     Engine speed: 2,000 rpm	BATTERY VOLTAGE (11 - 14 V)
87 (BR)	_	Sensor ground (Battery current sensor, battery temperature sen- sor, G sensor)	_		_
88 (V)	44 (SB)	Intake air temperature sensor 2	Input	[Engine is running]  • Warm-up condition  • Idle speed	0 - 4.8 V Output voltage varies with intake air temperature.
				[Ignition switch: OFF]	3.6 V
92	127	Cranking request signal	Output	[Ignition switch: ON]	0 V
(R)	(B/Y)	Granking request signal	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)

Terminal No. (Wire color)		Description		0	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
95 127 (L) (B/Y)		EVAP canister purge vol- ume control solenoid	Output	<ul><li>[Engine is running]</li><li>Idle speed</li><li>Accelerator pedal: Not depressed even slightly, after engine starting</li></ul>	BATTERY VOLTAGE  (11 - 14 V)★  50mSec/div  = 10V/div JMBIA0327GB	
	(B/Y) valve [Engine is • Engine (More t		<ul><li>[Engine is running]</li><li>Engine speed: About 2,000 rpm (More than 100 seconds after starting engine.)</li></ul>	10 V★ 50mSec/div 10V/div JMBIA0328GB		
99 (P)	_	CAN communication line (CAN-L)	Input/ Output	_	_	
100 (L)	_	CAN communication line (CAN-H)	Input/ Output	_	_	
101 (V)	_	Sensor power supply (Accelerator pedal position sensor 1)	1	[Ignition switch: ON]	5 V	
102	105	Accelerator pedal position sensor 1	Accelerator pedal posi-	la mont	[Ignition switch: ON]  • Engine stopped  • Accelerator pedal: Fully released	0.6 - 0.9 V
(R)	(GR)		Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	3.9 - 4.7 V	
103 (BR)	127 (B/Y)	PNP signal	Input	[Ignition switch: ON] • Selector lever: P or N (CVT), Neutral (M/T)	BATTERY VOLTAGE (11 - 14 V)	
(DK)	(D/T)			[Ignition switch: ON] • Selector lever: Except above	0 V	
104 (R)	127 (B/Y)	Data link connector	Input/ Output	[Ignition switch: ON] • CONSULT or GST: Disconnected	10.5 V	
105 (GR)	_	Sensor ground (Accelerator pedal position sensor 1)	_	_	1/2	
106 (Y)	127 (B/Y)	Power supply for ECM (Backup)	Input	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)	
108	127	Clutch pedal position	Input	[Ignition switch: ON] • Clutch pedal: Fully released	0 V	
(GR)	(B/Y)	switch	iiiput	[Ignition switch: ON] • Clutch pedal: Fully depressed	BATTERY VOLTAGE (11 - 14 V)	
109	127	1		[Ignition switch: OFF]	0 V	
(O)	(B/Y)	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)	

#### < ECU DIAGNOSIS INFORMATION >

	ninal No. re color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
				[Ignition switch: ON]  • ASCD steering switch: OFF	4 V
				[Ignition switch: ON] • MAIN switch: Pressed	0 V
110 (P)	111 (B)	ASCD steering switch	Input	[Ignition switch: ON] • CANCEL switch: Pressed	1 V
				[Ignition switch: ON] • ACCEL/RES switch: Pressed	3 V
				[Ignition switch: ON] • COAST/SET switch: Pressed	2 V
111 (B)	_	Sensor ground (ASCD steering switch)	_	_	_
112 (BR)	127 (B/Y)	ECM relay (Self shut-off)	Output	<ul><li>[Engine is running]</li><li>[Ignition switch: OFF]</li><li>A few seconds after turning ignition switch OFF</li></ul>	0 - 1.0 V
(BK)	(6/1)	(Sell Stiut-Oil)		[Ignition switch: OFF]  • More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)
115	127	Stop lamp switch	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0 V
(R)	(B/Y)	Stop lamp switch	mpat	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14 V)
116	127	Brake pedal position switch	Input	[Ignition switch: OFF] • Brake pedal: Fully released	BATTERY VOLTAGE (11 - 14 V)
(G)	(B/Y)			[Ignition switch: ON]  • Brake pedal: Slightly depressed	0 V
117 (Y)	127 (B/Y)	Fuel pump relay	Output	<ul><li>[Ignition switch: ON]</li><li>For 1 second after turning ignition switch ON</li><li>[Engine is running]</li></ul>	0 - 1.0 V
118 (O)	_	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5 V
119	120	Accelerator pedal posi-	lan: t	[Ignition switch: ON]  • Engine stopped  • Accelerator pedal: Fully released	0.3 - 0.6 V
(W)	(Y)	tion sensor 2	Input	[Ignition switch: ON]	1.95 - 2.4 V
120 (Y)	_	Sensor ground (Accelerator pedal position sensor 2)	_	_	_
121 (G)	127 (B/Y)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
122 (G)	127 (B/Y)	Throttle control motor power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
123 (GR)	_	ECM ground	_	_	_
124 (GR)	_	ECM ground	_	_	_

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	minal No. ire color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
125 (L)	127 (B/Y)	A/F sensor 1 heater	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed (More than 140 seconds after starting engine)</li></ul>	2.9 - 8.8 V★ 100mSec/div  5V/div  JPBIA4732ZZ
126 (W)	33 (R)	Heated oxygen sensor 2 heater	Output	<ul> <li>[Engine is running]</li> <li>Engine speed: Below 3,600 rpm after the following conditions are met</li> <li>Engine: after warming up</li> <li>Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load</li> </ul>	10 V★ 50mSec/div 10V/div JMBIA0325GB
			)_	<ul><li>[Ignition switch: ON]</li><li>Engine stopped</li><li>[Engine is running]</li><li>Engine speed: Above 3,600 rpm</li></ul>	BATTERY VOLTAGE (11 - 14 V)
127 (B/Y)	_	ECM ground		_	_

Fail Safe

DTC No.	Detected items	Engine operating condition in fail safe mode					
P0011	Intake valve timing control	The signal is not energized to the intake valve timing control solenoid valve and the valve control does not function.					
P0014	Exhaust valve timing control		The signal is not energized to the exhaust valve timing control magnet retarder and the magnet retarder control does not function.				
P0045 P0048	Turbocharger boost control solenoid valve	Sets the duty ratio of the turbocharger boost control solenoid valve to 0%, and decreases the boost to the lower limit.					
P0047		The ECM controls the electric throttle control actuator and restricts the torque.					
P0087 P0090	FRP control system	Engine torque is limited or engine speed is limited.					
P0088		Engine speed is limited.					
P0101 P0102 P0103	Mass air flow sensor circuit	Engine speed will not rise more than 2,400 rpm due to the fuel cut.					
P0117 P0118	Engine coolant tempera- ture sensor circuit	Engine coolant temperature will be d CONSULT displays the engine coola	etermined by ECM based on the following conditions ant temperature decided by ECM.				
		Condition	Engine coolant temperature decided (CONSULT display)				
		Just as ignition switch is turned ON or START	40°C (104°F)				
		Approx. 4 minutes or more after engine starting 80°C (176°F)					
		Except as shown above 40 - 80°C (104 - 176°F) (Depends on the time)					
		When the fail safe system for engine fan operates while engine is running	coolant temperature sensor is activated, the cooling				

#### < ECU DIAGNOSIS INFORMATION >

DTC No.	Detected items	Engine operating condition in fail safe mode
P0122 P0123 P0222 P0223 P2135	Throttle position sensor	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.  The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.  So, the acceleration will be poor.
P0190	FRP sensor	<ul><li>Engine speed is limited.</li><li>High pressure fuel pump is activated at maximum discharge pressure.</li></ul>
P0196 P0197 P0198	Engine oil temperature sensor	Exhaust valve timing control does not function.
P0201 P0202 P0203 P0204	Injector	<ul> <li>Engine torque is limited.</li> <li>Fuel injection shut-off of malfunction cylinder.</li> <li>Mixture ratio feedback control does not function.</li> <li>Idle engine speed is increased.</li> </ul>
P0234	Turbocharger system	The ECM controls the electric throttle control actuator and restricts the torque.
P0235 P0237 P0238	Turbocharger boost sensor	Sets the duty ratio of the turbocharger boost control solenoid valve to 0%, and decrease the boost to the lower limit.
P0500	Vehicle speed sensor	The cooling fan operates (Highest) while engine is running.
P0524	Engine oil pressure	<ul> <li>ECM illuminates oil pressure warning lamp on the combination meter.</li> <li>Engine speed will not rise more than 4,000 rpm due to the fuel cut.</li> <li>Fail-safe is canceled when ignition switch OFF → ON.</li> </ul>
P0603 P0607	ECM	Engine torque may be limited.
P0604	ECM	<ul> <li>ECM stops the electric throttle control actuator control, throttle valve is maintained at fixed opening (approx. 5 degrees) by the return spring.</li> <li>The position of the following components is fixed.</li> <li>Intake valve timing control solenoid valve</li> <li>Exhaust valve timing control solenoid valve</li> <li>ASCD operation may be deactivated.</li> </ul>
P0605 P0606 P060B	ECM	NOTE: Fail-safe may not occur depending on malfunction type.  • ECM stops the electric throttle control actuator control, throttle valve is maintained at fixed opening (approx. 5 degrees) by the return spring.  • The position of the following components is fixed.  - Intake valve timing control solenoid valve  - Exhaust valve timing control solenoid valve  • ASCD operation may be deactivated.
P060A	ECM	<ul> <li>NOTE:</li> <li>Fail-safe may not occur depending on malfunction type.</li> <li>ECM stops the electric throttle control actuator control, throttle valve is maintained at fixed opening (approx. 5 degrees) by the return spring.</li> <li>The position of the following components is fixed.</li> <li>Intake valve timing control solenoid valve</li> <li>Exhaust valve timing control solenoid valve</li> <li>Engine torque may be limited.</li> <li>ASCD operation may be deactivated.</li> </ul>
P062B		<ul> <li>Engine torque is limited.</li> <li>Idle engine speed is increased.</li> <li>Fuel injector power supply shut-off.</li> <li>High fuel pressure limitation.</li> </ul>
P0643	Sensor power supply	<ul> <li>ECM stops the electric throttle control actuator control, throttle valve is maintained at fixed opening (approx. 5 degrees) by the return spring.</li> <li>The position of the following components is fixed.</li> <li>Intake valve timing control solenoid valve</li> <li>Exhaust valve timing control solenoid valve</li> </ul>

DTC No.	Detected items	Engine operating condition in fail safe mode					
P1805	Brake switch	ECM controls the electric throttle control actuator by regulating the throttle opening to a small range.  Therefore, acceleration will be poor.					
		Vehicle condition Driving condition					
		When engine is idling	Normal				
		When accelerating	Poor acceleration				
P1197	Out of gas	Engine torque is limited.					
P2100 P2103	Throttle control motor relay	ECM stops the electric throttle control actuator control, throttle valve is maintained at a ixed opening (approx. 5 degrees) by the return spring.					
P2101	Electric throttle control function	•	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.				
P2118	Throttle control motor	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.					
P2119	Electric throttle control actuator	(When electric throttle control actuator does not function properly due to the return malfunction:)  ECM controls the electric throttle actuator by regulating the throttle opening around idle position. The engine speed will not rise more than 2,000 rpm.					
			e in fail safe mode is not in specified range:) ontrol actuator by regulating the throttle opening to 20				
		(When ECM detects the throttle valve is stuck open:) While the vehicle is driving, it slows down gradually by fuel cut. After the vehicle stop engine stalls. The engine can restart in the Neutral position, and engine speed will not exceed 1,00 or more.					
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	order for the idle position to be with	tle control actuator in regulating the throttle opening in nin +10 degrees. need of the throttle valve to be slower than the normal				

# DTC Inspection Priority Chart

INFOID:0000000012197709

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

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Priority	Detected items (DTC)
1	U0101 U0122 U1001 CAN communication line
	P0096 P0097 P0098 Intake air temperature sensor 2
	P0101 P0102 P0103 Mass air flow sensor
	P0111 P0112 P0113 P0127 Intake air temperature sensor 1
	P0116 P0117 P0118 P0125 Engine coolant temperature sensor
	P011C Intake air temperature sensor 2
	P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor
	P0128 Thermostat function
	P0181 P0182 P0183 Fuel tank temperature sensor
	P0190 P0192 P0193 P119A P119B P119C Fuel rail pressure sensor
	P0196 P0197 P0198 Engine oil temperature sensor
	P0235 Turbocharger boost sensor
	• P0327 P0328 Knock sensor
	P0335 Crankshaft position sensor (POS)
	P0340 Camshaft position sensor (PHASE)
	P0460 P0461 P0462 P0463 Fuel level sensor
	P0500 P0501 P2159 P2162 Vehicle speed sensor
	P0520 Engine oil pressure sensor
	P0603 P0604 P0605 P0606 P0607 P060A P060B P0611 P062B ECM
	P0643 Sensor power supply
	P0705 Transmission range switch
	P0850 Park/neutral position (PNP) switch
	• P1197 Out of gas*
	P1550 P1551 P1552 P1553 P1554 Battery current sensor
	P1556 P1557 Batter temperature sensor
	• P158A ECM
	P159A P159B P159C P159D G sensor
	• P1610 - P1612 NATS
	P1650 P1651 P1652 Starter motor relay
	P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor

Priority	Detected items (DTC)	Α
2	P0030 P0031 P0032 Air fuel ratio (A/F) sensor 1 heater     P0037 P0039 Heated awaren concer 3 heater	А
	P0037 P0038 Heated oxygen sensor 2 heater     P0045 P0047 P0048 Turbocharger boost control solenoid valve	
	P0075 Intake valve timing control solenoid valve	EC
	P0078 Exhaust valve timing control solenoid valve	LC
	P0130 P0131 P0132 P014C P014D P015A P015B P2096 P2097 Air fuel ratio (A/F) sensor 1	
	P0137 P0138 P0139 Heated oxygen sensor 2	
	P0237 P0238 Turbocharger boost sensor	С
	P0441 EVAP control system purge flow monitoring	
	P0443 P0444 P0445 EVAP canister purge volume control solenoid valve      P0443 P0446 EVAP canister purge volume control solenoid valve	
	P0447 P0448 EVAP canister vent control valve     P0451 P0452 P0453 EVAP control system pressure sensor	D
	P0451 P0452 P0453 EVAP control system pressure sensor     P0710 P0715 P0720 P0740 P0744 P0745 P0746 P0776 P0778 P0840 P1740 P1777 P1778 CVT related sensors, so-	
	lenoid valves and switches	
	P1078 Exhaust valve timing position sensor	
	P1217 Engine over temperature (OVERHEAT)	Е
	P1451 Pressure sensor	
	P1805 Brake switch	
	P1807 P1808 Brake pedal position switch	F
	P2100 P2103 Throttle control motor relay	
	P2101 Electric throttle control function     P2118 Throttle control motor	
		G
3	P0011 Intake valve timing control     P0014 Exhaust valve timing control	
	P0087 P0088 P0090 FRP control system	
	P0171 P0172 Fuel injection system function	
	• P0201 - P0204 Injector	Н
	P0234 P2263 Turbocharger system	
	• P0300 - P0304 Misfire	
	P0420 Three way catalyst function	
	P0456 EVAP control system (very small leak)	
	P0506 P0507 Idle speed control system     P050A P0505 P1403 P1404 Cold start control	
	P050A P050E P1423 P1424 Cold start control     P0524 Engine oil pressure	J
	P1148 Closed loop control	J
	P1212 TCS communication line	
	P1564 ASCD steering switch	
	P1572 ASCD brake switch	K
	P1574 ASCD vehicle speed sensor	
	P2119 Electric throttle control actuator	
	P219A Air fuel ratio sensor	- 1

#### NOTE:

#### DTC Index

×:Applicable —: Not applicable

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DTC*	1	Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*4	page
U0100	0100	COMMUNICATION ERROR (LOST)	_	2	×	_	EC-191
U0101	0101	LOST COMM (TCM)	_	1	×	В	EC-193
U0122	0122	VDC MDL	_	2	×	В	EC-194
U1001	1001 <sup>*5</sup>	CAN COMM CIRCUIT	_	2	_	_	EC-195
P0000	0000	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	_	_	Flashing <sup>*9</sup>	_	_
P0011	0011	INT/V TIM CONT-B1	×	2	×	В	EC-196
P0014	0014	EXH/V TIM CONT-B1	_	2	×	В	EC-199

<sup>\*:</sup> If "P1197" is displayed with other DTC in priority 1, perform trouble diagnosis for "P1197" first.

DTC*1	1	.,	0.0.7			Dormonont	5.6
CONSULT GST*2	ECM*3	Items (CONSULT screen terms)	SRT	Trip	MIL	Permanent DTC group*4	Reference page
P0030	0030	A/F SEN1 HTR (B1)	_	2	×	В	EC-203
P0031	0031	A/F SEN1 HTR (B1)	_	2	×	В	EC-203
P0032	0032	A/F SEN1 HTR (B1)	_	2	×	В	EC-203
P0037	0037	HO2 HTR (B1)	_	2	×	В	EC-206
P0038	0038	HO2 HTR (B1)	_	2	×	В	EC-206
P0045	0045	TC BOOST SOL/V	_	2	×	В	EC-209
P0047	0047	TC/SC BOOST CONT A	_	1	×	В	EC-209
P0048	0048	TC/SC BOOST CONT A	_	1	×	В	EC-209
P0075	0075	INT/V TIM V/CIR-B1	_	2	×	В	EC-211
P0078	0078	EX V/T ACT/CIRC-B1	_	2	×	В	EC-214
P0087	0087	LOW FUEL PRES	_	2	×	A or B	EC-217
P0088	0088	HIGH FUEL PRES	_	2	×	A or B	EC-220
P0090	0090	FUEL PUMP	_	2	×	В	EC-222
P0096	0096	IAT SENSOR 2 B1	_	2	×	В	EC-227
P0097	0097	IAT SENSOR 2 B1	_	2	×	В	EC-229
P0098	0098	IAT SENSOR 2 B1	_	2	×	В	EC-229
P0101	0101	MAF SEN/CIRCUIT-B1	_	2	×	В	EC-233
P0102	0102	MAF SEN/CIRCUIT-B1	_	1	×	В	EC-238
P0103	0103	MAF SEN/CIRCUIT-B1		1	×	В	EC-238
P0111	0111	IAT SENSOR 1 B1		2	×	Α	EC-243
P0112	0112	IAT SEN/CIRCUIT-B1	_	2	×	В	EC-245
P0113	0113	IAT SEN/CIRCUIT-B1	_	2	×	В	EC-245
P0116	0116	ECT SEN/CIRC	_	2	×	Α	EC-247
P0117	0117	ECT SEN/CIRC	_	1	×	В	EC-249
P0118	0118	ECT SEN/CIRC	_	1	×	В	EC-249
P011C	011C	CAT/IAT CRRLTN B1	_	2	×	В	EC-251
P0122	0122	TP SEN 2/CIRC-B1	_	1	×	В	EC-253
P0123	0123	TP SEN 2/CIRC-B1	_	1	×	В	EC-253
P0125	0125	ECT SENSOR	_	2	×	В	EC-256
P0127	0127	IAT SENSOR-B1	_	2	×	В	<u>EC-258</u>
P0128	0128	THERMSTAT FNCTN	_	2	×	Α	EC-260
P0130	0130	A/F SENSOR1 (B1)	×	2	×	Α	EC-263
P0131	0131	A/F SENSOR1 (B1)	_	2	×	В	EC-267
P0132	0132	A/F SENSOR1 (B1)	_	2	×	В	EC-270
P0137	0137	HO2S2 (B1)	×	2	×	Α	EC-273
P0138	0138	HO2S2 (B1)	×	2	×	Α	EC-279
P0139	0139	HO2S2 (B1)	×	2	×	Α	EC-286
P014C	014C	A/F SENSOR1 (B1)	×	2	×	A	EC-292
P014D	014D	A/F SENSOR1 (B1)	×	2	×	A	EC-292
P015A	015A	A/F SENSOR1 (B1)	×	2	X	A	EC-292
P015B	015B	A/F SENSOR1 (B1)	×	2	X	A	EC-292
P0171	0171	FUEL SYS-LEAN-B1	_	2	×	В	EC-297

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DTC*1		Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*4	page
P0172	0172	FUEL SYS-RICH-B1	_	2	×	В	EC-301
P0181	0181	FTT SENSOR	_	2	×	A and B	EC-305
P0182	0182	FTT SEN/CIRCUIT	_	2	×	В	EC-309
P0183	0183	FTT SEN/CIRCUIT	_	2	×	В	EC-309
P0190	0190	FUEL PRES SEN/CIRC	_	1	×	В	EC-312
P0192	0192	FRP SEN/CIRC	_	2	×	В	EC-312
P0193	0193	FRP SEN/CIRC	_	2	×	В	EC-312
P0196	0196	EOT SENSOR	_	2	×	A and B	EC-316
P0197	0197	EOT SEN/CIRC	_	2	×	В	EC-320
P0198	0198	EOT SEN/CIRC	_	2	×	В	EC-320
P0201	0201	INJECTOR CIRC-CYL1	_	2	×	В	EC-322
P0202	0202	INJECTOR CIRC-CYL2	_	2	×	В	EC-322
P0203	0203	INJECTOR CIRC-CYL3		2	×	В	EC-322
P0204	0204	INJECTOR CIRC-CYL4	_	2	×	В	EC-322
P0222	0222	TP SEN 1/CIRC-B1	_	1	×	В	EC-323
P0223	0223	TP SEN 1/CIRC-B1	_	1	×	В	EC-323
P0234	0234	TC SYSTEM-B1	_	1	×	В	EC-326
P0235	0235	TURBO BOOST SENSOR		2	×	В	EC-329
P0237	0237	TC BOOST SEN/CIRC-B1	12-	2	×	В	EC-332
P0238	0238	TC BOOST SEN/CIRC-B1	_	2	×	В	EC-332
P0300	0300	MULTI CYL MISFIRE	-	1 or 2	× or —	В	EC-335
P0301	0301	CYL 1 MISFIRE		1 or 2	× or —	В	EC-335
P0302	0302	CYL 2 MISFIRE	_	1 or 2	× or —	В	EC-335
P0303	0303	CYL 3 MISFIRE	_	1 or 2	× or —	В	EC-335
P0304	0304	CYL 4 MISFIRE	_	1 or 2	× or —	В	EC-335
P0327	0327	KNOCK SEN/CIRC-B1	_	2		_	EC-341
P0328	0328	KNOCK SEN/CIRC-B1	_	2	-	_	EC-341
P0335	0335	CKP SEN/CIRCUIT	_	2	×	В	EC-343
P0340	0340	CMP SEN/CIRC-B1	_	2	×	В	EC-346
P0420	0420	TW CATALYST SYS-B1	×	2	×	A	EC-350
P0441	0441	EVAP PURG FLOW/MON	×	2	×	Α	EC-355
P0443	0443	PURG VOLUME CONT/V	_	2	×	Α	EC-360
P0444	0444	PURG VOLUME CONT/V	_	2	×	В	EC-365
P0445	0445	PURG VOLUME CONT/V	_	2	×	В	EC-365
P0447	0447	VENT CONTROL VALVE	_	2	×	В	EC-368
P0448	0448	VENT CONTROL VALVE	_	2	×	В	EC-372
P0451	0451	EVAP SYS PRES SEN	_	2	×	Α	EC-376
P0452	0452	EVAP SYS PRES SEN	_	2	×	В	EC-380
P0453	0453	EVAP SYS PRES SEN	_	2	×	A	EC-383
P0456	0456	EVAP VERY SML LEAK	×*6	2	×	Α	EC-387
P0460	0460	FUEL LEV SEN SLOSH	_ ^	2	×	A	EC-393
1 0700	0461	FUEL LEVEL SENSOR	_	2	×	В	EC-394

#### < ECU DIAGNOSIS INFORMATION >

DTC*	1	Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*4	page
P0462	0462	FUEL LEVEL SEN/CIRC	_	2	×	В	EC-396
P0463	0463	FUEL LEVEL SEN/CIRC	_	2	×	В	EC-396
P0500	0500	VEHICLE SPEED SEN A*7	_	2	×	В	EC-397 (CVT) EC-398 (M/T)
P0501	0501	VEHICLE SPEED SEN A	_	2	×	В	EC-401
P0506	0506	ISC SYSTEM	_	2	×	В	EC-402
P0507	0507	ISC SYSTEM	_	2	×	В	EC-404
P050A	050A	COLD START CONTROL	_	2	×	Α	EC-406
P050E	050E	COLD START CONTROL	_	2	×	Α	EC-406
P0520	0520	EOP SENSOR/SWITCH	_	2	_	_	EC-408
P0524	0524	ENGINE OIL PRESSURE	_	1	_	_	EC-412
P0603	0603	ECM BACK UP/CIRCUIT*8	_	2	× or —	В	EC-415
P0604	0604	ECM	_	1	×	В	EC-416
P0605	0605	ECM	_	1 or 2	×	В	EC-417
P0606	0606	CONTROL MODULE	_	1	× or —	В	EC-418
P0607	0607	ECM	_	1 or 2	_	В	EC-419
P060A	060A	CONTROL MODULE	_	1 or 2	_	В	EC-420
P060B	060B	CONTROL MODULE	_	1	_	В	EC-421
P0611	0611	FIC MODULE		2	×	В	EC-422
P062B	062B	ECM		2	×	В	EC-423
P0643	0643	SENSOR POWER/CIRC	4	1	×	В	EC-424
P0705	0705	T/M RANGE SENSOR A	_	2	×	В	<u>TM-241</u>
P0710	0710	FLUID TEMP SENSOR A	_	2	×	В	TM-244
P0715	0715	INPUT SPEED SENSOR A	_	2	×	В	<u>TM-248</u>
P0720	0720	OUTPUT SPEED SENSOR*7	_	2	×	В	TM-251
P0740	0740	TORQUE CONVERTER	_	2	×	В	TM-255
P0744	0744	TORQUE CONVERTER	_	2	×	В	TM-258
P0745	0745	PC SOLENOID A	_	2	×	В	TM-260
P0746	0746	PC SOLENOID A	_	2	×	В	TM-262
P0776	0776	PC SOLENOID B	_	2	×	В	TM-264
P0778	0778	PC SOLENOID B	_	2	×	В	TM-266
P0840	0840	FLUID PRESS SEN/SW A	_	2	×	В	TM-274
P0850	0850	P-N POS SW/CIRCUIT	_	2	×	В	EC-426
P1078	1078	EXH TIM SEN/CIRC-B1	_	2	×	В	EC-430
P1148	1148	CLOSED LOOP-B1	_	1	×	A	EC-434
P1197	1197	FUEL RUN OUT	_	2	_	_	EC-435
P119A	119A	FRP SENSOR A	_	2	×	В	EC-437
P119B	119B	FRP SENSOR A	_	2	×	В	EC-437
P119C	119C	FRP SENSOR A	_	2	×	В	EC-442
P1212	1212	TCS/CIRC	_	2	_	_	EC-446
P1217	1217	ENG OVER TEMP	_		×	В	EC-447
P1225	1225	CTP LEARNING-B1	_	2	_	_	EC-450

		S INFORMATION >						_
DTC <sup>*1</sup>						5 .		_
CONSULT GST*2	ECM*3	Items (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*4	Reference page	
P1226	1226	CTP LEARNING-B1	_	2	_	_	EC-451	-
P1423	1423	COLD START CONTROL	_	2	×	В	EC-452	
P1424	1424	COLD START CONTROL	_	2	×	В	EC-452	_
P1451	1451	TC/SC PRES-EVAP PRES	_	2	×	В	EC-454	_
P1550	1550	BAT CURRENT SENSOR	_	2	_	_	EC-457	_
P1551	1551	BAT CURRENT SENSOR	_	2	_	_	EC-460	_
P1552	1552	BAT CURRENT SENSOR	_	2	_	_	EC-460	_
P1553	1553	BAT CURRENT SENSOR	_	2	_	_	EC-463	_
P1554	1554	BAT CURRENT SENSOR	_	2	_	_	EC-466	_
P1556	1556	BAT TMP SEN/CIRC	_	2	_	_	EC-470	_
P1557	1557	BAT TMP SEN/CIRC	_	2	_	_	EC-470	_
P1564	1564	ASCD SW	_	1	_	_	EC-472	_
P1572	1572	ASCD BRAKE SW	_	1	_	_	EC-475	_
P1574	1574	ASCD VHL SPD SEN	_	1	_	_	EC-480	_
P158A	158A	G SENSOR	_	1	_	_	EC-482	_
P159A	159A	G SENSOR	_	2	_	_	EC-483	-
P159B	159B	G SENSOR	_	2	×	В	EC-487	_
P159C	159C	G SENSOR	_	2	×	В	EC-483	-
P159D	159D	G SENSOR		2	×	В	EC-483	-
P1610	1610	LOCK MODE	1 _	2	_	_	SEC-50	-
P1611	1611	ID DISCORD, IMMU-ECM	_	2	_		SEC-51	_
P1612	1612	CHAIN OF ECM-IMMU		2	_		SEC-52	_
P1650	1650	STR MTR RELAY 2		2	×	В	EC-492	_
P1651	1651	STR MTR RELAY	_	2	×	В	EC-495	_
P1652	1652	STR MTR SYS COMM	_	1	×	В	EC-497	_
P1740	1740	SLCT SOLENOID	_	2	×	В	<u>TM-291</u>	-
P1777	1777	STEP MOTOR	_	2	×	В	TM-293	_
P1778	1778	STEP MOTOR	_	2	×	В	TM-296	-
P1805	1805	BRAKE SW/CIRCUIT	_	2			EC-499	_
P1807	1807	Brake pedal position switch	_	1	_	В	EC-501	_
P1808	1808	Brake pedal position switch	_	1	_	В	EC-501	-
P2096	2096	POST CAT FUEL TRIM SYS B1	_	2	×	A	EC-504	-
P2097	2097	POST CAT FUEL TRIM SYS B1	_	2	×	A	EC-504	-
P2100	2100	ETC MOT PWR-B1	_	1	×	В	EC-508	-
P2101	2101	ETC FNCTN/CIRC-B1	_	' 1	×	В	EC-510	_
P2103	2103	ETC MOT PWR	_	1	×	В	EC-508	_
P2118	2118	ETC MOT-B1	_	1	×	В	EC-513	_
P2119	2119	ETC ACTR-B1		1	×	В	EC-515	-
P2122	2122	APP SEN 1/CIRC		1	×	В	EC-517	_
P2123	2123	APP SEN 1/CIRC		1	×	В	EC-517	_
	2123	APP SEN I/CIRC	_	1		В		-
P2127 P2128	2127	APP SEN 2/CIRC  APP SEN 2/CIRC	_	1	×	В	EC-520 EC-520	_

#### < ECU DIAGNOSIS INFORMATION >

DTC*	1	Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*4	page
P2135	2135	TP SENSOR-B1	_	1	×	В	EC-523
P2138	2138	APP SENSOR	_	1	×	В	EC-526
P2159	2159	VEHICLE SPEED SEN B	_	2	×	В	EC-401
P2162	2162	VEHICLE SPEED SEN A-B	_	2	×	В	EC-530
P219A	219A	AIR FUEL RATIO IMBALANCE B1	_	2	×	А	EC-532
P2263	2263	TC SYSTEM-B1	_	2	×	В	EC-537

<sup>\*1: 1</sup>st trip DTC No. is the same as DTC No.

#### Test Value and Test Limit

INFOID:0000000012819110

The following is the information specified in Service \$06 of SAE J1979/ISO 15031-5.

The test value is a parameter used to determine whether a system/circuit diagnostic test is OK or NG while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

These data (test value and test limit) are specified by On Board Monitor ID (OBDMID), Test ID (TID), Unit and Scaling ID and can be displayed on the GST screen.

The items of the test value and test limit will be displayed with GST screen which items are provided by the ECM. (e.g., if bank 2 is not applied on this vehicle, only the items of bank 1 are displayed)

<sup>\*2:</sup> This number is prescribed by SAE J1979/ ISO 15031-5.

<sup>\*3:</sup> In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.

<sup>\*4:</sup> Refer to EC-174, "Description".

<sup>\*5:</sup> The troubleshooting for this DTC needs CONSULT.

<sup>\*6:</sup> SRT code will not be set if the self-diagnostic result is NG.

<sup>\*7:</sup> When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.

<sup>\*8:</sup> This self-diagnosis is not for ECM power supply circuit, even though "ECM BACK UP/CIRCUIT" is displayed on CONSULT screen.

<sup>\*9:</sup> When the ECM is in the mode that displays SRT status, MIL may blink. For details, Refer to EC-81, "On Board Diagnosis Function".

	OBD-			li	e and Test mit display)	
Item OBD-MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description	
			P0131	83H	0BH	Minimum sensor output voltage for test cycle
			P0131	84H	0BH	Maximum sensor output voltage for test cycle
			P0130	85H	0BH	Minimum sensor output voltage for test cycle
			P0130	86H	0BH	Maximum sensor output voltage for test cycle
			P0133	87H	04H	Response rate: Response ratio (lean to rich)
			P0133	88H	04H	Response rate: Response ratio (rich to lean)
			P2A00 or P2096	89H	84H	The amount of shift in air fuel ratio (too lean)
			P2A00 or P2097	8AH	84H	The amount of shift in air fuel ratio (too rich)
			P0130	8BH	0BH	Difference in sensor output voltage
			P0133	8CH	83H	Response gain at the limited frequency
HO2S	01H	Air fuel ratio (A/F) sensor 1 (Bank 1)	P014C	8DH	04H	O2 sensor slow response - Rich to lean bank 1 sensor 1
			P014C	8EH	04H	O2 sensor slow response - Rich to lean bank 1 sensor 1
			P014D	8FH	84H	O2 sensor slow response - Lean to rich bank 1 sensor 1
			P014D	90H	84H	O2 sensor slow response - Lean to rich bank 1 sensor 1
			P015A	91H	01H	O2 sensor delayed response - Rich to lean bank 1 sensor 1
			P015A	92H	01H	O2 sensor delayed response - Rich to lean bank 1 sensor 1
			P015B	93H	01H	O2 sensor delayed response - Lean to rich bank 1 sensor 1
			P015B	94H	01H	O2 sensor delayed response - Lean to rich bank 1 sensor 1
			P0133	95H	04H	Response rate: Response ratio (lean to rich)
			P0133	96H	84H	Response rate: Response ratio (rich to lean)

	07-			liı	e and Test mit display)	
Item	OBD- MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
			P0138	07H	0CH	Minimum sensor output voltage for tes
		Heated oxygen sensor 2	P0137	08H	0CH	Maximum sensor output voltage for test cycle
	02H	(Bank 1)	P0138	80H	0CH	Sensor output voltage
			P0139	81H	0CH	Difference in sensor output voltage
			P0139	82H	11H	Rear O2 sensor delay response diagnosis
		4/_,	P0143	07H	0CH	Minimum sensor output voltage for te cycle
	03H	Heated oxygen sensor 3 (Bank 1)	P0144	08H	0CH	Maximum sensor output voltage for test cycle
			P0146	80H	0CH	Sensor output voltage
			P0145	81H	0CH	Difference in sensor output voltage
			P0151	83H	0BH	Minimum sensor output voltage for te cycle
			P0151	84H	0BH	Maximum sensor output voltage for test cycle
			P0150	85H	0BH	Minimum sensor output voltage for te cycle
			P0150	86H	0BH	Maximum sensor output voltage for test cycle
HO2S			P0153	87H	04H	Response rate: Response ratio (lear to rich)
			P0153	88H	04H	Response rate: Response ratio (rich lean)
			P2A03 or P2098	89H	84H	The amount of shift in air fuel ratio (to lean)
		Air fuel ratio (A/F) sensor 1	P2A03 or P2099	8AH	84H	The amount of shift in air fuel ratio (to rich)
	05H	(Bank 2)	P0150	8BH	0BH	Difference in sensor output voltage
			P0153	8CH	83H	Response gain at the limited frequen
			P014E	8DH	04H	O2 sensor slow response - Rich to lean bank 2 sensor 1
			P014E	8EH	04H	O2 sensor slow response - Rich to lean bank 2 sensor 1
			P014F	8FH	84H	O2 sensor slow response - Lean to rid bank 2 sensor 1
			P014F	90H	84H	O2 sensor slow response - Lean to rid bank 2 sensor 1
			P015C	91H	01H	O2 sensor delayed response - Rich lean bank 2 sensor 1
			P015C	92H	01H	O2 sensor delayed response - Rich lean bank 2 sensor 1
			P015D	93H	01H	O2 sensor delayed response - Lean rich bank 2 sensor 1

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Item	OBD-	Self-diagnostic test item	DTC	(GST	display)	Description			
	MID	Ç		TID	Unitand Scaling ID	·			
			P015D	94H	01H	O2 sensor delayed response - Lean to rich bank 2 sensor 1			
	05H	Air fuel ratio (A/F) sensor 1 (Bank 2)	P0153	95H	04H	Response rate: Response ratio (lean to rich)			
			P0153	96H	Response rate: Response ratio (rich to lean)				
			P0158	07H	0CH	Minimum sensor output voltage for test cycle			
		Heated oxygen sensor 2	P0157	08H	0CH	Maximum sensor output voltage for test cycle			
HO2S	06H	(Bank 2)	P0158	80H	0CH	Sensor output voltage			
			P0159	81H	0CH	Difference in sensor output voltage			
			P0159	82H	11H	Rear O2 sensor delay response diagnosis			
		• /	P0163	07H	0CH	Minimum sensor output voltage for tes cycle			
	07H	Heated oxygen sensor 3 (Bank2)	P0164	H80	0CH	Maximum sensor output voltage for test cycle			
0711			P0166	80H	0CH	Sensor output voltage			
			P0165	81H	0CH	Difference in sensor output voltage			
			P0420	80H	01H	O2 storage index			
	21H	Three way catalyst function	P0420	82H	01H	Switching time lag engine exhaust index value			
	2111	(Bank1)	P2423	83H	0CH	Difference in 3rd O2 sensor output voltage			
CATA-			P2423	84H	84H	O2 storage index in HC trap catalyst			
LYST			P0430	80H	01H	O2 storage index			
	22H	Three way catalyst function	P0430	82H	01H	Switching time lag engine exhaust index value			
	<u> </u>	(Bank2)	P2424	83H	0CH	Difference in 3rd O2 sensor output voltage			
			P2424	84H	84H	O2 storage index in HC trap catalyst			
			P0400	80H	96H	Low flow faults: EGR temp change rate (short term)			
EGR			P0400	81H	96H	Low flow faults: EGR temp change rate (long term)			
	2411	ECD function	P0400	82H	96H	Low flow faults: Difference between max EGR temp and EGR temp under idling condition			
SYSTEM	31H	EGR function	P0400	83H	96H	Low flow faults: Max EGR temp			
			P1402	84H	96H	High Flow Faults: EGR temp increase rate			
			P0402	85H	FCH	EGR differential pressure high flow			
			P0401	86H	37H	EGR differential pressure low flow			
			P2457	87H	96H	EGR temperature			

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14	OBD-	Calf diamentia tantitana	DTO		display)	Description
Item	MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
			P0011	80H	9DH	VTC intake function diagnosis (VTC alignment check diagnosis)
			P0014	81H	9DH	VTC exhaust function diagnosis (VTC alignment check diagnosis)
			P0011	82H	9DH	VTC intake function diagnosis (VTC drive failure diagnosis)
	35H	VV/T Monitor (Poplet)	P0014	83H	9DH	VTC exhaust function diagnosis (VTC drive failure diagnosis)
	ээп	VVT Monitor (Bank1)	P100A	84H	10H	VEL slow response diagnosis
			P1090	85H	10H	VEL servo system diagnosis
		17	P0011	86H	9DH	VTC intake intermediate lock function diagnosis (VTC intermediate position alignment check diagnosis)
VVT		• /	Advanced: P052A Retarded: P052B	87H	9DH	VTC intake intermediate lock system diagnosis (VTC intermediate lock position check diagnosis)
SYSTEM			P0021	80H	9DH	VTC intake function diagnosis (VTC alignment check diagnosis)
			P0024	81H	9DH	VTC exhaust function diagnosis (VTC alignment check diagnosis)
			P0021	82H	9DH	VTC intake function diagnosis (VTC drive failure diagnosis)
	36H	VVT Monitor (Bank2)	P0024	83H	9DH	VTC exhaust function diagnosis (VTC drive failure diagnosis)
	3011	VVI MONITO (Bank2)	P100B	84H	10H	VEL slow response diagnosis
			P1093	85H	10H	VEL servo system diagnosis
			P0021	86H	9DH	VTC intake intermediate lock function diagnosis (VTC intermediate position alignment check diagnosis)
			Advanced: P052C Retarded: P052D	87H	9DH	VTC intake intermediate lock system diagnosis (VTC intermediate lock position check diagnosis)
	39H	EVAP control system leak (Cap Off)	P0455	80H	0CH	Difference in pressure sensor output voltage before and after pull down
	3ВН	EVAP control system leak (Small leak)	P0442	80H	05H	Leak area index (for more than 0.04 inch)
EVAP			P0456	80H	05H	Leak area index (for more than 0.02 inch)
SYSTEM	3СН	EVAP control system leak (Very small leak)	P0456	81H	FDH	Maximum internal pressure of EVAP system during monitoring
			P0456	82H	FDH	Internal pressure of EVAP system at the end of monitoring
	3DH	Purge flow system	P0441	83H	0CH	Difference in pressure sensor output voltage before and after vent control valve close

ltom	OBD-	Colf diagnostic test item	DTC	li	e and Test mit display)	Description
Item	MID	Self-diagnostic test item	ыс	TID	Unitand Scaling ID	Description
	41H	A/F sensor 1 heater (Bank 1)	Low Input: P0031 High Input: P0032	81H	0BH	Converted value of heater electric cur- rent to voltage
			P0030	83H	0BH	A/F sensor heater circuit malfunction
	42H	Heated oxygen sensor 2 heat- er (Bank 1)	Low Input: P0037 High Input: P0038	80H	0CH	Converted value of heater electric cur rent to voltage
O2 SEN- SOR HEATER 45H	er (Darik 1)	P0141	81H	14H	Rear O2 sensor internal impedance	
	43H	Heated oxygen sensor 3 heater (Bank 1)	P0043	80H	0CH	Converted value of heater electric cur rent to voltage
	45H	A/F sensor 1 heater (Bank 2)	Low Input: P0051 High Input: P0052	81H	0BH	Converted value of heater electric cur rent to voltage
			P0036	83H	0BH	A/F sensor heater circuit malfunction
	46H	Heated oxygen sensor 2 heat-	Low Input: P0057 High Input: P0058	80H	0CH	Converted value of heater electric cur rent to voltage
		er (Bank 2)	P0161	81H	14CH	Rear O2 sensor internal impedance
	47H	Heated oxygen sensor 3 heater (Bank 2)	P0063	80H	0CH	Converted value of heater electric cur rent to voltage
			P0411	80H	01H	Secondary air injection system incorrect flow detected
			Bank1: P0491 Bank2: P0492	81H	01H	Secondary air injection system insuffi- cient flow
SEC- OND- ARY AIR			P2445	82H	01H	Secondary air injection system pump stuck off
	71H	Secondary air system	P2448	83H	01H	Secondary air injection system high airflow
			Bank1: P2440 Bank2: P2442	84H	01H	Secondary air injection system switch ing valve stuck open
			P2440	85H	01H	Secondary air injection system switch ing valve stuck open
			P2444	86H	01H	Secondary air injection system pump stuck on

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Item	MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
			P0171 or P0172	80H	2FH	Long term fuel trim
			P0171 or P0172	81H	24H	The number of lambda control clamped
			P117A / P219A	82H	03H	Cylinder A/F imbalance monitoring
			P219C	83H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #1 cylinder parameter
		4	P219D	84H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #2 cylinder parameter
	81H	Fuel injection system function (Bank 1)	P219E	85H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #3 cylinder parameter
		• ^	P219F	86H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #4 cylinder parameter
FUEL			P21A0	87H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #5 cylinder parameter
SYSTEM			P21A2	89H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #7 cylinder parameter
			P0174 or P0175	80H	2FH	Long term fuel trim
			P0174 or P0175	81H	24H	The number of lambda control clamped
			P117B / P219B	82H	03H	Cylinder A/F imbalance monitoring
			P219D	84H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #2 cylinder parameter
	82H	Fuel injection system function (Bank 2)	P219F	86H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #4 cylinder parameter
			P21A1	88H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #6 cylinder parameter
			P21A3	8AH	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #8 cylinder parameter

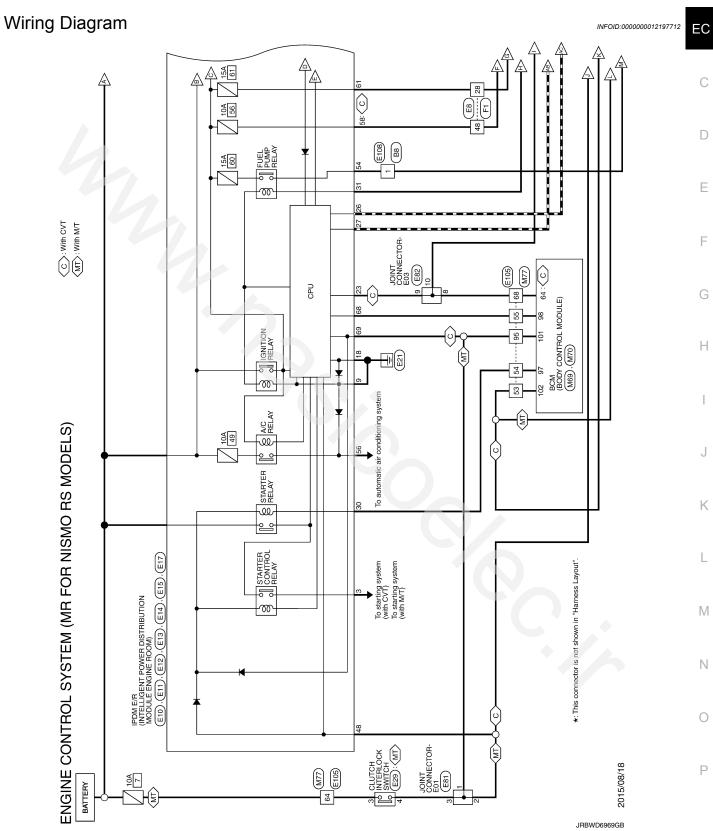
	OBD-MID Self-diagnostic test item			e and Test		
				mit display)		
Item		Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
			P0301	80H	24H	Misfiring counter at 1000 revolution of the first cylinder
			P0302	81H	24H	Misfiring counter at 1000 revolution of the second cylinder
			P0303	82H	24H	Misfiring counter at 1000 revolution of the third cylinder
			P0304	83H	24H	Misfiring counter at 1000 revolution of the fourth cylinder
		P0305	84H	24H	Misfiring counter at 1000 revolution of the fifth cylinder	
			P0306	85H	24H	Misfiring counter at 1000 revolution of the sixth cylinder
		P0307	86H	24H	Misfiring counter at 1000 revolution of the seventh cylinder	
		P0308	87H	24H	Misfiring counter at 1000 revolution of the eighth cylinder	
		P0300	88H	24H	Misfiring counter at 1000 revolution of the multiple cylinders	
MISFIRE	A1H	Multiple cylinder misfires	P0301	89H	24H	Misfiring counter at 200 revolution of the first cylinder
VIIOFIKE	АП	Multiple Cylinder misiles	P0302	8AH	24H	Misfiring counter at 200 revolution of the second cylinder
			P0303	8BH	24H	Misfiring counter at 200 revolution of the third cylinder
			P0304	8СН	24H	Misfiring counter at 200 revolution of the fourth cylinder
			P0305	8DH	24H	Misfiring counter at 200 revolution of the fifth cylinder
			P0306	8EH	24H	Misfiring counter at 200 revolution of the sixth cylinder
			P0307	8FH	24H	Misfiring counter at 200 revolution of the seventh cylinder
			P0308	90H	24H	Misfiring counter at 200 revolution of the eighth cylinder
			P0300	91H	24H	Misfiring counter at 1000 revolution of the single cylinder
			P0300	92H	24H	Misfiring counter at 200 revolution of the single cylinder
			P0300	93H	24H	Misfiring counter at 200 revolution of the multiple cylinders

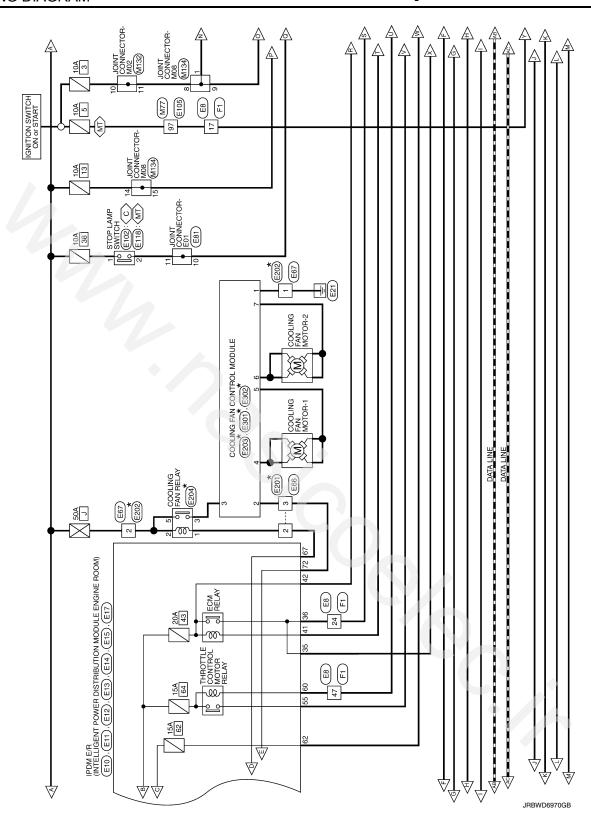
	OBD-			li	e and Test mit display)	
Item	MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
	A2H	No. 1 cylinder misfire	P0301	0ВН	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driv ing cycles
			P0301	0CH	24H	Misfire counts for last/current driving cycles
	АЗН	No. 2 cylinder misfire	P0302	ОВН	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0302	0CH	24H	Misfire counts for last/current driving cycles
,	A4H	No. 3 cylinder misfire	P0303	0ВН	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0303	0CH	24H	Misfire counts for last/current driving cycles
	A5H	No. 4 cylinder misfire	P0304	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driv ing cycles
MIOEIDE			P0304	0CH	24H	Misfire counts for last/current driving cycles
MISFIRE	A6H	No. 5 cylinder misfire	P0305	ОВН	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0305	0CH	24H	Misfire counts for last/current driving cycles
	A7H	No. 6 cylinder misfire	P0306	ОВН	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driv ing cycles
			P0306	0CH	24H	Misfire counts for last/current driving cycles
	A8H	No. 7 cylinder misfire	P0307	0ВН	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
			P0307	0CH	24H	Misfire counts for last/current driving cycles
	A9H	No. 8 cylinder misfire	P0308	0BH	24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driv ing cycles
		-	P0308	0CH	24H	Misfire counts for last/current driving cycles

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# WIRING DIAGRAM

# **ENGINE CONTROL SYSTEM**





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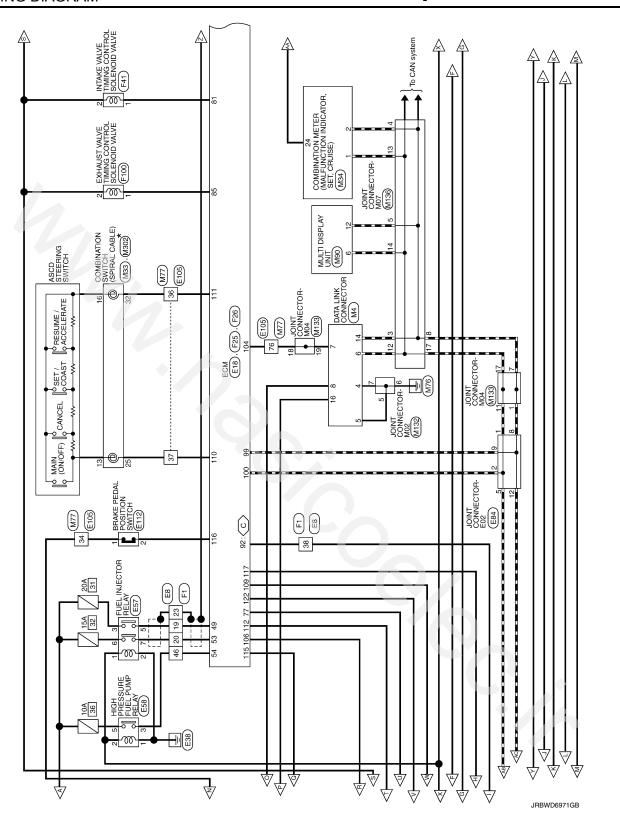
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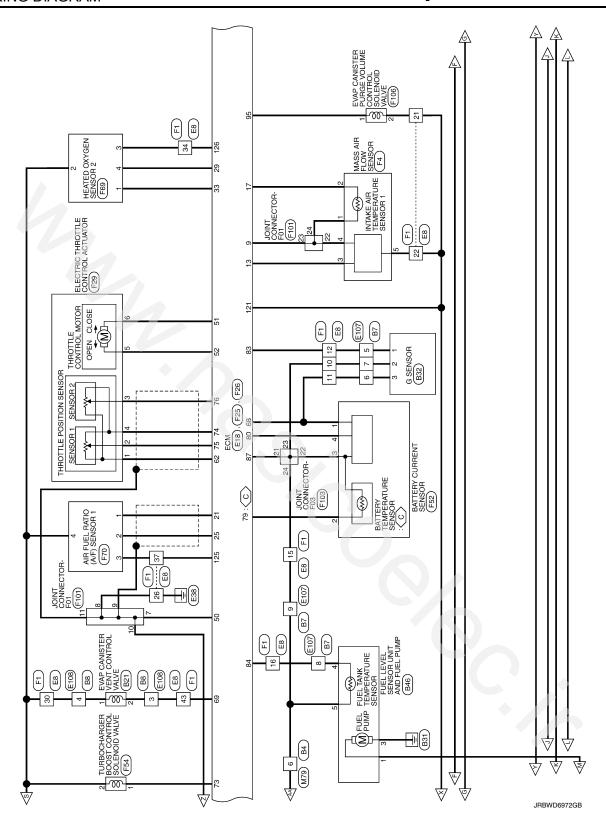
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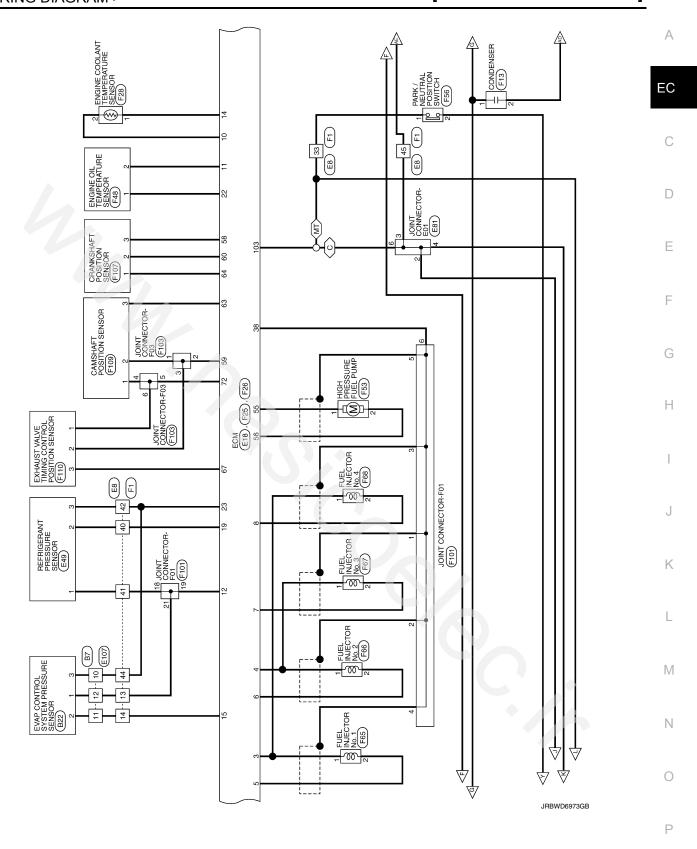
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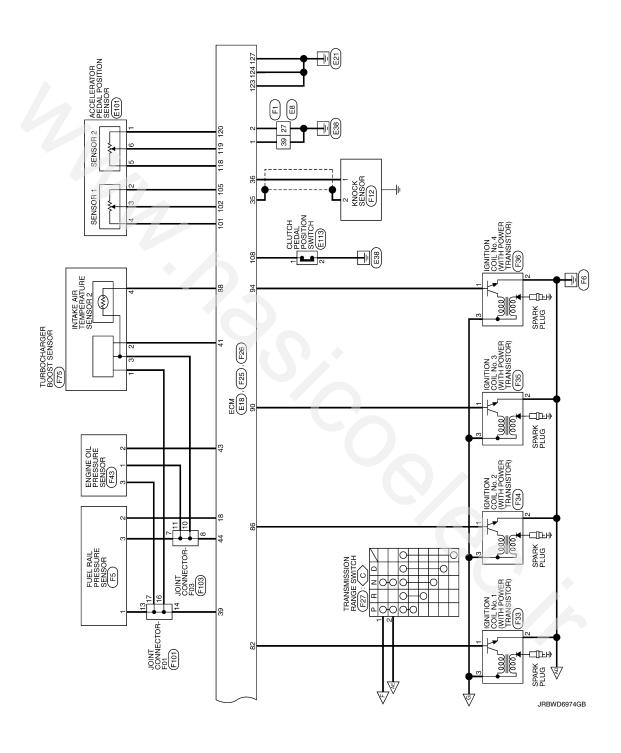
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(MR FOR NISMO RS MODELS)    14	Connector No. 88  Connector Name WHE TO WHE  Connector Type NSO4FW CS  AS A C Signal Name Specification  Terminal Color Of Signal Name Specification  To Wree Signal Name Specification  2 GR  3 L  4 R  1 G	Connector Name ROAFER VEST CONTROL VALVE Connector Type ROAFERS  Terminal Color Of Signal Name (Specification)  1
ENGINE CONTROL SYSTEM (MR FOR NISI Connector Nume With FOR WISI Connector Type H122WW-NH [1 2 3 4 5 6]	Signal Name [Specification]  www.rownee Thatareva.en  [12 [1] 10 [9   8   7   6   5   4   3   2   1    [24 [25 [22 [21   20 ] 19   18   17   16   15   14   13   3   1    [24 [25 [22 [21   20 ] 19   19   17   16   15   14   13   3   1    [25 [25 [27   20 ] 19   19   17   16   15   14   13   15   14   15   15   14   13   15   15   14   13   15   14   13   15   15   15   15   15   15   15	Signal Name (Specification)

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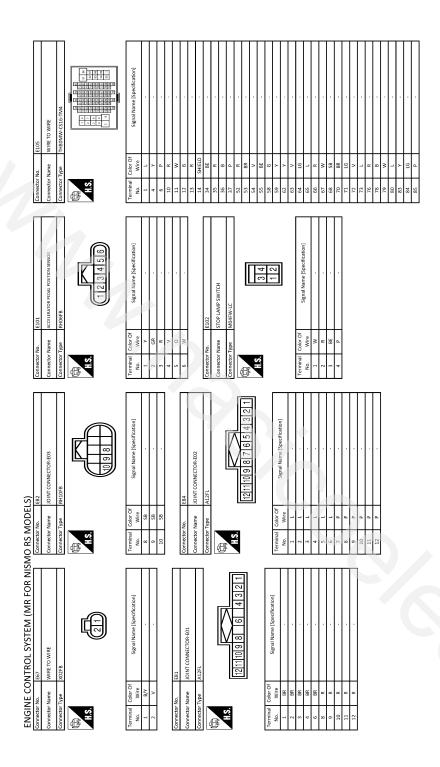
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MAR FOR NISMO RS MODELS	
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Revision: November 2015 EC-137 2016 JUKE



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Connector No. E113 Connector Nume CLUTCH PEDAL POSITION SWITCH Connector Type MAD2588.LC	Ferninal   Color Of   Signal Name   Specification   1
MO RS MODELS)  Connector No. 6108  Connector Name WHE TO WHE  Connector Type INSOAMW-CS  #\$3	Terminal   Color Of   Signal Name   Specification   No.   Wive   No.   Wive   No.   Wive   No.   No.
Second Control System (MR FOR NISMO RS MODELS)   Second Connector No.   E10   Second Connector No.	Connector No.

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Connector No. E203	Connector No. E301	Connector No.	F1	32	91		
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			WINE IS WINE	34	9	- [For NISMO RS]	
Connector Type SJZ01FGY-SNZ2	Connector Type 6188-0259	Connector Type	SAA36FB-RS10-SJZ2	34	Ь	- [Except for NISMO RS]	
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			48 47 48 44 43 42 41 40	41	۸	- [Except for NISMO RS]	
				42	٦	- [Except for NISMO RS]	
le	Terminal Color Of Signal Name (Specification)	Terminal Color Of	Signal Mama (Sparification)	42	W	- [For NISMO RS]	
2000	No. Wire	No. Wire	Department of the control of the con	43	7	- [For NISMO RS]	
1 B/Y GND	4 -	1 P		43	М	- [Except for NISMO RS]	
PW		2 1		44	BR	- [Except for NISMO RS]	
3 R/W PWM POWER		3 W	- [Except for NISMO RS]	44	9	- [For NISMO RS]	
		3	- [For NISMO RS]	45	BR		
	Connector No. E302	4 BG	- [For NISMO RS]	46	œ		
Connector No. E204	Γ	4 GR	- [Except for NISMO RS]	47	>	,	
П	Connector Name COOLING FAN CONTROL MODULE	5 1.6		48	g	- [With Intelligent Key]	
Connector Name COOLING FAN RELAY	Connector Type 6188-0259	7 6		48	>	- [Without Intelligent Key]	
Connector Type 24347 9F900	1	10 R	- [Except for NISMO RS]				_
1	<b>4</b>	ł	- [For NISMO BS]				
<b>[</b>	至	- 11	- [Except for NISMO RS]	Connector No.	Г	120	_
C.		+	[SU ON SUPPLIED DE]		Ī		
	(2)	1 5	- [FOI INISINO RS]	Connector Name		MASS AIR FLOW SENSOR	
_		+	[30 OF VSIN red second]	Consorter Tune	ı	913010	
		13 B	- [Except for NISMO RS]	Colline	ı	KHUDFB	
		og -	- [FUI NISINI NS]	₫.			
	н	-tT	- [FOI NISMO RS]	李			
Western Colonical	Signal Name (Specification)	+	- [Except for NISMO RS]				
	+	CT CT				,	
+	9	+				(12345)	
+		+					
+							
3 R/W		+					
		20 BR		Terminal	Color Of	Control Name (Specification)	
		21 6		No.	Wire	olgilal ivallie [obecilication]	
		22 BR	- [For NISMO RS]	-	a	•	
		H	- [Except for NISMO RS]	2	>		
		73 B		~	ی		
		+		,	, ;		
		+		4	\$		
		25 R		5	BR		
		26 B	-				
		27 B					
		28 R					
		┝					
		ŀ	- [Except for NISMO RS]				
		╀	- [For NISMO RS]				
		200	[FOI MISMIC RS]				
		-		_			

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Connector Name	Connector No. Connector Name	one C	r13 CONDENSER	22 23	<b>&gt;</b> > <b>&gt;</b>	A/F SENSOR 1 ENGINE OIL TEMPERATURE SENSOR SENSOR POWER SUPPLY	77	≥ > 8	THROTTLE POSITION SENSOR 2 THROTTLE CONTROL RELAY BATTERY TEMPERATURE SENSOR
	Connector Type	П	M02FW-LC	25	. ω ≥	A/F SENSOR 1	8 8	H	DVATA
	1			33	۳	SENSOR GROUND	82	+	IGNITION SIGNAL NO.1
6	Š		Ţ	32	8	SENSOR GROUND	83	υ a	G SENSOR
2 3))				8 8	8 8	SHIELD	85	╀	EXHAUST VALVE TIMING CONTROL SOLENOID VALVE
J			7	39	R	SENSOR POWER SUPPLY	98	H	IGNITION SIGNAL NO.2
			]	41	Μ	TURBOCHARGER BOOST SENSOR	87	BR	SENSOR GROUND
	- 1	ľ		43	9	ENGINE OIL PRESSURE SENSOR	88	+	INTAKE AIR TEMPERATURE SENSOR 2
Signal Name [Specification]	Ja Ja	Color Of	Signal Name [Specification]	44	SB	SENSOR GROUND	8	+	IGNITION SIGNAL NO.3
	o -	Wire					92	æ 95	CRANKING ENABLE SIGNAL
	2	80		Connector No.	ır No.	F26	95	+	EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE
				Connector Name	ır Name	ECM			
	Connector No.		F25	Connector Type	ır Type	RH40FBR-RZ8-L-RH	Conne	Connector No.	F27
	Connector Name		ECM	q	-		Conne	Connector Name	TRANSMISSION RANGE SWITCH
		Π	100	厚					
	connector type	7	H40FB-KZ8-L-KH	HS		79 75 67 63 59 55	Conne	connector type	HKUSFG
	售					9490 86 82 74 62 58 54 50 85 81 77 77 60 53 40	F	_	«
¢	ΕS		433935 231915117 3				H.S.	જ	7161418
			38 22181410 6 2 41 339955211713 9 5 1	Toronion	Color				- ۲
				No.		Signal Name [Specification]			
				49	ŋ	FUEL INJECTOR DRIVER POWER SUPPLY 1			
	Terminal	Color Of	Signal Name [Specification]	20	в (	ECM GROUND (HIGH PRESSURE FUEL PUMP)	Terminal	nal Color Of	Df Signal Name [Specification]
Signal Name [Specification]	J.	a a	ECM GROTIND (FILELINIECTOR)	7 02	5 8	THROTTLE CONTROL MOTOR (CLOSE)	INO.	$^{+}$	
	2	8	ECM GROUND (FUEL INJECTOR)	23	8	FUEL INJECTOR DRIVER POWER SUPPLY 2	2	88	
	3	5	FUEL INJECTOR NO.1, 4 (HI)	\$	~	HIGH PRESSURE FUEL PUMP DRIVER POWER SUPPLY	Э	9	
	4	٨	FUEL INJECTOR NO.2, 3 (HI)	55	BR	HIGH PRESSURE FUEL PUMP (HI)	4	_	
	2	×	FUEL INJECTOR NO.1 (LO)	26	>	HIGH PRESSURE FUEL PUMP (LO)	2	ŋ	
	9	æ	FUEL INJECTOR NO.2 (LO)	88	9	SENSOR POWER SUPPLY	9	>	
	7	>	FUEL INJECTOR NO.3 (LO)	28	-	SENSOR GROUND	_	≥	
	00	~	FUEL INJECTOR NO.4 (LO)	09	≽	SENSOR GROUND	∞	>	
	0	>	SENSOR GROUND	62	-	SENSOR POWER SUPPLY			
	10	91 6	SENSOR GROUND	63	88 °	CAMSHAFT POSITION SENSOR (PHASE)			
	11	2 8	SENSON GROUND	\$ 5	2 2	EXHAUST VALVE THAING CONTROL BOSTION SENSOR			
	13	£ 0	MASS AID ELOW SENSOD	3	2 >	CONTROL DOWNER CONTROL			
	14	-	ENGINE COOLANT TEMPERATURE SENSOR	8 8	1	EVAP CANISTER VENT CONTROL VALVE			
	15	-	EVAP CONTROL SYSTEM PRESSURE SENSOR	72	g	SENSOR POWER SUPPLY			
	17	>	INTAKE AIR TEMPERATURE SENSOR 1	73	88	TURBOCHARGER BOOST CONTROL SOLENOID VALVE			
	18	GR	FUEL RAIL PRESSURE SENSOR	74	æ	SENSOR GROUND			
	10	4	REFRIGERANT PRESSURE SENSOR	7	ď	THROTTLE POSITION SENSOR 1			

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ENGINE Connector No.	INE CONT r No. F28	ENGINE CONTROL SYSTEM (MR FOR NISMO RS MODELS) Connector No. 728 Connector Name forester coclart Transcarcing stricks Connector Name forester Coclart Transcarcing stricks	MO RS MODELS)  Gamedor No. F133  Connector Name   gamedor co. 1 (entricone pareston)	Connector No. F35 Connector Name controcos to 3 territ rione mosostorio	Gometon No. F41. Cometon Mane Invast vuot transciousos suuri
Connector Type	П	E02FGY-RS	Connector Type E03FGY-RS	Connector Type E03FGY-RS	Connector Type E02FG-RS-LGY
H.S.			HS.	HS.	H.S.
		)			
Terminal No.	Color Of Wire	Signal Name [Specification]	Terminal   Color Of   Signal Name [Specification]   No.   Wire   1   1   1   1   1   1   1   1   1	Terminal   Color Of   Signal Name   Specification   No.   Wire   1   1   1   1   1   1   1   1   1	Terminal Color Of Signal Name [Specification]
7 7	. 91		2 2 B S	3 2 8 8	2 2 2
Connector No.	Pr No.				Connector No. F43
Connector Name		ELECTRIC THROTTLE CONTROL ACTUATOR	Connector No. F34	Connector No. F36	Ju e
Connector Type	П	RHOGFB		_	Connector Type RH03FB
Œ			Connector Type E03FGY-RS	Connector Type E03FGY-RS	
IIS.			[ ]		Hs.
		(123456)	13 (123)		(1213)
Terminal No.	Terminal Color Of No. Wire	Signal Name [Specification]	Terminal Color Of	Terminal Color Of	Terminal Color Of Signal Name [Specification] No. Wire
1	8	- [For NISMO RS]	No. Wire Signal Name (Specification)	No. Wire Signal Name [Specification]	1 SB
п г	S. S.	- [Except for NISMO RS]	1 [G		2 6
2 0	ś (c	- (For NISMO RS)	2 62	4 m	3 R - (For NISMO RS)
e	W				
4	ч				
2	В	- [Except for NISMO RS]			
2	BR	- [For NISMO RS]			
9	0	- [Except for NISMO RS]			
9	GR	- [For NISMO RS]			

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Connector No.   F66 Connector Name FUEL INVECTOR No. 2 Connector Type HS02FGY	Terminal Color Of   Signal Name [Specification]   No. Wire   Signal Name [Specification]   1 LG   File Name (Specification]   1 LG   File Name (Specification)   1 LG   File Name (Specificat	Sis [ ector No. F67  Ector Name FUEL INJECTOR  Ector Type HS02FGY	H.S. (12)	Terminal Cole Of   Signal Name [Specification]   No.   Wire   Signal Name [Specification]   1
Connector No. 156 Connector Name PAGK/ NELTRAL POSITION SWITCH Connector Type RR02759	Terminal   Color Of   Signal Name   Specification   No.   Wire   1 8R   2 58	Connector No.  Connector Name FUEL INVECTOR No. 1  Connector Type HSQXFGY	Terminal Color Of Signal Name (Specification)	1   G   - [Fr MSINO RS]     1   GR   - [Fr MSINO RS]     2   RR   - [For MSINO RS]     2   R   - [For MSINO RS]
MORS MODELS)  Connector None HIGH PRESSURE FUEL PUMP  Connector Name HIGH PRESSURE FUEL PUMP  CONNECTOR Type HSDPHGYVIR  HS	Terminal Color Of Signal Name (Specification)  10. Write Signal Name (Specification)  2 Y Y	Connector No. F54  Connector Type  Connector T	Terminal Color Of Signal Name (Specification)	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
ENGINE CONTROL SYSTEM (MR FOR NISMO RS MODELS)  Connector Name ENGINE OIL TEMPERATURE SENSOR  Connector Type  Connector Type  TAS  HS  HS  HS	Terminal   Cobr Of   Signal Name (Specification)   No. Wire	Connector No. 5:52  Connector Name BATTEN CLIRENT SENSOR  Connector Type SAZOLAFOY	Terminal Color Of Signal Name (Specification)	1 Y

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Color Of   Signal Name   Specification    Connector   Connector		Connector No. F70	Connector No.	F100	12	BR	•
Figure   Connector   Figure   Connector   Figure   Connector   Figure   Connector   Figure   Connector   Figure   Figu			Connector Name	TO LEAN CHONNING CONTROL SWINGL TO LEAN TRIBUTA	13	œ	- [For NISMO RS]
From the Control of	T	Т			13	>	- [Except for NISMO RS]
Fig. 10   Signal Name [specification]   Firminal Good of Signal Name [	٦	٦	Connector Type	E02FG-RS-LGY	14	œ	- [For NISMO RS]
Transition   Tra		1	q		14	SB	- [Except for NISMO RS]
Formula   Color Of   Signal Name   Specification   Formula   Signal Name   Specification   Formula   Signal Name   Specification   Signal Name   Signal Name   Signal Name   Specification   Signal Name   Signal N			厚		15	SB	
CT   Signal Name Specification   Terminal Color Of   Signal Name Specificati	Ę	<u> </u>	ě	Ę	16	œ ;	- [For NISMO RS]
Ferminal   Coord of   Signal Name   Specification    Ferminal Name   Specification    Ferminal   Coord of   Signal Name   Specification    Ferminal Name   Signal Name   Specification    Signal Name   Specification    Signal Name   Signal Name   Specification    Signal Name   Signal Name   Specification    Signal Name   Sign				(6)	16	gg.	- [Except for NISMO RS]
Figure   Connector Nume   Figure   Connector Nume   Con		((4 3 2 1))			17	œ 6	*
Frames   Coor of Terminal   Co					87	ž	
Formitial Gold Of   Signal Name   Specification   Formitial Gold Of   Signal Name   Specificat					19	# G	
Signal Name Specification   Terminal Gold Off   Signal Name Specification   Terminal Color Off   Signal Name Specification   Terminal Co					07	ž	
1	Signal Name	Color Of		Signal Name [Specification]	17	SQ.	- [FOT NISMO RS]
Fig. 10   Fig.	ılıe	+	+		71	ž ;	- [Except for NISMO RS]
Fig.		M -	+		77	3 4	
FEST		+	-		23	U	- [Except for NISMO RS]
FEST		$\dashv$			23	>	- [For NISMO RS]
FEATED ONVER SENSOR 2   Connector Name   TURBOCHARGER BLOST SENSOR   Connector Name   Conn		$\dashv$			24	9	- [Except for NISMO RS]
HEATED OXYGEN SENSOR 2   Connector Yape   Connector Yap			Connector No.	F101	24	Ь	- [For NISMO RS]
Signal Name   Specification    Terminal   Color Of   Signal Name   Specification    No.   Wire   Signal Name   S			Connector Name	JOINT CONNECTOR-F01			
Signal Name   Specification    Turninal Color Of Name   Signal Name		1	١				
Signal Name   Specification    Triminal   Color Of   Signal Name   Specification    No.   Wire   Signal Name   Specification    No.   No.	٦		-	SAA24FB-J	Connecto	-	F103
Signal Name   Specification   Terminal Color Of   Signal Name   Signal		T	đ		Connecto		JOINT CONNECTOR-F03
Signal Name   Specification    Terminal   Color Of   Signal Name   Specification    Terminal   Color Of   Signal Name   Specification    No.   Wire   Specification    No.   Signal Name   Signal Name   Specification    No.   Signal Name   Signal Name   Specification    No.   Signal Name   Signal		٦	45			Τ	6.00
Signal Name (Specification)   Terminal Color Of Signal Name (Specification)   No. Wire   No. Wire   Signal Name (Specification)   No. Wire   N	<u> </u>	₫.	S	0 0	Connecto	1	SAA24FB-J
Signal Name [Specification]   Terminal Color Of Signal Name [Specification]   No. Wire   No. Wire   Signal Name [Specification]   No. Wire   Signal Name [Specification]   No. Wire   Signal Name [Specification]   No. Wire   No. Wir		H.S.		21 20 19 18 17 16 15 14	便 H.S.		11 10 8 7 6 5 4 3 2 1
Signal Name (Specification)   Terminal Color Of Wire   Signal Name (Specification)   Terminal Color Of Wire   Signal Name (Specification)   1							24 23 22 21 20 19 18 16 15 14 13
Terminal Code Of Signal Name (Specification)   1	Signal Name			Signal Name [Specification]			
No   Wive   Signal Walfile   Patentiation   1   R   Friends   Freminal   Patentiation   1   R   Friends   Patentiation   1   Pat		Color Of	1 8	- [For NISMO RS]			
1   R		Wire	1 R	- [Except for NISMO RS]	Terminal	Color Of	3 3 3
1 W   - (Sking)*Fex NISMO, RS]   2 R   - (Bacept for NISMO, RS]   1   2   2   2   2   2   2   2   2   2			2 B	- [For NISMO RS]	No.		Signal Name [Specification]
2			2 R	- [Except for NISMO RS]	-	_	
W			ł		2	-	
Sign			F	- [For NISMO BS]	m	-	
V   - (Except for NISANO RS)   S   B   - (For NISANO RS)   S   S		88	ŀ	- [Except for NISMO RS]	4	GR	
S8   -		>	F	- [For NISMO RS]	5	g	
V   (For NISMO RS)   6   8   7   8   7   8   8   8   1   10   10   10   10   1		. 88		- [Except for NISMO RS]	9	GR	
7   6		^	ł		_	a,	
6   10   10   10   10   10   10   10			+			8 8	
0   0   0   0   0   0   0   0   0   0			+		×o !	2 1	
			+	-	10	SB	
P   - (Except for NISMO RS]   13   14   15   15   15   15   15   15   15			-	- [For NISMO RS]	11	SB	
B   - (For NISMO RS)   14				- [Except for NISMO RS]	13	٨	-
Y - (Except for NISMO RS)   15   15   15   16   17   17   17   17   17   17   17				- [For NISMO RS]	14	٨	
B - [For NISMO RS] 16			10 γ	- [Except for NISMO RS]	15	٨	
GC [3d OFWSIN ref received] and				- [For NISMO RS]	16	λ	
BK - Except for NSMC RS 18			11 BR	- [Except for NISMO RS]	18	9	

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Connector No. M34 Connector Name COMBINATION METER Connector Type TH40FW-NH  Elegan Plant Street  Elegan Plant Str	of VE	6   8R   F.HEL LEVEL SENSOR SIGNAL     7   7   8   7   8   7   8   8   8   8	38 G G G G G G G G G G G G G G G G G G G	15	24   FILELLEPELSENSOR GROUND
Connector No. M4 Connector Name BATA LINK CONNECTOR Connector Type BOJSFW  M.S. H.S. H.S. H.S. H.S. H.S. H.S. H.S.	○ <b>│                                    </b>	18 IG	Connector No. M33 Connector Name Covenivrion synrci (978A CARE) Connector Name TXOBIGN 1V	H3. 81823334	Terminal Color Of Signal Name (Specification)   No. Wire   Signal Name (Specification)   24 G
MO RS MODELS)  Connector No.  Connector Name  CAMSHAFT POSITION SENSOR  (AMSHAFT POSITION SENSOR	Terminal   Color Of   Signal Name   Specification   No.   Wire   Signal Name   Specification   1   GR   Foreignt for NISMO RS   2   1   1   1   1   1   1   1   1   1	Connector No. F110 Connector Name Downst wax mans combs rosmon strose	Connector Type 8H03F8	Terminal Color Of Signal Name (Specification)  No. Wire Signal Name (Specification)	99 2 2
Connector No.   Fig.   Connector No.   Fig.	Connector Name Into Country Country Page 18251-455-LGY	Terminal Color Of Signal Name [Specification] 1. G - Income for MINALO RSI		Connector No.  Connector Name CRANSHAFT POSITION SENSOR Connector Type RH03FB	Terminal   Color Of   Signal Name   Specification

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1M DEAD BADDS ANT.		EM (MK FOK NISMO KS MODELS)
Signature   Sign	State   Stat	Second Company   Seco
State   Stat	Signature   Sign	Second Continue
State   Stat		State   Stat
State   Stat	Signate   Sign	State   Stat
State   Stat	MODULE    SE   W   REMAINSHMENT;   SE   SE   W   REMAINSHMENT;   SE   SE   SE   Connector Non Width   SE   SE   SE   SE   SE   SE   SE   S	Signature   Sign
State   Stat	State   Stat	State   No.   No
Signature   Sign	SS   W   RIAM BANK ANT   SS   RIAM BANK ANT   SS	Size   W   RELAB RODON MATT   Size   W   RELAB RODON MATT   Size   W   RODON MATT   W   RODON MATT   RODON MATT   Size   W   RODON MATT   RODON MATT   W   RODON MATT   RODO
Size	State   Stat	SE   W   REAR BARRANT   SE   REAR BARRANT
State   Stat	State   Stat	State   Stat
Size	State   Stat	State   Stat
State   Stat	State   Stat	State   Stat
State   Stat	State   Stat	State   Stat
State   Stat	State	State   Stat
State   Stat	State   Stat	State   Stat
State   Stat	State   Stat	1
State   Stat	State   Stat	1
1	State   Stat	Main
State   Stat	State   Stat	1
State   Stat	State   Stat	1
1	State   Stat	1
State   Stat	State   Stat	1
State   Stat	State   Stat	State   Windows Mark   State   State   Windows Mark   State   State   Windows Mark   State   State   State   Windows Mark   State   Stat
State   Stat	State   Stat	1
State   Stat	State   Stat	State   Stat
State   Stat	State   Stat	Main
1	State   Stat	1
State   Stat	State   Stat	State   Stat
State   Stat	State   Stat	Main
State   Recommendation   State   Recommendation   State   Recommendation   State   S	State   Stat	State   W   REAR BANPA MAIT   State   State   State   REAR BANPA MAIT   State   St
State   Stat	State   Stat	State   Stat
State   Stat	State   Stat	State   Stat
State   Stat	State   Wildle   Wilson   Wi	State   Stat
State   Stat	State   W   RIAMBANATITIS   STATE REPORTANTITIS   STATE REPORTAN	State   Stat
State   Bit   Recomplementary   State   Bit   Recomplementar	St.   W   RIAMBANATT,   ST.   P     Connector No.   MVP9	State   Stat
State   Stat	St.   W   FRANKHONINAMIT.   37   P     Connector No.   M/P9	State   Stat
State   Stat	St.   W   Fields Block Marth   St.   P   Connector No.   Milk Plant Plant   St.   P   Connector No.   Milk Plant Plant   St.   Connector No.   Milk Plant Plant   St.   Connector No.   Milk Plant P	State   Stat
State   Stat	SS   W   FIGH BURN MATT   SS   P     Connector No.   MP9	State   Stat
SS   SS   FIGHER AND NOTITE   SS   FIGHER AN	State   W   Fields Block Martin   State   W   Fields Block Martin   State   W   Connector No.   May     State   Stat	State   Stat
State   Stat	State   W   RIAMBRINANTH,   37   P     Connector No.   M/P9	State   Stat
SS   SS   FOR THE PROPERTY	SS   W   Fields Bright Martin   SS   R   P   P   P   P   P   P   P   P   P	State   Stat
SS   B   RANGINGHAMT   SS   R   ROOM ANT   ROOM ANT   SS   R   ROOM ANT   ROOM AN	St.   W   RIAMBONIANTI,   37   P     Connector No.   M/H To WINDOW MATE   1   1   1   1   1   1   1   1   1	St. W   REAR BANK ANT.   ST. P   P   Connector No.   MATE TO WILLIAM ANT.   ST. M.   Connector No.   MATE TO WILLIAM ANT.   ST. M.   Connector No.   MATE TO WILLIAM ANT.   ST. M.   Connector No.   Connect
State   Stat	St.   W   FLAR BUNDA MATH.   37   P     Connector You   M/79	State   Stat
1	State   Stat	State   Stat
SS   B   REARBENDEARTY   SS   R   Connector Man   SS   CS   CS   CS   CS   CS   CS   C	SS   W   RIAMBINANTI, 37   P   Connector No.   MINTO	State   Stat
SS   B   REALBURHANT:	St.   W   RIAMBINIMARTH,   37   P     Connector No.   M/F9	St. W   REAR BANK ANT.   ST. P   P   Connector No.   MJ9
State   Stat	St.   W   FLAR BUNDA MATT.   37   P     Connector No.   M/79	St. W   REAR BANK ANT 1   ST. P   P   Connector No.   MJ9
State   Stat	State   Stat	St. W   REAR BANPR ANT   ST. P   P   Connector No.   W19
S	SS   W   RIAMBINANTI- 37   P   Connector No.   MIVE TO	St.   W   REAR BANPE ANT:   St.   R     Connector No.   W179
SS	SS   W   FLARA BUMPA ANT 1	State   W   REAR BRINGH ANT   STATE
SS   SF   REARBENDE ANT 1   SS   R   REARBENDE ANT 1   SS   R   Connector Name   WIRE TO WIR	SS   W   FLAR BUNK ANT -   SS   P   -	SS   W   REAR BROWN ANT 1   SS   R   Connector No.   MATE TO WIRE TO
SS   8   REACH BURN ANT 1   SS   1   Commerce of Plane   Commerc	SS   W   FLAME MANTANT+   SS   P   Connector No.   M/79	State   Stat
SS   8   REACHBORN ANT 1   SS   8   REACHBORN ANT 1   SS   1   Connector Name   WIRE TO WIRE	SS   W   FLAMBRING ANT;   SS   P   Connector No.   M/5	State   Stat
S3   8   REARBONNE ANT 1   23   R   REARBONNE ANT 1   25   R     Connector Type   Tri 27PV-NH	S2   W   FLAR BUMPA ANT 1	S2 W   RGAR BNUPR ANT+   S2 R   Cornector No.   M/79     S8 B   RADAMAT 1+   S4 SR   Cornector Name   W/18 TO W/18 TO W/18     S8 GR   RODAMAT 2+   S4 SR   Cornector Name   W/18 TO
S	SS   W   FLAMB MATH.   ST   P	S2 W   Riche Mart.   S2 R   Connector No.   Mart.
SS   ST   TOTAL MATERIAL MAT	S2 W   FLAMB MATH ANTI-    37 P   P     Connector No.   M/79	S2 W   REAR BANDER ANT   S2 R   Connection No.   1979   P   Connection No.   1979
S3   8   RACE BOMP ANT 1   23   R   RODM ANT 1   25   R   Connector Name   WIRE TO W	S2 W RAMBMATT-	S2 W   RIGHE BNOPE ANT   S2 R   Connector No.   N/79
S3   8   REALBURNE ANT 1   23   R   REALBURNE ANT 1   25   R     Connector Type   THIZPWANH   THIZPW	S2   W   FILAMBRINARATI-   37   P	S2 W   RGAR BNUPR ANT+   S2 R   Cornector No.   W/79
S	SS   W   FLAR BUNDA MATT   ST   P	SS   W   REAR BANDH ANT   SS   R   Connector No.   M79
Si	SS   W   FLAR BURNER ANT-   SS   P	S2 W   Riche Biolen Anti-   S2 R   Connector No.   Maria   Connector No.   Maria   Connector No.   Maria   Connector No.   C
Si	S3 W RIAMBWRANT+	S2 W   RIGHE BANTH ANT   S2 R   Connector No.   NATIONAL MATT.   S4 SR   RIGHE BANTH ANT   S2 R   Connector Name   WHEE TO WHEE   CONNECTOR NAME   C
SS   B   REALBUMP ANT   SS   R   RODA ANT   SS   R   R   RODA ANT   SS   R   R   RODA ANT   R   R   R   R   R   R   R   R   R	S2 W RIAMBWANTH	S2 W   RIGHE BN/PP ANT+   37 P   Connector No.   N/P3     S3 B   RARAB BN/PANT+   52 R     Connector Name   WHE TO WHE E     S5 GR   RODA ANT 1
S2	S2 W   Filtra Binth Auft.   37 P	S2 W   REAR BINPE ANT   52 R   Connector No.   M79
SS   BY   RANDAMATT:   SZ   R   Connector Name   SS   GR   ROOMANT:   SZ   R   Connector Name   SS   GR   ROOMANT:   SZ   SZ   Connector Name   SS   Connector Name   SS   Connector Name   SS   Connector Name   SZ   SZ   Connector Name   SZ   SZ   Connector Name   SZ   SZ   Connector Name   SZ   SZ   SZ   SZ   Connector Name   SZ   SZ   SZ   SZ   Connector Name   SZ   SZ   SZ   SZ   SZ   SZ   SZ   S	S2 W   REAR BINPER ANT.   S2 R   Connector No.	S2 W   REAR BANPR ANT.   S2 R   Connector No.
Size   Franciscon Production   Size	S2 W   REAR BINPS ANT.   S2 R   Connector No.	S2 W   REAR BARPH ANT   S2 P   Connector No.
SS	S2 W   REAR BINDR ANT.   52 R   Connector No.	S2 W   REAR BAPPR ANT:   37 P   Connector No.
SS   W   Commerced from   SS   R   Commerced from	S2 W   REAR BINPR ANT+ 37 P	S2   W   REAR BANPR ANT   S2   P   Cornector No.
S2   B   RAMBHEATH.   S2   R   Connector Name   S2   R   Connector Name   S2   R   Connector Name   S2   CAN   Connector Name   S2   CAN   CONNECTOR Name   S2   CAN   CONNECTOR Name   S2   CAN   CONNECTOR Name   Connector Nam	S2 W   REAR BINKFART+   S7 P   Connector No.	S2   W   REAR BAPPR ANT+   37   P     Connector No.
S2   B   RAM BURNATH   S2   R   Connector Nume   S2   R   Connector Nume   S2   C   Connector Nume   S3   C   Connector Nume   S4   S4   Connector Nume   S4   S4   Connector Nume   S5   C   Connector Nume   S4   S4   S4   S4   Connector Nume   S5   S4   S6   Connector Nume   S6   C   Connector Nume   S6   C   Connector Nume   Connector Type	S2 W   REAR BUNPE ANT:   S2 R	S2 W   REAR BAPP ANT-   37 P   Connector No.
S2   87   RAMBURANT.   S2   R   Connector Type	S2 W   REAR BUNPA AATT,   S2 R   Connector No.	82         W         REAR BMPR ANT*         37         P         -         Connector No.           83         B         REAR BMPR ANT*         52         R         -         Connector No.           84         BR         ROOM ANT*         53         I.         -         Connector Name           85         GR         ROOM ANTT*         54         55         P         Connector Type           86         V         ROOM ANTT*         55         P         Connector Type
83         F         Programment         F         Programment	82         W         REAR BINPR ANT+         37         P         -         Connector No.           83         B         R RADOM ANT 1+         52         R         -         Connector Name           84         BR         RODOM ANT 1+         53         1         -         Connector Name           85         CM         RODOM ANT 3+         55         P         -         Connector Type	82         W         REAR BRING ANT 1         37         P         Connector No.           83         B         ROAM ANT 1+         53         I         Connector Name           84         B         ROAM ANT 1+         53         I         Connector Name           85         GR         ROAM ANT 3+         54         SB         Connector Type           86         V         ROAM ANT 3+         55         P         Connector Type
Size   W	8.2         W         REAR BINPR ANT+         3.7         P         -         Connector No.           8.3         B         REAR BINPR ANT+         5.2         R         -         Connector Name           8.4         BR         ROOM ANT1+         5.3         1.         Connector Name           8.5         GR         ROOM ANT1-         5.4         5.6         -         Connector Type           8.6         V         ROOM ANT2+         5.5         P         -         Connector Type	82         W         REAR BARPR ANT 1         37         P         P         Connector No.           83         B         RASAB BARPR ANT 1         53         I.         Connector Name           84         B         ROOM ANT 1+         53         I.         Connector Name           85         GR         ROOM ANT 1+         54         5B         Connector Type           86         V         ROOM ANT 2+         55         P         Connector Type
SS	8.2         W         REAR BINER ANT.         3.7         P         -         Connector No.           8.3         B         REAR BINER ANT.         5.2         R         -         Connector Name           8.4         BR         RODMANT1+         5.3         L         -         Connector Name           8.5         GR         RODMANT1-         5.4         SB         -         Connector Name	82         W         REAR BANPR ANT*         37         P         .         Grimector No.           83         B         REAR BANPR ANT         52         R         .         Connector Name           84         B         ROOM ANT 1+         53         L         .         Connector Name           85         GR         ROOM ANT 1+         54         SB         .         Connector Type
6.2         B         RAMBBHRAIT         52         R         Connector Name           8.4         BR         ROOMANTT         53         1         Connector Name           8.5         GR         ROMANTT         54         SS         Connector Type	82         W         REAR BINFR ANT.         37         P         -         Connector No.           83         B         REQMEMENT.         52         R         -         Connector Name           84         BR         RODMANT1+         53         L         -         Connector Name           65         GR         RODM ANT1.         54         58         C         Connector Type	82         W         REAR BAPPR ANT*         37         P         -         Gornector No.           83         B         REAR BAPPR ANT.         52         R         -         Gornector Name           84         B         ROOM ANT.1+         53         I         -         Gornector Name           65         GR         ROOM ANT.1-         54         58         Gramedor Type         Gornector Type
83         B         RARABURATH         52         R         Connector Num           84         BR         ROOMANT1-         54         R         .	82         W         REAR BINFR ANT-         37         P         -         Connector No.           83         B         REQUINANT 1+         53         I         -         Connector Name           84         R         RODOM ANT 1+         53         I         -         Connector Name           85         GR         RODOM ANT 1-         54         54         56         -         Connector Type	82         W         REAR BMPR ANT*         57         P         -         Connector No.           83         B         REAR BMPR ANT*         52         R         -         Connector Name           84         R         ROOM ANT*         53         I         -         Connector Name           85         GR         ROOMANTT*         54         SB         Connector Name
8.2         B         RARABURANT         52         R         Connector Name           8.4         BR         ROOMANT1-         5.3         I         .         Connector Name           8.5         GR         ROOMANT1-         5.4         S         .         Connector Name	82         W         TRANBURPRANT:         52         R         -         Connector No.           83         B         RADOMANT:         52         R         -         Connector No.           84         B         ROOMANT:         54         R         -         Connector Nume           85         GR         ROOMANT:         54         SB         Connector Type	82         W         REAR BMPR ANT+         37         P         Connector No.           83         B         REAR BMPR ANT-         52         R         Connector No.           84         BR         ROOM ANT1+         53         L         Connector Name           85         GR         ROMANT1-         54         SB         Connector Type
S2   F	S2 W   REAR BUNPA AATT;   S2 R   Connector No.	82         W         REAR BMPR ANT+         57         P         Connector No.           83         B         REAR BMPR ANT-         52         R         .         Connector No.           84         BR         ROOM ANTT-+         53         L         .         Connector Name           85         GR         ROOM ANTT-+         54         Sh         Connector Tope
S2   F	S2 W REAR BINPERANT.   S2 R   Connector No.	82         W         REAR BN/PR ANT+         37         P         -         Connector No.           83         B         REAR BN/PR ANT-         52         R         -         Connector Name           84         BR         ROOMANT+         53         L         -         Connector Name
83 8 REAR BINETATIVE 52 R Connector Name S48 BR ROMANT1+ 53 L	82         W         REAR BING PRIATH         37         P         -         Connector No.           83         B         REAR BING PRIATT         52         R         -         Connector Name           84         BR         RODM AMT14         53         L         -         Connector Name	82         W         REAR Brief ANT         37         P         .         Corrector No.           83         B         REAR BRIEF ANT         53         R         .         Corrector Name           84         B         ROAM ANT 14         53         I         .         Corrector Name
62         F         COMPACTOR NATE         37         F         Commerce or no commerce	82         W         REAR BINPR ANT+         37         P         -         Connector No.           83         B         REAR BINPR ANT         52         R         -         Connector Name           84         B         RODWART1+         53         I         -         Connector Name	82         W         REAR BARPR ANT 1         37         P          Connector No.           83         BR         RODAN ANT 34         53         R          Connector Name
62         F ARAD BINE ANT         37         R         Connector Name           83         B         REABBLING ANT         5.2         R         .         Connector Name           84         R         ROTHMATT +         5.3         I         .         Connector Name	8.2         W         REAR BNPR ANT- TABLE BNPR ANT- TABLE BNPR ANT- TABLE RODAMTT+         5.2         R         .         Connector No.	82         W         REAR BAPPR ANT*         37         P         Connector No.           83         B         REAR BAPPR ANT*         52         R         .         Connector Name           84         R         RODAM ANT*         53         I         .         Connector Name
83 6 REARBMPRANT 52 R Connector Name	82         W         REAR BAPPRANT+         37         P         .         Connector No.           83         B         REAR BAPPRANT-         52         R         .         Connector Name	82         W         REAR BMPR ANTH         37         P         Connector No.           83         B         REAR BMPR ANT.         52         R         Connector Name
0	8.2         W         REAR BMPR ANT+         37         P         -         Connector No.           83         B         REAR BMPR ANT-         52         R         -         Connector Navas	82         W         REAR BWPR ANTH         37         P         Connector No.           83         B         REAR BMPR ANT.         52         R         R         Connector No.
22   W   TAZINDER ANT   57   P   CONTRICTOR NO.	82         W         FRAB MPR ANT 1         37         P         -         Connector No.           83         R         BEAR RANDE ANT.         57         P         -         Connector No.	82 W REARBANPANT 37 P - Connector No.
W NEW DIVINITY 37 F	W REAR BMPR ANT+ 37 P - Connector No.	REAR BMPR ANT+ 37 P - Connector No.
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M (MR FOR NISMO RS MODELS)	ENGINE CONTROL SYSTEM (MR FOR NISMO RS MODELS)	

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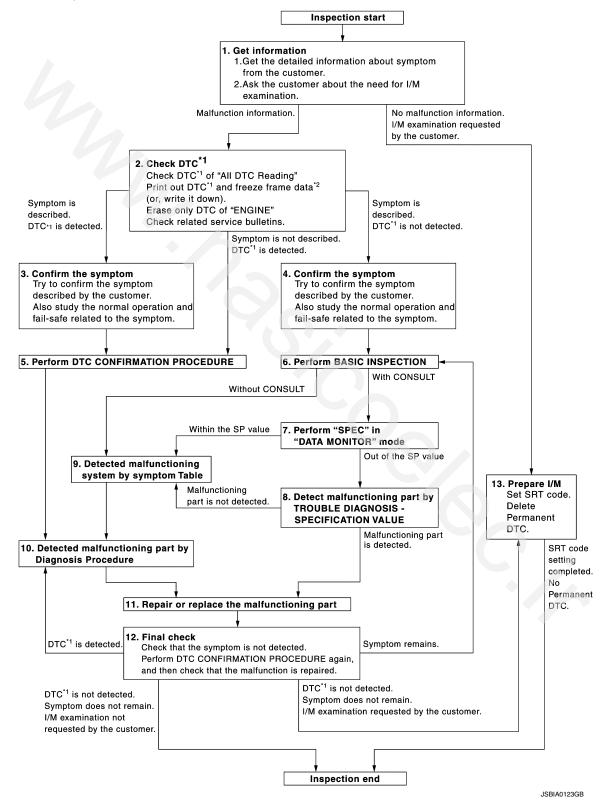
Color Of Wire Signal Name [Specification]  R W  B B  C G C  Y Y  Y Y		
M136 NONT CONNECTOR AND? NH20RL-DC 8 7 6 5 4 3 2 1 1 10 120 19 18 17 19 15 14 13 12 11 10 20	Color Of Virginia Name [specification]  P P	
DDELS)	Connector  Connector	
ENGINE CONTROL SYSTEM (MR FOR NISMO RS MODELS)    13	Name [Specification]	
ENGINE C Connector No. Connector Name Connector Type H.S.	Terminal Color O   Note   No	JRBWD6987GB

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## DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

#### OVERALL SEQUENCE



#### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## $1.\mathsf{GET}$ INFORMATION FOR SYMPTOM

1. Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the "Diagnostic Work Sheet". (Refer to EC-151, "Diagnostic Work Sheet".)

Ask if the customer requests I/M examination.

Malfunction information, obtained>>GO TO 2.

No malfunction information, but a request for I/M examination>>GO TO 13.

## 2.CHECK DTC

- Check DTC.
- Perform the following procedure if DTC is displayed.
- Record DTC and freeze frame data. (Print them out with CONSULT or GST.)
- Erase only DTC of "ENGINE".
- (A) With CONSULT: "How to Erase DTC and 1st Trip DTC" in EC-84, "CONSULT Function".
- Without CONSULT: "How to Erase Self-diagnostic Results" in EC-81, "On Board Diagnosis Function".
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Matrix Chart is useful. Refer to EC-576, "Symptom Table".)
- Check related service bulletins for information.

#### Are any symptoms described and any DTCs detected?

Symptom is described, DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

## 3.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer (except MIL ON).

Also study the normal operation and fail-safe related to the symptom. Refer to EC-583, "Description" and EC-111, "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

### f 4.CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail-safe related to the symptom. Refer to Refer to EC-576, "Symptom Table" and EC-111, "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

## ${f 5}$ .PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the displayed DTC, and then check that DTC is detected

If two or more DTCs are detected, refer to EC-113, "DTC Inspection Priority Chart" and determine trouble diagnosis order.

#### NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIR-MATION PROCEDURE.

#### Is DTC detected?

YES >> GO TO 10.

NO >> Check according to GI-45, "Intermittent Incident".

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#### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## 6.PERFORM BASIC INSPECTION

Perform EC-153, "Work Procedure".

#### Do you have CONSULT?

YES >> GO TO 7. NO >> GO TO 9.

## 7.PERFORM SPEC IN DATA MONITOR MODE

#### (P)With CONSULT

Check that "MAS A/F SE-B1", "MAS A/F SE-B2", "B/FUEL SCHDL", "A/F ALPHA-B1" and "A/F ALPHA-B2" are within the SP value using "SPEC" in "DATA MONITOR" mode with CONSULT. Refer to <u>EC-180</u>, "Component Function Check".

#### Is the measurement value within the SP value?

YES >> GO TO 9. NO >> GO TO 8.

## 8.DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Detect malfunctioning part according to EC-181, "Diagnosis Procedure".

#### Is a malfunctioning part detected?

YES >> GO TO 11. NO >> GO TO 9.

## $9.\mathsf{DETECT}$ MALFUNCTIONING SYSTEM BY SYMPTOM TABLE

Detect malfunctioning system according to <u>EC-576</u>, "Symptom Table" based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptoms.

>> GO TO 10.

## 10. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

#### NOTE:

The Diagnosis Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnosis Procedure. For details, refer to GI-48, "Circuit Inspection".

#### Is a malfunctioning part detected?

YES >> GO TO 11.

NO >> Monitor input data from related sensors or check voltage of related ECM terminals using CON-SULT. Refer to EC-96, "Reference Value".

## 11. REPAIR OR REPLACE THE MALFUNCTIONING PART

- 1. Repair or replace the malfunctioning part.
- 2. Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
- 3. Check DTC. If DTC is displayed, erase it. Refer to the following.
  - (F) With CONSULT: "How to Erase DTC and 1st Trip DTC" in EC-84, "CONSULT Function".
  - Without CONSULT: "How to Erase Self-diagnostic Results" in EC-81, "On Board Diagnosis Function".

>> GO TO 12.

## 12. FINAL CHECK

When DTC was detected in step 2, perform DTC CONFIRMATION PROCEDURE or Component Function Check again, and then check that the malfunction have been completely repaired.

When symptom was described from the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

#### Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 10.

YES-2 >> Symptom remains: GO TO 6.

#### < BASIC INSPECTION >

#### [MR FOR NISMO RS MODELS]

- NO-1 >> No request for I/M examination from the customer: Before returning the vehicle to the customer, always erase unnecessary DTC in ECM and TCM ((a)With CONSULT: Refer to "How to Erase DTC and 1st Trip DTC" in <a href="EC-84">EC-84</a>, "CONSULT Function", (a)Without CONSULT: Refer to "How to Erase Self-diagnostic Results" in <a href="EC-81">EC-81</a>, "On Board Diagnosis Function"). If the completion of SRT is needed, drive vehicle under the specific driving pattern. Refer to <a href="EC-169">EC-169</a>, "SRT Set Driving Pattern"
- NO-2 >> I/M examination, requested from the customer: GO TO 13.

## 13. PREPARE FOR I/M EXAMINATION

- 1. Set SRT codes, Refer to EC-168, "Description".
- 2. Erase permanent DTCs. Refer to EC-174, "Description".

#### >> INSPECTION END

### Diagnostic Work Sheet

## DESCRIPTION

There are many operating conditions that lead to the malfunction of engine components. A good grasp of such conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about symptoms. It is important to fully understand the symptoms or conditions for a customer complaint.

Utilize a diagnostic worksheet like the WORKSHEET SAMPLE below in order to organize all the information for troubleshooting. Some conditions may cause the MIL to illuminate or blink, and DTC to be detected. Examples:

- Vehicle ran out of fuel, which caused the engine to misfire.
- Fuel filler cap was left off or incorrectly screwed on, allowing fuel to evaporate into the atmosphere.

#### **KEY POINTS**

WHAT ..... Vehicle & engine model
WHEN ..... Date, Frequencies
WHERE..... Road conditions
HOW ..... Operating conditions,
Weather conditions,
Symptoms

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< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## **WORKSHEET SAMPLE**

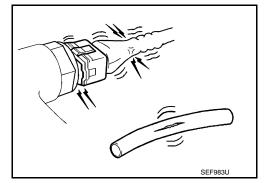
Customer name MR/MS		Model & Year	VIN	
Engine #		Trans.	Mileage	
Incident Date		Manuf. Date	In Service Date	
Fuel and fuel filler cap		☐ Vehicle ran out of fuel causing misfire ☐ Fuel filler cap was left off or incorrectly screwed on.		
	☐ Startability	☐ Impossible to start ☐ No combus ☐ Partial combustion affected by th ☐ Partial combustion NOT affected ☐ Possible but hard to start ☐ Other	nrottle position I by throttle position	
Symptoms	□ Idling	☐ No fast idle ☐ Unstable ☐ H☐ Others [	ligh idle □ Low idle ]	
Cymptomo	☐ Driveability	☐ Stumble ☐ Surge ☐ Knock☐ Intake backfire ☐ Exhaust backfi☐ Others [	☐ Lack of power re ]	
	☐ Engine stall	☐ At the time of start ☐ While idling ☐ While accelerating ☐ While dece ☐ Just after stopping ☐ While loadi	lerating	
Incident occurrence		☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐ In the daytime		
Frequency		☐ All the time ☐ Under certain cond	ditions	
Weather cond	litions	☐ Not affected		
	Weather	☐ Fine ☐ Raining ☐ Snowing	Others [	
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐	] Cold ☐ Humid °F	
		☐ Cold ☐ During warm-up ☐ A	After warm-up	
Engine conditions		Engine speed 2,000	4,000 6,000 8,000 rpm	
Road conditions		☐ In town ☐ In suburbs ☐ Hig	hway	
Driving conditions		☐ While accelerating ☐ While cruis ☐ While decelerating ☐ While turni	S	
		Vehicle speed 0 10 20	30 40 50 60 MPH	
Malfunction indicator lamp		☐ Turned on ☐ Not turned on		

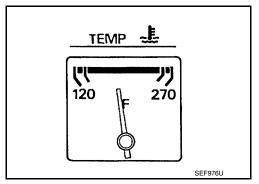
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Work Procedure

## 1.INSPECTION START

- 1. Check service records for any recent repairs that may indicate a related malfunction, or a current need for scheduled maintenance.
- 2. Open engine hood and check the following:
- Harness connectors for improper connections
- Wiring harness for improper connections, pinches and cut
- Vacuum hoses for splits, kinks and improper connections
- Hoses and ducts for leaks
- Air cleaner clogging
- Gasket
- 3. Confirm that electrical or mechanical loads are not applied.
- Headlamp switch is OFF.
- Air conditioner switch is OFF.
- Rear window defogger switch is OFF.
- Steering wheel is in the straight-ahead position, etc.
- Start engine and warm it up until engine coolant temperature indicator points the middle of gauge. Ensure engine stays below 1,000 rpm.

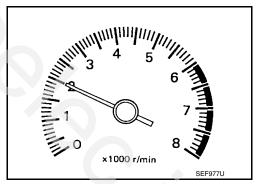




- 5. Run engine at about 2,000 rpm for about 2 minutes under no load.
- Make sure that no DTC is displayed with CONSULT or GST.

### Is any DTC detected?

YES >> GO TO 2. NO >> GO TO 3.



## 2.REPAIR OR REPLACE

Repair or replace components as necessary according to corresponding Diagnostic Procedure.

>> GO TO 3.

## 3.CHECK TARGET IDLE SPEED

1. Run engine at about 2,000 rpm for about 2 minutes under no load.

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#### < BASIC INSPECTION >

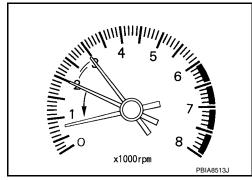
#### [MR FOR NISMO RS MODELS]

- 2. Rev engine (2,000 to 3,000 rpm) two or three times under no load, then run engine at idle speed for about 1 minute.
- 3. Check idle speed.

For procedure, refer to <u>EC-584, "Inspection"</u>. For specification, refer to <u>EC-591, "Idle Speed"</u>.

#### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 4.



## 4. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- Stop engine.
- 2. Perform EC-160, "Description".

>> GO TO 5.

## 5. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-161, "Description".

>> GO TO 6.

## 6. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-162, "Description".

#### Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 7.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

## 7. CHECK TARGET IDLE SPEED AGAIN

- 1. Start engine and warm it up to normal operating temperature.
- 2. Check idle speed.

For procedure, refer to EC-584, "Inspection".

For specification, refer to EC-591, "Idle Speed".

#### Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

## 8.DETECT MALFUNCTIONING PART

#### Check the Following.

- Check camshaft position sensor (PHASE) and circuit. Refer to <u>EC-346, "DTC Logic"</u>.
- Check crankshaft position sensor (POS) and circuit. Refer to EC-343, "DTC Logic"

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace. Then GO TO 4

## 9. CHECK ECM FUNCTION

- 1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- 2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to SEC-47, "ECM: Description".

>> GO TO 4.

## 10. CHECK IGNITION TIMING

Run engine at idle.

#### < BASIC INSPECTION >

#### [MR FOR NISMO RS MODELS]

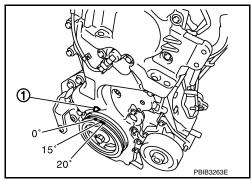
Check ignition timing with a timing light. For procedure, refer to EC-585, "Inspection" For specification, refer to EC-591, "Ignition Timing".

1 : Timing indicator

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> GO TO 11.



## 11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- Stop engine.
- 2. Perform EC-160, "Description".

>> GO TO 12.

## 12. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-161, "Description".

>> GO TO 13.

## 13. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-162, "Description".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 14.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

## 14. CHECK TARGET IDLE SPEED AGAIN

- Start engine and warm it up to normal operating temperature.
- Check idle speed.

For procedure, refer to EC-584, "Inspection".

For specification, refer to EC-591, "Idle Speed".

#### Is the inspection result normal?

YES >> GO TO 15.

NO >> GO TO 17.

## 15.check ignition timing again

Run engine at idle.

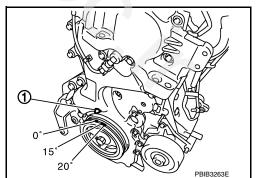
Check ignition timing with a timing light. For procedure, refer to EC-585, "Inspection". For specification, refer to EC-591, "Ignition Timing".

1 : Timing indicator

### Is the inspection result normal?

YES >> INSPECTION END.

NO >> GO TO 16.



## 16. CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to EM-76, "Exploded View".

Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair the timing chain installation. Then GO TO 4.

**EC-155 Revision: November 2015 2016 JUKE**  EC

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#### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## 17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-346, "DTC Logic".
- Check crankshaft position sensor (POS) and circuit. Refer to <u>EC-343</u>, "<u>DTC Logic</u>".

#### Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace. Then GO TO 4

## 18. CHECK ECM FUNCTION

- 1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- 2. Perform initialization of NVIS (NATS) system and registration of all NVIS (NATS) ignition key IDs. Refer to SEC-47, "ECM: Description".

>> GO TO 4.

### ADDITIONAL SERVICE WHEN REPLACING ECM

< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## ADDITIONAL SERVICE WHEN REPLACING ECM

Description INFOID:0000000012197716

When replacing ECM, the following procedure must be performed. (For details, refer to EC-157, "Work Procedure".)

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#### PROGRAMMING OPERATION

NOTE:

After replacing with a blank ECM, programming is required to write ECM information. Be sure to follow the procedure to perform the programming.

> D INFOID:0000000012197717

### Work Procedure

## 1. SAVE ECM DATA

(P)With CONSULT

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- Select "SAVING DATA FOR REPLC CPU" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- Follow the instruction of CONSULT display.

#### NOTE:

- Necessary data in ECM is copied and saved to CONSULT.
- Go to Step 2 regardless of with or without success in saving data.

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>> GO TO 2.

## 2.CHECK ECM PART NUMBER

Check ECM part number to see whether it is blank ECM or not.

#### NOTE:

- Part number of blank ECM is 23703 xxxxx.
- Check part number when ordering ECM or the one included in the label on the container box.

Is the ECM a blank ECM?

YES

>> GO TO 3. NO >> GO TO 5.

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## 3.SAVE ECM PART NUMBER

Read out the part number from the old ECM and save the number, following the programming instructions. Refer to "CONSULT Operation Manual".

#### NOTE:

- The ECM part number is saved in CONSULT.
- Even when ECM part number is not saved in CONSULT, go to 4.

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>> GO TO 4.

## 4.PERFORM ECM PROGRAMMING

After replacing ECM, perform the ECM programming. Refer to "CONSULT Operation Manual".

#### NOTE:

- Refer to <u>EC-590</u>, "Removal and Installation" for replacement of ECM.
- During programming, maintain the following conditions:
- Ignition switch: ON
- Electric load: OFF
- Brake pedal: Not depressed
- Battery voltage: 12 13.5 V (Be sure to check the value of battery voltage by selecting "BATTERY VOLT" in "Data monitor" of CONSULT.)

>> GO TO 6.

## 5.REPLACE ECM

EC-157 **Revision: November 2015 2016 JUKE** 

#### ADDITIONAL SERVICE WHEN REPLACING ECM

< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

Replace ECM. Refer to EC-590, "Removal and Installation".

>> GO TO 6.

**6.**PERFORM INITIALIZATION OF NVIS (NATS) SYSTEM AND REGISTRATION OF ALL NVIS (NATS) IGNITION KEY IDS

Refer to SEC-47, "ECM: Description".

>> GO TO 7.

7. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-160, "Description".

>> GO TO 8.

8. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-161, "Description".

>> GO TO 9.

9. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-162, "Description".

>> GO TO 10.

10. PERFORM G SENSOR CALIBRATION

Refer to EC-164, "Description".

>> END

### VIN REGISTRATION

[MR FOR NISMO RS MODELS]

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# < BASIC INSPECTION > VIN REGISTRATION Α Description INFOID:0000000012197718 VIN Registration is an operation to registering VIN in ECM. It must be performed each time ECM is replaced. EC Refer to EC-159, "Work Procedure". NOTE: Accurate VIN which is registered in ECM may be required for Inspection & Maintenance (I/M). Work Procedure INFOID:0000000012197719 1. CHECK VIN D Check the VIN of the vehicle and note it. Refer to GI-36, "Information About Identification or Model Code". Е >> GO TO 2. 2. PERFORM VIN REGISTRATION (I) With CONSULT F Turn ignition switch ON and engine stopped. Select "VIN REGISTRATION" in "WORK SUPPORT" mode of "ENGINE". Follow the instruction of CONSULT display. >> END Н Ν

## ACCELERATOR PEDAL RELEASED POSITION LEARNING

< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## ACCELERATOR PEDAL RELEASED POSITION LEARNING

Description INFOID:000000012197720

Accelerator Pedal Released Position Learning is a function of ECM to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected. Refer to <a href="EC-160">EC-160</a>, "Work <a href="Procedure"</a>.

Work Procedure

## 1.START

- 1. Make sure that accelerator pedal is fully released.
- 2. Turn ignition switch ON and wait at least 2 seconds.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON and wait at least 2 seconds.
- 5. Turn ignition switch OFF and wait at least 10 seconds.

>> END

### THROTTLE VALVE CLOSED POSITION LEARNING

< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## THROTTLE VALVE CLOSED POSITION LEARNING

Description INFOID:0000000012197722

Throttle Valve Closed Position Learning is a function of ECM to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time the harness connector of the electric throttle control actuator or ECM is disconnected or electric throttle control actuator inside is cleaned. Refer to EC-161, "Work Procedure".

Work Procedure INFOID:0000000012197723

## 1.START

#### (A) With CONSULT

- Turn ignition switch ON.
- 2. Select "CLSD THL POS LEARN" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 3. Follow the instructions on the CONSULT display.
- Turn ignition switch OFF and wait at least 10 seconds. Check that throttle valve moves during the above 10 seconds by confirming the operating sound.

#### **♥Without CONSULT**

Start the engine.

#### NOTE:

Engine coolant temperature is 25°C (77°F) or less before engine starts.

2. Warm up the engine.

#### NOTE:

Raise engine coolant temperature until it reaches 65°C (149°F) or more.

3. Turn ignition switch OFF and wait at least 10 seconds. Check that throttle valve moves during the above 10 seconds by confirming the operating sound.

>> END

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### IDLE AIR VOLUME LEARNING

Description INFOID.000000012197724

Idle Air Volume Learning is a function of ECM to learn the idle air volume that keeps each engine idle speed within the specific range. It must be performed under any of the following conditions:

- Each time electric throttle control actuator or ECM is replaced.
- · Idle speed or ignition timing is out of specification.

Refer to EC-162, "Work Procedure".

Work Procedure

## 1.PRECONDITIONING

Make sure that all of the following conditions are satisfied.

Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.9 V (At idle)
- Engine coolant temperature: 70 100°C (158 212°F)
- Selector lever : P or N (CVT), Neutral (M/T)
- Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

On vehicles equipped with daytime running light systems, set lighting switch to the 1st position to light only small lamps.

- Steering wheel: Neutral (Straight-ahead position)
- Vehicle speed: Stopped
- Transmission: Warmed-up
- CVT models
- ®With CONSULT: Drive vehicle until "ATF TENP SEN" in "DATA MONITOR" mode of "CVT" system indicates less than 0.9 V.
- Without CONSULT: Drive vehicle for 10 minutes.
- M/T models
- Drive vehicle for 10 minutes.

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

## 2.IDLE AIR VOLUME LEARNING

#### (P)With CONSULT

- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-160, "Description"</u>.
- Perform Throttle Valve Closed Position Learning. Refer to <u>EC-161. "Description"</u>.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode of "ENGINE".
- Touch "START" and wait 20 seconds.

#### Is "CMPLT" displayed on CONSULT screen?

YES >> GO TO 4.

NO >> GO TO 5.

## 3.IDLE AIR VOLUME LEARNING

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#### NOTE:

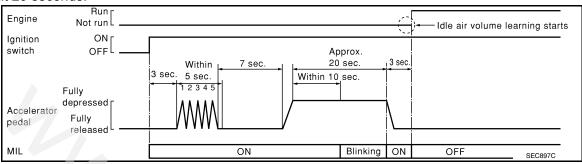
- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-160</u>, "<u>Description</u>".
- Perform Throttle Valve Closed Position Learning, Refer to EC-161, "Description".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 6. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.

#### **IDLE AIR VOLUME LEARNING**

#### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

- Fully release the accelerator pedal.
- 7. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- 8. Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- 9. Start engine and let it idle.
- 10. Wait 20 seconds.



>> GO TO 4

## 4. CHECK IDLE SPEED AND IGNITION TIMING

Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications. For specification, refer to <u>EC-591</u>, "Idle Speed" and <u>EC-591</u>, "Ignition Timing".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

## 5. DETECT MALFUNCTIONING PART

#### Check the following

- Check that throttle valve is fully closed.
- Check PCV valve operation.
- Check that downstream of throttle valve is free from air leakage.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning part.

## **6.**DETECT MALFUNCTIONING PART

Engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.

It is useful to perform "TROUBLE DIAGNOSIS - SPECIFICATION VALUE". Refer to <u>EC-180</u>, "<u>Description</u>". If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:

- · Engine stalls.
- · Erroneous idle.

#### >> INSPECTION END

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### **G SENSOR CALIBRATION**

< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

### **G SENSOR CALIBRATION**

Description INFOID:000000012197726

ECM stores calibration data (inherent characteristic value) of G sensor to provide accurate control. Therefore, it is required to perform calibration of G sensor after the following work is performed. Refer to <a href="EC-164">EC-164</a>, "Work Procedure".

- Removal/installation or replacement of G sensor
- · Replacement of ECM

Work Procedure

## 1. PREPARATION BEFORE CALIBRATION PROCEDURE

- 1. Park the vehicle on a level surface.
- 2. Adjust air pressure of all tires to the specified pressure. WT-47, "Tire Air Pressure".

>> GO TO 2.

## 2.PERFORM CALIBRATION

#### (II) With CONSULT

Turn ignition switch ON.

#### **CAUTION:**

#### Never start engine.

- 2. Select "Work Support" mode in "ENGINE.
- 3. Select "G SENSOR CALIBRATION".
- 4. Touch "Start".

#### **CAUTION:**

Never swing the vehicle during "G sensor calibration".

#### Is "COMPLETED" displayed?

YES >> END

NO >> Perform steps 1 and 2 again.

### MIXTURE RATIO SELF-LEARNING VALUE CLEAR

< BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

## MIXTURE RATIO SELF-LEARNING VALUE CLEAR

Description INFOID:0000000012197728

This describes how to erase the mixture ratio self-learning value. For the actual procedure, follow the instructions in "Diagnosis Procedure". Refer to <u>EC-165</u>, "Work Procedure".

INFOID:000000012197729

## Work Procedure

## 1.START

(E)With CONSULT

- Start engine and warm it up to normal operating temperature.
- 2. Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 3. Clear mixture ratio self-learning value by touching "CLEAR".

@With GST

- Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- Restart engine and let it idle for at least 5 seconds.
- 5. Stop engine and reconnect mass air flow sensor harness connector.
- 6. Select Service \$03 with GST. Make sure DTC P0102 is detected.
- 7. Select Service \$04 with GST to erase the DTC P0102.

>> END

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Revision: November 2015 EC-165 2016 JUKE

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## **FUEL PRESSURE**

Work Procedure

#### **FUEL PRESSURE RELEASE**

### 1. FUEL PRESSURE RELEASE

### (II) With CONSULT

- 1. Turn ignition switch ON.
- 2. Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.

#### Without CONSULT

- 1. Remove fuel pump fuse located in IPDM E/R.
- 2. Start engine.
- 3. After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF.
- 5. Reinstall fuel pump fuse after servicing fuel system.

>> END

#### **FUEL PRESSURE CHECK**

#### **CAUTION:**

- Before disconnecting fuel line, release fuel pressure from fuel line to eliminate danger.
- The fuel hose connection method used when taking fuel pressure check must not be used for other purposes.
- Be careful not to scratch or put debris around connection area when servicing, so that the quick connector maintains sealability with O-rings inside.
- Do not perform fuel pressure check with electrical systems operating (i.e. lights, rear defogger, A/C, etc.) Fuel pressure gauge may indicate false readings due to varying engine load and changes in manifold vacuum.

#### NOTE:

Prepare pans or saucers under the disconnected fuel line because the fuel may spill out. The fuel pressure cannot be completely released because F15 models do not have fuel return system.

## 1. FUEL PRESSURE CHECK

- Release fuel pressure to zero.
- Prepare fuel hose for fuel pressure check (B) and fuel tube adapter [SST: KV10120000] (D), then connect fuel pressure gauge (A).

: To high pressure fuel pump

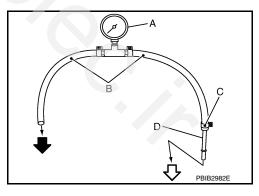
C : Clamp

#### **CAUTION:**

- Use suitable fuel hose for fuel pressure check (genuine NISSAN fuel hose without quick connector).
- To avoid unnecessary force or tension to hose, use moderately long fuel hose for fuel pressure check.
- · Do not use the fuel hose for checking fuel pressure with damage or cracks on it.
- Use Pressure Gauge to check fuel pressure.
- Remove fuel hose.

#### **CAUTION:**

Do not twist or kink fuel hose because it is plastic hose.



#### **FUEL PRESSURE**

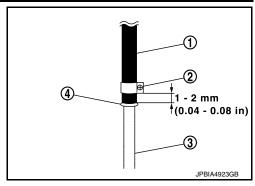
#### < BASIC INSPECTION >

#### [MR FOR NISMO RS MODELS]

Connect fuel hose for fuel pressure check (1) to high pressure fuel pump with clamp (2) as shown in the figure.

#### CAUTION:

- Wipe off oil or dirt from hose insertion part using cloth moistened with gasoline.
- Apply proper amount of gasoline between top of the high pressure fuel pump (3) and spool (4).
- Insert fuel hose for fuel pressure check until it touches the spool on high pressure fuel pump.
- Use NISSAN genuine hose clamp (part number: 16439 N4710 or 16439 40U00).
- When reconnecting fuel line, always use new clamps.
- Use a torque driver to tighten clamps.

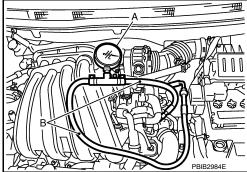


#### Tightening torque: 1 - 1.5 N·m (0.1 - 0.15 kg-m, 9 - 13 in-lb)

- Install hose clamp to the position within 1 2 mm (0.04 0.08 in).
- Make sure that clamp screw does not contact adjacent parts.
- After connecting fuel hose for fuel pressure check, pull the hose with a force of approximately 98 N (10 kg, 22 lb) to confirm fuel tube does not come off.
- 5. Connect fuel tube adapter to quick connector.
  - A : Fuel pressure gauge
  - B : Fuel hose for fuel pressure check
- Turn ignition switch ON and check for fuel leakage.
- Start engine and check for fuel leakage.
- 8. Read the indication of fuel pressure gauge.

#### **CAUTION:**

- · Do not perform fuel pressure check with system operating. Fuel pressure gauge may indicate false readings.
- During fuel pressure check, confirm for fuel leakage from fuel connection every 3 minutes.



At idling : Approximately 500 kPa (5.1 kg/cm<sup>2</sup>, 73 psi

#### Is the inspection result normal?

YFS >> INSPECTION END

NO >> GO TO 2.

## CHECK FUEL HOSES

- Check the following.
- Fuel hoses for clogging
- Fuel filter for clogging
- Low pressure fuel pump
- Fuel pressure regulator for clogging

#### Is the inspection result normal?

YES >> Replace fuel pressure regulator.

NO >> Repair or replace error-detected parts.

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## HOW TO SET SRT CODE

Description INFOID:0000000012197731

#### **OUTLINE**

In order to set all SRTs, the self-diagnoses as in the "SRT ITEM" table must have been performed at least once. Each diagnosis may require actual driving for a long period of time under various conditions.

#### **SRT ITEM**

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item*1 (CONSULT indication)	Performance Priority*2	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	1	Three way catalyst function	P0420
EVAP SYSTEM	1	EVAP control system purge flow monitoring	P0441
	1	EVAP control system	P0456
HO2S	1	Air fuel ratio (A/F) sensor 1	P014C,P014D, P015A, P015B
		Heated oxygen sensor 2	P0137
		Heated oxygen sensor 2	P0138
		Heated oxygen sensor 2	P0139
EGR/VVT SYSTEM	2	Intake value timing control function	P0011

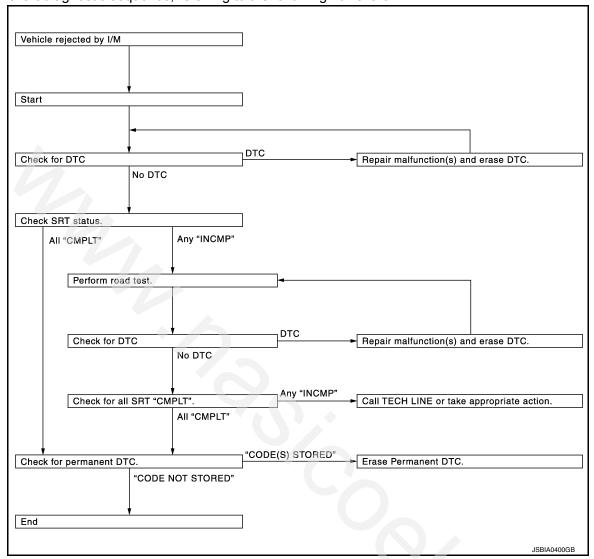
<sup>\*1:</sup> Though displayed on the CONSULT screen, "HO2S HTR" is not SRT item.

#### SRT SERVICE PROCEDURE

<sup>\*2:</sup> If completion of several SRTs is required, perform driving patterns (DTC confirmation procedure), one by one based on the priority for models with CONSULT.

### **HOW TO SET SRT CODE**

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating "INCMP", review the flowchart diagnostic sequence, referring to the following flowchart.



SRT Set Driving Pattern

**CAUTION:** 

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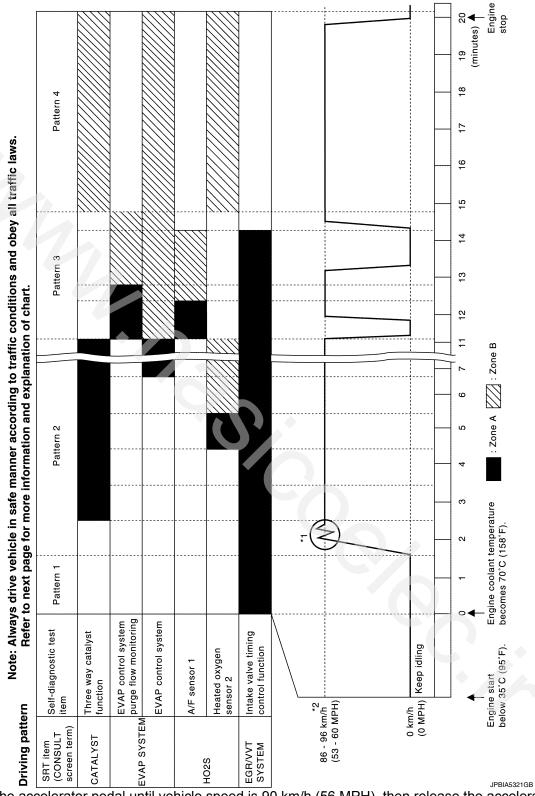
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Always drive the vehicle in safe manner according to traffic conditions and obey all traffic laws.



<sup>\*1:</sup> Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.

<sup>\*2:</sup> Checking the vehicle speed with GST is advised.

The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.

<sup>• &</sup>quot;Zone A" is the fastest time where required for the diagnosis under normal conditions\*. If the diagnosis is not completed within "Zone A", the diagnosis can still be performed within "Zone B".

## **HOW TO SET SRT CODE**

### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

*: Normal conditions	
- Sea level - Flat road	Α
- Ambient air temperature: 20 – 30°C (68 – 86°F) <b>NOTE:</b>	
Diagnosis is performed as quickly as possible under normal conditions. However, under other conditions, diagnosis may also be performed. [For example: ambient air temperature other than 20 – 30°C (68 – 86°F)]	С
Work Procedure	С
1.CHECK DTC	
Check DTC.	D
Is any DTC detected?	
YES >> Repair malfunction(s) and erase DTC. Refer to <u>EC-115, "DTC_Index"</u> .  NO >> GO TO 2.	Е
2.CHECK SRT STATUS	
With CONSULT     Select "SRT STATUS" in "DTC & SRT CONFIRMATION" mode with CONSULT.	F
Without CONSULT	
Perform "SRT status" mode with <u>EC-81, "On Board Diagnosis Function"</u> .	G
With GST Select Service \$01 with GST.	G
Is SRT code(s) set?	
1E3 > GO TO TI.	Н
NO-1 >> With CONSULT: GO TO 3. NO-2 >> Without CONSULT: GO TO 4.	
3.DTC CONFIRMATION PROCEDURE	
<ol> <li>Select "SRT WORK SUPPORT" in "DTC &amp; SRT CONFIRMATION" mode with CONSULT.</li> <li>For SRT(s) that is not set, perform the corresponding "DTC CONFIRMATION PROCEDURE" according to the "Performance Priority" in the "SRT ITEM" table. Refer to <u>EC-168</u>, "<u>Description</u>".</li> <li>Check DTC.</li> </ol>	J
Is any DTC detected?	1/
YES >> Repair malfunction(s) and erase DTC. Refer to <u>EC-115</u> , <u>"DTC_Index"</u> .  NO >> GO TO 10.	K
4.PERFORM ROAD TEST	ı
<ul> <li>Check the "Performance Priority" in the "SRT ITEM" table. Refer to <u>EC-168</u>. "<u>Description</u>".</li> <li>Perform the most efficient SRT set driving pattern to set the SRT properly. Refer to <u>EC-169</u>, "<u>SRT Set Driving Pattern</u>".</li> <li>In order to set all SRTs, the SRT set driving pattern must be performed at least once.</li> </ul>	M
in order to set all SKTs, the SKT set driving pattern must be performed at least orde.	
>> GO TO 5.	Ν
5. PATTERN 1	
- Fuel tank temperature is more than 0°C (32°F).  2. Start the engine.	О Р
NOTE:  ECM terminal voltage is follows;  • Engine coolant temperature 10 to 35°C (14 to 95°F): 3.0 – 4.3 V  - 70°(158°F): Less than 4.1 V  • Fuel tank temperature: Less than 1.4 V  Refer to EC-96, "Reference Value".	

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>> GO TO 6.

## 6. PATTERN 2

- 1. Drive the vehicle. And depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds.
- 2. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again

#### NOTE:

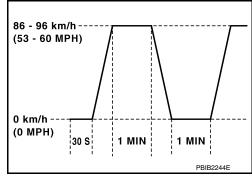
- · Checking the vehicle speed with GST is advised.
- When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted. In this case, the time required for diagnosis may be extended.

>> GO TO 7.

## 7. PATTERN 3

- Operate vehicle following the driving pattern shown in the figure.
- Release the accelerator pedal during deceleration of vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).

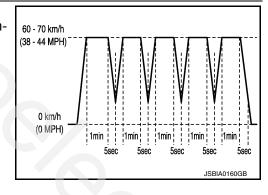
>> GO TO 8.



## 8. PATTERN 4

- · Operate vehicle following the driving pattern shown in the figure.
- Drive the vehicle in a proper gear at 60 km/h (38 MPH) and maintain the speed.
- Release the accelerator pedal fully at least 5 seconds.
- Repeat the above two steps at least 5 times.

>> GO TO 9.



## 9. PATTERN 5

- The accelerator pedal must be held very steady during steady-state driving.
- If the accelerator pedal is moved, the test must be conducted again.

>> GO TO 10.

## 10. CHECK SRT STATUS

(P)With CONSULT

Select "SRT STATUS" in "DTC & SRT CONFIRMATION" mode with CONSULT.

Perform "SRT status" mode with EC-81. "On Board Diagnosis Function".

Select Service \$01 with GST.

#### Is SRT(s) set?

YES >> GO TO 11.

NO >> Call TECH LINE or take appropriate action.

11. CHECK PERMANENT DTC

### **HOW TO SET SRT CODE**

#### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

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Permanent DTC cannot be checked with a tool other than CONSULT or GST.

(P)With CONSULT

Select "SRT STATUS" in "DTC & SRT CONFIRMATION" mode with CONSULT.

@With GST

Select Service \$0A with GST.

Is permanent DTC(s) detected?

YES >> Proceed to EC-180, "Description".

NO >> END

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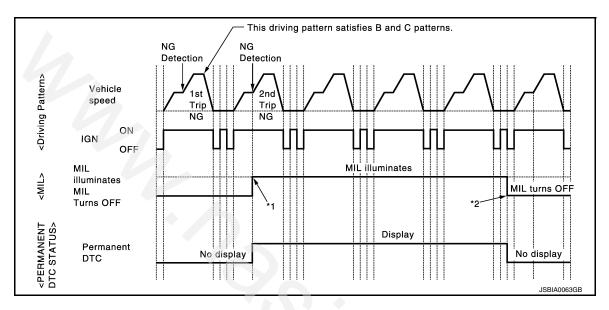
## HOW TO ERASE PERMANENT DTC

Description INFOID:000000012197734

#### **OUTLINE**

#### When a DTC is stored in ECM

When a DTC is stored in ECM and MIL is ON, a permanent DTC is erased with MIL shutoff if the same malfunction is not detected after performing the driving pattern for MIL shutoff three times in a raw.



<sup>\*1:</sup> When the same malfunction is detected in two consecutive trips, MIL will illuminate.

\*2: MIL will turn off after vehicle is driven 3 times (driving pattern B) without any malfunctions.

#### When a DTC is not stored in ECM

The erasing method depends on a permanent DTC stored in ECM. Refer to the following table.

×: Applicable —: Not applicable

Group*	Perform "DTC CONFIRMATION PROCE- DURE" for applicable DTCs.	Driving	Reference	
Group		В	D	Reference
A	×	_		EC-175
В	_	×	×	EC-177

<sup>\*:</sup> For group, refer to EC-115, "DTC Index".

#### PERMANENT DTC ITEM

For permanent DTC items, MIL turns ON. Refer to EC-115. "DTC Index".

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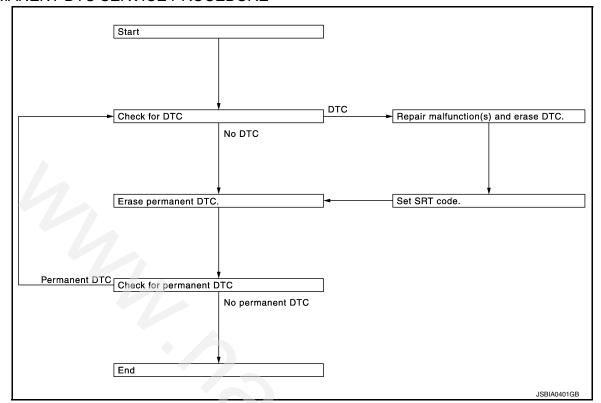
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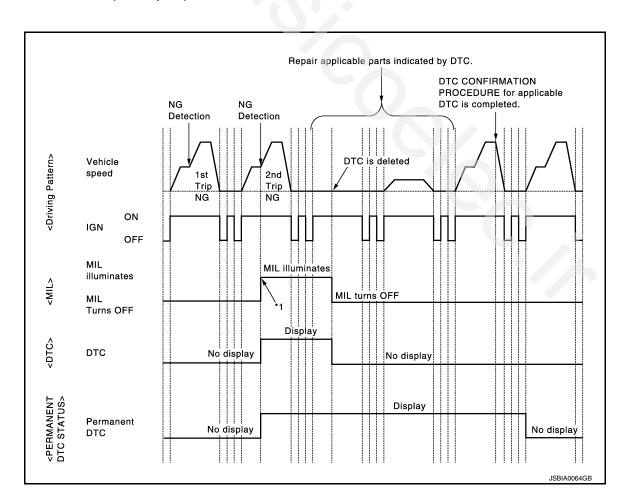
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### PERMANENT DTC SERVICE PROCEDURE



Work Procedure (Group A)

INFOID:0000000012197735



\*1: When the same malfunction is detected in two consecutive trips, MIL will illuminate.

## 1. CHECK DTC

Check DTC.

#### Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC. Refer to <a href="EC-81">EC-81</a>, "On Board Diagnosis Function", <a href="EC-84">EC-84</a>, "CONSULT Function".

NO >> GO TO 2.

## 2. CHECK PERMANENT DTC

#### (P)With CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 5. Select "PERMANENT DTC STATUS" mode with CONSULT.

#### With GST

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Select Service \$0A with GST.

#### Is any permanent DTC detected?

YES >> GO TO 3.

NO >> END

## 3. PERFORM DTC CONFIRMATION PROCEDURE

Perform "DTC CONFIRMATION PROCEDURE" for DTCs which are the same as permanent DTCs stored in ECM. Refer to <a href="EC-115">EC-115</a>, "DTC Index".

>> GO TO 4.

## 4. CHECK PERMANENT DTC

#### (P)With CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 5. Select "PERMANENT DTC STATUS" mode with CONSULT.

#### With GST

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- Select Service \$0A with GST.

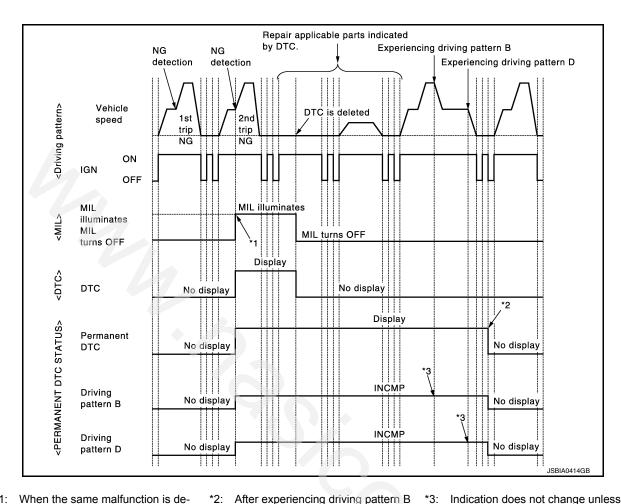
#### Is any permanent DTC detected?

YES >> GO TO 1.

NO >> END

Work Procedure (Group B)

INFOID:0000000012197736



- \*1: When the same malfunction is detected in two consecutive trips, MIL will illuminate.
- After experiencing driving pattern B and D, permanent DTC is erased.
- Indication does not change unless the ignition switch is turned from ON to OFF twice even after experiencing driving pattern B or D.

#### NOTE:

Drive the vehicle according to only driving patterns indicating "INCMP" in driving patterns B and D on the "PERMANENT DTC STATUS" screen.

## 1. CHECK DTC

Check DTC.

#### Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC. Refer to EC-81, "On Board Diagnosis Function", EC-84, "CONSULT Function".

NO >> GO TO 2.

## 2.CHECK PERMANENT DTC

### (E)With CONSULT

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds. 3.
- Turn ignition switch ON.
- Select "PERMANENT DTC STATUS" mode with CONSULT. 5.

#### ⊚With GST

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

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#### **HOW TO ERASE PERMANENT DTC**

#### < BASIC INSPECTION >

[MR FOR NISMO RS MODELS]

- Turn ignition switch ON.
- Select Service \$0A with GST.

#### Is any permanent DTC detected?

YES >> GO TO 3. NO >> END

3.DRIVE DRIVING PATTERN B

#### **CAUTION:**

- Always drive at a safe speed.
- Never erase self-diagnosis results.
- If self-diagnosis results are erased during the trip of driving pattern B or D, the counter of driving pattern B and D is reset.

(E)With CONSULT

- Start engine and warm it up to normal operating temperature.
- Use "PERMANENT DTC WORK SUPPORT" mode with CONSULT to drive the vehicle according to driving pattern B. Refer to EC-84, "CONSULT Function", EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

With GST

- Start engine and warm it up to normal operating temperature.
- Drive the vehicle according to driving pattern B. Refer to EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

>> GO TO 4.

## CHECK PERMANENT DTC

### (E)With CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "PERMANENT DTC STATUS" mode with CONSULT.

With GST

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select Service \$0A with GST.

#### Is any permanent DTC detected?

YES >> GO TO 5.

NO >> END

### ${f 5}$ . DRIVE DRIVING PATTERN D

#### **CAUTION:**

- Always drive at a safe speed.
- · Never erase self-diagnosis results.
- If self-diagnosis results are erased during the trip of driving pattern B or D, the counter of driving pattern B and D is reset.

Drive the vehicle according to driving pattern D. Refer to EC-78, "DIAGNOSIS DESCRIPTION: Driving Pattern".

>> GO TO 6.

## **6.**CHECK PERMANENT DTC

## With CONSULT

- <u>ĭ</u>. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.

## **HOW TO ERASE PERMANENT DTC**

< BASIC INSPECTION >	[MR FOR NISMO RS MODELS]	
5. Select "PERMANENT DTC STATUS" mode with CONSULT.		
<ul><li>With GST</li><li>Turn ignition switch OFF and wait at least 10 seconds.</li></ul>		А
2. Turn ignition switch ON.		
<ul><li>3. Turn ignition switch OFF and wait at least 10 seconds.</li><li>4. Turn ignition switch ON.</li></ul>		EC
5. Select Service \$0A with GST.	•	
Is any permanent DTC detected?		С
YES >> GO TO 1. NO >> END		
NO IN END		
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### TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## DTC/CIRCUIT DIAGNOSIS

## TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID:000000012197737

The specification (SP) value indicates the tolerance of the value that is displayed in "SPEC" of "DATA MONITOR" mode of CONSULT during normal operation of the Engine Control System. When the value in "SPEC" of "DATA MONITOR" mode is within the SP value, the Engine Control System is confirmed OK. When the value in "SPEC" of "DATA MONITOR" mode is NOT within the SP value, the Engine Control System may have one or more malfunctions.

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correction)
- A/F ALPHA-B1 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MAS A/F SE-B1 (The signal voltage of the mass air flow sensor)

## Component Function Check

INFOID:0000000012197738

## 1.START

Make sure that all of the following conditions are satisfied.

- Vehicle driven distance: More than 5,000 km (3,107 miles)
- Barometric pressure: 98.3 104.3 kPa (1.003 1.064 kg/cm<sup>2</sup>, 14.25 15.12 psi)
- Atmospheric temperature: 20 30°C (68 86°F)
- Engine coolant temperature: 75 95°C (167 203°F)
- · Transmission: Warmed-up
- CVT models: After the engine is warmed up to normal operating temperature, drive vehicle until "FLUID TEMP SE" (CVT fluid temperature sensor signal) indicates more than 60°C (140°F).
- M/T models: After the engine is warmed up to normal operating temperature, drive vehicle for 5 minutes.
- Electrical load: Not applied
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.
- · Engine speed: Idle

>> GO TO 2.

## 2.PERFORM "SPEC" OF "DATA MONITOR" MODE

#### (P)With CONSULT

#### NOTE:

Perform "SPEC" in "DATA MONITOR" mode in maximum scale display.

- 1. Perform EC-153, "Work Procedure".
- Select "B/FUEL SCHDL", "A/F ALPHA-B1" and "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Make sure that monitor items are within the SP value.

#### Is the inspection result normal?

YES >> END

NO >> Proceed to EC-181, "Diagnosis Procedure".

< DTC/CIRCUIT DIAGNOSIS >

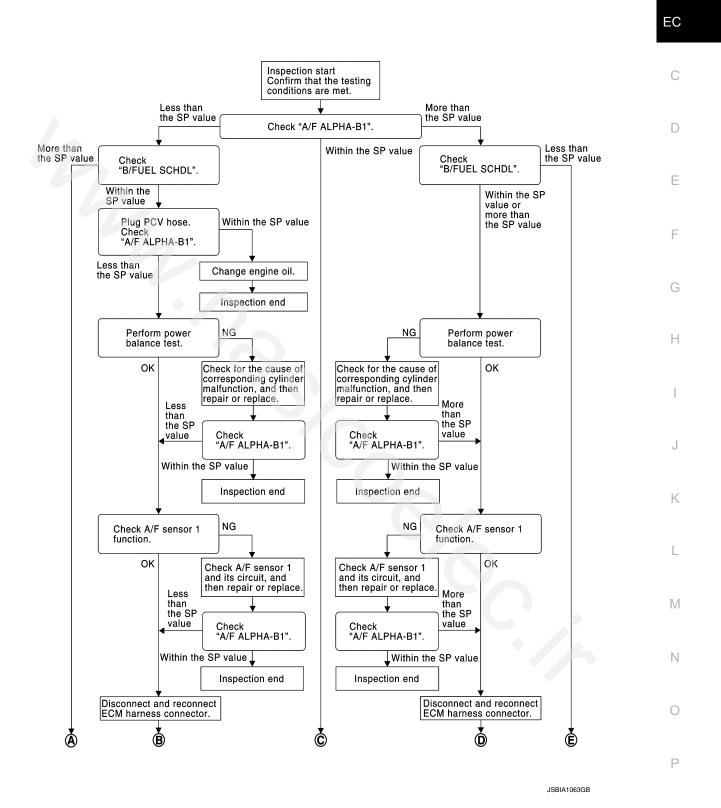
[MR FOR NISMO RS MODELS]

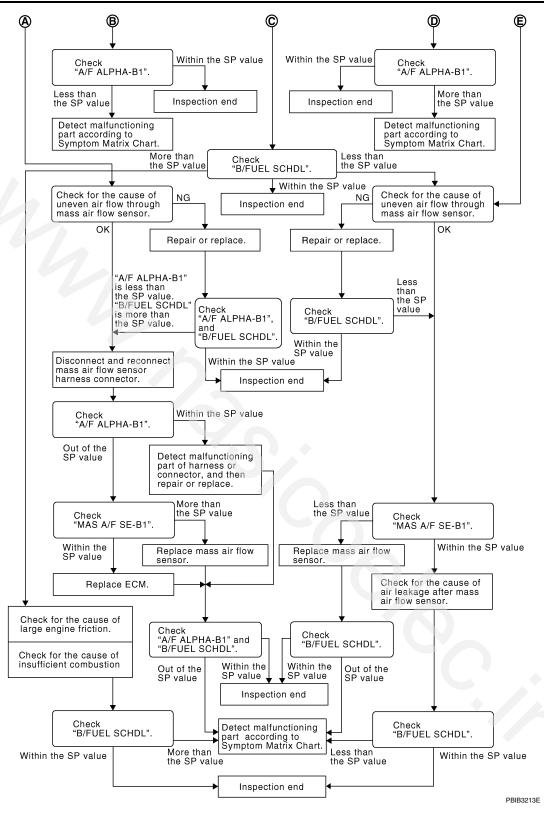
### Diagnosis Procedure

INFOID:0000000012197739

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#### **OVERALL SEQUENCE**





#### **DETAILED PROCEDURE**

### 1.CHECK "A/F ALPHA-B1"

#### (P)With CONSULT

- Start engine.
- Confirm that the testing conditions are met. Refer to <u>EC-180, "Component Function Check"</u>.
- 3. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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Check "A/F ALPHA-B1" for approximately 1 minute because it may fluctuate. It is NG if the indication is out of the SP value even a little.

#### Is the measurement value within the SP value?

YES >> GO TO 14.

NO-1 >> Less than the SP value: GO TO 2.

NO-2 >> More than the SP value: GO TO 3.

### 2.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 4.

NO >> More than the SP value: GO TO 16.

### 3.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 6.

NO-1 >> More than the SP value: GO TO 6.

NO-2 >> Less than the SP value: GO TO 22.

### 4.CHECK "A/F ALPHA-B1"

- Stop the engine.
- Disconnect PCV hose, and then plug it. 2.
- 3. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 5.

NO >> GO TO 6.

### **5.**CHANGE ENGINE OIL

- Stop the engine.
- 2. Change engine oil.

#### NOTE:

This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving conditions (such as when engine oil temperature does not rise enough since a journey distance is too short during winter). The symptom will not be detected after changing engine oil or changing driving condition.

#### >> INSPECTION END

### 6.PERFORM POWER BALANCE TEST

- Perform "POWER BALANCE" in "ACTIVE TEST" mode.
- 2. Make sure that the each cylinder produces a momentary engine speed drop.

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 7.

### .DETECT MALFUNCTIONING PART

#### Check the following.

- Ignition coil and its circuit (Refer to EC-554, "Component Function Check".)
- Fuel injector and its circuit (Refer to EC-541, "Component Function Check".)
- Intake air leakage
- Low compression pressure (Refer to EM-17, "Inspection".)

#### Is the inspection result normal?

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> Replace fuel injector and then GO TO 8.

NO >> Repair or replace malfunctioning part and then GO TO 8.

### 8.CHECK "A/F ALPHA-B1"

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 9.

### 9.CHECK A/F SENSOR 1 FUNCTION

Perform all DTC CONFIRMATION PROCEDURE related with A/F sensor 1.

- For DTC P0130, refer to <u>EC-263, "DTC Logic"</u>.
  For DTC P0131, refer to <u>EC-267, "DTC Logic"</u>.
- For DTC P0132, refer to <u>EC-270, "DTC Logic"</u>.
- For DTC P014C, P014D, P015A, P015B, refer to <u>EC-292, "DTC Logic"</u>.

#### Is any DTC detected?

YES >> GO TO 10.

NO >> GO TO 12.

## 10.CHECK A/F SENSOR $^{\scriptscriptstyle 1}$ CIRCUIT

Perform DIAGNOSTIC PROCEDURE according to corresponding DTC.

>> GO TO 11.

## 11.CHECK "A/F ALPHA-B1"

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> GO TO 12.

## 12. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR

- Stop the engine.
- Disconnect ECM harness connector.
- Check pin terminal and connector for damage, and then reconnect it.

>> GO TO 13.

## **13.**CHECK "A/F ALPHA-B1"

- 1. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to EC-576, "Symptom Table".

### 14.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

>> INSPECTION END

NO-1 >> More than the SP value: GO TO 15.

NO-2 >> Less than the SP value: GO TO 22.

## 15.DETECT MALFUNCTIONING PART

< DTC/CIRCUIT DIAGNOSIS >	[MR FOR NISMO RS MODELS]
1. Check for the cause of large engine friction. Refer to the following.	_
<ul><li>Engine oil level is too high</li><li>Engine oil viscosity</li></ul>	
<ul> <li>Belt tension of power steering, alternator, A/C compressor, etc. is exc</li> </ul>	essive
- Noise from engine	E
- Noise from transmission, etc.  Check for the square of insufficient combustion. Refer to the following.	
<ul> <li>Check for the cause of insufficient combustion. Refer to the following.</li> <li>Valve clearance malfunction</li> </ul>	
- Intake valve timing control function malfunction	
- Camshaft sprocket installation malfunction, etc.	
>> Repair or replace malfunctioning part, and then GO TO 27.	
16. CHECK INTAKE SYSTEM	
Check for the cause of uneven air flow through mass air flow sensor. Refe	er to the following.
Crushed air ducts	it to the following.
Malfunctioning seal of air cleaner element	
<ul><li>Uneven dirt of air cleaner element</li><li>Improper specification of intake air system</li></ul>	
Is the inspection result normal?	
YES >> GO TO 21.	
NO >> Repair or replace malfunctioning part, and then GO TO 17.	
17. CHECK "A/F ALPHA-B1", AND "B/FUEL SCHDL"	
Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MO	NITOP" made, and make cure that
each indication is within the SP value.	NITOR Illoue, and make sure that
Is the measurement value within the SP value?	
YES >> INSPECTION END	
NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1" is less than the S	P value: GO TO 18.
18. DISCONNECT AND RECONNECT MASS AIR FLOW SENSOR HAI	RNESS CONNECTOR
1. Stop the engine.	
2. Disconnect mass air flow sensor harness connector.	
3. Check pin terminal and connector for damage and then reconnect it a	gain.
>> CO TO 10	
>> GO TO 19.	
19.CHECK "A/F ALPHA-B1"	
1. Start engine.	
2. Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and m the SP value.	
Is the measurement value within the SP value?	
YES >> Detect malfunctioning part of mass air flow sensor circuit ar	nd repair it. Refer to EC-238. "DTC
Logic". Then GO TO 26.	
NO >> GO TO 20.	
20.check "Mas A/F se-B1"	
Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make	sure that the indication is within the
SP value.	
Is the measurement value within the SP value?	
YES >> GO TO 21.	

NO >> More than the SP value: Replace mass air flow sensor, and then GO TO 26.

## 21.REPLACE ECM

- 1. Replace ECM. Refer to EC-590, "Removal and Installation".
- 2. Perform EC-157, "Description".

>> GO TO 26.

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## 22. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- · Crushed air ducts
- · Malfunctioning seal of air cleaner element
- · Uneven dirt of air cleaner element
- Improper specification of intake air system

#### Is the inspection result normal?

YES >> GO TO 24.

NO >> Repair or replace malfunctioning part, and then GO TO 23.

### 23.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Less than the SP value: GO TO 24.

### 24.CHECK "MAS A/F SE-B1"

Select "MAS A/F SE-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 25.

NO >> Less than the SP value: Replace mass air flow sensor, and then GO TO 27.

## 25. CHECK INTAKE SYSTEM

Check for the cause of air leak after the mass air flow sensor. Refer to the following.

- · Disconnection, looseness, and cracks in air duct
- Looseness of oil filler cap
- · Disconnection of oil level gauge
- · Open stuck, breakage, hose disconnection, or cracks of PCV valve
- Disconnection or cracks of EVAP purge hose, open stuck of EVAP canister purge volume control solenoid valve
- · Malfunctioning seal of rocker cover gasket
- · Disconnection, looseness, or cracks of hoses, such as vacuum hose, connecting to intake air system parts
- Malfunctioning seal of intake air system, etc.

>> GO TO 27.

## 26. CHECK "A/F ALPHA-B1" AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that each indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to <a href="EC-576">EC-576</a>, "Symptom Table".

### 27. CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and then make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to <a href="EC-576">EC-576</a>, "Symptom Table".

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### POWER SUPPLY AND GROUND CIRCUIT

### Diagnosis Procedure

INFOID:0000000012197740

### 1.CHECK FUSE

Check that the following fuse is not blowing.

Location	Fuse No.	Capacity
IPDM E/R	#43	20 A
IPDIVI E/R	#62	15 A

#### Is the fuse blown (open)?

>> If the replaced fuse is blown again. Check IPDM E/R power supply.

NO >> GO TO 2.

## 2.CHECK GROUND CONNECTION

Turn ignition switch OFF.

Check ground connection E21 and E38. Refer to GI-48, "Circuit Inspection".

### Is the inspection result normal?

>> GO TO 3. YES

NO >> Repair or replace ground connection.

### 3.CHECK ECM GROUND CIRCUIT

- Disconnect ECM harness connectors.
- Check the continuity between ECM harness connector and ground.

+			
E	ECM		Continuity
Connector	Terminal		
F25	1		
F25	2		
	123	Ground	Existed
E18	124		
	127		

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4.CHECK ECM POWER SUPPLY (MAIN)-I

- Reconnect ECM harness connector.
- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals.

ECM			
Connector	+	_	Voltage
Connector	Terr	ninal	
E18	121	127	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 6.

### 5.CHECK ECM POWER SUPPLY (MAIN)-II

Turn ignition switch OFF and wait at least 10 seconds.

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Check the voltage between ECM harness connector terminals as per the following.

ECM				\
Connector	+	_	Condition	Voltage (Approx.)
Connector	Terminal		rminal	, , ,
E18	121	127	After turning ignition switch OFF, battery voltage will exist for a few seconds	Drop to 0 V

#### Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 7.

### 6. CHECK ECM POWER SUPPLY (MAIN) CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connectors.
- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+			_	
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E18	121	E14	35	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for IPDM E/R power supply circuit.

NO >> Repair or replace error-detected parts.

### 7.CHECK ECM RELAY CONTROL SIGNAL

Check the voltage between ECM harness connector terminals as per the following.

ECM				
Connector	Connector + - Terminal		Condition	Voltage (Approx.)
Connector				`
			Ignition switch ON	0 V
E18	112	127	Turn ignition switch OFF and wait at least 10 seconds.	Battery voltage

#### Is the inspection result normal?

YES >> Check Intermittent Incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 8.

## 8.CHECK ECM RELAY CONTROL SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+		-		
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E18	112	E14	41	Existed

5. Also check harness for short to ground and to power.

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "Removal and Installation".

NO >> Repair or replace error-detected parts.

### 9. CHECK IGNITION SWITCH SIGNAL

1. Turn ignition switch ON.

2. Check the voltage between ECM harness connector terminals.

ECM					
Connector	Connector + -		Condition	Voltage (Approx.)	
Terminal			(		
E18	109	127	Ignition switch OFF	0 V	
E18	109	121	Ignition switch ON	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 10.

## 10.check ignition switch signal circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

+			-	
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E18	109	E15	62	Existed

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 11.CHECK ECM POWER SUPPLY (BACK-UP)

Check the voltage between ECM harness connector terminals.

ECM			
Connector -	+	-	Voltage
	Terr	ninal	
E18	106	127	Battery voltage

#### Is the inspection result normal?

YES >> Check Intermittent Incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 12.

## 12.CHECK ECM POWER SUPPLY (BACK-UP) CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E18	106	E14	42	Existed

<sup>5.</sup> Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### **U0100 DRIVETRAIN CAN COMMUNICATION (ECM)**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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### U0100 DRIVETRAIN CAN COMMUNICATION (ECM)

DTC Description

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms		
No.	DTC (Trouble diagnosis content)	Malfunction type	DTC detecting condition
U0100	COMMUNICATION ERROR (LOST) (Lost communication with ECM/ PCM "A")	NO SUBTYPE INFORMATION	FPCM cannot receive the drivetrain CAN communication signal sent from ECM for Approx. 1 second or more.

#### POSSIBLE CAUSE

- Drivetrain CAN harness or connectors
- ECM

#### **FAIL-SAFE**

Not applicable

### DTC CONFIRMATION PROCEDURE

### 1. PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- 1. Turn ignition switch ON and wait at least 10 seconds.
- Check "Self Diagnostic Result" of "FPCM".

#### Is DTC "U0100" detected?

YES >> Proceed to EC-191, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012197742

## 1. CHECK DRIVETRAIN CAN COMMUNICATION HARNESS AND CONNECTORS

- Turn ignition switch OFF.
- Check installation condition of ECM and FPCM.
- Disconnect ECM harness connector and FPCM harness connector.
- 4. Check the continuity between ECM harness connector and FPCM harness connector.

+		_		
ECM		FPCM		Continuity
Connector	Terminal	Connector	Terminal	
E18	100	B111	3	Existed
	99	DIII	4	LAISIEU

Also check harness for short.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.perform dtc confirmation procedure again

#### (P)With CONSULT

- 1. Reconnect all harness connector disconnected.
- Turn ignition switch ON.
- 3. Erase "Self Diagnostic Result" of "FPCM".
- Perform DTC confirmation procedure again. Refer to <u>EC-191, "DTC Description"</u>.

#### Is DTC "U0100" detected again?

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### **U0100 DRIVETRAIN CAN COMMUNICATION (ECM)**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 3. NO >> GO TO 4.

## 3. REPLACE FPCM

1. Replace FPCM.

2. Perform DTC confirmation procedure again. Refer to EC-191, "DTC Description".

### Is DTC "U0100" detected again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

4. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> INSPECTION END

### **U0101 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### U0101 CAN COMM CIRCUIT

Description INFOID:0000000012197743

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic INFOID:0000000012197744

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
U0101	LOST COMM (TCM) (Lost communication with TCM)	When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) with TCM for 2 seconds or more.	CAN communication line between TCM and ECM

#### DTC CONFIRMATION PROCEDURE

### 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 3 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-193, "Diagnosis Procedure"

>> INSPECTION END NO

### Diagnosis Procedure

Perform the trouble diagnosis for CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow Chart".

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INFOID:0000000012197745

### **U0122 VEHICLE DYNAMICS CONTROL MODULE**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### U0122 VEHICLE DYNAMICS CONTROL MODULE

Description INFOID:000000012197746

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
U0122	VDC MDL (Lost communication with vehi- cle dynamics control module)	When ECM is not transmitting or receiving CAN communication signal of OBD (emission related diagnosis) with ABS actuator and electric unit (control unit) for 2 seconds or more.	CAN communication line between ECM and ABS actuator and electric unit (control unit) (CAN communication line is open or shorted)

#### DTC CONFIRMATION PROCEDURE

### 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-194, "Diagnosis Procedure"

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012197748

Perform the trouble diagnosis for CAN communication system. Refer to <u>LAN-17</u>, "Trouble <u>Diagnosis Flow Chart"</u>.

#### **U1001 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### U1001 CAN COMM CIRCUIT

Description INFOID:0000000012197749

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic INFOID:0000000012197750

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
U1001	CAN COMM CIRCUIT (CAN communication line)	When ECM is not transmitting or receiving CAN communication signal other than OBD (emission related diagnosis) for 2 seconds or more.	Harness or connectors (CAN communication line is open or shorted)

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 3 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-195, "Diagnosis Procedure". YES

NO >> INSPECTION END

#### Diagnosis Procedure

Perform the trouble diagnosis for CAN communication system. Refer to LAN-17, "Trouble Diagnosis Flow

Chart".

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INFOID:0000000012197751

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### P0011 IVT CONTROL

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0011 is displayed with DTC P0075, first perform the trouble diagnosis for EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0011	INT/V TIM CONT-B1 (Intake valve timing control performance)	There is a gap between angle of target and phase-control angle degree.	Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Intake valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for intake valve timing control

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is between 10 V and 16 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start engine and warm it up to normal operating temperature.
- Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

ENG SPEED	1,200 - 2,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
Selector lever	P or N position (CVT) Neutral position (M/T)

- 4. Stop vehicle with engine running and let engine idle for 10 seconds.
- Check 1st trip DTC.

#### With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-197, "Diagnosis Procedure".

NO >> GO TO 3.

### 3.PERFORM DTC CONFIRMATION PROCEDURE-II

#### (P)With CONSULT

1. Maintain the following conditions for at least 20 consecutive seconds.

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INFOID:0000000012197753

ENG SPEED	1,200 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 60°C (140°F)
Selector lever	D position (CVT) 1st or 2nd position (M/T)
Driving location	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)
CALITION	

#### Always drive at a safe speed.

Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-197, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

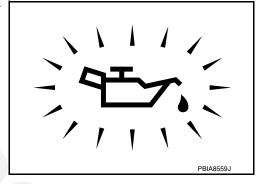
### ${f 1}$ .CHECK OIL PRESSURE WARNING LAMP

Start engine.

2. Check oil pressure warning lamp and confirm it is not illuminated.

#### Is oil pressure warning lamp illuminated?

>> Check the engine oil level. Refer to LU-9, "Inspection". >> GO TO 2. NO



### 2 . CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Check the intake valve timing control solenoid valve. Refer to EC-198, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace intake valve timing control solenoid valve. Refer to EM-76. "Exploded View".

## 3.CHECK CRANKSHAFT POSITION SENSOR (POS)

Check the crankshaft position sensor (POS). Refer to EC-345, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS). Refer to EM-114, "Exploded View"

### f 4 .CHECK CAMSHAFT POSITION SENSOR (PHASE)

Check the camshaft position sensor (PHASE). Refer to EC-348, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace camshaft position sensor (PHASE). Refer to EM-88, "Exploded View".

### CHECK CAMSHAFT (INT)

Check the following.

#### P0011 IVT CONTROL

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

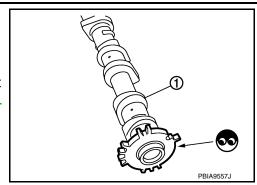
- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

#### Is the inspection result normal?

YES >> GO TO 6.

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to <a href="EM-89">EM-89</a>. "Removal and Installation".



### 6. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

YES >> Check timing chain installation. Refer to EM-77, "Removal and Installation".

NO >> GO TO 7.

### 7.CHECK LUBRICATION CIRCUIT

Refer to EM-92, "Inspection", "INSPECTION AFTER INSTALLATION".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Clean lubrication line.

### Component Inspection

INFOID:0000000012197754

## 1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as per the following.

Intake valve timing of	control solenoid valve	
+ -		Resistance
Terminal		
1	2	6.7 - 7.7 Ω [at 20°C (68°F)]
1	Ground	$\infty \Omega$
2	Glound	(Continuity should not exist)

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve. Refer to EM-76, "Exploded View".

### 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve. Refer to <u>EM-76. "Exploded View"</u>.

Provide 12 V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

#### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve. Refer to EM-76, "Exploded View".

#### [MR FOR NISMO RS MODELS]

### P0014 EVT CONTROL

**DTC Logic** INFOID:0000000012197755

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0014 is displayed with DTC P0078, first perform trouble diagnosis for DTC P0078. Refer to EC-214, "DTC Logic".
- If DTC P0014 is displayed with P1078, first perform trouble diagnosis for P1078. Refer to EC-430. "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0014	EXH/V TIM CONT-B1 (Exhaust valve timing control performance)	There is a gap between angle of target and phase-control angle degree.	Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Exhaust valve timing control position sensor Exhaust valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for exhaust valve timing control

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is between 10 V and 16 V at idle.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### With CONSULT

- Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start engine and warm it up to the normal operating temperature.
- Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

ENG SPEED	1,200 - 2,000 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 60°C (140°F)
Selector lever	P or N position (CVT) Neutral position (M/T)

- Let engine idle for 10 seconds.
- 5. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-200. "Diagnosis Procedure"

NO >> GO TO 3.

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# 3.PERFORM DTC CONFIRMATION PROCEDURE-II

#### (P)With CONSULT

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Maintain the following conditions for at least 20 consecutive seconds.

ENG SPEED	1,700 - 2,950 rpm (A constant rotation is maintained.)	
COOLAN TEMP/S	More than 70°C (158°F)	
Selector lever	D position (CVT) 1st or 2nd position (M/T)	
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)	

#### **CAUTION:**

#### Always drive at a safe speed.

3. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-200, "Diagnosis Procedure"

NO >> INSPECTION END

### Diagnosis Procedure

1. CHECK OIL PRESSURE WARNING LAMP

1. Start engine.

Check oil pressure warning lamp and confirm it is not illuminated.

#### Is oil pressure warning lamp illuminated?

YES >> Check the engine oil level. Refer to <u>LU-9</u>, "<u>Inspection</u>" NO >> GO TO 2.



INFOID:0000000012197756

## 2. CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE

Check the exhaust valve timing control solenoid valve. Refer to EC-198, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".

3.CHECK CRANKSHAFT POSITION SENSOR (POS)

Check the crankshaft position sensor (POS). Refer to EC-345, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 4

NO >> Replace crankshaft position sensor (POS). Refer to EM-114, "Exploded View".

### 4. CHECK EXHAUST VALVE TIMING CONTROL POSITION SENSOR

Check the exhaust valve timing control position sensor. Refer to EC-348, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace exhaust valve timing control position sensor. Refer to EM-88, "Exploded View".

CHECK CAMSHAFT (EXH)

#### [MR FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

Check the following.

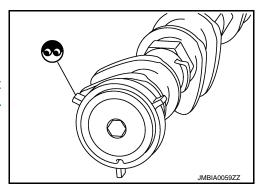
- · Accumulation of debris to the signal plate of camshaft rear end
- · Chipping signal plate of camshaft rear end

#### Is the inspection result normal?

YES >> GO TO 6.

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to EM-89, "Removal and Installation".



### 6. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

YES >> Check timing chain installation. Refer to EM-77, "Removal and Installation".

NO >> GO TO 7.

### 7. CHECK LUBRICATION CIRCUIT

Refer to EM-92, "Inspection"

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Clean lubrication line.

### Component Inspection

## 1.check exhaust valve timing control solenoid valve-i

- Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing control solenoid valve harness connector.
- Check resistance between exhaust valve timing control solenoid valve terminals as per the following.

Exhaust valve timing control solenoid valve			
+ –		Resistance	
Terminal			
1	2	7.0 - 7.7 Ω [at 20°C (68°F)]	
1	Ground	$\Omega$ $\infty$	
2	Giodila	(Continuity should not exist)	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".

### 2.CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE-II

Remove exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".

Provide 12 V DC between exhaust valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Check that the plunger moves as shown in the figure.

#### **CAUTION:**

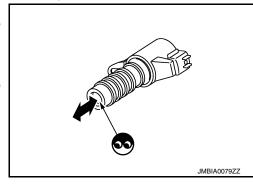
Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in exhaust valve timing control solenoid valve.

NOTE:

Always replace O-ring when exhaust valve timing control solenoid valve is removed.

#### Is the inspection result normal?

>> INSPECTION END YES



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NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".

### P0030, P0031, P0032 A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P0030, P0031, P0032 A/F SENSOR 1 HEATER

**DTC Logic** INFOID:0000000012197758

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	С
P0030	A/F SEN 1 HTR (B1) (Air fuel ratio (A/F) sensor 1 heater control circuit)	Deterioration in A/F sensor 1 heater performance. (Voltage signal transmitted from A/F sensor 1 heater to ECM is higher/lower than voltage in the normal range.)	Harness or connectors     (A/F sensor 1 heater circuit is open or	D
P0031	A/F SEN 1 HTR (B1) (Air fuel ratio (A/F) sensor 1 heater control circuit low)	The current amperage in the A/F sensor 1 heater circuit is out of the normal range.  (An excessively low voltage signal is sent to ECM through the A/F sensor 1 heater.)	shorted.) • A/F sensor 1 heater	Е
P0032	A/F SEN 1 HTR (B1) (Air fuel ratio (A/F) sensor 1 heater control circuit high)	The current amperage in the A/F sensor 1 heater circuit is out of the normal range.  (An excessively high voltage signal is sent to ECM through the A/F sensor 1 heater.)	<ul> <li>Harness or connectors (A/F sensor 1 heater circuit is shorted.)</li> <li>A/F sensor 1 heater</li> </ul>	F

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than between 11 V at

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 10 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-203, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### ${f 1}$ .CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- Turn ignition switch ON. 2.
- Check the voltage between A/F sensor 1 harness connector and ground.

+			
A/F sensor 1		_	Voltage
Connector	Terminal		
F70	4	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 2.

>> Repair or replace error-detected parts. NO

**EC-203 Revision: November 2015 2016 JUKE**  EC

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### P0030, P0031, P0032 A/F SENSOR 1 HEATER

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# $\overline{2}$ .check a/f sensor 1 heater output signal circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

	+		_	
A/F se	ensor 1	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F70	3	E18	125	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

### 3.CHECK A/F SENSOR 1 HEATER

Check the A/F sensor 1 heater. Refer to EC-204, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

### 4. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning air fuel ratio (A/F) sensor 1. Refer to EM-44. "Exploded View".

#### **CAUTION:**

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

## Component Inspection

INFOID:0000000012197760

## 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- Check resistance between A/F sensor 1 terminals as per the following.

A/F se	ensor 1	
+	_	Resistance
Terr	minal	
	4	1.8 - 2.44 Ω [at 20°C (68°F)]
3	1	
	2	$\infty  \Omega$
4	1	(Continuity should not exist)
	2	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-44, "Exploded View".

#### **CAUTION:**

### P0030, P0031, P0032 A/F SENSOR 1 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

• Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

 Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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### P0037, P0038 HO2S2 HEATER

DTC Logic INFOID.000000012197761

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0037	HO2 HTR (B1) (Heated oxygen sensor 2 heater control circuit low)	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	Harness or connectors     (Heated oxygen sensor 2 heater circuit is open or shorted.)     Heated oxygen sensor 2 heater
P0038	HO2 HTR (B1) (Heated oxygen sensor 2 heater control circuit high)	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	Harness or connectors     (Heated oxygen sensor 2 heater circuit is shorted.)     Heated oxygen sensor 2 heater

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Check 1st trip DTC.
- **With GST**

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-206, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197762

## 1. CHECK HO2S2 POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between HO2S2 harness connector and ground.

	+		
HO2S2		_	Voltage
Connector	Terminal		
F69	2	Ground	Battery voltage

### P0037, P0038 HO2S2 HEATER

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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INFOID:0000000012197763

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.CHECK HO2S2 OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F69	3	E18	126	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK HEATED OXYGEN SENSOR 2 HEATER

Check the heated oxygen sensor 2 heater. Refer to EC-207, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

### 4. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5. "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

## Component Inspection

## 1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 3. Check resistance between HO2S2 terminals as per the following.

+	_	
Heated oxygen sensor 2		Resistance
Terr	minal	
2	3	3.3 - 4.4 Ω [at 25°C (77°F)]
	1	
1	3	
	4	$\Omega$
	1	(Continuity should not exist)
4	2	
	3	

Is the inspection result normal?

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### P0037, P0038 HO2S2 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5. "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

### P0045, P0047, P0048 TC BOOST CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P0045, P0047, P0048 TC BOOST CONTROL SOLENOID VALVE

DTC Logic INFOID:0000000012197764

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0045	TC BOOST SOL/V (Turbocharger boost control solenoid valve circuit open)	ECM detected the turbocharger boost control solenoid valve circuit is open.	
P0047	TC/SC BOOST CONT A (Turbocharger boost control solenoid valve circuit low in- put)	ECM detected the turbocharger boost control solenoid valve circuit is short to ground.	Harness or connectors     (Turbocharger boost control solenoid valve circuit is open or shorted.)     Turbocharger boost control solenoid valve
P0048	TC/SC BOOST CONT A (Turbocharger boost control solenoid valve circuit high input)	ECM detected the turbocharger boost control solenoid valve circuit is short to power.	

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-209, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

1.check turbocharger boost control solenoid valve power supply

- Turn ignition switch OFF.
- 2. Disconnect turbocharger boost control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between turbocharger boost control solenoid valve harness connector and ground.

+			
Turbocharger boost control sole- noid valve		_	Voltage
Connector	Terminal		
F54	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

### 2.CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

Turn ignition switch OFF.

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### P0045, P0047, P0048 TC BOOST CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between turbocharger boost control solenoid valve harness connector and IPDM E/R harness connector.

+		-		
Turbocharger boost control solenoid valve		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F54	2	E14	36	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.check turbocharger boost control solenoid valve output signal circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between turbocharger boost control solenoid valve harness connector and ECM harness connector.

+				
	r boost control id valve	E	ECM	
Connector	Terminal	Connector	Terminal	
F54	1	F26	73	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4.CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE

Check the turbocharger boost control solenoid valve. Refer to <u>EC-210. "Component Inspection"</u>.

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Replace turbocharger boost control solenoid valve. Refer to EM-40, "Exploded View".

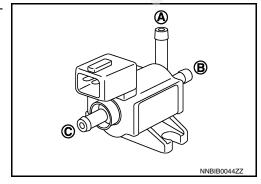
### Component Inspection

INFOID:0000000012197766

## 1. CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE

- 1. Turn ignition switch OFF
- 2. Disconnect turbocharger boost control solenoid valve harness connector.
- 3. Disconnect hoses connected to turbocharger boost control solenoid valve.
- 4. Check air passage continuity of turbocharger boost control solenoid valve as per the following conditions.

Condition	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
12 V direct current supply between terminals 1 and 2	Existed	Not existed
No supply	Not existed	Existed



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost control solenoid valve. Refer to EM-40, "Exploded View".

### P0075 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P0075 IVT CONTROL SOLENOID VALVE

DTC Logic INFOID:0000000012197767

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name ((Trouble diagnosis content))	DTC detecting condition	Possible cause
P0075	INT/V TIM V/CIR-B1 (Intake valve timing control solenoid valve circuit)	An improper voltage is sent to the ECM through intake valve timing control solenoid valve.	Harness or connectors     (Intake valve timing control solenoid valve circuit is open or shorted.)     Intake valve timing control solenoid valve

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 5 seconds.
- Check 1st trip DTC. 2.

### Is 1st trip DTC detected?

YES >> Proceed to EC-211, "Diagnosis Procedure"

>> INSPECTION END NO

### Diagnosis Procedure

1.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing (IVT) control solenoid valve harness connector.
- Turn ignition switch ON. 3.
- Check the voltage between intake valve timing control solenoid valve harness connector and ground.

+			
IVT control solenoid valve		_	Voltage
Connector	Terminal		
F41	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between IVT control solenoid valve harness connector and IPDM E/R harness connector.

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### P0075 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

+		+		
IVT control solenoid valve		IPDN	/I E/R	Continuity
Connector	Terminal	Connector	Terminal	
F41	2	E14	36	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.check intake valve timing control solenoid valve ground circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between IVT control solenoid valve harness connector and ECM harness connector.

	+		+	
IVT control s	solenoid valve	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F41	1	F26	81	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Check the intake valve timing control solenoid valve. Refer to EC-212. "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace intake valve timing control solenoid valve.

### Component Inspection

INFOID:0000000012197769

## 1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as per the following.

Intake valve timing control solenoid valve		
+	_	Resistance
Terr	minal	
1	2	6.7 - 7.7 Ω [at 20°C (68°F)]
1	Ground	$\infty \Omega$
2	Sibulia	(Continuity should not exist)

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve. Refer to EM-76, "Exploded View".

### 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove intake valve timing control solenoid valve. Refer to <a href="EM-76">EM-76</a>, "Exploded View".

#### P0075 IVT CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

2. Provide 12 V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

#### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

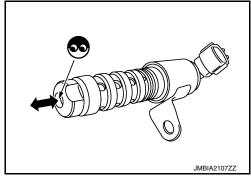
#### NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve. Refer to <a href="EM-76">EM-76</a>, "Exploded View".



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#### P0078 EVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P0078 EVT CONTROL SOLENOID VALVE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0078	EX V/T ACT/CIRC-B1 (Exhaust valve timing control sole- noid valve circuit)	An improper voltage is sent to the ECM through exhaust valve timing control solenoid valve.	Harness or connectors     (Exhaust valve timing control solenoid valve circuit is open or shorted.)     Exhaust valve timing control solenoid valve

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-214, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012197771

## 1. CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing (EVT) control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between exhaust valve timing control solenoid valve harness connector and ground.

+			
EVT control s	solenoid valve	_	Voltage
Connector	Terminal		
F100	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between EVT control solenoid valve harness connector and IPDM E/R harness connector.

### P0078 EVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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	solenoid valve		/I E/R	Continuity	
Connector	Terminal	Connector	Terminal		
F100	2	E14	36	Existed	
	eck harness	_	ground.		
-	ction result n		nacia far na	war awaaly ai	rouit
NO >>	Repair or rep	olace error-d	letected par	wer supply ci ts.	rcuit.
_			•		O VALVE GROUND CIRCUIT
	nition switch (				
	ect ECM hai		ctor.		
	he continuity	between E	VT control s	solenoid valve	e harness connector and ECM harness conr
tor.					
	+				
	solenoid valve		+ ECM		
				Continuity	
Connector F100	Terminal 1	Connector F26	Terminal 85	Existed	
	eck harness	_	ground and t	to power.	
	ction result no	<u>ormai?</u>			
_	Repair or rep	olace error-d	letected par	ts.	
4				L SOLENOII	) VALVE
					to EC-212, "Component Inspection".
	ction result n		or soleriola	valve. Refer	to <u>LO 212, Gomponent inspection</u> .
			nt. Refer to	GI-45. "Inter	mittent Incident".
_				l solenoid va	
Compone	nt Inspect	tion			INFOID:000000012
•	•				
4	->/!!!!!!	$\Lambda I \backslash / \Box T I I / I \Lambda I$	G CONTRO	I SOLENOII	
1.CHECK	=XHAUST V	ALVL IIIVIIIN	0 00111110	2 0022.101.	O VALVE-I
1. Turn igr	nition switch (	OFF.			
1. Turn igr 2. Disconn	nition switch (	OFF. valve timing	control sole	enoid valve ha	D VALVE-I  arness connector. olenoid valve terminals as per the following.

Exhaust valve timing control solenoid valve		
+	_	Resistance
Terminal		
1	2	7.0 - 7.7 Ω [at 20°C (68°F)]
1	Ground	$\stackrel{\infty}{\Omega} \Omega$ (Continuity should not exist)
2		

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".

## 2. CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".

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#### P0078 EVT CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

2. Provide 12 V DC between exhaust valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Check that the plunger moves as shown in the figure.

#### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in exhaust valve timing control solenoid valve.

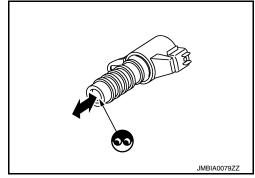
NOTE:

Always replace O-ring when exhaust valve timing control solenoid valve is removed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-76, "Exploded View".



#### P0087 FRP CONTROL SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0087 FRP CONTROL SYSTEM

DTC Logic INFOID:0000000012197773

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0087 is displayed with DTC P0090 and/or P1197, first perform the trouble diagnosis for DTC P0090 and/or P1197.
- DTC P0087 may be displayed when running out of gas or air accumulation.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0087	LOW FUEL PRES (High fuel pressure too low)	<ul> <li>Fuel rail pressure does not reach 1.3 MPa (13 bar, 13.3 kg/cm2, 188.5 psi) at engine cold start [water temperature 5°C (41°F) – 40°C (104°F)].</li> <li>Fuel rail pressure remains at 8.5 MPa (85 bar, 86.7 kg/cm2, 1232.8 psi) or less for 1 second or more during engine idle condition after cold start [water temperature 5°C (41°F) – 40°C (104°F)].</li> <li>The following condition continues for 5 seconds or more after engine start (regardless of water temperature): Target fuel pressure – Actual fuel pressure ≥ 2.7 MPa (27 bar, 27.5 kg/cm2, 392 psi).</li> </ul>	Fuel system     Leakage in fuel line     High pressure fuel pump     Low pressure fuel pump     Damage in lifter

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK FUEL LEAKAGE

- Turn ignition switch ON.
- Visually check the piping between low pressure fuel pump and fuel injectors for fuel leakage.
- Start the engine.
- Visually check the piping between low pressure fuel pump and fuel injectors for fuel leakage.

#### Is inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

### 2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.
- Before performing the following procedure, check that the fuel tank is 1/8 full of fuel.

>> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-1 $\,$

#### WITH CONSULT

- Turn ignition switch ON.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGNE" using CONSULT.
- Check the following condition;.

**COOLAN TEMP/S**  $: 5 - 40^{\circ}C (41 - 104^{\circ}F)$ 

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#### P0087 FRP CONTROL SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is the condition satisfied?

YES >> GO TO 4.

NO >> 1. Satisfy the condition.

2. Retry from step 1.

### 4. PERFORM DTC CONFIRMATION PROCEDURE-2

#### (P)WITH CONSULT

- 1. Start the engine and let it idle for 10 seconds.
- 2. Check 1st trip DTC.

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-218</u>, "Diagnosis Procedure".

NO >> GO TO 5.

## 5. PERFORM DTC CONFIRMATION PROCEDURE-3

#### (P)WITH CONSULT

- 1. Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Maintain the following condition for 10 seconds or more at idle.

### COOLAN TEMP/S : 70°C (104°F) or more

3. Check 1st trip DTC.

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is 1st trip DTC detected?

YES >> Proceed to EC-218, "Diagnosis Procedure".

NO >> INSPECTION END.

## Diagnosis Procedure

INFOID:0000000012197774

## 1.PERFORM THE HIGH PRESSURE FUEL PUMP COMPONENT INSPECTION

Perform the high pressure fuel pump component inspection. Refer to <u>EC-218</u>, "Component Inspection (High <u>Pressure Fuel Pump)"</u>.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. EM-49, "Removal and Installation".

## 2.CHECK FUEL LEAKAGE

- Start the engine.
- 2. Visually check that the fuel pump, fuel rail, and fuel piping have no fuel leakage.

#### Is the inspection result normal?

YES >> Check that the fuel system has no breakage, bend, and crush. Refer to FL-5, "Inspection".

NO >> Repair or Replace the error-detected parts.

## Component Inspection (High Pressure Fuel Pump)

INFOID:0000000012197775

## 1. CHECK HIGH PRESSURE FUEL PUMP-1

- 1. Turn ignition switch OFF.
- Disconnect high pressure fuel pump harness connector.
- Check the resistance between high pressure fuel pump terminals.

#### **P0087 FRP CONTROL SYSTEM**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

+	_	Condition		Resistance (Approx.)	
High pressu	ire fuel pump				
Terminal				, , ,	
1	2	Temperature °C (°F)	20 – 30 (68 - 86)	$0.46$ - $0.56$ $\Omega$	

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#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. Refer to EM-49, "Removal and Installation".

## 2.CHECK HIGH PRESSURE FUEL PUMP-2

#### (P)WITH CONSULT

- 1. Reconnect high pressure fuel pump harness connector.
- 2. Start the engine.
- 3. Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ECM" using CONSULT.

Monitor item	Condition	Voltage (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
I OLL FIXES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,140 – 3,060 mV

#### **NUMBER OF THE PROPERTY OF THE**

- 1. Reconnect high pressure fuel pump harness connector.
- 2. Start the engine.
- 3. Check FRP sensor signal voltage.

	ECM			V-L -
Connector	+	-	Condition	Value (Approx.)
Connector	Terminal			
E25	F25 18 44		Engine speed: idle	1,140 – 1,460 mV
F25 10 44		77	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,140 – 3,060 mV

#### YES >> INSPECTION END

NO >> Replace high pressure fuel pump. Refer to EM-49, "Removal and Installation".

### P0088 FRP CONTROL SYSTEM

DTC Logic INFOID.000000012197776

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0088 is displayed with DTC P0090, first perform the trouble diagnosis for DTC P0090.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0088	HIGH FUEL PRES (High fuel pressure too high)	<ul> <li>Fuel rail pressure remains at more than 12.5 MPa (125 bar, 127.5 kg/cm2, 1812.5 psi) for 1 second or more during engine idle condition after cold start [water temperature 5°C (41°F) - 40°C (104°F)].</li> <li>The following condition continues for 5 seconds or more after engine start (regardless of water temperature): Actual fuel pressure – Target fuel pressure ≥ 2.7 MPa (27 bar, 27.5 kg/cm², 392 psi)</li> </ul>	Harness or connector (The high pressure fuel pump circuit is open or shorted) High pressure fuel pump

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.
- Before performing the following procedure, check that the fuel tank is 1/8 full of fuel.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-1

 Warm up the engine to the normal operating temperature and keep the engine speed at idle for 10 seconds.

#### NOTE:

Warm up the engine until "COOLANT TEMP/S" on "DATA MONITOR" mode of "ENGINE" using CON-SULTIII reaches at least 70°C (158°F).

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-222, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.perform dtc confirmation procedure-2

- 1. Cool the engine until the engine coolant temperature reaches 60°C (140°F) or less.
- 2. Start the engine and wait at least 40 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-222, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012197777

1.PERFORM THE HIGH PRESSURE FUEL PUMP COMPONENT INSPECTION

#### P0088 FRP CONTROL SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

Perform the high pressure fuel pump component inspection. Refer to EC-221, "Component Inspection (High Pressure Fuel Pump)".

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. EM-49, "Removal and Installation".

## 2. CHECK FUEL LEAKAGE

- Start the engine.
- Visually check that the fuel pump, fuel rail, and fuel piping have no fuel leakage.

#### Is the inspection result normal?

YES >> Check that the fuel system has no breakage, bend, and crush. Refer to FL-5, "Inspection".

NO >> Repair or Replace the error-detected parts.

## Component Inspection (High Pressure Fuel Pump)

INFOID:0000000012197778

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## 1. CHECK HIGH PRESSURE FUEL PUMP-1

- 1. Turn ignition switch OFF.
- Disconnect high pressure fuel pump harness connector.
- Check the resistance between high pressure fuel pump terminals.

+ High pressu	re fuel pump	Condition	Resistance (Approx.)	
Terminal			( FF - /	
1	2	Temperature °C (°F) 20 – 30 (68 - 86)	0.46 - 0.56 Ω	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. Refer to EM-49, "Removal and Installation".

### 2.CHECK HIGH PRESSURE FUEL PUMP-2

#### (P)WITH CONSULT

- Reconnect high pressure fuel pump harness connector.
- Start the engine.
- Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ECM" using CONSULT.

Monitor item	Condition	Voltage (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
FUEL FRES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,140 – 3,060 mV

#### MWITHOUT CONSULT

- Reconnect high pressure fuel pump harness connector.
- 2. Start the engine.
- Check FRP sensor signal voltage.

	ECM		Value	
Connector	+	_	Condition	Value (Approx.)
Connector	Terminal			( 11 - 7
F25	F25 18 44		Engine speed: idle	1,140 – 1,460 mV
F25 10 44		77	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,140 – 3,060 mV

YES >> INSPECTION END

NO >> Replace high pressure fuel pump. Refer to EM-49, "Removal and Installation".

**EC-221 Revision: November 2015 2016 JUKE** 

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P0090 HIGH PRESSURE FUEL PUMP

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0090 is displayed with DTC P1197, first perform the trouble diagnosis for DTC P1197.
- DTC P0090 may be displayed when running out of gas.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0090	FUEL PUMP (High pressure fuel pump circuit)	<ul> <li>Fuel rail pressure remains at 1.1 MPa (11 bar, 11.2 kg/ cm², 159.5 psi) or less for 5 seconds or more during engine rev.</li> <li>Fuel rail pressure remains at 18.5 MPa (185 bar, 188.7 kg/ cm², 2682.5 psi) or more for 0.3 seconds or more during engine rev.</li> </ul>	Harness or connectors (The fuel pump circuit is open or shorted.) High pressure fuel pump

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.
- Before performing the following procedure, check that the fuel tank is 1/8 full of fuel.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### (P)WITH CONSULT

- 1. Start engine.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGNE" using CONSULT.
- 3. Maintain the following condition for 5 seconds or more at idle.

## COOLAN TEMP/S : 70°C (104°F) or more

4. Check 1st trip DTC.

**@WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-222</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197780

## 1. CHECK HIGH PRESSURE FUEL PUMP POWER SUPPLY

- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

	+			
E	СМ	_	Voltage	
Connector	Terminal			
F26	54	Ground	Battery voltage	

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#### Is inspection result normal?

YES >> GO TO 8.

NO >> GO TO 2.

## 2.CHECK HIGH PRESSURE FUEL PUMP POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect fuel injector relay harness connector.
- Check the continuity between ECM harness connector and high pressure fuel pump relay harness connector.

	+		-	
ECM		High pressure fuel pump re- lay		Continuity
Connector	Terminal	Connector	Terminal	
F26	54	E58	3	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts

## $3. \mathsf{CHECK}$ HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY (CONTACT SIDE)

Check the voltage between high pressure fuel pump relay harness connector and ground.

	+		
High pressure	fuel pump relay	_	Voltage
Connector	Terminal		
E58	5	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform the trouble diagnosis for power supply circuit.

## 4.CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY (EXCITATION COIL SIDE)

- Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between high pressure fuel pump relay harness connector and ground.

+			
High pressure fuel pump relay		_	Voltage
Connector	Terminal		
E58	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5

## 5.CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY CIRCUIT (EXCITATION COIL SIDE)

1. Turn ignition switch OFF.

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- Disconnect high pressure fuel pump relay harness connector.
- 3. Disconnect IPDM E/R harness connector.
- check the continuity between ipdm e/r harness connector and high pressure fuel pump harness connector.

	+		_	
IPDN	M E/R	High pressure fuel pump re- lay		Continuity
Connector	Terminal	Connector	Terminal	
E14	35	E58	2	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 6.CHECK HIGH PRESSURE FUEL PUMP RELAY GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump relay harness connector.
- 3. Check the continuity between high pressure fuel pump relay harness connector and ground.

	+		
High pressure fuel pump relay		_	Continuity
Connector	Terminal		
E58	1	Ground	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

#### .CHECK HIGH PRESSURE FUEL PUMP RELAY

Check the high pressure fuel pump relay. Refer to <u>EC-553</u>, "Component Inspection (High Pressure Fuel Pump Relay)".

#### Is inspection result normal?

YES >> GO TO 8.

NO >> Replace high pressure fuel pump relay. Refer to PG-9, "Standardized Relay".

## 8.CHECK HIGH PRESSURE FUEL PUMP CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector and high pressure fuel pump harness connector.
- Check the continuity between ECM harness connector and high pressure fuel pump harness connector.

	+		_	
E	СМ	High pressure fuel pump		Continuity
Connector	Terminal	Connector	Terminal	
F26	55	F53	1	Existed
1 20	56	1 33	2	LXISIEU

4. Also check harness for short to ground and to power.

#### Is inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

#### 9. CHECK HIGH PRESSURE FUEL PUMP

Check the high pressure fuel pump. Refer to EC-225, "Component Inspection (High Pressure Fuel Pump)".

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### Is inspection result normal?

YES >> GO TO 10.

NO >> Replace high pressure fuel pump. Refer to EM-49, "Exploded View".

## 10.CHECK HIGH PRESSURE FUEL PUMP INSTALLATION CONDITION

Turn ignition switch OFF.

Check that the high pressure fuel pump is installed with no backlash and looseness. 2.

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts.

## 11.CHECK CAMSHAFT

- Remove camshaft. Refer to EM-88, "Exploded View".
- Check camshaft. Refer to EM-92, "Inspection".

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace camshaft. Refer to EM-88, "Exploded View".

## Component Inspection (High Pressure Fuel Pump)

## $1.\mathsf{CHECK}$ HIGH PRESSURE FUEL PUMP-1

- Turn ignition switch OFF.
- Disconnect high pressure fuel pump harness connector.
- Check the resistance between high pressure fuel pump terminals.

+ High pressu	re fuel pump	Condition		Resistance (Approx.)
Terminal				(
1	2	Temperature °C (°F)	20 – 30 (68 - 86)	$0.46$ - $0.56 \Omega$

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. Refer to EM-49, "Removal and Installation".

## 2.CHECK HIGH PRESSURE FUEL PUMP-2

#### (P)WITH CONSULT

- Reconnect high pressure fuel pump harness connector.
- Start the engine.
- Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ECM" using CONSULT.

Monitor item	Condition	Voltage (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
TOLLT NESSEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,140 – 3,060 mV

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- Reconnect high pressure fuel pump harness connector.
- Start the engine.
- Check FRP sensor signal voltage.

	ECM			V-1 -
Connector + - Terminal		_	Condition	Value (Approx.)
		ninal		( 44.5)
F25	F25 18 44		Engine speed: idle	1,140 – 1,460 mV
125 10 44		77	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,140 – 3,060 mV

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> INSPECTION END

NO >> Replace high pressure fuel pump. Refer to EM-49, "Removal and Installation".

#### [MR FOR NISMO RS MODELS]

### P0096 IAT SENSOR 2

DTC Logic INFOID:0000000012197782

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0096	IAT SENSOR 2 B1 [Intake air temperature (IAT) sensor 2 circuit range/perfor- mance]	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor 1, IAT sensor 2, ECT sensor, FTT sensor, and EOT sensor) shows that the voltage signal of the IAT sensor 2 is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors (High or low resistance in the IAT sensor 2 circuit) IAT sensor 2

#### DTC CONFIRMATION PROCEDURE

### 1.INSPECTION START

#### Is it necessary to erase permanent DTC?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-228, "Component Function Check".

Use the component function check to check the overall function of the IAT sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-228, "Diagnosis Procedure".

### 3.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 4.

### f 4 . PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 60 minutes.
- Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

3. Turn ignition switch OFF and soak the vehicle for 12 hours.

#### **CAUTION:**

### Never turn ignition switch ON during soaking.

#### NOTE:

The vehicle must be cooled with the hood open.

Start engine and let it idle for 5 minutes or more.

#### **CAUTION:**

Never turn ignition switch OFF during idling.

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#### P0096 IAT SENSOR 2

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

5. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-228, "Diagnosis Procedure".

NO >> INSPECTION END

### Component Function Check

INFOID:0000000012197783

## 1. CHECK INTAKE AIR TEMPERATURE (IAT) SENSOR 2

- 1. Turn ignition switch OFF.
- Disconnect turbocharger boost sensor harness connector.
- 3. Check resistance between turbocharger boost sensor terminals as follows.

Turbocharger boost sensor				_
+	-//	Condition		Resistance ( $k\Omega$ )
Terminal				
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to EC-228, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012197784

## 1. CHECK INTAKE AIR TEMPERATURE (IAT) SENSOR 2

Check intake air temperature sensor 2. Refer to EC-228, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor (with intake temperature sensor 2). Refer to <u>EM-32</u>. "<u>Exploded View"</u>.

## Component Inspection

INFOID:0000000012197785

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2

- 1. Turn ignition switch OFF.
- 2. Disconnect turbocharger boost sensor harness connector.
- Check resistance between turbocharger boost sensor terminals as follows.

Turbocharge	r boost sensor	Condition		
+	_			Resistance (k $\Omega$ )
Term	ninals			
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <a href="EM-29">EM-29</a>, <a href="Exploded View"</a>.

#### [MR FOR NISMO RS MODELS]

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### P0097, P0098 IAT SENSOR 2

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0097	IAT SENSOR 2 B1 (Intake air temperature sensor 2 circuit low input)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the intake air temperature sensor 2 is 0.085 V or less.	Harness or connectors     (Intake air temperature sensor 2 circuit is open or shorted.)     (Turbocharger boost sensor circuit is
P0098	IAT SENSOR 2 B1 (Intake air temperature sensor 2 circuit high input)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the intake air temperature sensor 2 is 4.84 V or more.	open or shorted.) (Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Crankshaft position sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) Intake air temperature sensor 2 Turbocharger boost sensor Fuel rail pressure sensor Battery current sensor G sensor Crankshaft position sensor Exhaust valve timing control position sensor Accelerator pedal position sensor 2

#### DTC CONFIRMATION PROCEDURE

#### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-229, "Diagnosis Procedure".

NO >> INSPECTION END

#### Diagnosis Procedure

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2 POWER SUPPLY CIRCUIT-I

Turn ignition switch OFF.

INFOID:0000000012197787

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#### P0097, P0098 IAT SENSOR 2

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- Disconnect turbocharger boost sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between turbocharger boost sensor harness connector terminals.

Tu			
Connector	+	_	Voltage (Approx.)
Connector	(		
F75	1	3	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2.CHECK INTAKE AIR TEMPERATURE SENSOR 2 SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

	+		_	
Turbocharge	r boost sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F75	4	F26	88	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK INTAKE AIR TEMPERATURE SENSOR 2

Check intake air temperature sensor 2. Refer to EC-231, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <a href="EM-29">EM-29</a>, <a href="Exploded View"</a>.

## 4. CHECK INTAKE AIR TEMPERATURE SENSOR 2 POWER SUPPLY CIRCUIT-II

Check the voltage between turbocharger boost sensor harness connector terminal and ground.

+			
Turbocharger boost sensor		_	Voltage (Approx.)
Connector Terminal			(
F75	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 7.

### ${f 5}.$ CHECK INTAKE AIR TEMPERATURE SENSOR 2 GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

#### P0097, P0098 IAT SENSOR 2

### [MR FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

	+		_	
Turbocharge	r boost sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F75	3	F25	44	Existed

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#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F25	2			
E18	123 124	Ground	Existed	
	127			

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 7. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connectors and each sensor harness connectors
- 3. Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
	68	Battery current sensor	F52	1	
F26	00	G sensor	B32	3	
F20	72	CMP sensor	F109	1	
		EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2

- Turn ignition switch OFF.
- 2. Disconnect turbocharger boost sensor harness connector.
- 3. Check resistance between turbocharger boost sensor terminals as follows.

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INFOID:0000000012197788

### P0097, P0098 IAT SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Turbocharger boost sensor				
+	_	Condition		Resistance ( $k\Omega$ )
Terminals				
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <u>EM-29.</u> "<u>Exploded View</u>".

#### [MR FOR NISMO RS MODELS]

### P0101 MAF SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0101 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0101	MAF SEN/CIRCUIT-B1 [Mass air flow (MAF) sensor circuit range/performance]	<ul> <li>A high voltage from the sensor is sent to ECM under light load driving condition.</li> <li>A low voltage from the sensor is sent to ECM under heavy load driving condition.</li> </ul>	Harness or connectors (MAF sensor circuit is open or shorted.) Intake air leaks MAF sensor EVAP control system pressure sensor Intake air temperature sensor 1

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- Drive the vehicle for at least 5 seconds under the following conditions: CAUTION:

### Always drive vehicle at safe speed.

Selector lever	Suitable position
Vehicle speed	40 km/h (25 MPH) or more

#### NOTE:

- The gear must be fixed while driving the vehicle.
- Keep the accelerator pedal as steady as possible during cruising.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-233</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK INTAKE SYSTEM

Check the following for connection.

- · Air duct
- Vacuum hoses
- · Intake air passage between air duct and intake manifold

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Reconnect the parts.

## 2. CHECK MASS AIR FLOW (MAF) SENSOR POWER SUPPLY

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INFOID:0000000012197790

**2016 JUKE** 

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#### < DTC/CIRCUIT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- Disconnect MAF sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between MAF sensor harness connector and ground.

-	+			
-	MAF sensor		_	Voltage
	Connector Terminal			
	F4	5	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# $3.\mathsf{check}$ mass air flow (maf) sensor power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between MAF sensor harness connector and IPDM E/R harness connector.

	+		_	
MAF	sensor	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F4	5	E14	35	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### 4. CHECK MAF SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between MAF sensor harness connector and ECM harness connector.

+		_		
MAF	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F4	4	F25	9	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

### 5. CHECK MAF SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

+				
MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F4	3	F25	13	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts

#### **P0101 MAF SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## 6.CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check the intake air temperature sensor 1. Refer to EC-246, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace MAF sensor (with intake air temperature sensor 1). Refer to EM-27, "Exploded View".

## 7.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check the EVAP control system pressure sensor. Refer to EC-379, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View".

### 8.CHECK MAF SENSOR

Check the MAF sensor. Refer to EC-235, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace MAF sensor. Refer to EM-27, "Exploded View". NO

## Component Inspection

INFOID:0000000012197791

## 1. CHECK MASS AIR FLOW SENSOR-

#### (P)With CONSULT

1. Turn ignition switch OFF.

- Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- Connect CONSULT and select "DATA MONITOR" mode of "ENGINE".
- Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4 V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
IVIAS A/F SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
	Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### 

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- Check the voltage between ECM harness connector and ground.

ECM				
Connector	+	1	Condition	Voltage
Connector	Terminal			
			Ignition switch ON (Engine stopped.)	Approx. 0.4 V
F25	13 9	0	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
F25		ÿ	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
			Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

**EC-235 Revision: November 2015 2016 JUKE**  EC

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#### < DTC/CIRCUIT DIAGNOSIS >

\*: Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2. CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MASS AIR FLOW SENSOR

- Turn ignition switch OFF.
- 2. Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Intake valve deposits
- Improper specification of intake air system parts

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

## 3.CHECK MASS AIR FLOW SENSOR-II

#### (II) With CONSULT

- 1. Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Connect CONSULT and select "DATA MONITOR" mode of "ENGINE".
- 4. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4 V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
MAS AT SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
	Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Without CONSULT

- 1. Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.
- 3. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+ -		Condition	Voltage
Connector	Terminal			
			Ignition switch ON (Engine stopped.)	Approx. 0.4 V
F25	13 9	0	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
F25		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V	
			Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK MASS AIR FLOW SENSOR-III

#### **P0101 MAF SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT and select "DATA MONITOR" mode of "ENGINE".
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4 V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
IVIAG A/I GL-BI	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
	Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### 

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector and ground.

	ECM	<b>*</b>		
Connector	Connector + - Terminal		Condition	Voltage
Connector				
			Ignition switch ON (Engine stopped.)	Approx. 0.4 V
F25	13 9	0	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V	
			Idle to about 4,000 rpm	0.9 - 1.2 V to Ap- prox. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor. Refer to EM-27, "Exploded View".

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## P0102, P0103 MAF SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0102	MAF SEN/CIRCUIT-B1 (Mass air flow sensor circuit low input)	An excessively low voltage from the mass air flow sensor is sent to ECM.	Harness or connectors     (Mass air flow sensor circuit is open or shorted.)     Intake air leaks     Mass air flow sensor
P0103	MAF SEN/CIRCUIT-B1 (Mass air flow sensor circuit high input)	An excessively high voltage from the mass air flow sensor is sent to ECM.	Harness or connectors     (Mass air flow sensor circuit is open or shorted.)     Mass air flow sensor

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

## 2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0102

- 1. Start engine and wait at least 5 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-238, "Diagnosis Procedure".

NO >> INSPECTION END

## 3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-I

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to <u>EC-238</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 4.

## 4.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

- 1. Start engine and wait at least 5 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to <u>EC-238</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197793

## 1. INSPECTION START

Confirm the detected DTC.

#### Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

#### **P0102, P0103 MAF SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

# 2.CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct to intake manifold

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts. Refer to EM-27, "Exploded View".

## 3.CHECK MAF SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect mass air flow (MAF) sensor harness connector. 2.
- 3. Turn ignition switch ON.
- Check the voltage between MAF sensor harness connector and ground.

	+		
MAF	sensor	_	Voltage
Connector	Terminal		
F4	5	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

4. CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between MAF sensor harness connector and IPDM E/R harness connector.

	+		_	
MAF sensor		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F4	5	E14	35	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### CHECK MAF SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

	+		_	
MAF	sensor	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F4	4	F25	9	Existed

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### O.CHECK MAF SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between MAF sensor harness connector and ECM harness connector.

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	+		_	
MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F4	3	F25	13	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

## 7. CHECK MAF SENSOR

Check the MAF sensor. Refer to EC-235, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor. Refer to <a href="EM-27">EM-27</a>, "Exploded View".

## Component Inspection

INFOID:0000000012197794

## 1. CHECK MASS AIR FLOW SENSOR-I

#### (II) With CONSULT

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT and select "DATA MONITOR" mode of "ENGINE".
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4 V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
MAS AT SE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
	Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### 

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+ –		Condition	Voltage
Connector	Terr	minal		
			Ignition switch ON (Engine stopped.)	Approx. 0.4 V
F25	13	9	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
1 20	125	9	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
			Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

#### **P0102, P0103 MAF SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> INSPECTION END

NO >> GO TO 2.

## 2.CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MASS AIR FLOW SENSOR

1. Turn ignition switch OFF.

2. Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

Crushed air ducts

- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Intake valve deposits
- Improper specification of intake air system parts

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

## 3. CHECK MASS AIR FLOW SENSOR-II

#### (P)With CONSULT

1. Repair or replace malfunctioning part.

2. Start engine and warm it up to normal operating temperature.

3. Connect CONSULT and select "DATA MONITOR" mode of "ENGINE".

4. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1	
	Ignition switch ON (Engine stopped.)	Approx. 0.4 V	
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V	
MA2 A/L 2E-B1	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V	
	Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*	

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### 

Repair or replace malfunctioning part.

2. Start engine and warm it up to normal operating temperature.

3. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terr	minal	No.	
			Ignition switch ON (Engine stopped.)	Approx. 0.4 V
F25	13	9	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
F25	120	9	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
			Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

## 4.CHECK MASS AIR FLOW SENSOR-III

#### (P)With CONSULT

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.

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#### **P0102, P0103 MAF SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 3. Start engine and warm it up to normal operating temperature.
- Connect CONSULT and select "DATA MONITOR" mode of "ENGINE".
- 5. Select "MAS A/F SE-B1" and check indication.

Monitor item	Condition	MAS A/F SE-B1
	Ignition switch ON (Engine stopped.)	Approx. 0.4 V
MAS A/F SE-B1	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
WAG AT GE-BT	2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
	Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### 

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terr	minal		
			Ignition switch ON (Engine stopped.)	Approx. 0.4 V
F25	13	9	Idle (Engine is warmed-up to normal operating temperature.)	0.9 - 1.2 V
F25	F25 13		2,500 rpm (Engine is warmed-up to normal operating temperature.)	1.5 - 2.0 V
			Idle to about 4,000 rpm	0.9 - 1.2 V to Approx. 2.4 V*

<sup>\*:</sup> Check for linear voltage rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace mass air flow sensor. Refer to EM-27, "Exploded View".

#### [MR FOR NISMO RS MODELS]

### P0111 IAT SENSOR 1

DTC Logic INFOID:0000000012197795

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0111	IAT SENSOR 1 B1 [Intake air temperature (IAT) sensor 1 circuit range/performance]	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor 1, IAT sensor 2, ECT sensor, FTT sensor, and EOT sensor) shows that the voltage signal of the IAT sensor 1 is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors (High or low resistance in the IAT sensor 1 circuit) IAT sensor 1

#### DTC CONFIRMATION PROCEDURE

### 1.INSPECTION START

#### Is it necessary to erase permanent DTC?

YES >> GO TO 3. NO >> GO TO 2.

## 2.PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-244, "Component Function Check".

Use the component function check to check the overall function of the IAT sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-244, "Diagnosis Procedure".

### 3.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 4.

### f 4 . PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 60 minutes.
- Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

3. Turn ignition switch OFF and soak the vehicle for 12 hours.

#### **CAUTION:**

### Never turn ignition switch ON during soaking.

#### NOTE:

The vehicle must be cooled with the hood open.

Start engine and let it idle for 5 minutes or more.

#### **CAUTION:**

Never turn ignition switch OFF during idling.

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#### P0111 IAT SENSOR 1

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-244, "Diagnosis Procedure".

NO >> INSPECTION END

### Component Function Check

INFOID:0000000012197796

## 1. CHECK INTAKE AIR TEMPERATURE (IAT) SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- Check resistance between mass air flow sensor terminals as follows.

Mass air f	low sensor			
+	-	Condition	Resistance ( $k\Omega$ )	
Terr	minal			
1	2	Temperature [°C (°F)] 25 (77)		1.800 – 2.200

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to EC-244, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012197797

## 1. CHECK INTAKE AIR TEMPERATURE (IAT) SENSOR 1

Check intake air temperature sensor 1. Refer to EC-244, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <a href="EM-27">EM-27</a>, "Exploded <a href="EM-27">View</a>.

## Component Inspection

INFOID:0000000012197798

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- Disconnect mass air flow sensor harness connector.
- Check resistance between mass air flow sensor terminals as per the following.

Mass air f	low sensor	Condition		
+	_			Resistance ( $k\Omega$ )
Tern	ninals			
1	2	Temperature [°C (°F)]	25 (77)	1.800 - 2.200

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <a href="EM-27">EM-27</a>, "Exploded View".

### **P0112, P0113 IAT SENSOR 1**

< DTC/CIRCUIT DIAGNOSIS >

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## P0112, P0113 IAT SENSOR 1

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	С
P0112	IAT SEN/CIRCUIT- B1 (Intake air temperature sensor 1 circuit low input)	An excessively low voltage from the intake air temperature sensor 1 is sent to ECM.	Harness or connectors     (Intake air temperature sensor 1 circuit is)	D
P0113	IAT SEN/CIRCUIT- B1 (Intake air temperature sensor 1 circuit high input)	An excessively high voltage from the intake air temperature sensor 1 is sent to ECM.	open or shorted.)  • Intake air temperature sensor 1	Е

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-245, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1 POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor (with intake air temperature sensor 1) harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between mass air flow sensor harness connector and ground.

	+		Voltage	
MAF sensor		_	Voltage (Approx.)	
Connector Terminal			, , ,	
F4	2	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK INTAKE AIR TEMPERATURE SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between mass air flow sensor harness connector and ECM harness connector.

+				
MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F4	2	F25	17	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.check intake air temperature sensor 1 ground circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between mass air flow sensor harness connector and ECM harness connector.

	+		_	
MAF	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F4	1	F25	9	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check the intake air temperature sensor 1. Refer to EC-246, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <a href="EM-27">EM-27</a>, "Exploded <a href="EM-27">View</a>.

## Component Inspection

INFOID:0000000012197801

# 1.CHECK INTAKE AIR TEMPERATURE SENSOR 1

- Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- Check resistance between mass air flow sensor terminals as per the following.

Mass air f	low sensor	Condition				
+	_			Resistance ( $k\Omega$ )		
Tern	ninals					
1	2	Temperature [°C (°F)]	25 (77)	1.800 - 2.200		

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <a href="EM-27">EM-27</a>, "Exploded View".

#### [MR FOR NISMO RS MODELS]

### P0116 ECT SENSOR

DTC Logic INFOID:0000000012197802

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0116	ECT SEN/CIRC [Engine coolant temperature (ECT) sensor circuit range/per- formance]	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor 1, IAT sensor 2, ECT sensor, FTT sensor, and EOT sensor) shows that the voltage signal of the ECT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors (High or low resistance in the ECT sensor circuit) ECT sensor

#### DTC CONFIRMATION PROCEDURE

### 1.INSPECTION START

#### Is it necessary to erase permanent DTC?

YES >> GO TO 3. NO >> GO TO 2.

## 2.PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-248, "Component Function Check".

Use the component function check to check the overall function of the ECT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-248, "Diagnosis Procedure".

### 3.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 4.

### f 4 . PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 60 minutes.
- 2. Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

3. Turn ignition switch OFF and soak the vehicle for 12 hours.

#### **CAUTION:**

### Never turn ignition switch ON during soaking.

#### NOTE:

The vehicle must be cooled with the hood open.

Start engine and let it idle for 20 minutes or more.

#### **CAUTION:**

Never turn ignition switch OFF during idling.

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#### < DTC/CIRCUIT DIAGNOSIS >

5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-248, "Diagnosis Procedure".

NO >> INSPECTION END

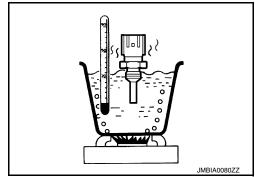
## Component Function Check

INFOID:0000000012197803

## $1. {\sf CHECK\ ENGINE\ COOLANT\ TEMPERATURE\ (ECT)\ SENSOR}$

- 1. Turn ignition switch OFF.
- Disconnect ECT sensor harness connector.
- Remove ECT sensor. Refer to <u>CO-25, "Exploded View"</u>.
- 4. Check resistance between ECT sensor terminals by heating with hot water as shown in the figure.

ECT :	sensor	Condition		
+	-			Resistance (kΩ)
Terr	minal			
		T 1 100	20 (68)	2.37 – 2.63
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
		,,,	90 (194)	0.236 - 0.260



#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to <u>EC-248, "Diagnosis Procedure"</u>.

## Diagnosis Procedure

INFOID:0000000012197804

## 1. CHECK ENGINE COOLANT TEMPERATURE (ECT) SENSOR

Check ECT sensor. Refer to EC-248, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace ECT sensor. Refer to CO-25, "Exploded View".

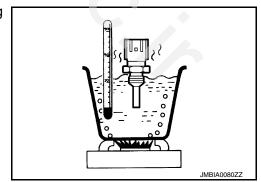
## Component Inspection

INFOID:0000000012197805

## 1. CHECK ENGINE COOLANT TEMPERATURE (ECT) SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect ECT sensor harness connector.
- 3. Remove ECT sensor.
- 4. Check resistance between ECT sensor terminals by heating with hot water as shown in the figure.

ECT :	sensor –	Condition		Resistance
Terr	ninal			(kΩ)
		20 (68) Temperature [°C (°F)] 50 (122)		2.37 - 2.63
1	2			0.68 - 1.00
			90 (194)	0.236 - 0.260



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor. Refer to <a href="EM-100">EM-100</a>, "Exploded View".

### **P0117, P0118 ECT SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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INFOID:0000000012197807

### P0117, P0118 ECT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause	C
P0117	ECT SEN/CIRC (Engine coolant temperature sensor circuit low input)	An excessively low voltage from the engine coolant temperature sensor is sent to ECM.	Harness or connectors  (Facing account tomporative appears)	
P0118	ECT SEN/CIRC (Engine coolant temperature sensor circuit high input)	An excessively high voltage from the engine coolant temperature sensor is sent to ECM.	(Engine coolant temperature sensor circuit is open or shorted.)     Engine coolant temperature sensor	D E

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-249, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect engine coolant temperature (ECT) sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between ECT sensor harness connector and ground.

	+		Valtaga	
ECT :	sensor	_	Voltage (Approx.)	
Connector Terminal			,	
F28	1	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK ENGINE COOLANT TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between ECT sensor harness connector and ECM harness connector.

	+		_	
ECT :	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F28	1	F25	14	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## ${f 3.}$ CHECK ENGINE COOLANT TEMPERATURE SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between ECT sensor harness connector and ECM harness connector.

	+			
ECT :	sensor	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F28	2	F25	10	Existed

4. Also check harness for short to ground to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Check the engine coolant temperature sensor. Refer to EC-248, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

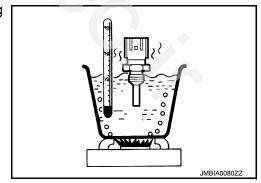
NO >> Replace engine coolant temperature sensor. Refer to EM-100, "Exploded View".

## Component Inspection

1. CHECK ENGINE COOLANT TEMPERATURE (ECT) SENSOR

- Turn ignition switch OFF.
- Disconnect ECT sensor harness connector.
- Remove ECT sensor.
- 4. Check resistance between ECT sensor terminals by heating with hot water as shown in the figure.

ECT :	sensor	Condition		Resistance (kΩ)	
+	_				
Terr	minal				
			20 (68)	2.37 - 2.63	
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00	
			90 (194)	0.236 - 0.260	



INFOID:0000000012197808

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor. Refer to EM-100, "Exploded View".

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

## P011C IAT SENSOR

DTC Logic INFOID:0000000012197809

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P011C	CAT/IAT CRRLTN B1 (Charge air temperature/Intake air temperature correlation)	<ul> <li>ECM detects a state that the temperature difference between intake air temperature sensor 1 and 2 remains 20°C (36°F) or less continuously for 5 seconds or more.</li> <li>ECM detects a state that the difference between the temperature of intake air temperature sensor 2 and its estimated temperature calculated by ECM from intake air temperature 1 and turbocharger boost sensor remains 106°C (191°F) or more continuously for 5 seconds or more.</li> </ul>	Harness or connectors     (High or low resistance in the intake air temperature sensor 1 circuit)     (High or low resistance in the intake air temperature sensor 2 circuit)     Intake air temperature sensor 1     Intake air temperature sensor 2	

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-251, "Diagnosis Procedure". YES

>> INSPECTION END NO

### Diagnosis Procedure

### ${f 1}$ .CHECK INTAKE AIR TEMPERATURE SENSOR 2

Check intake air temperature sensor 2. Refer to EC-252, "Component Inspection (Intake Air Temperature Sensor 2)".

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to EM-32, "Exploded View".

## 2.CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check intake air temperature sensor 1. Refer to EC-252, "Component Inspection (Intake Air Temperature Sensor 1)".

#### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to EM-27, "Exploded View".

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#### **P011C IAT SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## Component Inspection (Intake Air Temperature Sensor 1)

INFOID:000000001219781

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as follows.

Mass air flo	ow sensor 1	Condition			
+	-			Resistance ( $k\Omega$ )	
Terr	ninal				
1	2	Temperature [°C (°F)]	25 (77)	1.80 – 2.20	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <a href="EM-27">EM-27</a>, "Exploded View".

## Component Inspection (Intake Air Temperature Sensor 2)

INFOID:0000000012197812

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2

- Turn ignition switch OFF.
- Disconnect turbocharger boost sensor harness connector.
- 3. Check resistance between turbocharger boost sensor terminals as follows.

Turbocharge	r boost sensor				
+	_	Condition		Resistance ( $k\Omega$ )	
Terr	minal				
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <u>EM-32</u>, "Exploded View".

## P0122, P0123 TP SENSOR

**DTC Logic** INFOID:0000000012197813

### DTC DETECTION LOGIC

### NOTE:

If DTC P0122 or P0123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0122	TP SEN 2/CIRC-B1 (Throttle position sensor 2 circuit low input)	An excessively low voltage from the TP sensor 2 is sent to ECM.	Harness or connectors     (TP sensor 2 circuit is open or shorted.)
P0123	TP SEN 2/CIRC-B1 (Throttle position sensor 2 circuit high input)	An excessively high voltage from the TP sensor 2 is sent to ECM.	Electric throttle control actuator (TP sensor 2)

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

## **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- Start engine and let it idle for 1 second.
- 2. Check DTC.

## Is DTC detected?

>> Proceed to EC-253, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

# ${f 1}$ .CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

	+		\
Electric throttle	control actuator	_	Voltage (Approx.)
Connector	Terminal		( FF - 7
F29	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2 .CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT

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### < DTC/CIRCUIT DIAGNOSIS >

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+			_	
Electric throttle control actu- ator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	1	F26	62	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check throttle position sensor 2 ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector

+				
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	4	F26	74	Existed

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK THROTTLE POSITION SENSOR 2 INPUT SIGNAL CIRCUIT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

	+		_	
Electric throttle control actu- ator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	3	F26	76	Existed

2. Also check harness for short to ground and to power.

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# CHECK THROTTLE POSITION SENSOR

Check the throttle position sensor. Refer to EC-254, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

# Component Inspection

INFOID:0000000012197815

# 1.check throttle position sensor

## **P0122, P0123 TP SENSOR**

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform "Throttle Valve Closed Position Learning". Refer to EC-161, "Description".
- 4. Turn ignition switch ON.
- 5. Set selector lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector terminals as per the following conditions.

	ECM					
Connector	+	_	Condition		Voltage	
Terminal		ninal				
	75			Fully released	More than 0.36V	
F26	73	74	Accelerator	Fully depressed	Less than 4.75V	
	76	pedal	Fully released	Less than 4.75V		
			Fully depressed	More than 0.36V		

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View". EC

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## P0125 ECT SENSOR

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0125 is displayed with P0116, first perform the trouble diagnosis for DTC P0116. Refer to <a href="EC-247">EC-247</a>, "DTC Logic".
- If DTC P0125 is displayed with P0117 or P0118, first perform the trouble diagnosis for DTC P0117 or P0118. Refer to <u>EC-249</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0125	ECT SENSOR (Insufficient engine coolant temperature for closed loop fuel control)	<ul> <li>Voltage sent to ECM from the sensor is not practical, even when some time has passed after starting the engine.</li> <li>Engine coolant temperature is insufficient for closed loop fuel control.</li> </ul>	Harness or connectors     (High resistance in the circuit)     Engine coolant temperature sensor     Thermostat

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. CHECK ENGINE COOLANT TEMPERATURE SENSOR FUNCTION

### (P)With CONSULT

- Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check that "COOLAN TEMP/S" is above 10°C (50°F).

With GST

Follow the procedure "With CONSULT" above.

## Is it above 5°C (41°F)?

YES >> INSPECTION END

NO >> GO TO 3.

## 3. PERFORM DTC CONFIRMATION PROCEDURE

#### With CONSULT

- 1. Start engine and run it for 65 minutes at idle speed.
- Check 1st tip DTC.

If "COOLAN TEMP/S" indication increases to more than 10°C (50°F) within 65 minutes, stop engine because the test result will be OK.

### **CAUTION:**

## Be careful not to overheat engine.

With GST

Follow the procedure "With CONSULT" above.

## Is 1st trip DTC detected?

YES >> Proceed to EC-257, "Diagnosis Procedure".

NO >> INSPECTION END

## **P0125 ECT SENSOR**

## < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

## Diagnosis Procedure

INFOID:0000000012197817

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## 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR

Check the engine coolant temperature sensor. Refer to EC-257, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace engine coolant temperature sensor. Refer to <u>CO-25, "Exploded View"</u>.

## 2.CHECK THERMOSTAT OPERATION

When the engine is cold [lower than 70°C (158°F)] condition, grasp lower radiator hose and confirm the engine coolant does not flow.

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace thermostat. Refer to CO-23, "Removal and Installation".

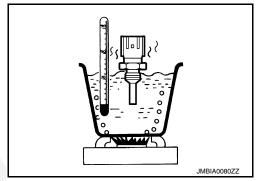
## Component Inspection

INFOID:0000000012197818

# $1. {\sf CHECK\ ENGINE\ COOLANT\ TEMPERATURE\ (ECT)\ SENSOR}$

- 1. Turn ignition switch OFF.
- 2. Disconnect ECT sensor harness connector.
- 3. Remove ECT sensor.
- Check resistance between ECT sensor terminals by heating with hot water as shown in the figure.

+	sensor –	Condition		Resistance $(k\Omega)$
Terr	minal			
			20 (68)	2.37 - 2.63
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
			90 (194)	0.236 - 0.260
			90 (194)	0.230 - 0



## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor. Refer to EM-100, "Exploded View".

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## P0127 IAT SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0127	IAT SENSOR-B1 (Intake air temperature too high)	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signal from engine coolant temperature sensor.	Harness or connectors     (Intake air temperature sensor 1 circuit is open or shorted)     Intake air temperature sensor 1

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

This test may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

## (P)With CONSULT

- 1. Wait until engine coolant temperature is less than 96°C (205°F)
- Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check the engine coolant temperature.
- If the engine coolant temperature is not less than 96°C (205°F), turn ignition switch OFF and cool down engine.

#### NOTE:

Perform the following steps before engine coolant temperature is above 96°C (205°F).

- 2. Turn ignition switch ON.
- 3. Select "DATA MONITOR" mode of "ENGINE" using CONSULT
- 4. Start engine.
- 5. Hold vehicle speed at more than 70 km/h (43 MPH) for 100 consecutive seconds.

### **CAUTION:**

Always drive vehicle at a safe speed.

6. Check 1st trip DTC.

#### 

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-258, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197820

# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check the intake air temperature sensor 1. Refer to <a>EC-259</a>, <a>"Component Inspection"</a>.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

## **P0127 IAT SENSOR**

## < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to EM-27, "Exploded View".

## Component Inspection

INFOID:0000000012197821

# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as per the following.

Mass air f	low sensor			
+		Condition		Resistance (kΩ)
Terminals				
1	2	Temperature [°C (°F)]	25 (77)	1.800 - 2.200

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <a href="EM-27">EM-27</a>, "Exploded <a href="Exploded View"</a>.

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[MR FOR NISMO RS MODELS]

## P0128 THERMOSTAT FUNCTION

DTC Logic

### DTC DETECTION LOGIC

### NOTE:

If DTC P0128 is displayed with DTC P0300, P0301, P0302, P0303 or P0304, first perform the trouble diagnosis for P0300, P0301, P0302, P0303, P0304. Refer to <a href="EC-335">EC-335</a>, "DTC Logic".

Engine coolant temperature has not risen enough to open the thermostat even though the engine has run long enough.

This is due to a leak in the seal or the thermostat being stuck open.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0128	THERMSTAT FNCTN [Coolant thermostat (coolant temperature below thermostat regulating temperature)]	The engine coolant temperature does not reach to specified temperature even though the engine has run long enough.	Thermostat Leakage from sealing portion of thermostat Engine coolant temperature sensor

### DTC CONFIRMATION PROCEDURE

### NOTE:

Never refuel before and during the following procedure.

## 1.PRECONDITIONING-I

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PRECONDITIONING-II

## (P)With CONSULT

- 1. Turn ignition switch ON.
- 2. Check the following conditions:

Ambient temperature	−10°C (14°F) or more
A/C switch	OFF
Blower fan switch	OFF

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check the following conditions:

### Is the condition satisfied?

YES >> GO TO 3.

NO >> 1. Satisfy the condition.

2. GO TO 3.

# 3.perform dtc confirmation procedure-i

## (P)With CONSULT

- 1. Start engine.
- 2. Drive the vehicle until the following condition is satisfied.

Always drive vehicle at safe speed.

- STEP 1

## **P0128 THERMOSTAT FUNCTION**

## < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

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Drive the vehicle under the conditions instructed below until the difference between "COOLAN TEMP/S" and "FUEL T/TMP SE" becomes at least 23°C (41°F).

COOLAN TEMP/S	65°C (149°F) or less	
FUEL T/TMP SE	Less than the value calculated by subtracting 23°C (41°F) from "COOLAN TEMP/S".*	EC
*: Example		C
COOLAN TEMP/S	FUEL T/TMP SE	
70°C (158°F)	47°C (117°F) or less	D
65°C (149°F)	42°C (108°F) or less	L
60°C (140°F)	37°C (99°F) or less	
T/TMP SE" maintained at <b>NOTE</b> :	(32 MPH) or more with the difference 23°C (41°F) or more. as steady as possible during cruising.	between "COOLAN TEMP/S" and "FUEL
Drive the vehicle at 50 km/h NOTE: Keep the accelerator pedal a	(32 MPH) or more until "COOLAN TENas steady as possible during cruising.	MP/S" increases by 6°C (11°F).
Is the condition satisfied? YES >> GO TO 4. NO >> GO TO 1.		H
4.PERFORM DTC CONFIRM	MATION PROCEDURE-II	
1. Drive the vehicle until the  COOLAN TEMP/S  CAUTION:	following condition is satisfied.  65°C (149°F) or more	J
Always drive vehicle at section 2. Check 1st trip DTC.  Is 1st trip DTC detected?  YES >> Proceed to EC-26  NO >> INSPECTION EN	31, "Diagnosis Procedure".	L L
Diagnosis Procedure		INFOID:000000012197823
1. CHECK ENGINE COOLAN	IT TEMPERATURE SENSOR	
Check the engine coolant tem  Is the inspection result normal  YES >> GO TO 2.	perature sensor. Refer to <u>EC-261, "Co</u> <u> ?</u>	mponent Inspection".
	oolant temperature sensor. Refer to <u>CC</u>	D-25, "Exploded View".
Check the thermostat. Refer to Is the inspection result normal YES >> INSPECTION EN NO >> Replace thermost	<u>.</u>	Pallation".
Component Inspection		INFOID:000000012197824
1.CHECK ENGINE COOLAN	IT TEMPERATURE SENSOR	

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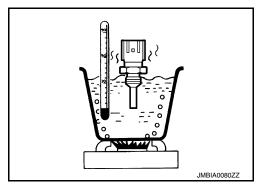
## **P0128 THERMOSTAT FUNCTION**

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor harness connector.
- 3. Remove engine coolant temperature sensor.
- 4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

-	oolant tem- e sensor	Condition		Resistance (k $\Omega$ )
+	-			
Terr	minal			
			20 (68)	2.37 - 2.63
1 2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00	
		, ,,	90 (194)	0.236 - 0.260



## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor. Refer to CO-25, "Exploded View".

## P0130 A/F SENSOR 1

**DTC Logic** INFOID:0000000012197825

### DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal fluctuates according to fuel feedback control.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible Cause
P0130	A/F SENSOR1 (B1) [Air fuel ratio (A/F) sensor 1	A)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly in the range other than approx. 2.2 V.	Harness or connectors     (A/F sensor 1 circuit is open or shorted.)
circuit]	B)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 2.2 V.	• A/F sensor 1	

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Let it idle for 2 minutes.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-264, "Diagnosis Procedure".

NO-1 >> With CONSULT: GO TO 3.

NO-2 >> Without CONSULT: GO TO 7.

# 3.CHECK AIR FUEL RATIO (A/F) SENSOR 1 FUNCTION

- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Check "A/F SEN1 (B1)" indication.

#### Does the indication fluctuates around 2.2 V?

YES >> GO TO 4.

NO >> Proceed to EC-264, "Diagnosis Procedure".

## f 4 .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-I

- Select "A/F SEN1 (B1) P1276" of "A/F SEN1" in "DTC WORK SUPPORT" mode of "ENGINE" using CON-SULT.
- Touch "START".
- 3. When the following conditions are met, "TESTING" will be displayed on the CONSULT screen.

ENG SPEED	1,150 - 3,200 rpm
VHCL SPEED SE	More than 64 km/h (40 mph)
B/FUEL SCHDL	1.0 - 8.0 msec
Selector lever	D position (CVT) 5th position (M/T)

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### < DTC/CIRCUIT DIAGNOSIS >

If "TESTING" is not displayed after 20 seconds, retry from step 2. CAUTION:

Always drive vehicle at a safe speed.

## Is "TESTING" displayed on CONSULT screen?

YES >> GO TO 5.

NO >> Check A/F sensor 1 function again. GO TO 3.

## ${f 5}$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-II

Release accelerator pedal fully.

#### NOTE:

Never apply brake during releasing the accelerator pedal.

## Which does "TESTING" change to?

COMPLETED>>GO TO 6.

OUT OF CONDITION>>Retry DTC CONFIRMATION PROCEDURE. GO TO 4.

## 6.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-III

Touch "SELF-DIAG RESULT"

### Which is displayed on CONSULT screen?

YES >> INSPECTION END

NO >> Proceed to <u>EC-264</u>, "<u>Diagnosis Procedure</u>".

## 7 .PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform Component Function Check. Refer to EC-264, "Component Function Check".

### NOTE:

Use component function check to check the overall function of the A/F sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-264, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012197826

# 1. PERFORM COMPONENT FUNCTION CHECK

## With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- 3. Shift the selector lever to the D position (CVT) or 5th position (M/T), then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (31 MPH).

#### CAUTION:

### Always drive vehicle at a safe speed.

#### NOTÉ:

Never apply brake during releasing the accelerator pedal.

- 4. Repeat steps 2 to 3 for five times.
- 5. Stop the vehicle and turn ignition switch OFF.
- 6. Wait at least 10 seconds and restart engine.
- 7. Repeat steps 2 to 3 for five times.
- Stop the vehicle.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-264, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197827

# 1.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector.
- 3. Turn ignition switch ON.

## **P0130 A/F SENSOR 1**

## < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

Check the voltage between A/F sensor 1 harness connector and ground.

+			
A/F sensor 1		_	Voltage
Connector	Terminal		
F70	4	Ground	Battery voltage

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## Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

	+		_	
A/F sensor 1		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F70	4	E14	36	Existed

4. Also check harness for short to ground.

## Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check a/f sensor 1 input signal circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		-		
A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F70	1	F25	21	Existed
	2	1 23	25	LAISIEU

4. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

+			
A/F se	ensor 1	_	Continuity
Connector	Terminal		
F70	1	Ground	Not existed
170	2	Giodila	Not existed

	+		
E	CM	_	Continuity
Connector	Terminal		
F25	21	Ground	Not existed
1 23	25	Glound	Not existed

Also check harness for short to power.

Is the inspection result normal?

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## **P0130 A/F SENSOR 1**

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-44, "Exploded View".

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

## P0131 A/F SENSOR 1

DTC Logic INFOID:0000000012197828

### DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P0131	A/F SENSOR1 (B1) [Air fuel ratio (A/F) sensor 1 circuit low voltage]	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 0 V.	Harness or connectors     (A/F sensor 1 circuit is open or shorted.)     A/F sensor 1

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idle.

>> GO TO 2.

## 2.CHECK A/F SENSOR FUNCTION

## (P)With CONSULT

- Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check "A/F SEN1 (B1)" indication.

#### 

Follow the procedure "With CONSULT" above.

## Is the indication constantly approx. 0 V?

YES >> Proceed to EC-268, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

Turn ignition switch OFF, wait at least 10 seconds and then restart engine.

Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine. **CAUTION:** 

## Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Selector lever	Suitable position

### NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- Check 1st trip DTC.

With GST

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## **P0131 A/F SENSOR 1**

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-268, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197829

# 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between A/F sensor 1 harness connector and ground.

_	77	+		
	A/F se	ensor 1	_	Voltage
	Connector	Terminal		
	F70	4	Ground	Battery voltage

## Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

+		-		
A/F sensor 1		F sensor 1 IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F70	4	E14	36	Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check a/f sensor 1 input signal circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		-		
A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector Terminal		
F70	1	F25	21	Existed
170	2	125	25	LAISIGU

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

## **P0131 A/F SENSOR 1**

## [MR FOR NISMO RS MODELS]

## < DTC/CIRCUIT DIAGNOSIS >

-	+			
A/F se	ensor 1	_	Continuity	
Connector	Terminal			
F70	1	O manuar d	Not evicted	
F70	2	Ground	Not existed	
-	+			
E	CM	_	Continuity	
Connector	Terminal			
	21			
F25	25	Ground	Not existed	
Also check	harness for sh	ort to nower		
	n result normal	•		
/ES >> GC		<u>-</u>		
	pair or replace	error-detected	parts.	
			•	
.CHECK INT	ERMITTENT IN	ICIDENT		
erform <u>GI-45.</u>	"Intermittent In	cident".		
erform <u>GI-45.</u> the inspection	"Intermittent In n result normal	cident".		
erform <u>GI-45.</u> the inspection	"Intermittent In n result normal	cident".	parts.	
erform GI-45. the inspection YES >> GC	"Intermittent In n result normal" TO 5. pair or replace	cident". ? error-detected		
erform <u>GI-45.</u> the inspection /ES >> GC NO >> Re .REPLACE A	"Intermittent In n result normal" TO 5. pair or replace	cident". ? error-detected O (A/F) SENSO	DR 1	ad View"
erform GI-45. the inspection YES >> GO NO >> Re REPLACE A eplace air fue	"Intermittent In n result normal" TO 5. pair or replace	cident". ? error-detected O (A/F) SENSO		ed View".
erform GI-45. the inspection /ES >> GC NO >> Re REPLACE A eplace air fue AUTION: Discard any	"Intermittent In n result normal" TO 5. pair or replace IR FUEL RATIO I ratio (A/F) sen	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro	DR 1  EM-44. "Explode pped from a hear the proper in the proper in the proper in the proper in the properties of the pro	ed View". eight of more than 0.5 m (19.7 in) onto a hard
erform GI-45. the inspection (ES >> GCNO >> Replace air fue) AUTION: Discard any surface such	"Intermittent In n result normal" TO 5. pair or replace IR FUEL RATIO I ratio (A/F) sen sensor which	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro e floor; use a r	EM-44. "Explode pped from a head one.	ight of more than 0.5 m (19.7 in) onto a hard
erform GI-45. the inspection 'ES >> GC NO >> Replace Air fue AUTION: Discard any surface such Before instal	"Intermittent In result normal" TO 5. Dair or replace of the Iratio (A/F) sensor which as a concrete of the Iratio new sensor when the Iratio new sensor which is a concrete or Iratio new sensor when the Iratio new sensor when the Iratio new sensor when Iratio new sensor whe	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro e floor; use a resor, clean exh	EM-44. "Explosion pped from a head one. aust system the	reads using Oxygen Sensor Thread Cleane
erform GI-45. the inspection (ES >> GC) IO >> RepLACE A eplace air fue AUTION: Discard any surface such Before instal	"Intermittent Inn result normal" TO 5. Dair or replace of the Intermittent Intermit	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro e floor; use a resor, clean exh	EM-44. "Explosion pped from a head one. aust system the	ight of more than 0.5 m (19.7 in) onto a hard
erform GI-45. the inspection (ES >> GC) IO >> RepLACE A eplace air fue AUTION: Discard any surface such Before instal	"Intermittent Inn result normal" TO 5. Dair or replace of the Intermittent Intermit	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro e floor; use a resor, clean exh	EM-44. "Explosion pped from a head one. aust system the	reads using Oxygen Sensor Thread Cleane
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erform GI-45. the inspection (ES >> GCNO >> Re REPLACE A eplace air fue AUTION: Discard any surface such Before instal [commercial service tool).	"Intermittent Inn result normal" TO 5. pair or replace of the result ratio (A/F) sensor which as a concrete ling new sensor tool (A/F).	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro e floor; use a r sor, clean exh J-43897-18 or	EM-44. "Explosion pped from a head one. aust system the	reads using Oxygen Sensor Thread Cleane
erform GI-45. the inspection (ES >> GCNO >> Re REPLACE A eplace air fue AUTION: Discard any surface such Before instal [commercial service tool).	"Intermittent Inn result normal" TO 5. pair or replace of the result ratio (A/F) sensor which as a concrete ling new sensor tool (A/F).	cident". ? error-detected O (A/F) SENSO nsor 1. Refer to has been dro e floor; use a r sor, clean exh J-43897-18 or	EM-44. "Explosion pped from a head one. aust system the	reads using Oxygen Sensor Thread Cleane

## P0132 A/F SENSOR 1

DTC Logic

### DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately high.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P0132	A/F SENSOR1 (B1) [Air fuel ratio (A/F) sensor 1 circuit high voltage]	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 5 V.	Harness or connectors     (A/F sensor 1 circuit is open or shorted.)     A/F sensor 1

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idle.

>> GO TO 2.

## 2.CHECK A/F SENSOR FUNCTION

## (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "A/F SEN1 (B1)" indication.

#### With GST

Follow the procedure "With CONSULT" above.

## Is the indication constantly approx. 5 V?

YES >> Proceed to <u>EC-271</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 3.

# 3. PERFORM DTC CONFIRMATION PROCEDURE

## (I) With CONSULT

- 1. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine. CAUTION:

## Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Selector lever	Suitable position

### NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step 1.
- 4. Check 1st trip DTC.

With GST

## **P0132 A/F SENSOR 1**

[MR FOR NISMO RS MODELS] < DTC/CIRCUIT DIAGNOSIS > Follow the procedure "With CONSULT" above. Α Is 1st trip DTC is detected? >> Proceed to EC-271, "Diagnosis Procedure". YES NO >> INSPECTION END EC Diagnosis Procedure INFOID:0000000012197831 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY Turn ignition switch OFF. 2. Disconnect A/F sensor 1 harness connector. Turn ignition switch ON. 3. D Check the voltage between A/F sensor 1 harness connector and ground. Е A/F sensor 1 Voltage Connector Terminal F70 Ground Battery voltage Is the inspection result normal? YES >> GO TO 3. NO >> GO TO 2. 2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT Turn ignition switch OFF. Н 2. Disconnect IPDM E/R harness connector. Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector. A/F sensor 1 IPDM E/R Continuity Connector Terminal **Terminal** Connector 4 F70 E14 36 Existed Also check harness for short to ground.

## Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# $3. { m CHECK}$ A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

	+				
Ī	A/F sensor 1		ECM		Continuity
Ī	Connector	Terminal	Connector Terminal		
	F70	1	F25	21	Existed
	170	2	125	25	LXISIEU

 Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

N

A/F se	ensor 1	_	Continuity	
Connector	Terminal			
F70	F70 1 2		Not existed	
	+		Octobra 11	
E(	CM	_	Continuity	
Connector	Connector Terminal			
F25	21	Ground	Not existed	
1 20	25		140t existed	

5. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-44, "Exploded View".

## **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

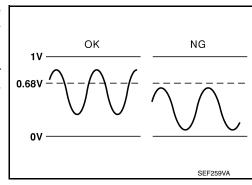
>> INSPECTION END

## P0137 H02S2

DTC Logic

## DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuel-cut.



			OV SEF259VA
DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0137	HO2S2 (B1) (Heated oxygen sensor 2 circuit low voltage)	The maximum voltage from the heated oxygen sensor 2 is not reached to the specified voltage.	Harness or connectors (Heated oxygen sensor 2 circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

## DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

Do you have CONSULT?

## Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 5.

## 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30°C (32 to 86°F).

>> GO TO 3.

# 3.perform dtc confirmation procedure

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F). If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches 70°C (158°F).
- Open engine hood.
- 8. Select "HO2S2 (B1) P1147" of "HO2S2" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT.

Revision: November 2015 EC-273 2016 JUKE

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### < DTC/CIRCUIT DIAGNOSIS >

9. Follow the instruction of CONSULT.

#### NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

## Which is displayed on CONSULT screen?

OK >> INSPECTION END

NG >> Proceed to <u>EC-275</u>, "<u>Diagnosis Procedure</u>".

CAN NOT BE DIAGNOSED>>GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE AGAIN

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

## 5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-274. "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-275, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012197833

## 1.PERFORM COMPONENT FUNCTION CHECK-I

### 

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	_	Condition	Voltage
Connector	Terr	minal		
F25	29	33	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	-	Condition	Voltage
Connector	Terminal			
F25	29	33	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

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INFOID:0000000012197834

# 3.perform component function check-iii

Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	_	Condition	Voltage
Connector	Terminal			
F25	29	33	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-275</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

# 1. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to EC-165, "Description".
- 2. Run engine for at least 10 minutes at idle speed.

## Is the 1st trip DTC P0171 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171. Refer to <u>EC-297</u>, "DTC Logic".

NO >> GO TO 2.

# 2.CHECK HO2S2 GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

+				
HC	2S2	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F69	1	F25	33	Existed

5. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK HO2S2 INPUT SIGNAL CIRCUIT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+			
НО	2S2	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F69	4	F25	29	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	_	Continuity
Connector	Terminal		
F69	4	Ground	Not existed

E	+ CM	_	Continuity
Connector	Terminal		
F25	29	Ground	Not existed

Also check harness for short to power.

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-276, "Component Inspection".

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

## 5. REPLACE HEATED OXYGEN SENSOR 2

## Replace heated oxygen sensor 2.

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

## Component Inspection

INFOID:0000000012197835

## 1.INSPECTION START

Do you have CONSULT?

## Do you have CONSULT?

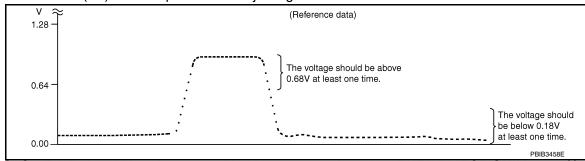
YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK HEATED OXYGEN SENSOR 2

## (P)With CONSULT

- Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select "FUEL INJECTION" in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to ± 25%.



"HO2S2 (B1)" should be above 0.68 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)" should be below 0.18 V at least once when the "FUEL INJECTION" is - 25%.

## P0137 HO2S2

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

ls	the	inspection	result	normal?
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YES >> INSPECTION END

NO >> GO TO 6.

# 3.check heated oxygen sensor 2-1

## 

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	_	Condition	Voltage
Connector	Terminal			
F25	29	33	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

# 4. CHECK HEATED OXYGEN SENSOR 2-11

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terr	ninal			
F25	29	33	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

## $oldsymbol{5}$ .CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	-	Condition	Voltage
Connector	Terminal			
F25	29	33	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

## 6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View". **CAUTION:** 

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- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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## P0138 H02S2

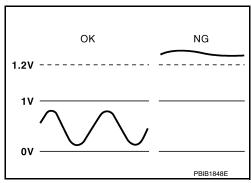
DTC Logic

### DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time.

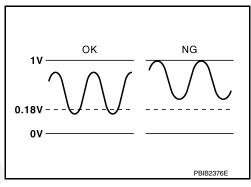
## **MALFUNCTION A**

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



## **MALFUNCTION B**

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.



DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible cause
110000 (D4)	A)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors     (The sensor circuit is open or shorted)     Heated oxygen sensor 2	
P0138	HO2S2 (B1) (Heated oxygen sensor 2 circuit high voltage)	B)	The minimum voltage from the sensor is not reached to the specified voltage.	<ul> <li>Harness or connectors (The sensor circuit is open or shorted)</li> <li>Heated oxygen sensor 2</li> <li>Fuel pressure</li> <li>Fuel injector</li> </ul>

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# $\overline{2}$ .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 2 minutes.
- 5. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-281, "Diagnosis Procedure"</u>.

NO-1 >> With CONSULT: GO TO 3.

NO-2 >> Without CONSULT: GO TO 5.

3.perform dtc confirmation procedure for malfunction b

### NOTE:

## For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30°C (32 to 86°F).

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indication is more than 70°C (158°F).
  - If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches 70°C (158°F).
- 7. Open engine hood.
- 8. Select "HO2S2 (B1) P1146" of "HO2S2" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 9. Follow the instruction of CONSULT.

### NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

## Which is displayed on CONSULT

OK >> INSPECTION END

NG >> Proceed to EC-281, "Diagnosis Procedure".

CAN NOT BE DIAGNOSED>>GO TO 4.

## f 4.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B AGAIN

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- 2. Perform DTC confirmation procedure again.

>> GO TO 3.

# 5. PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform component function check. Refer to <a>EC-281</a>, "Diagnosis Procedure"</a>.

#### NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-281, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012197837

# 1.PERFORM COMPONENT FUNCTION CHECK-I

## **Without CONSULT**

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

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	ECM			
Connector	+	_	Condition	Voltage
Connector	Terr	minal		
F25	29	33	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure
•	ction result r			
_	INSPECTIC GO TO 2.	N END		
PERFOR	M COMPO	NENT FUN	CTION CHECK-II	

	ECM			
Connector	+	-	Condition	Voltage
Terminal				
F25	29	33	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

# 3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terr	minal		
F25	29	33	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-281, "Diagnosis Procedure".

## Diagnosis Procedure

# 1. INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-279, "DTC Logic".

Which malfunction is detected?

A >> GO TO 2.

B >> GO TO 7.

# 2.CHECK HO2S2 CONNECTOR FOR WATER

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- Check connectors for water.

### Water should not exist.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

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# 3.CHECK HO2S2 GROUND CIRCUIT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F69	1	F25	33	Existed

3. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK HO2S2 INPUT SIGNAL CIRCUIT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
ŀ	1O2S2	E	СМ	Continuity
Connecto	Terminal	Connector	Terminal	
F69	4	F25	29	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+			
НО	2S2	_	Continuity	
Connector	Connector Terminal			
F69 4		Ground	Not existed	

	+		
E	CM	_	Continuity
Connector	Terminal		
F25	29	Ground	Not existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-284, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 6.

## O.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

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>> INSPECTION END

# $7.\mathtt{CLEAR}$ THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to EC-165. "Description".
- 2. Run engine for at least 10 minutes at idle speed.

## Is the 1st trip DTC P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0172. Refer to <a href="EC-279">EC-279</a>, "DTC Logic".

NO >> GO TO 8.

## 8.CHECK HO2S2 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F69	1	F25	33	Existed

5. Also check harness for short to ground and to power.

## Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

## 9. CHECK HO2S2 INPUT SIGNAL CIRCUIT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+	_		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F69	4	F25	29	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	_	Continuity
Connector	Terminal		
F69	4	Ground	Not existed

	+		
E	CM	_	Continuity
Connector	Connector Terminal		
F25	29	Ground	Not existed

3. Also check harness for short to power.

## Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

# 10. CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-284, "Component Inspection".

Is the inspection result normal?

Revision: November 2015 EC-283 2016 JUKE

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> GO TO 11.

# 11.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

### >> INSPECTION END

## Component Inspection

INFOID:0000000012197839

## 1.INSPECTION START

Do you have CONSULT?

## Do you have CONSULT?

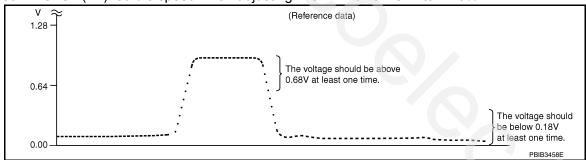
YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK HEATED OXYGEN SENSOR 2

## (E)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Select "FUEL INJECTION" in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to  $\pm$  25%.



"HO2S2 (B1)" should be above 0.68 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)" should be below 0.18 V at least once when the "FUEL INJECTION" is – 25%.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

# 3.CHECK HEATED OXYGEN SENSOR 2-I

#### 

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

ECM					
Connector	+	_	Condition	Voltage	
Connector	Terminal				
F25	29	33	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.	

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

## 4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	-	Condition	Voltage
Connector Terminal				
F25	29	33	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.

### Is the inspection result normal?

>> INSPECTION END YES

NO >> GO TO 5.

# 5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terr	minal		
F25	29	33	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

## 6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

 Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

 Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

### >> INSPECTION END

**EC-285 Revision: November 2015 2016 JUKE**  EC

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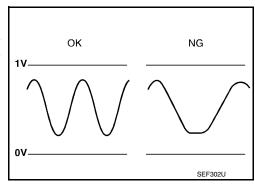
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## P0139 H02S2

DTC Logic

### DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst 1 causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the switching response of the sensor's voltage is faster than specified during various driving conditions such as fuel cut.



			)v	<u> </u>	SEF302U
DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible	cause
P0139	HO2S2 (B1) (Heated oxygen sensor 2 circuit slow response)	The switching time between rich and lean of a heated oxygen sensor 2 signal delays more than the specified time computed by ECM.	Heated ox	or circuit is sygen sens em tem	s open or shorted)

## DTC CONFIRMATION PROCEDURE

## 1.INSPECTION START

Do you have CONSULT?

## Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 7.

## 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

## **TESTING CONDITION:**

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30°C (32 to 86°F).

>> GO TO 3.

# 3.perform dtc confirmation procedure

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 8. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).
- Drive the vehicle in a proper at 60 km/h (38MPH) and maintain the speed. CAUTION:

## Always drive vehicle at a safe speed.

<ul><li>10. Release the accelerator per CAUTION:</li><li>Enable engine brake.</li></ul>	·	conds.
<ul> <li>Always drive carefully.</li> <li>Never apply brake whe</li> <li>11. Repeat step 9 and 10 at le</li> <li>12. Check the following item of</li> </ul>	en releasing the acce east 8 times.	lerator pedal.
Data monitor item	Status	-
HO2 S2 DIAG1 (B1)		-
HO2 S2 DIAG2 (B1)	CMPLT	
Is "CMPLT" displayed on CON	SULT screen?	
NO-2: "CMPLT" is not display	ed on DIAG 2>>GO T	rm DTC confirmation procedure again. O 4.
4.PERFORM DTC WORK SU	JPPORT	
3. Start engine and follow the <b>NOTE</b> :	e instruction of CONSU	PPORT" mode of "ENGINE" using CONSULT.  JLT display.
It will take at most 10 minuals "COMPLETED" displayed or		:D is displayed.
YES >> GO TO 6.	H GGIVEGET GGIGGHT.	H
NO >> GO TO 5.		
5.PERFORM DTC CONFIRM	1ATION PROCEDURE	AGAIN
<ol> <li>Turn ignition switch OFF a</li> <li>Perform DTC confirmation</li> </ol>		n a cool place (soak the vehicle).
>> GO TO 3.		
6.PERFORM SELF-DIAGNO	SIS	
®With CONSULT Perform ECM self-diagnosis.		K
Is DTC "P0139" detected?	0 IID's a see's December	
YES >> Proceed to <u>EC-28</u> NO >> INSPECTION ENI	<u>8, "Diagnosis Procedu</u> D	<u>ire"</u> .
7. PERFORM COMPONENT	FUNCTION CHECK	Λ.
	heck. Refer to EC-287	, "Component Function Check".
NOTE: Use component function check check, a 1st trip DTC might no		function of the heated oxygen sensor 2 circuit. During this
Is the inspection result normal	<del></del>	
YES >> INSPECTION ENI NO >> Proceed to EC-28	D 38, "Diagnosis Proced	ure".
Component Function Ch	_	
		INFOID:0000000012197841
1.PERFORM COMPONENT	FUNCTION CHECK-I	
Without CONSULT  Start engine and warm it up	un to normal operating	temperature

- Start engine and warm it up to normal operating temperature.
   Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	_	Condition	Voltage
	Terminal			
F25	29	33	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connector and ground as per the following condition.

ECM					
Connector	+		_	Condition	Voltage
	Terminal				
F25	29		<b>3</b> 3	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

# 3.perform component function check-iii

Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	_	Condition	Voltage
Connector	Terminal			
F25	29	33	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-275, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012197842

# 1. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-165, "Description"</u>.
- 2. Run engine for at least 10 minutes at idle speed.

## Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-297, "DTC Logic"</u> or <u>EC-301, "DTC Logic"</u>.

NO >> GO TO 2.

# 2.check ho2s2 ground circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

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+		_		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F69	1	F25 33		Existed
Also shoot have see for shoot to recover				

Also check harness for short to power.

#### Is the inspection result normal?

>> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.check ho2s2 input signal circuit

Check the continuity between HO2S2 harness connector and ECM harness connector.

+		_		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F69	4	F25	29	Existed

2. Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
HO2S2		-	Continuity
Connector	Terminal		
F69	4	Ground	Not existed

	+		O a a file of
E	CM	_	Continuity
Connector	Terminal		
F25	29	Ground	Not existed

3. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-290, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

### 5.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

### >> INSPECTION END

## Component Inspection

INFOID:0000000012197843

### 1.INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

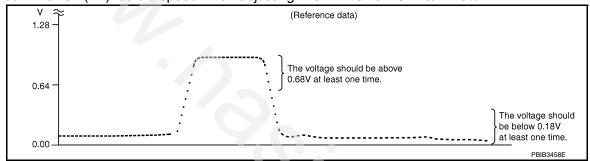
YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK HEATED OXYGEN SENSOR 2

#### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Select "FUEL INJECTION" in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to  $\pm$  25%.



"HO2S2 (B1)" should be above 0.68 V at least once when the "FUEL INJECTION" is  $\pm$  25%. "HO2S2 (B1)" should be below 0.18 V at least once when the "FUEL INJECTION" is  $\pm$  25%.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

# 3.CHECK HEATED OXYGEN SENSOR 2-I

### 

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector + _		_	Condition	Voltage	
Connector	Terminal				
F25	29	33	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

## 4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground as per the following condition.

### P0139 HO2S2

### [MR FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

	ECM				
Connector	+	_	Condition	Voltage	
Connector —	Terminal				
F25	29	33	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

## 5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	-	Condition	Voltage	
		minal			
F25	29	33	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure. The voltage should be below 0.18 V at least once during this procedure.	

Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

# 6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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[MR FOR NISMO RS MODELS]

## P014C, P014D, P015A, P015B A/F SENSOR 1

DTC Logic INFOID:000000012197844

#### DTC DETECTION LOGIC

To judge malfunctions, this diagnosis measures response time of the A/F signal computed by ECM from the A/F sensor 1 signal. The time is compensated by engine operating (speed and load), fuel feedback control constant, and the A/F sensor 1 temperature index. Judgment is based on whether the compensated time (the A/F signal cycling time index) is inordinately long or not.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P014C	Air fuel ratio (A/F) sensor 1 (bank 1)	The response time of a A/F sen-	
P014D	circuit slow response	sor 1 signal delays more than	Harness or connectors     (The A/F sensor 1 circuit is open or shorted.)
P015A	Air fuel ratio (A/F) sensor 1 (bank 1)	the specified time computed by ECM.	A/F sensor 1
P015B	circuit delayed response	LOIVI.	

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

### Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 6.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-1

#### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 6. Let engine idle for 1 minute.
- 7. Increase the engine speed up to about 3,600 rpm and keep it for 10 seconds.
- 8. Fully release accelerator pedal and then let engine idle for about 1 minute.
- 9. Check the items status of "DATA MONITOR" as follows.

#### NOTE:

If "PRSNT" changed to "ABSNT", refer to EC-264, "Component Function Check".

Data monitor item	Status
A/F SEN1 DIAG3 (B1)	PRSNT

### Is "PRSNT" displayed on CONSULT screen?

YES >> GO TO 4. NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE-2

### (F)With CONSULT

Perform DTC confirmation procedure-1 again.

### Is "PRSNT" displayed on CONSULT screen?

YES >> GO TO 4.

NO >> Refer to EC-264, "Component Function Check".

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 4. PERFORM DTC CONFIRMATION PROCEDURE-2

#### With CONSULT

- 1. Wait for about 20 seconds at idle.
- Check the items status of "DATA MONITOR" as follows.

If "CMPLT" changed to "INCMP", refer to EC-264, "Component Function Check".

Data monitor item	Status
A/F SEN1 DIAG1 (B1)	CMPLT
A/F SEN1 DIAG2 (B1)	GIVIFLI

### Is "CMPLT" displayed on CONSULT screen?

YES >> GO TO 5.

NO >> Refer to EC-264, "Component Function Check".

## 5. PERFORM SELF-DIAGNOSIS

#### (P)With CONSULT

Check the "SELF-DIAG RESULT".

#### Is any DTC detected?

YES >> Proceed to EC-294, "Diagnosis Procedure".

NO >> INSPECTION END

### O.CHECK AIR-FUEL RATIO SELF-LEARNING VALUE

### **With GST**

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select Service \$01 with GST.
- Calculate the total value of "Short term fuel trim" and "Long term fuel trim" indications.

#### Is the total percentage within $\pm 15\%$ ?

YES >> GO TO 8.

NO >> GO TO 7.

### 7. DETECT MALFUNCTIONING PART

### Check the following.

- · Intake air leaks
- Exhaust gas leaks
- · Incorrect fuel pressure
- Lack of fuel
- Fuel injector
- · Incorrect PCV hose connection
- PCV valve
- · Mass air flow sensor

### >> Repair or replace malfunctioning part.

# 8.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Increase the engine speed up to about 3.600 rpm and keep it for 10 seconds.
- 7. Fully release accelerator pedal and then let engine idle for about 1 minute.
- 8. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-294, "Diagnosis Procedure".

NO >> INSPECTION END

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### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### Diagnosis Procedure

INFOID:0000000012197845

# 1. CHECK GROUND CONNECTION

- 1. Turn ignition switch OFF.
- Check ground connection M95. Refer to Ground Inspection in GI-48. "Circuit Inspection".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

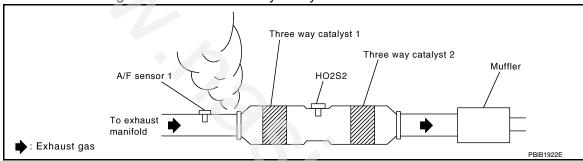
# 2.RETIGHTEN A/F SENSOR 1

Loosen and retighten the A/F sensor 1. Refer to <u>EM-34, "2WD : Exploded View"</u> (FOR 2WD MODELS), <u>EM-37, "AWD : Exploded View"</u> (FOR AWD MODELS).

>> GO TO 3.

# 3. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- Listen for an exhaust gas leak before three way catalyst 1.



#### Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

### 4. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

### Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 5.

## 5. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to EC-165, "Description".
- 2. Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0171or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171or P0172. Refer to <u>EC-297, "DTC Logic"</u> or <u>EC-301, "DTC Logic"</u>.

NO >> GO TO 6.

# $oldsymbol{6}$ .CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

A/F se	A/F sensor 1		Voltage	
Connector	Terminal	Ground	voltage	
F70	4	Ground	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 8.

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

NO >> GO TO 7.

# 7.DETECT MALFUNCTIONING PART

Check the following.

- Harness connectors E8. F1
- IPDM E/R harness connector E14
- 20 A fuse (No. 43)
- Harness for open or short between A/F sensor 1 and fuse
  - >> Repair or replace harness or connectors.

# 8.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

A/F sei	nsor 1	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F70	1	F25	21	Existed
170	2	1 25	25	LAISIEU

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

A/F sensor 1		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F70	1	Ground	Not existed	
170	2	Ground	Not existed	

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F25	21	Ground	Not existed	
1 23	25	Glound	Not existed	

5. Also check harness for short to power.

Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

9. CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-204, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 13.

10.CHECK MASS AIR FLOW SENSOR

Check mass air flow sensor.

Refer to EC-235, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning mass air flow sensor. Refer to EM-27, "Exploded View".

11. CHECK PCV VALVE

Refer to EM-60, "Exploded View".

Is the inspection result normal?

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 12.

NO >> Repair or replace PCV valve.

12. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

### Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or replace.

13.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning air fuel ratio (A/F) sensor 1. Refer to  $\underline{\text{EM-34}}$ , "2WD : Exploded View" (FOR 2WD MODELS),  $\underline{\text{EM-37}}$ , "AWD : Exploded View" (FOR AWD MODELS).

### **CAUTION:**

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P0171 FUEL INJECTION SYSTEM FUNCTION

DTC Logic INFOID:0000000012197846

#### DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too lean.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0171	FUEL SYS-LEAN-B1 (Fuel injection system too lean)	Fuel injection system does not operate properly.     The amount of mixture ratio compensation is too large. (The mixture ratio is too lean.)	<ul> <li>Intake air leaks</li> <li>A/F sensor 1</li> <li>Fuel injector</li> <li>Exhaust gas leaks</li> <li>Incorrect fuel pressure</li> <li>Lack of fuel</li> <li>Mass air flow sensor</li> <li>Incorrect PCV hose connection</li> </ul>

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Clear the mixture ratio self-learning value. Refer to EC-165, "Description".
- 2. Start engine.

#### Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

### 3.restart engine

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

#### NOTE:

When depressing accelerator pedal three-fourths (3/4) or more, the control system does not start the engine. Do not depress accelerator pedal too much.

#### Does engine start?

YES >> Proceed to EC-298, "Diagnosis Procedure".

NO >> Check exhaust and intake air leak visually.

### f 4 .PERFORM DTC CONFIRMATION PROCEDURE-II

- Start engine and let it idle for at least 5 minutes.
- 2. Check 1st trip DTC.

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**EC-297 Revision: November 2015 2016 JUKE** 

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### Is 1st trip DTC detected?

YES >> Proceed to EC-298, "Diagnosis Procedure".

NO >> GO TO 5.

# 5. PERFORM DTC CONFIRMATION PROCEDURE-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine.
- 3. Maintain the following conditions for at least 10 consecutive minutes. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE 50 - 120 km/h (31 - 75 MPH)

#### **CAUTION:**

### Always drive vehicle at a safe speed.

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-298, "Diagnosis Procedure".

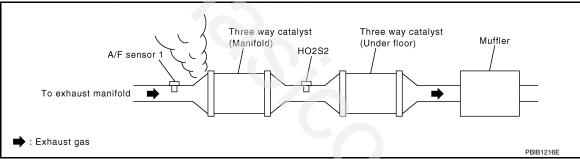
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197847

## 1. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 2.

# 2.CHECK FOR INTAKE AIR LEAK

- 1. Listen for an intake air leak after the mass air flow sensor.
- Check PCV hose connection.

### Intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

# 3. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

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A/F sensor 1		ECM		Continuity	
Connector	Terminal	Connector	Terminal		
F70	1	F25	21	Existed	
170	2	1 23	25	Existed	

< DTC/CIRCUIT DIAGNOSIS >

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Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground. Α EC A/F sensor 1 Continuity Connector **Terminal** F70 Ground Not existed 2 D + **ECM** Continuity Connector Terminal Е 21 F25 Ground Not existed 25 Also check harness for short to power. Is the inspection result normal? YES >> GO TO 4. NO >> Repair or replace error-detected parts. 4.CHECK FUEL PRESSURE Check fuel pressure. Refer to EC-166, "Work Procedure". Н Is the inspection result normal? YES >> GO TO 6. NO >> GO TO 5.  $oldsymbol{5}$  . DETECT MALFUNCTIONING PART Check fuel hoses and fuel tubes for clogging. Refer to <a>EM-54</a>, "Exploded View"</a>. Is the inspection result normal? YES >> Replace "fuel filter and fuel pump assembly". Refer to FL-6, "2WD: Exploded View" (2WD) or FL-10, "AWD: Exploded View" (AWD). NO >> Repair or replace error-detected parts. 6.CHECK MASS AIR FLOW SENSOR With CONSULT Install all removed parts. Check "MASS AIR FLOW" in "DATA MONITOR" mode of "ENGINE" using CONSULT. For specification, refer to EC-591, "Mass Air Flow Sensor". 1. Install all removed parts. Check mass air flow sensor signal in Service \$01 with GST. Ν For specification, refer to EC-591, "Mass Air Flow Sensor". Is the measurement value within the specification? YES >> GO TO 7. >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or NO grounds. Refer to EC-238, "DTC Logic". 7 .CHECK FUNCTION OF FUEL INJECTOR

### (P)With CONSULT

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Make sure that each circuit produces a momentary engine speed drop.

### 

Let engine idle.

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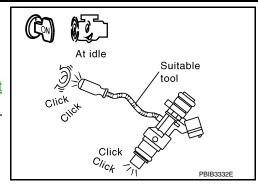
[MR FOR NISMO RS MODELS]

2. Listen to each fuel injector operating sound.

### Clicking noise should be heard.

### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-45</u>, "<u>Intermittent Incident"</u>.
- NO >> Perform trouble diagnosis for "FUEL INJECTOR", refer to <u>EC-541, "Component Function Check"</u>.



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### P0172 FUEL INJECTION SYSTEM FUNCTION

DTC Logic

### DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0172	FUEL SYS-RICH-B1 (Fuel injection system too rich)	Fuel injection system does not operate properly.     The amount of mixture ratio compensation is too large. (The mixture ratio is too rich.)	A/F sensor 1     Fuel injector     Exhaust gas leaks     Incorrect fuel pressure     Mass air flow sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Clear the mixture ratio self-learning value. Refer to <a>EC-165</a>, "Description"</a>.
- 2. Start engine.

### Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

3.restart engine

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

#### NOTE:

When depressing accelerator pedal three-fourths (3/4) or more, the control system does not start the engine. Do not depress accelerator pedal too much.

### Does engine start?

YES >> Proceed to EC-302, "Diagnosis Procedure".

NO >> Check exhaust and intake air leak visually.

### 4. PERFORM DTC CONFIRMATION PROCEDURE-II

- 1. Start engine and let it idle for at least 5 minutes.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-302, "Diagnosis Procedure".

NO >> GO TO 5.

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# 5. PERFORM DTC CONFIRMATION PROCEDURE-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start engine.
- 3. Maintain the following conditions for at least 10 consecutive minutes. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE 50 - 120 km/h (31 - 75 MPH)

#### **CAUTION:**

### Always drive vehicle at a safe speed.

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-302, "Diagnosis Procedure".

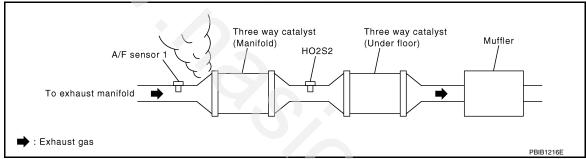
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012197849

# 1. CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- Listen for an exhaust gas leak before three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 2.

### 2 . CHECK FOR INTAKE AIR LEAK

- 1. Listen for an intake air leak after the mass air flow sensor.
- 2. Check PCV hose connection.

#### Intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

# 3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

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A/F se	A/F sensor 1 ECM		CM	Continuity
Connector	Terminal	Connector	Terminal	
F70	1	F25	21	Existed
1 70	2	1 23	25	LAISIEU

5. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

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AFF sensor 1 Connector Terminal F70 1 Ground Not existed  # Continuity  Connector Terminal F25 21 Ground Not existed  # Connector Terminal F26 21 Ground Not existed  # Connector Terminal F27 22 Ground Not existed  # Connector Terminal F28 20 Ground Not existed  # Connector Terminal F28 21 Ground Not existed  # Connector Terminal F28 22 Ground Not existed  # Connector Terminal F28 22 Ground Not existed  # Connector Terminal # Connec	
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Check mass air flow sensor signal in Service \$01 with GST. For specification, refer to EC-591, "Mass Air Flow Sensor".  the measurement value within the specification?  YES >> GO TO 7.  NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit grounds. Refer to EC-238. "DTC Logic".	
For specification, refer to <a href="EC-591">EC-591</a> , "Mass Air Flow Sensor".  the measurement value within the specification?  YES >> GO TO 7.  NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit grounds. Refer to <a href="EC-238">EC-238</a> , "DTC Logic".	
<ul> <li>YES &gt;&gt; GO TO 7.</li> <li>NO &gt;&gt; Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit grounds. Refer to <a href="EC-238">EC-238</a>, "DTC Logic".</li> </ul>	
NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit grounds. Refer to <a href="EC-238">EC-238</a> , "DTC Logic".	
·	or
With CONSULT	
. Start engine.	
<ul> <li>Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.</li> <li>Make sure that each circuit produces a momentary engine speed drop.</li> </ul>	

Without CONSULT

1. Let engine idle.

### < DTC/CIRCUIT DIAGNOSIS >

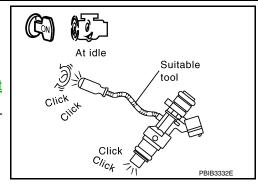
[MR FOR NISMO RS MODELS]

2. Listen to each fuel injector operating sound.

### Clicking noise should be heard.

### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to <u>GI-45</u>, "<u>Intermittent Incident"</u>.
- NO >> Perform trouble diagnosis for "FUEL INJECTOR", refer to <u>EC-541, "Component Function Check"</u>.



### [MR FOR NISMO RS MODELS]

### P0181 FTT SENSOR

DTC Logic INFOID:0000000012197850

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		DTC detecting condition	Possible cause
		A)	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from ECT sensor and intake air temperature sensor 1.	<ul> <li>Harness or connectors (FTT sensor circuit is open or shorted)</li> <li>FTT sensor</li> <li>Combination meter</li> </ul>
P0181	FTT SENSOR [Fuel tank temperature (FTT) sensor circuit range/perfor- mance]	B)	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor 1, IAT sensor 2, ECT sensor, EOT sensor, and FTT sensor) shows that the voltage signal of the FTT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	<ul> <li>Harness or connectors         (High or low resistance in the FTT sensor circuit)</li> <li>FTT sensor</li> </ul>

### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

### Is it necessary to erase permanent DTC?

YES >> GO TO 7.

NO >> GO TO 2.

### 2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 3.

# 3.perform dtc confirmation procedure for malfunction ${\sf A-I}$

- Turn ignition switch ON and wait at least 10 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-307, "Diagnosis Procedure".

NO >> GO TO 4.

### 4. CHECK ENGINE COOLANT TEMPERATURE

#### (P)With CONSULT

- Select "COOLAN TEMP/S" in "DATA MONITOR" of "ENGINE" using CONSULT.
- Check "COOLAN TEMP/S" value.

Follow the procedure "With CONSULT" above.

#### "COOLAN TEMP/S" less than 60°C (140°F)?

YES >> INSPECTION END

NO >> GO TO 5.

### $oldsymbol{5}$ .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A-II

#### (P)With CONSULT

Cool engine down until "COOLAN TEMP/S" is less than 60°C (140°F).

EC-305 **Revision: November 2015 2016 JUKE**  EC

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### P0181 FTT SENSOR

### [MR FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

- 2. Wait at least 10 seconds.
- Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-307</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 6.

### $oldsymbol{6}$ .PERFORM COMPONENT FUNCTION CHECK (FOR MALFUNCTION B)

Perform component function check. Refer to EC-306, "Component Function Check".

#### NOTE:

Use the component function check to check the overall function of the FTT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-307, "Diagnosis Procedure".

### 7.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- · Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 8.

# 8. PERFORM DTC CONFIRMATION PROCEDURE B

- 1. Start engine and let it idle for 60 minutes.
- 2. Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

3. Turn ignition switch OFF and soak the vehicle for 12 hours.

#### **CAUTION:**

Never turn ignition switch ON during soaking.

#### NOTE:

The vehicle must be cooled with the hood open.

4. Start engine and let it idle for 5 minutes or more.

#### **CAUTION:**

Never turn ignition switch OFF during idling.

5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-307, "Diagnosis Procedure".

NO >> INSPECTION END

# Component Function Check

INFOID:0000000012197851

# 1. CHECK FUEL TANK TEMPERATURE (FTT) SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit and fuel pump harness connector.
- Remove fuel level sensor unit. Refer to <u>FL-6</u>, "2WD : Exploded <u>View"</u>(2WD), <u>FL-10</u>, "AWD : Exploded <u>View"</u>(AWD).

### P0181 FTT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

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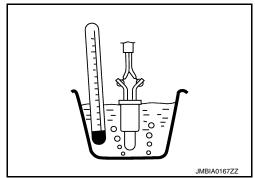
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4. Check resistance between fuel level sensor unit and fuel pump terminals by heating with hot water as shown in the figure.

Fuel level sensor unit and fuel pump		Condition		<b>5</b> 14 (1-)
+	_	Condition		Resistance (kΩ)
Terminal				
4	5	Temperature [°C	20 (68)	2.3 – 2.7
4	3	(°F)]	50 (122)	0.79 - 0.90



#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to EC-307, "Diagnosis Procedure".

## Diagnosis Procedure

## 1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-305, "DTC Logic".

### Which malfunction is detected?

A >> GO TO 2.

B >> GO TO 6.

# 2.CHECK DTC WITH COMBINATION METER

Check DTC with combination meter. Refer to MWI-22, "CONSULT Function".

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to MWI-54, "Component Function Check".

# $3.\mathsf{CHECK}$ FUEL TANK TEMPERATURE (FTT) SENSOR POWER

- 1. Turn ignition switch OFF.
- Disconnect fuel level sensor unit and fuel pump harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between fuel level sensor unit and fuel pump harness connector and ground.

	+		V-H	
Fuel level sensor	unit and fuel pump	_	Voltage (Approx.)	
Connector	Terminal		(	
B46	4	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

## f 4.CHECK FUEL TANK TEMPERATURE (FTT) SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between fuel level sensor unit and fuel pump harness connector and ECM harness connector.

	+ -		+		-	
	nsor unit and pump	ECM		Continuity		
Connector	Terminal	Connector Terminal				
B46	4	F26	84	Existed		

4. Also check harness for short to ground and to power.

#### < DTC/CIRCUIT DIAGNOSIS >

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 5. CHECK FTT SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect combination meter harness connector.
- 3. Check the continuity between fuel level sensor unit and fuel pump harness connector and combination meter harness connector.

+		-		
	nsor unit and pump	Combination meter		Continuity
Connector	Terminal	Connector Terminal		
B46	5	M34	24	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO

NO >> Repair or replace error-detected parts.

### 6.CHECK FUEL TANK TEMPERATURE (FTT) SENSOR

Check the FTT sensor. Refer to EC-308, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace fuel level sensor unit and fuel pump. Refer to <u>FL-6, "2WD : Exploded View"</u>(2WD), <u>FL-10, "AWD : Exploded View"</u>(AWD).

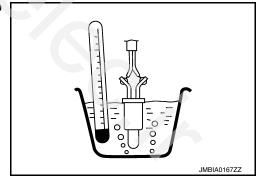
### Component Inspection

INFOID:0000000012197853

# 1. CHECK FUEL TANK TEMPERATURE (FTT) SENSOR

- Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit and fuel pump harness connector.
- Remove fuel level sensor unit. Refer to FL-6, "2WD : Exploded View" (2WD), FL-10, "AWD : Exploded View" (AWD).
- 4. Check resistance between fuel level sensor unit and fuel pump terminals by heating with hot water as shown in the figure.

Fuel level sensor unit and fuel pump + _		Condition		Desistance (IsO)	
				Resistance ( $k\Omega$ )	
Terminal					
4	5	Temperature 20 (68)		2.3 – 2.7	
	4 5 [°		50 (122)	0.79 – 0.90	



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit and fuel pump. Refer to FL-6, "2WD : Exploded View".

### **P0182, P0183 FTT SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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### P0182, P0183 FTT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0182	FTT SEN/CIRCUIT (Fuel tank temperature sensor circuit low input)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors     (The FTT sensor circuit is open or shorted.)
P0183	FTT SEN/CIRCUIT (Fuel tank temperature sensor circuit high input)	An excessively high voltage from the sensor is sent to ECM.	Fuel tank temperature sensor     Combination meter

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-309, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# 1. CHECK DTC WITH COMBINATION METER

Refer to MWI-22, "CONSULT Function".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to MWI-54, "Component Function Check".

# 2.CHECK FUEL TANK TEMPERATURE (FTT) SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit and fuel pump harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between fuel level sensor unit and fuel pump harness connector and ground.

+			
Fuel level sensor unit and fuel pump		_	Voltage (Approx.)
Connector	Terminal		
B46	4	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

### **P0182, P0183 FTT SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# $\overline{3}$ .check fuel tank temperature (ftt) sensor power supply circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between fuel level sensor unit and fuel pump harness connector and ECM harness connector.

+		-	_	
Fuel level ser fuel p		ECM		Continuity
Connector	Terminal	Connector Terminal		
B46	4	F26	F26 84	

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 4. CHECK FUEL TANK TEMPERATURE (FTT) SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect combination meter harness connector.
- Check the continuity between fuel level sensor unit and fuel pump harness connector and combination meter harness connector.

+		-	-	
Fuel level ser fuel p		Combination meter		Continuity
Connector	Terminal	Connector Terminal		
B46	5	M34	24	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5. CHECK FUEL TANK TEMPERATURE (FTT) SENSOR

Check the FTT sensor. Refer to EC-310, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace "fuel level sensor unit and fuel pump". Refer to <u>FL-6, "2WD : Exploded View"(2WD)</u>, <u>FL-10, "AWD : Exploded View"(AWD)</u>.

## Component Inspection

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# 1. CHECK FUEL TANK TEMPERATURE (FTT) SENSOR

- Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit and fuel pump harness connector.
- Remove fuel level sensor unit. Refer to <u>FL-6</u>, "2WD : Exploded <u>View"</u>(2WD), <u>FL-10</u>, "AWD : Exploded <u>View"</u>(AWD).

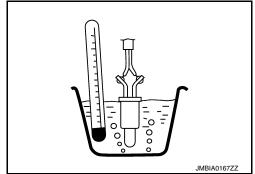
## **P0182, P0183 FTT SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

4. Check resistance between fuel level sensor unit and fuel pump terminals by heating with hot water as shown in the figure.

Fuel level sensor unit and fuel pump		Condition			
+	_	Cond	Resistance (kΩ)		
Terminal					
4	5	Temperature	20 (68)	2.3 – 2.7	
4	5 [°C (°F	[°C (°F)]	50 (122)	0.79 - 0.90	



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit and fuel pump. Refer to FL-6, "2WD : Exploded View".

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## P0190, P0192, P0193 FRP SENSOR

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

If DTC P0193 is displayed with DTC P0190 or P119C, perform the trouble diagnosis for DTC P0190 or P119C. Refer to <u>EC-115</u>, "DTC Index".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0190	FUEL PRES SEN/CIRCUIT (Fuel rail pressure sensor circuit low input and high in- put)	Signal voltage from the fuel rail pressure sensor remains at more than 4.84 V / less than 0.2 V for 5 seconds or more.	Harness or connectors     (Fuel rail pressure sensor circuit is open or shorted.)     (Battery current sensor circuit is open or short-
P0192	FRP SEN/CIRC (Fuel rail pressure sensor circuit low input)	Signal voltage from the fuel rail pressure sensor remains at less than 0.37 V for 5 seconds or more.	ed.) (G sensor circuit is open or shorted.) (Camshaft position sensor circuit is open or shorted.)
P0193	FRP SEN/CIRC (Fuel rail pressure sensor circuit high input)	Signal voltage from the fuel rail pressure sensor remains at more than 4.06 V for 5 seconds or more.	(Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) • Fuel rail pressure sensor • Battery current sensor • G sensor • Camshaft position sensor • Exhaust valve timing control position sensor • Accelerator pedal position sensor 2 • Turbocharger boost sensor • Engine oil pressure sensor

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start the engine ON and wait at least 60 seconds.
- Check DTC or 1st trip DTC.

### Is DTC or 1st trip DTC detected?

YES >> Proceed to EC-312, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### NOTE:

Turning the ignition switch ON with FRP sensor harness connector disconnected causes ECM to detect DTC P0190. Be sure to erase the DTC when the diagnosis procedure.

### P0190, P0192, P0193 FRP SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 1.CHECK FUEL RAIL PRESSURE (FRP) SENSOR POWER SUPPLY-I

- Turn ignition switch OFF.
- Disconnect FRP sensor connector.
- Turn ignition switch ON.
- Check the voltage between FRP sensor harness connector terminals.

	FRP sensor	V #	
Connector	+	_	Voltage (Approx.)
Connector	tern	ninal	,
F5	1	3	5 V

### Inspection result normal?

YES >> GO TO 6.

NO >> GO TO 2.

## 2.CHECK FRP SENSOR POWER SUPPLY-II

Check the voltage between FRP sensor harness connector and the ground.

+			Valla
FRP sensor			Voltage (Approx.)
Connector	Terminal		(
F5	1	Ground	5 V

### Is inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.check sensor power supply circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

E	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25 39	39	EOP sensor	F43	3
		Turbocharger boost sensor	F75	1
	68	Battery current sensor	F52	1
F26		G sensor	B32	3
F20	72	CMP sensor	F109	1
	12	EVT control position sensor	F110	1
E18	118	APP sensor 2	E101	5

#### Is inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### 4. CHECK FRP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

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+		_		
FRP	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F5	3	F25	44	Existed

4. Also check harness for short to power.

### Is inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and the ground.

E	CM	Ground	Continuity
Connector Terminal		Ground	Continuity
F25	1		
F25	2		Existed
	123	Ground	
E18	124		
	127		

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

# 6. CHECK FRP SENSOR SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

+		_		
FRP	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F5	2	F25	18	Existed

Also check harness for short to ground and to power.

### Is inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

### .CHECK FRP SENSOR

Check the FRP sensor. Refer to EC-314, "Component Inspection".

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

### Component Inspection

# 1. CHECK FRP SENSOR

### (I) WITH CONSULT

- 1. Turn ignition switch OFF.
- Reconnect harness connector disconnected.
- Start the engine.
- 4. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.

### P0190, P0192, P0193 FRP SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

### 5. Check that the "FUEL PRES SEN V" indication.

Monitor Item	Condition	Values/Status
	Engine speed: Idle	1,140 – 1,460 mV
FUEL PRES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

### **®WITHOUT CONSULT**

- 1. Turn ignition switch OFF.
- 2. Reconnect harness connector disconnected.
- 3. Start the engine.
- 4. Check FRP sensor signal voltage.

	ECM				
Connector	Connector + -		Condition	Value (Approx.)	
Connector				(, (pp.o)	
F25	18	44	[Engine is running]  • Warm-up condition  • Idle speed	1.14– 1.46 V	
F <b>Z</b> 3	10	44	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Revving engine from idle to 4,000 rpm quickly</li></ul>	1.3 – 2.9 V	

### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace FRP sensor. Refer to EM-54, "Exploded View".

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### P0196 EOT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0196 is displayed with DTC P0197 or P0198, first perform the trouble diagnosis for DTC P0197 or P0198. Refer to <u>EC-320, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible cause
	4	A)	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from EOT sensor and intake air temperature sensor 1.	Harness or connectors     (EOT sensor circuit is open or shorted)     EOT sensor
P0196	EOT SENSOR [Engine oil temperature (EOT) sensor circuit range/performance]	B)	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor1, IAT sensor 2, ECT sensor, FTT sensor, and EOT sensor) shows that the signal voltage of the EOT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors     (High or low resistance in the EOT sensor circuit)     EOT sensor

### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

### Is it necessary to erase permanent DTC?

YES >> GO TO 6.

NO >> GO TO 2.

## 2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 3.

# 3.perform dtc confirmation procedure for malfunction a-i

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and let it idle for 5 minutes and 10 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-318, "Diagnosis Procedure".

NO >> GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A-II

### (P)With CONSULT

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Check that "COOLAN TEMP/S" indicates above 80°C (176°F). If it is above 80°C (176°F), go to the following steps.

### P0196 EOT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

If it is below 80°C (176°F), warm engine up until "COOLAN TEMP/S" indicates more than 80°C (176°F). Then perform the following steps.

- 3. Turn ignition switch OFF and soak the vehicle in a cool place.
- 4. Turn ignition switch ON.

#### NOTE:

Do not turn ignition switch OFF until step 8.

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check the following.

COOLAN TEMP/S	Below 40°C (104°F)
INT/A TEMP SE	Below 40°C (104°F)
Difference between "COOLAN TEMP/S" and "INT/A TEMP SE"	Within 6°C (11°F)

If they are within the specified range, perform the following steps.

If they are out of the specified range, soak the vehicle to meet the above conditions. Then perform the following steps.

#### NOTE:

- Do not turn ignition switch OFF.
- If it is supposed to need a long period of time, do not deplete the battery.
- Start engine and let it idle for 5 minutes.
- 8. Check 1st trip DTC.

#### 

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-318, "Diagnosis Procedure".

NO >> GO TO 5.

## ${f 5}$ PERFORM COMPONENT FUNCTION CHECK (FOR MALFUNCTION B)

Perform component function check. Refer to EC-318, "Component Function Check".

### NOTE:

Use the component function check to check the overall function of the EOT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-318, "Diagnosis Procedure".

### 6.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds. 1.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 7.

### /.PERFORM DTC CONFIRMATION PROCEDURE B

- Start engine and let it idle for 60 minutes.
- Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

Turn ignition switch OFF and soak the vehicle for 12 hours.

### **CAUTION:**

Never turn ignition switch ON during soaking.

#### NOTE:

The vehicle must be cooled with the hood open.

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#### < DTC/CIRCUIT DIAGNOSIS >

4. Start engine and let it idle for 5 minutes or more.

#### **CAUTION:**

Never turn ignition switch OFF during idling.

5. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-318, "Diagnosis Procedure".

NO >> INSPECTION END

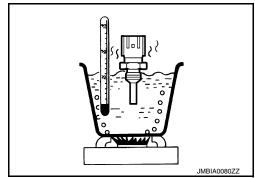
### Component Function Check

INFOID:0000000012197861

# 1. CHECK ENGINE OIL TEMPERATURE (EOT) SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect EOT sensor harness connector.
- 3. Remove EOT sensor. Refer to EM-114, "Exploded View".
- 4. Check resistance between EOT sensor terminals by heating with hot water as shown in the figure.

EOT :	sensor	Condition		Condition Resistance ( $k\Omega$ )
+	_			
Terr	ninal			
		T ( 100	20 (68)	2.37 – 2.63
1	2	Temperature [°C (°F)]	50 (122)	0.68 – 1.00
		( /1	90 (194)	0.236 - 0.260



### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Proceed to EC-318, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012197862

# 1. CHECK ENGINE OIL TEMPERATURE (EOT) SENSOR

Check EOT sensor. Refer to EC-318, "Component Inspection"

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EOT sensor. Refer to <a href="EM-114">EM-114</a>, "Exploded View".

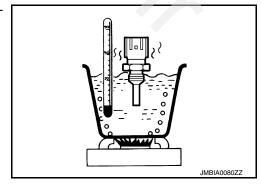
## Component Inspection

INFOID:0000000012197863

# 1. CHECK ENGINE OIL TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- Disconnect engine oil temperature sensor harness connector.
- 3. Remove engine oil temperature sensor.
- 4. Check resistance between engine oil temperature sensor terminals by heating with hot water as shown in the figure.

J	emperature nsor	0 111		5 11 (10)
+	ı	Condition		Resistance (kΩ)
Terr	ninal			
		_ ,	20 (68)	2.37 - 2.63
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
		1 - ( )1	90 (194)	0.236 - 0.260



#### Is the inspection result normal?

YES >> INSPECTION END

### **P0196 EOT SENSOR**

>> Replace engine oil temperature sensor. Refer to EM-114, "Exploded View". NO

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[MR FOR NISMO RS MODELS]

## P0197, P0198 EOT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC Detecting Condition	Possible Cause
P0197	EOT SEN/CIRC (Engine oil temperature sensor circuit low input)	An excessively low voltage from the engine oil temperature sensor is sent to ECM.	Harness or connectors     (EOT sensor circuit is open or shorted.)
P0198	EOT SEN/CIRC (Engine oil temperature sensor circuit high input)	An excessively high voltage from the engine oil temperature sensor is sent to ECM.	Engine oil temperature sensor

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 5 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-320, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197865

# 1. CHECK ENGINE OIL TEMPERATURE SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect engine oil temperature (EOT) sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between EOT sensor harness connector and ground.

+			V-11	
EOT sensor		_	Voltage (Approx.)	
Connector	Terminal		, , ,	
F43	3	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.CHECK ENGINE OIL TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between EOT sensor harness connector and ECM harness connector.

### **P0197, P0198 EOT SENSOR**

### [MR FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

+		_		
EOT s	ensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F43	3	F25	39	Existed

Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check eot sensor ground circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EOT sensor harness connector and ECM harness connector.

+			-	
EOT sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F43	1	F25	44	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4.CHECK ENGINE OIL TEMPERATURE SENSOR

Check the engine oil temperature sensor. Refer to EC-318, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

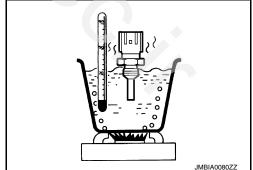
NO >> Replace engine oil temperature sensor. Refer to EM-114, "Exploded View".

# Component Inspection

# 1. CHECK ENGINE OIL TEMPERATURE SENSOR

- Turn ignition switch OFF.
- 2. Disconnect engine oil temperature sensor harness connector.
- 3. Remove engine oil temperature sensor.
- Check resistance between engine oil temperature sensor terminals by heating with hot water as shown in the figure.

Engine oil temperature sensor		Condition		Resistance (kΩ)
+ –				
Terminal				
	2		20 (68)	2.37 - 2.63
1		Temperature [°C (°F)]	50 (122)	0.68 - 1.00
		1 - ( )1	90 (194)	0.236 - 0.260



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine oil temperature sensor. Refer to EM-114, "Exploded View".

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INFOID:0000000012197866

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### P0201, P0202, P0203, P0204 FUEL INJECTOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P0201, P0202, P0203, P0204 FUEL INJECTOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P0201	INJECTOR CIRC-CYL1 (No.1 fuel injector circuit)	ECM detects No. 1 injector circuit is open or shorted.		
P0202	INJECTOR CIRC-CYL2 (No. 2 fuel injector circuit)	ECM detects No. 2 injector circuit is open or shorted.	The fuel injector circuit is open or shorted Fuel injector ECM	
P0203	INJECTOR CIRC-CYL3 (No. 3 fuel injector circuit)	ECM detects No. 3 injector circuit is open or shorted.		
P0204	INJECTOR CIRC-CYL4 (No. 4 fuel injector circuit)	ECM detects No. 4 injector circuit is open or shorted.		

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, conform that battery voltage is 11 V or more at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and let it idle at least 30 seconds.
- 3. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-322, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197868

# 1. PERFORM TROUBLE DIAGNOSIS FOR INJECTOR

Perform trouble diagnosis for injector. Refer to <u>EC-541, "Component Function Check"</u>.

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

[MR FOR NISMO RS MODELS]

### P0222. P0223 TP SENSOR

**DTC Logic** INFOID:0000000012197869

#### DTC DETECTION LOGIC

### NOTE:

If DTC P0222 or P0223 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-346, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P0222	TP SEN 1/CIRC-B1 (Throttle position sensor 1 circuit low input)	An excessively low voltage from the TP sensor 1 is sent to ECM.	Harness or connectors     (TP sensor 1 circuit is open or shorted.)     Electric throttle control actuator     (TP sensor 1)	
P0223	TP SEN 1/CIRC-B1 (Throttle position sensor 1 circuit high input)	An excessively high voltage from the TP sensor 1 is sent to ECM.		

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- Start engine and let it idle for 1 second.
- 2. Check DTC.

### Is DTC detected?

>> Proceed to EC-323, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

# ${f 1}$ .CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

+ Electric throttle control actuator		_	Voltage (Approx.)	
Connector	Terminal		(	
F29	1	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2. 2 .CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT

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### **P0222, P0223 TP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		_		
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	1	F26	62	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check throttle position sensor 1 ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector

+		-		
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	4	F26	74	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK THROTTLE POSITION SENSOR 1 INPUT SIGNAL CIRCUIT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		_		
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	2	F26	75	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

### ${f 5.}$ CHECK THROTTLE POSITION SENSOR

Check the throttle position sensor. Refer to EC-325, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

# **P0222, P0223 TP SENSOR**

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# **Component Inspection**

INFOID:0000000012197871

# 1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform "Throttle Valve Closed Position Learning". Refer to EC-161, "Description".
- 4. Turn ignition switch ON.
- 5. Set selector lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector terminals as per the following conditions.

ECM					
Connector	+	_	Condition		Voltage
Connector	Terr	ninal			
	75			Fully released	More than 0.36V
F26	73	74	Accelerator	Fully depressed	Less than 4.75V
F20	76		pedal	Fully released	Less than 4.75V
			Fully depressed	More than 0.36V	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

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## P0234 TC SYSTEM

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0234 is displayed with DTC P0237 or P0238, first perform the trouble diagnosis for DTC P0237 or P0238. Refer to <u>EC-332</u>. "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0234	TC SYSTEM-B1 (Turbocharger overboost condition)	Turbocharger boost is higher than the target value.	<ul> <li>Turbocharger boost sensor</li> <li>Turbocharger boost control solenoid valve</li> <li>Exhaust manifold and turbocharger assembly</li> <li>Disconnection, looseness or improper connection of boost control actuator hose</li> </ul>

## DTC CONFIRMATION PROCEDURE

# 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-326, "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the turbocharger system circuit. During this check, DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-327, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012197873

# 1. CHECK BOOST CONTROL ACTUATOR HOSE

Check disconnection, looseness or improper connection of hose between turbocharger boost control solenoid valve and boost control actuator.

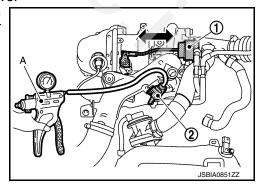
#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to EC-327, "Diagnosis Procedure".

# 2. PERFORM COMPONENT FUNCTION CHECK

- Turn ignition switch OFF.
- 2. Disconnect turbocharger boost control solenoid valve harness connector.
- 3. Disconnect of hose between turbocharger boost control solenoid valve and compressor outlet pipe.
- 4. Install pressure pump to turbocharger boost control solenoid valve.
- 5. Check that the rod of the boost control actuator activates when supplying pressure and battery voltage to the turbocharger boost control solenoid valve as per the following conditions.



## [MR FOR NISMO RS MODELS]

DIC/CIRC						
	Turboch	narger boost o		oid valve	Operation	
	oly pressure [73 kl	Condition  EPa (730 mbar, 548 mmHg, 21.56 inHg)] with batals 1 and 2  Boost control actuator rod operates				
Supp		Pa (730 mba		, 21.56 inHg)] without	Boost control actuator rod not operates	
CAUTIC						
			3 kPa (83	0 mbar, 623 mmHզ	g, 24.51 inHg)	
	tion result nor					
	Proceed to EC		gnosis Pro	ocedure".		
	Procedure				INFOID:00000	000012197874
					114 S12-0000	,00012131014
	BOOST CONT					
	nnection, loos		mproper co	onnection of hose b	etween turbocharger boost control so	olenoid
	ction result nor					
•	GO TO 2.	mar:				
_	Repair or repla	ace error-d	letected pa	arts.		
<b>2.</b> снеск т	URBOCHAR	GER BOO	ST CONTI	ROL SOLENOID VA	ALVE POWER SUPPLY	
			ST CONTI	ROL SOLENOID VA	ALVE POWER SUPPLY	
1. Turn ign 2. Disconn	ition switch Of ect turbocharg	FF. ger boost c		ROL SOLENOID V		
I. Turn ign 2. Disconn 3. Turn ign	ition switch Of ect turbocharg ition switch Of	FF. ger boost c N.	ontrol sole	noid valve harness	connector.	ad.
I. Turn ign 2. Disconn 3. Turn ign	ition switch Of ect turbocharg ition switch Of	FF. ger boost c N.	ontrol sole	noid valve harness		nd.
I. Turn ign 2. Disconn 3. Turn ign	ition switch Of ect turbocharg ition switch Of	FF. ger boost c N.	ontrol sole	noid valve harness	connector.	nd.
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Turn ign Disconn Turn ign Check th  Turbocharge	ition switch Of ect turbocharg ition switch Of ne voltage between the properties of	FF. ger boost c N. ween turbo	ontrol sole	enoid valve harness	connector.	nd.
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Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 s the inspec	ition switch Of ect turbocharg ition switch Of ne voltage between two services of the voltage between	FF. ger boost c N. ween turbo	control sole ocharger b	enoid valve harness cost control soleno Voltage	connector.	nd.
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 s the inspective YES >> NO >>	tition switch Of ect turbochargition switch Of the voltage between two terms of the voltage between	FF. ger boost c N. ween turbo	control sole ocharger b	enoid valve harness cost control soleno Voltage Battery voltage	connector. id valve harness connector and groun	nd.
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 s the inspective YES >> NO >>	tition switch Of ect turbochargition switch Of the voltage between two terms of the voltage between	FF. ger boost c N. ween turbo	control sole ocharger b	enoid valve harness cost control soleno Voltage Battery voltage	connector.	nd.
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 S the inspect YES >> ( NO >> ( CHECK T	ition switch Of ect turbochargition switch Of the voltage between two streets of the v	FF. ger boost c N. ween turbo	control sole ocharger b	enoid valve harness cost control soleno Voltage Battery voltage	connector. id valve harness connector and groun	nd.
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 s the inspect YES >> NO >> 0 CHECK T Turn ign Disconn	ition switch Of ect turbocharg ition switch Of ne voltage between two streets of the voltage between two switch Of the voltage	FF. ger boost c N. ween turbo  le- l GER BOOS  FF. harness c	control sole ocharger b - Ground ST CONTR	voltage  Battery voltage  ROL SOLENOID V	connector.  id valve harness connector and ground the second seco	
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 s the inspect YES >> NO >> NO >> NO Turn ign Check th	ition switch Of ect turbocharg ition switch Of the voltage between two switch of the continuity by the conti	FF. ger boost c N. ween turbo  le- l GER BOOS  FF. harness c	control sole ocharger b - Ground ST CONTR	voltage  Battery voltage  ROL SOLENOID V	connector. id valve harness connector and groun	
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 s the inspect YES >> NO >> NO >> NO Turn ign Check th	ition switch Of ect turbocharg ition switch Of ne voltage between two streets of the voltage between two switch Of the voltage	FF. ger boost c N. ween turbo  le- l GER BOOS  FF. harness c	control sole ocharger b - Ground ST CONTR	voltage  Battery voltage  ROL SOLENOID V	connector.  id valve harness connector and ground the second seco	
Turn ign Disconn Turn ign Check th  Turbocharge n Connector F54 S the inspect YES >> NO >> NO >> NO Turn ign Check th Check th	ition switch Of ect turbocharg ition switch Of the voltage between two switch of the continuity by the conti	FF. ger boost con. ween turbounder lole- ger boost con. GER BOOST	control sole ocharger b - Ground ST CONTR	voltage  Battery voltage  ROL SOLENOID V	connector.  id valve harness connector and ground the second seco	
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Turn ign Disconn Turn ign Check th Turbocharge n Connector F54 Sthe inspec YES >> NO >> NO >> NO CHECK T Turn ign Disconn Check th harness	tition switch Of ect turbochargition switch Of the voltage between two tage between two tages and the voltage between two tages and tages are boost control to the voltage between two tages and tages are to tage to tage the voltage tages are the voltage tages and tages are the voltage tages and tages are the voltage tages are the	FF. ger boost con. ween turbout ole- I GER BOOS FF. harness contents etween tur	control sole ocharger b - Ground ST CONTR onnector.	voltage  ROL SOLENOID W	connector.  id valve harness connector and ground the second seco	

Also check harness for short to ground and short.

## Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit. >> Repair or replace error-detected parts. YES

NO

4. CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between turbocharger boost control solenoid valve harness connector and ECM harness connector.

+		_		
_	Turbocharger boost control solenoid valve		ECM	
Connector	Terminal	Connector	Terminal	
F54	1	F26	73	Existed

4. Also check harness for short to power.

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# ${f 5}.$ CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE

Check the turbocharger boost control solenoid valve. Refer to EC-210, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace turbocharger boost control solenoid valve. Refer to <a href="EM-40">EM-40</a>, "Exploded View".

# 6. CHECK BOOST CONTROL ACTUATOR

Check the boost control actuator. Refer to EM-41, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace exhaust manifold and turbocharger assembly. Refer to EM-40, "Exploded View".

# 7.CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-334, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor. Refer to EM-32, "Exploded View".

## P0235 TC BOOST SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P0235 TC BOOST SENSOR

DTC Logic INFOID:0000000012197875

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	
P0235	TURBO BOOST SENSOR (Turbocharger/supercharger boost sensor A circuit)	An excessively low voltage from the turbocharger boost sensor is sent to ECM.	, ,	

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-329, "Diagnosis Procedure"

>> INSPECTION END NO

## Diagnosis Procedure

# 1. CHECK TURBOCHARGER BOOST SENSOR POWER SUPPLY

- Disconnect turbocharger boost sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between turbocharger boost sensor harness connector and ground.

	+		V-11
Turbocharge	boost sensor	_	Voltage (Approx.)
Connector	Terminal		<b>,</b> , , , , , , , , , , , , , , , , , ,
F75	F75 1		5 V

## Is the inspection result normal?

>> GO TO 3. NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

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INFOID:0000000012197876

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
	68	Battery current sensor	F52	1	
F26	00	G sensor	B32	3	
F20	72	CMP sensor	F109	1	
	12	EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

## Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected part.

# ${f 3.}$ CHECK TURBOCHARGER BOOST SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

	+		-	
Turbocharge	Turbocharger boost sensor		ECM	
Connector	Terminal	Connector	Terminal	
F75	3	F25	44	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK TURBOCHARGER BOOST SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

+		_		
Turbocharge	Turbocharger boost sensor		ECM	
Connector	Terminal	Connector	Terminal	
F75	2	F25	41	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5. CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-330, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor. Refer to EM-40, "Exploded View".

# Component Inspection

INFOID:0000000012197877

# 1. CHECK TURBOCHARGER BOOST SENSOR

1. Turn ignition switch OFF.

## P0235 TC BOOST SENSOR

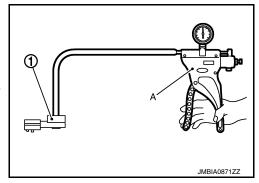
## < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

- 2. Remove turbocharger boost sensor with its harness connector.
- 3. Install pressure pump (A) to turbocharger boost sensor ①. CAUTION:

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- · Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

ECM			On all the Power on (Delether to all	Valtaga	
Connector	Connector + - Terminal		Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)	
				( ) ;	
F25	41 44	0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V		
1 25		40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V		

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to EM-40, "Exploded View".

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# P0237, P0238 TC BOOST SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0237	TC BOOST SEN/CIRC-B1 (Turbocharger boost sensor circuit low input)	An excessively low voltage from the turbocharger boost sensor is sent to ECM.	Harness or connectors     (Turbocharger boost sensor circuit is open or shorted.)
P0238	TC BOOST SEN/CIRC-B1 (Turbocharger boost sensor circuit high input )	An excessively high voltage from the turbocharger boost sensor is sent to ECM.	(Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Camshaft position sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) Turbocharger boost sensor Fuel rail pressure sensor Battery current sensor G sensor Camshaft position sensor Exhaust valve timing control position sensor Accelerator pedal position sensor 2

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-332, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197879

# 1. CHECK TURBOCHARGER BOOST SENSOR POWER SUPPLY

- Disconnect turbocharger boost sensor harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between turbocharger boost sensor harness connector and ground.

## P0237, P0238 TC BOOST SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

	+			
Turbocharge	r boost sensor	_	Voltage (Approx.)	
Connector	Connector Terminal		, , ,	
F75	F75 1		5 V	

Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
	00	Battery current sensor	F52	1	
F26	68	G sensor	B32	3	
F20	72	CMP sensor	F109	1	
	12	EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# ${f 3.}$ CHECK TURBOCHARGER BOOST SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

+		_		
Turbocharger boost sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F75	3	F25	44	Existed

Also check harness for short to power.

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK TURBOCHARGER BOOST SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

+		_		
Turbocharger boost sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F75	2	F25	41	Existed

2. Also check harness for short to ground and to power.

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## P0237, P0238 TC BOOST SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5. CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-334, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor. Refer to EM-40, "Exploded View".

# Component Inspection

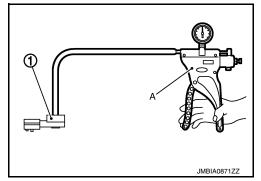
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# 1. CHECK TURBOCHARGER BOOST SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove turbocharger boost sensor with its harness connector.
- 3. Install pressure pump (A) to turbocharger boost sensor (1). CAUTION:

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- · Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

ECM					
Connector	+	_	Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)	
		ninal	, , , , , , , , , , , , , , , , , , , ,		
F25	F25 41 44 -		0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V	
1 23			40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V	

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to EM-40, "Exploded View".

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P0300, P0301, P0302, P0303, P0304 MISFIRE

**DTC Logic** INFOID:0000000012197881

#### DTC DETECTION LOGIC

When a misfire occurs, engine speed will fluctuate. If the engine speed fluctuates enough to cause the crankshaft position (CKP) sensor (POS) signal to vary, ECM can determine that a misfire is occurring.

Sensor	Input signal to ECM	ECM function
Crankshaft position sensor (POS)	Engine speed	On board diagnosis of misfire

The misfire detection logic consists of the following two conditions.

1. One Trip Detection Logic (Three Way Catalyst Damage)

On the 1st trip, when a misfire condition occurs that can damage the three way catalyst (TWC) due to overheating, the MIL will blink.

When a misfire condition occurs, the ECM monitors the CKP sensor signal every 200 engine revolutions for a change.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will turn off. If another misfire condition occurs that can damage the TWC on a second trip, the MIL will blink. When the misfire condition decreases to a level that will not damage the TWC, the MIL will remain on. If another misfire condition occurs that can damage the TWC, the MIL will begin to blink again.

Two Trip Detection Logic (Exhaust quality deterioration)

For misfire conditions that will not damage the TWC (but will affect vehicle emissions), the MIL will only light when the misfire is detected on a second trip. During this condition, the ECM monitors the CKP sensor signal every 1,000 engine revolutions.

A misfire malfunction can be detected on any one cylinder or on multiple cylinders.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0300	MULTI CYL MISFIRE (Multiple cylinder misfire detected)	Multiple cylinder misfire.	Improper spark plug     Insufficient compression
P0301	CYL 1 MISFIRE (No.1 cylinder misfire detected)	No. 1 cylinder misfires.	Incorrect fuel pressure     Fuel Injector circuit is open or shorted
P0302	CYL 2 MISFIRE (No. 2 cylinder misfire detected)	No. 2 cylinder misfires.	Fuel injector     Intake air leak     Ignition signal circuit is open or shorted
P0303	CYL 3 MISFIRE (No. 3 cylinder misfire detected)	No. 3 cylinder misfires.	Lack of fuel     Signal plate
P0304	CYL 4 MISFIRE (No. 4 cylinder misfire detected)	No. 4 cylinder misfires.	A/F sensor 1     Incorrect PCV hose connection

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Restart engine and let it idle for about 15 minutes.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

>> Proceed to EC-336, "Diagnosis Procedure".

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### < DTC/CIRCUIT DIAGNOSIS >

NO >> GO TO 3.

# 3.perform dtc confirmation procedure-ii $\,$

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive the vehicle as per the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

## Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

#### **CAUTION:**

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws when driving.

Engine speed	Engine speed in the freeze frame data $\pm$ 400 rpm
Vehicle speed	Vehicle speed in the freeze frame data $\pm$ 10 km/h (6 MPH)
Engine coolant temperature (T)	When the freeze frame data shows lower than 70°C (158°F), T should be lower than 70°C (158°F).
condition	When the freeze frame data shows higher than or equal to 70°C (158°F), T should be higher than or equal to 70°C (158°F).

The time to driving varies according to the engine speed in the freeze frame data.

Engine speed	Time	
Around 1,000 rpm	Approximately 10 minutes	
Around 2,000 rpm	Approximately 5 minutes	
More than 3,000 rpm	Approximately 3.5 minutes	

3. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-336, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197882

# 1. CHECK GROUND CONNECTION

#### Check the following.

- Connection condition of the ground F6
- Connection condition of the ground harness between engine assembly and vehicle body (If equipped)

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

# 2.CHECK FOR INTAKE AIR LEAK AND PCV HOSE

- 1. Start engine and run it at idle speed.
- 2. Listen for the sound of the intake air leak.
- Check PCV hose connection.

#### Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 3.

# 3.CHECK FOR EXHAUST SYSTEM CLOGGING

Stop engine and visually check exhaust tube, three way catalyst and muffler for dents.

### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 4.

YES-2 >> Without CONSULT: GO TO 5.

NO >> Repair or replace it.

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## < DTC/CIRCUIT DIAGNOSIS >

# 4.PERFORM POWER BALANCE TEST

### (P)With CONSULT

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Make sure that each circuit produces a momentary engine speed drop.

### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 5.

# 5.CHECK FUNCTION OF FUEL INJECTOR

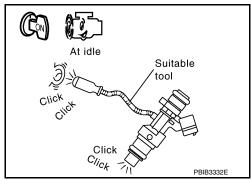
- Start engine and let engine idle.
- Listen to each fuel injector operating sound.

## Clicking noise should be heard.

### Is the inspection result normal?

YES >> GO TO 6.

>> Perform trouble diagnosis for FUEL INJECTOR. Refer NO to EC-541, "Diagnosis Procedure".



# 6.CHECK FUNCTION OF IGNITION COIL-I

#### **CAUTION:**

Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

#### NOTE:

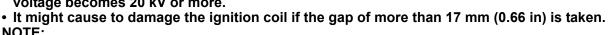
Do not use CONSULT to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

#### Spark should be generated.

#### CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20 kV or more.



When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

#### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

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13 - 17 mm

(Cylinder head, cylinder block, etc.)

Grounded metal portion

# $\overline{7}$ . CHECK FUNCTION OF IGNITION COIL-II

- 1. Turn ignition switch OFF.
- 2. Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

### Spark should be generated.

## Is the inspection result normal?

YES >> GO TO 8.

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-554, "Diagnosis Procedure".

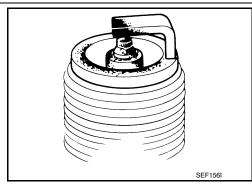
# 8. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

## Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-25, "Inspection".

NO >> Repair or clean spark plug. Then GO TO 9.



# 9. CHECK FUNCTION OF IGNITION COIL-III

- 1. Reconnect the initial spark plugs.
- 2. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

#### Spark should be generated.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type. Refer to <u>EM-24, "Removal</u> and Installation".

# 10. CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-17, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

# 11. CHECK FUEL PRESSURE

- Install all removed parts.
- Release fuel pressure to zero.
- Install fuel pressure gauge and check fuel pressure. Refer to <u>EC-166, "Work Procedure"</u>.

# At idling: Approximately 500 kPa (5.1 kg/cm<sup>2</sup>, 73 psi)

### Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

NO >> GO TO 12.

# 12. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

### Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly". Refer to FL-6, "2WD : Exploded View".

NO >> Repair or replace.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 13. CHECK IGNITION TIMING

Check the following items.

For procedure, refer to EC-153, "Work Procedure".

For specification, refer to EC-591, "Ignition Timing".

# Is the inspection result normal?

YES >> GO TO 14.

NO >> Follow the EC-153, "Work Procedure".

# 14.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector. 2.
- Disconnect ECM harness connector. 3.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		_		
A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F70	1	F25	21	Existed

Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

	+		
A/F se	ensor 1	-	Continuity
Connector	Terminal		
F70	1	Ground	Not existed

	+		
E	СМ	_	Continuity
Connector	Terminal		
F25	21	Ground	Not existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

# 15. CHECK A/F SENSOR 1 HEATER

Check the A/F sensor 1 heater. Refer to EC-204, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace A/F sensor 1. Refer to EM-44, "Exploded View".

# 16. CHECK MASS AIR FLOW SENSOR

## (P)With CONSULT

Check "MASS AIRFLOW" in "DATA MONITOR" mode of "ENGINE" using CONSULT.

1.0 - 4.0 g/s : at idling 2.0 - 10.0 g/s : at 2,500 rpm

## With GST

Check mass air flow sensor signal in Service \$01 with GST.

1.0 - 4.0 g/s : at idling 2.0 - 10.0 g/s : at 2,500 rpm

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## Is the measurement value within the specification?

YES >> GO TO 17.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to <u>EC-238</u>, "<u>DTC Logic</u>".

# 17. CHECK SYMPTOM TABLE

Check items on the rough idle symptom in EC-576, "Symptom Table".

### Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace error-detected parts.

# 18. ERASE THE 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.

Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to <u>EC-73, "Diagnosis Description"</u>.

>> GO TO 19.

# 19. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

>> INSPECTION END

### [MR FOR NISMO RS MODELS]

# P0327, P0328 KS

**DTC** Logic INFOID:0000000012197883

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detected condition	Possible cause
P0327	KNOCK SEN/CIRC-B1 (Knock sensor circuit low input)	An excessively low voltage from the knock sensor is sent to ECM.	Harness or connectors     (Knock sensor circuit is open or short-
P0328	KNOCK SEN/CIRC-B1 (Knock sensor circuit high input)	An excessively high voltage from the knock sensor is sent to ECM.	ed.) • Knock sensor

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and run it for at least 5 seconds at idle speed.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-341, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

CHECK KNOCK SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect knock sensor harness connector.
- Disconnect ECM harness connector.
- Check the continuity between knock sensor harness connector and ECM harness connector.

+		-		
Knock	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F12	2	F25	35	Existed

5. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

# 2.CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between knock sensor harness connector and ECM harness connector.

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+		_		
Knock	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F12	1	F25	36	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

# 3. CHECK KNOCK SENSOR

Check the knock sensor. Refer to EC-342, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace knock sensor. Refer to EM-114, "Exploded View".

# Component Inspection

INFOID:0000000012197885

# 1. CHECK KNOCK SENSOR

- 1. Turn ignition switch OFF.
- Disconnect knock sensor harness connector.
- 3. Check resistance between knock sensor terminals as per the following.

#### NOTE:

It is necessary to use an ohmmeter which can measure more than 10 M $\Omega$ .

Knock	sensor			
+	-	Resistance		
Term	ninals			
1	2	Approx. 532 - 588 kΩ [at 20°C (68°F)]		

#### **CAUTION:**

Do not use any knock sensors that have been dropped or physically damaged. Use only new ones. <u>Is the inspection result normal?</u>

# YES >> INSPECTION END

NO >> Replace knock sensor. Refer to <a href="EM-114"><u>EM-114</u></a>, "Exploded View".

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# P0335 CKP SENSOR (POS)

DTC Logic

#### DTC DETECTION LOGIC

### NOTE:

If DTC P0340 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-424</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0335	CKP SEN/CIRCUIT [Crankshaft position sensor (POS) circuit]	<ul> <li>The crankshaft position sensor (POS) signal is not detected by the ECM during the first few seconds of engine cranking.</li> <li>The proper pulse signal from the crankshaft position sensor (POS) is not sent to ECM while the engine is running.</li> <li>The crankshaft position sensor (POS) signal is not in the normal pattern during engine running.</li> </ul>	Harness or connectors [Crankshaft position sensor (POS) circuit is open or shorted.]     Crankshaft position sensor (POS)     Signal plate

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V with ignition switch ON.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- Start engine and let it idle for at least 5 seconds.
   If engine does not start, crank engine for at least 2 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-343, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# $1. {\sf CHECK} \ {\sf CRANKSHAFT} \ {\sf POSITION} \ ({\sf CKP}) \ {\sf SENSOR} \ ({\sf POS}) \ {\sf POWER} \ {\sf SUPPLY}$

- Disconnect crankshaft position (CKP) sensor (POS) harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between CKP sensor (POS) harness connector and ground.

+			Voltage (Approx.)	
CKP sensor (POS)		_		
Connector	Terminal		,	
F107	3	Ground	5 V	

## Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

[MR FOR NISMO RS MODELS]

# $\overline{2}$ .check ckp sensor (pos) power supply circuit

- 1. Turn ignition switch OFF
- Disconnect ECM harness connector.
- 3. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

+		_		
CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector Terminal		
F107	3	F26	58	Existed

Also check harness for short to ground.

## Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK CKP SENSOR (POS) GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

+		· -		
CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector Terminal		
F107	2	F26	60	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT

1. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

+		_		
CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector Terminal		
F107	1	F26	64	Existed

2. Also check harness for short to ground and to power.

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# ${f 5}$ .CHECK CRANKSHAFT POSITION SENSOR (POS)

Check the crankshaft position sensor (POS). Refer to EC-345, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace crankshaft position sensor (POS). Refer to EM-114, "Exploded View".

### **O.**CHECK GEAR TOOTH

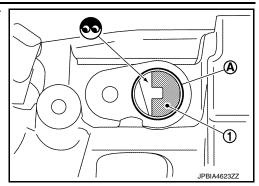
Remove crankshaft position sensor (POS). Refer to <u>EM-114, "Exploded View"</u>.

# P0335 CKP SENSOR (POS)

## < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

Look into the mounting hole (A) of the crankshaft position sensor (POS) to check that there is no missing gear tooth in the signal plate (1).



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## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

>> Replace the signal plate. Refer to EM-114, "Exploded View". NO

# Component Inspection

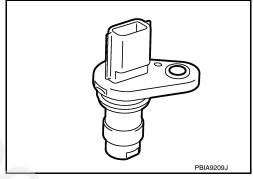
# 1. CHECK CRANKSHAFT POSITION SENSOR (POS)-I

- Turn ignition switch OFF.
- Loosen the fixing bolt of the sensor.
- Disconnect crankshaft position sensor (POS) harness connector.
- Remove the sensor.
- Visually check the sensor for chipping.

### Is the inspection result normal?

>> GO TO 2. YES

NO >> Replace crankshaft position sensor (POS). Refer to EM-114, "Exploded View".



# 2.CHECK CRANKSHAFT POSITION SENSOR (POS)-II

Check the resistance between crankshaft position sensor (POS) terminals as per the following.

Crankshaft posit	ion sensor (POS)	
+ -		Resistance [at 25°C (77°F)]
Terminal	(Polarity)	
1	2	
'	3	Except 0 or $\infty \Omega$
2	3	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace crankshaft position sensor (POS). Refer to EM-114, "Exploded View".

[MR FOR NISMO RS MODELS]

# P0340 CMP SENSOR (PHASE)

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0340	CMP SEN/CIRC-B1 [Camshaft position sensor (PHASE) circuit]	<ul> <li>The cylinder No. signal is not sent to ECM for the first few seconds during engine cranking.</li> <li>The cylinder No. signal is not sent to ECM during engine running.</li> <li>The cylinder No. signal is not in the normal pattern during engine running.</li> </ul>	Harness or connectors (Camshaft position sensor circuit is open or shorted) (Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) Camshaft position sensor Camshaft (Intake) Starter motor Starting system circuit Dead (Weak) battery Fuel rail pressure sensor Battery current sensor G sensor Exhaust valve timing control position sensor Accelerator pedal position sensor 2 Turbocharger boost sensor Engine oil pressure sensor

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V with ignition switch ON.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Start engine and let it idle for at least 5 seconds.
   If engine does not start, crank engine for at least 2 seconds.
- 2. Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-347, "Diagnosis Procedure".

NO >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-I

# P0340 CMP SENSOR (PHASE)

### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

- Maintaining engine speed at more than 800 rpm for at least 5 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-347, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197890

# CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over? Does the starter motor operate?

YES >> GO TO 2.

NO >> Check starting system (Refer to STR-18, "Work Flow (With GR8-1200 NI)" or STR-21, "Work Flow (Without GR8-1200 NI)". For the details of the GR8-1200 NI, refer to STR-4, "Special Service Tools".).

# 2.CHECK CAMSHAFT POSITION (CMP) SENSOR (PHASE) POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- Turn ignition switch ON.
- Check the voltage between CMP sensor (PHASE) harness connector and ground.

+			Valla a a
CMP sensor (PHASE)		-	Voltage (Approx.)
Connector	Terminal		, , ,
F109	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

# 3.check sensor power supply circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check harness connector for short to power and short to ground, between the following terminals.

E	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25	39	EOP sensor	F43	3
		Turbocharger boost sensor	F75	1
	68 72	Battery current sensor	F52	1
F26		G sensor	B32	3
F20		CMP sensor	F109	1
		EVT control position sensor	F110	1
E18	118	APP sensor 2	E101	5

### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 4. CHECK CMP SENSOR (PHASE) GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

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+		_		
CMP sensor (PHASE)		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F109	2	F26	59	Existed

Also check harness for short to power.

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5.check cmp sensor (phase) input signal circuit

- Disconnect ECM harness connector.
- 2. Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

+		-		
CMP sensor (PHASE)		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F109	3	F26	63	Existed

3. Also check harness for short to ground and to power.

## Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

# 6.CHECK CAMSHAFT POSITION SENSOR (PHASE)

Check the camshaft position sensor (PHASE). Refer to EC-348, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace camshaft position sensor (PHASE). Refer to EM-89, "Removal and Installation".

# 7. CHECK CAMSHAFT (INT)

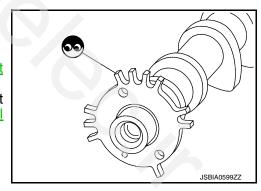
## Check the following.

- Accumulation of debris to the signal plate of camshaft rear end
- · Chipping signal plate of camshaft rear end

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to <a href="EM-89">EM-89</a>, "Removal and Installation".



INFOID:0000000012197891

# Component Inspection

# 1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor.

# P0340 CMP SENSOR (PHASE)

## < DTC/CIRCUIT DIAGNOSIS >

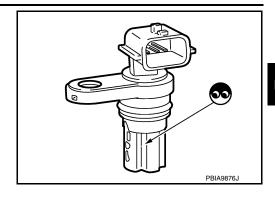
## [MR FOR NISMO RS MODELS]

5. Visually check the sensor for chipping.

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace camshaft position sensor (PHASE).



# 2.CHECK CAMSHAFT POSITION SENSOR (PHASE)-II

Check the resistance camshaft position sensor (PHASE) terminals as per the following.

Camshaft posit	ion sensor (PHASE)	
+	-	Resistance [Ω at 25°C (77°F)]
Termina	als (Polarity)	
1	2	
ı	3	Except 0 or ∞
2	3	

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace camshaft position sensor (PHASE). Refer to EM-89, "Removal and Installation".

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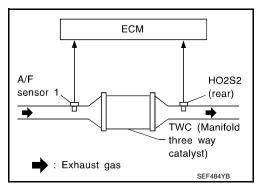
DTC Logic

#### DTC DETECTION LOGIC

The ECM monitors the switching frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2.

A three way catalyst (manifold) with high oxygen storage capacity will indicate a low switching frequency of heated oxygen sensor 2. As oxygen storage capacity decreases, the heated oxygen sensor 2 switching frequency will increase.

When the frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2 approaches a specified limit value, the three way catalyst (manifold) malfunction is diagnosed.



			: Exhaust gas
DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0420	TW CATALYST SYS-B1 (Catalyst system efficiency below threshold)	<ul> <li>Three way catalyst (manifold) does not operate properly.</li> <li>Three way catalyst (manifold) does not have enough oxygen storage capacity.</li> </ul>	<ul> <li>Three way catalyst (manifold)</li> <li>Exhaust tube</li> <li>Intake air leaks</li> <li>Fuel injector</li> <li>Fuel injector leaks</li> <li>Spark plug</li> <li>Improper ignition timing</li> </ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### Will CONSULT be used?

YES >> GO TO 2. NO >> GO TO 6.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### With CONSULT

#### **TESTING CONDITION:**

### Do not hold engine speed for more than the specified minutes below.

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 6. Let engine idle for 1 minute.
- 7. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 8. Check that "COOLAN TEMP/S" indicates more than 70°C (158°F).

  If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).
- Open engine hood.
- Select "DTC & SRT CONFIRMATION" then "SRT WORK SUPPORT" mode of "ENGINE" using CON-SULT.
- 11. Rev engine up to 2,000 to 3,000 rpm and hold it for 3 consecutive minutes then release the accelerator pedal completely.

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

12. Check the indication of "CATALYST".		
Which is displayed on CONSULT screen?		

CMPLT >> GO TO 5. INCMP >> GO TO 3.

3.PERFORM DTC CONFIRMATION PROCEDURE-II

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- 1. Wait 5 seconds at idle.
- Rev engine up to 2,000 to 3,000 rpm and maintain it until "INCMP" of "CATALYST" changes to "CMPLT" (It will take approximately 5 minutes).

Does the indication change to "CMPLT"?

YES >> GO TO 5. NO >> GO TO 4.

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# 4. PERFORM DTC CONFIRMATION PROCEDURE AGAIN

- 1. Stop engine and cool it down to less than 70°C (158°F).
- 2. Perform DTC confirmation procedure again.

>> GO TO 2.

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# 5. PERFORM DTC CONFIRMATION PROCEDURE-III

Check 1st trip DTC.

Is 1st trip DTC detected?

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YES >> Proceed to EC-352, "Diagnosis Procedure".

NO >> INSPECTION END

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# PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to <a>EC-351</a>, "Component Function Check".

NOTE:

Use component function check to check the overall function of the three way catalyst (manifold). During this check, a 1st trip DTC might not be confirmed.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-352, "Diagnosis Procedure".

# Component Function Check

INFOID:0000000012197893

# 1.PERFORM COMPONENT FUNCTION CHECK

#### 

- 1. Start engine and warm it up to the normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Restart engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Open engine hood.
- Check the voltage between ECM harness connector terminals as per the following condition.

ECM					
Connector	+	_	Condition	Voltage (V)	
Connector	Terr	minal			
F25	29	33	Keeping engine speed at 2500 rpm constant under no load	The voltage fluctuation cycle takes more than 5 seconds.  • 1 cycle: 0.6 - 1.0 → 0 - 0.3 → 0.6 - 1.0	

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-352, "Diagnosis Procedure".

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# Diagnosis Procedure

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# CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

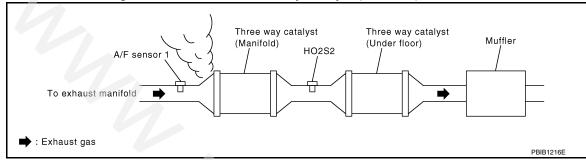
### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

# 2. CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- Listen for an exhaust gas leak before the three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

# 3.CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

#### Is intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 4.

# 4. CHECK IGNITION TIMING AND IDLE SPEED

Check the following items. Refer to EC-153, "Work Procedure"

For specification, refer to <u>EC-591</u>, "Ignition Timing" For specification, refer to <u>EC-591</u>, "Idle Speed".

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Follow the EC-153, "Work Procedure".

# **5.**CHECK FUEL INJECTOR

Check the fuel injector. Refer to EC-541, "Component Function Check".

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform EC-541, "Diagnosis Procedure".

## $oldsymbol{6}$ .CHECK FUNCTION OF IGNITION COIL-I

#### **CAUTION:**

### Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

#### NOTE:

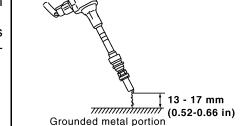
Do not use CONSULT to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- Remove ignition coil and spark plug of the cylinder to be checked.

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.



(Cylinder head, cylinder block, etc.)

### Spark should be generated.

#### **CAUTION:**

· Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20 kV or more.

 It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

#### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

# 7.CHECK FUNCTION OF IGNITION COIL-II

Turn ignition switch OFF.

- 2. Disconnect spark plug and connect a known-good spark plug.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

#### Spark should be generated.

### Is the inspection result normal?

YES >> GO TO 8.

NO

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-554, "Diagnosis Procedure".

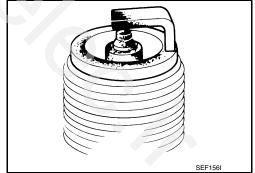
# 8.CHECK SPARK PLUG

Check the initial spark plug for fouling, etc. Refer to EM-25, "Inspection".

### Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-25, "Inspection".

>> Repair or clean spark plug. Refer to EM-60, "Exploded View". Then GO TO 9



# 9. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

### Spark should be generated.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to EM-24, "Removal and Installation".

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 10. PERFORM DTC CONFIRMATION PROCEDURE

- Replace three way catalyst (manifold). Refer to EM-34, "2WD: Removal and Installation" (2WD models) or <u>EM-37</u>, "<u>AWD</u>: <u>Removal and Installation</u>" (AWD models). Perform DTC confirmation procedure. Refer to <u>EC-350</u>, "<u>DTC Logic</u>".

## Is DTC P0420 detected again?

>> Replace fuel injector. Refer to EM-54, "Removal and Installation".

NO >> INSPECTION END

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# P0441 EVAP CONTROL SYSTEM

DTC Logic

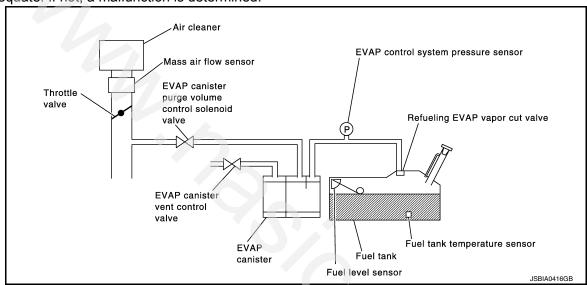
#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0441 is displayed with other DTC such as P2122, P2123, P2127, P2128 or P2138, first perform trouble diagnosis for other DTC.

In this evaporative emission (EVAP) control system, purge flow occurs during non-closed throttle conditions. Purge volume is related to air intake volume. Under normal purge conditions (non-closed throttle), the EVAP canister purge volume control solenoid valve is open to admit purge flow. Purge flow exposes the EVAP control system pressure sensor to intake manifold vacuum.

Under normal conditions (non-closed throttle), sensor output voltage indicates if pressure drop and purge flow are adequate. If not, a malfunction is determined.



DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	K
P0441	EVAP PURG FLOW/MON (EVAP control system incor- rect purge flow)	EVAP control system does not operate properly, EVAP control system has a leak between intake manifold and EVAP control system pressure sensor.	EVAP canister purge volume control sole- noid valve stuck closed     EVAP control system pressure sensor and the circuit     Loose, disconnected or improper connection of rubber tube     Blocked rubber tube     Cracked EVAP canister     EVAP canister purge volume control sole- noid valve circuit     Accelerator pedal position sensor     Blocked purge port     EVAP canister vent control valve	L M

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### Will CONSULT be used?

YES >> GO TO 2.

NO >> GO TO 5.

Revision: November 2015 EC-355 2016 JUKE

## P0441 EVAP CONTROL SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# $\overline{2}$ .PERFORM DTC CONFIRMATION PROCEDURE-I

#### **MITH CONSULT**

#### **TESTING CONDITION:**

## Always perform test at a temperature of 5°C (41°F) or more.

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and let it idle for at least 70 seconds.
- Select "PURG FLOW P0441" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 7. Touch "START".

#### Is "COMPLETED" displayed on CONSULT screen?

YES >> GO TO 4. NO >> GO TO 3.

# 3. PERFORM DTC CONFIRMATION PROCEDURE-II

When the following conditions are met, "TESTING" will be displayed on the CONSULT screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take at least 35 seconds.)

Selector lever	Suitable position
VHCL SPEED SE	32 - 120 km/h (20 - 75 MPH)
ENG SPEED	500 - 3,300 rpm
B/FUEL SCHDL	1.0 - 6.5 msec
COOLAN TEMP/S	More than 0°C (32°F)

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

#### NOTE

If "TESTING" does not change for a long time, retry from step 2.

#### Is "COMPLETED" displayed on CONSULT screen?

YES >> GO TO 4.

NO >> Perform DTC CONFIRMATION PROCEDURE again. GO TO 2.

## 4. PERFORM DTC CONFIRMATION PROCEDURE-III

Touch "SELF-DIAG RESULTS".

#### Which is displayed on CONSULT screen?

OK >> INSPECTION END

NG >> Proceed to <u>EC-357</u>, "<u>Diagnosis Procedure</u>".

## **5.**PERFORM COMPONENT FUNCTION CHECK

#### **WITH GST**

Perform component function check. Refer to <a>EC-356</a>, "Component Function Check".

#### NOTE:

Use component function check to check the overall monitoring function of the EVAP control system purge flow monitoring. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-357, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012197896

# 1. PERFORM COMPONENT FUNCTION CHECK

- Lift up drive wheels.
- Start engine (VDC switch OFF) and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

## P0441 EVAP CONTROL SYSTEM

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 4. Start engine and wait at least 70 seconds.
- Set voltmeter probes to ECM harness connector terminals as per the following.

ECM		
Connector	+	_
Connector	Terr	ninal
F25	15	12

6. Check EVAP control system pressure sensor value at idle speed and note it.

7. Establish and maintain the following conditions for at least 1 minute.

Air conditioner switch	ON
Headlamp switch	ON
Rear window defogger switch	ON
Engine speed	Approx. 3,000 rpm
Gear position	Any position other than P, N or R

Verify that EVAP control system pressure sensor value stays 0.1 V less than the value at idle speed (measured at step 6) for at least 1 second.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-357</u>, "<u>Diagnosis Procedure</u>".

# Diagnosis Procedure

# 1.CHECK EVAP CANISTER

- 1. Turn ignition switch OFF.
- 2. Check EVAP canister for cracks.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 2.

YES-2 >> Without CONSULT: GO TO 3.

NO >> Replace EVAP canister. Refer to <u>FL-27</u>, "2WD : <u>Removal and Installation"</u>(2WD), <u>FL-30</u>, "AWD : <u>Removal and Installation"</u>(AWD).

# 2. CHECK PURGE FLOW

### (E)WITH CONSULT

- 1. Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port.
- Start engine and let it idle.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 4. Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL CONT/V" opening and check vacuum existence.

PURG VOL CONT/V	Vacuum
100%	Existed
0%	Not existed

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 4.

# 3. CHECK PURGE FLOW

### **®WITHOUT CONSULT**

- 1. Start engine and warm it up to normal operating temperature.
- 2. Stop engine.

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## **P0441 EVAP CONTROL SYSTEM**

## < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to <a href="EC-66">EC-66</a>, "EVAPORATIVE <a href="EMISSION SYSTEM">EMISSION SYSTEM</a>: System Description".
- 4. Start engine and let it idle.

#### Never depress accelerator pedal even slightly.

5. Check vacuum gauge indication before 60 seconds pass after starting engine.

#### Vacuum should not exist.

6. Rev engine up to 2,000 rpm after 100 seconds pass after starting engine.

#### Vacuum should exist.

#### Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 4.

# 4. CHECK EVAP PURGE LINE

- 1. Turn ignition switch OFF.
- Check EVAP purge line for improper connection or disconnection. Refer to <u>EC-586</u>, "Inspection".

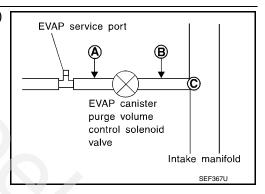
#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair EVAP purge line.

# ${f 5}.$ CHECK EVAP PURGE HOSE AND PURGE PORT

- 1. Disconnect purge hoses connected to EVAP service port (A) and EVAP canister purge volume control solenoid valve (B).
- 2. Blow air into each hose and EVAP purge port (C).



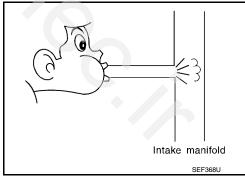
3. Check that air flows freely.

### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 6.

YES-2 >> Without CONSULT: GO TO 7.

NO >> Repair or clean hoses and/or purge port.



# 6. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### (P)WITH CONSULT

- Start engine.
- 2. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT. Check that engine speed varies according to the valve opening.

#### Does engine speed vary according to the valve opening?

YES >> GO TO 8.

NO >> GO TO 7.

P0441 EVAP CONTROL SYSTEM			
< DTC/CIRCUIT DIAGNOSIS >	[MR FOR NISMO RS MODELS]		
7. CHECK EVAP CANISTER PURGE VOLUME CONTROL	SOLENOID VALVE		
Check the EVAP canister purge volume control solenoid valve	e. Refer to EC-363, "Component Inspection".		
Is the inspection result normal?			
YES >> GO TO 8.			
NO >> Replace EVAP canister purge volume control so <a ."="" href="View">View".</a>	olenoid valve. Refer to <u>FL-27, "2WD : Exploded</u>		
8. CHECK EVAP CONTROL SYSTEM PRESSURE SENSO	R CONNECTOR		
<ol> <li>Disconnect EVAP control system pressure sensor harnes</li> <li>Check that water is not inside connectors.</li> </ol>	ss connector.		
Is the inspection result normal?			
YES >> GO TO 9.			
NO >> Replace EVAP control system pressure sensor. FL-30, "AWD : Exploded View" (AWD).	Refer to FL-27, "2WD: Exploded View"(2WD),		
9. CHECK EVAP CONTROL SYSTEM PRESSURE SENSO	R FUNCTION		
Refer to EC-380, "DTC Logic" for DTC P0452, EC-383, "DTC	Logic" for DTC P0453.		

FL-30, "AWD: Exploded View"(AWD).

>> Clean the rubber tube using an air blower.

11. CHECK EVAP CANISTER VENT CONTROL VALVE

"AWD: Exploded View" (AWD).

>> Repair or replace malfunctioning part.

Clean EVAP purge line (pipe and rubber tube) using air blower.

Disconnect rubber tube connected to EVAP canister vent control valve.

Inspect EVAP purge line (pipe and rubber tube). Check for evidence of leaks.

Check the EVAP canister vent control valve. Refer to EC-370, "Component Inspection".

>> Replace EVAP canister vent control valve, Refer to FL-27, "2WD : Exploded View" (2WD), FL-30,

10.CHECK RUBBER TUBE FOR CLOGGING

Check the rubber tube for clogging.

Is the inspection result normal?

>> GO TO 10.

Is the inspection result normal?

>> GO TO 11.

Is the inspection result normal?

>> GO TO 12.

12. CHECK EVAP PURGE LINE

Refer to EC-587, "Inspection".

Is the inspection result normal?

>> GO TO 13.

13.clean evap purge line

>> GO TO 14.

14. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

>> INSPECTION END

YES

YES

NO

YES

YES

NO

NO

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>> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View" (2WD),

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EC-359 **Revision: November 2015 2016 JUKE** 

# P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible cause
P0443	PURG VOLUME CONT/ V (EVAP canister purge volume control solenoid valve)	Α	The canister purge flow is detected during the vehicle is stopped while the engine is running, even when EVAP canister purge volume control solenoid valve is completely closed.	EVAP control system pressure sensor EVAP canister purge volume control solenoid valve (The valve is stuck open.) EVAP canister vent control valve EVAP canister Hoses (Hoses are connected incorrectly or clogged.)
		В	The canister purge flow is detected during the specified driving conditions, even when EVAP canister purge volume control solenoid valve is completely closed.	

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

- Perform DTC CONFIRMATION PROCEDURE when the fuel is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Always perform test at a temperature of 5 to 60°C (41 to 140°F).
- · Cool the vehicle so that engine coolant temperature becomes same level as ambient temperature.

### Do you have CONSULT

YES >> GO TO 2. NO >> GO TO 4.

# 2.PERFORM DTC CONFIRMATION PROCEDURE A

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check that the following condition are met. FUEL T/TMP SE: 0 35°C (32 95°F)
- 4. Start the engine and wait at least 60 seconds.
- 5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-361, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE B

### (P)With CONSULT

- Start the engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "PURG VOL CN/V P1444" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 5. Touch "START".
- 6. Start the engine and let it idle until "TESTING" on CONSULT changes to "COMPLETED". (It will take approximately 10 seconds.)

If "TESTING" is not displayed after 5 minutes, retry from step 2.

# P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

## < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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#### Which is displayed on CONSULT?

OK >> INSPECTION END

>> Proceed to EC-361, "Diagnosis Procedure". NG

# f 4.PERFORM DTC CONFIRMATION PROCEDURE A

#### @With GST

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

	+		
ECM		_	Voltage
Connector	Terminal		
F25	15	Ground	3.1 - 4.0 V

- Start the engine and wait at least 60 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-361, "Diagnosis Procedure".

NO >> GO TO 5.

# 5.PERFORM DTC CONFIRMATION PROCEDURE

#### 

- Start the engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine and let it idle for at least 20 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-361, "Diagnosis Procedure"

NO >> INSPECTION END

# Diagnosis Procedure

# 1.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

+			
EVAP canister purge volume control solenoid valve		_	Voltage
Connector Terminal			
F106	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and IPDM E/R harness connector.

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# P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

[MR FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

+		-	_	
EVAP canister purge volume control solenoid valve		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F106	2	E14	35	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check evap canister purge volume control solenoid valve ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

+			_	
EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	•
F106	1	F26	95	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

#### Water should not exist.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"</u>(2WD), <u>FL-30, "AWD : Exploded View"</u>(AWD).

# 5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check the EVAP control system pressure sensor. Refer to EC-363, "Component Inspection".

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 6.

YES-2 >> Without CONSULT: GO TO 7.

NO >> Replace EVAP control system pressure sensor. Refrt to <u>FL-27, "2WD : Exploded View"</u>(2WD), <u>FL-30, "AWD : Exploded View"</u>(AWD).

# 6. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### (I) With CONSULT

- 1. Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- Start the engine.
- 4. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT. Check that engine speed varies according to the valve opening.

#### Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 7.

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## P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE [MR FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

# $\overline{7}$ . CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Check the EVAP canister purge volume control solenoid valve. Refer to EC-363, "Component Inspection". Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EM-29, "Exploded View".

## 8.CHECK RUBBER TUBE FOR CLOGGING

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Clean the rubber tube using an air blower.

# 9. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the EVAP canister vent control valve. Refer to EC-370, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 10.

>> Replace EVAP canister vent control valve. Refer to FL-27, "2WD: Exploded View" (2WD), FL-30, NO "AWD: Exploded View" (AWD).

# 10.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

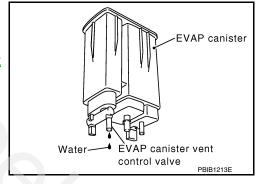
Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

Check if water will drain from EVAP canister.

#### Does water drain from the EVAP canister?

YES >> GO TO 11.

NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".



# 11. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

## The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 12.

# 12.detect malfunctioning part

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister. Refer to FL-27, "2WD: Exploded View" (2WD), FL-30. "AWD: Exploded View" (AWD).

## Component Inspection

# ${f 1}$ .CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### With CONSULT

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.

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**EC-363 Revision: November 2015 2016 JUKE**  EC

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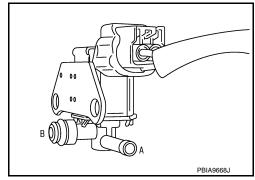
# P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Start the engine.
- 5. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL C/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

Condition (PURG VOL C/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



#### Without CONSULT

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

Condition	Air passage continuity between (A) and (B)	
12 V direct current supply between terminals 1 and 2	Existed	
No supply	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EM-29, "Exploded View".

## P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID **VALVE**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID **VALVE**

**DTC** Logic INFOID:0000000012197901

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0444	PURG VOLUME CONT/V (EVAP canister purge volume control solenoid valve circuit open)	An excessively low voltage signal is sent to ECM through the EVAP canister purge volume control solenoid valve.	Harness or connectors     (EVAP canister purge volume control solenoid valve circuit is open or shorted.)     EVAP canister purge volume control solenoid valve
P0445	PURG VOLUME CONT/V (EVAP canister purge volume control solenoid valve circuit shorted)	An excessively high voltage signal is sent to ECM through the valve	Harness or connectors     (The solenoid valve circuit is shorted.)     EVAP canister purge volume control solenoid valve

#### DTC CONFIRMATION PROCEDURE

# 1.conditioning

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start the engine and let it idle for at least 13 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-365, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197902

# 1.check evap canister purge volume control solenoid valve power supply

- Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

+			
EVAP canister purge volume control solenoid valve		_	Voltage
Connector Terminal			
F106	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3. >> GO TO 2. NO

**EC-365 Revision: November 2015 2016 JUKE**  EC

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# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# $\overline{2}$ .check evap canister purge volume control solenoid valve power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and IPDM E/R harness connector.

+		-	_	
EVAP canister purge volume control solenoid valve		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F106	2	E14	35	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

+			-	
EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F106	1	F26	95	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 4.

YES-2 >> Without CONSULT: GO TO 5.

NO >> Repair or replace error-detected parts.

## 4. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

#### (P)With CONSULT

- Reconnect all harness connectors disconnected.
- Start the engine.
- 3. Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 4. Check that engine speed varies according to the valve opening.

#### Does engine speed vary according to the valve opening?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

# ${f 5.}$ CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Check the EVAP canister purge volume control solenoid valve. Refer to <u>EC-363, "Component Inspection"</u>. Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to <u>EM-29</u>, "<u>Exploded View</u>".

# Component Inspection

INFOID:0000000012197903

# 1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### (II) With CONSULT

Turn ignition switch OFF.

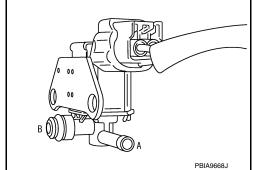
# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Start the engine.
- 5. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL C/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

Condition (PURG VOL C/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



#### Without CONSULT

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals 1 and 2	Existed
No supply	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to <u>EM-29</u>, "<u>Exploded View</u>".

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0447 EVAP CANISTER VENT CONTROL VALVE

DTC Logic INFOID:000000012197904

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0447	VENT CONTROL VALVE (EVAP canister vent control valve circuit open)	An improper voltage signal is sent to ECM through EVAP canister vent control valve.	Harness or connectors     (EVAP canister vent control valve circuit is open or shorted.)     EVAP canister vent control valve

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 8 seconds.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-368, "Diagnosis Procedure"

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197905

# 1. INSPECTION START

Do you have CONSULT?

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK EVAP CANISTER VENT CONTROL VALVE CIRCUIT

## (I) With CONSULT

- 1. Turn ignition switch OFF and then turn ON.
- Select "VENT CONTROL/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Touch "ON/OFF" on CONSULT screen.
- Check for operating sound of the valve.

#### Clicking sound should be heard.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> GO TO 3.

# 3.CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect EVAP canister vent control valve harness connector.
- 3. Turn ignition switch ON.

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

4. Check the voltage between EVAP canister vent control valve harness connector and ground.

+			
EVAP canister vent control valve		_	Voltage
Connector	Terminal		
B21	1	Ground	Battery voltage

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#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

# 4. CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY CIRCUIT

Turn ignition switch OFF.

- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between EVAP canister vent control valve harness connector and IPDM E/R harness connector.

	+		_	
	er vent control Ilve	IPDI	M E/R	Continuity
Connector	Terminal	Connector	Terminal	
B21	1	E14	36	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# ${f 5.}$ CHECK EVAP CANISTER VENT CONTROL VALVE OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP canister vent control valve harness connector and ECM harness connector.

•	+		_	
	er vent control Ive	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
B21	2	F26	69	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## CHECK RUBBER TUBE FOR CLOGGING

- 1. Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Clean the rubber tube using an air blower.

# 7. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the EVAP canister vent control valve. Refer to EC-370, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

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[MR FOR NISMO RS MODELS]

NO >> Replace EVAP canister vent control valve. Refer to FL-27, "2WD : Exploded View"

## Component Inspection

INFOID:0000000012197906

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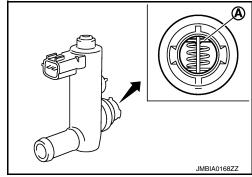
# 1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- 1. Turn ignition switch OFF.
- 2. Remove EVAP canister vent control valve from EVAP canister.
- Check portion (A) of EVAP canister vent control valve for being rusted.

#### Is it rusted?

YES >> Replace EVAP canister vent control valve. Refer to <u>FL-27</u>, "2WD : Exploded View"(2WD), <u>FL-30</u>, "AWD : Exploded View"(AWD).

NO >> GO TO 2.



# 2.CHECK EVAP CANISTER VENT CONTROL VALVE-II

#### (P)With CONSULT

- 1. Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Check air passage continuity and operation delay time.
   Make sure new O-ring is installed properly.

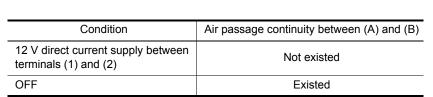
Condition (VENT CONT/V)	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

#### 

Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.



#### Operation takes less than 1 second.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, <u>FL-30, "AWD : Exploded View"(AWD)</u>.

# 3.check evap canister vent control valve-iii $\,$

#### (P)With CONSULT

- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.

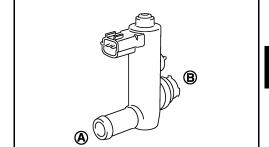
# NE" using CONSULT.

#### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

Check air passage continuity and operation delay time. Make sure new O-ring is installed properly.

Condition (VENT CONT/V)	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed



Operation takes less than 1 second.

Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

2. Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> INSPECTION END

>> Replace EVAP canister vent control valve. Refer to FL-27, "2WD : Exploded View" (2WD), FL-30, NO "AWD : Exploded View"(AWD).

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0448 EVAP CANISTER VENT CONTROL VALVE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0448	VENT CONTROL VALVE (EVAP canister vent control valve close)	EVAP canister vent control valve remains closed under specified driving conditions.	<ul> <li>EVAP canister vent control valve</li> <li>EVAP control system pressure sensor and the circuit</li> <li>Blocked rubber tube to EVAP canister vent control valve</li> <li>EVAP canister is saturated with water</li> </ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

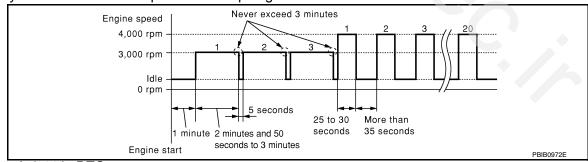
# 2. PERFORM DTC CONFIRMATION PROCEDURE

#### (I) With CONSULT

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 4. Start engine and let it idle for at least 1 minute.
- Repeat next procedures three times.
- Increase the engine speed up to 3,000 to 3,500 rpm and keep it for 2 minutes and 50 seconds to 3 minutes.

#### Never exceed 3 minutes.

- Fully released accelerator pedal and keep engine idle for about 5 seconds.
- 6. Repeat next procedure 20 times.
- Quickly increase the engine speed up to 4,000 to 4,500 rpm or more and keep it for 25 to 30 seconds.
- Fully released accelerator pedal and keep engine idle for at least 35 seconds.



#### 7. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-373, "Diagnosis Procedure".

NO >> INSPECTION END

#### < DTC/CIRCUIT DIAGNOSIS >

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# Diagnosis Procedure

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# 1. CHECK RUBBER TUBE

- 1. Turn ignition switch OFF.
- 2. Disconnect rubber tube connected to EVAP canister vent control valve.
- 3. Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Clean rubber tube using an air blower.

# 2. CHECK EVAP CANISTER VENT CONTROL VALVE

Check the EVAP canister vent control valve. Refer to EC-374, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, <u>FL-30, "AWD : Exploded View"(AWD)</u>.

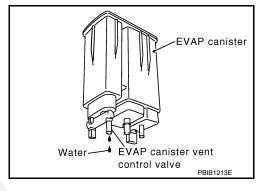
# 3.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Check if water will drain from the EVAP canister.

#### Does water drain from EVAP canister?

YES >> GO TO 4.

NO >> GO TO 6.



# 4. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

# 5. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister. Refer to <u>FL-27, "2WD : Exploded View"</u>(2WD), <u>FL-30, "AWD : Exploded View"</u>(AWD).

# 6.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- Check connectors for water.

#### Water should not exist.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, <u>FL-30, "AWD : Exploded View"(AWD)</u>.

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 7.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check the EVAP control system pressure sensor. Refer to EC-379, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"(2WD), FL-30, "AWD : Exploded View"(AWD).</u>

## Component Inspection

INFOID:0000000012197909

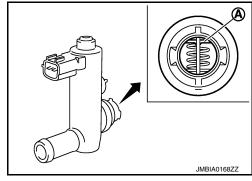
# 1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- 1. Turn ignition switch OFF.
- 2. Remove EVAP canister vent control valve from EVAP canister.
- Check portion (A) of EVAP canister vent control valve for being rusted.

#### Is it rusted?

YES >> Replace EVAP canister vent control valve. Refer to <u>FL-27</u>, "2WD: Exploded View"(2WD), <u>FL-30</u>, "AWD: Exploded View"(AWD).

NO >> GO TO 2.



# 2.check evap canister vent control valve-ii

#### (II) With CONSULT

- Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 4. Check air passage continuity and operation delay time.

#### Make sure new O-ring is installed properly.

Condition (VENT CONT/V)	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed



#### 

Check air passage continuity and operation delay time under the following conditions.

#### Make sure new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

#### Operation takes less than 1 second.

#### Is the inspection result normal?

YES >> GO TO 3.

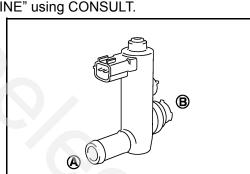
>> Replace EVAP canister vent control valve. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, <u>FL-30, "AWD : Exploded View"(AWD)</u>.

# 3. CHECK EVAP CANISTER VENT CONTROL VALVE-III

#### (P)With CONSULT

NO

Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.



#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

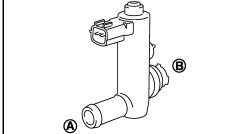
Perform "VENT CONTROL/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.

Check air passage continuity and operation delay time.

Make sure new O-ring is installed properly.

Condition (VENT CONT/V)	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed





Operation takes less than 1 second.

Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

2. Check air passage continuity and operation delay time under the following conditions.

Make sure new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals (1) and (2)	Not existed
OFF	Existed

Operation takes less than 1 second.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control valve. Refer to FL-27, "2WD: Exploded View" (2WD), FL-30,

"AWD: Exploded View"(AWD).

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[MR FOR NISMO RS MODELS]

## P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0451 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P0451	EVAP SYS PRES SEN (EVAP control system pressure sensor perfor- mance)	ECM detects a sloshing signal from the EVAP control system pressure sensor	Harness or connectors     (EVAP control system pressure sensor circuit is shorted.)     EVAP control system pressure sensor

#### DTC CONFIRMATION PROCEDURE

#### NOTE:

Never remove fuel filler cap during DTC confirmation procedure.

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- (E)With CONSULT>>GO TO 2.
- Without CONSULT>>GO TO 5.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-1

#### (P)With CONSULT

Start engine and let it idle for least 40 seconds.

#### NOTE:

Do not depress accelerator pedal even slightly.

2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-377, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE-2

#### (P)With CONSULT

- Select "EVAP DIAG READY" in "DATA MONITOR" mode of "ENGINE".
- Let it idle until "OFF" of "EVAP DIAG READY" changes to "ON".

#### NOTE:

It will take at most 2 hours until "OFF" of "EVAP DIAG READY" changes to "ON".

3. Turn ignition switch OFF and wait at least 90 minutes.

#### NOTE:

Never turn ignition switch ON during 90 minutes.

- Turn ignition switch ON.
- 5. Select "EVAP LEAK DIAG" in "DATA MONITOR" mode of "ENGINE".
- Check that "EVAP LEAK DIAG" indication.

#### Which is displayed on CONSULT?

CMPLT >> GO TO 4.

YET >> 1. Perform DTC CONFIRMATION PROCEDURE again.

GO TO 1.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

1			
F.PERFORM DTC CONFI	RMATION PROCE	DURE-3	
With CONSULT Check 1st trip DTC.			
s 1st trip DTC detected?			
YES >> Proceed to EC		rocedure".	
NO >> INSPECTION F		DUDE 4	
5.PERFORM DTC CONFI	RMATION PROCE	:DURE-4	
<ul><li>With GST</li><li>Start engine and let it is NOTE:</li></ul>	lle for least 40 sec	onds.	
Do not depress accel	erator pedal even	slightly.	
2. Check 1st trip DTC.  Is 1st trip DTC detected?			
YES >> Proceed to EC-	377 "Diagnosis Pi	rocedure"	
NO >> GO TO 6.		. <u> </u>	
6.PERFORM DTC CONFI	RMATION PROCE	DURE-5	
With GST			-
1. Let it idle for at least 2		00 min to	
<ol><li>Turn ignition switch OF NOTE:</li></ol>	⊢ and wait at least	90 minutes.	
Never turn ignition sv		0 minutes.	
<ol> <li>Turn ignition switch ON</li> <li>Check 1st trip DTC.</li> </ol>			
Is 1st trip DTC detected?			
YES >> Proceed to EC	377. "Diagnosis Pi	rocedure".	
NO >> INSPECTION I			
Diagnosis Procedure			INFOID:000000012197911
1.CHECK EVAP CONTRO	L SYSTEM PRES	SURE SENSOR CON	INECTOR FOR WATER
1. CHECK EVAP CONTRO		SURE SENSOR CON	INECTOR FOR WATER
<ol> <li>Turn ignition switch OF</li> <li>Disconnect EVAP conti</li> </ol>	F. ol system pressure	e sensor harness con	
<ol> <li>Turn ignition switch OF</li> <li>Disconnect EVAP conti</li> </ol>	F. ol system pressure	e sensor harness con	
Turn ignition switch OF     Disconnect EVAP conti	F. ol system pressure connector for wate	e sensor harness con	
<ol> <li>Turn ignition switch OF</li> <li>Disconnect EVAP conting</li> <li>Check sensor harness</li> </ol> Water should not expression	F. ol system pressure connector for wate xist.	e sensor harness con	
<ol> <li>Turn ignition switch OF</li> <li>Disconnect EVAP control</li> <li>Check sensor harness</li> </ol>	F. ol system pressure connector for wate xist.	e sensor harness con	
Turn ignition switch OF     Disconnect EVAP conto     Check sensor harness      Water should not expected in the inspection result normore     YES >> GO TO 2.     NO >> Repair or repla	F. ol system pressure connector for wate xist. nal? ce harness connector	e sensor harness con r. ctor.	nector.
<ol> <li>Turn ignition switch OF</li> <li>Disconnect EVAP conting</li> <li>Check sensor harness</li> <li>Water should not expected in the inspection result norminal expection in the inspection i</li></ol>	F. ol system pressure connector for wate xist. nal? ce harness connector	e sensor harness con r. ctor.	nector.
1. Turn ignition switch OF 2. Disconnect EVAP conto 3. Check sensor harness  Water should not expected in the inspection result normore  YES >> GO TO 2.  NO >> Repair or repla  2. CHECK EVAP CONTRO  1. Turn ignition switch ON	F. ol system pressure connector for wate xist. nal? ce harness connector SYSTEM PRES	e sensor harness con r. etor. SURE SENSOR POV	ver supply
1. Turn ignition switch OF 2. Disconnect EVAP conto 3. Check sensor harness  Water should not expected in the inspection result normore  YES >> GO TO 2.  NO >> Repair or repla  2. CHECK EVAP CONTRO  1. Turn ignition switch ON	F. ol system pressure connector for wate xist. nal? ce harness connector SYSTEM PRES	e sensor harness con r. etor. SURE SENSOR POV	nector.
1. Turn ignition switch OF 2. Disconnect EVAP conto 3. Check sensor harness  Water should not expected in the inspection result normore  YES >> GO TO 2.  NO >> Repair or repla  2. CHECK EVAP CONTRO  1. Turn ignition switch ON	F. ol system pressure connector for wate xist. nal? ce harness connector SYSTEM PRES	e sensor harness con r. etor. SURE SENSOR POV	ver supply
1. Turn ignition switch OF 2. Disconnect EVAP conto 3. Check sensor harness  Water should not expected in the inspection result normore  YES >> GO TO 2.  NO >> Repair or repla  CHECK EVAP CONTRO  1. Turn ignition switch ON 2. Check the voltage between the contract of t	F. ol system pressure connector for wate xist. nal? ce harness connector SYSTEM PRES een EVAP control	e sensor harness con r. etor. SURE SENSOR POV	ver supply
1. Turn ignition switch OF 2. Disconnect EVAP control 3. Check sensor harness  Water should not expected in the inspection result normore YES >> GO TO 2. NO >> Repair or repla  CHECK EVAP CONTRO  1. Turn ignition switch ON 2. Check the voltage between	F. ol system pressure connector for wate xist. nal? ce harness connector SYSTEM PRES een EVAP control	e sensor harness con r. etor. SURE SENSOR POV system pressure sens	ver supply
1. Turn ignition switch OF 2. Disconnect EVAP control 3. Check sensor harness  Water should not expected in the inspection result norm YES >> GO TO 2. NO >> Repair or repla  CHECK EVAP CONTRO  1. Turn ignition switch ON 2. Check the voltage between the switch of the control system pressure services.	F. ol system pressure connector for wate xist. nal? ce harness connector SYSTEM PRES een EVAP control	e sensor harness contr.  etor.  SURE SENSOR POV  system pressure sensor	ver supply

YES >> GO TO 4. NO >> GO TO 3.

 $3. \mathsf{CHECK}$  EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

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	l system pres- sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
B22	3	F25	23	Existed

Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts

# 4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+		-		
	l system pres- sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B22	1	F25	12	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# ${f 5}.$ CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR SIGNAL CIRCUIT

Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+			_	
	l system pres- sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
B22	2	F25	15	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

#### 6.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check the EVAP control system pressure sensor. Refer to EC-379, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27</u>, "2WD : <u>Exploded View"</u>(2WD), <u>FL-30</u>, "AWD : <u>Exploded View"</u>(AWD).

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# Component Inspection

INFOID:0000000012197912

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. **Always replace O-ring with a new one.**
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector and ground under the following conditions.

Connector + -			Condition	Voltage	
		-	Condition [Applied vacuum kPa (kg/cm <sup>2</sup> , psi)]		
	Terminal				
F25	15	12	Not applied	0.5 - 4.6 V	
1 23	13	12	-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- · Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm<sup>2</sup>, 14.69 psi).

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, <u>FL-30, "AWD : Exploded View"(AWD)</u>.

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Logic INFOID.000000012197913

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0451 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0452	EVAP SYS PRES SEN (EVAP control system pressure sensor low in- put)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors     (EVAP control system pressure sensor circuit is shorted.)     EVAP control system pressure sensor

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 5. Make sure that "FUEL T/TMP SE" indication is more than 0°C (32°F).
- Start engine and wait at least 20 seconds.
- 7. Check 1st trip DTC.

#### **With GST**

- 1. Start engine and warm it up to normal operating temperature.
- Set voltmeter probes to ECM harness connector terminals as per the following.

Connector	+	_	Voltage
Connector	Terr	ninal	
F25	15	12	Less than 4.2 V

- 3. Make sure that the voltage is less than 4.2 V.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and wait at least 20 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-381, "Diagnosis Procedure".

NO >> INSPECTION END

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# Diagnosis Procedure

INFOID:0000000012197914

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# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER

- Turn ignition switch OFF.
- 2. Disconnect EVAP control system pressure sensor harness connector.
- 3. Check sensor harness connector for water.

#### Water should not exist.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace harness connector.

2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY

- 1. Turn ignition switch ON.
- 2. Check the voltage between EVAP control system pressure sensor harness connector and ground.

	+		
	tem pressure sen- or	-	Voltage (Approx.)
Connector	Terminal		
B22	3	Ground	5 V

## Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+			_	
	EVAP control system pres- sure sensor		ECM	
Connector	Terminal	Connector Terminal		
B22	3	F25	23	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts

# 4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+				
	system pressensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
B22	1	F25	12	Existed

Also check harness for short to power.

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< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# ${f 5.}$ CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR SIGNAL CIRCUIT

Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+		_		
	system pres- sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B22	2	F25	15	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## 6.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check the EVAP control system pressure sensor. Refer to EC-379, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD : Exploded View"(2WD), FL-30, "AWD : Exploded View"(AWD).

## Component Inspection

INFOID:0000000012197915

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector and ground under the following conditions.

ECM			Condition		
Connector	+	_	[Applied vacuum kPa (kg/cm <sup>2</sup> , psi)]	Voltage	
Connector	Terminal		[ tppea raeaa a (.tg.e , pe./]		
F25	15	12	Not applied	0.5 - 4.6 V	
F25	15	12	-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm<sup>2</sup>, 14.69 psi).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, FL-30, "AWD : Exploded View"(AWD).

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Logic INFOID:0000000012197916

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0451 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0453	EVAP SYS PRES SEN (EVAP control system pressure sensor high in- put)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors     (EVAP control system pressure sensor circuit is shorted.)     EVAP control system pressure sensor

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

# ${f 2}$ .PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 5. Make sure that "FUEL T/TMP SE" indication is more than 0°C (32°F).
- Start engine and wait at least 20 seconds.
- Check 1st trip DTC.

#### 

- Start engine and warm it up to normal operating temperature.
- Set voltmeter probes to ECM harness connector terminals as per the following.

Connector	+	_	Voltage
	Terr		
F25	15	12	Less than 4.2 V

- 3. Make sure that the voltage is less than 4.2 V.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and wait at least 20 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-384, "Diagnosis Procedure". YES

NO >> INSPECTION END

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[MR FOR NISMO RS MODELS]

## Diagnosis Procedure

INFOID:0000000012197917

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP control system pressure sensor harness connector.
- 3. Check sensor harness connector for water.

#### Water should not exist.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace harness connector.

# 2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY

- 1. Turn ignition switch ON.
- 2. Check the voltage between EVAP control system pressure sensor harness connector and ground.

EVAD seeded see	+		Valtara
=	tem pressure sen- or	-	Voltage (Approx.)
Connector	Terminal		
B22	3	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+		_		
	l system pres- sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
B22	3	F25	23	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts

# 4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+		_		
	l system pres- sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
B22	1	F25	12	Existed

4. Also check harness for short to power.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# ${f 5.}$ CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR SIGNAL CIRCUIT

Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

+		_		
	system pres- sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B22	2	F25	15	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## **6.**CHECK RUBBER TUBE

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Clean the rubber tube using an air blower, repair or replace rubber tube.

# 7.CHECK EVAP CANISTER VENT CONTROL VALVE

Refer to EC-370, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP canister vent control valve. Refer to FL-27, "2WD: Exploded View" (2WD), FL-30, "AWD: Exploded View" (AWD).

# 8. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Refer to EC-386, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View" (2WD), FL-30, "AWD: Exploded View" (AWD).

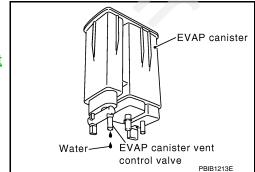
# 9.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Check if water will drain from the EVAP canister.

#### Does water drain from EVAP canister?

YES >> GO TO 10.

NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".



# 10. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 11.

# 11. DETECT MALFUNCTIONING PART

#### Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
  - >> Repair hose or replace EVAP canister. Refer to <u>FL-27, "2WD : Exploded View"</u>(2WD), <u>FL-30, "AWD : Exploded View"</u>(AWD).

## Component Inspection

INFOID:0000000012197918

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector and ground under the following conditions.

ECM			Condition		
Connector	+	_	Condition [Applied vacuum kPa (kg/cm², psi)]	Voltage	
Connector	Terminal		[ripplied vaddalli ki a (kg/olli , pol/)]		
F25	15	12	Not applied	0.5 - 4.6 V	
1 25	15	12	-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm<sup>2</sup>, 14.69 psi).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u>, <u>FL-30, "AWD : Exploded View"(AWD)</u>.

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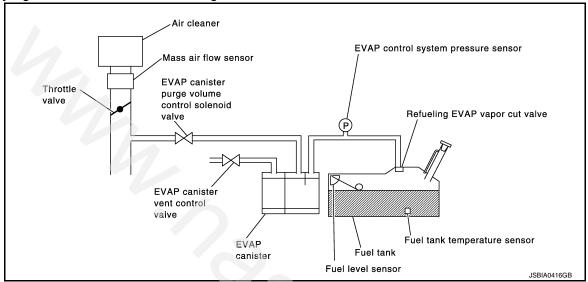
# P0456 EVAP CONTROL SYSTEM

DTC Logic INFOID:0000000012197919

#### DTC DETECTION LOGIC

This diagnosis detects leaks in the EVAP line between fuel tank and EVAP canister purge volume control solenoid valve, using the negative pressure caused by decrease of fuel temperature in the fuel tank after turning ignition switch OFF.

If ECM judges there are no leaks, the diagnosis will be OK.



DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0456	EVAP VERY SML LEAK (Evaporative emission control system leak)	EVAP system has a leak.     EVAP system does not operate properly.	<ul> <li>Incorrect fuel tank vacuum relief valve</li> <li>Incorrect fuel filler cap used</li> <li>Fuel filler cap remains open or does not close.</li> <li>Foreign matter caught in fuel filler cap.</li> <li>Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve.</li> <li>Foreign matter caught in EVAP canister vent control valve.</li> <li>EVAP canister or fuel tank leaks</li> <li>EVAP purge line (pipe and rubber tube) leaks</li> <li>EVAP purge line rubber tube bent</li> <li>Loose or disconnected rubber tube</li> <li>EVAP canister vent control valve and the circuit</li> <li>EVAP canister purge volume control solenoid valve and the circuit</li> <li>Fuel tank temperature sensor</li> <li>O-ring of EVAP canister vent control valve is missing or damaged</li> <li>EVAP canister is saturated with water</li> <li>EVAP control system pressure sensor</li> <li>Refueling EVAP vapor cut valve</li> <li>ORVR system leaks</li> <li>Fuel level sensor and the circuit</li> <li>Foreign matter caught in EVAP canister purge volume control solenoid valve</li> </ul>

#### **CAUTION:**

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may illuminate.
- If the fuel filler cap is not tightened properly, the MIL may illuminate.
- Use only a genuine NISSAN rubber tube as a replacement.

#### DTC CONFIRMATION PROCEDURE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 4.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### (A)WITH CONSULT

- Turn ignition switch ON and select "EVAP DIAG READY" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start engine and wait at idle until "OFF" of "EVAP DIAG READY" changes to "ON".

#### NOTE:

It will take at most 2 hours until "OFF" of "EVAP DIAG READY" changes to "ON".

3. Turn ignition switch OFF and wait at least 90 minutes.

#### NOTE:

Never turn ignition switch ON during 90 minutes.

- Turn ignition switch ON and select "EVAP LEAK DIAG" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 5. Check that "EVAP LEAK DIAG" indication.

#### Which is displayed on CONSULT?

CMPLT>> GO TO 3.

YET >> Perform DTC CONFIRMATION PROCEDURE again. GO TO 1.

# 3. PERFORM DTC CONFIRMATION PROCEDURE-II

#### Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-388, "Diagnosis Procedure".

NO >> INSPECTION END.

## 4. PERFORM DTC CONFIRMATION PROCEDURE

#### WITH GST

- 1. Start engine and wait engine idle for at least 2 hours.
- 2. Turn ignition switch OFF and wait at least 90 minutes.

#### NOTE:

#### Never turn ignition switch ON during 90 minutes.

- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-388, "Diagnosis Procedure"</u>.

NO >> INSPECTION END.

# Diagnosis Procedure

INFOID:0000000012197920

# 1. CHECK FUEL FILLER CAP DESIGN

1. Turn ignition switch OFF.

#### < DTC/CIRCUIT DIAGNOSIS >

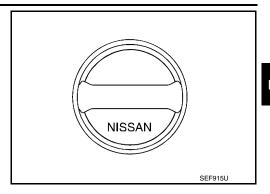
#### [MR FOR NISMO RS MODELS]

Check for genuine NISSAN fuel filler cap design.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



# 2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until reteaching sound is heard.

# 3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

## Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

## 4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-392, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

#### **5.**CHECK FOR EVAP LEAK

Refer to EC-587, "Inspection".

#### Is there any leak in EVAP line?

YES >> Repair or replace.

NO >> GO TO 6.

## **6.**CHECK EVAP CANISTER VENT CONTROL VALVE

#### Check the following.

• EVAP canister vent control valve is installed properly.

Refer to FL-27, "2WD: Exploded View".

EVAP canister vent control valve.

Refer to EC-370, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace EVAP canister vent control valve and O-ring. Refer to <u>FL-27, "2WD : Exploded View"</u>(2WD), <u>FL-30, "AWD : Exploded View"</u>(AWD).

## 7.CHECK IF EVAP CANISTER SATURATED WITH WATER

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#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

- 1. Remove EVAP canister (1) with EVAP canister vent control valve (2) and EVAP control system pressure sensor attached.
- 2. Check if water will drain from the EVAP canister.

#### Does water drain from EVAP canister?

YES >> GO TO 8.

NO-1 >> With CONSULT: GO TO 10. NO-2 >> Without CONSULT: GO TO 11. 9 PBIB2731E

# 8. CHECK EVAP CANISTER

Weigh the EVAP canister assembly with the EVAP canister vent control valve and EVAP control system pressure sensor attached. Refer to <u>FL-27</u>, "2WD: Exploded View"(2WD), <u>FL-30</u>, "AWD: Exploded View"(AWD). The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 10.

YES-2 >> Without CONSULT: GO TO 11.

NO >> GO TO 9.

# 9. DETECT MALFUNCTIONING PART

#### Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
  - >> Repair hose or replace EVAP canister. Refer to <u>FL-27, "2WD : Exploded View"</u>(2WD), <u>FL-30, "AWD : Exploded View"</u>(AWD).

# 10.check evap canister purge volume control solenoid valve operation

#### (P)With CONSULT

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- Start engine and let it idle.
- 3. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 4. Touch "Qu" on CONSULT screen to increase "PURG VOL CONT/V" opening to 100%.
- Check vacuum hose for vacuum.

#### Vacuum should exist.

#### Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

# 11. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

#### **⋈**Without CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- Stop engine.
- 3. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

#### Vacuum should exist.

#### Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

# 12. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to FL-27, "2WD: Exploded View".

< DTC/	CIRCUIT DIAGNOSIS > [MR FOR NISMO RS MODELS]
Is the in	nspection result normal?
YES NO	>> GO TO 13. >> Repair or reconnect the hose.
_	HECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE
	the EVAP canister purge volume control solenoid valve. Refer to <u>EC-366</u> . "Component Inspection".
	nspection result normal?
YES	>> GO TO 14.
NO	>> Replace EVAP canister purge volume control solenoid valve. Refer to <u>FL-27, "2WD : Exploded View"</u> .
<b>14.</b> cl	HECK FUEL TANK TEMPERATURE SENSOR
Check 1	the fuel tank temperature sensor. Refer to EC-308, "Component Inspection".
	nspection result normal?
YES NO	>> GO TO 15. >> Replace fuel level sensor unit. Refer to FL-6, "2WD: Exploded View" (2WD), FL-10, "AWD: Exploded View" (AWD).
<b>15.</b> cı	HECK EVAP CONTROL SYSTEM PRESSURE SENSOR
	the EVAP control system pressure sensor. Refer to FL-27, "2WD : Exploded View".
Is the in	nspection result normal?
YES NO	>> GO TO 16. >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"(2WD)</u> , <u>FL-30, "AWD : Exploded View"(AWD)</u> .
<b>16.</b> cı	HECK EVAP PURGE LINE
Refer to	EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection. o FL-26, "2WD: Hydraulic Layout"(2WD), FL-28, "AWD: Hydraulic Layout"(AWD).
	aspection result normal?
YES NO	>> GO TO 17. >> Repair or reconnect the hose.
	LEAN EVAP PURGE LINE
	EVAP purge line (pipe and rubber tube) using air blower.
40	>> GO TO 18.
<b>18.</b> c⊦	HECK EVAP/ORVR LINE
	EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper con. For location, refer to FL-26, "2WD: Hydraulic Layout" (2WD), FL-28, "AWD: Hydraulic Layout" (AWD).
	nspection result normal?
YES NO	>> GO TO 19. >> Repair or replace hoses and tubes.
	HECK RECIRCULATION LINE

# 19. CHECK RECIRCULATION LINE

Check recirculation line between fuel filler tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

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## Is the inspection result normal?

YES >> GO TO 20.

NO >> Repair or replace hose, tube or fuel filler tube. Refer to FL-27, "2WD: Exploded View" (2WD), FL-10, "AWD: Exploded View" (AWD).

# 20.CHECK REFUELING EVAP VAPOR CUT VALVE

Check the refueling EVAP vapor cut valve. Refer to FL-28, "2WD: Inspection" (2WD), FL-31, "AWD: Inspection"(AWD).

#### Is the inspection result normal?

>> GO TO 21. YES

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

NO >> Replace refueling EVAP vapor cut valve with fuel tank. Refer to <u>FL-27</u>, "2WD : <u>Exploded View"</u>(2WD), <u>FL-30</u>, "AWD : <u>Exploded View"</u>(AWD).

# 21. CHECK FUEL LEVEL SENSOR

Check the fuel level sensor. Refer to MWI-56, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace fuel level sensor unit. Refer to <u>FL-6, "2WD : Exploded View"(2WD)</u>, <u>FL-10, "AWD : Exploded View"(AWD)</u>.

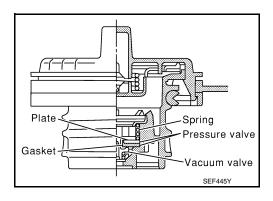
# Component Inspection

NO

INFOID:0000000012197921

# 1. CHECK FUEL FILLER CAP

- 1. Turn ignition switch OFF.
- 2. Remove fuel filler cap.
- 3. Wipe clean valve housing.



- 4. Install fuel filler cap adapter (commercial service tool) to fuel filler cap.
- 5. Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm<sup>2</sup>, 2.22

- 2.90 psi)

Vacuum:  $-6.0 \text{ to } -3.3 \text{ kPa} (-0.061 \text{ to } -0.034 \text{ kg/cm}^2,$ 

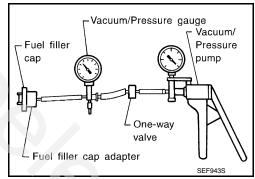
-0.87 to -0.48 psi)

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.REPLACE FUEL FILLER CAP



Replace fuel filler cap.

#### **CAUTION:**

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may illuminate.

>> INSPECTION END

## P0460 FUEL LEVEL SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0460 FUEL LEVEL SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0460 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0460 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-419, "DTC Logic".

When the vehicle is parked, naturally the fuel level in the fuel tank is stable. It means that output signal of the fuel level sensor does not change. If ECM senses sloshing signal from the sensor, fuel level sensor malfunction is detected.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0460	FUEL LEV SEN SLOSH (Fuel level sensor circuit noise)	Even though the vehicle is parked, a signal being varied is sent from the fuel level sensor to ECM.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait maximum of 2 consecutive minutes.
- 2. Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-393, "Diagnosis Procedure".

NO >> INSPECTION END

#### Diagnosis Procedure

# 1. CHECK COMBINATION METER FUNCTION

Refer to MWI-22, "CONSULT Function".

#### Is the inspection result normal?

YES >> CHECK INTERMITTENT INCIDENT. Refer to GI-45, "Intermittent Incident".

NO >> Refer to MWI-54, "Component Function Check".

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## P0461 FUEL LEVEL SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0461 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0461 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-419, "DTC Logic".

Driving long distances naturally affect fuel gauge level.

This diagnosis detects the fuel gauge malfunction of the gauge not moving even after a long distance has been driven.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0461	FUEL LEVEL SENSOR (Fuel level sensor circuit range/performance)	The output signal of the fuel level sensor does not change within the specified range even though the vehicle has been driven a long distance.	Harness or connectors     (The CAN communication line is open or shorted)     Harness or connectors     (The sensor circuit is open or shorted)     Combination meter     Fuel level sensor

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-394, "Component Function Check".

Use component function check to check the overall function of the fuel level sensor function. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-395, "Diagnosis Procedure".

# Component Function Check

INFOID:0000000012197925

# 1.PRECONDITIONING

#### **WARNING:**

When performing following procedure, be sure to observe the handling of the fuel. Refer to <u>FL-2</u>, "General Precautions".

#### **TESTING CONDITION:**

Before starting component function check, preparation of draining fuel and refilling fuel is required.

#### Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 3.

# 2.PERFORM COMPONENT FUNCTION CHECK

#### (P)With CONSULT

#### NOTE:

Start from step 10, if it is possible to confirm that the fuel cannot be drained by 30  $\,\ell$  (7-7/8 US gal, 6-5/8 lmp gal) in advance.

- 1. Prepare a fuel container and a spare hose.
- Release fuel pressure from fuel line, refer to EC-166, "Work Procedure".
- 3. Remove the fuel feed hose on the fuel level sensor unit.
- 4. Connect a spare fuel hose where the fuel feed hose was removed.
- 5. Turn ignition switch OFF and wait at least 10 seconds then turn ON.
- 6. Select "FUEL LEVEL SE" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 7. Check "FUEL LEVEL SE" output voltage and note it.

#### P0461 FUEL LEVEL SENSOR [MR FOR NISMO RS MODELS] < DTC/CIRCUIT DIAGNOSIS > Select "FUEL PUMP RELAY" in "ACTIVE TEST" mode of "ENGINE" using CONSULT. Touch "ON" and drain fuel approximately 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) and stop it. Α 10. Check "FUEL LEVEL SE" output voltage and note it. 11. Fill fuel into the fuel tank for 30 $\ell$ (7-7/8 US gal, 6-5/8 Imp gal). 12. Check "FUEL LEVEL SE" output voltage and note it. EC 13. Confirm whether the voltage changes more than 0.03 V during step 7 to 10 and 10 to 12. Is the inspection result normal? YES >> INSPECTION END NO >> Proceed to EC-395, "Diagnosis Procedure". 3.PERFORM COMPONENT FUNCTION CHECK NOTE: Start from step 8, if it is possible to confirm that the fuel cannot be drained by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) in advance. Е 1. Prepare a fuel container and a spare hose. 2. Release fuel pressure from fuel line. Refer to EC-166, "Work Procedure". 3. Remove the fuel feed hose on the fuel level sensor unit. 4. Connect a spare fuel hose where the fuel feed hose was removed. Turn ignition switch ON. 6. Drain fuel by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) from the fuel tank using proper equipment. 7. Confirm that the fuel gauge indication varies. 8. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal). 9. Confirm that the fuel gauge indication varies. Is the inspection result normal? Н YES >> INSPECTION END NO >> Proceed to EC-395, "Diagnosis Procedure" Diagnosis Procedure INFOID:0000000012197926 1. CHECK COMBINATION METER FUNCTION Refer to MWI-22, "CONSULT Function". Is the inspection result normal? YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident" NO >> Refer to MWI-54, "Component Function Check"

Revision: November 2015 EC-395 2016 JUKE

#### P0462, P0463 FUEL LEVEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P0462, P0463 FUEL LEVEL SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0462 or P0463 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0462 or P0463 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-419, "DTC Logic".

This diagnosis indicates the former, to detect open or short circuit malfunction.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0462	FUEL LEVEL SEN/ CIRC (Fuel level sensor circuit low input)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors (CAN communication line is open or shorted) Harness or connectors (Fuel level sensor circuit is open or shorted) Combination meter Fuel level sensor
P0463	FUEL LEVEL SEN/ CIRC (Fuel level sensor circuit high input)	An excessively high voltage from the sensor is sent to ECM.	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is between 11 V and 16 V at ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-396, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197928

# 1. CHECK COMBINATION METER FUNCTION

Refer to MWI-22, "CONSULT Function".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Refer to MWI-54, "Component Function Check"

### P0500 VSS

### **EXCEPT FOR M/T MODELS**

## **EXCEPT FOR M/T MODELS: Description**

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ECM receives vehicle speed signals from two different paths via CAN communication line: One is from the ABS actuator and electric unit (control unit) via the combination unit and the other is from TCM.

## EXCEPT FOR M/T MODELS: DTC Logic

#### INFOID:0000000012197930

#### DTC DETECTION LOGIC

#### NOTE:

• If DTC P0500 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.

If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-419</u>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0500	VEH SPEED SEN/CIRC (Vehicle speed sensor)	At 20 km/h (13 MPH), ECM detects the following status continuously for 5 seconds or more: The difference between a vehicle speed calculated by a output speed sensor transmitted from TCM to ECM via CAN communication and the vehicle speed indicated on the combination meter exceeds 15km/h (10 MPH).	Harness or connector     (CAN communication line is open or shorted.)     Combination meter     ABS actuator and electric unit (control unit)     Wheel sensor     TCM     Output speed sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 10 V or more at idle.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- Start engine.
- Shift the selector lever to D range and wait at least for 2 seconds.
- 3. Drive the vehicle at least 5 seconds at 20 km/h (13 MPH) or more.

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

#### NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-397, "EXCEPT FOR M/T MODELS : Diagnosis Procedure"

NO >> INSPECTION END

### EXCEPT FOR M/T MODELS : Diagnosis Procedure

#### INFOID:0000000012197931

## 1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-203, "DTC Index".

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INFOID:0000000012197932

INFOID:0000000012197933

#### < DTC/CIRCUIT DIAGNOSIS >

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

## 2.CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-50, "DTC Index".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform trouble shooting relevant to DTC indicated.

## 3. CHECK DTC WITH COMBINATION METER

Check DTC with combination meter. Refer to MWI-33, "DTC Index".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform trouble shooting relevant to DTC indicated.

#### 4. CHECK OUTPUT SPEED SENSOR

Check output speed sensor. Refer to TM-251, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace or replace error-detected parts.

#### 5. CHECK WHEEL SENSOR

Check wheel sensor. Refer to BRC-88, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace or replace error-detected parts.

M/T MODELS

#### M/T MODELS: Description

The vehicle speed signal is sent to the combination meter from the "ABS actuator and electric unit (control unit)" via the CAN communication line. The combination meter then sends a signal to the ECM via the CAN communication line.

#### M/T MODELS: DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0500 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-419, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0500	VEH SPEED SEN/CIRC (Vehicle speed sensor)	The vehicle speed signal sent to ECM is almost 0 km/h (0 MPH) even when vehicle is being driven.	Harness or connectors (CAN communication line is open or shorted) Harness or connectors (Vehicle speed signal circuit is open or shorted) Wheel sensor Combination meter ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

### 1. INSPECTION START

Do you have CONSULT?

Do you have CONSULT?

#### < DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 2. NO >> GO TO 5.

## 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

Turn ignition switch OFF and wait at least 10 seconds.

- Turn ignition switch ON. 2.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 3.

## 3.CHECK VEHICLE SPEED SIGNAL

#### NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

#### (P)With CONSULT

- Start engine.
- Read "VHCL SPEED SE" in "DATA MONITOR" mode of "ENGINE" using CONSULT. The vehicle speed on CONSULT should exceed 10 km/h (6 mph) when rotating wheels with suitable gear position.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Proceed to EC-400, "M/T MODELS : Diagnosis Procedure".

## 4.PERFORM DTC CONFIRMATION PROCEDURE

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 50 consecutive seconds. **CAUTION:**

Always drive vehicle at a safe speed.

ENG SPEED	1,800 - 6,000 rpm
COOLAN TEMP/S	More than 65°C (149°F)
B/FUEL SCHDL	6.25 - 31.8 msec
Selector lever	Except Neutral position
PW/ST SIGNAL	OFF

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-400, "M/T MODELS: Diagnosis Procedure".

NO >> INSPECTION END

#### ${f 5.}$ PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-399, "M/T MODELS: Component Function Check". Use component function check to check the overall function of the vehicle speed signal circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-400, "M/T MODELS: Diagnosis Procedure".

## M/T MODELS: Component Function Check

## 1. PERFORM COMPONENT FUNCTION CHECK

#### With GST

- 1. Lift up drive wheels.
- Start engine.
- Read vehicle speed signal in Service \$01 with GST.

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INFOID:0000000012197934

#### < DTC/CIRCUIT DIAGNOSIS >

The vehicle speed signal on GST should be able to exceed 10 km/h (6 MPH) when rotating wheels with suitable gear position.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-400, "M/T MODELS : Diagnosis Procedure".

## M/T MODELS: Diagnosis Procedure

INFOID:0000000012197935

## 1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Check DTC with ABS actuator and electric unit (control unit). Refer to <u>BRC-50, "DTC Index"</u>.

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

## 2. CHECK DTC WITH COMBINATION METER

Check DTC with combination meter. Refer to MWI-33, "DTC Index".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform trouble shooting relevant to DTC indicated.

### P0501, P2159 VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0501, P2159 VEHICLE SPEED SENSOR

Description INFOID:0000000012197936

ECM receives a rear wheel sensor signal from ABS actuator and electric unit (control unit) via CAN communication to switch combustion for the direct injection gasoline system. For the direct injection gasoline system, refer to EC-51, "DIRECT INJECTION GASOLINE SYSTEM: System Description".

INFOID:0000000012197937

## DTC Logic

#### DTC DETECTION LOGIC

NOTE:

If DTC P0501 or P2159 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX. Refer to EC-115, "DTC Index".

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0501	VEHICLE SPEED SEN A (Vehicle speed sensor A range/ performance)	ECM detects a rear LH wheel sensor mal- function signal transmitted from the ABS ac- tuator and electric unit (control unit) via CAN communication at least for 5 seconds in a row.	Harness or connectors     (The CAN communication line is open or shorted)     Rear LH wheel sensor     ABS actuator and electric unit (control unit)
P2159	Vehicle speed sensor B (Vehicle speed sensor B range/ performance)	ECM detects a rear RH wheel sensor mal- function signal transmitted from the ABS ac- tuator and electric unit (control unit) via CAN communication at least for 5 seconds in a row.	Harness or connectors     (The CAN communication line is open or shorted)     Rear RH wheel sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 9 V at idle.

#### >> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-401, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

 ${f 1}.$ CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-39, "CONSULT Function".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform Diagnosis Procedure corresponding to DTC indicated.

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INFOID:0000000012197938

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### P0506 ISC SYSTEM

Description INFOID:000000012197939

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0506 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0506	ISC SYSTEM (Idle speed control system RPM lower than expected)	The idle speed is less than the target idle speed by 100 rpm or more.	Electric throttle control actuator     Intake air leak

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

If the target idle speed is out of the specified value, perform<u>EC-162, "Description"</u>, before conducting DTC Confirmation Procedure.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.
- Always perform the test at a temperature above -10°C (14°F).

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-402, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197941

## 1. CHECK INTAKE AIR LEAK

- Start engine and let it idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

#### Is intake air leak detected?

YES >> Discover air leak location and repair.

### **P0506 ISC SYSTEM**

NO >> Replace ECM. Refer to EC-590, "Removal and Installation".

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### P0507 ISC SYSTEM

Description INFOID:000000012197942

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration, and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic INFOID:000000012197943

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0507 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0507	ISC SYSTEM (Idle speed control system RPM higher than expected)	The idle speed is more than the target idle speed by 200 rpm or more.	Electric throttle control actuator     Intake air leak     PCV system

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

If the target idle speed is out of the specified value, perform <u>EC-162</u>, <u>"Description"</u>, before conducting DTC Confirmation Procedure.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.
- Always perform the test at a temperature above –10°C (14°F).

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-404, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197944

## 1. CHECK PCV HOSE CONNECTION

Confirm that PCV hose is connected correctly.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

#### **P0507 ISC SYSTEM**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 2.CHECK INTAKE AIR LEAK

- 1. Start engine and let it idle.
- 2. Listen for an intake air leak after the mass air flow sensor.

#### Is intake air leak detected?

- YES >> Discover air leak location and repair.
- NO >> Replace ECM. Refer to EC-590, "Removal and Installation".

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#### P050A, P050E COLD START CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P050A, P050E COLD START CONTROL

Description INFOID.000000012197945

ECM controls ignition timing and engine idle speed when engine is started with pre-warming up condition. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P050A, P050B or P050E is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P050A	Cold start idle air control system performance	ECM does not control engine idle speed properly when engine is started with pre-warming up condition.	Lack of intake air volume     Fuel injection system
P050E	Cold start engine exhaust temperature too low	The temperature of the catalyst inlet does not rise to the proper temperature when the engine is started with pre-warming up condition.	• ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE-I

#### (P)With CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 4. Check the indication of "COOLAN TEMP/S".

With GST

Follow the procedure "With CONSULT" above.

#### Is the value of "COOLAN TEMP/S" between 4°C (39°F) and 36°C (97°F)?

YES >> GO TO 3.

NO-1 [If it is below 4°C (39°F)]>>Warm up the engine until the value of "COOLAN TEMP/S" reaches 4°C (39°F) or more. Retry from step 1.

NO-2 [If it is above 36°C (97°F)]>>Cool engine down to less than 36°C (97°F). Retry from step 1.

#### 3.PERFORM DTC CONFIRMATION PROCEDURE-II

#### (P)With CONSULT

- 1. Set the select lever in N range.
- Start the engine and warm up in idle with the value of "COOLAN TEMP/S" between 5°C (41°F) and 40°C (104°F) for more than 15 seconds.
- 3. Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

## P050A. P050E COLD START CONTROL

P050A, P050E COLD START CO	NTROL
< DTC/CIRCUIT DIAGNOSIS >	[MR FOR NISMO RS MODELS]
YES >> Proceed to <u>EC-407</u> , " <u>Diagnosis Procedure</u> ". NO >> INSPECTION END	A
Diagnosis Procedure	INFOID:000000012197947
1.PERFORM IDLE AIR VOLUME LEARNING	EC
Perform EC-162, "Description".	
Is Idle Air Volume Learning carried out successfully?	С
YES >> GO TO 2.  NO >> Follow the instruction of Idle Air Volume Learning.	
2.CHECK INTAKE SYSTEM	D
Check for the cause of intake air volume lacking. Refer to the following.  Crushed intake air passage  Intake air passage clogging  Clogging of throttle body	E
Is the inspection result normal? YES >> GO TO 3.	F
NO >> Repair or replace malfunctioning part	Г
3. CHECK FUEL INJECTION SYSTEM FUNCTION	
Perform DTC Confirmation Procedure for DTC P0171. Refer to EC-297.	<u>. "DTC Logic"</u> .
Is the inspection result normal?	
YES >> GO TO 4.  NO >> Proceed to <u>EC-298</u> , " <u>Diagnosis Procedure</u> " for DTC P0171.	Н
4.PERFORM DTC CONFIRMATION PROCEDURE	
1. Turn ignition switch ON.	
Erase DTC.     Perform DTC Confirmation Procedure.	
See EC-406, "DTC Logic".	J
Is the 1st trip DTC P050A or P050E displayed again?  YES >> Replace ECM. Refer to EC-590, "Removal and Installation"	
NO >> INSPECTION END	K
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## P0520 EOP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	Detecting condition	Possible cause
P0520	EOP SENSOR/SWITCH [Engine oil pressure (EOP) sensor circuit]	Signal voltage from the EOP sensor remains at more than 4.9 V / less than 0.26 V for 5 seconds or more.	Harness or connectors     (EOP sensor circuit is open or shorted.)     (Camshaft position sensor circuit is open or shorted)     (Fuel rail pressure sensor circuit is open or shorted.)     (Battery current sensor circuit is open or shorted.)     (G sensor circuit is open or shorted.)     (Exhaust valve timing control position sensor circuit is open or shorted.)     (Accelerator pedal position sensor 2 circuit is open or shorted.)     (Turbocharger boost sensor circuit is open or shorted.)     Engine oil level abnormality     EOP sensor     Camshaft position sensor     Fuel rail pressure sensor     Battery current sensor     G sensor     Exhaust valve timing control position sensor     Accelerator pedal position sensor 2     Turbocharger boost sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-408, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197949

## 1. CHECK ENGINE OIL

- Turn ignition switch OFF.
- Check engine oil level and pressure. Refer to <u>LU-9</u>, "Inspection".

#### Is inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

#### **P0520 EOP SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

# 2.CHECK EOP SENSOR POWER SUPPLY-I

- 1. Disconnect EOP sensor connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between EOP sensor harness connector terminals.

 EOP sensor
 Voltage (Approx.)

 Connector
 terminal
 5 V

#### Inspection result normal?

YES >> GO TO 7.

NO >> GO TO 3.

## 3. CHECK EOP SENSOR POWER SUPPLY-II

Check the voltage between EOP sensor harness connector and the ground.

EOP	+ sensor	_	Voltage (Approx.)	
Connector	Terminal		(	
F43	3	Ground	5 V	

#### Is inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

## 4. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor	or		
Connector	Terminal	Name	Name Connector		
FRP sensor		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor F75		1	
F26	68	Battery current sensor	F52	1	
	00	G sensor	B32	3	
	72	CMP sensor	F109	1	
	12	EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## CHECK EOP SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between EOP sensor harness connector and ECM harness connector.

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INFOID:0000000012197950

+		,	_	
EOP sensor		E	СМ	Continuity
Connector	Terminal	Connector Terminal		
F43	1	F25	44	Existed

Also check harness for short to power.

#### Is inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## 6. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

+ ECM		_	Continuity
Connector	Terminal		
F25	1		
F25	2		
	123	Ground	Existed
E18	124		
	127		

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 7. CHECK EOP SENSOR SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between EOP sensor harness connector and ECM harness connector.

+		_				
EOP	sensor	ECM		ECM Co		Continuity
Connector	Terminal	Connector	Terminal			
F43	2	F25	43	Existed		

4. Also check harness for short to ground and to power.

#### Is inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

## 8. CHECK EOP SENSOR

Refer to EC-410, "Component Inspection".

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## Component Inspection

## 1.CHECK EOP SENSOR

- Turn ignition switch OFF.
- 2. Disconnect EOP sensor harness connector.
- Check resistance between EOP sensor connector terminals.

### **P0520 EOP SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

EOP	sensor		
+	_	Condition	Resistance (k $\Omega$ )
Terminal			
1	2		4 kΩ – 10 kΩ
'	3		2 kΩ – 8 kΩ
2	1	None	4 kΩ – 10 kΩ
2	3	None	1 kΩ – 3 kΩ
3	1		2 kΩ – 8 kΩ
3	2		1 kΩ – 3 kΩ

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace EOP sensor. Refer to <a href="EM-114">EM-114</a>, "Exploded View".

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[MR FOR NISMO RS MODELS]

## P0524 ENGINE OIL PRESSURE

DTC Logic INFOID:0000000012197951

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0524	ENGINE OIL PRESSURE (Engine oil pressure too low)	An EOP sensor signal voltage applied to ECM remains lower than the specified value continuously for 10 seconds or more when the engine speed is 1,000 rpm or more.	<ul> <li>Decrease in engine oil pressure</li> <li>Decrease in engine oil level</li> <li>Engine oil condition</li> <li>EOP sensor</li> <li>Engine body</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

If "EC-413, "Diagnosis Procedure" is unfinished, be sure to perform Step 3 and 4.

## 1.PRECONDITIONING-1

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PRECONDITIONING-2

#### Is "Diagnosis Procedure" of DTC P0524 finished?

YES >> GO TO 3.

>> GO TO 4. NO

## 3.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and warm it up to normal operating temperature.
- Maintain the following conditions for about 10 consecutive seconds.

Selector lever	P or N position
Engine coolant temperature	70°C (158°F) or more
Engine speed	1,000 rpm or more

#### NOTE:

With engine speed set around 4,000 rpm, the phenomenon can be reproduced more easily.

3. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-413, "Diagnosis Procedure".

NO >> INSPECTION END

#### 4. CHECK ENGINE OIL LEVEL

Check engine oil pressure. Refer to LU-9, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Proceed to EC-413, "Diagnosis Procedure".

#### ${f 5.}$ CHECK ENGINE OIL PRESSURE

#### (P)With CONSULT

#### P0524 ENGINE OIL PRESSURE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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INFOID:0000000012197952

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Start the engine and check that "EOP SENSOR" changes, according to engine speeds.

Monitor item	Condition		Value (Approx.)
EOP SENSOR	Engine oil temperature: 80°C (176°F)     Selector lever: P or N position	Engine speed: Idle	1,450 mV or more
LOI GENGOR	Air conditioner switch: OFF     No load	Engine speed: 2,000 rpm	2,850 mV or more

Check engine oil level. Refer to <u>LU-9</u>, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to <u>EC-413</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

## 1. CHECK ENGINE OIL LEVEL

- Turn ignition switch OFF.
- Check engine oil level. Refer to <u>LU-9, "Inspection"</u>.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2.CHECK ENGINE OIL PRESSURE

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Start the engine and check that "EOP SENSOR" changes, according to engine speeds.

Monitor item	Condition		Value (Approx.)
EOP SENSOR	• Engine oil temperature: 80°C (176°F) • Selector lever: P or N position	Engine speed: Idle	1,450 mV or more
Air conditioner switch: OFF     No load		Engine speed: 2,000 rpm	2,850 mV or more

#### 

Check engine oil pressure. Refer to <a href="LU-9">LU-9</a>, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check oil pump. Refer to <u>LU-18</u>, "Inspection".

## 3.CHECK EOP SENSOR

Check EOP sensor. Refer to EC-414, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

### CHECK ENGINE OIL LEAKAGE

Check engine oil leakage. Refer to LU-8, "Engine Lubrication System".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

Revision: November 2015 EC-413 2016 JUKE

#### **P0524 ENGINE OIL PRESSURE**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# $5. \mathsf{CHECK}$ CAUSE OF ENGINE OIL CONSUMPTION

Check the following item.

Step	Inspection item	Equipment	Standard	Reference
1	PCV valve	EC-589, "Inspection"	-	
2	Turbocharger	EM-41, "Inspection"		
3	Exhaust front tube	Visual	<ul><li>No blocking</li><li>No abnormal sounds</li></ul>	_
4	Oil pump	Visual	<ul><li>No blocking</li><li>No abnormal sounds</li></ul>	_
4	Oil pump	LU-18, "Inspection"		
5	Piston Piston pin Piston ring	<ul><li>Piston to piston pin oil clearance</li><li>Piston ring side clearance</li><li>Piston ring end gap</li></ul>		EM-133, "Description"
6	Cylinder block	Cylinder block top surface distortion     Piston to cylinder bore clearance		EM-123, "Inspection"

>> Repair or replace error-detected parts.

## Component Inspection

INFOID:0000000012197953

## 1. CHECK EOP SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect EOP sensor harness connector.
- 3. Check resistance between EOP sensor connector terminals.

EOP	sensor		
+	_	Condition	Resistance (kΩ)
Terr	minal		
1	2	None	4 kΩ – 10 kΩ
'	3		2 kΩ – 8 kΩ
2	1		4 kΩ – 10 kΩ
2	3		1 kΩ – 3 kΩ
3	1		2 kΩ – 8 kΩ
	2		1 kΩ – 3 kΩ

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace EOP sensor. Refer to EM-114, "Exploded View".

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### P0603 ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0603	ECM BACK UP CIRCUIT [Internal control module keep alive memory (KAM) error]	<ul> <li>Malfunction in the internal back up RAM of ECM.</li> <li>Malfunction in the internal EEP-ROM system of ECM.</li> </ul>	• ECM power supply • ECM

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Repeat step 1 and 2 for 10 times.
- Turn ignition switch ON.
- 5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-415, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## ${f 1}.$ CHECK ECM POWER SUPPLY AND GROUND CIRCUIT

Perform trouble diagnosis for ECM power supply and ground circuit. Refer to <u>EC-187, "Diagnosis Procedure"</u>. Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-45, "Intermittent Incident"

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

### 3.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to EC-415, "DTC Logic".

#### Is the 1st trip DTC P0603 displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

Revision: November 2015 EC-415 2016 JUKE

### P0604 ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0604	ECM [Internal control module random access memory (RAM) error]	Malfunction in the internal RAM of ECM.	ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON (engine stopped) and wait least 20 minutes.

#### **CAUTION:**

#### Never start engine during this procedure.

- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-416, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197957

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to EC-416, "DTC Logic".

#### Is the 1st trip DTC P0604 displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

### P0605 ECM

**DTC** Logic INFOID:0000000012197958

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0605	ECM [Internal control module read only memory (ROM) error]	Malfunction in the internal ROM of ECM.	ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

Turn ignition switch ON (engine stopped) and wait least 20 minutes.

#### **CAUTION:**

Never start engine during this procedure.

- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-417, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to <a>EC-417</a>, "DTC Logic".

#### Is the 1st trip DTC P0605 displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

**EC-417 Revision: November 2015 2016 JUKE**  EC

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### P0606 ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0606	CONTROL MODULE (Control module processor)	Malfunction in ECM processor.	ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

1. Turn ignition switch ON (engine stopped) and wait at least 10 seconds.

#### **CAUTION:**

#### Never start engine during this procedure.

- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-418, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-II

- 1. Start engine.
- 2. Rev up the engine quickly to approximately 3,000 rpm under unloaded condition and completely release the accelerator pedal.
- 3. Let the engine idle and wait at least 10 seconds.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON.
- 6. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-418, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197961

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure for 3 times. Refer to EC-418, "DTC Logic".

#### Is the 1st trip DTC P0606 displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

#### [MR FOR NISMO RS MODELS]

### P0607 ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0607	ECM (Control module performance)	ECM internal communication system is malfunctioning.	ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON (engine stopped) and wait least 10 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-419, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- Perform DTC confirmation procedure. Refer to <u>EC-419, "DTC Logic"</u>.

### Is the 1st trip DTC P0607 displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

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### P060A ECM

DTC Logic INFOID:000000012197964

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P060A	CONTROL MODULE (Internal control module monitoring processor per- formance)	ECM internal monitoring processor is malfunctioning.	ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 10 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Repeat step 1 and 2 for 5 times.
- 4. Turn ignition switch ON.
- 5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-420, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197965

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to <u>EC-420, "DTC Logic"</u>.

### Is the 1st trip DTC P060A displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

#### P060B ECM

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

### P060B ECM

**DTC** Logic INFOID:0000000012197966

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P060B	CONTROL MODULE (Internal control module A/ D processing performance)	ECM internal analog/digital conversion processing system is malfunctioning.	ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- Turn ignition switch ON (engine stopped) and wait least 10 seconds.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Turn ignition switch ON.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-421, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Erase DTC. 2.
- Perform DTC confirmation procedure. Refer to EC-421, "DTC Logic".

### Is the 1st trip DTC P060B displayed again?

>> Replace ECM. Refer to EC-590, "Removal and Installation". YES

NO >> INSPECTION END EC

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#### **P0611 ECM PROTECTION**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0611 ECM PROTECTION

Description INFOID:000000012197968

This DTC is detected when the ECM protective function is activated due to an extreme temperature increase in ECM, resulting from severe conditions such as heavy load driving.

DTC Logic (INFOID:000000012197969

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0611	FIC MODULE (ECM protection)	ECM overheat protection control is activated.	ECM overheated

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

This DTC is displayed as protection function history. If no malfunction is detected after the diagnosis, the customer must be informed of the activation of the protection function.

>> Proceed to EC-422, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012197970

## 1.INSPECTION START

- 1. Perform DTC confirmation procedure. Refer to EC-417, "DTC Logic".
- 2. Check 1st trip DTC.

#### Is DTC P0605 detected?

YES >> Proceed to EC-417, "Diagnosis Procedure".

NO >> Explain the customer about the activation of the protection function.

### P062B ECM

Description INFOID:0000000012197971

This DTC is detected when the ECM-integrated injector driver unit has a malfunction. For injector driver unit, refer to <a href="EC-33">EC-33</a>. <a href=""EC-33">"ECM"</a>.

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## DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P062B	ECM (Internal control module fuel injector control performance)	Injector driver unit is malfunctioning.	Harness and connectors     (Injector circuit is open or shorted)     Battery power supply     ECM (injector driver unit)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- Start the engine and keep the engine speed at idle for 30 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-423, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

1.CHECK FUEL INJECTOR

Check fuel injector. Refer to EC-541, "Component Function Check".

#### Is inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure again. Refer to EC-423, "DTC Logic".
- Check 1st trip DTC.

#### Is the DTC P062B displayed again?

YES >> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

Revision: November 2015 EC-423 2016 JUKE

#### P0643 SENSOR POWER SUPPLY

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P0643 SENSOR POWER SUPPLY

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0643	SENSOR POWER/ CIRC (Sensor power supply circuit short)	ECM detects a voltage of power source for sensor is excessively low or high.	Harness or connectors (Refrigerant pressure sensor circuit is open or shorted.) (Crankshaft position sensor circuit is open or shorted) (Accelerator pedal position sensor 1 circuit is open or shorted.) (Throttle position sensor circuit is open or shorted.) (EVAP control pressure sensor circuit is open or shorted.) Refrigerant pressure sensor Crankshaft position sensor Accelerator pedal position sensor 1 Throttle position sensor EVAP control pressure sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-424, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197975

## 1. CHECK SENSOR POWER SUPPLY

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

#### P0643 SENSOR POWER SUPPLY

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

	+ CM	_	Voltage (Approx.)	
Connector	Terminal		(, (ppiox.)	
F25	23			
F26	58	Ground 5 V	5 V	
1 20	62	Giodila	5 V	
E18	101			

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY ROUTING CIRCUIT FOR SHORT

Turn ignition switch OFF.

2. Check harness for short to power and to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
F25	23	Refrigerant pressure sensor	E49	3
1 23	23	EVAP control system pressure sensor	B22	3
F26	58	CKP sensor	F107	3
F20	62	TP sensor	F29	1
E18	101	APP sensor	E101	4

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK COMPONENTS

#### Check the following.

- Refrigerant pressure sensor Refer to <u>EC-568</u>, "<u>Diagnosis Procedure</u>".
- EVAP control system pressure sensor Refer to <u>EC-379</u>, "Component Inspection".
- Crankshaft position sensor Refer to <u>EC-345</u>, "Component Inspection".
- Throttle position sensor

Refer to EC-254, "Component Inspection".

 Accelerator pedal position sensor Refer to <u>EC-518</u>, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace malfunctioning component.

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### P0850 PNP SWITCH

Description INFOID:000000012197976

For CVT models, transmission range switch is turn ON when the selector lever is P or N.

For M/T models, park/neutral position (PNP) range switch is ON when the selector lever is Neutral position. ECM detects the position because the continuity of the line (the ON) exists.

DTC Logic INFOID:000000012197977

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0850	P-N POS SW/CIRCUIT (Park/neutral position switch)	<ul> <li>For CVT models, the signal of transmission range switch is not changed in the process of engine starting and driving.</li> <li>For M/T models, the signal of the park/neutral position (PNP) switch is not changed in the process of engine starting and driving.</li> </ul>	Harness or connectors [The transmission range switch circuit is open or shorted.(CVT models)] [The park/neutral position (PNP) switch circuit is open or shorted.(M/T models)] Transmission range switch (CVT models) Park/neutral position (PNP) switch (M/T models)

#### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

Do you have CONSULT?

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 5.

## 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 3.

## 3.CHECK PNP SIGNAL FUNCTION

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "P/N POSI SW" in "DATA MONITOR" mode of "ENGINE" using CONSULT. Then check the "P/N POSI SW" signal as per the following conditions.

Selector lever position	Known-good signal
N or P position (CVT) Neutral position (M/T)	ON
Except above position	OFF

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Proceed to EC-427, "Diagnosis Procedure".

#### 4.PERFORM DTC CONFIRMATION PROCEDURE

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.

#### < DTC/CIRCUIT DIAGNOSIS >

Maintain the following conditions for at least 60 consecutive seconds. **CAUTION:** 

Always drive vehicle at a safe speed.

ENG SPEED	1,400 - 6,375 rpm (CVT) 1,675 - 6,375 rpm (M/T)
COOLAN TEMP/S	More than 65°C (149°F)
B/FUEL SCHDL	1.6 - 31.8 msec
VHCL SPEED SE	More than 64 km/h (40 mph)
Selector lever	Suitable position

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-427, "Diagnosis Procedure".

NO >> INSPECTION END

## ${f 5}$ PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-427, "Component Function Check".

#### NOTE:

Use component function check the overall function of the transmission range switch circuit (CVT models) or the park/neutral position (PNP) switch circuit (M/T models). During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-427, "Diagnosis Procedure".

## Component Function Check

## 1.PERFORM COMPONENT FUNCTION CHECK

1. Turn ignition switch ON.

Check the voltage between ECM harness connector and ground as per the following conditions.

ECM				)/-H	
Connector	+	_	Condition		Voltage (Approx.)
Connector	Terr	minal			
E18	103	127	P or N (CVT) Neutral (M/T)		0 V
				Except above	Battery voltage

#### Is the inspection result normal?

YES >> INSPECTION END

>> Proceed to EC-427, "Diagnosis Procedure". NO

#### Diagnosis Procedure

### 1.INSPECTION START

Check which type of transmission the vehicle is equipped with.

#### Which type of transmission?

**CVT** >> GO TO 2.

M/T >> GO TO 6.

# 2.CHECK TRANSMISSION RANGE SWITCH POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect transmission range switch harness connector.
- Turn ignition switch ON.
- Check the voltage between transmission range switch harness connector and ground.

**EC-427 Revision: November 2015 2016 JUKE**  EC

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	+		
Transmission	range switch	_	Voltage
Connector	Terminal		
F27			Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.check transmission range switch power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between transmission range switch harness connector and IPDM E/R harness connector.

	+		_	
Transmission	range switch	IPDM E/R		Continuity
Connector Terminal		Connector	Terminal	
F27	1	E15	58	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## f 4.CHECK TRANSMISSION RANGE SWITCH SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between transmission range switch harness connector and ECM harness connector.

	+			
Transmission	range switch	ECM		Continuity
Connector	Terminal	Connector Terminal		
F27	2	E18	103	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

### 5. CHECK TRANSMISSION RANGE SWITCH

Check the transmission range switch. Refer to <u>TM-243</u>, "Component Inspection (<u>Transmission Range Switch</u>)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace transmission range switch. Refer to TM-326, "Removal and Installation".

## 6. CHECK PARK/NEUTRAL POSITION (PNP) SWITCH POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect PNP switch harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between PNP switch harness connector and ground.

## P0850 PNP SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

	+				
PN	IP switch		_	Voltage	
Connector	Termi	nal			
F56	2	Gi	round	Battery voltage	
he inspect	ion result n	ormal?			•
•	30 TO 7.	<u>omman.</u>			
		trouble diagr	nosis for po	ower supply circ	uit.
.CHECK P	NP SWITC	H INPUT SIG	NAL CIRC	CUIT	
	tion switch	off. rness connec	etor		
				arness connect	or and ECM harness connector.
+		_	_		
PNP sv	witch	EC	CM	Continuity	
Connector	Terminal	Connector	Terminal		
F56	1	E18	103	Existed	
		for short to g			
	GO TO 8. Repair or re	place error-de	etected na	erk o	
			Ciccica pa	rts.	
CHECK P	ND SWITC	•	Ciccica pa	rts.	
	NP SWITC	H			SITION (DND) SWITCH : Component Inches
neck the PN		H			SITION (PNP) SWITCH : Component Inspec-
neck the PN n".	NP switch.	H Refer to <u>TM-</u>			SITION (PNP) SWITCH : Component Inspec-
eck the PNn <u>"</u> . the inspect	NP switch.	H Refer to <u>TM-</u> ormal?	20, "PARK	/NEUTRAL PO	
eck the PNn". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
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eck the PN 1". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
eck the PN n". he inspect ES >> C	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
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eck the PN n". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
eck the PN n". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
eck the PN 1". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
eck the PN n". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
neck the PNn". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
eck the PNn". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".
neck the PNn". the inspect	NP switch. ion result n	H Refer to TM- ormal? mittent incide	20, "PARK	VNEUTRAL PO	ttent Incident".

## P1078 EVT CONTROL POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P1078 EVT CONTROL POSITION SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1078	EXH TIM SEN/CIRC-B1 (Exhaust valve timing control position sensor circuit)	An excessively high or low voltage from the sensor is sent to ECM.	Harness or connectors (Exhaust valve timing control position sensor circuit is open or shorted) (Camshaft position sensor circuit is open or shorted) (Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.)  Accumulation of debris to the signal pick-up portion of the camshaft Exhaust valve timing control position sensor Crankshaft position sensor Crankshaft position sensor Fuel rail pressure sensor Battery current sensor G sensor Accelerator pedal position sensor 2 Turbocharger boost sensor Engine oil pressure sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 10 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-430, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197981

## 1. CHECK EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing (EVT) control position sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between EVT control position sensor harness connector and ground.

#### P1078 EVT CONTROL POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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EVT :	sensor	_	Voltage (Approx.)	
Connector	Terminal		· · · · /	
F110	F110 1		5 V	

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#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

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# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness connector for short to power and short to ground, between the following terminals.

EC	M	Sens	sor	
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25	F25 39	EOP sensor	F43	3
	Turbocharger boost sensor	F75	1	
68		Battery current sensor	F52	1
F26	00	G sensor	B32	3
F20 =	72	CMP sensor	F109	1
	12	EVT control position sensor	F110	1
E18	118	APP sensor 2	E101	5

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# ${f 3.}$ CHECK EVT CONTROL POSITION SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVT control position sensor harness connector and ECM harness connector.

,	+			
EVT control p	osition sensor	ECM		Continuity
Connector Terminal		Connector	Terminal	
F110	2	F26	59	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## f 4.CHECK EVT CONTROL POSITION SENSOR INPUT SIGNAL CIRCUIT

- tor.

Disconnect ECM harness connector. Check the continuity between EVT control position sensor harness connector and ECM harness connec-

	+			
EVT control p	osition sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F110	3	F26	67	Existed

3. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK EVT CONTROL POSITION SENSOR

Check the EVT control position sensor. Refer to EC-432, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace EVT control position sensor. Refer to EM-89, "Removal and Installation".

## 6.CHECK CAMSHAFT (EXT)

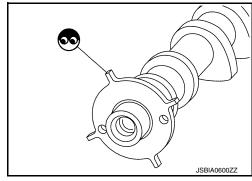
#### Check the following.

- · Accumulation of debris to the signal plate of camshaft rear end
- · Chipping signal plate of camshaft rear end

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to <a href="EM-89">EM-89</a>, "Removal and Installation".



## Component Inspection

INFOID:0000000012197982

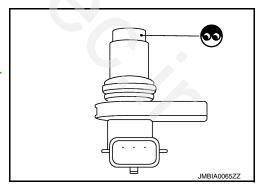
# 1. EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR-I

- 1. Turn ignition switch OFF.
- 2. Disconnect EVT control position sensor harness connector.
- 3. Loosen the fixing bolt of the sensor.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace EVT control position sensor. Refer to <u>EM-76</u>, "Exploded View".



## 2.EVT CONTROL POSITION SENSOR-II

Check resistance EVT control position sensor terminals as shown below.

## P1078 EVT CONTROL POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

				•
E\	VT control po	osition sensor		Α
	+	_	Resistance	
	Term	inal		EC
	1	2		
	0	3	Except 0 or ∞ Ω [at 25°C (77°F)]	0
le the ir	2	3 result normal?		С
YES NO	>> INSP	PECTION END	I position sensor. Refer to EM-76, "Exploded View".	D
				Е
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### P1148 CLOSED LOOP CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P1148 CLOSED LOOP CONTROL

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

DTC P1148 is displayed with DTC for A/F sensor 1.

When the DTC is detected, perform the trouble diagnosis of DTC corresponding to A/F sensor 1.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1148	CLOSED LOOP-B1 (Closed loop control function)	The closed loop control function does not operate even when vehicle is being driven in the specified condition.	<ul> <li>Harness or connectors (A/F sensor 1 circuit is open or shorted.)</li> <li>A/F sensor 1</li> <li>A/F sensor 1 heater</li> </ul>

## Diagnosis Procedure

INFOID:0000000012197984

DTC P1148 is displayed with DTC for A/F sensor 1.

When the DTC is detected, perform the trouble diagnosis of DTC corresponding to A/F sensor 1. Refer to <u>EC-115</u>, "<u>DTC Index</u>".

## P1197 OUT OF GAS

Description INFOID:000000012197985

This diagnosis result is detected when the fuel level of the fuel tank is extremely low and the engine does not run normally.

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INFOID:0000000012197987

# DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1197	FUEL RUN OUT (Out of gas)	<ul> <li>Fuel rail pressure remains at 1.1 MPa (11 bar, 11.2 kg/cm², 159.5 psi) or less for 5 seconds or more with the fuel level too low.</li> <li>Fuel rail pressure remains 2.7 MPa (27 bar, 27.5 kg/cm², 392 psi) lower than a target fuel pressure for 5 seconds or more with the fuel level too low.</li> </ul>	Out of gas Harness or connectors (Low pressure fuel pump circuit is open or shorted.) Low pressure fuel pump Fuel pressure regulator Low pressure fuel system Harness or connectors (High pressure fuel pump circuit is shorted.) High pressure fuel pump High pressure fuel system Fuel rail pressure sensor Disconnection of the fuel hose

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

Start the engine.

#### Does the engine start?

YES >> GO TO 3.

NO >> Proceed to <u>EC-435</u>, "<u>Diagnosis Procedure</u>".

## 3.PERFORM DTC CONFIRMATION PROCEDURE-II

Warm up the engine to the normal operating temperature.

#### NOTE:

For best results, warm up the engine until "COOLAN TEMP/S" on "DATA MONITOR" mode of "ENGINE" using CONSULT reaches at least 70°C (158°F).

- 2. Keep the engine speed at 3,500 rpm for 5 seconds and let it idle at least 60 seconds.
- 3. Check the 1st trip DTC.

#### NOTE:

If the fuel tank has sufficient fuel, this diagnosis result may not be detected.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-435, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

1. REFUEL THE VEHICLE

#### P1197 OUT OF GAS

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

1. Refuel 10 liter (10 US qt, 8 imp qt).

#### **CAUTION:**

#### Never refuel more than 10 liter.

2. Start the engine and keep the engine speed at 3,000 rpm for 30 seconds.

#### NOTE:

For best results, warm up the engine until "COOLAN TEMP/S" on "DATA MONITOR" mode of "ENGINE" using CONSULT reaches at least 70°C (158°F).

- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Turn ignition switch ON.
- 7. Erase the DTC.
- 8. Start the engine and let it idle at least 60 seconds.
- 9. Perform DTC confirmation procedure again. Refer to EC-435, "DTC Logic".

#### Is 1st trip DTC detected?

YES >> GO TO 2.

NO >> INSPECTION END

# 2.CHECK LOW PRESSURE FUEL PUMP

### Refer to EC-546, "Component Function Check".

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK HIGH PRESSURE FUEL PUMP

Refer to EC-549, "Component Function Check".

## Is inspection result normal?

YES >> Check the fuel hose for disconnection and looseness.

NO >> Repair or replace error-detected parts.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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## P119A, P119B FUEL RAIL PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P119A	FUEL PRESSURE SENSOR (Fuel pressure sensor)	<ul> <li>All of the following conditions are satisfied:</li> <li>Battery voltage: 8 V or more</li> <li>Under engine start condition</li> <li>Engine coolant temperature at previous ignition switch OFF: 65°C (149°F) or more</li> <li>Engine coolant temperature: 35°C (65°F) or less</li> <li>Temperature difference between engine coolant and intake air: Less than 6°C (42°F)</li> <li>Fuel rail pressure: Less than 1.0 MPa (10.2 kg/cm², 145 psi) (calculated by ECM)</li> <li>Fuel system monitor: Excessively RICH</li> </ul>	Harness or connectors     (Fuel rail pressure sensor circuit is open or shorted.)     (Battery current sensor circuit is open or shorted.)     (G sensor circuit is open or shorted.)     (Camshaft position sensor circuit is open or shorted.)     (Exhaust valve timing control position sensor circuit is open or shorted.)     (Accelerator pedal position sensor 2 circuit is open or shorted.)     (Turbocharger boost sensor circuit is open or shorted.)     (Engine oil pressure sensor circuit is open or shorted.)     Fuel rail pressure sensor     Battery current sensor     G sensor     Camshaft position sensor     Exhaust valve timing control position sensor     Accelerator pedal position sensor 2     Turbocharger boost sensor     Engine oil pressure sensor
P119B	FUEL PRESSURE SENSOR (Fuel pressure sensor)	<ul> <li>All of the following conditions are satisfied:</li> <li>Battery voltage: 8 V or more</li> <li>Ignition switch: ON (engine stopped)</li> <li>Engine coolant temperature at previous ignition switch OFF: 65°C (149°F) or more</li> <li>Engine coolant temperature: 35°C (65°F) or less</li> <li>Temperature difference between engine coolant and intake air: Less than 6°C (42°F)</li> <li>Fuel rail pressure: More than 1.5 MPa (15.3 kg/cm², 217 psi) (calculated by ECM)</li> <li>Fuel system monitor: Excessively LEAN</li> </ul>	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING-1

If DTC Confirmation Procedure is previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, check that battery voltage is 9 V or more with ignition switch ON.

>> GO TO 2.

## 2.PRECONDITIONING-2

#### NOTE:

- When it is certain that the previous driving is performed with the engine warmed up, the next steps can be performed.
- When it is difficult to satisfy the conditions, performing Component Function Check can identify the presence
  or absence of malfunction in the part/system that may result in a possible cause of this DTC. (Perform DTC
  Confirmation Procedure as much as possible.)
- 1. Start the engine and warm it up until engine coolant temperature reaches 70°C (158°F) or more.
- 2. Stop the engine and leave the vehicle in a cool place (soak the engine) until the engine coolant temperature reaches 35°C (95°F) or less.

#### **CAUTION:**

- The difference between air temperature and engine coolant temperature must be 5°C (9°F) or less.
- · Never turn ignition switch ON during soak the engine.

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### Are the conditions satisfied?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.component function check

### (I) With CONSULT

- 1. Turn ignition switch OFF.
- Start the engine.
- 3. On CONSULT screen, select "DATA MONITOR" mode of "ENGINE".
- 4. Check the value of "FUEL PRES SEN V" under the following conditions.

Monitor Item	Condition	Values/Status	
	Engine speed: Idle	1,140 – 1,460 mV	
FUEL PRES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV	

#### **⋈Without CONSULT**

- 1. Turn ignition switch OFF.
- Start the engine.
- 3. Check fuel rail pressure sensor signal voltage.

ECM			4	
Connector	+	-	Condition	Value (Approx.)
Connector	Terminal			(
F5	2	3	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.14 – 1.46 V
сэ	2	3	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Revving engine from idle to 4,000 rpm quickly</li></ul>	1.3 – 2.9 V

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Proceed to EC-438, "Diagnosis Procedure".

## 4.PERFORM DTC CONFIRMATION PROCEDURE-1

#### (II) With CONSULT

- 1. Turn ignition switch ON (engine stopped).
- On CONSULT screen, select "ENGINE" >> "DATA MONITOR" >> "COOLAN TEMP/S" and "INT/A TEMP SE".
- Check that the indicated value of "COOLAN TEMP/S" is less than 35°C (95°F).
- Check that the difference between "INT/A TEMP SE" and "COOLAN TEMP/S" is 5°C (9°F) or less.
- 5. Check "Self-diagnostic result" of "ENGINE".

#### Is the DTC detected?

YES >> Proceed to EC-438, "Diagnosis Procedure".

NO-1 (Conditions satisfied)>>GO TO 5.

NO-2 (Conditions not satisfied)>>GO TO 2.

## PERFORM DTC CONFIRMATION PROCEDURE-2

- 1. Start the engine (or cranking) at least 1 second.
- Check "Self-diagnostic result" of "ENGINE".

#### Is the DTC detected?

- YES >> Proceed to EC-438, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".

NO-2 >> Confirmation after repair: INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197989

#### NOTE:

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Turning the ignition switch ON with FRP sensor harness connector disconnected causes ECM to detect DTC P119A and P119B. Be sure to erase the DTC when the diagnosis procedure.

1. CHECK FUEL RAIL PRESSURE (FRP) SENSOR POWER SUPPLY-1

- Turn ignition switch OFF.
- 2. Disconnect FRP sensor connector.
- Turn ignition switch ON. 3.
- Check the voltage between FRP sensor harness connector terminals.

	FRP sensor	V-II	
Connector	+	-	Voltage (Approx.)
Connector	tern	ninal	, , ,
F5	1	3	5 V

#### Inspection result normal?

YES >> GO TO 7.

NO >> GO TO 2.

### 2.CHECK FRP SENSOR POWER SUPPLY-2

Check the voltage between FRP sensor harness connector and the ground.

FRP	+ sensor	1	Voltage (Approx.)
Connector	Terminal		
F5	1	Ground	5 V

#### Is inspection result normal?

YES >> GO TO 5.

NO >> GO TO 3.

# 3.check sensor power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

	+		_	
FRP	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F5	1	F25	39	Existed

Also check harness for short to power and short to ground.

#### Is inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor		
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25	39	EOP sensor	F43	3
		Turbocharger boost sensor	F75	1

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
	68	Battery current sensor	F52	1	
F26	00	G sensor	B32	3	
1 20	72	CMP sensor	F109	1	
		EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected part.

# 5. CHECK FRP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

	+		_	
FRP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F5	3	F25	44	Existed

4. Also check harness for short to power.

#### Is inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## 6.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and the ground.

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F25	1			
1 23	2		Existed	
	123	Ground		
E18	124			
	127			

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

# 7.CHECK FRP SENSOR SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between FRP sensor harness connector and ECM harness connector.

+		_		
FRP	sensor	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F5	2	F25	18	Existed

4. Also check harness for short to ground and to power.

#### Is inspection result normal?

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> Replace fuel rail pressure sensor. Refer to EM-54, "Exploded View".

NO >> Repair or replace error-detected parts.

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DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P119C	FUEL PRESSURE SENSOR (Fuel pressure sensor)	All of the following conditions are satisfied:  • Battery voltage: 8 V or more  • Engine speed: 50 rpm or more  • Engine coolant temperature: With a background of 65°C (149°F) or more during the trip  • Remaining fuel amount: 15% or more  • Fuel cut: No  • Rail pressure between MAX and MIN differs more than 0.05 MPa (0.51 kg/cm², 7.25 psi).	Harness or connectors (Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Camshaft position sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) Fuel rail pressure sensor Battery current sensor G sensor Camshaft position sensor Exhaust valve timing control position sensor Accelerator pedal position sensor 2 Turbocharger boost sensor Engine oil pressure sensor

#### DTC CONFIRMATION PROCEDURE

# 1. CHECK DTC PRIORITY

If DTC P119C is displayed with DTC P0190, first perform the confirmation procedure (trouble diagnosis) for DTC P0190.

#### Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to <a href="EC-312">EC-312</a>, "DTC Logic"

NO >> GO TO 2.

## 2.PRECONDITIONING-1

If DTC Confirmation Procedure is previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, check that battery voltage is 9 V or more with ignition switch ON.
- · Remaining fuel amount must be 15% or more.

>> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start the engine and warm it up until the engine coolant temperature reaches 70°C (158°F) or more.
- Drive the vehicle and accelerate 3 consecutive seconds or more with the engine speed 1,500 rpm or more.
- 3. Check "Self-diagnostic result" of "ENGINE".

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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YES >> Proceed to EC-443, "Diagnosis Procedure".

NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".

NO-2 >> Confirmation after repair: INSPECTION END

## Diagnosis Procedure

INFOID:0000000012197991

#### NOTE:

Turning the ignition switch ON with FRP sensor harness connector disconnected causes ECM to detect DTC P119C. Be sure to erase the DTC when the diagnosis procedure.

## 1. CHECK DTC PRIORITY

If DTC P119C is displayed with DTC P0190, first perform the confirmation procedure (trouble diagnosis) for DTC P0190.

#### Is applicable DTC detected?

>> Perform diagnosis of applicable. Refer to EC-312, "DTC Logic".

NO >> GO TO 2.

# 2.CHECK FUEL RAIL PRESSURE (FRP) SENSOR POWER SUPPLY-1

- Turn ignition switch OFF.
- Disconnect FRP sensor connector.
- Turn ignition switch ON.
- Check the voltage between FRP sensor harness connector terminals.

	FRP sensor		
Connector	+	-	Voltage (Approx.)
Connector	tern	ninal	
F5	1	3	5 V

#### Inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

# 3.CHECK FRP SENSOR POWER SUPPLY-2

Check the voltage between FRP sensor harness connector and the ground.

+ FRP sensor		_	Voltage (Approx.)
Connector	Terminal		(Approx.)
F5	1	Ground	5 V

#### Is inspection result normal?

YES >> GO TO 6.

NO >> GO TO 4.

## 4. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

	+		_	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F5	1	F25	39	Existed

Also check harness for short to power and short to ground.

Is inspection result normal?

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
	68	Battery current sensor	F52	1	
F26	00	G sensor	B32	3	
	72	CMP sensor	F109	1	
72		EVT control position sensor	F110	1	
E18	118	118 APP sensor 2		5	

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected part.

## 6.CHECK FRP SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

+		-		
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F5	3	F25	44	Existed

Also check harness for short to power.

#### Is inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

# 7. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and the ground.

Е	CM	Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F25	1			
1 23	2			
	123	Ground	Existed	
E18	124			
	127			

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 8. CHECK FRP SENSOR SIGNAL CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between FRP sensor harness connector and ECM harness connector.

+		_		
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F5	2	F25	18	Existed

4. Also check harness for short to ground and to power.

#### Is inspection result normal?

YES >> Replace fuel rail pressure sensor. Refer to EM-54, "Exploded View".

NO >> Repair or replace error-detected parts.

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#### P1212 TCS COMMUNICATION LINE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P1212 TCS COMMUNICATION LINE

Description INFOID.000000012197992

This CAN communication line is used to control the smooth engine operation during the TCS operation. Pulse signals are exchanged between ECM and "ABS actuator and electric unit (control unit)".

Be sure to erase the malfunction information such as DTC not only for "ABS actuator and electric unit (control unit)" but also for ECM after TCS related repair.

DTC Logic INFOID:000000012197993

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1212 is displayed with DTC U1001, first perform the trouble diagnosis for DTC U1001. Refer to EC-195, "DTC Logic".
- If DTC P1212 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-419</u>, "<u>DTC Logic"</u>.

Freeze frame data is not stored in the ECM for this self-diagnosis.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P1212	TCS/CIRC (TCS communication line)	ECM can not receive the information from "ABS actuator and electric unit (control unit)" continuously.	Harness or connectors     (CAN communication line is open or shorted.)     ABS actuator and electric unit (control unit)     Dead (Weak) battery

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 10 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-446, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012197994

Perform the trouble diagnosis for TCS. Refer to <u>BRC-59</u>, "Work Flow".

If DTC P1212 is displayed with DTC UXXXX and/or P0607, perform the following trouble diagnosis.

- Trouble diagnosis for DTC UXXXX Refer to <u>EC-115</u>, "<u>DTC Index</u>".
- Trouble diagnosis for DTC P0607 Refer to <u>EC-419</u>, "<u>DTC Logic</u>".

#### P1217 ENGINE OVER TEMPERATURE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P1217 ENGINE OVER TEMPERATURE

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1217 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P1217 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-419</u>, "<u>DTC Logic"</u>.

If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will rise.

When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1217	ENG OVER TEMP [Engine over tempera- ture (Overheat)]	<ul> <li>Cooling fan does not operate properly (Overheat).</li> <li>Cooling fan system does not operate properly (Overheat).</li> <li>Engine coolant was not added to the system using the proper filling method.</li> <li>Engine coolant is not within the specified range.</li> </ul>	Harness or connectors     (Cooling fan circuit is open or shorted.)     IPDM E/R     Cooling fan control module     Cooling fan motor     Radiator hose     Radiator     Radiator cap     Reservoir tank     Water pump     Thermostat     Water control valve

#### **CAUTION:**

When a malfunction is indicated, be sure to replace the coolant. Refer to <u>CO-10, "Draining"</u>. Also, replace the engine oil. Refer to <u>CO-11, "Refilling"</u>.

- 1. Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-13, "Anti-Freeze Coolant Mixture Ratio".
- 2. After refilling coolant, run engine to ensure that no water-flow noise is emitted.

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to <u>EC-447, "Component Function Check"</u>.

Use component function check to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-448, "Diagnosis Procedure".

## Component Function Check

## 1.PERFORM COMPONENT FUNCTION CHECK-I

#### **WARNING:**

Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.

Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

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#### P1217 ENGINE OVER TEMPERATURE

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

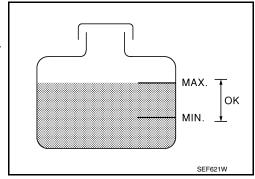
Check the coolant level in the reservoir tank and radiator.

Allow engine to cool before checking coolant level.

<u>Is the coolant level in the reservoir tank and/or radiator below the proper range?</u>

YES >> Proceed to EC-448, "Diagnosis Procedure".

NO >> GO TO 2.



# 2. PERFORM COMPONENT FUNCTION CHECK-II

Confirm whether customer filled the coolant or not.

Did customer fill the coolant?

YES >> Proceed to EC-448, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.perform component function check-iii

(II) With CONSULT

- 1. Turn ignition switch ON.
- 2. Perform "FAN DUTY CONTROL" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that cooling fan speed varies according to the percentage.

(R)Without CONSULT

- 1. Activate IPDM E/R auto active test and check cooling fan motors operation. Refer to <a href="PCS-12">PCS-12</a>, "Diagnosis Description".
- 2. Check that cooling fan operates.

Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-448, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012197997

# 1. CHECK COOLING FAN OPERATION

(P)With CONSULT

- 1. Turn ignition switch ON.
- 2. Perform "FAN DUTY CONTROL" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that cooling fan speed varies according to the percentage.

®Without CONSULT

- Activate IPDM E/R auto active test and check cooling fan motors operation. Refer to <u>PCS-12</u>, "<u>Diagnosis Description</u>".
- 2. Check that cooling fan operates.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to <u>EC-560</u>, "<u>Diagnosis Procedure</u>".

2.check cooling system for Leak-I

Check cooling system for leak. Refer to CO-10, "Inspection".

Is leakage detected?

YES >> GO TO 3. NO >> GO TO 4.

3.CHECK COOLING SYSTEM FOR LEAK-II

Check the following for leak.

- Hose (Refer to <u>CO-10</u>, "Inspection".)
- Radiator (Refer to <u>CO-14, "RADIATOR: Inspection"</u>.)
- Water pump (Refer to <u>CO-21, "Inspection"</u>.)

## **P1217 ENGINE OVER TEMPERATURE**

P1217 ENGINE OVER TEMPERATURE	
< DTC/CIRCUIT DIAGNOSIS > [MR FOR NISMO RS	MODELS]
>> Repair or replace malfunctioning part.	
4.CHECK RADIATOR CAP	
Check radiator cap. Refer to CO-14, "RADIATOR CAP: Inspection".	
Is the inspection result normal?	E
YES >> GO TO 5.	
NO >> Replace radiator cap. Refer to <u>CO-16, "Exploded View"</u> . <b>5.</b> CHECK THERMOSTAT	
Check thermostat. Refer to CO-24, "Inspection".	
Is the inspection result normal?  YES >> GO TO 6.	
NO >> Replace thermostat. Refer to CO-23, "Removal and Installation".	
6.CHECK WATER CONTROL VALVE	
Check water control valve. Refer to CO-26, "Inspection".	
Is the inspection result normal?	
YES >> GO TO 7.	
NO >> Replace water control valve. Refer to <u>CO-25, "Exploded View"</u> .	
7. CHECK ENGINE COOLANT TEMPERATURE SENSOR	
Refer to EC-248, "Component Inspection".	
Is the inspection result normal?	
YES >> GO TO 8.	
NO >> Replace engine coolant temperature sensor. Refer to <u>CO-25, "Exploded View"</u> .  8.OVERHEATING CAUSE ANALYSIS	
If the cause cannot be isolated, check the CO-8. "Troubleshooting Chart".	
>> INSPECTION END	
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## P1225 TP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1225	CTP LEARNING-B1 [Closed throttle position learning performance]	Closed throttle position learning value is excessively low.	Electric throttle control actuator (TP sensor 1 and 2)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-450</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012197999

# 1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- Remove the intake air duct. Refer to EM-27, "Exploded View".
- Check if foreign matter is caught between the throttle valve and the housing.

## Is the inspection result normal?

YES >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to <a href="EC-161">EC-161</a>, "Description".

#### P1226 TP SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

## P1226 TP SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1226	CTP LEARNING-B1 (Closed throttle position learning performance)	Closed throttle position learning is not performed successfully, repeatedly.	Electric throttle control actuator (TP sensor 1 and 2)

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF, wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Repeat steps 2 and 3 for 32 times.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-451, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# 1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Turn ignition switch OFF.
- Remove the intake air duct. Refer to <u>EM-27</u>, "<u>Exploded View</u>".
- 3. Check if foreign matter is caught between the throttle valve and the housing.

#### Is the inspection result normal?

YES >> Replace electric throttle control actuator. Refer to <a href="EM-29">EM-29</a>, "Exploded View".

NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to <a href="EC-161">EC-161</a>, "Description".

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### P1423, P1424 COLD START CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

INFOID:0000000012198004

# P1423, P1424 COLD START CONTROL

Description INFOID:000000012198002

ECM controls fuel injection timing and fuel injection quantity when engine is started with the engine cold. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P1423 or P1424 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1423	COLD START CONTROL (Cold start emission reduction strategy monitoring)	ECM does not control fuel injection timing properly when engine is started with the engine cold.	ECM
P1424	COLD START CONTROL (Cold start emission reduction strategy monitoring)	ECM does not control fuel injection quantity properly when engine is started with the engine cold.	EGW

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

#### (P)WITH CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check that "COOLAN TEMP/S".
- If it is between 5°C (41°F) and 40°C (104°F) go to the following steps.
- If it is below 5°C (41°F) warm engine up to more than 5°C (41°F) and retry from step 1.
- If it is above 40°C (104°F) cool engine down to less than 40°C (104°F) and retry from step 1.
- 5. Start engine and let it idle for 5 minutes.
- 6. Check 1st trip DTC.

#### **WITH GST**

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-452, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

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# 1.INSPECTION START

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to <u>EC-452, "DTC Logic"</u>.
- Check 1st trip DTC.

## P1423, P1424 COLD START CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Is the 1st trip DTC P1423 or P1424 displayed again?

>> Replace ECM. Refer to EC-590, "Removal and Installation".

NO >> INSPECTION END

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## P1451 PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P1451 is displayed with DTC P0452 or P0453, first perform the trouble diagnosis for DTC P0452 or P0453. Refer to EC-380, "DTC Logic" or EC-383, "DTC Logic".

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1451	TC/SC PRES-EVAP PRES (EVAP control system pressure sensor/turbocharger boost sen- sor correlation)	ECM detects a state that the pressure difference remains –13.0 kPa (–98 mmHg, –3.83 inHg) or less/13.5 kPa (102 mmHg, 3.99 inHg) or more for continuously for 5 seconds or more under the condition that the pressure of the EVAP control system pressure sensor and that of the turbocharger boost sensor are equal.	<ul> <li>EVAP control system pressure sensor</li> <li>Turbocharger boost sensor</li> <li>Clogging, crushing, or damage in hose or piping</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### NOTE:

Never refuel before and during the following procedure.

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- 1. Start engine and warm it up to normal operating temperature
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start the engine. Wait at least for 15 seconds after the start of idle running.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-454, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198006

# 1. CHECK HOSE AND PIPING

- 1. Turn ignition switch OFF.
- Check the following.
- Blockage, crush, or damage in the hose and the piping of EVAP purge line between fuel tank and intake manifold.
- Blockage, crush, or damage in the hose and the piping of intake air passage between inlet air duct and intake manifold.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts

# 2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check EVAP control system pressure sensor. Refer to <u>EC-455</u>, "Component Inspection (<u>EVAP Control System Pressure Sensor</u>)".

#### Is the inspection result normal?

#### P1451 PRESSURE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 3.

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View".

## 3.CHECK TURBOCHARGER BOOST SENSOR

Check turbocharger boost sensor. Refer to EC-455, "Component Inspection (Turbocharger Boost Sensor)". Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor (with intake temperature sensor 2). Refer to EM-32, "Exploded View".

## Component Inspection (EVAP Control System Pressure Sensor)

#### INFOID:0000000012198007

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- Turn ignition switch OFF.
- Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- Turn ignition switch ON and check output voltage between ECM harness connector and ground under the following conditions.

ECM			Condition		
Connector	+	_	Condition [Applied vacuum kPa (kg/cm², psi)]	Voltage	
	Terminal		[ tpp://our radam. ki a (kg/om , pol/)]		
F25	15	12	Not applied	0.5 - 4.6 V	
1 20	15	12	-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- · Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/ cm<sup>2</sup>, 14.69 psi).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View".

# Component Inspection (Turbocharger Boost Sensor)

#### INFOID:0000000012198008

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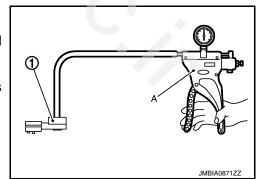
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# 1. CHECK TURBOCHARGER BOOST SENSOR

- Turn ignition switch OFF.
- Remove turbocharger boost sensor with its harness connector.
- Install pressure pump (A) to turbocharger boost sensor (1).

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

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## **P1451 PRESSURE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

ECM			On all'in a ID case on (Dalatina to at	
Connector	+	I	Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)
Oomicotor	Terminal		, , , , , , , , , , , , , , , , , ,	, , ,
F25	41	44	0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V
1 23	41   44		40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to EM-40, "Exploded View".

### P1550 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P1550 BATTERY CURRENT SENSOR

**DTC Logic** INFOID:0000000012198009

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1550	BAT CURRENT SENSOR (Battery current sensor circuit range/performance)	The output voltage of the battery current sensor remains within the specified range while engine is running.	Harness or connectors     (Battery current sensor circuit is open or shorted.)     (Camshaft position sensor circuit is open or shorted)     (Fuel rail pressure sensor circuit is open or shorted.)     (G sensor circuit is open or shorted.)     (Exhaust valve timing control position sensor circuit is open or shorted.)     (Accelerator pedal position sensor 2 circuit is open or shorted.)     (Turbocharger boost sensor circuit is open or shorted.)     (Engine oil pressure sensor circuit is open or shorted.)     (Battery current sensor     Camshaft position sensor     Camshaft (Intake)     Starter motor     Starting system circuit     Dead (Weak) battery     Fuel rail pressure sensor     G sensor     Exhaust valve timing control position sensor     Accelerator pedal position sensor 2     Turbocharger boost sensor     Engine oil pressure sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and wait at least 10 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-457, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

 ${f 1}$  .CHECK BATTERY CURRENT SENSOR POWER SUPPLY

**EC-457 Revision: November 2015 2016 JUKE**  Α

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INFOID:0000000012198010

#### P1550 BATTERY CURRENT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- Disconnect battery current sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between battery current sensor harness connector and ground.

	+		.,,,,,	
Battery cur	rent sensor	-	Voltage (Approx.)	
Connector	Terminal		,	
F52	1	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness connector for short to power and short to ground, between the following terminals.

EC	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25	39	EOP sensor	F43	3
		Turbocharger boost sensor	F75	1
F26	68	Battery current sensor	F52	1
		G sensor	B32	3
	72	CMP sensor	F109	1
		EVT control position sensor	F110	1
E18	118	APP sensor 2 E101		5

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

+			_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F26	87	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

### P1550 BATTERY CURRENT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

+		-		
Battery cur	rent sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F52	4	F26	80	Existed

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2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

## 5. CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-459, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

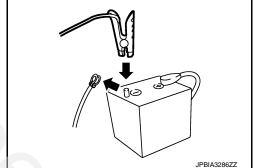
NO >> Replace battery negative cable assembly. Refer to PG-106, "Exploded View".

## Component Inspection

INFOID:0000000012198011

# 1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- 4. Install jumper cable between battery negative terminal and body Γ ground.
- Turn ignition switch ON.
- 6. Check the voltage between ECM harness connector and ground.



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ECM				
Connector	+	-	Voltage (Approx.)	
Connector	Ter	minal	(	
F26	80	87	2.5 V	

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly. Refer to <a href="PG-106">PG-106</a>, "Exploded View".

## P1551, P1552 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# P1551, P1552 BATTERY CURRENT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1551	BAT CURRENT SENSOR (Battery current sensor circuit low input)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors     (Battery current sensor circuit is open or shorted.)
P1552	BAT CURRENT SENSOR (Battery current sensor circuit high input)	An excessively high voltage from the sensor is sent to ECM.	(Camshaft position sensor circuit is open or shorted) (Fuel rail pressure sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.)  Battery current sensor Camshaft (Intake) Starter motor Starting system circuit Dead (Weak) battery Fuel rail pressure sensor G sensor Exhaust valve timing control position sensor Accelerator pedal position sensor 2 Turbocharger boost sensor Engine oil pressure sensor

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V with ignition switch ON

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 10 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-461, "Diagnosis Procedure".

NO >> INSPECTION END

## P1551, P1552 BATTERY CURRENT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# **Diagnosis Procedure**

INFOID:0000000012198013

# 1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

	+			
Battery current sensor		-	Voltage (Approx.)	
Connector Terminal			()	
F52	1	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
	Turbocharger boost sensor	F75	1		
	60	Battery current sensor	F52	1	
F26	68	G sensor	B32	3	
F20	72	CMP sensor	F109	1	
	12	EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check battery current sensor ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between battery current sensor harness connector and ECM harness connector.

+		_		
Battery cui	rrent sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F52	3	F26	87	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# $oldsymbol{4}.$ CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between battery current sensor harness connector and ECM harness connector.

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## P1551, P1552 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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Battery cur	rent sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F52	4	F26	80	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

# 5. CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-459, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

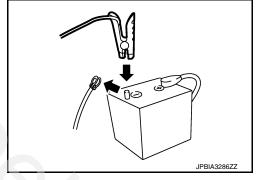
NO >> Replace battery negative cable assembly. Refer to <a href="PG-106">PG-106</a>, "Exploded View".

## Component Inspection

INFOID:0000000012198014

# 1. CHECK BATTERY CURRENT SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- Install jumper cable between battery negative terminal and body ground.
- 5. Turn ignition switch ON.
- 6. Check the voltage between ECM harness connector and ground.



ECM					
Connector	+	-	Voltage (Approx.)		
Connector	Ter	minal	(		
F26	80	87	2.5 V		

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly. Refer to <u>PG-106</u>, "<u>Exploded View</u>".

### P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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INFOID:0000000012198016

# P1553 BATTERY CURRENT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
			Harness or connectors     (Battery current sensor circuit is open or shorted.)     (Camshaft position sensor circuit is open or shorted)     (Fuel rail pressure sensor circuit is open or shorted.)     (G sensor circuit is open or shorted.)     (Exhaust valve timing control position sensor circuit is open or shorted.)     (Accelerator pedal position sensor 2 circuit is open or shorted.)     (Turbocharger boost sensor circuit is
P1553	BAT CURRENT SENSOR (Battery current sensor performance)	The signal voltage transmitted from the sensor to ECM is higher than the amount of the maximum power generation.	open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) • Battery current sensor • Camshaft position sensor • Camshaft (Intake) • Starter motor • Starting system circuit • Dead (Weak) battery
			<ul> <li>Fuel rail pressure sensor</li> <li>G sensor</li> <li>Exhaust valve timing control position sensor</li> <li>Accelerator pedal position sensor 2</li> <li>Turbocharger boost sensor</li> <li>Engine oil pressure sensor</li> </ul>

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 10 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-463</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

# Diagnosis Procedure

1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

Revision: November 2015 EC-463 2016 JUKE

### P1553 BATTERY CURRENT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- Disconnect battery current sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between battery current sensor harness connector and ground.

	+		Malla a a	
Battery current sensor		-	Voltage (Approx.)	
Connector Terminal			· · · · /	
F52	1	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

EC	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25	39	EOP sensor	F43	3
		Turbocharger boost sensor	F75	1
	68	Battery current sensor	F52	1
F26	00	G sensor	B32	3
F20	72	CMP sensor	F109	1
12	12	EVT control position sensor	F110	1
E18	118	APP sensor 2	E101	5

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

+				_	
Battery current sensor		ECM		Continuity	
Connec	or	Terminal	Connector Terminal		
F52		3	F26	87	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

#### P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

+		_		
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
F52	4	F26	80	Existed

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2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

## 5. CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-459, "Component Inspection".

#### Is the inspection result normal?

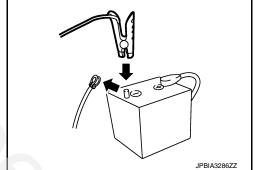
YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace battery negative cable assembly. Refer to PG-106, "Exploded View".

## Component Inspection

# 1. CHECK BATTERY CURRENT SENSOR

- 1. Turn ignition switch OFF.
- Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- 4. Install jumper cable between battery negative terminal and body ground.
- 5. Turn ignition switch ON.
- 6. Check the voltage between ECM harness connector and ground.



	JPBIA3286Z	z
FCM		

	ECM	Valtaga	
Connector	+	-	Voltage (Approx.)
Connector	Tei	minal	,
F26	80	87	2.5 V

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly. Refer to <u>PG-106</u>, "<u>Exploded View</u>".

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## P1554 BATTERY CURRENT SENSOR

DTC Logic INFOID:0000000012198018

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1554	BAT CURRENT SENSOR (Battery current sensor performance)	The output voltage of the battery current sensor is lower than the specified value while the battery voltage is high enough.	Harness or connectors (Battery current sensor circuit is open or shorted.) (Camshaft position sensor circuit is open or shorted) (Fuel rail pressure sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.)  Battery current sensor  Camshaft (Intake)  Starter motor  Starting system circuit  Dead (Weak) battery  Fuel rail pressure sensor  Exhaust valve timing control position sensor  Accelerator pedal position sensor 2  Turbocharger boost sensor  Engine oil pressure sensor

### DTC CONFIRMATION PROCEDURE

# 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-466, "Component Function Check". NOTE:

Use component function check to check the overall function of the battery current sensor circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-467, "Diagnosis Procedure".

# Component Function Check

INFOID:0000000012198019

## 1.PRECONDITIONING

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 12.8 V at idle.
- Before performing the following procedure, confirm that all load switches and A/C switch are turned OFF.

>> GO TO 2.

## ${f 2}$ .PERFORM COMPONENT FUNCTION CHECK

(P)With CONSULT

#### P1554 BATTERY CURRENT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Start engine and let it idle.
- 2. Select "BAT CUR SEN" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "BAT CUR SEN" indication for 10 seconds.

"BAT CUR SEN" should be above 2,300 mV at least once.

#### Without CONSULT

- Start engine and let it idle.
- 2. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+	-	Voltage	
Connector	Terminal			
F26 80		87	Above 2.3 V at least once	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-467</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

# 1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between battery current sensor harness connector and ground.

	+		Valtage
Battery cur	rent sensor	-	Voltage (Approx.)
Connector Terminal			
F52	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
68	60	Battery current sensor	F52	1	
F26	00	FRP sensor EOP sensor Turbocharger boost sensor	B32	3	
F20	72	CMP sensor	F109	1	
12	12	EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# ${f 3.}$ CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT

Revision: November 2015 EC-467 2016 JUKE

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### P1554 BATTERY CURRENT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

+		_		
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
F52	3	F26	87	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

	+		_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
F52	4	F26	80	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

## 5. CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-459, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

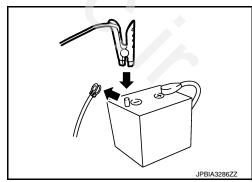
NO >> Replace battery negative cable assembly. Refer to <a href="PG-106">PG-106</a>, "Exploded View".

# Component Inspection

INFOID:0000000012198021

# 1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- 4. Install jumper cable between battery negative terminal and body ground.
- 5. Turn ignition switch ON.
- 6. Check the voltage between ECM harness connector and ground.



## P1554 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

	ECM		
Connector	+	-	Voltage (Approx.)
Connector	Ter	minal	(
F26	80	87	2.5 V

Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97. "How to Handle Battery".

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly. Refer to PG-106, "Exploded View". EC

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### P1556, P1557 BATTERY TEMPERATURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P1556, P1557 BATTERY TEMPERATURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1556	BAT TMP SEN/CIRC (Battery temperature sensor circuit low input)	Signal voltage from Battery temperature sensor remains 0.16V or less for 5 seconds or more.	Harness or connectors     [Battery current sensor (Battery temperature sensor) circuit is shorted.]
P1557	BAT TMP SEN/CIRC (Battery temperature sensor circuit high input)	Signal voltage from Battery temperature sensor remains 4.84V or more for 5 seconds or more.	Battery current sensor (Battery temperature sensor)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 10 V or more at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start the engine and let it idle at least 10 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-470, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198023

## 1. CHECK BATTERY TEMPERATURE SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

	+		V 16	
Battery cur	rent sensor	_	Voltage (Approx.)	
Connector	Terminal		(	
F52	2	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK BATTERY TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

## P1556, P1557 BATTERY TEMPERATURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Battery current sensor	•		_						
Connector Terminal Connector Terminal F52 2 F26 79 Existed  4. Also check harness for short to ground.  Is the inspection result normal? YES >> Perform the trouble diagnosis for power supply circuit. NO >> Repair or replace error-detected parts.  3. CHECK BATTERY TEMPERATURE SENSOR GROUND CIRCUIT  1. Turn ignition switch OFF. 2. Disconnect ECM harness connector. 3. Check the continuity between battery current sensor harness connector and ECM harness connector.  4. Battery current sensor ECM Continuity Connector Terminal Connector Terminal F52 3 F26 87 Existed  4. Also check harness for short to power.  Is the inspection result normal? YES >> GO TO 4. NO >> Repair or replace error-detected parts.  4. CHECK BATTERY TEMPERATURE SENSOR Check the battery temperature sensor. Refer to EC-471 "Component Inspection".  Is the inspection result normal? YES >> Check intermittent incident. Refer to G1-45. "Intermittent incident". NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  4	Battery curr		FC	:M	Continuity				
## F52					Continuity				I
4. Also check harness for short to ground.  5. the inspection result normal?  YES >> Perform the trouble diagnosis for power supply circuit.  NO >> Repair or replace error-detected parts.  3. CHECK BATTERY TEMPERATURE SENSOR GROUND CIRCUIT  1. Turn ignition switch OFF.  2. Disconnect ECM harness connector.  3. Check the continuity between battery current sensor harness connector and ECM harness connector.  *  Battery current sensor					Existed				
Set the inspection result normal?  YES >> Perform the trouble diagnosis for power supply circuit.  NO >> Repair or replace error-detected parts.  3. CHECK BATTERY TEMPERATURE SENSOR GROUND CIRCUIT  1. Turn ignition switch OFF.  2. Disconnect ECM harness connector.  3. Check the continuity between battery current sensor harness connector and ECM harness connector.  ***  **Battery current sensor**    ECM   Continuity	1. Also che	ck harness	for short to a	ıround.					•
NO   >> Repair or replace error-detected parts.			-	,					
3. CHECK BATTERY TEMPERATURE SENSOR GROUND CIRCUIT  1. Turn ignition switch OFF. 2. Disconnect ECM harness connector. 3. Check the continuity between battery current sensor harness connector and ECM harness connector.	YES >> F	Perform the	trouble diagi	nosis for po	wer supply ci	cuit.			
1. Turn ignition switch OFF. 2. Disconnect ECM harness connector. 3. Check the continuity between battery current sensor harness connector and ECM harness connector.	_			•					
2. Disconnect ECM harness connector. 3. Check the continuity between battery current sensor harness connector and ECM harness connector.  +	<b>3.</b> CHECK B	ATTERY TE	EMPERATUR	RE SENSO	R GROUND (	IRCUIT			
#									
+ Battery current sensor ECM Continuity  Connector Terminal Connector Terminal  F52 3 F26 87 Existed  4. Also check harness for short to power.  Is the inspection result normal?  YES >> GO TO 4.  NO >> Repair or replace error-detected parts.  4. CHECK BATTERY TEMPERATURE SENSOR  Check the battery temperature sensor. Refer to EC-471 "Component Inspection".  Is the inspection result normal?  YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".  NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +					nt concor harr	see conne	otor and E	CM harness connector	
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Connector   Terminal   Connector   Terminal   F52   3   F26   87   Existed	+		_	-					
Connector   Terminal   Connector   Terminal   F52   3   F26   87   Existed	Battery curr	ent sensor	EC	CM	Continuity				
4. Also check harness for short to power.  Is the inspection result normal?  YES >> GO TO 4.  NO >> Repair or replace error-detected parts.  4. CHECK BATTERY TEMPERATURE SENSOR  Check the battery temperature sensor. Refer to EC-471. "Component Inspection".  Is the inspection result normal?  YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".  NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF.  2. Disconnect battery current sensor.  3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +			Connector	Terminal					
Step inspection result normal?  YES >> GO TO 4.  NO >> Repair or replace error-detected parts.  4. CHECK BATTERY TEMPERATURE SENSOR  Check the battery temperature sensor. Refer to EC-471. "Component Inspection".  Is the inspection result normal?  YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".  NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF.  2. Disconnect battery current sensor.  3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +	F52	3	F26	87	Existed				
Step   Institute   Sensor   Sensor	4. Also che	ck harness	for short to n	ower.					
YES >> GO TO 4.  NO >> Repair or replace error-detected parts.  4. CHECK BATTERY TEMPERATURE SENSOR  Check the battery temperature sensor. Refer to EC-471. "Component Inspection".  Is the inspection result normal?  YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".  NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +									
4. CHECK BATTERY TEMPERATURE SENSOR  Check the battery temperature sensor. Refer to EC-471. "Component Inspection".  Is the inspection result normal?  YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".  NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +	•								
Check the battery temperature sensor. Refer to EC-471, "Component Inspection".  Is the inspection result normal?  YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".  NO >> Replace battery negative cable assembly. Refer to PG-106, "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +		•							
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NO >> Replace battery negative cable assembly. Refer to PG-106. "Exploded View".  Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +	ls the inspect	tion result n	ormal?						
Component Inspection  1. CHECK BATTERY TEMPERATURE SENSOR  1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +			<u> </u>						
1. Turn ignition switch OFF. 2. Disconnect battery current sensor. 3. Check the resistance between battery current sensor connector terminals.  Battery current sensor  +			nittent incide					176	
<ol> <li>Turn ignition switch OFF.</li> <li>Disconnect battery current sensor.</li> <li>Check the resistance between battery current sensor connector terminals.</li> <li>Battery current sensor         <ul> <li>+</li> <li>-</li> <li>Terminal</li> </ul> </li> <li>2</li> <li>3</li> <li>Continuity with the resistance value 100 Ω or more</li> <li>Is the inspection result normal?</li> <li>YES</li> <li>NSPECTION END</li> </ol>	NO >> F	Replace bat	nittent incide tery negative					l View".	
<ol> <li>Turn ignition switch OFF.</li> <li>Disconnect battery current sensor.</li> <li>Check the resistance between battery current sensor connector terminals.</li> <li>Battery current sensor         <ul> <li>+</li> <li>-</li> <li>Terminal</li> </ul> </li> <li>2</li> <li>3</li> <li>Continuity with the resistance value 100 Ω or more</li> <li>Is the inspection result normal?</li> <li>YES</li> <li>NSPECTION END</li> </ol>	NO >> F	Replace bat	nittent incide tery negative						8024
<ul> <li>Disconnect battery current sensor.</li> <li>Check the resistance between battery current sensor connector terminals.</li> <li>Battery current sensor         <ul> <li>+</li> <li>-</li> <li>Terminal</li> </ul> </li> <li>2</li> <li>3</li> <li>Continuity with the resistance value 100 Ω or more</li> <li>Is the inspection result normal?</li> <li>YES &gt;&gt; INSPECTION END</li> </ul>	NO >> F Componer	Replace bat	nittent incide tery negative tion	e cable asse	embly. Refer t				8024
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+ - Resistance  Terminal  2 3 Continuity with the resistance value 100 Ω or more  Is the inspection result normal?  YES >> INSPECTION END	NO >> F Componer  1.CHECK B T. Turn igni	Replace bat  Inspec  ATTERY TE  tion switch	nittent incide tery negative tion EMPERATUF OFF.	e cable asse	embly. Refer t				8024
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	NO >> F Componer  1. CHECK B 1. Turn igni 2. Disconne 3. Check th  Battery cur +	Replace bat  Inspec  ATTERY TE  tion switch ect battery content sensor  rent sensor  ninal	nittent incide tery negative tion  EMPERATUF  OFF. current sensor between be	e cable asse RE SENSO or. attery curre	embly. Refer t R  nt sensor con  tance	PG-106.	"Exploded		8024
NO >> Replace battery negative cable assembly. Refer to <u>PG-106, "Exploded View"</u> .	NO >> F Componer  1. CHECK B 1. Turn igni 2. Disconne 3. Check th  Battery cur + Tern 2  Is the inspect	Replace bat  Inspec  ATTERY TE  tion switch ect battery content sensor  rent sensor  ninal  3  tion result n	nittent incide tery negative tion  EMPERATUF  OFF. current sensor be between be continuity wormal?	e cable asse RE SENSO or. attery curre	embly. Refer t R  nt sensor con  tance	PG-106.	"Exploded		18024
	NO >> F Componer  1. CHECK B 1. Turn igni 2. Disconne 3. Check th  Battery cur + Term 2  Is the inspect YES >> I	Replace bat  Inspec  ATTERY TE  tion switch ect battery content sensor  rent sensor  rinal  3  tion result n  NSPECTIO	nittent incide tery negative tion  EMPERATUF  OFF. current sensor be between be continuity wormal?  N END	e cable asserted asse	embly. Refer t  R  nt sensor con  tance	PG-106.	"Exploded	INFOID:00000000121S	8024
	NO >> F Componer  1. CHECK B 1. Turn igni 2. Disconne 3. Check th  Battery cur + Term 2  Is the inspect YES >> I	Replace bat  Inspec  ATTERY TE  tion switch ect battery content sensor  rent sensor  rinal  3  tion result n  NSPECTIO	nittent incide tery negative tion  EMPERATUF  OFF. current sensor be between be continuity wormal?  N END	e cable asserted asse	embly. Refer t  R  nt sensor con  tance	PG-106.	"Exploded	INFOID:00000000121S	8024

#### < DTC/CIRCUIT DIAGNOSIS >

P1564 ASCD STEERING SWITCH

**DTC Logic** INFOID:0000000012198025

#### DTC DETECTION LOGIC

If DTC P1564 is displayed with DTC P0603, P0604, P0605, P0606, P0607, P060A and P060B first perform the trouble diagnosis for DTC P0603, P0604, P0605, P0606, P0607, P060A and P060B. Refer to EC-115, "DTC Index".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1564	ASCD SW (ASCD steering switch)	<ul> <li>An excessively high voltage signal from the ASCD steering switch is sent to ECM.</li> <li>ECM detects that input signal from the ASCD steering switch is out of the specified range.</li> <li>ECM detects that the ASCD steering switch is stuck ON.</li> </ul>	Harness or connectors     (ASCD steering switch circuit is open or shorted.)     ASCD steering switch     ECM

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON. 2.
- Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

# 2.perform dtc confirmation procedure

- Turn ignition switch ON.
- Wait at least 10 seconds.
- Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press CANCEL switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 5. Press ACCEL/RES switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press COAST/SET switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Check DTC.

#### Is DTC detected?

>> Proceed to EC-472, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

INFOID:0000000012198026

[MR FOR NISMO RS MODELS]

# 1. CHECK ASCD STEERING SWITCH CIRCUIT

#### (II) With CONSULT

- Turn ignition switch ON.
- Select "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check each item indication as per the following conditions.

Monitor item	Condition	Indication	
MAIN SW	MAIN switch	Pressed	ON
IVIAIN SVV	WAIN SWILCH	Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
CANCEL 3W	CANCLE SWILLI	Released	OFF

### P1564 ASCD STEERING SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

Monitor item	Condition	Indication	
RESUME/ACC	ACCEL/RES switch	Pressed	ON
SW	ACCEL/RES SWILLII	Released	OFF
SET SW	COAST/SET switch	Pressed	ON
3L1 3W	COAST/SET SWILLI	Released	OFF

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- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector terminals.

ECM				Voltono
Connector	+	-	Condition	Voltage (Approx.)
Connector	Terminal			, , ,
			MAIN switch: Pressed	0 V
			CANCEL switch: Pressed	1 V
E18	110	111	COAST/SET switch: Pressed	2 V
			ACCEL/RES switch: Pressed	3 V
			All ASCD steering switches: Released	4 V

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 2.

# $2.\mathsf{CHECK}$ ASCD STEERING SWITCH GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect combination switch (spiral cable) harness connector.
- 4. Check the continuity between combination switch (spiral cable) and ECM harness connector.

	+			
	tion switch I cable)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
M33	32	E18	111	Existed

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK ASCD STEERING SWITCH INPUT SIGNAL CIRCUIT

1. Check the continuity between ECM harness connector and combination switch.

	+			
	Combination switch (Spiral cable)		ECM	
Connector	Terminal	Connector	Terminal	
M33	25	E18	110	Existed

Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

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#### P1564 ASCD STEERING SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## 4. CHECK ASCD STEERING SWITCH

Refer to EC-474, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace ASCD steering switch. Refer to <a href="ST-9">ST-9</a>, "Exploded View".

## Component Inspection

INFOID:0000000012198027

## 1. CHECK ASCD STEERING SWITCH

- 1. Disconnect combination switch (spiral cable) harness connector.
- 2. Check the resistance between combination switch harness connector terminals as per the following conditions.

Combination switch (Spiral cable)  Connector + - Terminals				Resistance	
		-	Condition	(Approx.)	
		ninals			
			MAIN switch: Pressed	0 Ω	
			CANCEL switch: Pressed	250 Ω	
M302	13	16	COAST/SET switch: Pressed	660 Ω	
			ACCEL/RES switch: Pressed	1,480 Ω	
			All ASCD steering switches: Released	4,000 Ω	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD steering switch. Refer to <u>ST-9</u>, "Exploded View".

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P1572 BRAKE PEDAL POSITION SWITCH

**DTC** Logic INFOID:0000000012198028

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1572 is displayed with DTC P0603, P0604, P0605, P0606, P0607, P060A and P060B, first perform the trouble diagnosis for DTC P0603, P0604, P0605, P0606, P0607, P060A and P060B. Refer to EC-115, "DTC Index".
- This self-diagnosis has the one trip detection logic. When malfunction A is detected, DTC is not stored in ECM memory. And in that case, 1st trip DTC and 1st trip freeze frame data are displayed. 1st trip DTC is erased when ignition switch OFF. And even when malfunction A is detected in two consecutive trips, DTC is not stored in ECM memory.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		DTC detecting condition	Possible cause
	ASCD BRAKE SW	A)	When the vehicle speed is above 30 km/h (19 MPH), ON signals from the stop lamp switch and the brake pedal position switch are sent to the ECM at the same time.	Harness or connectors     (Stop lamp switch circuit is shorted.)     (Brake pedal position switch circuit is shorted.)     Stop lamp switch
P1572 (ASCD brake switch)	`	В)	Brake pedal position switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Brake pedal position switch     Incorrect stop lamp switch installation     Incorrect brake pedal position switch installation     ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### NOTE:

Procedure for malfunction B is not described here. It takes extremely long time to complete procedure for malfunction B. By performing procedure for malfunction A, the incident that causes malfunction B can be detected.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- Start engine.
- 2. Press MAIN switch and make sure that CRUISE indicator is displayed in combination meter.
- 3. Drive the vehicle for at least 5 consecutive seconds as per the following conditions. **CAUTION:**

Always drive vehicle at a safe speed.

#### NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Selector lever	Suitable position

#### Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-480, "Diagnosis Procedure".

NO >> GO TO 3.

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[MR FOR NISMO RS MODELS]

# $\overline{3}$ .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

1. Drive the vehicle for at least 5 consecutive seconds as per the following conditions.

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Selector lever	Suitable position
Driving location	Depress the brake pedal for more than five seconds so as not to come off from the above-mentioned vehicle speed.

2. Check DTC.

#### Is DTC detected?

YES >> Proceed to <u>EC-480</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198029

## 1. CHECK OVERALL FUNCTION-I

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "BRAKE SW1" indication as per the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake pedal	Slightly depressed	OFF
DIVARL SWI	brake pedar	Fully released	ON

#### 

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector terminals as per the following.

	ECM				Valtage		
Connector	+	_	Brake pedal Slightly depressed Fully released		Condition Voltage (Approx.)		Voltage (Approx.)
Connector	Term	ninal			<b>、</b> 11		
E18	116	127			0 V		
	110	127			Battery voltage		

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

## 2.CHECK OVERALL FUNCTION-II

#### (P)With CONSULT

Select "BRAKE SW2" and check indication as per the following conditions.

Monitor item	C	Indication	
BRAKE SW2	Brake nedal	Slightly depressed	ON
DIVAIL OWE	Brake pedal	Fully released	OFF

#### 

Check the voltage between ECM harness connector terminals as per the following conditions.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

	ECM						A
Connector	+	-	Condition Voltage (Approx.)		Voltage (Approx.)		
Connector	Term	ninal				(	EC
E18	115	127	Brake pedal Sligh		Slightly depressed	Battery voltage	
	110	121	Brake	Fully released 0 V			
Is the inspe			_	nt. Ref	er to <u>GI-45, "Interm</u>	nittent Incident".	C
_	GO TO 6.						
3.CHECK	BRAKE PI	EDAL PC	SITIO	N SWI	TCH POWER SUF	PPLY	D
<ol> <li>Discon</li> <li>Turn ig</li> </ol>	nition swite	pedal po ch ON.			harness connector		and ground.
	+						F
Brake ne	edal position s	ewitch			Voltage		
Connecto		rminal			voltage		
E112		1	Grou	nd	Battery voltage		G
Is the inspe	ction resul	t normal					
	GO TO 4.		-				Н
4			_		or power supply cire		
4			_		or power supply cire		ı
4.CHECK  1. Turn ig	BRAKE PI	EDAL PC	SITIO	N SWI			
4. CHECK  1. Turn ig 2. Disconi	BRAKE Pl nition swite nect ECM	EDAL PO ch OFF. harness	OSITIO	N SWI	TCH INPUT SIGNA	AL CIRCUIT	or and ECM harness connec-
4. CHECK  1. Turn ig 2. Disconi	BRAKE Pl nition swite nect ECM	EDAL PO ch OFF. harness	OSITIO	N SWI	TCH INPUT SIGNA	AL CIRCUIT	or and ECM harness connec-
4. CHECK  1. Turn ig 2. Discond 3. Check	BRAKE Pl nition swite nect ECM the contine	EDAL PO ch OFF. harness	OSITIO	N SWI	TCH INPUT SIGNA	AL CIRCUIT	or and ECM harness connec-
<ol> <li>CHECK</li> <li>Turn ig</li> <li>Discon</li> <li>Check tor.</li> </ol>	BRAKE Pl nition switch nect ECM the continu	EDAL PC ch OFF. harness uity betwo	OSITION connection brains	tor.	dal position switch	AL CIRCUIT	or and ECM harness connec-
<ol> <li>4. CHECK</li> <li>Turn ig</li> <li>Discond</li> <li>Check tor.</li> </ol>	nition switch nect ECM the continuation switch the continuation switch neck the continuation of the contin	en OFF. ch OFF. ch off. ch	connection bracket	tor.  ake pe	dal position switch	AL CIRCUIT	J
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector	nition switch nect ECM the continued the con	ch OFF. harness uity betwo	connection brace EC	otor.  Alke per	dal position switch  Continuity	AL CIRCUIT	J
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal  Connector  E112	nition switch nect ECM the continual the con	ch OFF.	connection brackers EC	otor.  A Termi	dal position switch  Continuity  nal  Existed	AL CIRCUIT	J
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also ch	nition switch ect ECM the continual three techniques of the continual three techniques of the continual techniques	ch OFF. harness uity between	connection brain b	otor.  A Termi	dal position switch  Continuity	AL CIRCUIT	J
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also check Is the inspector	position switch the continual to the con	ch OFF. harness uity between	connection brain b	otor.  A Termi	dal position switch  Continuity  nal  Existed	AL CIRCUIT	J
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also check Is the inspective of the inspec	nition switch ect ECM the continual three techniques of the continual three techniques of the continual techniques	ch OFF. harness uity between	connection brackers brackers   EC	otor.  A Termi  Termi  Tound a	dal position switch  Continuity  nal  Existed  and to power.	AL CIRCUIT	K L
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also check Is the inspective of the inspec	hition switch nect ECM the continual the con	ch OFF. harness uity between	connection braining in the connection braining i	tor. Ake per	Continuity nal and to power.	AL CIRCUIT	K L
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal  Connector  E112  4. Also check to the inspection of the insp	position switch the continual	ch OFF. harness uity between	connection braining of the connection braining o	tor. Ake per  Termi  116  round a	Continuity nal and to power.  I parts. TCH	AL CIRCUIT	K L
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also check Is the inspection YES NO >> 5. CHECK Check the	position switch the continual	ch OFF. harness uity between	connected brace br	tor. Ake per  Termi  116  round a	Continuity nal and to power.  I parts. TCH	AL CIRCUIT	K L
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also check Is the inspector YES >> NO >> 5. CHECK Check the Switch)" Is the inspector Is the inspector Is the inspector Signature of the content of the c	position switch the continual	ch OFF. harness uity between the content of the con	connection brain b	tor. Ake per  Termi  116  round a  etected N SWI  tch. R	Continuity nal Existed and to power.  TCH efer to EC-571. "	AL CIRCUIT  harness connect  Component Insp	ection (Brake Pedal Position
4. CHECK  1. Turn ig 2. Discond 3. Check tor.  Brake pedal Connector E112  4. Also check Is the inspector YES >> NO >> 5. CHECK Check the Switch)" Is the inspector System of the inspector of th	position switch the continual	ch OFF. harness aity between the control of the con	connected brace br	M Terminate tected of the state	Continuity nal and to power.  TCH Efer to EC-571, "	harness connect  Component Insp	ection (Brake Pedal Position

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the voltage between stop lamp switch harness connector and ground.

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Stop lam	p switch	_	Voltage	
Connector	Terminal			
E102 <sup>*1</sup> E118 <sup>*2</sup>	1	Ground	Battery voltage	

<sup>\*1:</sup> CVT models

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Perform the trouble diagnosis for power supply circuit.

## 7.CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between stop lamp switch harness connector and ECM harness connector.

+				
Stop lam	p switch	EC	CM	Continuity
Connector	Terminal	Connector	Terminal	
E102 <sup>*1</sup> E118 <sup>*2</sup>	2	E18	115	Existed

<sup>\*1:</sup> CVT models

3. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

## 8.CHECK STOP LAMP SWITCH

Check the stop lamp switch. Refer to EC-479, "Component Inspection (Stop Lamp Switch)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace stop lamp switch. Refer to BR-20, "Exploded View".

## Component Inspection (Brake Pedal Position Switch)

INFOID:0000000012198030

# 1. CHECK BRAKE PEDAL POSITION SWITCH-I

- 1. Turn ignition switch OFF.
- Disconnect brake pedal position harness connector.
- Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal p	oosition switch	Condition		
+	_			Continuity
Tern	ninals			
		Fully released		Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2. CHECK BRAKE PEDAL POSITION SWITCH-II

<sup>\*2:</sup> M/T models

<sup>\*2:</sup> M/T models

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

- Adjust brake pedal position switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal position switch				
+	_	Condition		Continuity
Term	ninals			
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace brake pedal position switch. Refer to BR-20, "Exploded View".

### Component Inspection (Stop Lamp Switch)

## 1. CHECK STOP LAMP SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals as per the following conditions.

Stop lan	np switch	Condition		
+	_			Continuity
Tern	ninals			
			Fully released	Not existed
1	2	Brake pedal	Slightly de- pressed	Existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.CHECK STOP LAMP SWITCH-II

- Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals as per the following conditions.

Stop lan	Stop lamp switch			
+	_	Condition		Continuity
Tern	ninals			
		Fully released		Not existed
1	2	Brake pedal	Slightly de- pressed	Existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <a href="https://exploded-view">BR-20, "Exploded View"</a>.

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[MR FOR NISMO RS MODELS]

### P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID.000000012198032

The ECM receives two vehicle speed sensor signals via CAN communication line. One is sent from combination meter, and the other is from TCM (Transmission control module). The ECM uses these signals for ASCD control. Refer to <a href="EC-68">EC-68</a>, "AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Description" for ASCD functions.

DTC Logic INFOID:000000012198033

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1574 is displayed with DTC U1001, first perform the trouble diagnosis for DTC U1001. Refer to <u>EC-195</u>, "<u>DTC Logic"</u>.
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to EC-397, "EXCEPT FOR M/T MODELS: DTC Logic"
- If DTC P1574 is displayed with DTC DTC P0603, P0604, P0605, P0606, P0607, P060A and P060B, first perform the trouble diagnosis for DTC DTC P0603, P0604, P0605, P0606, P0607, P060A and P060B. Refer to EC-115. "DTC Index".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1574	ASCD VHL SPD SEN (ASCD vehicle speed sensor)	ECM detects a difference between two vehicle speed signals is out of the specified range.	Harness or connectors     (CAN communication line is open or shorted.)     ABS actuator and electric unit (control unit)     TCM     ECM

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine.
- 2. Drive the vehicle at more than 40 km/h (25 MPH).

#### **CAUTION:**

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

3. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-480, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198034

## 1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-190, "CONSULT Function".

Is DTC detected?

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### P1574 ASCD VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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YES >> Perform trouble shooting relevant to DTC indicated.

 $2.\mathsf{CHECK}$  DTC WITH "ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)"

Check DTC with ABS actuator and electric unit (control unit). Refer to <u>BRC-39</u>, "CONSULT Function". <u>Is DTC detected?</u>

NO >> INSPECTION END

YES >> Perform trouble shooting relevant to DTC indicated.

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## P158A G SENSOR

**DTC Logic** INFOID:0000000012198035

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause*
P158A	G SENSOR (G sensor calibration is incomplete)	ECM detects a state that calibration of the G sensor is incomplete.	G sensor calibration is incomplete

<sup>\*:</sup> Since this DTC is detected when G sensor calibration is incomplete, there is not replacement parts.

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
   Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-482, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198036

# 1.PERFORM CALIBRATION OF G SENSOR

Perform calibration of G sensor. Refer to EC-164, "Description".

>> INSPECTION END

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P159A	G SENSOR (G sensor circuit)	When ECM detects the following status: A voltage signal transmitted from the G sensor is less than 0.5 V or more than 5.02 V continuously for 5 seconds or more.	Harness or connectors     (G sensor circuit is open or shorted.)     (Intake air temperature sensor 2 circuit is open or shorted.)
P159C	G SENSOR (G sensor circuit low input)	When ECM detects the following status: A voltage signal transmitted from the G sensor is less than 0.5 V continuously for 5 seconds or more.	(Turbocharger boost sensor circuit is open or shorted.) (Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open
P159D	G SENSOR (G sensor circuit high input)	When ECM detects the following status: A voltage signal transmitted from the G sensor is more than 4.5 V continuously for 5 seconds or more.	or shorted.) (Crankshaft position sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Accelerator pedal position sensor 2 circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) G sensor Intake air temperature sensor Fuel rail pressure sensor Battery current sensor Crankshaft position sensor Exhaust valve timing control position sensor Accelerator pedal position sensor 2

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-483, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

1. CHECK G SENSOR POWER SUPPLY CIRCUIT-I

Turn ignition switch OFF.

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- 2. Disconnect G sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between G sensor harness connector terminals.

Connector	+	_	Voltage (Approx.)
Connector	Terr	minal	( 1-1 /
B32	3	2	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2. CHECK G SENSOR SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between G sensor harness connector and ECM harness connector.

+		-		
G sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
B32	1	F26	83	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK G SENSOR

Check G sensor. Refer to EC-485, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> 1. Replace G sensor.

2. Perform calibration of G sensor. Refer to EC-164, "Description".

## 4. CHECK G SENSOR POWER SUPPLY CIRCUIT-II

Check the voltage between G sensor harness connector terminal and ground.

	+		V-11	
G se	ensor	_	Voltage (Approx.)	
Connector	Terminal		, , ,	
B32	3	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 7.

## 5. CHECK G SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between G sensor harness connector and ECM harness connector.

### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

	+			
G sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
B32	3	F26	87	Existed

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#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

E	CM	Ground	Continuity	
Connector	Connector Terminal		Continuity	
F25	2			
	123	Ground	Existed	
E18	124	_		
	127			

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 7. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connectors and each sensor harness connectors
- 3. Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
F26	68 72	Battery current sensor	F52	1	
		G sensor	B32	3	
		CMP sensor	F109	1	
		EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection

# 1. CHECK G SENSOR

#### (P)With CONSULT

- Remove G sensor.
- Reconnect all harness connectors disconnected.
- Place the G sensor on a flat table.
- Turn ignition switch ON.

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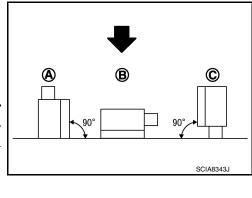
INFOID:0000000012198039

### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

- Select "G SENSOR" in "DATA MONITOR" mode of "ENGINE" using CONSULT to check indications according to the following conditions:
  - : Direction of gravitational force

Monitor item	Condition	Value (V)
	Parallel with the table (0G) (B)	2.18 – 2.82
G SENSOR	Vertical to the table (–1G) (A) ↓	0.85 – 1.49* ↓
COLNOCIA	Parallel with the table (0G) (B) ↓	2.18 – 2.82* ↓
	Vertical to the table (1G) (C)	3.51 – 4.15*

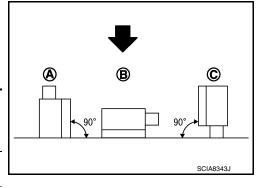


\*: Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

#### 

- 1. Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminal and ground.
  - : Direction of gravitational force

i and the second				
+ ECM		_	Condition	Voltage (V)
Connector	Terminal			
			Parallel with the table (0G) (B)	2.18 – 2.82
F26	83	Ground	Vertical to the table (-1G)  (A)  ↓  Parallel with the table  (0G) (B)  ↓  Vertical to the table (1G)  (C)	0.85 - 1.49* ↓ 2.18 - 2.82* ↓ 3.51 - 4.15*



\*: Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace G sensor.

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## P159B G SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P159B	G SENSOR (G sensor circuit range/perfor- mance)	Every time when the vehicle is stopped, ECM detects the following status 13 times in a row: A voltage signal transmitted from the G sensor is less than 2.275V or more than 2.725 V continuously for 5 seconds or more.	Harness or connectors     (G sensor circuit is open or shorted.)     (Intake air temperature sensor 2 circuit is open or shorted.)     (Turbocharger boost sensor circuit is open or shorted.)     (Fuel rail pressure sensor circuit is open or shorted.)     (Battery current sensor circuit is open or shorted.)     (Crankshaft position sensor circuit is open or shorted.)     (Exhaust valve timing control position sensor circuit is open or shorted.)     (Accelerator pedal position sensor 2 circuit is open or shorted.)     (Engine oil pressure sensor circuit is open or shorted.)     G sensor     Intake air temperature sensor 2     Turbocharger boost sensor     Fuel rail pressure sensor     Battery current sensor     Crankshaft position sensor     Exhaust valve timing control position sensor     Accelerator pedal position sensor 2     Engine oil pressure sensor     G sensor fitting condition

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine.
- 2. Drive the vehicle for at least 5 seconds at 35 km/h (22 MPH) or more.
- 3. Stop the vehicle and let it idle for at least 5 seconds.

#### NOTE:

- Depress the brake pedal to bring the vehicle to a full stop.
- Never depress the accelerator pedal while the vehicle is stopped.
- 4. Repeat Step 2 and Step 3 thirteen times.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-488, "Diagnosis Procedure".

Revision: November 2015 EC-487 2016 JUKE

#### < DTC/CIRCUIT DIAGNOSIS >

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198041

## 1. PERFORM CALIBRATION OF G SENSOR

Perform calibration of G sensor. Refer to EC-164, "Description".

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC Confirmation Procedure. Refer to EC-487, "DTC Logic".

#### Is 1st trip DTC detected?

YES >> GO TO 3.

NO >> INSPECTION END

## 3.CHECK G SENSOR FITTING CONDITION

Check G sensor fitting condition.

#### Is the inspection result normal?

YES >> GO TO 4.

NO

>> 1. Adjust parts fitting condition. 2. Perform calibration of G sensor. Refer to EC-164, "Description".

## CHECK G SENSOR POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF.
- 2. Disconnect G sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between G sensor harness connector terminals.

	Atalian				
Connector	+	_	Voltage (Approx.)		
Connector	Terr	minal			
B32	3	2	5 V		

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 7.

## ${f 5.}$ CHECK G SENSOR SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between G sensor harness connector and ECM harness connector.

G se	ensor	E	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
B32	1	F26	83	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6.CHECK G SENSOR

Check G sensor. Refer to EC-490, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> 1. Replace G sensor.

#### P159B G SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

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2. Perform calibration of G sensor. Refer to EC-164, "Description".

## 7.check g sensor power supply circuit-ii

Check the voltage between G sensor harness connector terminal and ground.

	+		
G se	ensor	_	Voltage (Approx.)
Connector	Terminal		( 1-1 )
B32	3	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 8. NO >> GO TO 10.

# 8. CHECK G SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between G sensor harness connector and ECM harness connector.

G se	ensor	E	Continuity	
Connector Terminal		Connector	Terminal	Continuity
B32	2	F26	87	Existed

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

## 9. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

E	CM	Ground	Continuity	
Connector	Terminal	Ground		
F25	1			
1 23	2	2	Existed	
	123	Ground		
E18	124			
	127			

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

# 10. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connectors and each sensor harness connectors
- 3. Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor				
Connector	Terminal	Name	Connector	Terminal		
F25	39	FRP sensor	F5	1		
		EOP sensor	F43	3		
		Turbocharger boost sensor	F75	1		

#### < DTC/CIRCUIT DIAGNOSIS >

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
	68 72	Battery current sensor	F52	1	
F26		G sensor	B32	3	
1 20		CMP sensor	F109	1	
		EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection

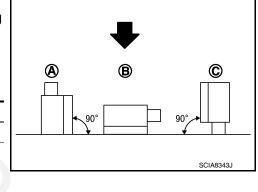
INFOID:0000000012198042

## 1. CHECK G SENSOR

#### (P)With CONSULT

- 1. Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- Turn ignition switch ON.
- Select "G SENSOR" in "DATA MONITOR" mode of "ENGINE" using CONSULT to check indications according to the following conditions:
  - : Direction of gravitational force

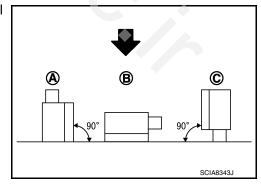
Monitor item	Condition	Value (V)
	Parallel with the table (0G) (B)	2.18 – 2.82
G SENSOR	Vertical to the table (−1G) (A) ↓	0.85 – 1.49* ↓
	Parallel with the table (0G) (B) ↓	2.18 – 2.82* ↓
	Vertical to the table (1G) (C)	3.51 – 4.15*



<sup>\*:</sup> Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

#### **♥Without CONSULT**

- Remove G sensor.
- Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminal and ground.
  - : Direction of gravitational force



+			
ECM	_	Condition	Voltage (V)
Connector Terminal			
		Parallel with the table (0G) (B)	2.18 – 2.82
F26 83	Ground	Vertical to the table (-1G)  (A)  ↓  Parallel with the table  (0G) (B)  ↓  Vertical to the table (1G)  (C)	0.85 – 1.49* ↓ 2.18 – 2.82* ↓ 3.51 – 4.15*

<sup>\*:</sup> Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

#### Is the inspection result normal?

YES >> INSPECTION END NO >> Replace G sensor.

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### P1650 STARTER MOTOR RELAY 2

Description INFOID:000000012198043

ECM controls ON/OFF state of the starter relay, according to the engine and vehicle condition. On the other hand, models with the Intelligent Key System transmit a control signal to IPDM E/R by way of BCM via CAN communication.

Under normal conditions, ECM controls and maintains the starter relay in OFF state during engine running or "D" position.

When detecting a decrease in engine speed due to rapid deceleration or heavy load condition, ECM controls and reactivates the starter relay.

IPDM E/R detects a control state of starter relay and starter control relay and transmits a feedback signal to ECM via CAN communication.

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1650 is displayed with DTC U1001, perform the trouble diagnosis for DTC U1001. Refer to <u>EC-195</u>, "<u>DTC Logic"</u>.
- If DTC P1650 is displayed with DTC P0607, perform the trouble diagnosis for DTC P0607. Refer to <u>EC-419</u>.
  "DTC Logic".
- If DTC P1650 is displayed with B209F or B20A0 of IPDM E/R, perform the trouble diagnosis for B209F or B20A0. Refer to <u>SEC-101, "DTC Logic"</u> or <u>SEC-103, "DTC Logic"</u>.
- If DTC P1650 is displayed with B26F9 or B26FA of BCM, perform the trouble diagnosis for B209F or B20A0. Refer to <u>SEC-95</u>, "DTC Logic" or <u>SEC-97</u>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		DTC detecting condition	Possible cause
		Α	Starter relay is stuck ON.	Harness and connectors     (Between IPDM E/R harness connector and ECM harness connector is shorted to ground.)     (Between IPDM E/R harness connector and BCM harness connector is shorted to ground.)     IPDM E/R
P1650	STR MTR RELAY 2 (Starter relay circuit)	В	Starter relay power supply circuit is excessively high voltage.	<ul> <li>Harness and connectors         (Between IPDM E/R harness connector and ECM harness is open or shorted to power.)         (Between IPDM E/R harness connector and BCM harness is open or shorted to power.)         (Between IPDM E/R harness connector and bat tery is open.)</li> <li>IPDM E/R</li> </ul>
		С	Starter relay circuit is excessively low voltage	<ul> <li>Harness and connectors (Starter relay circuit is open or shorted.)</li> <li>IPDM E/R</li> </ul>

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### NOTE:

Before performing the following procedure, confirm that battery voltage is 12 V or more with ignition switch ON.

### P1650 STARTER MOTOR RELAY 2

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

2. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A AND C	А
Turn ignition switch OFF and wait at least 10 seconds.  Turn ignition switch ON.  Turn ignition switch OFF and weit at least 10 seconds.	
<ol> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> <li>Check 1st trip DTC.</li> </ol>	EC
Is 1st trip DTC detected?	
YES >> Proceed to <u>EC-493, "Diagnosis Procedure"</u> .  NO >> GO TO 3.	С
3. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B	
With CONSULT	_ D
CAUTION: Always drive at a safe speed.	
1. Start the engine.	Е
2. Turn ignition switch OFF and wait at least 10 seconds.	_
<ol> <li>Turn ignition switch ON.</li> <li>Start the engine and warm it up to normal operating temperature.</li> </ol>	
5. Turn ignition switch OFF.	F
6. Lift up drive wheels.	
<ol> <li>Turn ignition switch ON.</li> <li>Select "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.</li> </ol>	
9. Restart the engine and let it idle at least 10 seconds.	G
10. Shift the selector lever to D position while depressing fully the brake pedal.	
<ul><li>11. Select 1 - 4 cylinders in "POWER BALANCE" and cut the fuel of all cylinders.</li><li>12. Check 1st trip DTC.</li></ul>	Н
Without CONSULT	
CAUTION:	
Always drive at a safe speed.	
<ol> <li>Start the engine.</li> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> </ol>	
3. Turn ignition switch ON.	J
4. Start the engine and warm it up to normal operating temperature.	J
<ul><li>5. Turn ignition switch OFF.</li><li>6. Lift up drive wheels.</li></ul>	
7. Restart the engine and let it idle at least 10 seconds.	K
8. Shift the selector lever to D position while depressing fully the brake pedal.	
9. Remove vacuum hoses from intake manifold.	
10. Check 1st trip DTC.  Is 1st trip DTC detected?	L
YES >> Proceed to <u>EC-493</u> , " <u>Diagnosis Procedure</u> ".	
NO >> INSPECTION END	M
Diagnosis Procedure	
1. CHECK STARTER RELAY POWER SUPPLY CIRCUIT	N
Check the starter motor relay power supply circuit. Refer to PCS-36, "Diagnosis Procedure".	_
Is the inspection result normal?	
YES >> GO TO 2.	0
NO >> Repair or replace error-detected parts.	
2. CHECK STARTER RELAY CONTROL SIGNAL CIRCUIT	Р
Turn ignition switch OFF.     Disconnect IPDM F/R harness connector.	_

- 3. Disconnect BCM harness connector.
- 4. Check the continuity between IPDM E/R harness connector and BCM harness connector.

**EC-493 2016 JUKE Revision: November 2015** 

### P1650 STARTER MOTOR RELAY 2

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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IPDN	/I E/R	ВСМ		Continuity
Connector	Terminal	Connector Terminal		
E13	30	M70	97	Existed

5. Also check harness for short to ground to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

3. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "Removal and Installation".

NO >> Repair or replace error-detected parts.

#### P1651 STARTER MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P1651 STARTER MOTOR RELAY

Description INFOID:0000000012198046

ECM controls ON/OFF state of the starter relay, according to the engine and vehicle condition. On the other hand, models with the Intelligent Key System transmit a control signal to IPDM E/R by way of BCM via CAN communication.

Under normal conditions, ECM controls and maintains the starter relay in OFF state during engine running or "D" position.

When detecting a decrease in engine speed due to rapid deceleration or heavy load condition, ECM controls and reactivates the starter relay.

IPDM E/R detects a control state of starter relay and starter control relay and transmits a feedback signal to ECM via CAN communication.

DTC Logic INFOID:0000000012198047

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1650 is displayed with DTC U1001, perform the trouble diagnosis for DTC U1001. Refer to EC-195.
- If DTC P1650 is displayed with DTC P0607, perform the trouble diagnosis for DTC P0607. Refer to EC-419. "DTC Logic".
- If DTC P1650 is displayed with B209F or B20A0 of IPDM E/R, perform the trouble diagnosis for B209F or B20A0. Refer to SEC-101, "DTC Logic" or SEC-103, "DTC Logic".
- If DTC P1650 is displayed with B26F9 or B26FA of BCM, perform the trouble diagnosis for B209F or B20A0. Refer to SEC-95, "DTC Logic" or SEC-97, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		
P1651	STR MTR RELAY (Starter control relay circuit)	A correlated error is detected for 2 seconds or more between a control signal transmitted from ECM and a feedback signal transmitted from IPDM E/R via CAN communication line.	Harness or connectors     (Between ECM harness connector and IPDM E/R harness connector is shorted to power.)     (Between ECM harness connector and BCM harness connector is shorted to power.)     IPDM E/R     BCM	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### NOTE:

Before performing the following procedure, confirm that battery voltage is 12 V or more with ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start the engine and let it idle at least 30 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-496, "Diagnosis Procedure". YES

NO >> INSPECTION END

**EC-495 Revision: November 2015 2016 JUKE**  EC

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### P1651 STARTER MOTOR RELAY

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## Diagnosis Procedure

INFOID:0000000012198048

## 1. INSPECTION START

Check the starter motor operation.

#### Is the starter motor operated?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK DTC WITH IPDM E/R

Check DTC with IPDM E/R. Refer to PCS-14, "CONSULT Function (IPDM E/R)".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform trouble diagnosis for DTC indicated.

## 3.CHECK DTC WITH BCM

Check DTC with BCM. Refer to BCS-33, "BCM: CONSULT Function (BCM - BCM)".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform trouble diagnosis for DTC indicated.

## 4. CHECK CRANKING REQUEST SIGNAL CIRCUIT-I

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

	+		-	
E	СМ	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F26	92	E13	23	Existed

5. Also check harness for short to ground to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK CRANKING REQUEST SIGNAL CIRCUIT-II

- Disconnect BCM harness connector.
- Check the continuity between ECM harness connector and BCM harness connector.

+		_		
E	СМ	ВСМ		Continuity
Connector	Terminal	Connector Terminal		
F26	92	M69	64	Existed

3. Also check harness for short to ground to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6.CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "Removal and Installation".

NO >> Repair or replace error-detected parts.

### P1652 STARTER MOTOR SYSTEM COMM

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P1652 STARTER MOTOR SYSTEM COMM

Description INFOID:0000000012198049

ECM controls ON/OFF state of the starter relay, according to the engine and vehicle condition. On the other hand, models with the Intelligent Key System transmit a control signal to IPDM E/R by way of BCM via CAN communication.

Under normal conditions, ECM controls and maintains the starter relay in OFF state during engine running or "D" position.

When detecting a decrease in engine speed due to rapid deceleration or heavy load condition, ECM controls and reactivates the starter relay.

IPDM E/R detects a control state of starter relay and starter control relay and transmits a feedback signal to ECM via CAN communication.

DTC Logic INFOID:0000000012198050

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1650 is displayed with DTC U1001, perform the trouble diagnosis for DTC U1001. Refer to EC-195.
- If DTC P1650 is displayed with DTC P0607, perform the trouble diagnosis for DTC P0607. Refer to EC-419. "DTC Logic".
- If DTC P1650 is displayed with B209F or B20A0 of IPDM E/R, perform the trouble diagnosis for B209F or B20A0. Refer to SEC-101, "DTC Logic" or SEC-103, "DTC Logic".
- If DTC P1650 is displayed with B26F9 or B26FA of BCM, perform the trouble diagnosis for B209F or B20A0. Refer to SEC-95, "DTC Logic" or SEC-97, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1652	STR MTR SYS COMM (Starter motor communication line)	ECM detects malfunction in starter motor drive circuit of the IPDM E/R.	IPDM E/R

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start the engine and wait at least 5 minutes.
- 3. Repeat step 1 and 2 for 20 times.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-497, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

### 1.INSPECTION START

- Erase DTC.
- 2. Perform DTC confirmation procedure. Refer to <a>EC-497</a>, "DTC Logic"</a>.
- Check DTC.

**EC-497 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198051

### P1652 STARTER MOTOR SYSTEM COMM

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Is the P1652 displayed again?

YES >> GO TO 2.

NO >> INSPECTION END

2. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "Removal and Installation".

NG >> Repair or replace error-detected parts.

#### P1805 BRAKE SWITCH

< DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

## P1805 BRAKE SWITCH

**DTC Logic** INFOID:0000000012198052

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1805	BRAKE SW/CIRCUIT (Brake switch)	A stop lamp switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Harness or connectors     (Stop lamp switch circuit is open or shorted.)     Stop lamp switch

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Fully depress the brake pedal for at least 5 seconds.
- Erase the DTC.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-499, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- Check the voltage between stop lamp switch harness connector and ground.

+ Stop lamp switch		_	Voltage
Connector	Connector Terminal		
E102 <sup>*1</sup> E118 <sup>*2</sup>	1	Ground	Battery voltage

<sup>\*1:</sup> CVT models

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2.CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT

- Disconnect ECM harness connector.
- Check the continuity between stop lamp switch harness connector and ECM harness connector.

+		-	-	
Stop lam	p switch	ECM		Continuity
Connector	Terminal	Connector	Terminal	
E102 <sup>*1</sup> E118 <sup>*2</sup>	2	E18	115	Existed

<sup>\*1:</sup> CVT models

**EC-499 Revision: November 2015 2016 JUKE** 

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<sup>\*2:</sup> M/T models

<sup>\*2:</sup> M/T models

Also check harness for short to ground and to power.

### P1805 BRAKE SWITCH

### [MR FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK STOP LAMP SWITCH

Check the stop lamp switch. Refer to EC-500, "Component Inspection (Stop Lamp Switch)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

### Component Inspection (Stop Lamp Switch)

INFOID:0000000012198054

## 1. CHECK STOP LAMP SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals as per the following conditions.

Stop lan	np switch			
+	- (	Condition		Continuity
Tern	ninals			
		<b>*</b>	Fully released	Not existed
1	2	Brake pedal	Slightly de- pressed	Existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2. CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals as per the following conditions.

Stop lamp switch					
+	_	Condition		Continuity	
Term	ninals				
			Fully released	Not existed	
1	2	Brake pedal	Slightly de- pressed	Existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

## P1807, P1808 BRAKE PEDAL POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P1807, P1808 BRAKE PEDAL POSITION SWITCH

**DTC** Logic INFOID:0000000013475492

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P1807	Brake pedal position switch (Brake pedal position switch)	Regardless of ON/OFF of stop lamp switch signal when brake pedal is depressed 100 times, a brake pedal position switch signal remains OFF.	Harness or connectors     (Brake pedal position switch circuit is shorted.)     Brake pedal position switch	
P1808	Brake pedal position switch (Brake pedal position switch)	Regardless of ON/OFF of stop lamp switch signal when brake pedal is depressed 100 times, a brake pedal position switch signal remains ON.	Incorrect brake pedal position switch installation     ECM	

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE 1

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check "BRAKE SW1" indication as per the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake nedal	Slightly depressed	OFF
	Brake pedal	Fully released	ON

#### 

- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals as per the following.

ECM					\
Connector	+ –		Condition		Voltage (Approx.)
Connector	Terminal				
E18	116	127	Brake pedal	Slightly depressed	0 V
L10	110	121	Diake pedal	Fully released	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to EC-502, "Diagnosis Procedure".

# 3.PERFORM DTC CONFIRMATION PROCEDURE 2

- Turn ignition switch ON.
- Depress the brake pedal for at least 100 times.
- Check DTC.

#### Is DTC detected?

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### P1807, P1808 BRAKE PEDAL POSITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> Proceed to EC-502, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000013475493

## 1. CHECK OVERALL FUNCTION

#### (P)With CONSULT

- Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "BRAKE SW1" indication as per the following conditions.

Monitor item	C	Condition	
BRAKE SW1	Brake pedal	Slightly depressed	OFF
DIVAILE SWI		Fully released	ON

#### 

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector terminals as per the following.

ECM			Condition		Voltage (Approx.)
Connector + -					
Connector	Terminal				
E18	E18 116 127 Brake p		Brake pedal	Slightly depressed	0 V
E10	110 121	brake pedar	Fully released	Battery voltage	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 2.

# 2.CHECK BRAKE PEDAL POSITION SWITCH POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect brake pedal position switch harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between brake pedal position switch harness connector and ground.

+	-		
Brake pedal p	osition switch	_	Voltage
Connector	Terminal		
E112	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform the trouble diagnosis for power supply circuit.

# 3.CHECK BRAKE PEDAL POSITION SWITCH INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between brake pedal position switch harness connector and ECM harness connector.

+		-		
Brake pedal position switch		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E112	2	E18	116	Existed

4. Also check harness for short to ground and to power.

### P1807, P1808 BRAKE PEDAL POSITION SWITCH

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### f 4.CHECK BRAKE PEDAL POSITION SWITCH

Check the brake pedal position switch. Refer to <u>EC-503</u>, "Component Inspection (Brake Pedal Position Switch)"

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace brake pedal position switch. Refer to <u>BR-20, "Exploded View"</u>.

### Component Inspection (Brake Pedal Position Switch)

## 1. CHECK BRAKE PEDAL POSITION SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect brake pedal position harness connector.
- 3. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal ¡	position switch			
+	- //	Condition		Continuity
Tern	ninals			
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2. CHECK BRAKE PEDAL POSITION SWITCH-II

- 1. Adjust brake pedal position switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal p	position switch				
+	+ -		Condition		
Tern	ninals				
			Fully released	Existed	
1	2	Brake pedal	Slightly de- pressed	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace brake pedal position switch. Refer to <a href="BR-20">BR-20</a>, "Exploded View".

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## P2096, P2097 A/F SENSOR 1

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P2096	POST CAT FUEL TRIM SYS B1 (Post catalyst fuel trim system too lean bank 1)	The output voltage computed by ECM from the A/F sensor 1 signal is shifts to the lean side for a specified period.	<ul><li>A/F sensor 1</li><li>A/F sensor 1 heater</li><li>Heated oxygen sensor 2</li></ul>
P2097	POST CAT FUEL TRIM SYS B1 (Post catalyst fuel trim system too rich bank 1)	The A/F signal computed by ECM from the A/F sensor 1 signal is shifts to the rich side for a specified period.	<ul><li>Fuel pressure</li><li>Fuel injector</li><li>Intake air leaks</li><li>Exhaust gas leaks</li></ul>

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Clear the mixture ratio self-learning value. Refer to EC-165, "Description".
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 6. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-504, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198056

## 1. CHECK HARNESS CONNECTOR

- 1. Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector.
- Check harness connector for water.

#### Water should not exit.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace harness connector.

## 2.RETIGHTEN A/F SENSOR 1 AND HEATED OXYGEN SENSOR 2

Loosen and retighten the A/F sensor 1 and heated oxygen sensor 2. Refer to <u>EM-44, "Exploded View"</u>, <u>EX-5. "Exploded View"</u>.

>> GO TO 3.

### P2096, P2097 A/F SENSOR 1

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

# 3.CHECK FOR EXHAUST GAS LEAK

- Start engine and run it at idle.
- Listen for an exhaust gas leak before the three way catalyst 2.

### Is exhaust gas leak detected?

>> Repair or replace malfunctioning parts.

NO >> GO TO 4.

## 4.CHECK FOR INTAKE AIR LEAK

- Reconnect A/F sensor 1 harness connector.
- 2. Start engine and run it at idle.
- Listen for an intake air leak after the mass air flow sensor.

#### Is intake air leak detected?

YES >> Repair or replace malfunctioning parts.

NO >> GO TO 5.

## $5.\mathtt{clear}$ the mixture ratio self-learning value

- Clear the mixture ratio self-learning value. Refer to EC-165, "Description".
- Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to EC-297, "DTC Logic" or EC-301, "DTC Logic".

NO >> GO TO 6.

## 6.CHECK A/F SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector. 2.
- Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

+			
A/F sensor 1		-	Voltage
Connector	Terminal		
F70	4	Ground	Battery voltage

#### Is the inspection result normal?

>> GO TO 8. YES

NO >> GO TO 7.

## 7 .CHECK A/F SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

+		_		
A/F ser	nsor 1	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F70	4	E14	36	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 8.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.

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Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		_			
A/F ser	nsor 1	ECM		Continuity	
Connector	Terminal	Connector	Terminal		
F70	1	F25	21	Existed	
170	2	125	25	LAISIEU	

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

A/F s	ensor 1 Terminal	-	Continuity	
	1			
F70	2	Ground	Not existed	
	+			
ECM			Continuity	
Connector	Terminal			
F25	21	Cround	Not existed	
F <b>Z</b> 5		Ground	Not existed	

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

### 9.CHECK A/F SENSOR 1 HEATER

Check the A/F sensor 1 heater. Refer to EC-204, "Component Inspection"

#### Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 12.

## 10.CHECK HEATED OXYGEN SENSOR 2

Check heated oxygen sensor 2. Refer to EC-276, "Component Inspection".

### Is the inspection result normal?

>> GO TO 11. YES

NO >> Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

## 11. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace error-detected parts.

## 12.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-44, "Exploded View".

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved Anti-seize Lubricant (commercial service tool).

D2006 D2007 A/E SENSOD 1	
P2096, P2097 A/F SENSOR 1 < DTC/CIRCUIT DIAGNOSIS > [MR FOR NISMO RS MODELS]	
Do you have CONSULT?  YES >> GO TO 13.  NO >> GO TO 14.	А
13.CONFIRM A/F ADJUSTMENT DATA	EC
<ul> <li>With CONSULT</li> <li>1. Turn ignition switch ON.</li> <li>2. Select "A/F ADJ-B1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.</li> <li>3. Make sure that "0.000" is displayed on CONSULT screen.</li> <li>Is "0.000" displayed?</li> </ul>	С
YES >> INSPECTION END NO >> GO TO 14.	D
14. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE	_
Clear the mixture ratio self-learning value. Refer to <a href="EC-165">EC-165</a> , "Description".  Do you have CONSULT?	Е
YES >> GO TO 15. NO >> INSPECTION END  15.CONFIRM A/F ADJUSTMENT DATA	F
<ul> <li>With CONSULT</li> <li>1. Turn ignition switch ON.</li> <li>2. Select "A/F ADJ-B1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.</li> </ul>	G
3. Make sure that "0.000" is displayed on CONSULT screen.	Н
>> INSPECTION END	I
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	K
	L
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## P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P2100, P2103 THROTTLE CONTROL MOTOR RELAY

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2100	ETC MOT PWR-B1 (Throttle control motor relay circuit open)	ECM detects a voltage of power source for throttle control motor is excessively low.	Harness or connectors     (Throttle control motor relay circuit is open)     Throttle control motor relay
P2103	ETC MOT PWR (Throttle control motor relay circuit short)	ECM detect the throttle control motor relay is stuck ON.	Harness or connectors     (Throttle control motor relay circuit is shorted)     Throttle control motor relay

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V.

#### Witch DTC is detected?

P2100 >> GO TO 2.

P2103 >> GO TO 3.

## 2. PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2100

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-508, "Diagnosis Procedure".

NO >> INSPECTION END

## 3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2103

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-508, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198058

## 1. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Check the voltage between ECM harness connector and ground.

+			_	
	EC			Voltage
Connector	Terminal	Connector	Terminal	
F26	77	E18	127	Battery voltage

### P2100, P2103 THROTTLE CONTROL MOTOR RELAY

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

ls	the	inspection	result	normal?
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YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

	+		_	
E	СМ	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F26	77	E15	60	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL

Check the voltage between ECM harness connector and ground as per the following conditions.

ECM				\
Connector	+	-	Condition	Voltage (Approx.)
Connector	Terminal			( 44 )
E18	122	127	Ignition switch: OFF	0 V
L10	122	121	Ignition switch: ON	Battery voltage

#### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

## f 4.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

	+		_	
E	CM	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E18	122	E15	55	Existed

5. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

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### P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P2101 ELECTRIC THROTTLE CONTROL FUNCTION

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P2101 is displayed with DTC P2100, first perform the trouble diagnosis for DTC P2100. Refer to <u>EC-508</u>, "DTC Logic".
- If DTC P2101 is displayed with DTC P2119, first perform the trouble diagnosis for DTC P2119. Refer to <u>EC-515</u>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P2101	ETC FNCTN/CIRC-B1 (Electric throttle control performance)	Electric throttle control function does not operate properly.	Harness or connectors     (Throttle control motor circuit is open or shorted)     Electric throttle control actuator

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V when engine is running.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-510, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198060

## 1. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL

Check the voltage between ECM harness connector terminals as per the following conditions.

ECM				Voltage	
Connector + - Terminal		_	Condition	Voltage (Approx.)	
			(		
E18	122	127	Ignition switch: OFF	0 V	
L10	122	127	Ignition switch: ON	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

## 2. CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT

1. Turn ignition switch OFF.

#### P2101 ELECTRIC THROTTLE CONTROL FUNCTION

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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- 2. Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

	+		_	
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		
E18	122	E15	55	Existed

5. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

1. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+			_	
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F26	77	E15	60	Existed

2. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 4. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

	+		_		
Electric throttle control actuator		ECM		Continuity	
Connector	Terminal	Connector	Terminal		
	5	F26	51	Not existed	
F29			52	Existed	
			51	Existed	
	0		52 Not exist		

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5.CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Remove the intake air duct. Refer to <u>EM-27</u>, "Exploded View".
- 2. Check if foreign matter is caught between the throttle valve and the housing.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to <u>EC-161</u>, "<u>Description</u>".

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### P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## 6. CHECK THROTTLE CONTROL MOTOR

Check the throttle control motor. Refer to EC-512, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

## Component Inspection

INFOID:0000000012198061

## 1. CHECK THROTTLE CONTROL MOTOR

- Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Check the resistance between electric throttle control actuator terminals as per the following.

Electric throttle	control actuator	<b>D</b>
+		Resistance (Approx.)
		( + + )
5	6	1 - 15 Ω [at 25°C (77°F)]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

#### **P2118 THROTTLE CONTROL MOTOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

### P2118 THROTTLE CONTROL MOTOR

DTC Logic

#### DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2118	ETC MOT-B1 (Throttle control motor circuit short)	ECM detects short in both circuits between ECM and throttle control motor.	Harness or connectors     (Throttle control motor circuit is shorted.)     Electric throttle control actuator     (Throttle control motor)

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to <u>EC-513</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198063

## 1. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		-		
Electric throttle control actu- ator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
	5	F26	51	Not existed
F29			52	Existed
1 23			51	Existed
	0		52	Not existed

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

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### **P2118 THROTTLE CONTROL MOTOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# $\overline{2}$ .check throttle control motor

Check the throttle control motor. Refer to EC-514, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

## Component Inspection

INFOID:0000000012198064

## 1. CHECK THROTTLE CONTROL MOTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Check the resistance between electric throttle control actuator terminals as per the following.

Electric throttle	control actuator	<b>D</b>
+		Resistance (Approx.)
		( + + )
5	6	1 - 15 Ω [at 25°C (77°F)]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

### P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

DTC Logic

#### DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name (Trouble diagnosis content)			Possible cause	
	ETC ACTR-B1	Α	Electric throttle control actuator does not function properly due to the return spring malfunction.		
P2119	(Electric throttle control actuator)	В	Throttle valve opening angle in fail-safe mode is not in specified range.	Electric throttle control actuator	
		С	ECM detect the throttle valve is stuck open.		

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

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If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2.perform dtc confirmation procedure for malfunction a and b

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Set selector lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 3. Set selector lever to P (CVT) or Neutral (M/T) position.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON and wait at least 1 second.
- 6. Set selector lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 7. Set selector lever to P (CVT) or Neutral (M/T) position.
- 8. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 9. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-515, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.perform dtc confirmation procedure for malfunction c

1. Turn ignition switch ON and wait at least 1 second.

- Set selector lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 3. Set selector lever to P (CVT) or Neutral (M/T) position.
- 4. Start engine and let it idle for 3 seconds.
- 5. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-515, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198066

## 1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Remove the intake air duct. Refer to EM-27, "Exploded View".
- Check if foreign matter is caught between the throttle valve and the housing.

#### Is the inspection result normal?

YES >> Replace electric throttle control actuator. Refer to EM-29, "Exploded View".

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### **P2119 ELECTRIC THROTTLE CONTROL ACTUATOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to <a href="EC-161">EC-161</a>, "Description".

Revision: November 2015 EC-516 2016 JUKE

## P2122. P2123 APP SENSOR

**DTC Logic** INFOID:0000000012198067

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P2122 or P2123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2122	APP SEN 1/CIRC (Accelerator pedal position sensor 1 circuit low input)	An excessively low voltage from the APP sensor 1 is sent to ECM.	Harness or connectors     (APP sensor 1 circuit is open or shorted.     Accelerator pedal position sensor     (APP sensor 1)
P2123	APP SEN 1/CIRC (Accelerator pedal position sensor 1 circuit high input)	An excessively high voltage from the APP sensor 1 is sent to ECM.	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- Start engine and let it idle for 1 second.
- 2. Check DTC.

#### Is DTC detected?

>> Proceed to EC-517, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

## 1.CHECK APP SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

+ APP sensor		_	Voltage (Approx.)	
Connector	Connector Terminal		(Αρρίολ.)	
E101	4	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2 .CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

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#### < DTC/CIRCUIT DIAGNOSIS >

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

+			_	
APP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	4	E18	101	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK APP SENSOR 1 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

+		-		
APP :	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	2	E18	105	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK APP SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between APP sensor harness connector and ECM harness connector.

+		-		
APP	sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	3	E18	102	Existed

Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK APP SENSOR

Check the APP sensor. Refer to EC-518, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace accelerator pedal assembly. Refer to EM-29, "Exploded View".

## Component Inspection

INFOID:0000000012198069

## 1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals as per the following condition.

## **P2122, P2123 APP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

	ECM						
Connector	+	_	Condition		Condition Voltage		Voltage
Connector	Terr	ninal					
	102	105		Fully released	0.6 - 0.9 V		
E18		103	Accelerator nodel	Fully depressed	3.9 - 4.7 V		
119	120	Accelerator pedal	Fully released	0.3 - 0.6 V			
	119	120		Fully depressed	1.95 - 2.4 V		

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accelerator pedal assembly. Refer to EM-29, "Exploded View". EC

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## P2127, P2128 APP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2127	APP SEN 2/CIRC (Accelerator pedal position sensor 2 circuit low input)	An excessively low voltage from the APP sensor 2 is sent to ECM.	Harness or connectors     (APP sensor 2 circuit is open or shorted.)     [Crankshaft position sensor (POS) circuit
P2128	APP SEN 2/CIRC (Accelerator pedal position sensor 2 circuit high input)	An excessively high voltage from the APP sensor 2 is sent to ECM.	is shorted.] (Refrigerant pressure sensor circuit is shorted.) (EVAP control system pressure sensor circuit is shorted.) (Battery current sensor circuit is shorted.) • Accelerator pedal position sensor (APP sensor 2) • Crankshaft position sensor (POS) • Refrigerant pressure sensor • EVAP control system pressure sensor • Battery current sensor

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-520, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198071

## 1. CHECK APP SENSOR 2 POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between APP sensor harness connector and ground.

+ APP sensor		-	Voltage (Approx.)	
Connector	Terminal		(Approx.)	
E101	5	Ground	5 V	

Is the inspection result normal?

### **P2127, P2128 APP SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Terminal Name		Terminal	
		FRP sensor	F5	1	
F25	39	EOP sensor	F43	3	
		Turbocharger boost sensor	F75	1	
4	68	Battery current sensor	F52	1	
F26	00	G sensor	B32	3	
	72	CMP sensor	F109	1	
12		EVT control position sensor	F110	1	
E18	118	APP sensor 2	E101	5	

### Is inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

>> Repair or replace error-detected parts. NO

## 3.check app sensor 2 ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between APP sensor harness connector and ECM harness connector.

+		_		
APP :	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	1	E18	120	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

>> Repair or replace error-detected parts. NO

## 4. CHECK APP SENSOR 2 INPUT SIGNAL CIRCUIT

Check the continuity between APP sensor harness connector and ECM harness connector.

+				
APP :	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	6	E18	119	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

### $\mathbf{5}$ .CHECK APP SENSOR

Check the APP sensor. Refer to EC-522, "Component Inspection".

#### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

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## **P2127, P2128 APP SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

NO >> Replace accelerator pedal assembly. Refer to <a href="EM-29">EM-29</a>, "Exploded View".

## Component Inspection

INFOID:0000000012198072

## 1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals as per the following condition.

ECM						
Connector +		_	Condition		Voltage	
Connector	Terr	minal				
E18 —	102 105		Fully released	0.6 - 0.9 V		
	102	102 103	Accelerator pedal	Fully depressed	3.9 - 4.7 V	
	110	440		Fully released	0.3 - 0.6 V	
	119 120			Fully depressed	1.95 - 2.4 V	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accelerator pedal assembly. Refer to EM-29, "Exploded View".

### P2135 TP SENSOR

**DTC Logic** INFOID:0000000012198073

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P2135 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-424, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P2135	TP SENSOR-B1 (Throttle position sensor circuit range/perfor- mance)	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	Harness or connector     (TP sensor 1 or 2 circuit is open or shorted.)     Electric throttle control actuator     (TP sensor 1 or 2)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- 2. Check DTC.

#### Is DTC detected?

>> Proceed to EC-523, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

## 1.check throttle position sensor power supply

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

	+		Malfara
Electric throttle control actuator		_	Voltage (Approx.)
Connector	Terminal		· · · · /
F29	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ground.

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INFOID:0000000012198074

+		_		
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	1	F26	62	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## ${f 3.}$ CHECK THROTTLE POSITION SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		-		
Electric throttle control actu- ator		ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	4	F26	74	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## f 4.CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		_			
	le control actu- tor	ECM		Continuity	
Connector	Terminal	Connector	Terminal		
F29	2	F26	75	Existed	
F29	3	1 20	76	LXISIEU	

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

### 5. CHECK THROTTLE POSITION SENSOR

Check the throttle position sensor. Refer to EC-524, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-29. "Exploded View".

## Component Inspection

INFOID:0000000012198075

## 1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.

### **P2135 TP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

- 3. Perform "Throttle Valve Closed Position Learning". Refer to EC-161, "Description".
- 4. Turn ignition switch ON.
- 5. Set selector lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector terminals as per the following conditions.

ECM					
Connector	+	_	Condition		Voltage
Comilector	Terr	ninal			
	75			Fully released	More than 0.36V
F26	75	74	Accelerator	Fully depressed	Less than 4.75V
76	74	pedal	Fully released	Less than 4.75V	
	76			Fully depressed	More than 0.36V

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to <a href="EM-29">EM-29</a>, "Exploded View".

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## P2138 APP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-424, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2138	APP SENSOR (Accelerator pedal position sensor circuit range/performance)	Rationally incorrect voltage is sent to ECM compared with the signals from APP sensor 1 and APP sensor 2.	Harness or connector (APP sensor 1 or 2 circuit is open or shorted.) (Turbocharger boost sensor circuit is open or shorted.) (Fuel rail pressure sensor circuit is open or shorted.) (Battery current sensor circuit is open or shorted.) (G sensor circuit is open or shorted.) (Camshaft position sensor circuit is open or shorted.) (Exhaust valve timing control position sensor circuit is open or shorted.) (Engine oil pressure sensor circuit is open or shorted.) Accelerator pedal position sensor (APP sensor 1 or 2) Turbocharger boost sensor Fuel rail pressure sensor Battery current sensor G sensor Camshaft position sensor Exhaust valve timing control position sensor Exhaust valve timing control position sensor Exhaust valve timing control position sensor Engine oil pressure sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-527, "Diagnosis Procedure".

NO >> INSPECTION END

### [MR FOR NISMO RS MODELS]

## Diagnosis Procedure

INFOID:0000000012198077

## 1. CHECK APP SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect accelerator pedal position (APP) sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between APP sensor harness connector and ground.

	+		
APP	sensor	_	Voltage (Approx.)
Connector	Terminal		(
E101	4	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

+		-		
APP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	4	E18	101	Existed

Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK APP SENSOR 2 POWER SUPPLY

Check the voltage between APP sensor harness connector and ground.

	+		Mallana
APP :	sensor	_	Voltage (Approx.)
Connector Terminal			, , ,
E101	E101 5		5 V

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

## 4. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

EC	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
		FRP sensor	F5	1
F25	39	EOP sensor	F43	3
		Turbocharger boost sensor	F75	1

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#### < DTC/CIRCUIT DIAGNOSIS >

E	CM	Sensor		
Connector	Terminal	Name	Connector	Terminal
	68	Battery current sensor	F52	1
F26		G sensor	B32	3
1 20	72	CMP sensor	F109	1
12		EVT control position sensor	F110	1
E18	118	APP sensor 2	E101	5

### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## CHECK APP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

+		-		
APP :	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	1	E18	120	Existed
	2	LIO	105	LAISIEU

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6.CHECK APP SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

+		_		
APP :	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	3	E18	102	Existed
EIUI	6	E10	119	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts

### .CHECK APP SENSOR

Check the APP sensor. Refer to EC-522, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace accelerator pedal assembly. Refer to EM-29, "Exploded View".

## Component Inspection

INFOID:0000000012198078

## 1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals as per the following condition.

### **P2138 APP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

## [MR FOR NISMO RS MODELS]

ECM					
Connector	+ -		Condition		Voltage
Connector	Terr	minal			
	102 105			Fully released	0.6 - 0.9 V
E18		105	Accelerator pedal	Fully depressed	3.9 - 4.7 V
E10	110	440 400	Accelerator pedar	Fully released	0.3 - 0.6 V
	119 120		Fully depressed	1.95 - 2.4 V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accelerator pedal assembly. Refer to EM-29, "Exploded View".

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### P2162 VEHICLE SPEED SENSOR

Description INFOID.000000012198079

ECM receives a rear wheel sensor signal from ABS actuator and electric unit (control unit) via CAN communication to switch combustion for the direct injection gasoline system. For the direct injection gasoline system, refer to <a href="EC-51">EC-51</a>, "DIRECT INJECTION GASOLINE SYSTEM: System Description".

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE

- If DTC P2162 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX. Refer to EC-115, "DTC Index".
- If DTC P2162 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-419</u>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2162	VEHICLE SPEED SEN A/B (Vehicle speed sensor A/B correlation)	ECM detects a rear LH wheel sensor signal or a rear RH wheel sensor signal transmitted from the ABS actuator and electric unit (control unit) via CAN communication at least for 15 seconds in a row when the vehicle is in stopped condition.	Harness or connectors     (The CAN communication line is open or shorted)     Rear LH wheel sensor     Rear RH wheel sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 9 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start engine and let it idle for at least 30 seconds.

#### NOTE:

Never depress the accelerator pedal during idle running.

2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-530, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198081

## 1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-39, "CONSULT Function".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform diagnosis procedure corresponding to DTC indicated.

2.CHECK REAR WHEEL SENSOR-I

### **P2162 VEHICLE SPEED SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

	With CONSULT
1.	Stop the vehicle.
2.	Set the parking b
2	LICA CONSULT t

brake. Use CONSULT to select "RR RH SENSOR" and "RR RH SENSOR" in "DATA MONITOR" mode of "ABS"

Check indications of "RR RH SENSOR" and "RR RH SENSOR".

Never cause the vehicle to vibrate.

Is 0 km/h (0 MPH) indicated for both "RR RH SENSOR" and "RR RH SENSOR"?

YES >> GO TO 3.

NO >> Perform trouble diagnosis of the rear wheel sensor if 0 km/h (0 MPH) is not displayed. Refer to BRC-88, "Diagnosis Procedure".

3.CHECK REAR WHEEL SENSOR-II

(P)With CONSULT

1. Drive the vehicle at 20 km/h (13 MPH).

**CAUTION:** 

Always drive vehicle at a safe speed.

Check indications of "RR RH SENSOR" and "RR RH SENSOR".

Is the difference between the indicated values of "RR RH SENSOR" and "RR RH SENSOR" within  $\pm$  1 km/h (1 MPH)?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Perform trouble diagnosis of the rear wheel sensor. Refer to BRC-88, "Diagnosis Procedure" EC

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### P219A AIR FUEL RATIO

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P219A is displayed with other DTC, first perform the trouble diagnosis for the other DTC.
 Refer to <u>EC-115</u>, "<u>DTC Index</u>".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P219A	AIR FUEL RATIO B1 (AIR FUEL RATIO B1)	ECM detects a lean/rich air fuel ratio state in any cylinder for a specified length of time.	Fuel injector Exhaust gas leaks Incorrect fuel pressure Mass air flow sensor Intake air leaks Lack of fuel Incorrect PCV hose connection Improper spark plug Insufficient compression The fuel injector circuit is open or shorted ignition coil The ignition signal circuit is open or shorted

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING-1

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### NOTE:

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PRECONDITIONING-2

- 1. Turn ignition switch ON.
- 2. Clear the mixture ratio self-learning value. Refer to EC-165, "Description".

#### Will CONSULT be used?

YES >> GO TO 3.

NO >> GO TO 6.

## 3.perform dtc confirmation procedure-1

- Turn ignition switch ON.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start the engine.
- 4. Make sure that "COOLAN TEMP/S" indicates more than 80°C (176°F).

>> GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE-2

#### (P)With CONSULT

- 1. Select "SYSTEM 1 DIAGNOSIS B B1" and "SYSTEM 1 DIAGNOSIS A B1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Drive vehicle under the following conditions for at least 5 consecutive seconds. CAUTION:

#### < DTC/CIRCUIT DIAGNOSIS >

Always drive vehicle at a safe speed.

ENG SPEED	1,600 – 2,600rpm
COOLAN TEMP/S	More than 80°C (176°F)
B/FUEL SCHDL	6 – 14 msec
Selector lever	CVT: D position M/T: 6th position
SYSTEM 1 DIAGNOSIS B B1	PRSENT

### NOTE:

- Drive the vehicle at approximately 88 km/h (55MPH) allows easy diagnosis.
- Keep the accelerator pedal as possible during crusing.
- 3. Check "SYSTEM 1 DIAGNOSIS A B1" indication.

#### Is "CMPLT" displayed?

YES >> GO TO 5.

NO >> GO TO 2.

## PERFORM DTC CONFIRMATION PROCEDURE-3

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-533</u>, "<u>Diagnosis Procedure</u>".

>> INSPECTION END NO

## 6. PERFORM DTC CONFIRMATION PROCEDURE-4

## **⊗Without CONSULT**

- Start the engine and warm it up to normal operating temperature.
- Drive vehicle under the following conditions for at least 5 consecutive seconds.

#### **CAUTION:**

Always drive vehicle at a safe speed.

Engine speed	1,600 – 2,600rpm
Calculated load value	24 – 77 %
Selector lever	CVT: D position M/T: 6th position

#### NOTE:

- Drive the vehicle at approximately 88 km/h (55MPH) allows easy diagnosis.
- Keep the accelerator pedal as possible during crusing.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-533</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

#### Diagnosis Procedure

## 1.CHECK FOR INTAKE AIR LEAK

- Stop engine and check the following for connection.
- Air duct
- Vacuum hoses
- PCV hose
- Intake air passage between air duct to intake manifold
- Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

**EC-533 Revision: November 2015 2016 JUKE**  EC

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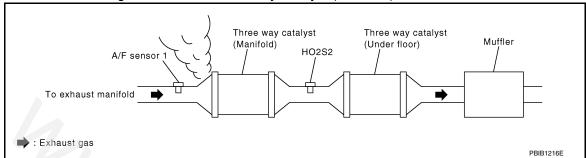
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# $\overline{2}$ .CHECK EXHAUST GAS LEAK

- 1. Stop engine and visually check exhaust tube, three way catalyst and muffler for dents connection.
- 2. Start engine and let it idle.
- Listen for an exhaust gas leak before three way catalyst (manifold).



#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK FUEL PRESSURE

- Release fuel pressure to zero. Refer to <u>EC-166, "Work Procedure"</u>.
- Check fuel pressure. Refer to <u>EC-166, "Work Procedure"</u>.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 8.

## 4. CHECK MASS AIR FLOW SENSOR

#### (P)With CONSULT

Check "MASS AIRFLOW" in "DATA MONITOR" mode of "ENGINE" using CONSULT.

For specification, refer to EC-591, "Mass Air Flow Sensor".

#### 

Check mass air flow sensor signal in Service \$01 using GST.

For specification, refer to EC-591, "Mass Air Flow Sensor".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to <u>EC-233</u>, "<u>Diagnosis Procedure</u>".

## 5. CHECK FUNCTION OF FUEL INJECTOR

#### (I) With CONSULT

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that each circuit produces a momentary engine speed drop.

#### **⊗Without CONSULT**

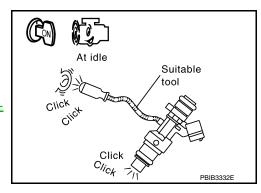
- Let engine idle.
- Listen to each fuel injector operating sound.

#### Clicking noise should be heard.

#### Is the inspection result normal?

YES >> GO TO 6. NO >> Perform to

>> Perform trouble diagnosis for fuel injector, refer to <u>EC-541</u>, "Component Function Check".



## 6.CHECK FUNCTION OF IGNITION COIL-1

Perform the following steps in a well-ventilated area with no combustibles.

- Turn ignition switch OFF.
- 2. Remove fuel pump fuse from IPDM E/R to release fuel pressure.

#### NOTE:

CONSULT must not be used to release fuel pressure. It develops again during the following steps, if released by using CONSULT.

- Start the engine.
- After an engine stall, crank the engine two or three times to release all the fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Disconnect all the harness connectors of ignition coil to prevent electric discharge from occurring in ignition coil.
- Remove ignition coil assembly and spark plug of cylinder. Refer to EM-60, "Removal and Installation".
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Allow a 13-17mm (0.52-0.66 in) spacing between spark plug and grounded metal portion as shown in the figure to fix the ignition coil with a rope or an equivalent.
- 11. Crank the engine for approximately 3 seconds to see if sparking occurs between spark plug and the grounded metal portion.

#### Spark should be generated.

#### CAUTION:

- The discharge voltage becomes 20 kV or higher. Therefore, always stay away from the spark plug and ignition coil at least 50 cm (19.7 in) during the inspection.
- Leaving a space of more than 17mm (0.66 in) may damage the ignition coil.

#### NOTE:

When the gap is less than 13 mm (0.52 in), a the spark might be generated even if the coil is malfunctioning.

### Is the inspection result normal?

>> GO TO 7. YES

NO >> GO TO 9.

## 7.CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-17, "Inspection".

#### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".
- NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

### $oldsymbol{8}$ . DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

#### Is the inspection result normal?

- >> Replace fuel filter and fuel pump assembly. Refer to FL-6, "2WD : Exploded View" (2WD models) YES or FL-10, "AWD: Exploded View" (AWD models).
- NO >> Repair or replace error-detected parts.

### 9. CHECK FUNCTION OF IGNITION COIL-2

- Turn ignition switch OFF.
- 2. Disconnect spark plug and connect a non-malfunctioning spark plug.
- Crank engine for approximately 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

#### Spark should be generated.

#### Is the inspection result normal?

**EC-535 Revision: November 2015 2016 JUKE**  EC

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13 - 17 mm

(Cylinder head, cylinder block, etc.)

Grounded metal portion

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### **P219A AIR FUEL RATIO**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 10.

NO >> Check ignition coil, power transistor and their circuits. Refer to <a href="EC-554">EC-554</a>, "Component Function Check".

## 10. CHECK SPARK PLUG

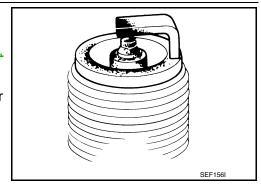
Check the initial spark plug for fouling, etc.

#### Is the inspection result normal?

YES >> 1. Repair or clean spark plug. Refer to <u>EM-60.</u> "Exploded View".

2. GO TO 11.

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <a href="EM-139">EM-139</a>, "Spark Plug".



## 11. CHECK FUNCTION OF IGNITION COIL-3

- 1. Reconnect the initial spark plugs.
- 2. Crank engine for approximately 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

#### Spark should be generated.

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <u>EM-139</u>, "Spark <u>Plug"</u>.

### **P2263 TC SYSTEM**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## P2263 TC SYSTEM

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P2263 is displayed with DTC P0237 or P0238, first perform the trouble diagnosis for DTC P0237 or P0238. Refer to <a href="EC-332"><u>EC-332</a>. "DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2263	TC SYSTEM-B1 (Turbocharger boost system performance)	In spite of the boosting area, the boost does not increase.	Intake air leaks Exhaust gas leaks Turbocharger boost sensor Turbocharger boost control solenoid valve Recirculation valve Exhaust manifold and turbocharger assembly Boost control actuator

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-537, "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the turbocharger system circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-538, "Diagnosis Procedure".

## Component Function Check

## 1.PERFORM COMPONENT FUNCTION CHECK-I

#### Check the following:

- Disconnection of air duct or hose between electric throttle control actuator and compressor wheel.
- · Exhaust gas leaks of exhaust manifold
- · Open stuck of recirculation valve
- Stuck of turbocharger

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to EC-538, "Diagnosis Procedure".

## 2.PERFORM COMPONENT FUNCTION CHECK-II

- Turn ignition switch OFF.
- Disconnect turbocharger boost control solenoid valve harness connector.
- Disconnect of hose between turbocharger boost control solenoid valve and compressor outlet pipe.
- 4. Install pressure pump to turbocharger boost control solenoid valve.

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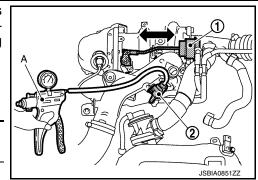
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#### < DTC/CIRCUIT DIAGNOSIS >

 Check that the rod of the boost control actuator (1) activates when supplying pressure and battery voltage to the turbocharger boost control solenoid valve (2) as per the following conditions.

#### A. Pressure pump

Operation	
Boost control actuator rod not operates	



#### CAUTION:

Do not supply pressure over 83 kPa (623 mmHg, 24.51 inHg).

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-538</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

INFOID:0000000012198084

## 1. CHECK FOR EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak of exhaust manifold.

#### Is exhaust gas leak detected?

YES >> Repair or replace malfunction parts.

NO >> GO TO 2.

## 2.CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak between electric throttle control actuator and compressor wheel.

#### Is intake air leak detected?

YES >> Repair or replace malfunction parts.

NO >> GO TO 3.

## 3.CHECK RECIRCULATION VALVE

- 1. Turn ignition switch OFF.
- Check recirculation valve. Refer to EM-41, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace recirculation valve. Refer to <a href="EM-32">EM-32</a>, "Exploded View".

## 4. CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE POWER SUPPLY

- 1. Disconnect turbocharger boost control solenoid valve harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between turbocharger boost control solenoid valve harness connector and ground.

	+		
_	st control solenoid lve	_	Voltage
Connector	Terminal		
F54 2		Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

# 5.check turbocharger boost control solenoid valve power supply circuit

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between turbocharger boost control solenoid valve harness connector and IPDM E/R harness connector.

	+		_	
Turbocharger boost control so- lenoid valve		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		
F54	2	E14	36	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply.

NO >> Repair or replace error-detected parts.

## 6.CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between turbocharger boost control solenoid valve harness connector and ECM harness connector.

	+	-		
Turbocharger boost control so- lenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F54	1	F26	73	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YFS >> GO TO 7.

NO >> Repair or replace error-detected parts.

### 7.CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE

Check the turbocharger boost control solenoid valve. Refer to EC-540, "Component Inspection (Turbocharger Boost Control Solenoid Valve)".

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace turbocharger boost control solenoid valve. Refer to EM-40, "Exploded View".

### 8.CHECK BOOST CONTROL ACTUATOR

Check the boost control actuator. Refer to EM-41, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace exhaust manifold and turbocharger assembly. Refer to EM-40, "Exploded View".

### 9.CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-540, "Component Inspection (Turbocharger Boost Sensor)".

#### Is the inspection result normal?

YES >> GO TO 10.

>> Replace turbocharger boost sensor. Refer to EM-32, "Exploded View". NO

## 10.check exhaust manifold and turbocharger assembly

Check the exhaust manifold and turbocharger assembly. Refer to EM-45, "Inspection".

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#### Is the inspection result normal?

YES >> CHECK INTERMITTENT INCIDENT. Refer to GI-45, "Intermittent Incident".

NO >> Replace exhaust manifold and turbocharger assembly. Refer to EM-40, "Exploded View".

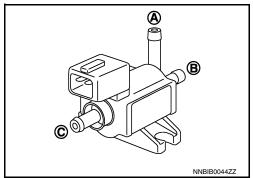
## Component Inspection (Turbocharger Boost Control Solenoid Valve)

INFOID:0000000012198085

## 1. CHECK TURBOCHARGER BOOST CONTROL SOLENOID VALVE

- 1. Turn ignition switch OFF
- 2. Disconnect turbocharger boost control solenoid valve harness connector.
- 3. Disconnect hoses connected to turbocharger boost control solenoid valve.
- 4. Check air passage continuity of turbocharger boost control solenoid valve as per the following conditions.

Condition	Air passage continuity between (A) and (B)	Air passage continuity between (A) and (C)
12 V direct current supply between terminals 1 and 2	Existed	Not existed
No supply	Not existed	Existed



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost control solenoid valve. Refer to <u>EM-40</u>, "<u>Exploded View</u>".

## Component Inspection (Turbocharger Boost Sensor)

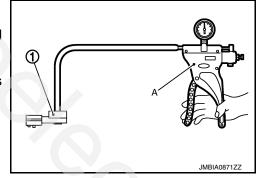
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## 1. CHECK TURBOCHARGER BOOST SENSOR

- Turn ignition switch OFF.
- Remove turbocharger boost sensor with its harness connector.
- Install pressure pump (A) to turbocharger boost sensor (1).
   CAUTION:

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- · Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

ECM			0 100 100 100 100 100 100 100 100 100 1	
Connector	+	_	Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)
Connector	Tern	ninal	, , , , , , , , , , , , , , , , , , , ,	( 11 /
F25	41 44	0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V	
	71	77	40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to <a href="EM-40">EM-40</a>, "Exploded View".

#### **FUEL INJECTOR**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

### **FUEL INJECTOR**

### Component Function Check

#### INFOID:0000000012198087

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INFOID:0000000012198088

# 1.INSPECTION START

Turn ignition switch to START.

#### Is any cylinder ignited?

YES >> GO TO 2.

NO >> Proceed to <u>EC-541, "Diagnosis Procedure"</u>.

# 2.CHECK FUEL INJECTOR FUNCTION

#### (P)With CONSULT

- 1. Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Check that each circuit produces a momentary engine speed drop.

#### Without CONSULT

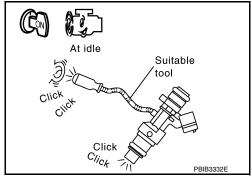
- Let engine idle.
- 2. Listen to each fuel injector operating sound.

### Clicking noise should be heard.

#### Is the inspection result normal?

YES >> INSPECTION END

>> Proceed to EC-541, "Diagnosis Procedure". NO



# Diagnosis Procedure

# 1. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.
- Turn ignition switch ON.
- Check the voltage between fuel injector harness connector and ground.

+				
Fuel injector		_	Voltage	
Cylinder	Connector	Terminal		
1	F65	1		
2	F66	1	Ground	Pattory voltage
3	F67	1	Giouna	Battery voltage
4	F68	1		

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 2.

# 2.CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between fuel injector harness connector and ECM harness connector.

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Fuel injector			ECM		Continuity
Cylinder	Connector	Terminal	Connector	Terminal	
1	F65	1		3	
2	F66	1	F25	4	Existed
3	F67	1	125	7	LAISIEU
4	F68	1		3	

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK FUEL INJECTOR DRIVER POWER SUPPLY

- 1. Reconnect ECM harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector and ground.

+ ECM		* <i>^</i>	Voltage
Connector	Terminal		
F26	49	Ground	Battery voltage
1 20	53	Ground	Battery voltage

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> GO TO 4.

# 4. CHECK FUEL INJECTOR DRIVER POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect fuel injector relay harness connector.
- 4. Check the continuity between ECM harness connector and fuel injector relay harness connector.

	+	_		
E	CM	Fuel injector relay		Continuity
Connector	Terminal	Connector	Terminal	
F26	49	E57	5	Existed
1 20	53	LJI	7	LXISIEU

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

# 5. CHECK FUEL INJECTOR RELAY POWER SUPPLY (CONTACT SIDE)

Check the voltage between fuel injector relay harness connector and ground.

+			
Fuel injector relay		_	Voltage
Connector	Terminal		
E57	3	Ground	Battery voltage
	6	Ground	Dattery voltage

#### **FUEL INJECTOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform the trouble diagnosis for power supply circuit.

# 6.CHECK FUEL INJECTOR RELAY POWER SUPPLY (EXCITATION COIL SIDE)

- Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- Check the voltage between fuel injector relay harness connector and ground.

+			
Fuel injector relay		_	Voltage
Connector	Terminal		
E57	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7

# 7.CHECK FUEL INJECTOR RELAY POWER SUPPLY CIRCUIT (EXCITATION COIL SIDE)

- Turn ignition switch OFF.
- 2. Disconnect fuel injector relay harness connector.
- 3. Disconnect IPDM E/R harness connector.
- Check the continuity between IPDM E/R harness connector and fuel injector harness connector.

+		-		
IPDI	/I E/R	Fuel injector relay		Continuity
Connector	Terminal	Connector	Terminal	
E14	35	E57	1	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### 8.CHECK FUEL INJECTOR RELAY GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect fuel injector relay harness connector. 2.
- Check the continuity between fuel injector relay harness connector and ground.

	+		
Fuel injector relay		_	Continuity
Connector	Terminal		
E57	2	Ground	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 10.

>> Repair or replace error-detected parts. NO

# 9. CHECK FUEL INJECTOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between fuel injector harness connector and ECM harness connector.

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Fuel injector			ECM		Continuity
Cylinder	Connector	Terminal	Connector	Terminal	
1	F65	2		5	
2	F66	2	F25	6	Existed
3	F67	2	125	7	LAISIEU
4	F68	2		8	

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts.

# 10. CHECK FUEL INJECTOR RELAY

Check the fuel injector relay. Refer to EC-544, "Component Inspection (Fuel Injector Relay)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace fuel injector relay. Refer to PG-9, "Standardized Relay".

# 11. CHECK FUEL INJECTOR

Check the fuel injector. Refer to EC-544, "Component Inspection (Fuel Injector)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace malfunctioning fuel injector. Refer to EM-54, "Exploded View".

# Component Inspection (Fuel Injector)

INFOID:0000000012198089

INFOID:0000000012198090

# 1. CHECK FUEL INJECTOR

- Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.
- 3. Check resistance between fuel injector terminals as per the following.

Fuel i	njector		
+	_	Resistance	
Terminals			
1	2	1.44 - 1.73 Ω [at 10 - 60°C (50 - 140°F)]	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning fuel injector. <u>EM-54</u>, "<u>Exploded View</u>"

# Component Inspection (Fuel Injector Relay)

# 1. CHECK FUEL INJECTOR RELAY

- 1. Turn ignition switch OFF.
- Remove fuel injector relay.

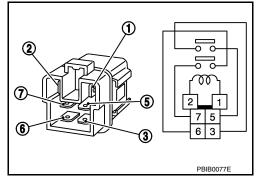
### **FUEL INJECTOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR FOR NISMO RS MODELS]

3. Check the continuity between fuel heater relay terminals as per the following conditions.

Fuel inje	ctor relay			
+	_	Conditions	Continuity	
Terr	minal			
3	12 V direct current supply between terminals 1 and 2		Existed	
		No current supply	Not existed	
6	7	12 V direct current supply between terminals 1 and 2	Existed	
		No current supply	Not existed	



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel injector relay.

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### LOW PRESSURE FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# LOW PRESSURE FUEL PUMP

### **Component Function Check**

#### INFOID:0000000012198091

# 1. CHECK FUEL PUMP FUNCTION

- 1. Turn ignition switch ON.
- 2. Pinch fuel feed hose with two fingers.

#### NOTE:

Fuel pressure pulsation should be felt on the fuel feed hose for 1 second after ignition switch is turned ON.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-546, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000012198092

# 1. CHECK FUEL PUMP RELAY POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals.

	ECM		
Connector	+	-	Voltage
Connector	Terr	minal	
E18	117	127	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK FUEL PUMP RELAY POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+		-		
E	СМ	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E18	117	E13	31	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK LOW FUEL PUMP POWER SUPPLY

- Turn ignition switch OFF.
- 2. Reconnect ECM harness connector.
- 3. Disconnect fuel level sensor unit and fuel pump harness connector.
- 4. Turn ignition switch ON.
- 5. Check the voltage between fuel level sensor unit and fuel pump harness connector and ground.

< DTC/CIF	CUIT DIA		W PRES	SSURE FUEL	[MR FOR NISMO RS MODELS]	
						А
	sensor unit					$\wedge$
and fue		-	Voltag	je		F.0
Connector	Terminal					EC
B46	1		ery voltage sho nd after ignitio	ould for exist 1 n switch is turn		С
Is the inspe	ection result	normal?				
NO >>	GO TO 5. GO TO 4.					D
4.CHECK	LOW FUE	L PUMP POWE	ER SUPPLY	CIRCUIT		
<ol> <li>Discon</li> <li>Check</li> </ol>	the continu	E/R harness co		sor unit and fuel រុ	nump harness connector and IPDM E/R har-	Ε
ness c	onnector.			<del></del>		F
	+	4	-	_		
	sensor unit and I pump	IPDN	I E/R	Continuity		G
Connector	Terminal	Connector	Terminal			
B46	1	E15	54	Existed		Н
		ss for short to g	round.			
Is the inspe						1
		ie trouble diagi replace error-d		wer supply circuits.		
_	•	L PUMP GROU	•			
	nition switc					J
			el level sens	or unit and fuel p	ump harness connector and ground.	
		•		•		

+			
Fuel level sensor unit and fuel pump		_	Continuity
Connector Terminal			
B46	3	Ground	Existed

3. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6.CHECK LOW FUEL PUMP

Check the low fuel pump. Refer to EC-547, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Replace fuel level sensor unit and fuel pump. Refer to FL-6, "2WD : Exploded View".

# Component Inspection

# 1.CHECK FUEL PRESSURE REGULATOR

- 1. Turn ignition switch OFF.
- Check low fuel pressure. Refer to <u>EC-166, "Work Procedure"</u>.

#### Is inspection result normal?

Revision: November 2015 EC-547 2016 JUKE

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INFOID:0000000012198093

#### LOW PRESSURE FUEL PUMP

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> INSPECTION END

NO >> GO TO 2.

# $2.\mathsf{CHECK}$ LOW PRESSURE FUEL PUMP

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit.
- 3. Check resistance between fuel level sensor unit terminals as follows.

Fuel level sensor unit			
+	_	Condition	Resistance
Terminals			
2	4	Temperature: 25°C (77°F)	0.2 - 5.0 Ω

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit. Refer to FL-6, "2WD : Exploded View".

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# HIGH PRESSURE FUEL PUMP

# Component Function Check

INFOID:0000000012198094

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# 1. CHECK HIGH PRESSURE FUEL PUMP FUNCTION

### ®With CONSULT

- 1. Start engine.
- 2. Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ENGINE" using CONSULT.

Monitor Item	Condition	Values/Status
FUEL PRES SEN V	Engine speed: Idle	1,140 – 1,460 mV
	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

#### Without CONSULT

- Start engine.
- 2. Check the voltage between ECM harness connector terminals as per the following conditions.

	ECM				
Connector	+	_	Condition	Voltage	G
Connector	Connector Terminal				
			[Engine is running]	BATTERY VOLTAGE (11 - 14 V) ★ 20mSec/div	Н
			Warm-up condition     Idle speed     NOTE:     The pulse cycle changes depending on rpm at idle		I
F26	55 50		5V/div JPBIA4722ZZ  BATTERY VOLTAGE	J	
			[Engine is running] • Warm-up condition • Engine speed: 2,000 rpm	(11 - 14 V) ★ 20mSec/div  5V/div  JPBIA4723ZZ	K

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-549, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012198095

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# 1. CHECK HIGH PRESSURE FUEL PUMP POWER SUPPLY

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

	+		
E	СМ	_	Voltage
Connector	Terminal		
F26	54	Ground	Battery voltage

Is inspection result normal?

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

YES >> GO TO 8. NO >> GO TO 2.

# 2.CHECK HIGH PRESSURE FUEL PUMP POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect fuel injector relay harness connector.
- Check the continuity between ECM harness connector and high pressure fuel pump relay harness connector.

+		_		
E	CM	High pressure fuel pump re- lay		Continuity
Connector	Terminal	Connector Terminal		
F26	54	E58	3	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts

# 3.CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY (CONTACT SIDE)

Check the voltage between high pressure fuel pump relay harness connector and ground.

	+		
High pressure fuel pump relay		-	Voltage
Connector	Terminal		
E58	5	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform the trouble diagnosis for power supply circuit.

### 4. CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY (EXCITATION COIL SIDE)

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between high pressure fuel pump relay harness connector and ground.

+			
High pressure fuel pump relay		_	Voltage
Connector	Terminal		
E58	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5

# 5.CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY CIRCUIT (EXCITATION COIL SIDE)

- 1. Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump relay harness connector.
- 3. Disconnect IPDM E/R harness connector.
- check the continuity between ipdm e/r harness connector and high pressure fuel pump harness connector.

[MR FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

+		_		
IPDI	M E/R	High pressure fuel pump re- lay		Continuity
Connector	Terminal	Connector	Terminal	
E14	35	E58	2	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 6.CHECK HIGH PRESSURE FUEL PUMP RELAY GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect high pressure fuel pump relay harness connector. 2.
- Check the continuity between high pressure fuel pump relay harness connector and ground.

	+		
High pressure fuel pump relay		_	Continuity
Connector	Terminal		
E58	1	Ground	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

### 7. CHECK HIGH PRESSURE FUEL PUMP RELAY

Check the high pressure fuel pump relay. Refer to EC-553, "Component Inspection (High Pressure Fuel Pump Relay)".

#### Is inspection result normal?

YES >> GO TO 8.

>> Replace high pressure fuel pump relay. Refer to PG-9, "Standardized Relay". NO

# 8.CHECK HIGH PRESSURE FUEL PUMP CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector and high pressure fuel pump harness connector.
- Check the continuity between ECM harness connector and high pressure fuel pump harness connector.

+					
E	CM	High pressure fuel pump		Continuity	
Connector	Terminal	Connector	Terminal		
F26	55	F53	1	Existed	
1 20	56	1 33	2	LXISIEU	

Also check harness for short to ground and to power.

#### Is inspection result normal?

>> GO TO 9. YES

NO >> Repair or replace error-detected parts.

#### 9. CHECK HIGH PRESSURE FUEL PUMP

Check the high pressure fuel pump. Refer to EC-552, "Component Inspection (High Pressure Fuel Pump)". Is inspection result normal?

YES >> GO TO 10.

>> Replace high pressure fuel pump. Refer to EM-49, "Exploded View". NO

**EC-551 Revision: November 2015 2016 JUKE**  EC

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# 10.check high pressure fuel pump installation condition

- 1. Turn ignition switch OFF.
- Check that the high pressure fuel pump is installed with no backlash and looseness.

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts.

# 11. CHECK CAMSHAFT

- Remove camshaft. Refer to <u>EM-88, "Exploded View"</u>.
- 2. Check camshaft. Refer to EM-92, "Inspection".

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace camshaft. Refer to EM-88, "Exploded View".

### Component Inspection (High Pressure Fuel Pump)

INFOID:0000000012198096

# 1. CHECK HIGH PRESSURE FUEL PUMP-I

- 1. Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump harness connector.
- Check the resistance between high pressure fuel pump terminals as follows.

High pressu	re fuel pump				
+	-	Condition		Resistance	
Terr	minal				
1	2	Temperature °C (°F) 20 – 30 (68 - 86) 0.46 - 0		0.46 - 0.51 Ω	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. Refer to EM-49, "Exploded View".

# 2.CHECK HIGH PRESSURE FUEL PUMP-II

#### (P)With CONSULT

- Reconnect high pressure fuel pump harness connector.
- Start the engine.
- 3. Check "FUEL PRES SEN" in "DATA MONITOR" of "ENGINE" using CONSULT.

Data monitor item	Condition	Voltage (Approx.)	
FIIEL DDES SENIV	Engine speed: idle	1,140 – 1,460 mV	
TOLLTINES SEN V	FUEL PRES SEN V Engine speed: Revving engine from idle to 4,000 rpm quickly		

#### 

- 1. Start the engine.
- 2. Check fuel rail pressure sensor signal voltage.

Fuel rail pr	+ ressure sensor	_	Value Condition (Approx.)	
Connector	Terminal		, , ,	(
			Engine speed: idle	1.14 – 1.46 V
F5	2	Ground	Engine speed: Revving engine from idle to 4,000 rpm quickly	1.3 – 2.9 V

#### Is the inspection result normal?

YES >> INSPECTION END

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR FOR NISMO RS MODELS]

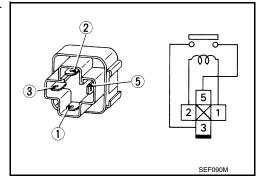
NO >> Replace high pressure fuel pump. Refer to EM-49, "Exploded View".

# Component Inspection (High Pressure Fuel Pump Relay)

# 1. CHECK HIGH PRESSURE FUEL PUMP RELAY

- 1. Turn ignition switch OFF.
- 2. Remove high pressure fuel pump relay.
- 3. Check the continuity between high pressure fuel pump relay terminals as per the following conditions.

pump +	ssure fuel o relay – minal	Conditions	Continuity
3	5	12 V direct current supply between terminals 1 and 2	Existed
		No current supply Not e	



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace high pressure fuel pump relay.

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### **IGNITION SIGNAL**

# **Component Function Check**

INFOID:0000000012198098

# 1. INSPECTION START

Turn ignition switch OFF, and restart engine.

#### Does the engine start?

YES >> GO TO 2.

NO >> Proceed to EC-554, "Diagnosis Procedure".

# 2. IGNITION SIGNAL FUNCTION

#### (P)With CONSULT

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 2. Check that each circuit produces a momentary engine speed drop.

#### 

- 1. Let engine idle.
- 2. Check the voltage signal between ECM harness connector and ground with an oscilloscope.

	E	CM			
	+	-		Voltage signal	
Connector	Terminal	Connector	Terminal		
	82				
	86			100mSec/div	
F00	90	F40	407		
F26		E18	127	=	
	94				
				2V/div JPBIA4733ZZ	

#### NOTE:

The pulse cycle changes depending on rpm at idle.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-554</u>, "<u>Diagnosis Procedure</u>".

# Diagnosis Procedure

INFOID:0000000012198099

# 1. CHECK CONDENSER POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect condenser harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between condenser harness connector and ground.

	+		
Cond	lenser	_	Voltage
Connector	Terminal		
F13	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2. CHECK CONDENSER POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between IPDM E/R harness connector and condenser harness connector.

#### **IGNITION SIGNAL**

-	+	_			
IPDN	/I E/R	Condenser		Continuity	
Connector	Terminal	Connector	Terminal		
E15	61	F13	1	Existed	
4. Also che	eck harness	or short to ground.			
Is the inspec	ction result n	ormal?			

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check condenser ground circuit

1. Turn ignition switch OFF.

Check the continuity between Condenser harness connector and ground.

	+		
Conc	lenser	_	Continuity
Connector	Terminal		
F13	2	Ground	Existed

3. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4.CHECK CONDENSER

Check the condenser. refer to EC-557, "Component Inspection (Condenser)".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace condenser.

# 5.CHECK IGNITION COIL POWER SUPPLY

- Reconnect all harness connectors disconnected.
- Disconnect ignition coil harness connector. 2.
- Turn ignition switch ON.
- Check the voltage between ignition coil harness connector and ground.

	+				
Ignition coil		Ignition coil		Voltage	
Cylinder	Connector	Terminal			
1	F33	3	Ground		
2	F34	3		Battery voltage	
3	F35	3		Battery voltage	
4	F36	3			

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform the trouble diagnosis for power supply circuit.

#### 6. CHECK IGNITION COIL GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Check the continuity between ignition coil harness connector and ground.

**EC-555 Revision: November 2015 2016 JUKE**  EC

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	+				
	Ignition coil		_	Continuity	
Cylinder	Connector	Terminal			
1	F33	2	Ground		
2	F34	2		Evictod	
3	F35	2	Giouna	Existed	
4	F36	2			

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

# 7.CHECK IGNITION COIL OUTPUT SIGNAL CIRCUIT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ignition coil harness connector.

	-	-		+	
Continuity	ECM		Ignition coil		
1	Terminal	Connector	Terminal	Connector	Cylinder
	82		1	F33	1
Existed	86	F26	1	F34	2
LAISIEU	90	120	1	F35	3
	94		1	F36	4

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

### 8.CHECK IGNITION COIL WITH POWER TRANSISTOR

Check the ignition coil with power transistor. Refer to <u>EC-556</u>, "Component Inspection (Ignition Coil with Power Transistor)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-60, "Exploded View".

### Component Inspection (Ignition Coil with Power Transistor)

INFOID:0000000012198100

# 1. CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- 1. Turn ignition switch OFF.
- Disconnect ignition coil harness connector.
- 3. Check resistance between ignition coil terminals as per the following.

Ignition coil with	power transistor		
+ Terminal		Resistance [Ω at 25°C (77°F)]	
1	2	Except 0 or ∞	
'	3	Except 0	
2	3	Except o	

Is the inspection result normal?

YES >> GO TO 2.

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#### < DTC/CIRCUIT DIAGNOSIS >

>> Replace malfunctioning ignition coil with power transistor. Refer to EM-60, "Exploded View". NO

2.CHECK IGNITION COIL WITH POWER TRANSISTOR-II

#### **CAUTION:**

Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

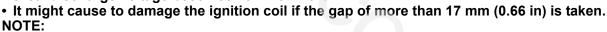
#### NOTE:

Do not use CONSULT to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils. Refer to EM-60, "Exploded View".
- 8. Remove ignition coil and spark plug of the cylinder to be checked. Refer to .0EM-60, "Exploded View"
- 9. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 12. Crank engine for about three seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

Spark should be generated.

 During the operation, always stay 0.5 cm (19.7 in) away from the spark plug and the ignition coil. Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20 kV or more.



When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-60, "Exploded View".

### Component Inspection (Condenser)

1. CHECK CONDENSER

- Turn ignition switch OFF.
- 2. Disconnect condenser harness connector.
- Check resistance between condenser terminals as per the following.

Cond	lenser		
+ -		Resistance	
Terr	minal		
1	2	Above 1 MΩ [at 25°C (77°F)]	

#### Is the inspection result normal?

YES >> INSPECTION END NO >> Replace Condenser.

13 - 17 mm (0.52-0.66 in) Grounded metal portion (Cylinder head, cylinder block, etc.)

INFOID:0000000012198101

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### **ELECTRICAL LOAD SIGNAL**

Description INFOID:000000012198102

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred via the CAN communication line.

### Component Function Check

INFOID:0000000012198103

# 1. CHECK REAR WINDOW DEFOGGER SWITCH FUNCTION

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Select "LOAD SIGNAL" and check indication as per the following conditions.

Monitor item	Condition	Indication	
LOAD SIGNAL	Rear window defogger switch	ON	ON
	ixear window delogger switch	OFF	OFF

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to <u>EC-558</u>, "<u>Diagnosis Procedure</u>".

### 2. CHECK LIGHTING SWITCH FUNCTION

#### (P)With CONSULT-III

Check "LOAD SIGNAL" indication as per the following conditions.

Monitor item	Con	Indication	
LOAD SIGNAL	Lighting switch	ON at 2nd position	ON
		OFF	OFF

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to EC-558, "Diagnosis Procedure".

### ${f 3.}$ CHECK HEATER FAN CONTROL SWITCH FUNCTION

#### (P)With CONSULT

Select "HEATER FAN SW" and check indication as per the following conditions.

Monitor item	Condition	Indication	
HEATER FAN	Heater fan control switch	ON	ON
SW	Treater fair control switch	OFF	OFF

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-558, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012198104

# 1.INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to <u>EC-558</u>, "Component Function Check".

#### Which circuit is related to the incident?

Rear window defogger>>GO TO 2.

Headlamp>>GO TO 3.

Heater fan>>GO TO 4.

### **ELECTRICAL LOAD SIGNAL**

<pre></pre>	- [MR FOR NISMO RS MODELS]
2.CHECK REAR WINDOW DEFOGGER SYSTEM	Α
Check the rear window defogger system. Refer to <u>DEF-18</u> , "Work Flow".	A
>> INSPECTION END	EC
3.CHECK HEADLAMP SYSTEM	
Check the headlamp system. Refer to EXL-47, "Work Flow".	C
>> INSPECTION END	
4.CHECK HEATER FAN CONTROL SYSTEM	D
Check the heater fan control system. Refer to HAC-45, "Work Flow".	
>> INSPECTION END	Е
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### **COOLING FAN**

### Component Function Check

INFOID:0000000012198105

# 1. CHECK COOLING FAN FUNCTION

#### (P)With CONSULT

- Turn ignition switch ON.
- Perform "FAN DUTY CONTROL" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Check that cooling fan speed varies according to the percentage.

#### 

- Activate IPDM E/R auto active test and check cooling fan motors operation. Refer to PCS-12, "Diagnosis Description".
- Check that cooling fan operates.

#### Is the inspection result normal?

YES >> INSPECTION END

>> Proceed to EC-560, "Diagnosis Procedure". NO

### Diagnosis Procedure

INFOID:0000000012198106

# 1. CHECK COOLING FAN CONTROL MODULE POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect cooling fan control nodule harness connector.
- Turn ignition switch ON.
- Check the voltage between cooling fan control nodule harness connector and ground.

	+		
Cooling fan c	ontrol module	_	Voltage
Connector	Terminal		
E203	3	Ground	Battery voltage

#### Is the inspection result normal?

YFS >> GO TO 5. NO >> GO TO 2.

# 2.CHECK COOLING FAN CONTROL MODULE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect cooling fan relay harness connector.
- Check the continuity between cooling fan control nodule harness connector and cooling fan relay harness connector.

+				
Cooling fan o	control module	Cooling fan relay		Continuity
Connector	Terminal	Connector	Terminal	
E203	3	E204	3	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK COOLING FAN RELAY POWER SUPPLY CIRCUIT

- Disconnect IPDM E/R harness connector.
- Check the continuity between cooling fan relay harness connector and IPDM E/R harness connector.

Α

+					
Cooling	fan relay	IPDM E/R		Continuity	
Connector	Terminal	Connector Terminal			
E204	1	E17	Existed		
Also check harness for short to ground.					

- Turn ignition switch ON.
   Check the voltage between cooling fan control module terminals and ground.

Connector	Terriniai	Connector	Terrinia		
E204	1	E17	67	Existed	
. Also che	ck harness	for short to g	round.		
•	<u>tion result n</u>	ormal?			
_	GO TO 4.			·_	
		place error-d	etected part	.S.	
1.CHECK C					
			<u>-562, "Comp</u>	onent Inspe	ction (Cooling Fan Relay)".
s the inspec			accia for nov	war aunahu a	iro. iš
		trouble diag			ardized Relay".
_		AN CONTRO			
					<u></u>
	ition switch ne continuity		oling fan co	ntrol nodule	harness connector and ground.
	,				Ç
	+				
Cooling fa	n control mod	ule	-	Continuity	
Connector	Termi	nal			
E203	1	G	round	Existed	
3. Also che	ck harness	for short to p	ower.		
s the inspec	tion result n	ormal?			
	GO TO 6.				
_	-	place error-d			
		AN CONTRO		CIRCUIT	
		R harness c		ntral nadula	harness connector and IPDM E/R harness con-
nector.	ie continuity	/ Detween CC	oning lan cc	illioi liodule	Tidiness connector and IPDIVI E/R Harriess con-
-	-		_		
Cooling fan co	ontrol module	IPDN	I E/R	Continuity	
Connector	Terminal	Connector	Terminal		
E203	2	E17	72	Existed	
B. Also che	ck harness	for short to g	round and t	o power.	* / <u>*</u>
s the inspec	tion result n	ormal?			
_	GO TO 7.				
_	•	place error-d	•		
.CHECK C	COOLING F	AN CONTRO	L MODULE	OUTPUT S	IGNAL CIRCUIT
		ss connector			
		fan control m	odule harne	ss connecto	r.
. rum ign	ition switch	ON.			

#### < DTC/CIRCUIT DIAGNOSIS >

	+			
Cooling fan c	ontrol module	-	Voltage	
Connector	Terminal			
E301	4	Ground	Battery voltage	
E302	6	Giodila		

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

8. CHECK COOLING FAN MOTORS -1 AND -2

Check the cooling fan motor. Refer to EC-562, "Component Inspection (Cooling Fan Motor)".

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace cooling motor. Refer to CO-19, "Exploded View".

### Component Inspection (Cooling Fan Motor)

INFOID:0000000012198107

# 1. CHECK COOLING FAN MOTOR

- 1. Turn ignition switch OFF.
- Disconnect cooling fan control module harness connector.
- Supply cooling fan control module harness connector terminals with battery voltage as per the following, and check operation.

(	Cooling fan contro				
Motor	Motor Connector Termina		ninal	Operation	
WOO	Connector	(+)	(-)		
1	E301	4	5	Cooling fan operates.	
2	E302	6	7	- Cooling lan operates	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning cooling fan motor. Refer to <a href="CO-19">CO-19</a>, "Exploded View".

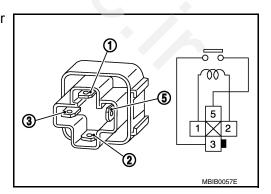
# Component Inspection (Cooling Fan Relay)

INFOID:0000000012198108

# 1. CHECK COOLING FAN RELAY

- 1. Turn ignition switch OFF.
- Remove cooling fan relay.
- 3. Check the continuity between cooling fan relay terminals under the following conditions.

Cooling	fan relay			
+	-	Conditions	Continuity	
Terr	minal			
3	5	12 V direct current supply between terminals 1 and 2	Existed	
		No current supply	Not existed	



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan relay.

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# ON BOARD REFUELING VAPOR RECOVERY (ORVR)

# Component Function Check

INFOID:0000000012198109

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### 1. CHECK ORVR FUNCTION

Check whether the following symptoms are present.

- · Fuel odor from EVAP canister is strong.
- Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

#### Is any symptom present?

YES >> Proceed to <u>EC-563</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198110

# 1.INSPECTION START

Check whether the following symptoms are present.

A: Fuel odor from EVAP canister is strong.

B: Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

#### Which symptom is present?

A >> GO TO 2.

B >> GO TO 8.

# 2.CHECK EVAP CANISTER

- 1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> GO TO 3.

# NO >> GO TO 4. 3.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

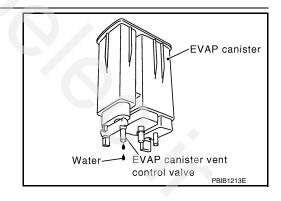
**EC-563** 

#### Check if water will drain from EVAP canister.

#### Does water drain from the EVAP canister?

YES >> GO TO 4.

NO >> GO TO 7.



# 4. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 5.

# 5. CHECK DRAIN FILTER

Refer to EC-567, "Component Inspection (Drain filter)".

#### Is the inspection result normal?

OK >> GO TO 6.

NO >> Replace drain filter.

**Revision: November 2015** 

#### 6.DETECT MALFUNCTIONING PART

2016 JUKE

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

### 7.CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-565, "Component Inspection (Refueling EVAP vapor cut valve)".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

# 8. CHECK EVAP CANISTER

- 1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> GO TO 9.

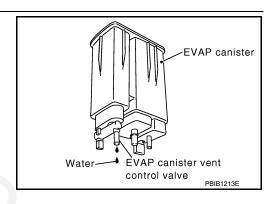
NO >> GO TO 10.

# 9. CHECK IF EVAP CANISTER IS SATURATED WITH WATER

Check if water will drain from EVAP canister.

#### Does water drain from the EVAP canister?

YES >> GO TO 10. NO >> GO TO 13.



# 10. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 11.

# 11. CHECK DRAIN FILTER

Refer to EC-567, "Component Inspection (Drain filter)".

#### Is the inspection result normal?

OK >> GO TO 12.

NO >> Replace drain filter.

# 12. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

# 13. CHECK VENT HOSES AND VENT TUBES

Check hoses and tubes between EVAP canister and refueling control valve for clogging, kink, looseness and improper connection.

#### Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair or replace hoses and tubes.

# 14. CHECK RECIRCULATION LINE

#### < DTC/CIRCUIT DIAGNOSIS >

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Check recirculation line for clogging, dents and cracks.

Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel filler tube.

# 15. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-565, "Component Inspection (Refueling EVAP vapor cut valve)".

### Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

# 16. CHECK FUEL FILLER TUBE

Check fuel filler tube and hose connected to the fuel tank for clogging, dents and cracks.

#### Is the inspection result normal?

YES >> GO TO 17.

NO >> Replace fuel filler tube.

# 17.CHECK ONE-WAY FUEL VALVE-I

Check one-way valve for clogging.

#### Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace one-way fuel valve with fuel tank.

# 18. CHECK ONE-WAY FUEL VALVE-II

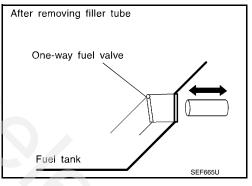
- Make sure that fuel is drained from the tank.
- 2. Remove fuel filler tube and hose.
- Check one-way fuel valve for operation as per the following. When a stick is inserted, the valve should open, when removing stick it should close.

Do not drop any material into the tank.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel filler tube or replace one-way fuel valve with fuel tank.



# Component Inspection (Refueling EVAP vapor cut valve)

# 1.INSPECTION START

Do you have CONSULT?

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

**Revision: November 2015** 

### 2.CHECK REFUELING EVAP VAPOR CUT VALVE

#### With CONSULT

- 1. Remove fuel tank. Refer to FL-18, "2WD: Removal and Installation".
- 2. Drain fuel from the tank as per the following:
- Remove fuel feed hose located on the fuel gauge retainer.
- Connect a spare fuel hose, one side to fuel gauge retainer where the hose was removed and the other side to a fuel container.
- Drain fuel using "FUEL PUMP RELAY" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Check refueling EVAP vapor cut valve for being stuck to close as per the following. Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.

**EC-565** 

INFOID:0000000012198111

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Check refueling EVAP vapor cut valve for being stuck to open as per the following.

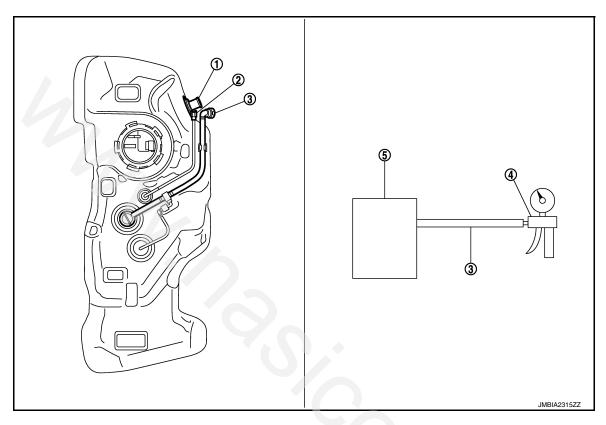
#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

#### Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [-13.3 kPa (-0.136 kg/cm<sup>3</sup>, -1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.



Filler tube

- 2. Recirculation line
- 5. Fuel tank

3. EVAP/ORVR line

#### Is the inspection result normal?

Vacuum/pressure handy pump

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank. Refer to FL-27, "2WD : Exploded View".

### 3.CHECK REFUELING EVAP VAPOR CUT VALVE

#### **⋈**Without CONSULT

- 1. Remove fuel tank. Refer to FL-18, "2WD: Exploded View".
- 2. Drain fuel from the tank as per the following:
- Remove fuel gauge retainer.
- Drain fuel from the tank using a handy pump into a fuel container.
- 3. Check refueling EVAP vapor cut valve for being stuck to close as per the following.

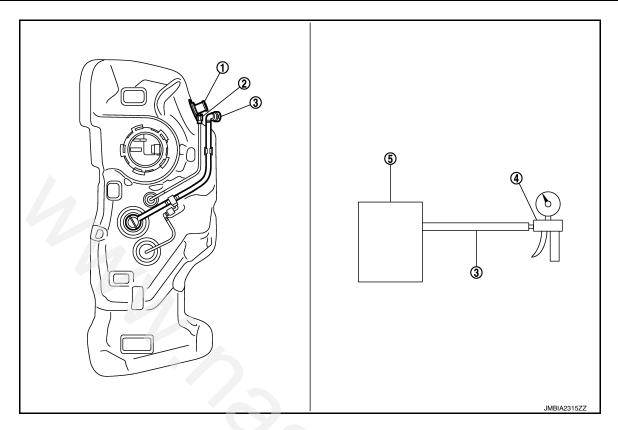
  Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as per the following.
- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

#### Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [–13.3 kPa (–0.136 kg/cm<sup>3</sup>, –1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.

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#### < DTC/CIRCUIT DIAGNOSIS >



1. Filler tube

- Recirculation line
  - Fuel tank

EVAP/ORVR line

Is the inspection result normal?

YES >> INSPECTION END

Vacuum/pressure handy pump

NO >> Replace refueling EVAP vapor cut valve with fuel tank .Refer to FL-27, "2WD : Exploded View".

### Component Inspection (Drain filter)

INFOID:0000000012198112

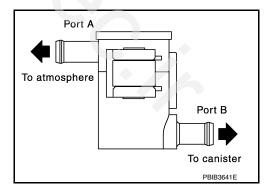
# 1. CHECK DRAIN FILTER

- 1. Check visually for insect nests in the drain filter air inlet.
- 2. Check visually for cracks or flaws in the appearance.
- 3. Check visually for cracks or flaws in the hose.
- 4. Blow air into port A and check that it flows freely out of port B.
- Block port B.
- 6. Blow air into port A and check that there is no leakage.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace drain filter.



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#### REFRIGERANT PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# REFRIGERANT PRESSURE SENSOR

# **Component Function Check**

INFOID:0000000012198113

# 1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

- 1. Start engine and warm it up to normal operating temperature.
- Turn A/C switch and blower fan switch ON.
- 3. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+	_	Voltage	
Connector	Ter	minal		
F25	19	12	1.0 - 4.0V	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-568</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000012198114

# 1. CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY

- 1. Turn ignition OFF.
- 2. Disconnect refrigerant pressure sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between refrigerant pressure sensor harness connector and ground.

	+		Voltage (Approx.)	
Refrigerant pr	essure sensor	_		
Connector	Terminal		( ) )	
E49	3	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector.

	+			
Refrigerant pr	essure sensor	E	Continuity	
Connector	Terminal	Connector	Terminal	
E49	3	F25	23	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3. CHECK REFRIGERANT PRESSURE SENSOR GROUND

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector.

### **REFRIGERANT PRESSURE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

+		-	-	Q (; ;;				
Refrigerant pre	Terminal	Connector	Terminal	Continuity				
E49	1	F25	12	Existed				
	-	for short to p		LXISICG				
	tion result n	-	OWEI.					
-	GO TO 4.	omman.						
NO >> F	Repair or rep	place error-de	etected part	S.				
·.CHECK R	EFRIGERA	NT PRESSU	JRE SENSO	R INPUT SIG	NAL CIRCI	UIT		
. Check th	ne continuity	between EC	CM harness	connector an	d refrigeran	t pressure	sensor hai	ness conne
tor.								
+		-		Q (; ;;				
Refrigerant pre		Connector		Continuity				
Connector	Terminal	Connector	Terminal	F ::				
E49	2	F25	19	Existed				
A I I	ck narness	for short to g	round and t	o power.				
	tion result n	ormai?						
the inspect	<u>tion result n</u> GO TO 5.							
the inspect YES >> ( NO >> F	<u>tion result n</u> GO TO 5. Repair or re <sub>l</sub>	place error-de		s.				
the inspect YES >> ( NO >> F	<u>tion result n</u> GO TO 5. Repair or re <sub>l</sub>			S.				
the inspect YES >> 0 NO >> F	tion result n GO TO 5. Repair or rep	place error-de	NT.	S.				
the inspect YES >> ( NO >> F  CHECK IN Perform GI-4	tion result n GO TO 5. Repair or rep	place error-de ENT INCIDEN ent Incident"	NT.	S.				
s the inspect YES >> ( NO >> F  CHECK IN erform GI-4 s the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		
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s the inspect YES >> ( NO >> F  CHECK IN erform GI-4 s the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		
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s the inspect YES >> ( NO >> F  CHECK IN erform GI-4 s the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		
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the inspect YES >> ( NO >> F  CHECK IN erform GI-4 the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		
the inspect YES >> ( NO >> F  CHECK IN erform GI-4 the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	;-98, "Explo	ded View"		
s the inspect YES >> ( NO >> F  CHECK IN erform GI-4 s the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		
the inspect YES >> ( NO >> F  CHECK IN erform GI-4 the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		
s the inspect YES >> ( NO >> F  CHECK IN erform GI-4 s the inspect YES >> F	tion result n GO TO 5. Repair or rep NTERMITTE 5, "Intermitt tion result n Replace refr	place error-de ENT INCIDEN ent Incident" ormal? igerant press	NT sure sensor.	Refer to <u>HAC</u>	-98, "Explo	ded View"		

#### **BRAKE PEDAL POSITION SWITCH**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# BRAKE PEDAL POSITION SWITCH

### **Component Function Check**

INFOID:0000000012198115

# 1. CHECK BRAKE PEDAL POSITION SWITCH FUNCTION

#### (I) With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "BRAKE SW1" indication as per the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake nedal	Slightly depressed	OFF
BIVARL SWI	Brake pedal	Fully released	ON

#### Without CONSULT

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector terminals as per the following.

	ECM						
Connector	+	-	Condition				Voltage (Approx.)
Connector	Term	ninal			, , ,		
E18	116	127	Brake pedal	Slightly depressed	0 V		
L10	110	121	Brake pedal	Fully released	Battery voltage		

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-570</u>, "<u>Diagnosis Procedure</u>".

# Diagnosis Procedure

INFOID:0000000012198116

# 1. CHECK BRAKE PEDAL POSITION SWITCH POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect brake pedal position switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between brake pedal position switch harness connector and ground.

+	-			
Brake pedal p	osition switch	_	Voltage	
Connector	Terminal			
E112	1	Ground	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

# 2.CHECK BRAKE PEDAL POSITION SWITCH INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between brake pedal position switch harness connector and ECM harness connector.

+		-		
Brake pedal po	Brake pedal position switch		ECM	
Connector	Terminal	Connector	Terminal	
E112	2	E18	116	Existed

#### **BRAKE PEDAL POSITION SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK BRAKE PEDAL POSITION SWITCH

Check the brake pedal position switch. Refer to <u>EC-571</u>, "Component Inspection (Brake Pedal Position Switch)"

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace brake pedal position switch. Refer to <u>BR-20, "Exploded View"</u>.

### Component Inspection (Brake Pedal Position Switch)

INFOID:0000000012198117

# 1. CHECK BRAKE PEDAL POSITION SWITCH-I

- 1. Turn ignition switch OFF.
- Disconnect brake pedal position harness connector.
- 3. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal	position switch			
+	-	Condition		Continuity
Tern	ninals			
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

### 2. CHECK BRAKE PEDAL POSITION SWITCH-II

- Adjust brake pedal position switch installation. Refer to BR-9. "Inspection and Adjustment".
- 2. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal position switch					
+	_	Condition		Continuity	
Tern	ninals				
			Fully released	Existed	
1	2	Brake pedal	Slightly de- pressed	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace brake pedal position switch. Refer to <a href="BR-20">BR-20</a>, "Exploded View".

Revision: November 2015 EC-571 2016 JUKE

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#### **CLUTCH PEDAL POSITION SWITCH**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# **CLUTCH PEDAL POSITION SWITCH**

### **Component Function Check**

INFOID:0000000012198118

# 1. CHECK FOR CLUTCH PEDAL POSITION SWITCH FUNCTION

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground.

	ECM				) (alta a a		
Connector	+	-	Condition				Voltage (Approx.)
Connector	Teri	minal			, , ,		
E18	108	127	Clutch pedal	Slightly depressed	Battery voltage		
LIO	100	121	Ciutcii pedai	Fully released	0V		

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Proceed to <u>EC-572</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000012198119

# 1. CHECK CLUTCH PEDAL POSITION INPUT SIGNAL

- Turn ignition switch OFF.
- 2. Disconnect clutch pedal position switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between clutch pedal position switch harness connector and ground.

	+		
Clutch pedal	position switch	_	Voltage
Connector	Terminal		
E113	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.check clutch pedal position switch input signal circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connectors.
- Check the continuity between clutch pedal position switch harness connector and ECM harness connector.

	+	-		
Clutch pedal <sub>l</sub>	oosition switch	EC	Continuity	
Connector	Terminal	Connector	Terminal	
E113	1	E18	108	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3. Check clutch pedal position switch ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connectors.
- Check the continuity between clutch pedal position switch harness connector and ground

### **CLUTCH PEDAL POSITION SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

	+				
Clutch pedal	position switch	_	Continuity		
Connector	Terminal				
E113	2	Ground	Existed		
	harness for sh	ort to power			
	n result normal	•			
/ES >> GC		_			
NO >> Re	pair or replace	error-detected p	arts.		
.CHECK CLU	JTCH PEDAL F	POSITION SWIT	ГСН		
			to EC-573, "Compo	onent Inspection".	
	n result normal	<del></del> '	1. OLAE W. (	( )	
			to <u>GI-45, "Intermitt</u> ch. Refer to <u>CL-11</u>		
·	Inspection	aar poortion our	.o 1 (010) to <u>02 7 1</u>		INFOID:000000012198120
•	·				## 6.B.000000072.00720
.CHECK CLU	JTCH PEDAL F	POSITION SWIT	TCH-I		
	n switch OFF.				
			arness connector.	rminals as per the follo	wing conditions
CHECK THE	Continuity between	een clutch peda	i position switch te	miliais as per the folio	wing conditions.
Clutch pedal r	position switch				
+	_	Co	ndition	Continuity	
Tern	ninal			•	
			Fully released	Existed	
1	2	Clutch pedal	Slightly depressed	Not existed	
the inspection	n result normal	?			
	SPECTION EN	D			
IO >> GC					
CHECK CLU	JTCH PEDAL F	POSITION SWIT	TCH-II		
Adjust cluto	h pedal positio	n switch installa	ition. Refer to CL-1	2, "Inspection and Adju	ustment".
Check the	continuity between	een clutch peda	I position switch te	rminals as per the follo	wing conditions.
Clutch nedal r	position switch				
+	–	Co	ndition	Continuity	
	 ninal		Hallott	Continuity	
Tenn			Fully released	Existed	
1	2	Clutch pedal	Slightly depressed	Not existed	
the increation	n recult perme	2	oligitity depressed	I VOL GAIGLEU	
•	<u>n result normal</u> SPECTION ENI	<del></del>			
	place clutch pe				

### **INFORMATION DISPLAY (ASCD)**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# **INFORMATION DISPLAY (ASCD)**

# Component Function Check

INFOID:0000000012198121

# 1. CHECK INFORMATION DISPLAY

- Start engine.
- Press ASCD MAIN switch on ASCD steering switch.
- 3. Drive the vehicle at more than 40 km/h (25 MPH).

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

- Press SET/– switch.
- Check that the reading of the speedometer shows the same value as the set speed indicated in the information display while driving the vehicle on a flat road.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-574</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000012198122

### 1.CHECK DTC

Check that DTC UXXXX, P0500 or P1574 is not displayed.

### Is the inspection result normal?

YES >> GO TO 2.

NO-1 >> Perform trouble diagnosis for DTC UXXXX.

NO-2 >> Perform trouble diagnosis for DTC P0500. Refer to <u>EC-397, "EXCEPT FOR M/T MODELS : DTC Logic"</u>.

NO-3 >> Perform trouble diagnosis for DTC P1574. Refer to <u>EC-480, "DTC Logic"</u>.

### 2.CHECK DTC WITH COMBINATION METER

#### Refer to MWI-22, "CONSULT Function".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform trouble diagnosis for DTC indicated.

# 3.check intermittent incident

#### Perform GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-64, "Removal and Installation"

NO >> Repair or replace error-detected parts.

### **MALFUNCTION INDICATOR LAMP**

< DTC/CIRCUIT DIAGNOSIS >

[MR FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS > [IIIIX TOX NIGHIO IX MODEL	<u>.0,</u>
MALFUNCTION INDICATOR LAMP	
Component Function Check	A 198123
1. CHECK MIL FUNCTION	EC
1. Turn ignition switch ON. 2. Check that MIL lights up.  Is the inspection result normal?  YES >> INSPECTION END  NO >> Proceed to EC-575, "Diagnosis Procedure".	С
Diagnosis Procedure	198124
1.CHECK DTC	Е
Check that DTC UXXXX is not displayed.  Is the inspection result normal?  YES >> GO TO 2.  NO >> Perform trouble diagnosis for DTC UXXXX.  2.CHECK DTC WITH METER	F
Refer to MWI-22, "CONSULT Function".	G
Is the inspection result normal?  YES >> GO TO 3.  NO >> Perform trouble diagnosis for DTC indicated.  3.CHECK INTERMITTENT INCIDENT	Н
Refer to GI-45, "Intermittent Incident".	
Is the inspection result normal?	
YES >> Replace combination meter. Refer to <a href="MWI-64">MWI-64</a> , "Removal and Installation".  NO >> Repair or replace error-detected parts.	J K
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# SYMPTOM DIAGNOSIS

# **ENGINE CONTROL SYSTEM**

Symptom Table

SYSTEM — BASIC ENGINE CONTROL SYSTEM

		SYMPTOM													
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
	y symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Fuel	Low pressure fuel pump circuit	1	1	2	3	2		2	2			3		2	EC-546
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-166
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-541
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-586
	FRP sensor circuit	1	1	2	2	2		2	2			2			EC-312
	High pressure fuel pump circuit			4		3									EC-549
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-589
	Incorrect idle speed adjustment						1	1	1	1		1			EC-162
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-510, EC-515
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-585
	Ignition circuit	1	1	2	2	2		2	2			2			EC-554
Main po	wer supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-187
Mass air	Mass air flow sensor circuit				2										EC-238
Engine coolant temperature sensor circuit		<b>-</b> 1					3			3					EC-249
Air fuel ratio (A/F) sensor 1 circuit			1	2	3	2		2	2			2			EC-263, EC-267, EC-270, EC-292
Throttle position sensor circuit							2			2					EC-253, EC-323, EC-450, EC-451
Accelerator pedal position sensor circuit				3	2	1									EC-517, EC-520, EC-526

## **ENGINE CONTROL SYSTEM**

< SYMPTOM DIAGNOSIS >

# [MR FOR NISMO RS MODELS]

No.   No.							S	/MPT	ОМ							Δ
Heated oxygen sensor 2 circuit			ENGINE STALL		SPARK KNOCK/DETONATION	OF POWER/POOR	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION		BATTERY DEAD (UNDER CHARGE)		A EC C
Heated oxygen sensor 2 circuit	Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА		
Engine oil temperature sensor circuit    4	Heated oxygen sensor 2 circuit			6		6		6	6			5			EC-279,	F
Engine oil pressure sensor circuit  Crankshaft position sensor (POS) circuit  2	Knock sensor circuit			2								3			EC-341	G
Crankshaft position sensor (POS) circuit         2         2         1         5	Engine oil temperature sensor circuit			4		2						3			EC-320	
Crankshaft position sensor (POASE) circuit         2         2         2         EC-343           Camshaft position sensor (PHASE) circuit         3         2         5	Engine oil pressure sensor circuit			4		4	3	3	3			3			EC-408	Н
Vehicle speed signal circuit	Crankshaft position sensor (POS) circuit	2	2												EC-343	- 11
Vehicle speed signal circuit         2         3         3         EC.397. EC.401, EC.530           ECM         2         2         3         <	Camshaft position sensor (PHASE) circuit	3	2												EC-346	
Vehicle speed signal circuit         2         3         3         3         EC-401, EC-530           ECM         2         2         3         4         3         4         3         3         3         3         3         3         4         3         2         2         3         3         3         3 <td>Turbocharger boost sensor circuit</td> <td></td> <td></td> <td>3</td> <td></td> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>EC-332</td> <td></td>	Turbocharger boost sensor circuit			3		3									EC-332	
ECM 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Vehicle speed signal circuit		2	3		3						3			EC-401,	J
cuit         3         2         1         3         2         2         3         2         2         3         3         EC-211           Exhaust valve timing control solenoid valve circircuit         3         2         1         3         2         2         3         3         3         EC-199, EC-214         EC-214           Exhaust valve timing control position sensor circuit         5         5         5         5         5         5         5         5         5         5         EC-430         EC-426         EC-426         EC-426         EC-426         EC-426         EC-426         EC-426         EC-426         EC-426         EC-457, EC-460, EC-463, EC-	ECM	2	2	3	3	3	3	3	3	3	3	3			EC-416, EC-417, EC-418, EC-419, EC-420,	K
circuit         3         2         1         3         2         2         3         5         5         5         5         5         5         5         6         EC-214           Exhaust valve timing control position sensor circuit         5         5         5         5         5         5         5         5         6         EC-430           Turbocharger boost control solenoid valve circuit         3         3         3         3         3         6         EC-209           PNP signal circuit         3         3         3         3         3         4         EC-426           Refrigerant pressure sensor circuit         2         3         3         3         4         EC-568           Cooling fan control module circuit         5         5         5         5         5         5         4         5         EC-457, EC-460, EC-463, EC-463,	<del>-</del>		3	2		1	3	2	2	3		3				_
circuit         3         5         5         5         5         5         6         EC-430           Turbocharger boost control solenoid valve circuit         3         3         3         EC-209           PNP signal circuit         3         3         3         3         EC-426           Refrigerant pressure sensor circuit         2         3         3         4         EC-568           Cooling fan control module circuit         5         5         5         5         5         5         4         5         EC-457, EC-460, EC-463, EC-463,	circuit		3	2		1	3	2	2	3		3				M
Cuit         3         3         3         3         3         3         3         3         3         3         3         EC-209           PNP signal circuit         3         3         3         3         3         4         EC-426           Refrigerant pressure sensor circuit         2         3         3         4         EC-568           Cooling fan control module circuit         5         5         5         5         5         4         5         EC-450           Battery current sensor circuit         4         5         5         3         EC-457, EC-460, EC-463, EC-463,         EC-463,		5	5	5	5	5		5	5			5			EC-430	N
Refrigerant pressure sensor circuit         2         3         3         4         EC-568           Cooling fan control module circuit         5         5         5         5         5         5         5         4         5         EC-560           Battery current sensor circuit         4         5         5         5         3         EC-457, EC-460, EC-463, EC-463,         EC-463,	=			3		3									EC-209	
Cooling fan control module circuit         5         5         5         5         5         5         5         4         5         EC-560           Battery current sensor circuit         4         5         5         5         4         5         3         EC-457, EC-460, EC-463, EC-463, EC-463,         EC-463,	PNP signal circuit			3		3		3	3			3			EC-426	0
Battery current sensor circuit  4 5 5  3 EC-457, EC-460, EC-463,	<u> </u>						3								EC-568	
Battery current sensor circuit  4 5 5  3 EC-460, EC-463,	Cooling fan control module circuit	5	5	5	5	5		5	5	5	4	5			EC-560	_
	Battery current sensor circuit						4	5	5					3	EC-460, EC-463,	Р
Starter relay circuit 3 EC-492	Starter relay circuit	3													EC-492	
Starter control relay circuit 3 EC-495	Starter control relay circuit	3													EC-495	
Electrical load signal circuit 3 EC-558	Electrical load signal circuit							3							EC-558	

						S	/MPT	ОМ						
	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	HA	
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	HAC-45
ABS actuator and electric unit (control unit)			4											BRC-59

<sup>1 - 6:</sup> The numbers refer to the order of inspection. (continued on next page)

#### SYSTEM — ENGINE MECHANICAL & OTHER

							S	/MPT	OM						
Warranty	v symptom code	A HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
vvarranty	symptom code	A	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Fuel	Fuel tank	5													FL-22, FL-24
	Fuel piping			5	5	5		5	5			5			EM-54
	Vapor lock		5												_
	Valve deposit														_
	Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5			_

# **ENGINE CONTROL SYSTEM**

< SYMPTOM DIAGNOSIS >

[MR FOR NISMO RS MODELS]

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		P. HA)		F		RATI					JREI	7		ш		EC
		(EXCP.		SPOT	7	SELE					RATI	OLL	NO!	ARG		
		START/RESTART (		HESITATION/SURGING/FLAT	SPARK KNOCK/DETONATION	POWER/POOR ACCELERATION	)LE	DNIL	7	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	CONSUMPTION	CONSUMPTION	(UNDER CHARGE)	Reference page	С
			STALL	TION/SUR	KNOCK/DE	OF POWER	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	IO RETUR	EATS/WAT	SIVE FUEL	OIL	BATTERY DEAD ((		D
		HARD/NO	ENGINE STALL	HESITA	SPARK	LACK 0	HIGH ID	ROUGH	IDLING	SLOW/N	OVERH	EXCESSIVE	EXCESSIVE	BATTER		Е
Warranty sy	ymptom code	A A	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА		F
Air	Air duct														EM-27	
	Air cleaner														EM-27	G
	Air leakage from air duct (Mass air flow sensor — electric throttle control actuator)	5	5	5	5	5	5	5	5	5		5			<u>EM-29</u>	Н
	Electric throttle control actuator  Air leakage from intake manifold/															
	Collector/Gasket															
Cranking	Battery	1	1	1		1		1	1					1	PG-105	I
	Generator circuit	•	•					•	•					'	CHG-8	
	Starter circuit	3										1			STR-6	J
	Signal plate	6													EM-115	
	PNP signal	4													<u>TM-24</u> , <u>TM-326</u>	K
Engine	Cylinder head	5	5	5	5	5		5	5			5			<u>EM-101</u>	
	Cylinder head gasket	)	3	3	3	3		5			4	3	3		<u>LIVI-101</u>	
	Cylinder block															L
	Piston												4			
	Piston ring	6	6	6	6	6		6	6			6			EM-115	M
	Connecting rod	O	U	0	U	U		O	0			U			LIVI- I TO	
	Bearing															
	Crankshaft															Ν
Valve	Timing chain														<u>EM-77</u>	
mecha- nism	Camshaft														EM-89	0
	Intake valve timing control	E	E	E	E	E		E	_			E			EM-77	
	Exhaust valve timing control	5	5	5	5	5		5	5			5			EM-77	
	Intake valve												2		EM 90	Р
	Exhaust valve												3		<u>EM-89</u>	
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket	F	E	E	E	E		F	E			E			EM-44, EX-10	
	Three way catalyst	5	5	5	5	5		5	5			5			<u>EM-34,</u> <u>EM-37,</u> <u>EX-10</u>	

							S'	/MPT	ОМ						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty	symptom code	A A	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler	5	5	5	5	5		5	5			5			EM-48, EM-113, LU-14, LU- 18
	Oil level (Low)/Filthy oil														<u>LU-9</u>
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-16</u>
	Thermostat									5					<u>CO-23</u>
	Water pump														<u>CO-21</u>
	Water gallery	5	5	5	5	5		5	5		4	5			<u>CO-25</u>
	Cooling fan														<u>CO-19</u>
	Coolant level (Low)/Contaminated coolant									5					<u>CO-10</u>
NVIS (Nis NATS)	san Vehicle Immobilizer System -	1	1												SEC-13

<sup>1 - 6:</sup> The numbers refer to the order of inspection.

# ASCD TEMPORARY RELEASE CANNOT BE PERFORMED BY THE CLUTCH PEDAL

< SYMPTOM DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# ASCD TEMPORARY RELEASE CANNOT BE PERFORMED BY THE CLUTCH PEDAL

Diagnosis Procedure	<sup>6</sup> EC
1.check dtc with ecm	
Check that DTC is not displayed.	C
Is the inspection result normal?	
YES >> GO TO 2.  NO >> Perform trouble diagnosis relevant to DTC indicated.	D
2. CHECK CLUTCH PEDAL POSITION SWITCH	D
Refer to EC-572. "Component Function Check".	
Is the inspection result normal?	Е
YES >> GO TO 3.  NO >> Repair or replace malfunctioning part.	
3. CHECK INTERMITTENT INCIDENT	F
Refer to GI-45. "Intermittent Incident".	=
>> INSPECTION END	G
>> INSECTION END	
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#### INFORMATION DISPLAY IS MALFUNCTIONING

< SYMPTOM DIAGNOSIS >

[MR FOR NISMO RS MODELS]

# INFORMATION DISPLAY IS MALFUNCTIONING

# Diagnosis Procedure

INFOID:0000000012198127

# 1. CHECK DTC WITH ECM

Check that DTC is not displayed.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis relevant to DTC indicated.

# 2.CHECK INFORMATION DISPLAY (ASCD)

Refer to EC-574, "Component Function Check".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning part.

# 3. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

>> INSPECTION END

#### NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[MR FOR NISMO RS MODELS]

## NORMAL OPERATING CONDITION

Description INFOID:0000000012198128

#### FUEL CUT CONTROL (AT NO LOAD AND HIGH ENGINE SPEED)

If the engine speed is above 2,500 rpm under no load (for example, the selector lever position is neutral and engine speed is over 2,500 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.

Fuel cut will be operated until the engine speed reaches 2,000 rpm, then fuel cut will be cancelled. **NOTE:** 

This function is different from deceleration control listed under direct injection gasoline system, <u>EC-51</u>. "<u>DIRECT INJECTION GASOLINE SYSTEM</u>: <u>System Description</u>".

Revision: November 2015 EC-583 2016 JUKE

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# PERIODIC MAINTENANCE

# **IDLE SPEED**

Inspection INFOID:000000012198129

# 1. CHECK IDLE SPEED

With CONSULT

Check idle speed in "DATA MONITOR" mode of "ENGINE" using CONSULT.

Check idle speed with Service \$01 of GST.

>> INSPECTION END

## **IGNITION TIMING**

#### < PERIODIC MAINTENANCE >

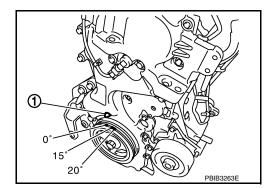
[MR FOR NISMO RS MODELS]

# **IGNITION TIMING**

Inspection INFOID:0000000012198130

# 1. CHECK IGNITION TIMING

- 1. Attach timing light to the ignition coil No.1 harness.
- 2. Check ignition timing.
  - 1 : Timing indicator
  - >> INSPECTION END



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#### **EVAPORATIVE EMISSION SYSTEM**

< PERIODIC MAINTENANCE >

[MR FOR NISMO RS MODELS]

# **EVAPORATIVE EMISSION SYSTEM**

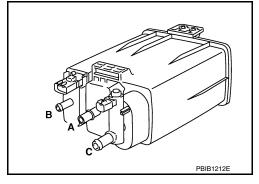
Inspection INFOID:0000000012198131

#### **EVAP CANISTER**

# 1. CHECK EVAP CANISTER

- 1. Block port (B).
- 2. Blow air into port (A) and check that it flows freely out of port (C).
- 3. Release blocked port (B).
- 4. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- 5. Block port (A) and (B).
- 6. Apply pressure to port (C) and check that there is no leakage.

>> INSPECTION END



## **EVAP LEAK CHECK**

Inspection INFOID:0000000012198132

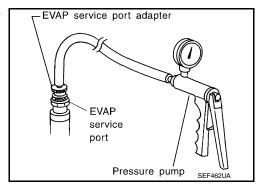
#### **CAUTION:**

- Do not use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm<sup>2</sup>, 0.6 psi) of pressure in EVAP system. NOTE:
- Do not start engine.
- Improper installation of EVAP service port adapter [commercial service tool: (J-41413-OBD)] to the EVAP service port may cause a leak.

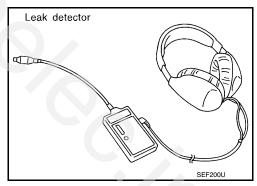
# 1.EVAP LEAK CHECK

#### (P)With CONSULT

1. Install EVAP service port adapter [commercial service tool: (J-41413-OBD)] and pressure pump to EVAP service port.

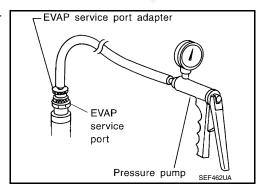


- 2. Turn ignition switch ON.
- 3. Select the "EVAP SYSTEM CLOSE" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 4. Touch "START". A bar graph (Pressure indicating display) will appear on the screen.
- Apply positive pressure to the EVAP system until the pressure indicator reaches the middle of the bar graph.
- 6. Remove EVAP service port adapter [commercial service tool: (J-41413-OBD)] and hose with pressure pump.
- Locate the leak using a leak detector [commercial service tool: (J-41416)]. Refer to <u>EC-66, "EVAPORATIVE EMISSION SYSTEM</u>: System Description".



#### 

1. Install EVAP service port adapter [commercial service tool: (J-41413-OBD)] and pressure pump to EVAP service port.



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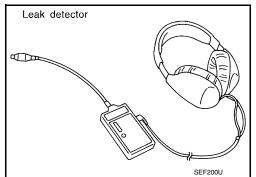
#### **EVAP LEAK CHECK**

#### < PERIODIC MAINTENANCE >

#### [MR FOR NISMO RS MODELS]

- 2. Apply battery voltage between the terminals of EVAP canister vent control valve to make a closed EVAP system.
- 3. To locate the leak, deliver positive pressure to the EVAP system until pressure gauge points reach 1.38 to 2.76 kPa (0.014 to 0.028 kg/cm<sup>2</sup>, 0.2 to 0.4 psi).
- 4. Remove EVAP service port adapter [commercial service tool: (J-41413-OBD)] and hose with pressure pump.
- 5. Locate the leak using a leak detector [commercial service tool: (J-41416)]. Refer to <u>EC-66</u>, "<u>EVAPORATIVE EMISSION SYSTEM</u>: System Description".

>> INSPECTION END



#### POSITIVE CRANKCASE VENTILATION

< PERIODIC MAINTENANCE >

[MR FOR NISMO RS MODELS]

# POSITIVE CRANKCASE VENTILATION

Inspection INFOID:0000000012198133

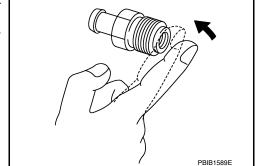
# 1. CHECK PCV VALVE

With engine running at idle, remove PCV valve from rocker cover. A properly working valve makes a hissing noise as air passes through it. A strong vacuum should be felt immediately when a finger is placed over valve inlet.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace PCV valve. Refer to EM-60, "Exploded View".



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# REMOVAL AND INSTALLATION

# **ECM**

#### Removal and Installation

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#### **CAUTION:**

Perform ADDITIONAL SERVICE WHEN REPLACING ECM. Refer to EC-157, "Description"

#### **REMOVAL**

- 1. Remove fusible link bracket. Keep a service area.
- 2. Disconnect ECM harness connectors. Refer to PG-6, "Harness Connector".
- 3. Remove ECM mounting nuts, and then remove ECM.

#### INSTALLATION

Install in the reverse order of removal.

# **SERVICE DATA AND SPECIFICATIONS (SDS)**

< SERVICE DATA AND SPECIFICATIONS (SDS)

[MR FOR NISMO RS MODELS]

# SERVICE DATA AND SPECIFICATIONS (SDS)

# SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Transmission	Condition	Specification
CVT	No load* (in P or N position)	650 ± 50 rpm
M/T	No load* (in Neutral position)	600 ± 50 rpm

\*: Under the following conditions

A/C switch: OFF

• Electric load: OFF (Lights, heater fan & rear window defogger)

· Steering wheel: Kept in straight-ahead position

## **Ignition Timing**

 Transmission
 Condition
 Specification

 CVT
 No load\* (in P or N position)
  $6 \pm 2^{\circ}$  BTDC

 M/T
 No load\* (in Neutral position)
  $8 \pm 2^{\circ}$  BTDC

· A/C switch: OFF

· Electric load: OFF (Lights, heater fan & rear window defogger)

· Steering wheel: Kept in straight-ahead position

#### Calculated Load Value

Condition	Specification (Using CONSULT or GST)
At idle	5 – 35 %
At 2,500 rpm	5 – 35 %

#### Mass Air Flow Sensor

Supply voltage	Battery voltage (11 – 14 V)
Output voltage at idle	0.9 – 1.2V*
Mass air flow (Using CONSULT or GST)	1.0 – 4.0 g/s at idle* 2.0 – 10.0 g/s at 2,500 rpm*

<sup>\*:</sup> Engine is warmed up to normal operating temperature and running under no load.

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<sup>\*:</sup> Under the following conditions

# **PRECAUTION**

#### **PRECAUTIONS**

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

#### WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.
- Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

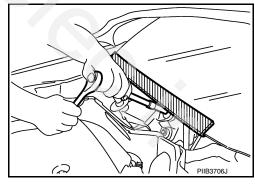
Always observe the following items for preventing accidental activation.

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the
  ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with
  a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing
  serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery or batteries, and wait at least 3 minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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When performing the procedure after removing cowl top cover, cover the lower end of windshield with urethane, etc to prevent damage to windshield.



Precautions For Xenon Headlamp Service

INFOID:0000000012198141

#### **WARNING:**

Comply with the following warnings to prevent any serious accident.

- Disconnect the battery cable (negative terminal) or the power supply fuse before installing, removing, or touching the xenon headlamp (bulb included). The xenon headlamp contains high-voltage generated parts.
- · Never work with wet hands.
- Check the xenon headlamp ON-OFF status after assembling it to the vehicle. Never turn the xenon headlamp ON in other conditions. Connect the power supply to the vehicle-side connector.

#### **PRECAUTIONS**

#### < PRECAUTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

(Turning it ON outside the lamp case may cause fire or visual impairments.)

Never touch the bulb glass immediately after turning it OFF. It is extremely hot.

#### **CAUTION:**

Comply with the following cautions to prevent any error and malfunction.

- Install the xenon bulb securely. (Insufficient bulb socket installation may melt the bulb, the connector, the housing, etc. by high-voltage leakage or corona discharge.)
- Never perform HID circuit inspection with a tester.
- Never touch the xenon bulb glass with hands. Never put oil and grease on it.
- Dispose of the used xenon bulb after packing it in thick vinyl without breaking it.
- Never wipe out dirt and contamination with organic solvent (thinner, gasoline, etc.).

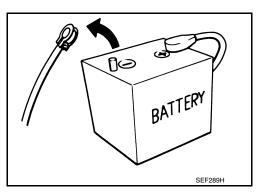
#### Precautions for Removing Battery Terminal

When disconnecting the battery terminal, pay attention to the following.

- Always use a 12V battery as power source.
- Never disconnect battery terminal while engine is running.
- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.
- · For vehicles with the engine listed below, remove the battery terminal after a lapse of the specified time:

YS23DDT D4D engine : 20 minutes : 4 minutes HRA2DDT : 12 minutes YS23DDTT : 4 minutes K9K engine : 4 minutes ZD30DDTi : 60 seconds ZD30DDTT : 60 seconds M9R engine : 4 minutes

: 4 minutes R9M engine V9X engine : 4 minutes YD25DDTi : 2 minutes



#### NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

After high-load driving, if the vehicle is equipped with the V9X engine, turn the ignition switch OFF and wait for at least 15 minutes to remove the battery terminal.

#### NOTE:

- Turbocharger cooling pump may operate in a few minutes after the ignition switch is turned OFF.
- Example of high-load driving
- Driving for 30 minutes or more at 140 km/h (86 MPH) or more.
- Driving for 30 minutes or more on a steep slope.
- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

#### NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

#### NOTE:

The removal of 12V battery may cause a DTC detection error.

# On Board Diagnostic (OBD) System of Engine and CVT

The ECM has an on board diagnostic system. It will light up the malfunction indicator lamp (MIL) to warn the driver of a malfunction causing emission deterioration.

#### **CAUTION:**

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MIL to light up due to the open circuit. (Be sure the connector is free from water, grease, dirt, bent terminals, etc.)

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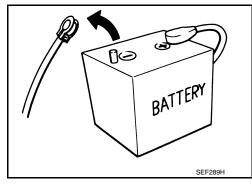
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- Certain systems and components, especially those related to OBD, may use a new style slide-locking type harness connector. For description and how to disconnect, refer to PG-6, "Harness Connector".
- Be sure to route and secure the harnesses properly after work. The interference of the harness with a bracket, etc. may cause the MIL to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube
  may cause the MIL to light up due to the malfunction of the EVAP system or fuel injection system,
  etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the ECM and TCM (Transmission control module) before returning the vehicle to the customer.

#### **General Precautions**

- Always use a 12 volt battery as power source.
- Do not attempt to disconnect battery cables while engine is running.
- Before connecting or disconnecting the ECM harness connector, turn ignition switch OFF and disconnect negative battery cable. Failure to do so may damage the ECM because battery voltage is applied to ECM even if ignition switch is turned OFF.
- Before removing parts, turn ignition switch OFF and then disconnect battery ground cable.



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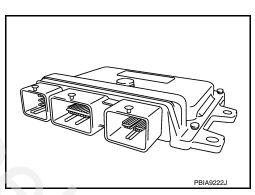
- · Do not disassemble ECM.
- If a battery cable is disconnected, the memory will return to the ECM value.

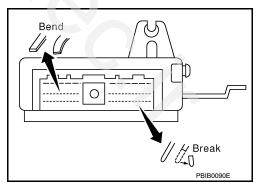
The ECM will now start to self-control at its initial value. Engine operation can vary slightly when the terminal is disconnected. However, this is not an indication of a malfunction. Do not replace parts because of a slight variation.

- If the battery is disconnected, the following emission-related diagnostic information will be lost within 24 hours.
- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values
- When connecting or disconnecting pin connectors into or from ECM, take care not to damage pin terminals (bend or break).

Make sure that there are not any bends or breaks on ECM pin terminal, when connecting pin connectors.

- Securely connect ECM harness connectors.
- A poor connection can cause an extremely high (surge) voltage to develop in coil and condenser, thus resulting in damage to ICs.
- Keep engine control system harness at least 10 cm (4 in) away from adjacent harness, to prevent engine control system malfunctions due to receiving external noise, degraded operation of ICs. etc.
- Keep engine control system parts and harness dry.



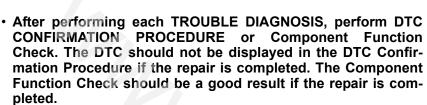


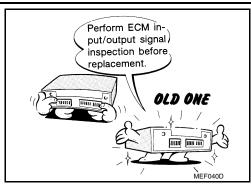
#### **PRECAUTIONS**

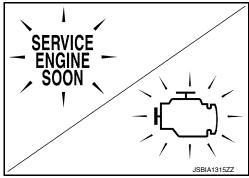
#### < PRECAUTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

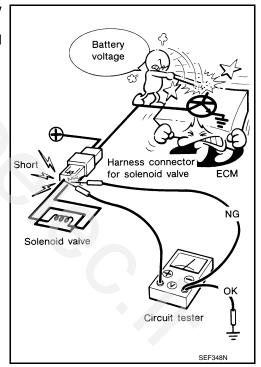
- Before replacing ECM, perform ECM Terminals and Reference Value inspection and make sure ECM functions properly. Refer to EC-679, "Reference Value".
- · Handle mass air flow sensor carefully to avoid damage.
- Do not clean mass air flow sensor with any type of detergent.
- Do not disassemble electric throttle control actuator.
- Even a slight leak in the air intake system can cause serious incidents.
- Do not shock or jar the camshaft position sensor (PHASE), crankshaft position sensor (POS).







 When measuring ECM signals with a circuit tester, never allow the two tester probes to contact.
 Accidental contact of probes will cause a short circuit and damage the ECM power transistor.



- Do not operate fuel pump when there is no fuel in lines.
- Tighten fuel hose clamps to the specified torque.

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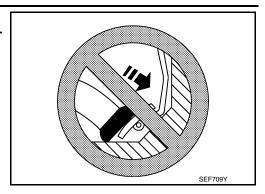
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#### **PRECAUTIONS**

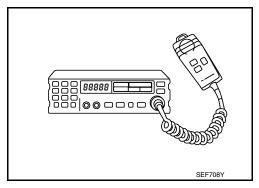
#### < PRECAUTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

- Do not depress accelerator pedal when starting.
- Immediately after starting, do not rev up engine unnecessarily.
- Do not rev up engine just prior to shutdown.



- When installing C.B. ham radio or a mobile phone, be sure to observe the following as it may adversely affect electronic control systems depending on installation location.
- Keep the antenna as far as possible from the electronic control units.
- Keep the antenna feeder line more than 20 cm (8 in) away from the harness of electronic controls.
   Do not let them run parallel for a long distance.
- Adjust the antenna and feeder line so that the standing-wave ratio can be kept smaller.
- Be sure to ground the radio to vehicle body.



## **PREPARATION**

# [MR EXCEPT FOR NISMO RS MODELS]

# **PREPARATION**

# **PREPARATION**

# **Special Service Tools**

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## NOTE:

The actual shapes of TechMate tools may differ from those of special service tools illustrated here.

Tool number (TechMate No.) Tool name		Description
KV10117100 Heated oxygen sensor wrench	S-NT379	Loosening or tightening heated oxygen sensor 2 (AWD) and air fuel ratio sensor 1  For 22 mm (0.87 in) width hexagon nut
KV10114400 Heated oxygen sensor wrench	S-NT636	Loosening or tightening heated oxygen sensor 2 (2WD models) a: For 22 mm (0.87 in) width hexagon nut
(J-44321) Fuel pressure gauge kit	LEC642	Checks fuel pressure
(J-44321-6) Fuel pressure adapter	LBIA0376E	Connects fuel pressure gauge to quick connector type fuel lines.
KV10120000 Fuel tube adapter		Measuring fuel pressure
	JSBIA0410ZZ	

# [MR EXCEPT FOR NISMO RS MODELS]

# **Commercial Service Tools**

INFOID:0000000012198146

Tool name (TechMate No.)		Description
Leak detector i.e.: (J-41416)	S-NT703	Locates the EVAP leak
EVAP service port adapter i.e.: (J-41413-OBD)	S-NT704	Applies positive pressure through EVAP service port
Fuel filler cap adapter i.e.: (J-42909)	ALBIA1353ZZ	Checks fuel tank vacuum relief valve opening pressure
Quick connector re- lease	PBIC0198E	Removing fuel tube quick connectors in engine room (Available in SEC. 164 of PARTS CATALOG: Par No. 16441 6N210)
Socket wrench	19 mm (0.75 in) More than 32 mm (1.26 in) S-NT705	Removing and installing engine coolant temperature sensor

# **PREPARATION**

#### < PREPARATION >

# [MR EXCEPT FOR NISMO RS MODELS]

Tool name (TechMate No.)		Description
Oxygen sensor thread cleaner	Mating surface shave cylinder	Reconditioning the exhaust system threads before installing a new oxygen sensor. Use with antiseize lubricant shown below.  a: 18 mm diameter with pitch 1.5 mm for Zirconia Oxygen Sensor b: 12 mm diameter with pitch 1.25 mm for Titania Oxygen Sensor
Anti-seize lubricant i.e.: (Permatex <sup>TM</sup> 133AR or equivalent meeting MIL specifica- tion MIL-A-907)	S-NT779	Lubricating oxygen sensor thread cleaning tool when reconditioning exhaust system threads.

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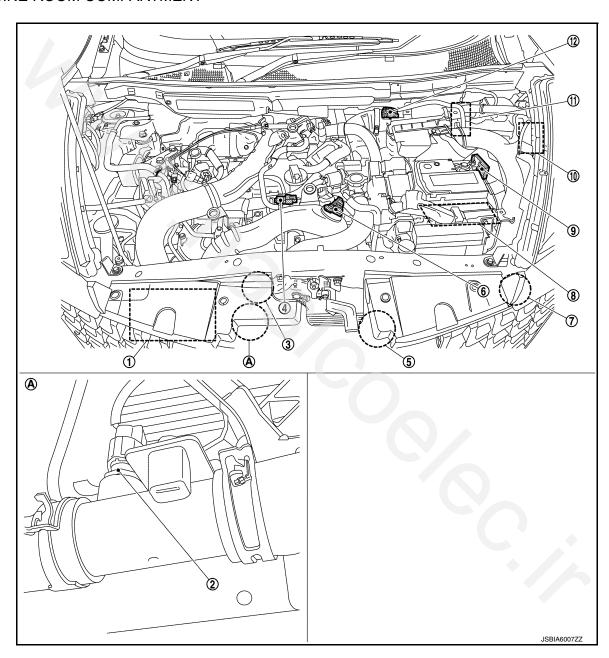
# SYSTEM DESCRIPTION

COMPONENT PARTS
ENGINE CONTROL SYSTEM

**ENGINE CONTROL SYSTEM: Component Parts Location** 

INFOID:0000000012198147

#### **ENGINE ROOM COMPARTMENT**



- 1. Inter cooler
- 4. EVAP canister purge volume control 5. solenoid valve
- 7. Refrigerant pressure sensor
- 10. IPDM E/R

- 2. Engine coolant temperature sensor 2 3.
- 5. Cooling fan motor
- 8. ECM
- 11. TCM

- Cooling fan control module
- 6. Turbocharger boost sensor
- 9. Battery current sensor
- 12. Mass air flow sensor

#### **ENGINE COMPARTMENT**

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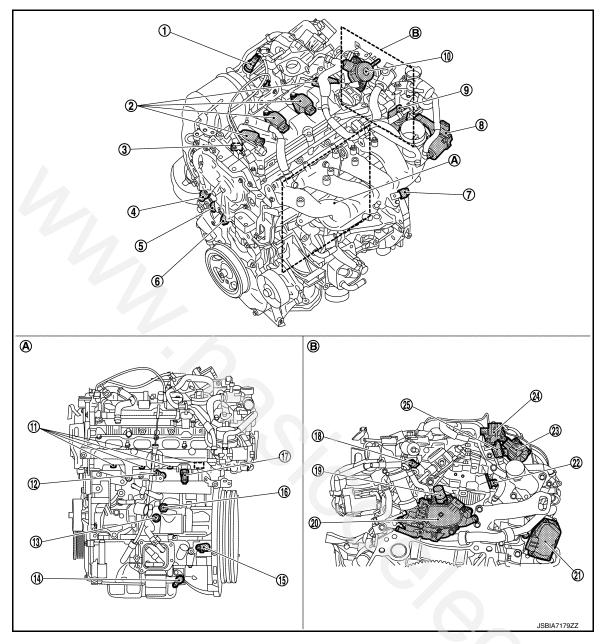
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- 1. Air fuel ratio (A/F) sensor 1
- 4. Exhaust valve timing control solenoid valve
- 7. Manifold absolute pressure sensor
- 10. High pressure fuel pump
- 13. Engine oil temperature sensor
- 16. Engine oil pressure sensor
- 19. Engine coolant temperature sensor
- 22. Exhaust valve timing control position sensor
- 25. EGR pressure sensor
- A. Cylinder block left side

- 2. Ignition coil (with power transistor)
- 5. Intake valve timing intermediate lock control solenoid valve
- 8. Electric throttle control actuator
- 11. Fuel injector
- 14. Engine oil pressure control solenoid valve
- 17. Fuel rail pressure sensor
- 20. Multi-way control valve

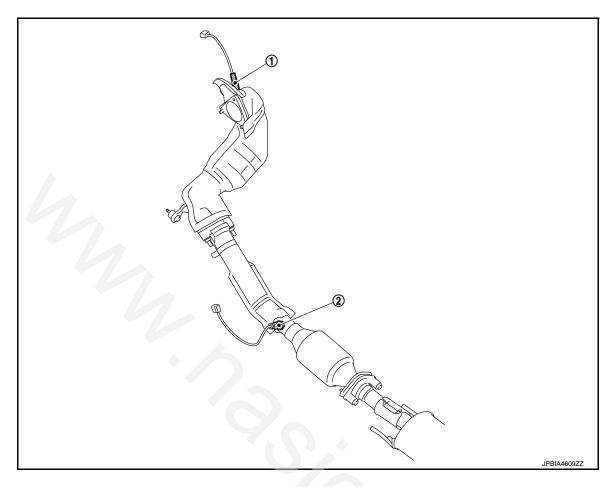
Engine rear end

- 23. Electric wastegate control actuator

- 3. PCV valve
- Intake valve timing control solenoid valve
- 9. Intake manifold runner control valve
- 12. Knock sensor
- 15. Crankshaft position sensor
- 18. Camshaft position sensor
- 21. EGR volume control valve
- 24. Turbocharger bypass control valve

#### **EXHAUST COMPARTMENT**

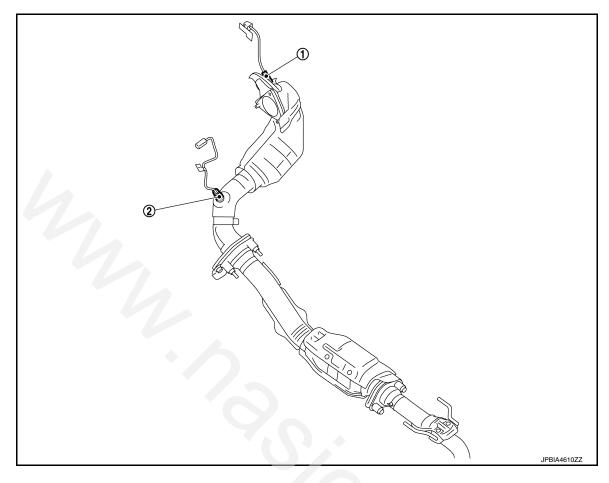
2WD



1. A/F sensor 1

2. Heated oxygen sensor 2

AWD



1. A/F sensor 1

2. Heated oxygen sensor 2

#### **BODY COMPARTMENT**

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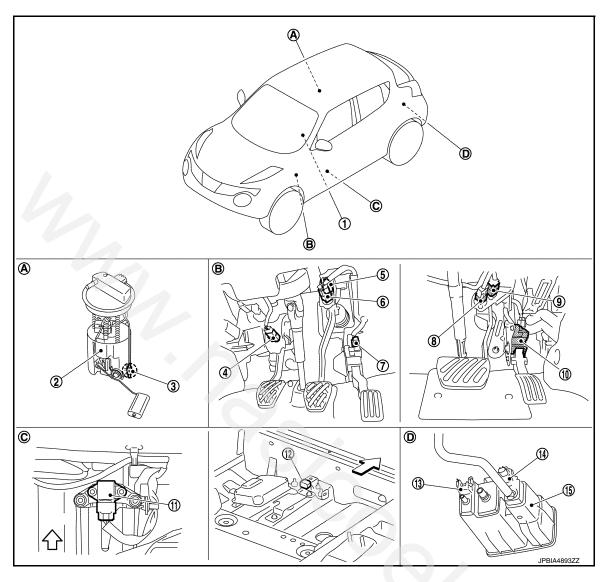
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- 1. ASCD steering switch
- 4. Clutch pedal position switch (with M/T models)
- Accelerator pedal position sensor (with M/T models)
- Accelerator pedal position sensor (with CVT models)
- 13. EVAP control system pressure sensor 14.
- A. Under of right side second seat
- D. Fuel tank rear

- Fuel level sensor unit, fuel filter and fuel pump assembly
- 5. Brake pedal position switch (with M/T models)
- 8. Brake pedal position switch (with CVT models)
- G sensor (with 2WD models)
- 14. EVAP canister vent control valve
- B. Periphery of pedals

- 3. Fuel tank temperature sensor
- Stop lamp switch (with M/T models)
- 9. Stop lamp switch (with CVT models)
- 12. G sensor (with AWD models)
- 15. EVAP canister
- C. Under of left side front seat

# ENGINE CONTROL SYSTEM : Component Description

INFOID:0000000012198148

Component	Reference	
ECM	EC-606. "ECM"	
Accelerator pedal position sensor	EC-606. "Accelerator Pedal Position Sensor"	

## **COMPONENT PARTS**

## < SYSTEM DESCRIPTION >

# [MR EXCEPT FOR NISMO RS MODELS]

Component	Reference	
Electric throttle control actuator		
Throttle control motor	EC-606, "Electric Throttle Control Actuator"	
Throttle position sensor		
Ignition coil with power transistor	EC-607, "Ignition Coil With Power Transistor"	
Fuel injector	EC-608, "Fuel Injector"	
High pressure fuel pump	EC-608. "High Pressure Fuel Pump"	
Fuel rail pressure sensor	EC-609, "Fuel Rail Pressure Sensor"	
Low pressure fuel pump	EC-609, "Low Pressure Fuel Pump"	
Mass air flow sensor	EC-609. "Mass Air Flow Sensor (With Intake Air Temperature Sen-	
Intake air temperature sensor 1	<u>sor 1)"</u>	
Turbocharger		
Electric wastegate control actuator	EC-609, "Turbocharger"	
Turbocharger bypass control solenoid valve		
Turbocharger boost sensor	EC-610, "Turbocharger Boost Sensor (With Intake Air Tempera-	
Intake air temperature sensor 2	ture Sensor 2)"	
Engine coolant temperature sensor	EC-611, "Engine Coolant Temperature Sensor 1", EC-612, "Engine Coolant Temperature Sensor 2"	
Crankshaft position sensor	EC-612. "Crankshaft Position Sensor (POS)"	
Camshaft position sensor	EC-612, "Camshaft Position Sensor (PHASE)"	
Intake valve timing control solenoid valve	EC-613, "Intake Valve Timing Control Solenoid Valve"	
Exhaust valve timing control position sensor	EC-613, "Exhaust Valve Timing Control Position Sensor"	
Exhaust valve timing control solenoid valve	EC-613. "Exhaust Valve Timing Control Solenoid Valve"	
Air fuel ratio (A/F) sensor 1	EC-614. "Air Fuel Ratio (A/F) Sensor 1"	
Heated oxygen sensor 2	EC-615, "Heated Oxygen Sensor 2"	
Knock sensor	EC-616. "Knock Sensor"	
Engine oil pressure sensor	EC-616. "Engine Oil Pressure Sensor"	
Engine oil temperature sensor	EC-616. "Engine Oil Temperature Sensor"	
Cooling fan	EC-617, "Cooling Fan"	
EVAP canister purge volume control solenoid valve	EC-617, "EVAP Canister Purge Volume Control Solenoid Valve"	
Battery current sensor	EC-618, "Battery Current Sensor (With Battery Temperature Sen-	
Battery temperature sensor	sor)"	
Malfunction indicator lamp (MIL)	EC-619, "Malfunction Indicator lamp (MIL)"	
Oil pressure warning lamp	EC-619, "Oil Pressure Warning Lamp"	
Refrigerant pressure sensor	EC-619, "Refrigerant Pressure Sensor"	
Stop lamp switch	FO 620 liCton Loren Critich & Brake Bodyl By War O Wall	
Brake pedal position switch	EC-620, "Stop Lamp Switch & Brake Pedal Position Switch"	
Clutch pedal position switch (M/T models)	EC-620, "Clutch Pedal Position Switch"	
ASCD steering switch	EC-620, "ASCD Steering Switch"	
Information display	EC-620, "Information Display"	
G sensor	EC-614, "G Sensor"	
Manifold absolute pressure sensor	EC-619, "Manifold Absolute Pressure Sensor"	
Engine oil pressure control solenoid valve	EC-616, "Engine Oil Pressure Control Solenoid Valve"	
Intake valve timing intermediate lock control solenoid valve	EC-613, "Intake Valve Timing Intermediate Lock Control Solenoid Valve"	
EGR pressure sensor	EC-614, "EGR Pressure Sensor"	

#### **COMPONENT PARTS**

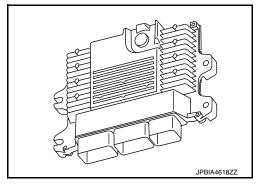
#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

Component	Reference
EGR volume control valve	EC-614, "EGR Volume Control Valve"
Electric wastegate control actuator	EC-609, "Turbocharger"
Multi-way control valve	EC-611, "Multi-way Control Valve"
Intake manifold runner control valve	EC-614, "Intake Manifold Runner Control Valve"

ECM INFOID:000000012198149

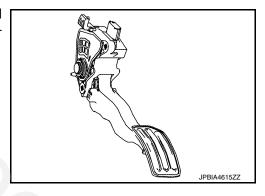
The ECM consists of a microcomputer and connectors for signal input and output and for power supply. The ECM controls the engine.



#### Accelerator Pedal Position Sensor

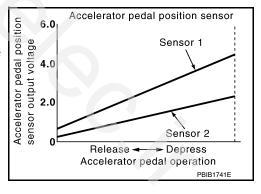
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The accelerator pedal position sensor is installed on the upper end of the accelerator pedal assembly. The sensor detects the accelerator position and sends a signal to the ECM.



Accelerator pedal position sensor has two sensors. These sensors are a kind of potentiometers which transform the accelerator pedal position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the accelerator pedal and feed the voltage signals to the ECM. The ECM judges the current opening angle of the accelerator pedal from these signals and controls the throttle control motor based on these signals.

Idle position of the accelerator pedal is determined by the ECM receiving the signal from the accelerator pedal position sensor. The ECM uses this signal for the engine operation such as fuel cut.

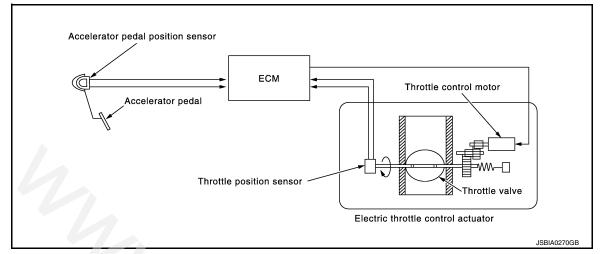


#### Electric Throttle Control Actuator

INFOID:0000000012198151

**OUTLINE** 

Electric throttle control actuator consists of throttle body, throttle valve, throttle control motor and throttle position sensor.



#### THROTTLE CONTROL MOTOR RELAY

Power supply for the throttle control motor is provided to the ECM via throttle control motor relay. The throttle control motor relay is ON/OFF controlled by the ECM. When the ignition switch is turned ON, the ECM sends an ON signal to throttle control motor relay and battery voltage is provided to the ECM. When the ignition switch is turned OFF, the ECM sends an OFF signal to throttle control motor relay and battery voltage is not provided to the ECM.

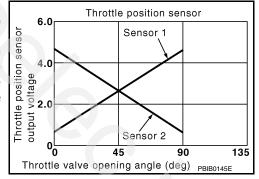
#### THROTTLE CONTROL MOTOR

The throttle control motor is operated by the ECM and it opens and closes the throttle valve.

The current opening angle of the throttle valve is detected by the throttle position sensor and it provides feedback to the ECM to control the throttle control motor to make the throttle valve opening angle properly in response to driving condition.

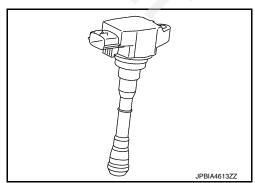
#### THROTTLE POSITION SENSOR

The throttle position sensor responds to the throttle valve movement. The throttle position sensor has two sensors. These sensors are a kind of potentiometers which transform the throttle valve position into output voltage, and emit the voltage signal to the ECM. In addition, these sensors detect the opening and closing speed of the throttle valve and feed the voltage signals to the ECM. The ECM judges the current opening angle of the throttle valve from these signals and the ECM controls the throttle control motor to make the throttle valve opening angle properly in response to driving condition.



# Ignition Coil With Power Transistor

The ignition signal from the ECM is sent to and amplified by the power transistor. The power transistor turns ON and OFF the ignition coil primary circuit. This ON/OFF operation induces the proper high voltage in the coil secondary circuit.



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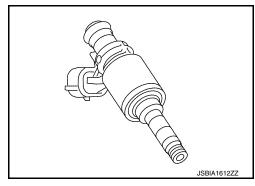
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Fuel Injector

For the fuel injector, a high pressure fuel injector is used and this enables a high-pressure fuel injection at a high voltage within a short time. The ECM is equipped with an injector driver unit and actuates the fuel injector at a high voltage (approximately 65 V at the maximum).



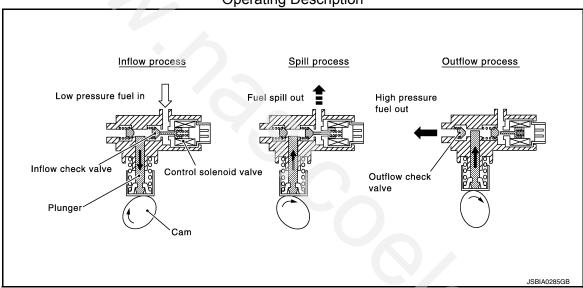
# High Pressure Fuel Pump

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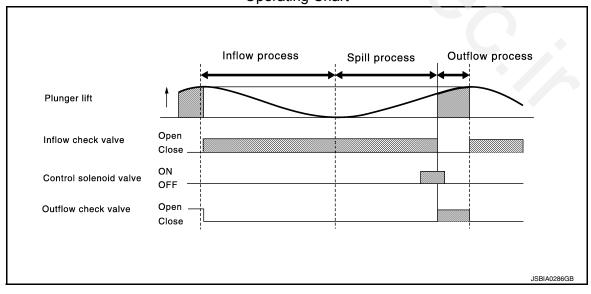
The high pressure fuel pump is activated by the exhaust camshaft.

ECM controls the high pressure fuel pump control solenoid valve built into the high pressure fuel pump and adjusts the amount of discharge by changing the suction timing of the low pressure fuel.

#### Operating Description

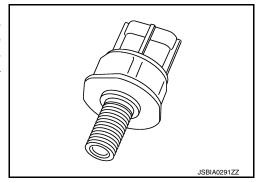


#### **Operating Chart**



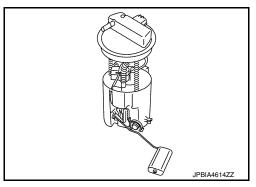
## Fuel Rail Pressure Sensor

The fuel rail pressure (FRP) sensor is placed to the fuel rail and measures fuel pressure in the fuel rail. The sensor transmits voltage signal to the ECM. As the pressure increases, the voltage rises. The ECM controls the fuel pressure in the fuel rail by operating high pressure fuel pump. The ECM uses the signal from fuel rail pressure sensor as a feedback signal.



# Low Pressure Fuel Pump

The low pressure fuel pump is integrated with a fuel pressure regulator and a fuel filter. This pump is build into the fuel tank.

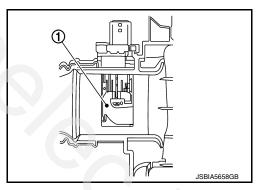


# Mass Air Flow Sensor (With Intake Air Temperature Sensor 1)

#### MASS AIR FLOW SENSOR

The mass air flow sensor (MAF sensor) ① is placed in the stream of intake air. It measures the intake flow rate by measuring a part of the entire intake flow. The MAF sensor controls the temperature of the heater in sensing element to a certain amount.

The temperature distribution around the heater changes according to the increase in intake air volume. The change is detected by a thermistor and the air volume data is sent to ECM by the MAF sensor.



#### **INTAKE AIR TEMPERATURE SENSOR 1**

The intake air temperature sensor 1 (IAT sensor 1) is built-into the mass air flow sensor. The sensor detects intake air temperature and transmits a signal to the ECM.

The temperature sensing unit uses a thermistor which is sensitive to the change in temperature.

#### <Reference data>

Intake air temperature	Voltage <sup>*</sup>
25°C (77°F)	2.0 – 2.2 V
80°C (176°F)	3.0 – 3.2 V

<sup>\*:</sup> These data are reference values on the diagnosis tool.

Turbocharger INFOID:000000012198158

#### TURBOCHARGER BOOST CONTROL

Revision: November 2015 EC-609 2016 JUKE

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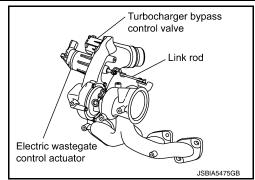
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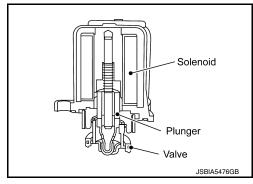
#### [MR EXCEPT FOR NISMO RS MODELS]

The electric wastegate control actuator operates based on a signal from ECM and adjusts the turbo charger boost control valve angle via link rod. The electronic control allows the turbocharger wastegate control valve to be opened even in non-supercharging regions. This reduces pumping losses and contributes to the fuel economy. In charging regions, wastegate valve angles are controlled by the electronic control with a high degree of accuracy.



#### TURBOCHARGER BYPASS CONTROL

When an operating signal received from ECM energizes the solenoid, the turbocharger bypass control valve opens the valve by sucking in the plunger. The electronically-controlled turbocharger bypass control valve quickly opens the bypass valve when releasing the accelerator pedal during driving under supercharge. This reduces surge sound generated by the back flow of supercharged air to the compressor fin.

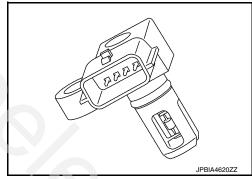


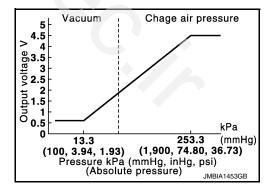
Turbocharger Boost Sensor (With Intake Air Temperature Sensor 2)

INFOID:0000000012198159

#### TURBOCHARGER BOOST SENSOR

The turbocharger boost sensor detects the pressure of the outlet side of the intercooler. When increasing the pressure, the output voltage of the sensor to the ECM increases.





#### **INTAKE AIR TEMPERATURE SENSOR 2**

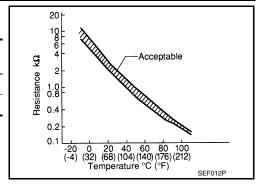
The intake air temperature sensor 2 is built-into turbocharger boost sensor. The sensor detects intake air temperature and transmits a signal to the ECM.

The temperature sensing unit uses a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to the temperature rise.

#### <Reference data>

Intake air temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
25 (77)	3.27-3.35	1.940 - 2.089
80 (176)	1.19-1.23	0.310 - 0.322

<sup>\*:</sup> These data are reference values and are measured between ECM terminals.



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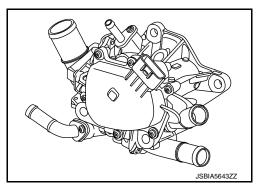
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# Multi-way Control Valve

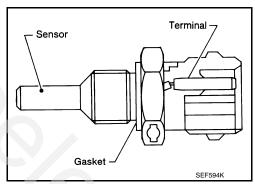
The multi-way control valve changes flow paths to Heater & EGR cooler, Oil cooler, and Radiator, according to coolant temperature and driving conditions.



#### INFOID:0000000012198161

# **Engine Coolant Temperature Sensor 1**

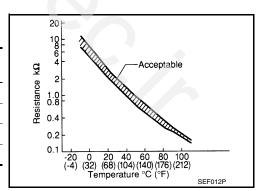
The engine coolant temperature sensor is used to detect the engine coolant temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine coolant temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



#### <Reference data>

Engine coolant temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
-10 (14)	4.29-4.50	7.0 - 11.4
20 (68)	3.48-3.58	2.37 - 2.63
50 (122)	2.03-2.49	0.68 - 1.00
90 (194)	0.97-1.04	0.236 - 0.260

<sup>\*:</sup> These data are reference values and are measured between ECM terminals.



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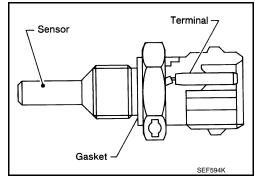
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# Engine Coolant Temperature Sensor 2

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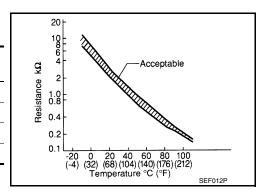
The engine coolant temperature sensor is used to detect the radiator-outlet water temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the radiator-outlet water temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



#### <Reference data>

Engine coolant temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
-10 (14)	4.29-4.50	7.0 - 11.4
20 (68)	3.48-3.58	2.37 - 2.63
50 (122)	2.03-2.49	0.68 - 1.00
90 (194)	0.97-1.04	0.236 - 0.260

<sup>\*:</sup> These data are reference values and are measured between ECM terminals.



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## Crankshaft Position Sensor (POS)

The crankshaft position sensor (POS) is located on the oil pan facing the gear teeth (cogs) of the signal plate. It detects the fluctuation of the engine revolution.

The sensor consists of a permanent magnet and Hall IC.

When the engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.

The ECM receives the voltage signal and detects the fluctuation of the engine revolution.

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# Camshaft Position Sensor (PHASE)

The camshaft position sensor (PHASE) senses the retraction of intake camshaft to identify a particular cylinder. The camshaft position sensor (PHASE) senses the piston position.

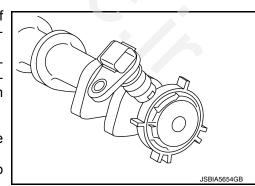
When the crankshaft position sensor (POS) system becomes inoperative, the camshaft position sensor (PHASE) provides various controls of engine parts instead, utilizing timing of cylinder identification signals.

The sensor consists of a permanent magnet and Hall IC.

When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.



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## Intake Valve Timing Control Solenoid Valve

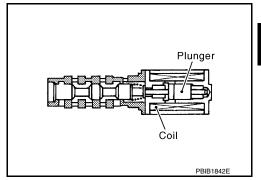
Intake valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The intake valve timing control solenoid valve changes the oil amount and direction of flow through intake valve timing control unit or stops oil flow.

The longer pulse width advances valve angle.

The shorter pulse width retards valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the intake valve angle at the control position.

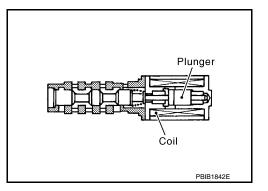


## Intake Valve Timing Intermediate Lock Control Solenoid Valve

Intake valve timing intermediate lock control solenoid valve is activated by ON/OFF signals from the ECM.

The intake valve timing intermediate lock control solenoid valve opens/closes the path of oil pressure acting on the lock key in the camshaft sprocket (INT).

- When the solenoid valve becomes ON, oil pressure to the lock key is drained to perform intermediate lock.
- When the solenoid valve becomes OFF, oil pressure is acted on the lock key to release the intermediate lock.



## Exhaust Valve Timing Control Position Sensor

Exhaust valve timing control position sensor detects the protrusion of the signal plate installed to the exhaust camshaft front end.

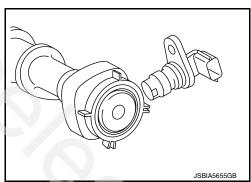
This sensor signal is used for sensing a position of the exhaust camshaft.

The sensor consists of a permanent magnet and Hall IC.

When engine is running, the high and low parts of the teeth cause the gap with the sensor to change.

The changing gap causes the magnetic field near the sensor to change.

Due to the changing magnetic field, the voltage from the sensor changes.



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## Exhaust Valve Timing Control Solenoid Valve

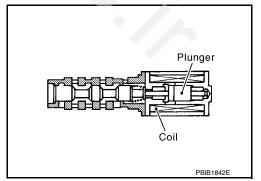
Exhaust valve timing control solenoid valve is activated by ON/OFF pulse duty (ratio) signals from the ECM.

The exhaust valve timing control solenoid valve changes the oil amount and direction of flow through exhaust valve timing control unit or stops oil flow.

The longer pulse width retards valve angle.

The shorter pulse width advances valve angle.

When ON and OFF pulse widths become equal, the solenoid valve stops oil pressure flow to fix the exhaust valve angle at the control position.



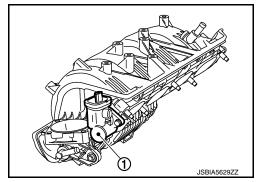
#### Intake Manifold Runner Control Valve

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Intake manifold runner control valve (1) is integrated to intake manifold.

Intake manifold runner control valve is mounted each port of the intake manifold and opened/closed by the intake manifold runner control valve motor.

ECM controls the intake manifold runner control valve motor, according to signals of engine speed, water temperature, etc. and stabilizes combustion by generating a strong tumble flow.



#### INTAKE MANIFOLD RUNNER CONTROL VALVE MOTOR

Intake manifold runner control valve motor is connected to the rear end of the valve shaft.

The motor opens or closes the valve by the output signal of the ECM.

### **EGR Volume Control Valve**

INFOID:0000000012198171

#### EGR VOLUME CONTROL VALVE

The EGR volume control valve used a DC motor and controls the flow rate of EGR from downstream of exhaust manifold catalyst. ECM controls the DC motor to make the valve opening angle in response to driving conditions.

#### EGR CONTROL POSITION SENSOR

The EGR control valve control position sensor is built in the EGR control valve and uses a permanent magnet and a semiconductor device. This sensor measures valve shaft movements and transmits a voltage signal to ECM. Based on this signal, ECM judges the valve opening angle as of then and controls the motor to achieve opening angle appropriate to the driving conditions.

#### **EGR Pressure Sensor**

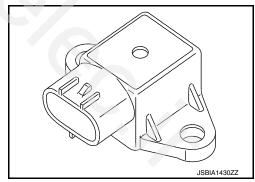
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The EGR pressure sensor detects the pressure difference between before and behind the EGR volume control valve. This sensor is not directly used for the engine system control, but used only for self-diagnosis.

G Sensor

The G sensor has a semiconductor acceleration sensor and detects longitudinal G and tilt angle of the vehicle based on gravitational acceleration.

In addition, the G sensor converts a detected tilt angle into an electric signal and transmits it to ECM.



Air Fuel Ratio (A/F) Sensor 1

INFOID:0000000012198175

DESCRIPTION

#### COMPONENT PARTS

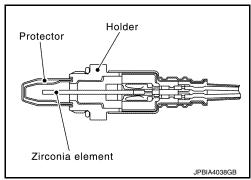
#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

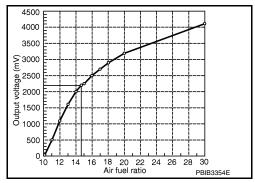
The sensor element of the A/F sensor 1 is composed an electrode layer, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement  $\lambda = 1$ , but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide  $\lambda$  range.

The exhaust gas components diffuse through the diffusion layer at the sensor cell. An electrode layer is applied voltage, and this current relative oxygen density in lean. Also this current relative hydrocarbon density in rich.



Therefore, the A/F sensor 1 is able to indicate air fuel ratio by this electrode layer of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of approximately 760°C (1,400°F).



#### A/F SENSOR 1 HEATER

A/F sensor 1 heater is integrated in the sensor.

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element within the specified range.

## Heated Oxygen Sensor 2

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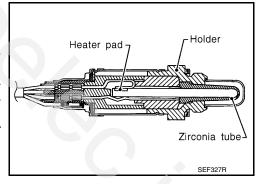
#### **DESCRIPTION**

The heated oxygen sensor 2, after three way catalyst (manifold), monitors the oxygen level in the exhaust gas.

Even if switching characteristics of the air fuel ratio (A/F) sensor 1 are shifted, the air fuel ratio is controlled to stoichiometric, by the signal from the heated oxygen sensor 2.

This sensor is made of ceramic zirconia. The zirconia generates voltage from approximately 1 V in richer conditions to 0 V in leaner conditions.

Under normal conditions the heated oxygen sensor 2 is not used for engine control operation.



#### **HEATED OXYGEN SENSOR 2 HEATER**

Heated oxygen sensor 2 heater is integrated in the sensor.

The ECM performs ON/OFF control of the heated oxygen sensor 2 heater corresponding to the engine speed, amount of intake air and engine coolant temperature.

Engine speed	Heated oxygen sensor 2 heater
Above 3,600 rpm	OFF
Below 3,600 rpm after the following conditions are met.  • Engine: After warming up  • Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load	ON

Revision: November 2015 EC-615 2016 JUKE

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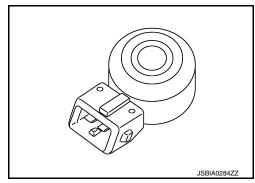
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Knock Sensor

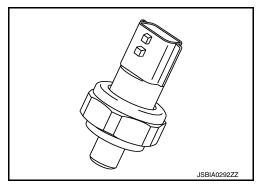
The knock sensor is attached to the cylinder block. It senses engine knocking using a piezoelectric element. A knocking vibration from the cylinder block is sensed as vibrational pressure. This pressure is converted into a voltage signal and sent to the ECM.



## Engine Oil Pressure Sensor

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The engine oil pressure (EOP) sensor is detects engine oil pressure and transmits a voltage signal to the ECM.

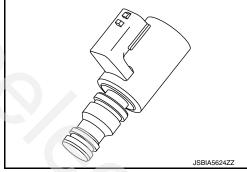


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## Engine Oil Pressure Control Solenoid Valve



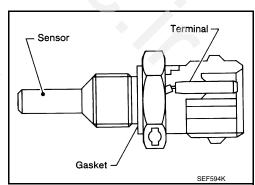
The engine oil pressure control solenoid valve performs the variable hydraulic control (low oil pressure control and high oil pressure control) according to oil temperature and engine load.



## Engine Oil Temperature Sensor

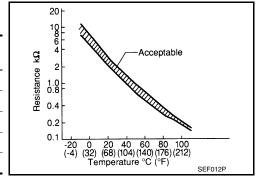
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The engine oil temperature sensor is used to detect the engine oil temperature. The sensor modifies a voltage signal from the ECM. The modified signal returns to the ECM as the engine oil temperature input. The sensor uses a thermistor which is sensitive to the change in temperature. The electrical resistance of the thermistor decreases as temperature increases.



#### <Reference data>

Engine oil temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
-10 (14)	4.29-4.50	7.0 - 11.4
20 (68)	3.48-3.58	2.37 - 2.63
50 (122)	2.03-2.49	0.68 - 1.00
90 (194)	0.97-1.04	0.236 - 0.260
110 (230)	0.63-0.67	0.143 - 0.153



<sup>\*:</sup> These data are reference values and are measured between ECM terminals.

Cooling Fan

#### COOLING FAN CONTROL MODULE

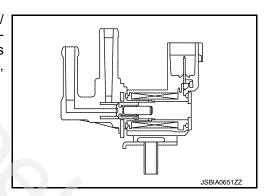
Cooling fan control module receives ON/OFF pulse duty signal from IPDM E/R. Corresponding to this ON/OFF pulse duty signal, cooling fan control module sends cooling fan motor operating voltage to cooling fan motor. The revolution speed of cooling fan motor is controlled by duty cycle of the voltage.

#### COOLING FAN MOTOR

Cooling fan motor receives cooling fan motor operating voltage from cooling fan control module. The revolution speed of cooling fan motor is controlled by duty cycle of the voltage.

## **EVAP Canister Purge Volume Control Solenoid Valve**

The EVAP canister purge volume control solenoid valve uses a ON/ OFF duty to control the flow rate of fuel vapor from the EVAP canister. The EVAP canister purge volume control solenoid valve is moved by ON/OFF pulses from the ECM. The longer the ON pulse, the greater the amount of fuel vapor that will flow through the valve.



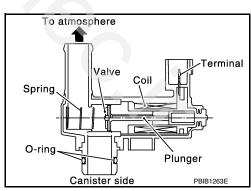
#### **EVAP Canister Vent Control Valve**

The EVAP canister vent control valve is located on the EVAP canister and is used to seal the canister vent.

This solenoid valve responds to signals from the ECM. When the ECM sends an ON signal, the coil in the solenoid valve is energized. A plunger will then move to seal the canister vent. The ability to seal the vent is necessary for the on board diagnosis of other evaporative emission control system components.

This solenoid valve is used only for diagnosis, and usually remains opened.

When the vent is closed, under normal purge conditions, the evaporative emission control system is depressurized and allows "EVAP Control System" diagnosis.



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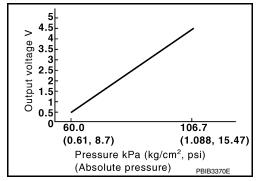
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## **EVAP Control System Pressure Sensor**

The EVAP control system pressure sensor detects pressure in the purge line. The sensor output voltage to the ECM increases as pressure increases.



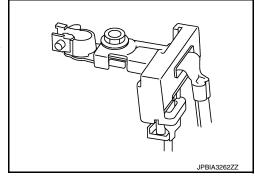
## Battery Current Sensor (With Battery Temperature Sensor)

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#### OUTLINE

The power generation voltage variable control enables fuel consumption to be decreased by reducing the engine load which is caused by the power generation of the generator.

Based on sensor signals, ECM judges whether or not the power generation voltage variable control is performed. When performing the power generation voltage variable control, ECM calculates the target power generation voltage based on the sensor signal. And ECM sends the calculated value as the power generation command value to IPDM E/R. For the details of the power generation voltage variable control, refer to CHG-8, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM: System Description".



#### **CAUTION:**

Never connect the electrical component or the ground wire directly to the battery terminal. The connection causes the malfunction of the power generation voltage variable control, and then the battery discharge may occur.

#### BATTERY CURRENT SENSOR

The battery current sensor is installed to the battery negative cable. The sensor measures the charging/discharging current of the battery.

#### BATTERY TEMPERATURE SENSOR

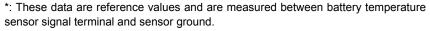
Battery temperature sensor is integrated in battery current sensor. The sensor measures temperature around the battery.

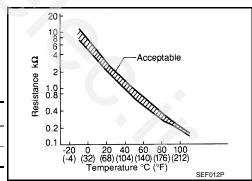
The electrical resistance of the thermistor decreases as temperature

increases.

#### <Reference data>

Temperature [°C (°F)]	Voltage <sup>*</sup> (V)	Resistance (kΩ)
25 (77)	3.333	1.9 - 2.1
90 (194)	0.969	0.222 - 0.258





## Malfunction Indicator lamp (MIL)

Malfunction Indicator lamp (MIL) is located on the combination meter.

MIL will illuminate when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, MIL should turn OFF. If the MIL remains illuminated, the on board diagnostic system has detected an engine system malfunction.

For details, refer to <u>EC-666</u>, "<u>DIAGNOSIS DESCRIPTION</u>: <u>Malfunction Indicator Lamp</u> (MIL)".

Control modules that a DTC of MIL ON/Blink is stored (Control module varies among DTCs.):

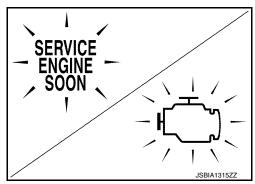
- ECM
- TCM

## Oil Pressure Warning Lamp

Oil pressure warning lamp is located on the combination meter. It indicates the low pressure of the engine oil and the malfunction of the engine oil pressure system.

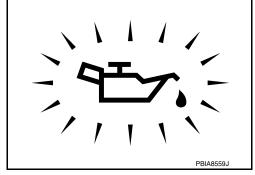
Combination meter turns the oil pressure warning lamp ON/OFF according to the oil pressure warning lamp signal received from ECM via CAN communication.

For details, refer to <u>EC-644</u>, "<u>ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE</u>: <u>System Description</u>".



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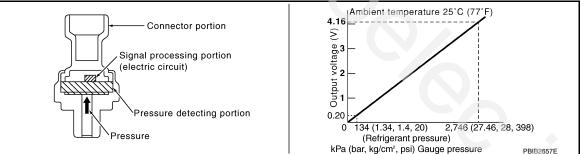


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## Refrigerant Pressure Sensor

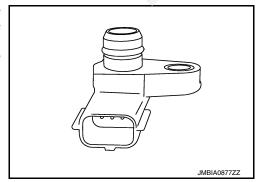
The refrigerant pressure sensor is installed at the condenser of the air conditioner system. The sensor uses an electrostatic volume pressure transducer to convert refrigerant pressure to voltage. The voltage signal is sent to ECM, and ECM controls cooling fan system.



## Manifold Absolute Pressure Sensor

The manifold absolute pressure (MAP) sensor is placed at intake manifold collector. It detects intake manifold pressure and sends the voltage signal to the ECM.

The sensor uses a silicon diaphragm which is sensitive to the change in pressure. As the pressure increases, the voltage rises.



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#### **COMPONENT PARTS**

#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

## Stop Lamp Switch & Brake Pedal Position Switch

INFOID:0000000012198190

Stop lamp switch and brake pedal position switch are installed to brake pedal bracket. ECM detects the state of the brake pedal by those two types of input (ON/OFF signal).

Brake pedal	Brake pedal position switch	Stop lamp switch
Released	ON	OFF
Depressed	OFF	ON

#### Clutch Interlock Switch

INFOID:0000000012198191

When the clutch pedal is depressed, the clutch interlock switch turns ON and the clutch interlock switch signal is sent to the ECM. The ECM judges the clutch pedal conditions via the signal (ON or OFF).

Clutch pedal	Clutch interlock switch
Released	OFF
Depressed	ON

#### Clutch Pedal Position Switch

INFOID:0000000012198192

When the clutch pedal is depressed, the clutch pedal position switch turns OFF and the clutch pedal position switch signal is sent to the ECM. The ECM judges the clutch pedal conditions via the signal (ON or OFF).

	Clutch pedal	Clutch pedal position switch
Released		ON
Depressed		OFF

## **ASCD Steering Switch**

INFOID:0000000012198193

ASCD steering switch has variant values of electrical resistance for each button. ECM reads voltage variation of switch, and determines which button is operated.

## Information Display

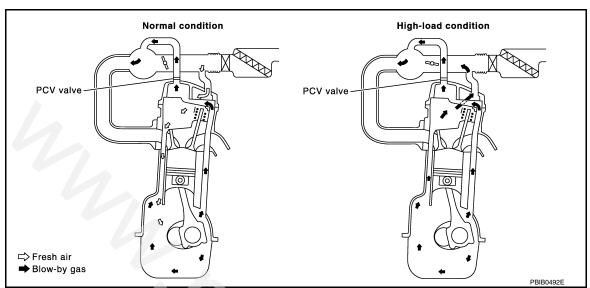
INFOID:0000000012198194

The operation mode of the ASCD is indicated on the information display in the combination meter. ECM transmits the status signal to the combination meter via CAN communication according to ASCD operation.

#### STRUCTURE AND OPERATION

## Positive Crankcase Ventilation

INFOID:0000000012198195



This system returns blow-by gas to the intake manifold.

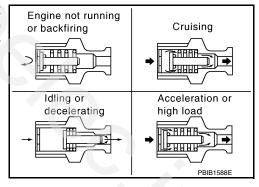
The positive crankcase ventilation (PCV) valve is provided to conduct crankcase blow-by gas to the intake manifold.

During partial throttle operation of the engine, the intake manifold sucks the blow-by gas through the PCV valve.

Normally, the capacity of the valve is sufficient to handle any blow-by and a small amount of ventilating air. The ventilating air is then drawn from the air inlet tubes into the crankcase. In this process the air passes through the hose connecting air inlet tubes to rocker cover.

Under full-throttle condition, the manifold vacuum is insufficient to draw the blow-by flow through the valve. The flow goes through the hose connection in the reverse direction.

On vehicles with an excessively high blow-by, the valve does not meet the requirement. This is because some of the flow will go through the hose connection to the air inlet tubes under all conditions.



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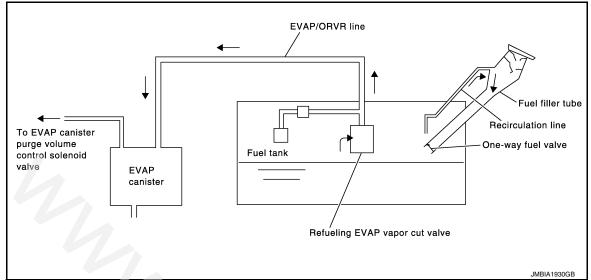
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#### STRUCTURE AND OPERATION

[MR EXCEPT FOR NISMO RS MODELS]

## On Board Refueling Vapor Recovery (ORVR)

INFOID:0000000012198196



From the beginning of refueling, the air and vapor inside the fuel tank go through refueling EVAP vapor cut valve and EVAP/ORVR line to the EVAP canister. The vapor is absorbed by the EVAP canister and the air is released to the atmosphere.

When the refueling has reached the full level of the fuel tank, the refueling EVAP vapor cut valve is closed and refueling is stopped because of auto shut-off. The vapor which was absorbed by the EVAP canister is purged during driving.

#### **WARNING:**

When conducting inspections below, be sure to observe the following:

- Put a "CAUTION: FLAMMABLE" sign in workshop.
- · Do not smoke while servicing fuel system. Keep open flames and sparks away from work area.
- Be sure to furnish the workshop with a CO2 fire extinguisher.

#### **CAUTION:**

- Before removing fuel line parts, carry out the following procedures:
- Put drained fuel in an explosion-proof container and put lid on securely.
- Release fuel pressure from fuel line. Refer to EC-1252, "Inspection".
- Disconnect battery ground cable.
- Always replace O-ring when the fuel gauge retainer is removed.
- Do not kink or twist hose and tube when they are installed.
- Do not tighten hose and clamps excessively to avoid damaging hoses.
- After installation, run engine and check for fuel leaks at connection.
- Do not attempt to top off the fuel tank after the fuel pump nozzle shuts off automatically.
   Continued refueling may cause fuel overflow, resulting in fuel spray and possibly a fire.

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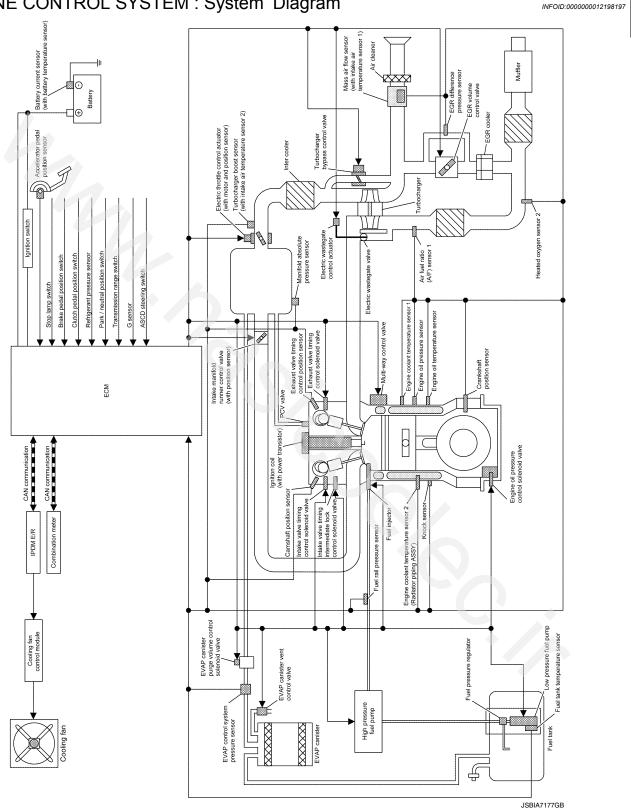
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# **SYSTEM**

## **ENGINE CONTROL SYSTEM**

ENGINE CONTROL SYSTEM: System Diagram



**ENGINE CONTROL SYSTEM: System Description** 

INFOID:0000000012198198

ECM controls the engine by various functions.

Function	Reference				
Engine oil pressure control	EC-635, "ENGINE OIL PRESSURE CONTROL SYSTEM: System Description"				
EGR system	EC-637, "EGR SYSTEM : System Description"				
Intake manifold runner control	EC-643, "INTAKE MANIFOLD RUNNER CONTROL : System Description"				
Thermal management control	EC-647, "THERMAL MANAGEMENT CONTROL : System Description"				
Fuel injection control	EC-630, "DIRECT INJECTION GASOLINE SYSTEM: System Description"				
Fuel pressure control	EC-633, "FUEL PRESSURE CONTROL : System Description"				
Electric ignition control	EC-636, "ELECTRIC IGNITION SYSTEM : System Description"				
Intake valve timing control	EC-639, "INTAKE VALVE TIMING CONTROL : System Description"				
Exhaust valve timing control	EC-642, "EXHAUST VALVE TIMING CONTROL : System Description"				
Turbocharger boost control	EC-643. "TURBOCHARGER BOOST CONTROL : System Description"				
Engine protection control (Low engine oil pressure)	EC-644, "ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE: System Description"				
Air conditioning cut control	EC-645, "AIR CONDITIONING CUT CONTROL : System Description"				
Cooling fan control	EC-646, "COOLING FAN CONTROL : System Description"				
Starter motor drive control	EC-649, "STARTER MOTOR DRIVE CONTROL : System Description"				
Evaporative emission	EC-650, "EVAPORATIVE EMISSION SYSTEM : System Description"				
Alternator power generation voltage variable control system	EC-651, "ALTERNATOR POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM: System Description"				
Fuel filler cap warning system	EC-652, "FUEL FILLER CAP WARNING SYSTEM : System Description"				
ASCD (Automatic speed control device)	EC-653, "AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Description"				
Nissan dynamic control	EC-654, "INTEGRATED CONTROL SYSTEM : System Description"				
CAN communication	EC-655, "CAN COMMUNICATION : System Description"				

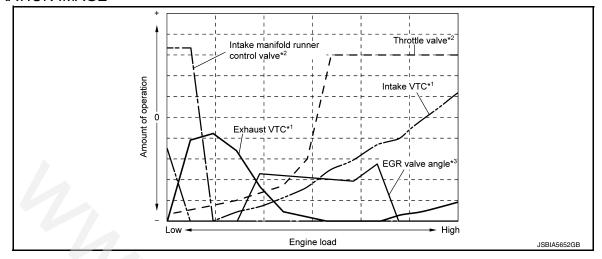
## **ENGINE CONTROL SYSTEM: Integrated Engine Control**

INFOID:0000000012198199

#### SYSTEM DESCRIPTION

ECM calculates the target intake air amount and the target boost pressure according to the effective volume of cylinder, operation rate of EGR, and boost pressure to achieve driving condition requested by the driver. ECM properly combines the intake and exhaust air VTC, EGR valve, throttle valve, and turbocharger bypass control valve based on the calculations.

#### **OPERATION IMAGE**



ENGINE CONTROL SYSTEM: Fail Safe

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#### Description

When a DTC is detected, ECM executes a mode (in the Fail-safe mode) applicable to the DTC. The fail-safe mode has the preset traveling control mode (accelerator angle variation and engine output limit) and device fix mode.

Fail s	afe mode	Vehicle behavior
	Accelerator angle variation control	ECM controls the accelerator pedal depression speed to make it slower than actual speed. This causes a drop in accelerating performance and encourages the driver to repair malfunction.  NOTE:  ECM does not control the accelerator pedal releasing speed.
Traveling con- trol mode	Engine output control	ECM reduces the engine output, according to the rise in engine speed. This reduces the vehicle speed to encourage the driver to repair malfunction.  • Engine output control 1: Limits the maximum speed to 120 km/h (75 MPH)*  • Engine output control 2: Limits the maximum speed to 55 km/h (34 MPH)*  *: This value is a reference value converted from engine power to vehicle speed.  Actual power limitation value differs due to the malfunctioning part and driving condition.
Device fix mode	9	<ul> <li>This mode fixes the IVT control solenoid valve and the EVT control solenoid valve in the reference position.</li> <li>A control signals is not transmitted to EGR volume control valve and the EGR volume control is deactivated.</li> <li>The Intake manifold runner control valve motor is turned OFF (Intake manifold runner control valve opens).</li> </ul>
	Stratified charge combustion control at starting	No stratified charge combustion at starting (cold start).
	Idle speed con- trol	Stops feedback control of idle speed and controls with specified speed.
Combustion control mode	Recovery speed control at decelerating	Stops recovery speed control by the fuel cut at decelerating and controls with specified speed.
	Idle neutral con- trol	Stops idle neutral control.
	Ignition timing correction control	Partially controls ignition timing control.
	Retardation control	Controls ignition timing delay control in the intermediate water temperature range.

#### Fail Safe Pattern

Pattern		Fail safe mode								
А		Accelerator angle variation control								
В	Traveling control mode	Engine output control 1								
С		Engine output control 2								
D	Device fix mode									
E		Stratified charge combustion control at starting								
F	Combustion control mode	<ul><li> Idle speed control</li><li> Recovery speed control at decelerating</li><li> Idle neutral control</li></ul>								
G		<ul><li>Ignition timing correction control</li><li>Retardation control</li></ul>								

#### Fail Safe List

×:Applicable —: Not applicable

							Ve	ehicle b	pehavior
DTC No.	Detected items				Patter	n			Othere
140.		Α	В	С	D	Е	F	G	- Others
P0011 P0075 P052A P052B	Intake valve timing control	_		_	×	_	_	_	_
P0014 P0078	Exhaust valve timing control	_		-	×	_	_	_	_
P0046	Electric wastegate control actuator	×	×	_	×	_	_	_	The ECM stops the electric wastegate actuator control, engine can not be supercharged driving. The ECM requlates engine power limiter and EGR Off.
P0087 P0090	FRP control system	×	_	×	×	×	_	)-	_
P0088	FRP control system	×	_	×	_	×			_
P00B3 P00B4	Engine coolant temperature sensor 2	_		_	_	_	_	-	High coolant temperature control does not function.
P0101 P0102 P0103	Mass air flow sensor	×	×	_	×	×	×	×	NOTE: Fail-safe mode may not start depending on malfunction type of ECM
P0117 P0118	Engine coolant temperature sensor 1	_	_	_	_	×	×	_	The engine speed does not exceed 2,000 rpm due to fuel cut
P0122 P0123 P0222 P0223 P2135	Throttle position sensor		_	_	×	_	_	_	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.  The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.  So, the acceleration will be poor.
P0171 P0172	Fuel injection system	×	_	_	_	×	×	_	_
P0190	FRP sensor	×	×	×	×	×	×	_	High pressure fuel pump is activated at maximum discharge pressure.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM

## **SYSTEM**

## [MR EXCEPT FOR NISMO RS MODELS]

DTC	<b>5</b>				<u> </u>		Ve	enicle b	ehavior	
No.	Detected items		Г.	1	Patteri		_	-	Others	
P0192	FRP sensor	×	B ×		D	×	F —	G	High pressure fuel pump is activated at maximum discharge pressure.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM	
P0193	FRP sensor	×	×	_	_	×	_	_	High pressure fuel pump is activated at maximum discharge pressure.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM	
P0196 P0197 P0198	Engine oil temperature sensor	_	_		_	_	_	_	Exhaust valve timing control does not function.	
P0201 P0202 P0203 P0204	Injector	×	_	×	_	×	_	_	_	
P0237	Turbocharger boost sensor	×	×	_	×	_	_	_	_	
P0300 P0301 P0302 P0303 P0304	Misfire	×	2	5	_	×	×	_	_	
P0335	Crankshaft position sensor	_	_		×	_	_	_	_	
P0340	Camshaft position sensor	_	_	_	×	_	_	_	_	
P0365	Exhaust valve timing control position sensor	_	_	_	×	_	)-	_	_	
P0401 P0402	EGR system	_	_	_	×				_	
P0404	EGR volume control valve	×	_	×	×	×	×	_	_	
P0407 P0408 P046E P046F P0486	EGR pressure sensor	_	_	_	×	_	_			
P0448	EVAP canister vent control valve	×	_	_	×	_	_	_	<u> </u>	
P044A P044B P044C P044D P044E	EGR volume control valve position sensor	×	_	_	×	_	_	_		
P0500		×	_	_	_	×	×	_		
P0501 P2159	Vehicle speed sensor	×	_	_	_	×	_	_	<del>-</del>	
P050A	Cold start control	×	_	_	_	×	_	_		
P0524	Engine oil pressure	_	_	_	_	_	_	_	<ul> <li>ECM illuminates oil pressure warning lamp on the combination meter.</li> <li>Engine speed will not rise more than 4,000rpm due to the fuel cut.</li> <li>Fail-safe is canceled when ignition switch OFF → ON.</li> </ul>	

DTC		Vehicle behavior								
DTC No.	Detected items				Patter	n			Others	
		Α	В	С	D	Е	F	G	Outers	
P0603 P0607		×	×	_	_	_	_	_	_	
P0604 P0605 P0606 P060B	ECM	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.	
P060A		×	×	_	×	_	_	_	NOTE:	
P062B		×	_	×	_	×	_	_	Fail-safe mode may not start depending on malfunction type of ECM	
P0643	Sensor power supply	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.	
P119A	FRP sensor	×	_	_	_	×	_	_	_	
P119B	FRP sensor	×	_	_	_	×	_	_	_	
P119C	FRP sensor	×		_	_	×		_	_	
P1197	Out of gas	_	_	×	×	_	_	_	_	
P1217	Engine over temperature	_		_	_	_	_	_	The engine speed does not exceed 2,000 rpm due to fuel cut	
P159B	G sensor	×		-	_	×	_	_	_	
P2100 P2103	Throttle control motor relay	_		7	×	-	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.	
P2004	Intake manifold runner control valve	_	_	_	×	_	)-	_	_	
P2014	Intake manifold runner control valve position sensor	_	_	_	×			)-	_	
P2016	Intake manifold runner control valve position sensor	_	_	_	×	_		-	_	
P2017	Intake manifold runner control valve position sensor	_	_	_	×	_	_		_	
P2018	Intake manifold runner control valve position sensor	_	_	_	×	_	_	_	_	
P2101	Electric throttle control function	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.	
P2118	Throttle control motor	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.	
P2119	Electric throttle control actuator	×	×	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM	

## **SYSTEM**

## < SYSTEM DESCRIPTION >

## [MR EXCEPT FOR NISMO RS MODELS]

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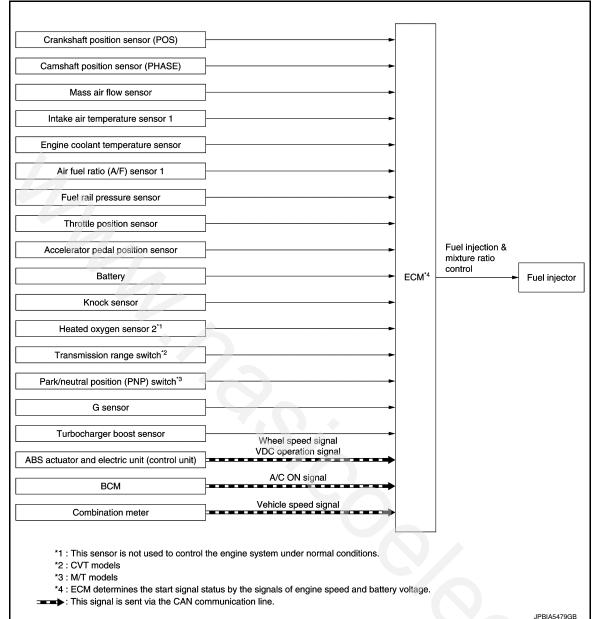
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		Vehicle behavior						pehavior	
DTC No.	Detected items				Patterr	ı			Others
		Α	В	С	D	Е	F	G	- Citicis
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	_	_	_	×	_	_	_	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.  The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.  So, the acceleration will be poor.
P2162	Vehicle speed sensor	×	_	_	_	×	_	_	_
P2263	Turbocharger system	×	×	_	×	_	_	_	_
P2562 P2566	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	The ECM stops the electric wastegate actuator control, engine can not be supercharged driving. The ECM regulates engine power limiter and EGR Off.
P2563	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	_
P2564	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	_
P2565	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	_
P26A3 P26A5 P26A6 P26A7	Multi-way control valve	_	<u> </u>		9	<u>-</u>	-	_	<ul> <li>When detecting a malfunction with the valve closed, ECM fully opens the valve.</li> <li>When detecting a malfunction with the valve opened, ECM maintains valve angle.</li> <li>When detecting a malfunction in sensor, ECM fully opens the valve.</li> <li>ECM limits the engine output depending on malfunctions.</li> </ul>

**DIRECT INJECTION GASOLINE SYSTEM** 

# DIRECT INJECTION GASOLINE SYSTEM : System Diagram



DIRECT INJECTION GASOLINE SYSTEM : System Description

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Sensor		Input signal to ECM	ECM func- tion	Actuator	
Crankshaft position sensor (POS)	Engine speed*4				_
Camshaft position sensor (PHASE)	Camshaft position	Camshaft position			E
Mass air flow sensor	Amount of intake air		-		
Intake air temperature sensor 1	Intake air temperature				(
Engine coolant temperature sensor	Engine coolant to	emperature			
Air fuel ratio (A/F) sensor 1	Density of oxyge	en in exhaust gas	-		
Fuel rail pressure sensor	Fuel rail pressure	е	-		[
Throttle position sensor	Throttle position		-		
Accelerator pedal position sensor	Accelerator pedal position		Fuelinjection & mixture ra- tio control		
Battery	Battery voltage*4				
Knock sensor	Engine knocking condition				
Heated oxygen sensor 2*1	Density of oxyge	en in exhaust gas			F
Transmission range switch*2	0				
Park/neutral position (PNP) switch*3	Gear position				
G sensor	Inclination angle		-		
Turbocharger boost sensor	Turbocharger boost		=		
ABS actuator and electric unit (control unit)	CAN communication  • Wheel speed signal • VDC/TCS operation command				ŀ
ВСМ	CAN communi- cation	A/C ON signal			
Combination meter	CAN communication Vehicle speed signal				

<sup>\*1:</sup> This sensor is not used to control the engine system under normal conditions.

#### SYSTEM DESCRIPTION

The adoption of the direct fuel injection method enables more accurate adjustment of fuel injection quantity by injecting atomized high-pressure fuel directly into the cylinder. This method allows high-powered engine, low fuel consumption, and emissions-reduction.

The amount of fuel injected from the fuel injector is determined by the ECM. The ECM controls the length of time the valve remains open (injection pulse duration). The amount of fuel injected is a program value in the ECM memory. The program value is preset by engine operating conditions. These conditions are determined by input signals (for engine speed, intake air, fuel rail pressure and boost) from the crankshaft position sensor, camshaft position sensor, mass air flow sensor, fuel rail pressure sensor and the turbocharger boost sensor.

#### VARIOUS FUEL INJECTION INCREASE/DECREASE COMPENSATION

In addition, the amount of fuel injected is compensated to improve engine performance under various operating conditions as listed below.

#### <Fuel increase>

- During warm-up
- · When starting the engine
- During acceleration
- · Hot-engine operation
- When selector lever position is changed from N to D (CVT models)
- · High-load, high-speed operation

#### <Fuel decrease>

- During deceleration
- During high engine speed operation

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<sup>\*2:</sup> CVT models

<sup>\*3:</sup> M/T models

<sup>\*4:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

#### **FUEL INJECTION CONTROL**

#### Stratified-charge Combustion

Stratified-charge combustion is a combustion method which enables extremely lean combustion by injecting fuel in the latter half of a compression process, collecting combustible air-fuel around the spark plug, and forming fuel-free airspace around the mixture.

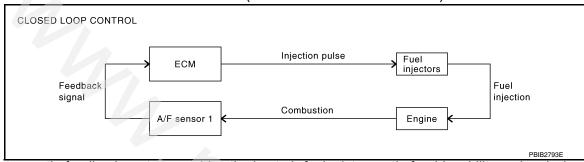
Right after a start with the engine cold, the catalyst warm-up is accelerated by stratified-charge combustion.

#### Homogeneous Combustion

Homogeneous combustion is a combustion method that fuel is injected during intake process so that combustion occurs in the entire combustion chamber, as is common with conventional methods.

As for a start except for starts with the engine cold, homogeneous combustion occurs.

#### MIXTURE RATIO FEEDBACK CONTROL (CLOSED LOOP CONTROL)



The mixture ratio feedback system provides the best air-fuel mixture ratio for driveability and emission control. The three way catalyst (manifold) can better reduce CO, HC and NOx emissions. This system uses A/F sensor 1 in the exhaust manifold to monitor whether the engine operation is rich or lean. The ECM adjusts the injection pulse width according to the sensor voltage signal. For more information about A/F sensor 1, refer to EC-614, "Air Fuel Ratio (A/F) Sensor 1". This maintains the mixture ratio within the range of stoichiometric (ideal air-fuel mixture).

This stage is referred to as the closed loop control condition.

Heated oxygen sensor 2 is located downstream of the three way catalyst (manifold). Even if the switching characteristics of A/F sensor 1 shift, the air-fuel ratio is controlled to stoichiometric by the signal from heated oxygen sensor 2.

- Open Loop Control
  - The open loop system condition refers to when the ECM detects any of the following conditions. Feedback control stops in order to maintain stabilized fuel combustion.
- Deceleration and acceleration
- High-load, high-speed operation
- Malfunction of A/F sensor 1 or its circuit
- Insufficient activation of A/F sensor 1 at low engine coolant temperature
- High engine coolant temperature
- During warm-up
- After shifting from N to D (CVT models)
- When starting the engine

#### MIXTURE RATIO SELF-LEARNING CONTROL

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from A/F sensor 1. This feedback signal is then sent to the ECM. The ECM controls the basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally designed. Both manufacturing differences (i.e., mass air flow sensor hot wire) and characteristic changes during operation (i.e., fuel injector clogging) directly affect mixture ratio.

Accordingly, the difference between the basic and theoretical mixture ratios is monitored in this system. This is then computed in terms of "injection pulse duration" to automatically compensate for the difference between the two ratios.

"Fuel trim" refers to the feedback compensation value compared against the basic injection duration. Fuel trim includes "short-term fuel trim" and "long-term fuel trim".

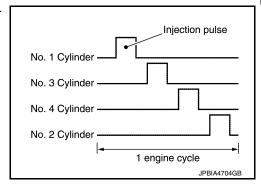
"Short term fuel trim" is the short-term fuel compensation used to maintain the mixture ratio at its theoretical value. The signal from A/F sensor 1 indicates whether the mixture ratio is RICH or LEAN compared to the theoretical value. The signal then triggers a reduction in fuel volume if the mixture ratio is rich, and an increase in fuel volume if it is lean.

"Long-term fuel trim" is overall fuel compensation carried out over time to compensate for continual deviation of the "short-term fuel trim" from the central value. Continual deviation will occur due to individual engine differences, wear over time and changes in the usage environment.

#### FUEL INJECTION TIMING

Sequential Direct Injection Gasoline System

Fuel is injected into each cylinder during each engine cycle according to the ignition order.



#### STRATIFIED-CHARGE START CONTROL

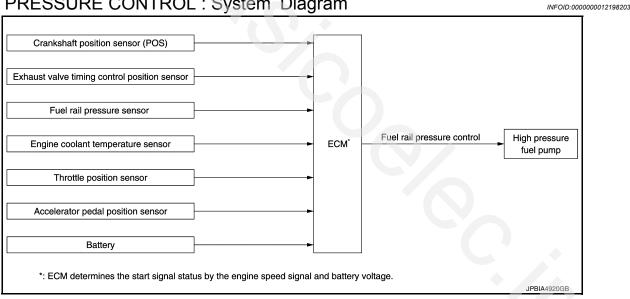
The use of the stratified-charge combustion method enables emissions-reduction when starting the engine with engine coolant temperature between 5°C (41°F) and 40°C (104°F).

#### **FUEL SHUT-OFF**

Fuel to each cylinder is shut-off during deceleration, operation of the engine at excessively high speed or operation of the vehicle at excessively high speed.

#### FUEL PRESSURE CONTROL

## FUEL PRESSURE CONTROL: System Diagram



## FUEL PRESSURE CONTROL: System Description

INPUT/OUTPUT SIGNAL CHART

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**EC-633 Revision: November 2015 2016 JUKE**  EC

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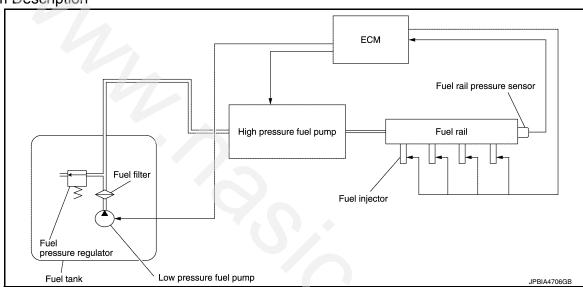
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Sensor	Input signal to ECM	ECM function	Actuator
Crankshaft position sensor (POS)	Engine speed*		
Exhaust valve timing control position sensor	Camshaft position		
Fuel rail pressure sensor	Fuel rail pressure		
Engine coolant temperature sensor	Engine coolant temperature	Fuel rail pres- sure control	High pressure fuel pump
Throttle position sensor	Throttle position		
Accelerator pedal position sensor	Accelerator pedal position		
Battery	Battery voltage*		

<sup>\*:</sup> ECM determines the start signal status by the engine speed signal and battery voltage.

#### System Description



#### Low fuel pressure control

- The low fuel pressure pump is controlled by ECM. The pumped fuel passes through the fuel filter and is sent to the high pressure fuel pump.
- Low fuel pressure is adjusted by the fuel pressure regulator.

#### High fuel pressure control

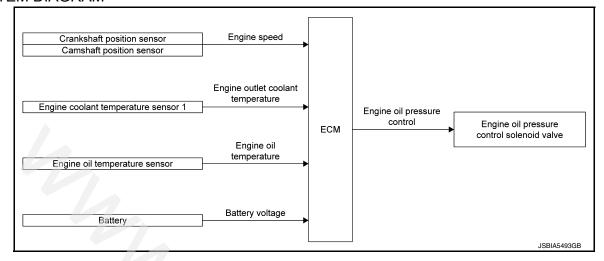
The high pressure fuel pump raises the pressure of the fuel sent from the low pressure fuel pump. Actuated by the exhaust camshaft, the high pressure fuel pump activates the high pressure fuel pump solenoid based on a signal received from ECM, and adjusts the amount of discharge by changing the timing of closing the inlet check valve to control fuel rail pressure.

#### ENGINE OIL PRESSURE CONTROL SYSTEM

## ENGINE OIL PRESSURE CONTROL SYSTEM: System Description

INFOID:0000000012198205

#### SYSTEM DIAGRAM



#### SYSTEM DESCRIPTION

ECM performs the variable hydraulic control (low oil pressure control and high oil pressure control) based on signals from each sensor according to oil temperature and engine load. ECM activates the engine oil pressure control solenoid valve and switches to the low oil pressure control and high oil pressure control. ECM uses the low oil pressure control for 80-90 % of the operating area to maintain low oil pressure and stops piston cooling jet (i.e. achievement of less than or equal to jet injection valve opening pressure).

High oil pressure control start condition

- · High oil pressure control start condition
- · High engine speed
- Coolant temperature is 60°C (140°F)or more under high engine load condition

Low oil pressure control start condition

- Coolant temperature is less than 60°C (140°F) under low engine speed condition
- Coolant temperature is 60°C (140°F) or more under low engine load and low engine speed conditions

#### **ELECTRIC IGNITION SYSTEM**

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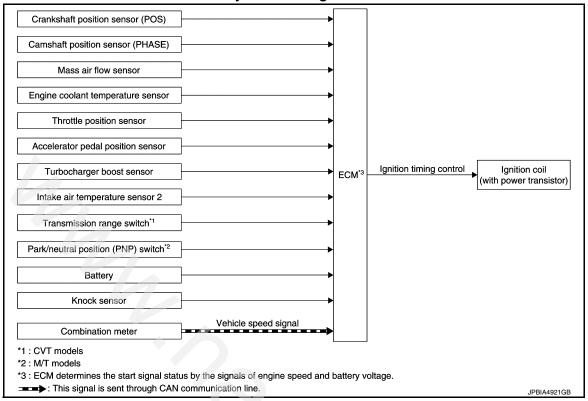
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# ELECTRIC IGNITION SYSTEM : System Diagram

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## **ELECTRIC IGNITION SYSTEM: System Description**

INFOID:0000000012198207

#### INPUT/OUTPUT SIGNAL CHART

Sensor	ı	Input Signal to ECM	ECM func- tion	Actuator
Crankshaft position sensor (POS)	Engine speed	*3		
Camshaft position sensor (PHASE)	Piston position	ı		
Mass air flow sensor	Amount of inta	ake air		
Engine coolant temperature sensor	Engine coolan	nt temperature		
Throttle position sensor	Throttle position	on		Ignition coil (with power transistor)
Accelerator pedal position sensor	Accelerator pe	edal position		
Turbocharger boost sensor	Turbocharger	boost	Ignition tim-	
Intake air temperature sensor 2	Intake air temp	perature	ing control	
Transmission range switch*1	Gear position			
Park/neutral position (PNP) switch*2	Gear position			
Battery	Battery voltage <sup>*3</sup>			
Knock sensor	Engine knocking condition			
Combination meter	CAN communication Vehicle speed signal			

<sup>\*1:</sup> CVT models

## SYSTEM DESCRIPTION

Firing order: 1 - 3 - 4 - 2

<sup>\*2:</sup> M/T models

<sup>\*3:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

The ignition timing is controlled by the ECM to maintain the best air-fuel ratio for every running condition of the engine. The ignition timing data is stored in the ECM.

The ECM receives information such as the injection pulse width and camshaft position sensor (PHASE) signal. Computing this information, ignition signals are transmitted to the power transistor.

During the following conditions, the ignition timing is revised by the ECM according to the other data stored in the ECM.

- At starting
- · During warm-up
- · At idle
- At low battery voltage
- During acceleration

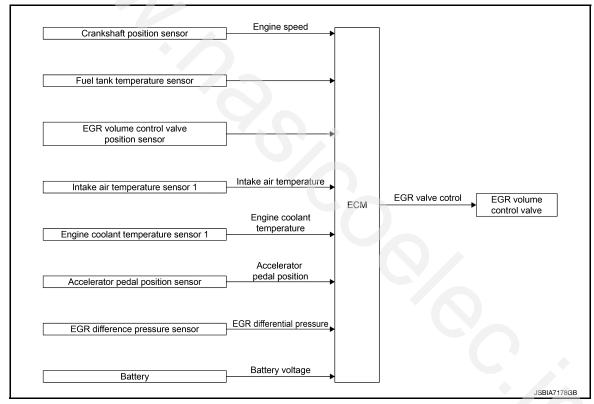
The knock sensor retard system is designed only for emergencies. The basic ignition timing is programmed within the anti-knocking zone, if recommended fuel is used under dry conditions. The retard system does not operate under normal driving conditions. If engine knocking occurs, the knock sensor monitors the condition. The signal is transmitted to the ECM. The ECM retards the ignition timing to eliminate the knocking condition.

#### EGR SYSTEM

### EGR SYSTEM : System Description

INFOID:0000000012198208

#### SYSTEM DIAGRAM



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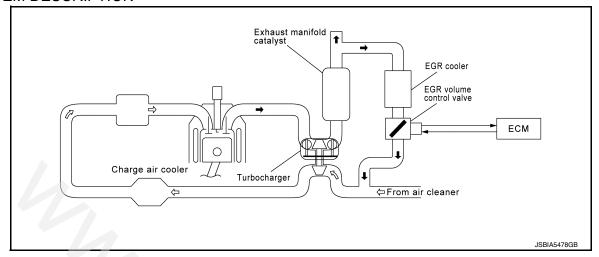
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#### SYSTEM DESCRIPTION



#### EGR VOLUME CONTROL

The EGR volume control regulates the flow rate of exhaust gas flowing from downstream of exhaust manifold catalyst to intake manifold. The exhaust gas flow rate is controlled by opening/closing the EGR path in the EGR control valve.

A built-in DC motor moves the valve continuously corresponding to the ECM output signal.

The EGR volume control valve position sensor detects the valve position and sends the voltage signals to the ECM.

The adoption of water-cooled EGR cooler reduces the knocking by efficiently cooling the gas circulated by the EGR system to lower the combustion temperature and improves fuel efficiency by raising the thermal efficiency.

The ECM judges the current opening angle of the valve from this signals and the ECM controls the DC motor to make the valve opening angle properly.

The opening angle of the valve varies for optimum engine control. The optimum value stored in the ECM is determined by considering various engine conditions.

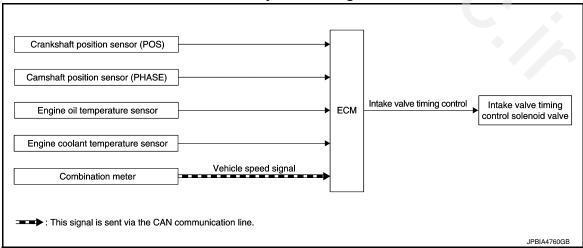
The EGR volume control valve remains close under the following conditions.

- Engine stopped
- Engine starting
- · Low engine coolant temperature
- · Excessively high engine coolant temperature
- · High engine speed
- · Accelerator pedal fully depressed
- · Low intake air temperature

#### INTAKE VALVE TIMING CONTROL

## INTAKE VALVE TIMING CONTROL: System Diagram

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## INTAKE VALVE TIMING CONTROL: System Description

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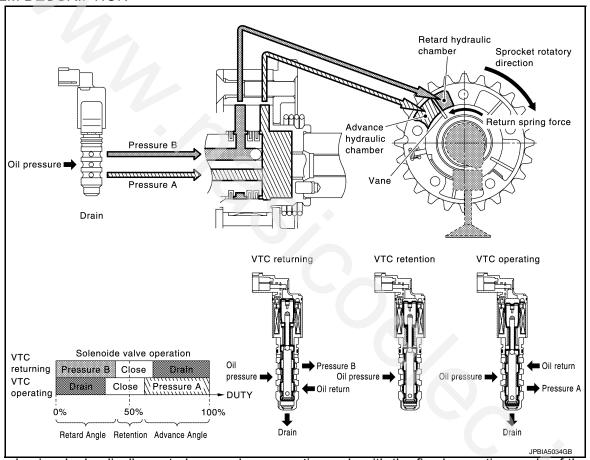
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#### INPUT/OUTPUT SIGNAL CHART

Sensor		Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed and piston position				
Camshaft position sensor (PHASE)			Intake valve tim-	Intake valve timing con-	
Engine oil temperature sensor	Engine oil temperature				
Engine coolant temperature sensor	Engine coolant temperature		ing control	trol solenoid valve	
Combination meter	CAN commu- nication	Vehicle speed signal			

#### SYSTEM DESCRIPTION

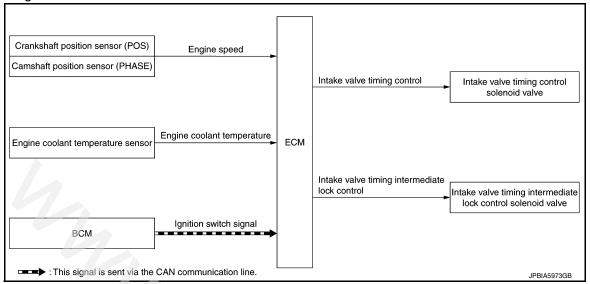


This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the intake-valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine coolant-temperature. Then, the ECM sends ON/OFF pulse duty signals to the intake valve timing (IVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the intake valve to increase engine torque in low/mid speed range and output in high-speed range.

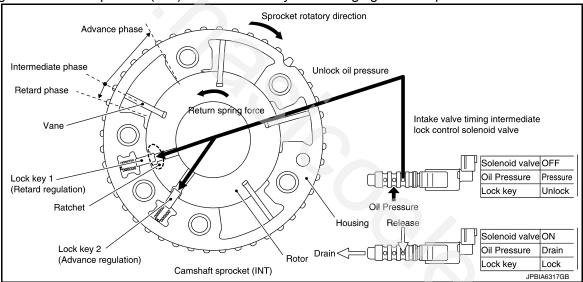
INTAKE VALVE TIMING INTERMEDIATE LOCK CONTROL

#### System Diagram



#### System Description

The intake valve timing intermediate lock control improves the cleaning ability of exhaust gas at cold starting by fixing the camshaft sprocket (INT) with two lock keys and bringing the cam phase into intermediate phase.



Cam phase is fixed at the intermediate phase by two lock keys in the camshaft sprocket (INT). Lock key 1 controls retard position and lock key 2 controls advance position.

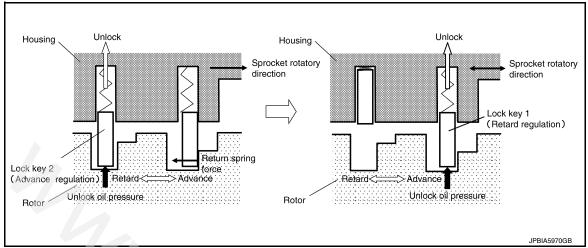
ECM controls the intermediate phase lock by opening/closing the intake valve timing intermediate lock control solenoid valve to control oil pressure acting on the lock key and locking/unlocking the lock key.

#### Lock/Unlock Activation

When ECM activates the intake valve timing intermediate lock control solenoid valve, oil pressure generated in the oil pump is drained through the oil pressure path in the control valve. Since oil pressure is not acted on the lock key, the lock key position is fixed by the spring tension and the cam phase is fixed at the intermediate phase.

When ECM deactivates the intake valve timing intermediate lock control solenoid valve, unlocking oil pressure acts on each lock key. Lock key 1 is not released because it is under load due to sprocket rotational force. For this reason, lock key 2 is released first by being pushed up by unlocking oil pressure. When lock key 2 is released, some clearance is formed between lock key 1 and the rotor due to sprocket rotational force and

return spring force. Accordingly, lock key 1 is pushed up by unlocking oil pressure and the intermediated phase lock is released.



When stopping the engine

When the ignition switch is turned from idle state to OFF, ECM receives an ignition switch signal from BCM via CAN communication and activates the intake valve timing intermediate lock control solenoid valve and drains oil pressure acting on the lock key before activating the intake valve timing control solenoid valve and operating the cam phase toward the advance position.

The cam phase is fixed by the lock key when shifting to the intermediated phase and ECM performs Lock judgment to stop the engine.

#### When starting the engine

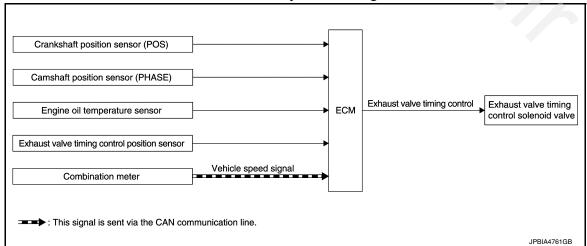
When starting the engine by cold start, ECM judges the locked/unlocked state when ignition switch is turned ON. When judged as locked state (fixed at the intermediate phase), the intake valve timing intermediate lock control solenoid valve is activated. Since oil pressure does not act on the lock key even when the engine is started, the cam phase is fixed at the intermediate phase and the intake valve timing control is not performed. When the engine stops without locking the cam phase at the intermediate phase due to an engine stall and the state is not judged as locked, the intake valve timing intermediate lock control solenoid valve and the intake valve timing control solenoid valve are activated and the cam phase shifts to the advanced position to be locked at the intermediate phase. Even when not locked in the intermediate lock phase due to no oil pressure or low oil pressure, a ratchet structure of the camshaft sprocket (INT) rotor allows the conversion to the intermediate phase in stages by engine vibration.

When engine coolant temperature is more than 60°C (140°F), the intake valve timing is controlled by deactivating the intake valve timing intermediate lock control solenoid valve and releasing the intermediate phase lock.

When the engine is started after warming up, ECM releases the intermediate phase lock immediately after the engine start and controls the intake valve timing.

#### EXHAUST VALVE TIMING CONTROL

## EXHAUST VALVE TIMING CONTROL: System Diagram



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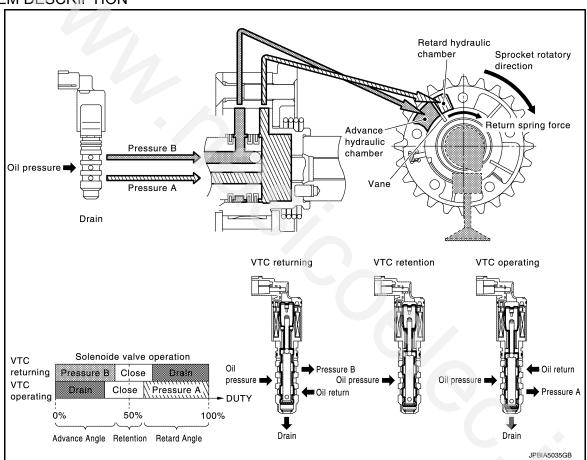
## **EXHAUST VALVE TIMING CONTROL: System Description**

INFOID:0000000012198212

#### INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM		ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed and piston position				
Camshaft position sensor (PHASE)					
Engine oil temperature sensor	Engine oil tem	perature	Exhaust valve	Exhaust valve timing control	
Exhaust valve timing control position sensor	Exhaust valve timing signal		timing control	solenoid valve	
Combination meter	CAN commu- nication	Vehicle speed signal			

#### SYSTEM DESCRIPTION



This mechanism hydraulically controls cam phases continuously with the fixed operating angle of the exhaust valve.

The ECM receives signals such as crankshaft position, camshaft position, engine speed, and engine oil temperature. Then, the ECM sends ON/OFF pulse duty signals to the exhaust valve timing (EVT) control solenoid valve depending on driving status. This makes it possible to control the shut/open timing of the exhaust valve to increase engine torque and output in a range of high engine speed.

#### INTAKE MANIFOLD RUNNER CONTROL

## INTAKE MANIFOLD RUNNER CONTROL: System Description

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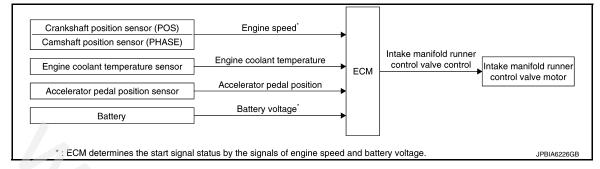
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#### SYSTEM DIAGRAM



#### SYSTEM DESCRIPTION

Intake manifold runner control valve has a valve portion in the intake passage of each cylinder.

When the engine speed is 2800rpm or less, the intake manifold runner control valve closes. Thus the velocity of the air in the intake passage increases, promoting the vaporization of the fuel and producing a intake manifold runner in the combustion chamber.

Because of this operation, this system tends to increase the burning speed of the gas mixture, improve exhaust emission, and increase the stability in running conditions.

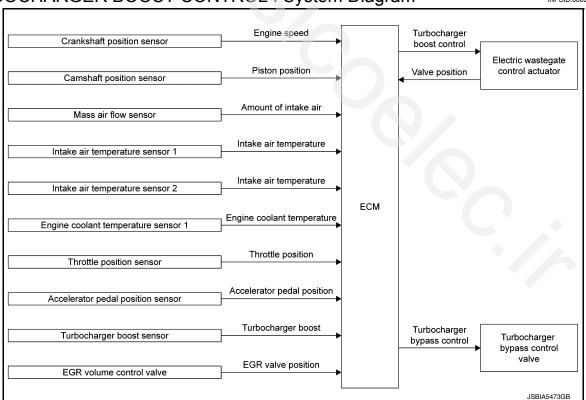
Also, except when idling and during low engine coolant temperature, this system opens the intake manifold runner control valve.

In this condition, this system tends to increase power by improving intake efficiency via reduction of intake flow resistance.

The intake manifold runner control valve is operated by the ECM.

#### TURBOCHARGER BOOST CONTROL

## TURBOCHARGER BOOST CONTROL: System Diagram



## TURBOCHARGER BOOST CONTROL: System Description

INFOID:0000000012198215

ECM controls the electric wastegate control actuator according to driving conditions.

The rod connected to the electric wastegate control actuator controls turbocharger boost by changing the angle of the wastegate valve in the exhaust side turbine.

ECM determines a target boost pressure based on engine speed, accelerator pedal position, throttle valve position, and EGR volume control valve position. ECM then calculates intake air pressure around the turbine entrance according to the amount of intake air and intake air pressure. Based on this information, ECM determines the wastegate valve angle to satisfy the target boost pressure.

The electronically-controlled wastegate control actuator enables the adjustment of wastegate valve angle, allowing the improvement of the response to driving conditions and the achievement of high-precision boost pressure control.

When the engine is cold, the wastegate valve is opened and heat loss caused by turbocharger is minimized to accelerate the warm-up (activation) of catalyst. This allows the wastegate valve to be opened in non-super-charging regions and improves the fuel economy by reducing piston pumping loss.

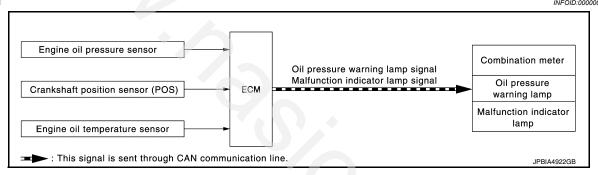
In addition, the adoption of the electronically-controlled turbocharger bypass control valve quickly starts opening the bypass valve when releasing the accelerator pedal, and accordingly this reduces surge sound generated by the back flow of supercharged air to the compressor fin.

#### NOTE:

Boost pressure varies according to the environment where the vehicle is used.

#### ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE

# ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE : System Diagram



# ENGINE PROTECTION CONTROL AT LOW ENGINE OIL PRESSURE: System Description

#### INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator
Engine oil pressure sensor	Engine pressure	Engine protection control	
Crankshaft position sensor (POS)	Engine speed	Oil pressure warning lamp signal	Combination meter  Oil pressure warning lamp
Engine oil temperature sensor	Engine oil temperature	FUel cut control	

#### SYSTEM DESCRIPTION

- The engine protection control at low engine oil pressure warns the driver of a decrease in engine oil pressure by the oil pressure warning lamp a before the engine becomes damaged.
- When detecting a decrease in engine oil pressure at an engine speed less than 1,000 rpm, ECM transmits
  an oil pressure warning lamp signal to the combination meter. The combination meter turns ON the oil pressure warning lamp, according to the signal.

Decrease in engine oil	Engine speed	Combination meter		
pressure	Liigilie speed	Oil pressure warning lamp		
Detection	Less than 1,000 rpm	ON*		
	1,000 rpm or more	ON		

<sup>\*:</sup> When detecting a normal engine oil pressure, ECM turns OFF the oil pressure warning lamp.

#### AIR CONDITIONING CUT CONTROL

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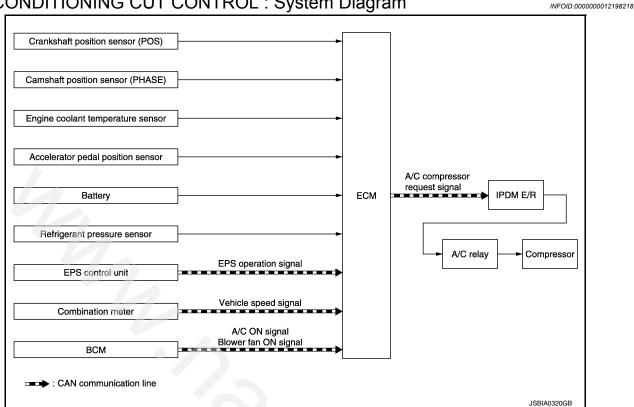
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## AIR CONDITIONING CUT CONTROL: System Diagram



## AIR CONDITIONING CUT CONTROL: System Description

#### INPUT/OUTPUT SIGNAL CHART

Sensor	Inj	Input Signal to ECM		Actuator
Crankshaft position sensor (POS)				
Camshaft position sensor (PHASE)	Engine speed*			
Engine coolant temperature sensor	Engine coolan	Engine coolant temperature		
Accelerator pedal position sensor	Accelerator pe	dal position		
Battery	Battery voltage*			IPDM E/R
Refrigerant pressure sensor	Refrigerant pre	essure	Air conditioner	↓ Air conditioner relay
EPS control unit	CAN communication EPS operation signal		cut control	↓ Compressor
Combination meter	CAN communication Vehicle speed signal		<b>*</b>	
всм	CAN commu- nication	A/C ON signal     Blower fan ON signal		

<sup>\*:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

#### SYSTEM DESCRIPTION

This system improves engine operation when the air conditioner is used. Under the following conditions, the air conditioner is turned off.

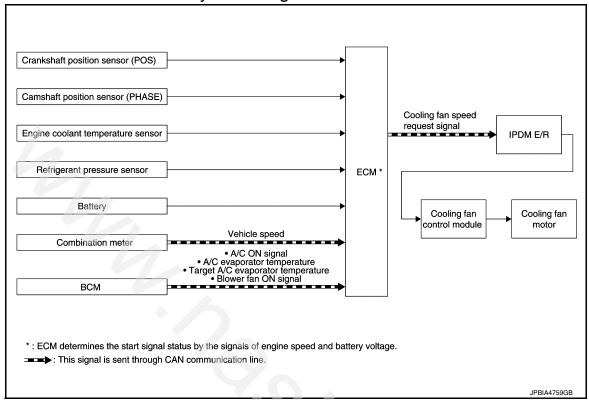
- When the accelerator pedal is fully depressed.
- · When cranking the engine.
- At high engine speeds.
- When the engine coolant temperature becomes excessively high.
- When operating power steering during low engine speed or low vehicle speed.
- · When engine speed is excessively low.
- · When refrigerant pressure is excessively low or high.

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## **COOLING FAN CONTROL**

## COOLING FAN CONTROL: System Diagram

INFOID:0000000012198220



## COOLING FAN CONTROL: System Description

INFOID:0000000012198221

#### INPUT/OUTPUT SIGNAL CHART

Sensor	Inpu	Input signal to ECM		Actuator
Crankshaft position sensor (POS)	F			
Camshaft position sensor (PHASE)	Engine speed*			
Engine coolant temperature sensor	Engine coolant	temperature		
Refrigerant pressure sensor	Refrigerant pre	essure		
Battery	Battery voltage	Battery voltage*		IPDM E/R ↓ Cooling fan control mod- ule
Combination meter	CAN commu- nication	Vehicle speed signal		
		A/C ON signal	†	Cooling fan motor
DOM	CAN commu-	A/C evaporator temper- ature*		
ВСМ	nication	Target A/C evaporator temperature*		
		Blower fan ON signal*		

<sup>\*:</sup> The ECM determines the start signal status by the signals of engine speed and battery voltage.

#### SYSTEM DESCRIPTION

ECM controls cooling fan speed corresponding to vehicle speed, engine coolant temperature, A/C ON signal and refrigerant pressure.

Cooling fan control signal is sent to IPDM E/R from ECM by CAN communication line. Then, IPDM E/R sends ON/OFF pulse duty signal to cooling fan control module. Corresponding to this ON/OFF pulse duty signal, cooling fan control module gives cooling fan motor operating voltage to cooling fan motors. Cooling fan speed is controlled by duty cycle of cooling fan motor operating voltage sent from cooling fan control module.

#### THERMAL MANAGEMENT CONTROL

## THERMAL MANAGEMENT CONTROL: System Description

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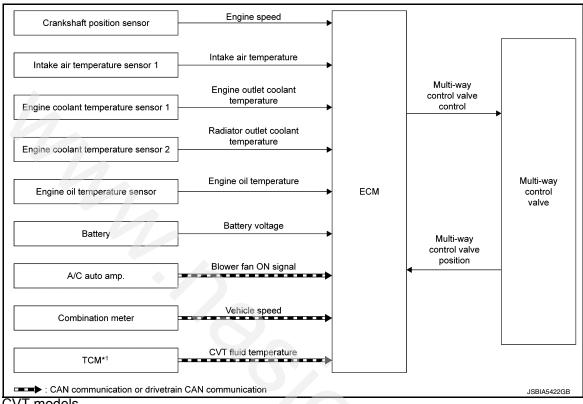
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#### SYSTEM DIAGRAM



\*1: For CVT models

#### SYSTEM DESCRIPTION

The multi-way control valve changes the paths to heater & EGR cooler, oil cooler, and radiator according to engine coolant temperature and driving conditions.

When coolant temperature is low, the paths to heater & EGR cooler, oil cooler, and radiator are closed and coolant is circulated only inside the engine to accelerate engine warm-up.

When coolant temperature is high, the paths to heater & EGR cooler, oil cooler, and radiator are opened and coolant is refrigerated. This raises the coolant temperature and oil temperature rapidly and improves the fuel economy by reducing friction among parts.

#### Operation

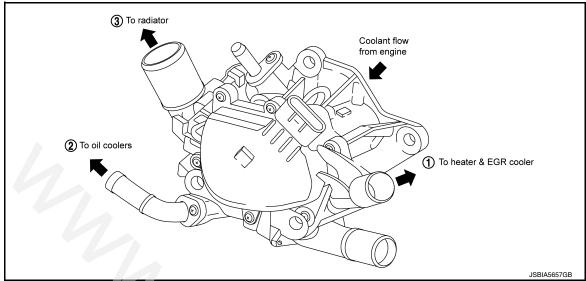
When the ignition switch is OFF, the valve is fully closed to accelerate bleeding the coolant channels.

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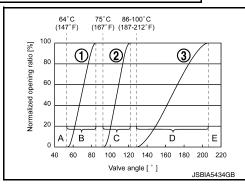
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When receiving a blower fan ON signal and/or an A/C ON signal, ECM opens the flow path to the heater & EGR cooler even when coolant temperature is low.



	1	2	3
Valve position	Heater & EGR cooler	Oil cooler	Radiator
А	Full close	Full close	Full close
В	Open	Full close	Full close
С	Full open	Open	Full close
D	Full open	Full open	Open
E	Full open	Full open	Full open



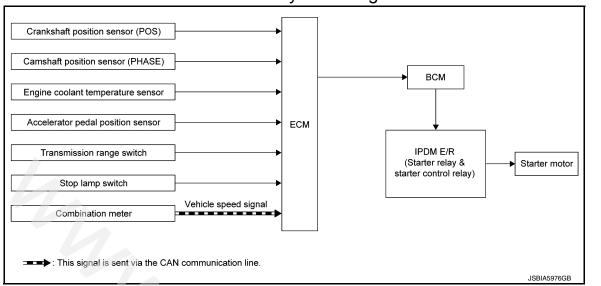
- A: Closes all flow paths ①, ②, and ③ and circulates coolant only inside the engine.
- B: Opens the flow path to Heater & EGR cooler and circulates coolant to Heater & EGR cooler.
- C: Opens the flow path to oil cooler and circulates coolant to Heater & EGR cooler and oil cooler.
- D: Opens the flow path to radiator and circulates coolant to Heater & EGR cooler, oil cooler, and radiator.
- E: Opens all the flow paths (1), (2), and (3).

The high coolant temperature control is performed by opening/closing the flow path to the radiator to raise the engine oil temperature even when the coolant temperature is high. When engine load is high, the high coolant temperature control is not performed because of the knocking control.

When detecting a malfunction in multi-way control valve, ECM fully opens the valve to secure cooling paths.

STARTER MOTOR DRIVE CONTROL

### STARTER MOTOR DRIVE CONTROL: System Diagram



# STARTER MOTOR DRIVE CONTROL: System Description

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#### INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator	
Crankshaft position sensor (POS)	Engine speed			
Camshaft position sensor (PHASE)	Piston position			
Engine coolant temperature sensor	Engine coolant temperature		• BCM	
Accelerator pedal position sensor	Accelerator pedal position	Starter motor	IPDM E/R     (Starter relay & starter control relay)	
Transmission range switch	Gear position	drive control		
Stop lamp switch	Brake pedal position		cr control relay)	
Combination meter	CAN communication Vehicle speed signal			

#### SYSTEM DESCRIPTION

When rapid deceleration occurs during engine runs or idle speed decreases due to heavy load conditions, ECM detects a decrease in idle speed and restarts the engine to secure reliability in handleability by transmitting a cranking request signal to IPDM E/R for activating the starter motor under the following conditions:

- · Selector lever: P or any position other than N
- Idle switch: ON (Accelerator pedal not depressed)
- Brake switch: ON (Brake pedal depressed)

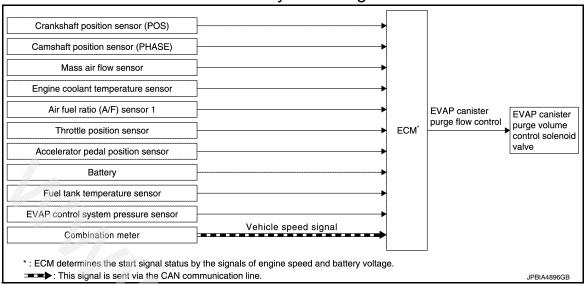
On the other hand, models with the Intelligent Key System transmit a control signal to IPDM E/R by way of BCM via CAN communication.

IPDM E/R detects an operating state of the starter motor relay and the starter motor control relay and transmits a feed back signal to ECM via CAN Communication.

### **EVAPORATIVE EMISSION SYSTEM**

# **EVAPORATIVE EMISSION SYSTEM: System Diagram**

NFOID:0000000001219822



# **EVAPORATIVE EMISSION SYSTEM: System Description**

INFOID:0000000012198226

### INPUT/OUTPUT SIGNAL CHART

Sensor	Input signal to ECM	ECM function	Actuator		
Crankshaft position sensor (POS)	Engine speed*				
Camshaft position sensor (PHASE)	Piston position				
Mass air flow sensor	Amount of intake air				
Engine coolant temperature sensor	Engine coolant temperature				
Air fuel ratio (A/F) sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)				
Throttle position sensor	Throttle position	EVAP canister	EVAP canister purge vol-		
Accelerator pedal position sensor	Accelerator pedal position	purge flow control	ume control solenoid valve		
Battery	Battery voltage*				
Fuel tank temperature sensor	Fuel temperature in fuel tank				
EVAP control system pressure sensor	Pressure in purge line				
Combination meter	CAN communication Vehicle speed				

<sup>\*:</sup> ECM determines the start signal status by the signals of engine speed and battery voltage.

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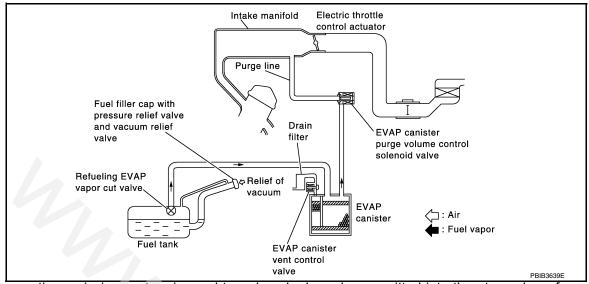
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#### SYSTEM DESCRIPTION



The evaporative emission system is used to reduce hydrocarbons emitted into the atmosphere from the fuel system. This reduction of hydrocarbons is accomplished by activated charcoals in the EVAP canister.

The fuel vapor in the sealed fuel tank is led into the EVAP canister which contains activated carbon and the vapor is stored there when the engine is not operating or when refueling to the fuel tank.

The vapor in the EVAP canister is purged by the air through the purge line to the intake manifold when the engine is operating. EVAP canister purge volume control solenoid valve is controlled by ECM. When the engine operates, the flow rate of vapor controlled by EVAP canister purge volume control solenoid valve is proportionally regulated as the air flow increases.

EVAP canister purge volume control solenoid valve also shuts off the vapor purge line during decelerating.

# ALTERNATOR POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM

# ALTERNATOR POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM: System Description

The alternator power generation voltage variable control system controls the amount of power generation, according to a battery loaded condition. ECM judges a battery condition, according to a signal received from the battery current sensor which detects a charge/discharge current. ECM then transmits a signal to IPDM E/R to command power generation via CAN communication. IPDM E/R transmits a power generation control signal to the alternator so that the system can control the amount of power generation. The voltage of power generation is lowered during battery low-load conditions and boosted under heavy load conditions. In this way, the system reduces the engine load through the adequate power generation control.

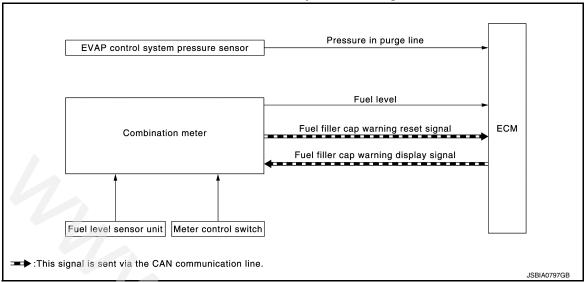
#### FUEL FILLER CAP WARNING SYSTEM

**Revision: November 2015** 

2016 JUKE

# FUEL FILLER CAP WARNING SYSTEM: System Diagram

INFOID:0000000012198228



### FUEL FILLER CAP WARNING SYSTEM: System Description

INFOID:0000000012198229

#### INPUT/OUTPUT SIGNAL CHART

Input

Unit/Sensor	Input signal to ECM	ECM function
EVAP control system pressure sensor	Pressure in purge line	
Combination mater	Fuel level	Fuel filler cap warning control
Combination meter	Fuel filler cap warning reset signal*	

<sup>\*:</sup> This signal is sent to the ECM via the CAN communication line.

Output

Unit	Output signal	Actuator
ECM	Fuel filler cap warning display signal*	Combination meter

<sup>\*:</sup> This signal is sent to the combination meter via the CAN communication line.

#### SYSTEM DESCRIPTION

The fuel filler cap warning system alerts the driver to the prevention of the fuel filler being left uncapped and malfunction occurrences after refueling, by turning ON the fuel filler cap warning display on the combination meter.

ECM judges a refueled state, based on a fuel level signal transmitted from the combination meter.

When a very small leak is detected through the EVAP leak diagnosis performed after judging the refueled state, ECM transmits a fuel filler cap warning display signal (request for display ON) to the combination meter via CAN communication.

When receiving the signal, the combination meter turns ON the fuel filler cap warning display.

#### **CAUTION:**

#### Check fuel filler cap installation condition when the fuel filler cap warning display turns ON.

#### **Reset Operation**

The fuel filler cap warning lamp tunes OFF, according to any condition listed below:

- Reset operation is performed by operating the meter control switch on the combination meter. Refer to <u>MWI-20</u>, "Switch Name and Function".
- When the reset operation is performed, the combination meter transmits a fuel filler cap warning reset signal to ECM via CAN communication. ECM transmits a fuel filler cap warning display signal (request for display OFF) to the combination meter via CAN communication. When receiving the signal, the combination meter turns OFF the fuel filler cap warning display.
- · EVAP leak diagnosis result is normal.
- · Fuel refilled.
- DTC erased by using CONSULT.

#### NOTE:

MIL turns ON if a malfunction is detected in leak diagnosis results again at the trip after the fuel filler cap warning display turns ON/OFF.

AUTOMATIC SPEED CONTROL DEVICE (ASCD)

# AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Diagram

INFOID:0000000012198230

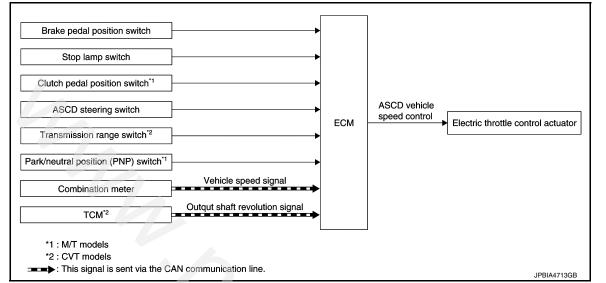
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# AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Description

#### INFOID:0000000012198231

#### INPUT/OUTPUT SIGNAL CHART

Sensor	Ir	nput signal to ECM	ECM function	Actuator
Brake pedal position switch	Droke nedel ex	o o votion		
Stop lamp switch	Brake pedal operation			
Clutch pedal position switch*1	Clutch pedal o	peration		
ASCD steering switch	ASCD steering	g switch operation		
Transmission range switch*2	9 111		ASCD vehicle speed control	Electric throttle control actuator
Park/neutral position (PNP) switch*1	Gear position		CONTO	actuator
Combination meter	CAN communication Vehicle speed signal			
TCM*2	CAN communication Output shaft revolution signa			

<sup>\*1:</sup> M/T models

#### BASIC ASCD SYSTEM

Refer to Owner's Manual for ASCD operating instructions.

Automatic Speed Control Device (ASCD) allows a driver to keep vehicle at predetermined constant speed without depressing accelerator pedal. Driver can set vehicle speed in advance between approximately 40 km/h (25 MPH) and 144km/h (90 MPH).

ECM controls throttle angle of electric throttle control actuator to regulate engine speed.

Operation status of ASCD is indicated by CRUISE indicator and SET indicator in combination meter. If any malfunction occurs in ASCD system, it automatically deactivates control.

Refer to <u>EC-656</u>, "<u>AUTOMATIC SPEED CONTROL DEVICE (ASCD)</u>: <u>Switch Name and Function</u>" for ASCD operating instructions.

#### NOTE:

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws. INTEGRATED CONTROL SYSTEM

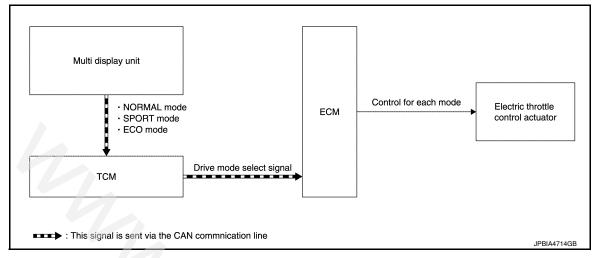
Revision: November 2015 EC-653 2016 JUKE

<sup>\*2:</sup> CVT models

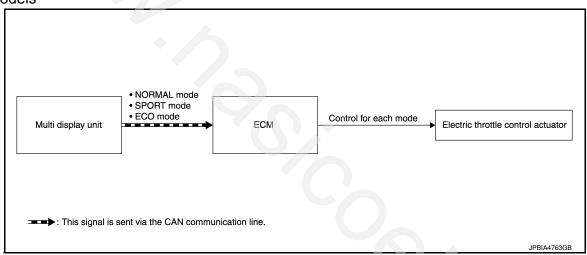
# INTEGRATED CONTROL SYSTEM: System Diagram

INFOID:0000000012198232

#### CVT models



#### M/T models



# INTEGRATED CONTROL SYSTEM: System Description

INFOID:0000000012198233

#### CVT models

#### System Description

TCM transmits a drive mode select signal to ECM via CAN communication, according to a NORMAL mode signal, SPORT mode signal, or ECO mode signal received from the multi display unit via CAN communication. ECM controls torque and throttle opening angle characteristics appropriate for each mode, based on a received drive mode select signal.

#### NOTE:

- Because of the multi display unit operation, the display may indicate that the mode is switching. However, the mode may not actually switch due to CAN communication error.
- When a CAN communication error occurs between ECM and TCM, the mode switches to NORMAL mode.

#### M/T models

#### System Description

ECM controls torque and throttle opening angle characteristics appropriate for each mode, based on a NOR-MAL mode signal, SPORT mode signal, or ECO mode signal received from the multi display unit via CAN communication.

#### NOTE:

 Because of the multi display unit operation, the display may indicate that the mode is switching. However, the mode may not actually switch due to CAN communication error.

#### **SYSTEM**

#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

 When a CAN communication error occurs between ECM and the multi display unit, the mode switches to NORMAL mode.

#### Control By Mode

Mode	Control
NORMAL mode	Offers a better balance of fuel economy and traveling performance.
SPORT mode	Allows throttle opening angle change and torque control for obtaining reality and acceleration performance appropriate to a winding run.
ECO mode	Allows throttle opening angle change and torque control for assisting better fuel efficiency.

#### CAN COMMUNICATION

# CAN COMMUNICATION: System Description

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring.

Refer to LAN-30, "CAN COMMUNICATION SYSTEM: CAN Communication Signal Chart", about CAN communication for detail.

Each control unit transmits/receives data but selectively reads required data only.

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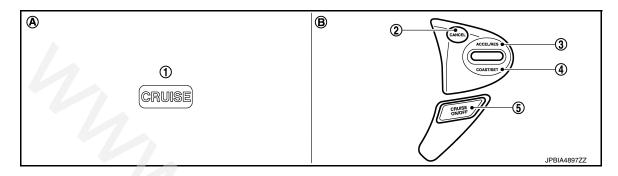
### **OPERATION**

# AUTOMATIC SPEED CONTROL DEVICE (ASCD)

### AUTOMATIC SPEED CONTROL DEVICE (ASCD): Switch Name and Function

INFOID:0000000012198235

#### SWITCHES AND INDICATORS



- 1. CRUISE indicator
- 2. CANCEL switch

5.

- ASCD MAIN switch
- COAST/SET switch

On the combination meter

- B. On the steering wheel
- ACCEL/RES switch

#### SET SPEED RANGE

ASCD system can be set the following vehicle speed.

Minimum speed (Approx.)	Maximum speed (Approx.)
40 km/h (25 MPH)	144 km/h (90 MPH)

#### SWITCH OPERATION

Item	Function
CANCEL switch	Cancels the cruise control driving.
ACCEL/RES switch	Resumes the set speed.     Increases speed incrementally during cruise control driving.
COAST/SET switch	<ul> <li>Sets desired cruise speed.</li> <li>Decreases speed incrementally during cruise control driving.</li> </ul>
ASCD MAIN switch	Master switch to activate the ASCD system.

#### SET OPERATION

Press MAIN switch. (The CRUISE indicator in combination meter illuminates.)

When vehicle speed reaches a desired speed between approximately 40 km/h (25 MPH) and 144 km/h (90 MPH), press COAST/SET switch.

#### ACCELERATE OPERATION

If the ACCEL/RES switch is pressed during the cruise control driving, increase the vehicle speed until the switch is released or vehicle speed reaches maximum speed controlled by the system. And then ASCD will keep the new set speed.

#### CANCEL OPERATION

- When any of following conditions exist, the cruise operation is canceled.
- CANCEL switch is pressed
- ASCD MAIN switch is pressed (Set speed is cleared)
- More than 2 switches at ASCD steering switch are pressed at the same time (Set speed is cleared)
- Brake pedal is depressed
- Clutch pedal is depressed or gear position is changed to neutral position. (M/T models)
- Selector lever is changed to N, P or R position (CVT models)
- Vehicle speed decreased to 13 km/h (8 MPH) lower than the set speed
- TCS system is operated

#### **OPERATION**

#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

- When the ECM detects any of the following conditions, the ECM cancels the cruise operation and informs the driver by blinking CRUISE indicator lamp.
- Engine coolant temperature is slightly higher than the normal operating temperature, CRUISE indicator lamp is blinked slowly.

#### NOTE:

Engine coolant temperature decreases to the normal operating temperature, CRUISE indicator lamp stop blinking and the cruise operation is able to work.

- Malfunction for some self-diagnoses regarding ASCD control: CRUISE indicator will blink quickly.
- When ASCD MAIN switch is turned to OFF during the cruise control driving, all of ASCD operations is canceled and vehicle speed memory is erased.

#### COAST OPERATION

When the COAST/SET switch is pressed during the cruise control driving, decrease vehicle set speed until the switch is released. And then ASCD will keep the new set speed.

#### RESUME OPERATION

- When the ACCEL/RES switch is pressed after the cancel operation other than pressing ASCD MAIN switch is performed, vehicle speed is return to last set speed. To resume vehicle set speed, vehicle condition must meet following conditions.
- Brake pedal is released
- Clutch pedal is released (M/T models)
- Selector lever is in other than P and N positions (CVT models)
- Vehicle speed is greater than 40 km/h (25 MPH) and less than 144 km/h (90 MPH)

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### ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

[MR EXCEPT FOR NISMO RS MODELS]

# ON BOARD DIAGNOSTIC (OBD) SYSTEM

### **Diagnosis Description**

INFOID:0000000012198236

This system is an on board diagnostic system that records exhaust emission-related diagnostic information and detects a sensors/actuator-related malfunction. A malfunction is indicated by the malfunction indicator lamp (MIL) and stored in control module memory as a DTC.

[MR EXCEPT FOR NISMO RS MODELS]

< SYSTEM DESCRIPTION >

# **DIAGNOSIS SYSTEM (ECM)** DIAGNOSIS DESCRIPTION

### DIAGNOSIS DESCRIPTION: 1st Trip Detection Logic and Two Trip Detection Logic

INFOID:0000000012198237

When a malfunction is detected for the first time, 1st trip DTC and 1st trip Freeze Frame data are stored in the ECM memory. The MIL will not illuminate at this stage. <1st trip>

If the same malfunction is detected again during the next drive, the DTC and Freeze Frame data are stored in the ECM memory, and the MIL illuminates. The MIL illuminates at the same time when the DTC is stored. <2nd trip> The "trip" in the "Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation. Specific on board diagnostic items will cause the ECM to illuminate or blink the MIL, and store DTC and Freeze Frame data, even in the 1st trip, as shown below.

x: Applicable —: Not applicable

	MIL			DTC		1st trip DTC		
Items	1st trip		2nd trip		1st trip	2nd trip	1st trip	2nd trip
	Blinking	Illuminat- ed	Blinking	Illuminat- ed	displaying		displaying	display- ing
Misfire (Possible three way catalyst damage) — DTC: P0300 – P0308 is being detected	×	_	_	_	_	_	×	_
Misfire (Possible three way catalyst damage) — DTC: P0300 – P0308 is being detected	_	)_	×	_	_	×	_	_
One trip detection diagnoses (Refer to EC-706, "DTC Index".)	_	×	_	_	×	_	_	_
Except above	_	_	+	×	_	×	×	_

#### DIAGNOSIS DESCRIPTION: DTC and Freeze Frame Data

INFOID:0000000012198238

#### DTC AND 1ST TRIP DTC

The 1st trip DTC (whose number is the same as the DTC number) is displayed for the latest self-diagnostic result obtained. If the ECM memory was cleared previously, and the 1st trip DTC did not recur, the 1st trip DTC will not be displayed.

If a malfunction is detected during the 1st trip, the 1st trip DTC is saved in the ECM memory. The MIL will not light up (two trip detection logic). If the same malfunction is not detected in the 2nd trip (meeting the required driving pattern), the 1st trip DTC is cleared from the ECM memory. If the same malfunction is detected in the 2nd trip, both the 1st trip DTC and DTC are saved in the ECM memory and the MIL lights up. In other words, the DTC is stored in the ECM memory and the MIL lights up when the same malfunction occurs in two consecutive trips. If a 1st trip DTC is stored and a non-diagnostic operation is performed between the 1st and 2nd trips, only the 1st trip DTC will continue to be stored. For malfunctions that blink or light up the MIL during the 1st trip, the DTC and 1st trip DTC are stored in the ECM memory.

For malfunctions in which 1st trip DTCs are displayed, refer to EC-706, "DTC Index". These items are required by legal regulations to continuously monitor the system/component. In addition, the items monitored non-continuously are also displayed on CONSULT.

1st trip DTC is specified in Service \$07 of SAE J1979/ISO 15031-5. 1st trip DTC detection occurs without illuminating the MIL and therefore does not warn the driver of a malfunction.

When a 1st trip DTC is detected, check, print out or write down and erase (1st trip) DTC and Freeze Frame data as specified in Work Flow procedure Step 2, refer to EC-743, "Work Flow". Then perform DTC Confirmation Procedure or Component Function Check to try to duplicate the malfunction. If the malfunction is duplicated, the item requires repair.

#### FREEZE FRAME DATA AND 1ST TRIP FREEZE FRAME DATA

The ECM records the driving conditions such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed, vehicle speed, absolute throttle position, base fuel schedule and intake air temperature at the moment a malfunction is detected.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data. The data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT or GST. The 1st trip freeze frame data can only be displayed on the CONSULT screen.

**EC-659 Revision: November 2015 2016 JUKE**  EC

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#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

Priority		Items		
1	Freeze frame data	Misfire — DTC: P0300 – P0308 Fuel Injection System Function — DTC: P0171, P0172, P0174, P0175		
2	Except the above items			
3	1st trip freeze frame d	ata		

For example, the EGR malfunction (Priority: 2) was detected and the freeze frame data was saved in the 2nd trip. After that when the misfire (Priority: 1) is detected in another trip, the freeze frame data will be updated from the EGR malfunction to the misfire. The 1st trip freeze frame data is updated each time a different malfunction is detected. There is no priority for 1st trip freeze frame data. However, once freeze frame data is stored in the ECM memory, 1st trip freeze data is no longer stored (because only one freeze frame data or 1st trip freeze frame data can be stored in the ECM). If freeze frame data is stored in the ECM memory and freeze frame data with the same priority occurs later, the first (original) freeze frame data remains unchanged in the ECM memory.

Both 1st trip freeze frame data and freeze frame data (along with the DTCs) are cleared when the ECM memory is erased.

### **DIAGNOSIS DESCRIPTION: Counter System**

### INFOID:0000000012198239

#### RELATIONSHIP BETWEEN MIL, 1ST TRIP DTC, DTC, AND DETECTABLE ITEMS

- When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data are stored in the ECM memory.
- When the same malfunction is detected in two consecutive trips, the DTC and the freeze frame data are stored in the ECM memory, and the MIL will come on.
- The MIL will turn OFF after the vehicle is driven 3 times (driving pattern B) with no malfunction. The drive is counted only when the recorded driving pattern is met (as stored in the ECM). If another malfunction occurs while counting, the counter will reset.
- The DTC and the freeze frame data will be stored until the vehicle is driven 40 times (driving pattern A) without the same malfunction recurring (except for Misfire and Fuel Injection System). For Misfire and Fuel Injection System, the DTC and freeze frame data will be stored until the vehicle is driven 80 times (driving pattern C) without the same malfunction recurring. The "TIME" in "SELF-DIAGNOSTIC RESULTS" mode of CONSULT will count the number of times the vehicle is driven.
- The 1st trip DTC is not displayed when the self-diagnosis results in OK for the 2nd trip.

#### COUNTER SYSTEM CHART

Items	Fuel Injection System	Misfire	Other
MIL (turns OFF)	3 (pattern B)	3 (pattern B)	3 (pattern B)
DTC, Freeze Frame Data (no display)	80 (pattern C)	80 (pattern C)	40 (pattern A)
1st Trip DTC (clear)	1 (pattern C), *1	1 (pattern C), *1	1 (pattern B)
1st Trip Freeze Frame Data (clear)	*1, *2	*1, *2	1 (pattern B)

For details about patterns B and C under "Fuel Injection System" and "Misfire", see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

For details about patterns A and B under Other, see "EXPLANATION FOR DRIVING PATTERNS FOR "MISFIRE <EXHAUST QUALITY DETERIORATION>", "FUEL INJECTION SYSTEM".

- \*1: Clear timing is at the moment OK is detected.
- \*2: Clear timing is when the same malfunction is detected in the 2nd trip.

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns for "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"

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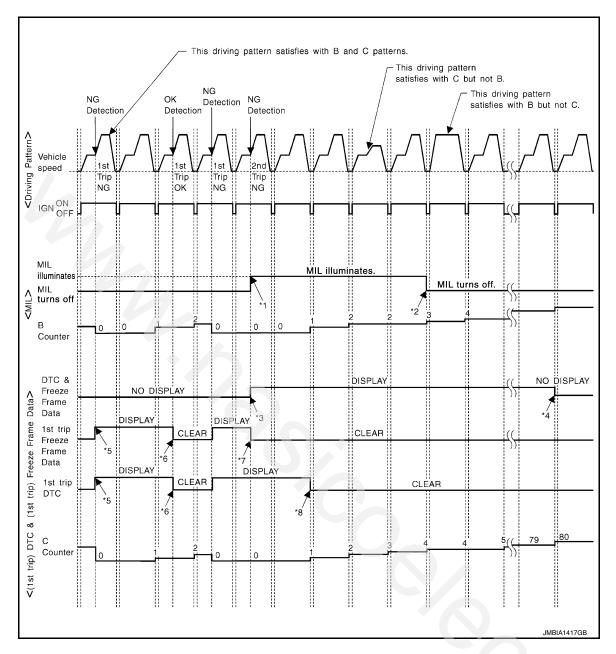
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- \*1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- \*4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 80 times (pattern C) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)
- \*7: When the same malfunction is detected in the 2nd trip, the 1st trip freeze frame data will be cleared.

- \*2: MIL will turn OFF after vehicle is driv- \*3: When the same malfunction is deen 3 times (pattern B) without any malfunctions.
- \*5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- \*8: 1st trip DTC will be cleared when vehicle is driven once (pattern C) without the same malfunction after DTC is stored in ECM.
- tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.
- \*6: The 1st trip DTC and the 1st trip freeze frame data will be cleared at the moment OK is detected.

Explanation for Driving Patterns for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System"

Driving Pattern B

Refer to EC-663, "DIAGNOSIS DESCRIPTION: Driving Pattern".

Driving Pattern C

Refer to EC-663, "DIAGNOSIS DESCRIPTION: Driving Pattern".

Example:

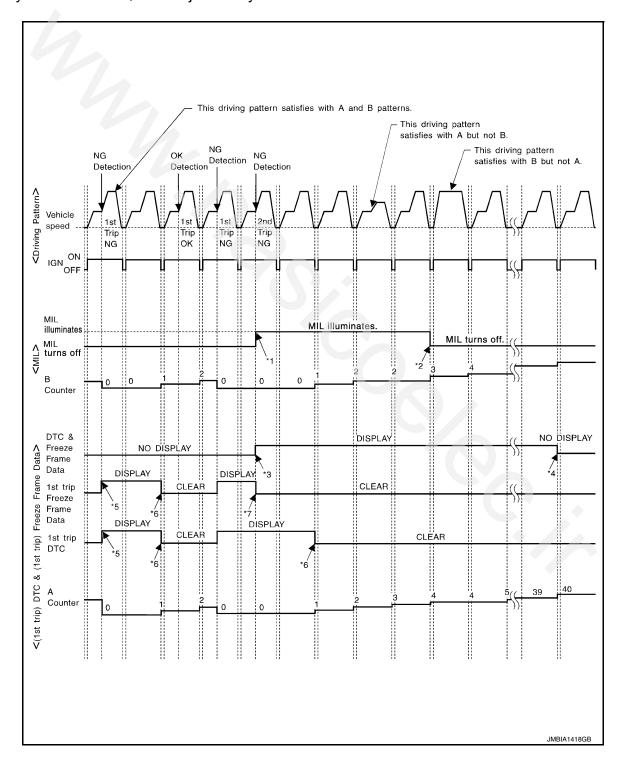
If the stored freeze frame data is as per the following:

Engine speed: 850 rpm, Calculated load value: 30%, Engine coolant temperature: 80°C (176°F)

To be satisfied with driving pattern C, the vehicle should run under the following conditions:

Engine speed: 475 - 1,225 rpm, Calculated load value: 27 - 33%, Engine coolant temperature: more than  $70^{\circ}$ C ( $158^{\circ}$ F)

Relationship Between MIL, DTC, 1st Trip DTC and Driving Patterns Except For "Misfire <Exhaust Quality Deterioration>", "Fuel Injection System"



#### < SYSTEM DESCRIPTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

- \*1: When the same malfunction is detected in two consecutive trips, MIL will light up.
- \*2: MIL will turn OFF after vehicle is driv- \*3: When the same malfunction is deen 3 times (pattern B) without any malfunctions.
  - tected in two consecutive trips, the DTC and the freeze frame data will be stored in ECM.

\*4: The DTC and the freeze frame data will not be displayed any longer after vehicle is driven 40 times (pattern A) without the same malfunction. (The DTC and the freeze frame data still remain in ECM.)

\*7: When the same malfunction is detected in the 2nd trip, the 1st trip

freeze frame data will be cleared.

- \*5: When a malfunction is detected for the first time, the 1st trip DTC and the 1st trip freeze frame data will be stored in ECM.
- \*6: 1st trip DTC will be cleared after vehicle is driven once (pattern B) without the same malfunction.

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Explanation for Driving Patterns Except for "Misfire < Exhaust Quality Deterioration>", "Fuel Injection System"

Driving Pattern A

Refer to EC-663, "DIAGNOSIS DESCRIPTION: Driving Pattern".

Driving Pattern B

Refer to EC-663, "DIAGNOSIS DESCRIPTION: Driving Pattern".

### **DIAGNOSIS DESCRIPTION: Driving Pattern**

INFOID:0000000012198240

#### DRIVING PATTERN A

Driving pattern A means a trip satisfying the following conditions.

- Engine speed reaches 400 rpm or more.
- Engine coolant temperature rises by 20°C (36°F) or more after starting the engine.
- Engine coolant temperature reaches 70°C (158°F) or more.
- The ignition switch is turned from ON to OFF.

#### NOTE:

- When the same malfunction is detected regardless of driving conditions, reset the counter of driving pattern
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern A.

#### DRIVING PATTERN B

Driving pattern B means a trip satisfying the following conditions.

- · Engine speed reaches 400 rpm or more.
- Engine coolant temperature reaches 70°C (158°F) or more.
- Vehicle speed of 70 120 km/h (44 75 MPH) is maintained for 60 seconds or more under the control of closed loop.
- closed loop.
- Under the closed loop control condition, the following state reaches 12 seconds or more in total: Vehicle speed of 4 km/h (2 MPH) or less with idling condition.
- The state of driving at 10 km/h (7 MPH) or more reaches 10 minutes or more in total.
- A lapse of 22 minutes or more after engine start.

#### NOTE:

- Drive the vehicle at a constant velocity.
- When the same malfunction is detected regardless of driving conditions, reset the counter of driving pattern
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern B.

#### DRIVING PATTERN C

Driving pattern C means operating vehicle as per the following:

The following conditions should be satisfied at the same time:

Engine speed: (Engine speed in the freeze frame data)  $\pm 375$  rpm

Calculated load value: (Calculated load value in the freeze frame data) x (1±0.1) [%]

Engine coolant temperature condition:

 Vehicle speed of 30 – 60 km/h (19 – 37 MPH) is maintained for 10 seconds or more under the control of Ν

#### < SYSTEM DESCRIPTION >

[MR EXCEPT FOR NISMO RS MODELS]

- When the freeze frame data shows lower than 70°C (158°F), engine coolant temperature should be lower than 70°C (158°F).
- When the freeze frame data shows higher than or equal to 70°C (158°F), engine coolant temperature should be higher than or equal to 70°C (158°F).

#### NOTE:

- When the same malfunction is detected regardless of the above vehicle conditions, reset the counter of driving pattern C.
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern C.
- The 1st trip DTC will be cleared when C counter is counted once without the same malfunction after DTC is stored in ECM.

#### DRIVING PATTERN D

Driving pattern D means a trip satisfying the following conditions.

- The state of driving at 40 km/h (25 MPH) reaches 300 seconds or more in total.
- Idle speed lasts 30 seconds or more.
- A lapse of 600 seconds or more after engine start.

#### NOTE:

- When the same malfunction is detected regardless of driving conditions, reset the counter of driving pattern
- When the above conditions are satisfied without detecting the same malfunction, reset the counter of driving pattern D.

### DIAGNOSIS DESCRIPTION: System Readiness Test (SRT) Code

INFOID:0000000012198241

System Readiness Test (SRT) code is specified in Service \$01 of SAE J1979/ISO 15031-5.

As part of an enhanced emissions test for Inspection & Maintenance (I/M), certain states require the status of SRT be used to indicate whether the ECM has completed self-diagnosis of major emission systems and components. Completion must be verified in order for the emissions inspection to proceed.

If a vehicle is rejected for a State emissions inspection due to one or more SRT items indicating "INCMP", use the information in this Service Manual to set the SRT to "CMPLT".

In most cases the ECM will automatically complete its self-diagnosis cycle during normal usage, and the SRT status will indicate "CMPLT" for each application system. Once set as "CMPLT", the SRT status remains "CMPLT" until the self-diagnosis memory is erased.

Occasionally, certain portions of the self-diagnostic test may not be completed as a result of the customer's normal driving pattern; the SRT will indicate "INCMP" for these items.

#### NOTE:

The SRT will also indicate "INCMP" if the self-diagnosis memory is erased for any reason or if the ECM memory power supply is interrupted for several hours.

If, during the state emissions inspection, the SRT indicates "CMPLT" for all test items, the inspector will continue with the emissions test. However, if the SRT indicates "INCMP" for one or more of the SRT items the vehicle is returned to the customer untested.

#### NOTE:

If permanent DTC is stored or MIL illuminates during the state emissions inspection, the vehicle is also returned to the customeruntested even though the SRT indicates "CMPLT" for all test items. therefore, it is important to check SRT ("CMPLT"), DTC (No DTCs) and permanent DTC (No permanent DTC) before the inspection.

#### SRT SET TIMING

SRT is set as "CMPLT" after self-diagnosis has been performed one or more times. Completion of SRT is done regardless of whether the result is OK or NG. The set timing is different between OK and NG results and is shown in the table below.

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		Example				
Self-diagnosis result		Diagnosis	← ON →		on cycle $OFF \leftarrow ON \rightarrow OF$	F ← ON →
All OK	Case 1	P0400	OK (1)	—(1)	OK (2)	— (2)
		P0402	OK (1)	—(1)	— (1)	OK (2)
		P1402	OK (1)	OK (2)	— (2)	— (2)
		SRT of EGR	"CMPLT"	"CMPLT"	"CMPLT"	"CMPLT"
	Case 2	P0400	OK (1)	—(1)	—(1)	—(1)
		P0402	— (0)	—(0)	OK (1)	—(1)
		P1402	OK (1)	OK (2)	— (2)	— (2)
		SRT of EGR	"INCMP"	"INCMP"	"CMPLT"	"CMPLT"
NG exists	Case 3	P0400	OK	OK	_	_
		P0402	_	_	_	_
		P1402	NG	_	NG	NG (Consecutive NG)
		(1st trip) DTC	1st trip DTC	_	1st trip DTC	DTC (= MIL ON)
		SRT of EGR	"INCMP"	"INCMP"	"INCMP"	"CMPLT"

OK: Self-diagnosis is carried out and the result is OK.

NG: Self-diagnosis is carried out and the result is NG.

-: Self-diagnosis is not carried out.

When all SRT related self-diagnoses show OK results in a single cycle (Ignition OFF-ON-OFF), the SRT will indicate "CMPLT".  $\rightarrow$  Case 1 above

When all SRT related self-diagnoses show OK results through several different cycles, the SRT will indicate "CMPLT" at the time the respective self-diagnoses have at least one OK result. → Case 2 above

If one or more SRT related self-diagnoses show NG results in 2 consecutive cycles, the SRT will also indicate "CMPLT". → Case 3 above

The table above shows that the minimum number of cycles for setting SRT as "INCMP" is the number one (1) for each self-diagnosis (Case 1 & 2) or the number two (2) for one of self-diagnoses (Case 3). However, in preparation for the state emissions inspection, it is unnecessary for each self-diagnosis to be executed twice (Case 3) for the following reasons:

- The SRT will indicate "CMPLT" at the time the respective self-diagnoses have one (1) OK result.
- The emissions inspection requires "CMPLT" of the SRT only with OK self-diagnosis results.
- During SRT driving pattern, the 1st trip DTC (NG) is detected prior to "CMPLT" of SRT and the self-diagnosis memory must be erased from the ECM after repair.
- If the 1st trip DTC is erased, all the SRT will indicate "INCMP".

#### NOTE:

SRT can be set as "CMPLT" together with the DTC(s). Therefore, DTC check must always be carried out prior to the state emission inspection even though the SRT indicates "CMPLT".

# DIAGNOSIS DESCRIPTION: Permanent Diagnostic Trouble Code (Permanent DTC)

INFOID:0000000012198242

Permanent DTC is defined in SAE J1979/ISO 15031-5 Service \$0A.

ECM stores a DTC issuing a command of turning on MIL as a permanent DTC and keeps storing the DTC as a permanent DTC until ECM judges that there is no presence of malfunction.

Permanent DTCs cannot be erased by using the erase function of CONSULT or Generic Scan Tool (GST) and by disconnecting the battery to shut off power to ECM. This prevents a vehicle from passing the in-use inspection without repairing a malfunctioning part.

When not passing the in-use inspection due to more than one permanent DTC, permanent DTCs should be erased, referring to this manual.

#### NOTE:

- The important items in in-use inspection are that MIL is not ON, SRT test items are set, and permanent DTCs are not included.
- Permanent DTCs do not apply for regions that permanent DTCs are not regulated by law.

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#### PERMANENT DTC SET TIMING

The setting timing of permanent DTC is stored in ECM with the lighting of MIL when a DTC is confirmed.

### DIAGNOSIS DESCRIPTION: Malfunction Indicator Lamp (MIL)

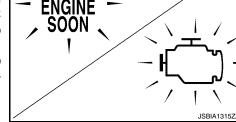
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When detecting a DTC that affects exhaust gas, the exhaust emission-related control module transmits a malfunction indicator lamp signal to ECM via CAN communication line.

ECM prioritizes (MIL: ON/blink) the signal received from the exhaust emission-related control module and the ECM-stored DTC that affects exhaust gas and transmits a malfunction indicator lamp signal to the combination meter via CAN communication line.

The combination meter turns ON or blinks the MIL, according to the signal transmitted from ECM, and alerts the driver of malfunction detection.

 Control modules that a DTC of MIL ON/Blink is stored (Control module varies among DTCs.):



SERVICE

- ECM
- TCM
- 1. The MIL illuminates when ignition switch is turned ON (engine is not running).

#### NOTE:

Check the MIL circuit if MIL does not illuminate. Refer to EC-1237, "Component Function Check".

When the engine is started, the MIL should go off.

#### NOTE:

If MIL remains ON or continues blinking, a DTC(s) that affects exhaust gas is detected. In this case, Self-diagnosis is required for performing inspection and repair.

### On Board Diagnosis Function

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#### ON BOARD DIAGNOSIS ITEM

The on board diagnostic system has the following functions.

Diagnostic test mode	Function	
Bulb check	MIL can be checked.	
SRT status	ECM can read if SRT codes are set.	
Malfunction warning	If ECM detects a malfunction, it illuminates or blinks MIL to inform the driver that a malfunction has been detected.	
Self-diagnostic results	DTCs or 1st trip DTCs stored in ECM can be read.	
Accelerator pedal released position learning	ECM can learn the accelerator pedal released position. Refer to <u>EC-753, "Description"</u> .	
Throttle valve closed position learning	ECM can learn the throttle valve closed position. Refer to EC-754, "Description".	
Idle air volume learning	ECM can learn the idle air volume. Refer to EC-758, "Description".	
Mixture ratio self-learning value clear	Mixture ratio self-learning value can be erased. Refer to <u>EC-762</u> , " <u>Description</u> ".	

#### **BULB CHECK MODE**

#### Description

This function allows damage inspection in the MIL bulb (blown, open circuit, etc.).

#### Operation Procedure

- 1. Turn ignition switch ON.
- The MIL on the instrument panel should stay ON.
   If it remains OFF, check MIL circuit. Refer to <u>EC-1237</u>, "<u>Diagnosis Procedure</u>".

#### SRT STATUS MODE

Description

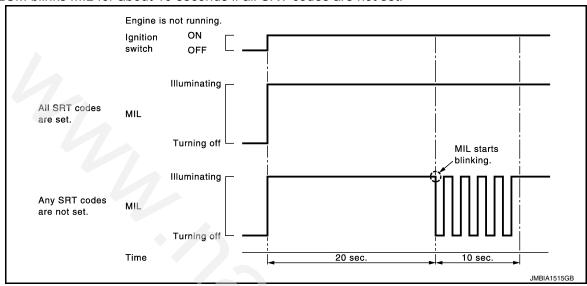
# [MR EXCEPT FOR NISMO RS MODELS]

This function allows to read if ECM has completed the self-diagnoses of major emission control systems and components. For SRT, refer to EC-664, "DIAGNOSIS DESCRIPTION: System Readiness Test (SRT) Code".

#### Operation Procedure

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- Turn ignition switch ON and wait 20 seconds.
- SRT status is indicated as shown blow.
  - ECM continues to illuminate MIL if all SRT codes are set.
  - ECM blinks MIL for about 10 seconds if all SRT codes are not set.



#### MALFUNCTION WARNING MODE

#### Description

In this function ECM turns on or blinks MIL when it detects a malfunction in the emission control system components and/or the powertrain control components (which affect vehicle emissions) to inform the driver that a malfunction has been detected.

#### Operation Procedure

- Turn ignition switch ON.
- Check that MIL illuminates. If it remains OFF, check MIL circuit. Refer to EC-664, "DIAGNOSIS DESCRIPTION: System Readiness Test (SRT) Code".
- Start engine and let it idle.
  - For two trip detection logic diagnoses, ECM turns on MIL when it detects the same malfunction twice in the two consecutive driving cycles.
  - For 1st trip detection logic diagnoses, ECM turns on MIL when it detects a malfunction in one driving cycle.
  - ECM blinks MIL when it detects a malfunction that may damage the three way catalyst (misfire).

#### CONSULT Function

#### **FUNCTION**

Diagnostic test mode	Function		
Self Diagnostic Results	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame d can be read and erased quickly.*		
Data Monitor	Input/Output data in the ECM can be read.		
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT unit.		
Active Test  Diagnostic Test Mode in which CONSULT drives some actuators apart from the ECMs a some parameters in a specified range.			

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### [MR EXCEPT FOR NISMO RS MODELS]

Diagnostic test mode	Function	
Ecu Identification	ECM part number can be read.	
DTC Work Support	The status of system monitoring tests and the self-diagnosis status/results can be confirmed.	

- \*: The following emission-related diagnostic information is cleared when the ECM memory is erased.
- · Diagnostic trouble codes
- · 1st trip diagnostic trouble codes
- · Freeze frame data
- · 1st trip freeze frame data
- · System readiness test (SRT) codes
- · Test values

#### SELF DIAGNOSTIC RESULT MODE

#### Self Diagnostic Item

Regarding items of DTC and 1st trip DTC, refer to EC-706. "DTC Index".

#### How to Read DTC and 1st Trip DTC

DTCs and 1st trip DTCs related to the malfunction are displayed in "Self-diag results".

- When ECM detects a 1st trip DTC, "1t" is displayed for "TIME".
- When ECM has detected a current DTC, "0" is displayed for "TIME".
- If "TIME" is neither "0" nor "1t", the DTC occurred in the past and ECM shows the number of times the vehicle has been driven since the last detection of the DTC.

#### How to Erase DTC and 1st Trip DTC

#### NOTE:

If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.

Freeze Frame Data and 1st Trip Freeze Frame Data

Freeze frame data item*	Description		
DIAG TROUBLE CODE [PXXXX]	The engine control component part/control system has a trouble code the is displayed as PXXXX. (Refer to EC-706. "DTC_Index".)		
CAL/LD VALUE [%]	The calculated load value at the moment a malfunction is detected is displayed.		
COOLANT TEMP [°C] or [°F]	The engine coolant temperature at the moment a malfunction is detected is displayed.		
L-FUEL TRM-B1 [%]	"Long-term fuel trim" at the moment a malfunction is detected is displayed.		
L-FUEL TRM-B2 [%]	<ul> <li>The long-term fuel trim indicates much more gradual feedback compensation to the base fuel schedule than short-term fuel trim.</li> </ul>		
S-FUEL TRM-B1 [%]	"Short-term fuel trim" at the moment a malfunction is detected is displayed.		
S-FUEL TRM-B2 [%]	<ul> <li>The short-term fuel trim indicates dynamic or instantaneous feedback compensation to the base fuel sched- ule.</li> </ul>		
ENGINE SPEED [rpm]	The engine speed at the moment a malfunction is detected is displayed.		
VEHICL SPEED [km/h] or [mph]	The vehicle speed at the moment a malfunction is detected is displayed.		
INT MANI PRES [kPa]	These items are displayed but are not applicable to this model.		
ABSOL TH·P/S [%]	The throttle valve opening angle at the moment a malfunction is detected is displayed.		
B/FUEL SCHDL [msec]	The base fuel schedule at the moment a malfunction is detected is displayed.		
INT/A TEMP SE [°C] or [°F]	The intake air temperature at the moment a malfunction is detected is displayed.		

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### [MR EXCEPT FOR NISMO RS MODELS]

Freeze frame data item*	Description	
FUEL SYS-B1	"Fuel injection system status" at the moment a malfunction is detected is displayed.	
FUEL SYS-B2	One of the following mode is displayed.     Mode2: Open loop due to detected system malfunction     Mode3: Open loop due to driving conditions (power enrichment, deceleration enleanment)     Mode4: Closed loop - using oxygen sensor(s) as feedback for fuel control     Mode5: Open loop - has not yet satisfied condition to go to closed loop	
COMBUST CONDI- TION	These items are displayed but are not applicable to this model.	
FUEL RAIL PRES- SURE [MPa]	The fuel rail pressure at the moment a malfunction is detected is displayed.	
TARGET FUEL RAIL PRESSURE [MPa]	The target fuel rail pressure at the moment a malfunction is detected is displayed.	
BATTERY VOLTAGE [V]	The battery voltage at the moment a malfunction is detected is displayed.	
FUEL LEVEL [%]	The fuel level at the moment a malfunction is detected is displayed.	

<sup>\*:</sup> The items are the same as those of 1st trip freeze frame data.

#### DATA MONITOR MODE

#### NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

• For reference values of the following items, refer to EC-679, "Reference Value".

#### Monitored Item

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Monitored item	Unit	Description	Remarks
ENG SPEED	rpm	Indicates the engine speed computed from the signal of the crankshaft position sensor (POS) and camshaft position sensor (PHASE).	<ul> <li>Accuracy becomes poor if engine speed drops below the idle rpm.</li> <li>If the signal is interrupted while the engine is running, an abnormal value may be indicated.</li> </ul>
MASS AIR FLOW SENSOR (Hz)	Hz	The signal frequency of the mass air flow sensor is displayed.	
B/FUEL SCHDL	msec	"Base fuel schedule" indicates the fuel injection pulse width programmed into ECM, prior to any learned on board correction.	When engine is running specification range is indicated in "SPEC".
A/F ALPHA-B1	%	The mean value of the air-fuel ratio feedback correction factor per cycle is indicated.	<ul> <li>When the engine is stopped, a certain value is indicated.</li> <li>When engine is running specification range is indicated in "SPEC".</li> <li>This data also includes the data for the air-fuel ratio learning control.</li> </ul>
COOLAN TEMP/S	°C or °F	The engine coolant temperature (determined by the signal voltage of the engine coolant temperature sensor) is displayed.	When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The engine coolant temperature determined by the ECM is displayed.
A/F SEN1 (B1)	V	The A/F signal computed from the input signal of the air fuel ratio (A/F) sensor 1 is displayed.	
HO2S2 (B1)	V	The signal voltage of the heated oxygen sensor 2 is displayed.	
HO2S2 MNTR(B1)	RICH/LEAN	Display of heated oxygen sensor 2 signal:     RICH: means the amount of oxygen after three way catalyst is relatively small.     LEAN: means the amount of oxygen after three way catalyst is relatively large.	When the engine is stopped, a certain value is indicated.

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Monitored item	Unit	Description	Remarks
VHCL SPEED SE	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from combination meter is displayed.	
BATTERY VOLT	V	The power supply voltage of ECM is displayed.	
ACCEL SEN 1		The accelerator pedal position sensor signal volt-	ACCEL SEN 2 signal is converted by
ACCEL SEN 2	V	age is displayed.	ECM internally. Thus, it differs from ECM terminal voltage signal.
TP SEN 1-B1		The throttle position sensor signal voltage is dis-	TP SEN 2-B1 signal is converted by
TP SEN 2-B1	V	played.	ECM internally. Thus, it differs from ECM terminal voltage signal.
START SIGNAL	ON/OFF	Indicates start signal status [ON/OFF] computed by the ECM according to the signals of engine speed and battery voltage.	After starting the engine, [OFF] is displayed regardless of the starter signal.
CLSD THL POS	ON/OFF	Indicates idle position [ON/OFF] computed by ECM according to the accelerator pedal position sensor signal.	
AIR COND SIG	ON/OFF	Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal.	
PW/ST SIGNAL	ON/OFF	[ON/OFF] condition of the power steering system (determined by the signal sent from EPS control unit) is indicated.	
LOAD SIGNAL	ON/OFF	<ul> <li>Indicates [ON/OFF] condition from the electrical load signal.</li> <li>ON: Rear window defogger switch is ON and/or lighting switch is in 2nd position.</li> <li>OFF: Both rear window defogger switch and lighting switch are OFF.</li> </ul>	
IGNITION SW	ON/OFF	Indicates [ON/OFF] condition from ignition switch signal.	
HEATER FAN SW	ON/OFF	Indicates [ON/OFF] condition from the heater fan switch signal.	
BRAKE SW	ON/OFF	Indicates [ON/OFF] condition from the stop lamp switch signal.	
IGN TIMING	BTDC	Indicates the ignition timing computed by ECM according to the input signals.	When the engine is stopped, a certain value is indicated.
COMBUSTION	_	These items are displayed but are not applicable to this model.	
CAL/LD VALUE	%	"Calculated load value" indicates the value of the current airflow divided by peak airflow.	40
MASS AIRFLOW	g/s	Indicates the mass airflow computed by ECM according to the signal voltage of the mass airflow sensor.	- / / /
PURG VOL C/V	%	<ul> <li>Indicates the EVAP canister purge volume control solenoid valve control value computed by the ECM according to the input signals.</li> <li>The opening becomes larger as the value increases.</li> </ul>	
INT/V TIM(B1)	°CA	Indicates [°CA] of intake camshaft advance angle.	
EXH/V TIM B1	°CA	Indicates [°CA] of exhaust camshaft retard angle.	
INT/V SOL(B1)	%	<ul> <li>The control value of the intake valve timing control solenoid valve (determined by ECM according to the input signals) is indicated.</li> <li>The advance angle becomes larger as the value increases.</li> </ul>	

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Monitored item	Unit	Description	Remarks
AIR COND RLY	ON/OFF	The air conditioner relay control condition (determined by ECM according to the input signals) is indicated.	
FUEL PUMP RLY	ON/OFF	Indicates the fuel pump relay control condition determined by ECM according to the input signals.	
THRTL RELAY	ON/OFF	Indicates the throttle control motor relay control condition determined by the ECM according to the input signals.	
HO2S2 HTR (B1)	ON/OFF	Indicates [ON/OFF] condition of heated oxygen sensor 2 heater determined by ECM according to the input signals.	
ALT DUTY SIG	ON/OFF	<ul> <li>The control condition of the power generation voltage variable control (determined by ECM according to the input signals) is indicated.</li> <li>ON: Power generation voltage variable control is active.</li> <li>OFF: Power generation</li> </ul>	
I/P PULLY SPD	rpm	Indicates the engine speed computed from the input speed sensor signal.	
VEHICLE SPEED	km/h or mph	The vehicle speed computed from the vehicle speed signal sent from TCM is displayed.	
IDL A/V LEARN	YET/CMPLT	Display the condition of Idle Air Volume Learning     YET: Idle air volume learning has not been performed yet.     CMPLT: Idle air volume learning has already been performed successfully.	
TRVL AFTER MIL	km/h or mph	Distance traveled while MIL is activated.	
ENG OIL TEMP	°C or °F	The engine oil temperature (determined by the signal voltage of the engine oil temperature sensor) is displayed.	
A/F S1 HTR(B1)	%	<ul> <li>Air fuel ratio (A/F) sensor 1 heater control value computed by ECM according to the input signals.</li> <li>The current flow to the heater becomes larger as the value increases.</li> </ul>	
INT/A TEMP SE	°C or °F	The intake air temperature (determined by the signal voltage of the intake air temperature sensor) is indicated.	
SET VHCL SPD	km/h or mph	The preset vehicle speed is displayed.	
MAIN SW	ON/OFF	Indicates [ON/OFF] condition from ASCD MAIN switch signal.	
CANCEL SW	ON/OFF	Indicates [ON/OFF] condition from CANCEL switch signal.	
RESUME/ACC SW	ON/OFF	Indicates [ON/OFF] condition from ACCEL/RES switch signal.	
SET SW	ON/OFF	Indicates [ON/OFF] condition from COAST/SET switch signal.	
BRAKE SW1	ON/OFF	Indicates [ON/OFF] condition from brake pedal position switch signal.	
BRAKE SW2	ON/OFF	Indicates [ON/OFF] condition of stop lamp switch signal.	
VHCL SPD CUT	NON/CUT	Indicates the vehicle cruise condition.     NON: Vehicle speed is maintained at the ASCD set speed.     CUT: Vehicle speed decreased to excessively low compared with the ASCD set speed, and ASCD operation is cut off.	

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Monitored item	Unit	Description	Remarks
LO SPEED CUT	NON/CUT	Indicates the vehicle cruise condition.     NON: Vehicle speed is maintained at the ASCD set speed.     CUT: Vehicle speed decreased to excessively low, and ASCD operation is cut off.	
AT OD MONITOR	ON/OFF	Indicates [ON/OFF] condition of CVT O/D according to the input signal from the TCM.	For M/T models, always "OFF" is displayed.
AT OD CANCEL	ON/OFF	Indicates [ON/OFF] condition of CVT O/D cancel request signal.	For M/T models, always "OFF" is displayed.
CRUISE LAMP	ON/OFF	Indicates [ON/OFF] condition of CRUISE lamp determined by the ECM according to the input signals.	
SET LAMP	ON/OFF	Indicates [ON/OFF] condition of SET lamp determined by the ECM according to the input signals.	
FUN DUTY	%	Indicates a command value for cooling fan. The value is calculated by ECM based on input signals.	
ALT DUTY	%	Indicates the duty ratio of the power generation command value. The ratio is calculated by ECM based on the battery current sensor signal.	
BAT CUR SEN	mV	The signal voltage of battery current sensor is displayed.	
A/F ADJ-B1	_	Indicates the correction of a factor stored in ECM. The factor is calculated from the difference between the target air-fuel ratio stored in ECM and the air-fuel ratio calculated from A/F sensor 1 signal.	
P/N POSI SW	ON/OFF	Indicates [ON/OFF] condition from the park/neutral position (PNP) signal.	
AC PRESS SEN	V	The signal voltage from the refrigerant pressure sensor is displayed.	
FUEL PRES SEN	MPa	Indicates the fuel rail pressure computed by ECM according to the input signals.	
TURBO BST SEN	V	The turbocharger boost sensor signal voltage is displayed.	
FUEL INJ TIM	BTDC	Indicates the fuel injection timing computed by ECM according to the input signals.	
FUEL INJ B1	msec	ECM-calculated injection pulse width of the fuel injector on the Bank 1 side.	
BAT TEMP SEN	V	The signal voltage from the battery temperature sensor is displayed.	
A/F SEN1 DIAG2(B1)*	INCMP/CM- PLT	<ul> <li>Indicates DTC P0133 self-diagnosis condition.</li> <li>INCMP: Self-diagnosis is incomplete.</li> <li>CMPLT: Self-diagnosis is complete.</li> </ul>	
HO2 S2 DIAG1(B1)	INCMP/CM- PLT	Indicates DTC P0139 self-diagnosis (delayed response) condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
HO2 S2 DIAG2(B1)*	INCMP/CM- PLT	Indicates DTC P0139 self-diagnosis (slow response) condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
H/P FUEL PUMP DEG	deg	Displays ECM-calculated fuel discharge position of the high pressure fuel pump.	
FUEL PRES SEN V	mV	The signal voltage of FRP sensor is displayed.	
EOP SENSOR	mV	The signal voltage of EOP sensor is displayed.	

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Monitored item	Unit	Description	Remarks	
BOOST S/V DUTY	%	The turbocharger boost control valve control condition (determined by ECM according to the input signals) is indicated.		<i>j-</i>
ATOM PRESS SEN	V	The atmospheric pressure sensor signal voltage is displayed.		E(
ECM TEMP 1 ECM TEMP 2	°C or °F	The ECM temperature is indicated.		(
A/F-S ATMSPHRC CRCT B1	_	Displays a determined value of atmospheric correction factor necessary for correcting an A/F sensor signal input to ECM. The signal used for the correction is an A/F sensor signal transmitted while driving under atmospheric pressure.		[
A/F-S ATMSPHRC CRCT UP B1	count	Displays the number of updates of the A/F sensor atmospheric correction factor.		-
SL TRG VHCL SPD	km/h or mph	The preset speed limiter vehicle speed is displays.	<ul> <li>A certain constant value is displayed while mode other than speed limiter control being activated.</li> <li>When the speed limiter is released by other method than the main switch, the vehicle speed indicated during the standby mode is the one that is previously set before releasing the speed limiter.</li> </ul>	F
SL SET LAMP	ON/OFF	Indicates [ON/OFF] condition of speed limiter SET indicator determined by the ECM according to the input signals.		-  -
SL LIMIT LAMP	ON/OFF	Indicates [ON/OFF] condition of speed limiter LIMIT indicator determined by the ECM according to the input signals.		
SL MAIN SW	ON/OFF	Indicates [ON/OFF] condition from speed limiter MAIN switch signals.		
KICKDOWN POS	ON/OFF	Indicates [ON/OFF] condition of kickdown determined by the ECM according to the input signals.		
EGR TEMP SEN	V	The signal voltage of EGR temperature sensor is displayed.		
EGR VALVE POSI- TION	deg	ECM-calculated EGR valve position is displayed.		
EGR VALVE POSI- TION SEN	V	The signal voltage of EGR valve position sensor is displayed.	40	- - "
EGR DIFFEREN- TIAL PRESS	kPa	Displays ECM-calculated pressure difference between before and behind the EGR volume control valve.	. / .	
W/G ACTUATOR POSITION B1	m	Indicates real stroke position of turbocharger wastegate actuator. The value is calculated by ECM based on the difference voltage between position sensor output and valve close position.		· 1
W/G ACTUATOR POSI SEN B1	V	Indicates position sensor output voltage of turbo- charger wastegate actuator.		
W/GATE V CLSD LEARN B1	INCMP/CM- PLT	Displays "full close position learning" experience of wastegate actuator.  INCMP: Learning is incomplete. There is no memory of the full close position voltage in the ECM.  CMPLT: Learning is complete. Full close position voltage is memory in the ECM.	After replacing ECM, "INCMP" is displayed.	-

Monitored item	Unit	Description	Remarks
RADIATOR COOL- ANT TEMP	°C or °F	Description: The radiator coolant temperature (determined by the signal voltage of the radiator coolant temperature sensor) is displayed.	
ENGINE COOLANT B/V POSI	deg	Description: The Multi-way Control Valve position detected by the position sensor is displayed.	
AC EVA TEMP	°C or °F	Indicates A/C evaporator temperature sent from "unified meter and A/C amp".	
AC EVA TARGET	°C or °F	Indicates target A/C evaporator temperature sent from "unified meter and A/C amp".	
STRT OPRTN CNTR	count	Starter motor operation counter is displayed.	Indicated multiplication value of the starter motor operation of key switch operation and the restart.
CML B/DCHG CRNT	<del>-</del>	Cumulative battery discharge current is displayed.	ECM judges whether stop/start system is possible according to battery state.
A/F LRN CNTR B1	1-7	NOTE: The item is indicated, but not used.	
MASS AIR FLOW SENSOR (HZ)	Hz	The value is air flow meter output frequency. This output decide fuel injection quantity.	
EXHAUST GAS TEMP SEN 1 B1	V	The signal voltage of exhaust gas temperature sensor is displayed.	
SWRL CONT S/V	_	Indicates open/close condition of intake manifold control valve.	
BATTERY STS	OK/NG	Indicated [OK/NG] condition of battery output.	
AT STOP START SW	ON/OFF	Indicates [ON/OFF] condition stop/start OFF switch signal.	
CPP SW	ON/OFF	Indicates [ON/OFF] condition from clutch pedal position switch signal.	
CLUTCH INTLCK SW	ON/OFF	Indicates [ON/OFF] condition from clutch interlock switch signal.	
THRTL STK CNT B1	_	NOTE: The item is indicated, but not used.	
A/F SEN1 DIAG1 (B1)	INCMP/CM- PLT	Indicates DTC P015A or P015B self-diagnosis condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
A/F SEN1 DIAG2 (B1)	INCMP/CM- PLT	Indicates DTC P014C or P014D self-diagnosis condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
A/F SEN1 DIAG3 (B1)	ABSNT/ PRSNT	<ul> <li>Indicates DTC P014C, P014D, P015A or P015B self-diagnosis condition.</li> <li>ABSNT: The vehicle condition is not within the diagnosis range.</li> <li>PRSNT: The vehicle condition is within the diagnosis range.</li> </ul>	
A/F-S ATMSPHRC CRCT B1	_	Displays a determined value of atmospheric correction factor necessary for correcting an A/F sensor signal input to ECM. The signal used for the correction is an A/F sensor signal transmitted while driving under atmospheric pressure.	
A/F-S ATMSPHRC CRCT UP B1	count	Displays the number of updates of the A/F sensor atmospheric correction factor.	
FUEL T/TMP SE	°C or °F	The fuel temperature (determined by the signal voltage of the fuel tank temperature sensor) is displayed.	

### < SYSTEM DESCRIPTION >

### [MR EXCEPT FOR NISMO RS MODELS]

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Monitored item	Unit	Description	Remarks
FUEL LEVEL SE	V	The signal voltage of the fuel level sensor is displayed.	
EVAP LEAK DIAG	YET/CMPLT	<ul> <li>Indicates the condition of EVAP leak diagnosis.</li> <li>YET: EVAP leak diagnosis has not been performed yet.</li> <li>CMPLT: EVAP leak diagnosis has been performed successfully.</li> </ul>	
EVAP DIAG READY	ON/OFF	<ul> <li>Indicates the ready condition of EVAP leak diagnosis.</li> <li>ON: Diagnosis has been ready condition.</li> <li>OFF: Diagnosis has not been ready condition.</li> </ul>	
G SENSOR	V	The signal voltage of G sensor is displayed	
TUMBLE POS SEN	V	The intake manifold runner control valve position sensor signal voltage is displayed.	
EVAP SYS PRES	V	The signal voltage of EVAP control system pressure sensor is displayed.	
SYSTEM 1 DIAG- NOSIS A B1	INCMP/CM- PLT	Indicates DTC P219A self-daiagnosis condition.     INCMP: Self-diagnosis is incomplete.     CMPLT: Self-diagnosis is complete.	
SYSTEM 1 DIAG- NOSIS B B1	ABSENT/ PRSENT	<ul> <li>Indicates DTC P219A self-daiagnosis condition.</li> <li>ABSENT: Self-diagnosis standby.</li> <li>PRSENT: Under self-diagnosis.</li> </ul>	

<sup>\*:</sup> The item is indicated, but not used.

#### NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.

### WORK SUPPORT MODE

### Work Item

Work item	Condition	Usage
IDLE AIR VOL LEARN	The idle air volume that keeps the engine within the specified range is memorized in ECM.	When learning the idle air volume.
FUEL PRESSURE RELEASE	Crank a few times after engine stalls.	When releasing fuel pressure from fuel line.
TARGET IGN TIM ADJ*	Idle condition	When adjusting target ignition timing.
TARGET IDLE RPM ADJ*	Idle condition	When setting target idle speed.
SELF-LEARNING CONT	The coefficient of self-learning control mixture ratio returns to the original coefficient.	When clearing mixture ratio self-learning value.
G SENSOR CALIBRATION	<ul><li>Park the vehicle on a flat road.</li><li>Adjust pressure in all tires to the specified value.</li></ul>	Calibrates G sensor.
WASTEGATE ACTUATOR POSI LEARN VALUE CLEAR	Ignition switch is ON and Engine running	When learning full close position of wastegate actuator after ECM or turbocharger assembly is replaced.
ENGINE COOLANT BYPASS VALVE	Condition: The valve is in the full opening position	When filing with coolant.
A/F INITIAL LEARNING	NITIAL LEARNING  Air fuel ratio learning frequency is low while idling, learning the air fuel ratio of the idling domain in ECM.	
VALVE TIMING OFFSET DATA WRITING	Ignition switch: ON (Engine stopped)	When adjusting valve timing offset angle after ECM or engine assembly is replaced.
VALVE TIMING OFFSET DATA CLEAR	Ignition switch: ON (Engine stopped)	When clear the valve timing offset angle data after replacing the camshaft or timing chain.

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### < SYSTEM DESCRIPTION >

# [MR EXCEPT FOR NISMO RS MODELS]

Work item	Condition	Usage
CLSD THL POS LEARN	Ignition on and engine stopped.	When learning the throttle valve closed position
EVAP SYSTEM CLOSE	Close the EVAP canister vent control valve in order to make EVAP system close under the following conditions.  • Ignition switch ON  • Engine not running  • Ambient temperature is above 0°C (32°F)  • No vacuum and no high pressure in EVAP system  • Fuel tank temperature is more than 0°C (32°F)  • Within 10 minutes after starting "EVAP SYSTEM CLOSE"  • When trying to execute "EVAP SYSTEM CLOSE" under the condition except above, CONSULT will discontinue it and display appropriate instruction.  NOTE:  When starting engine, CONSULT may display "Battery voltage is low. Charge battery", even in using charged battery.	When detecting EVAP vapor leak point of EVAP system
VIN REGISTRATION	In this mode, VIN is registered in ECM.	When registering VIN in ECM
SAVING DATA FOR REPLC CPU	In this mode, save data that is in ECM.	When ECM is replaced.
WRITING DATA FOR REPLC CPU	In this mode, write data stored by "SAVE DATA FOR CPU REPLC" in work support mode to ECM.	When ECM is replaced.

<sup>\*:</sup> This function is not necessary in the usual service procedure.

### **ACTIVE TEST MODE**

#### Test Item

Test item	Condition	Judgement	Check item (Remedy)
ENG COOLANT TEMP	Engine: Return to the original trouble condition     Change the engine coolant temperature using CONSULT.	If trouble symptom disappears, see Check item.	Harness and connectors     Engine coolant temperature sensor     Fuel injector
FUEL INJECTION	Engine: Return to the original trouble condition     Change the amount of fuel injection using CONSULT.	If trouble symptom disappears, see Check item.	Harness and connectors     Fuel injector     Air fuel ratio (A/F) sensor 1
PURG VOL CONT/V	Engine: After warming up, run engine at 1,500 rpm.     Change the EVAP canister purge volume control solenoid valve opening percent using CONSULT.	Engine speed changes according to the opening percent.	Harness and connectors     Solenoid valve
FUEL PUMP RELAY	Ignition switch: ON     Engine stopped     Turn the fuel pump relay "ON" and "OFF" using CONSULT and listen to operating sound.	Fuel pump relay makes the operating sound.	Harness and connectors     Fuel pump relay
IGNITION TIMING	<ul> <li>Engine: Return to the original trouble condition</li> <li>Timing light: Set</li> <li>Retard the ignition timing using CONSULT.</li> </ul>	If trouble symptom disappears, see Check item.	Perform Idle Air Volume Learning.
FAN DUTY CON- TROL <sup>*</sup>	Ignition switch: ON     Change duty ratio using CON-SULT.	Cooling fan speed changes.	Harness and connectors     Cooling fan motor     Cooling fan relay     Cooling fan control module     IPDM E/R

### < SYSTEM DESCRIPTION >

# [MR EXCEPT FOR NISMO RS MODELS]

Test item	Condition	Judgement	Check item (Remedy)
ALTERNATOR DUTY	Ignition switch: ON     Change duty ratio using CON- SULT.	Battery voltage changes.	Harness and connectors     Alternator     IPDM E/R
POWER BALANCE	<ul> <li>Engine: After warming up, idle the engine.</li> <li>A/C switch OFF</li> <li>Shift lever: P or N (CVT), Neutral (M/T)</li> <li>Cut off each fuel injector signal one at a time using CONSULT.</li> </ul>	Engine runs rough or dies.	Harness and connectors     Compression     Fuel injector     Power transistor     Spark plug     Ignition coil
EGR CONTROL VALVE	Ignition switch: ON     Engine stopped     Change valve target angle using     CONSULT	Valve opening angle changes according to target angle (from 0deg to 70deg)	Harness and connectors     EGR valve
VALVE TIMING OFF- SET DATA WRITING	Ignition switch: ON     Engine stopped     Change the wastegate target stroke using CONSULT	Wastegate position sensor output voltage changes according to target stroke value.	Harness and connectors     Wastegate actuator (Removal wastegate actuator from turbocharger is NG)     Turbocharger assembly
TC BYPASS VALVE	Ignition switch: ON     Engine stopped or Engine running (idling, less than 1200rpm)     Input "ON" "OFF" signal using CONSULT	Bypass valve makes the operating sound.	Harness and connectors     Turbocharger bypass valve (Removal bypass valve from Turbocharger is NG)     Turbocharger assembly
ENGINE OIL PRES- SURE CONTROL SOLENOID VALVE	Water temperature: > -10°C     Engine oil temperature: < 120°C     (248°F)     Engine speed: < 4000rpm	Engine oil pressure change	Harness and connectors     Engine oil pressure control sole- noid valve     Engine oil pressure sensor     Engine oil pump
SWRL CONT S/V VALVE	Ignition switch: ON     Engine stopped     Turn the intake manifold runner control valve "ON" and "OFF" using CONSULT to open or close.	Touch the intake manifold runner control valve motor and check the operating vibration and sound.	Harness and connectors     Intake manifold runner control valve     Intake manifold runner control valve motor
AUTO STOP START	Engine: After warming up, run engine at idle     Shift lever: Neutral position     "Start" and "Cancel" using CONSULT.	Check the stop/start system operate and restart.	<ul> <li>Harness and connectors</li> <li>IPDM E/R</li> <li>Starter motor</li> <li>Engine restart relay</li> <li>Starter control relay</li> <li>DC/DC converter</li> <li>Battery</li> </ul>
	CAUTION: Be careful so that a hood operate	es in the opened state when carry o	ut work.
WASTEGATE ACTU- ATOR	Ignition switch: ON     Engine stopped     Change valve of wastegate actuator target angle using CONSULT	Wastegate valve position sensor voltage changes according to valve target angle	Harness and connectors     Electric wastegate control actuator (Removal bypass valve from turbocharger is NG)     Turbocharger assembly
VENT CONTROL/V	Ignition switch: ON     Engine stopped     Turn solenoid valve ON and OFF with the CONSULT and listen to operating sound.	Solenoid valve makes an operating sound.	Harness and connectors     EVAP canister vent control solenoid valve

<sup>\*:</sup> Leaving cooling fan OFF with CONSULT while engine is running may cause the engine to overheat.

### DTC WORK SUPPORT MODE

Test Item

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Test mode	Test item	Corresponding DTC No.	Reference page
EVAPORATIVE SYS-	PURG VOL CN/V P1444	P0443	EC-977
TEM	PURG FLOW P0441	P0441	EC-971
	HO2S2 (B1) P1146	P0138	EC-887
HO2S2	HO2S2 (B1) P1147	P0137	EC-881
	HO2S2 (B1) P0139	P0139	EC-894
A/E OENA	A/F SEN1 (B1) P1278/P1279	_	
A/F SEN1	A/F SEN1 (B1) P1276	P0130	EC-871

#### SRT & P-DTC MODE

#### SRT STATUS Mode

- For items whose SRT codes are set, "CMPLT" is displayed on the CONSULT screen; for items whose SRT codes are not set, "INCMP" is displayed.
- "SRT STATUS" provides the presence or absence of permanent DTCs stored in ECM memory.

#### PERMANENT DTC STATUS Mode

How to display permanent DTC status

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 5. Select "PERMANENT DTC STATUS" in "DTC & SRT CONFIRMATION" mode with CONSULT.

#### NOTE:

Permanent DTCs stored in ECM memory are displayed on the CONSULT screen to show if a driving pattern required for erasing permanent DTCs is complete (CMPLT) or incomplete (INCMP).

#### CAUTION:

Since the "PERMANENT DTC STATUS" screen displays the previous trip information, repeat the following twice to update the information: "Ignition switch OFF", "Wait for more than 10 seconds" and "Ignition switch ON".

CAUTION: Turn ignition switch from O status screen.	N to OFF twice to update the informa	ation on the
PERMANENT DTC	DRIVING PATTERN B	DRIVING PATTERN D
xxxx	INCMP	INCMP
xxxx	CMPLT	INCMP
xxxx	INCMP	CMPLT
xxxx	CMPLT	INCMP
XXXX	INCMP	INCMP
XXXX	INCMP	INCMP

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#### NOTE

This mode is not used in regions that permanent DTCs are not regulated by law.

#### SRT WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to set the SRT while monitoring the SRT status.

#### PERMANENT DTC WORK SUPPORT Mode

This mode enables a technician to drive a vehicle to complete the driving pattern that is required for erasing permanent DTC.

#### NOTE:

This mode is not used in regions that permanent DTCs are not regulated by law.

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# **ECU DIAGNOSIS INFORMATION**

### **ECM**

Reference Value EC

### VALUES ON THE DIAGNOSIS TOOL

#### NOTE:

- The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.
- Numerical values in the following table are reference values.
- These values are input/output values that ECM receives/transmits and may differ from actual operations.
   Example: The ignition timing shown by the timing light may differ from the ignition timing displayed on the data monitor.

This occurs because the timing light shows a value calculated by ECM according to signals received from the camshaft position sensor and other sensors related to ignition timing.

For outlines of following items, refer to <u>EC-667</u>. "CONSULT Function".

Monitor Item	C	ondition	Values/Status
ENG SPEED	Run engine and compare CONSULT	value with the tachometer indication.	Almost the same speed as the tachometer indication.
MASS AIR FLOW SENSOR (Hz)	See EC-786, "Diagnosis Procedure"		
B/FUEL SCHDL	See EC-786, "Diagnosis Procedure"		
A/F ALPHA-B1	See EC-786, "Diagnosis Procedure"	.)	
COOLANT TEMP/S	Engine: After warming up		More than 70°C (158°F)
RADIATOR COOL- ANT TEMP	Engine: running	7,7,	0 - 4.8 V
	Ignition switch: ON     Cold condition	10	Approx. 207 deg
ENGINE COOLANT		Engine coolant temperature: 64°C (148°F)	Approx. 63 deg
B/V POSI	Engine: Idle	Engine coolant temperature: 75°C (167°F)	Approx. 99 deg
		Engine coolant temperature: 86-100°C (187- 212°F)	Approx. 163 deg
A/F SEN1 (B1)	Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 1.5 V
HO2S2 (B1)	<ul> <li>Revving engine from idle up to 3,000 rpm quickly after the following conditions are met.</li> <li>Engine: After warming up</li> <li>After keeping engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load</li> </ul>		0 - 0.3 V ←→ Approx. 0.6 - 1.0 V
HO2S2 MNTR(B1)	<ul> <li>Revving engine from idle up to 3,000 rpm quickly after the following conditions are met.</li> <li>Engine: After warming up</li> <li>After keeping engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load</li> </ul>		LEAN ←→ RICH
VHCL SPEED SE	Turn drive wheels and compare CONSULT value with the speedometer indication.		Almost the same speed as speedometer indication
BATTERY VOLT	Ignition switch: ON (Engine stopped)		11 - 14 V
ACCEL SENIA	Ignition switch: ON	Accelerator pedal: Fully released	0.6 - 0.9 V
ACCEL SEN 1	(Engine stopped)	Accelerator pedal: Fully depressed	4.0 - 4.8 V
ACCEL OFN 3*1	Ignition switch: ON	Accelerator pedal: Fully released	Approx. 0.8 V
ACCEL SEN 2*1	(Engine stopped)	Accelerator pedal: Fully depressed	Approx. 4.6 V

Monitor Item	C	condition	Values/Status
TP SEN 1-B1	Ignition switch: ON     (Engine stopped)	Accelerator pedal: Fully released	More than 0.36 V
	Selector lever: D (CVT), 1st (M/T)	Accelerator pedal: Fully depressed	Less than 4.75 V
TD 05N 0 D4*	Ignition switch: ON	Accelerator pedal: Fully released	More than 0.36 V
TP SEN 2-B1*	<ul><li>(Engine stopped)</li><li>Selector lever: D (CVT), 1st (M/T)</li></ul>	Accelerator pedal: Fully depressed	Less than 4.75 V
START SIGNAL	Ignition switch: ON $\rightarrow$ START $\rightarrow$ ON		$OFF \to ON \to OFF$
CLSD THL POS	Ignition switch: ON	Accelerator pedal: Fully released	ON
CLOD THE POS	(Engine stopped)	Accelerator pedal: Slightly depressed	OFF
	Engine: After warming up, idle the	Air conditioner switch: OFF	OFF
AIR COND SIG	engine	Air conditioner switch: ON (Compressor operates.)	ON
PW/ST SIGNAL	Engine: After warming up, idle the	Steering wheel: Not being turned	OFF
PW/ST SIGNAL	engine	Steering wheel: Being turned	ON
LOAD CICNAL	legition outlieby ON	Rear window defogger switch: ON and/or Lighting switch: 2nd position	ON
LOAD SIGNAL	Ignition switch: ON	Rear window defogger switch and lighting switch: OFF	OFF
IGNITION SW	Ignition switch: $ON \rightarrow OFF \rightarrow ON$		$ON \to OFF \to ON$
HEATER FAN SW	Engine: After warming up, idle the	Heater fan switch: ON	ON
HEATER FAIN SW	engine	Heater fan switch: OFF	OFF
BRAKE SW	Ignition switch: ON	Brake pedal: Fully released	OFF
BRAKE SW	ignition switch. On	Brake pedal: Fully released  Brake pedal: Slightly depressed	ON
	Engine: After warming up	Idle	5° - 15° BTDC
IGN TIMING	<ul> <li>Engine: After warming up</li> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	30° - 50° BTDC
COMBUSTION		- %.	These items are displayed but are not applicable to this model.
CAL/LD VALUE	Engine: After warming up     Selector lever: P or N (CVT),     Neutral (M/T)	Idle	Approx. 21% (CVT models Approx. 17% (M/T models)
ONEED WILDE	Air conditioner switch: OFF     No load	2,500 rpm	Approx. 15%
	Engine: After warming up     Selector lever: P or N (CVT)	Idle	Approx. 1.6 g/s
MASS AIRFLOW	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,500 rpm	Approx. 5.0 g/s
	Engine: After warming up	Idle	-
PURG VOL C/V	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> </ul>	(Accelerator pedal: Not depressed even slightly, after engine starting.)	0 - 1%
	<ul><li> Air conditioner switch: OFF</li><li> No load</li></ul>	2,000 rpm	1% - 90%
	Engine: After warming up	Idle	Approx. 36°CA
INT/V TIM(B1)	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	Approx. 18°CA

Monitor Item	(	Condition	Values/Status
	Engine: After warming up	Idle	−5° - 5°CA
EXH/V TIM B1	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	Around 2,500 rpm while the engine speed is rising	Approx. 0° - 30°CA
	Engine: After warming up	Idle	Approx. 46%
INT/V SOL(B1)	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	Approx. 46%
	F : 46 : : : : : : : : : : : : : : : : :	Air conditioner switch: OFF	OFF
AIR COND RLY	Engine: After warming up, idle the engine	Air conditioner switch: ON (Compressor operates)	ON
FUEL PUMP RLY	<ul><li>For 1 seconds after turning ignition</li><li>Engine running or cranking</li></ul>	on switch: ON	ON
	Except above		OFF
THRTL RELAY	Ignition switch: ON		ON
HO2S2 HTR (B1)	- Engine: After warming up	after the following conditions are met. en 3,500 and 4,000 rpm for 1 minute and at	ON
	Engine speed: Above 3,600 rpm		OFF
W/GATE V CLSD	Ignition switch: ON	Waste gate valve closed learning has not been performed yet.	INCMP
LEARN B1	ignition switch. ON	Waste gate valve closed learning has already been performed successfully.	CMPLT
	Ignition switch: ON		Approx. 0.008 m
W/G ACTUATOR		Idle	Approx. 0.008 m
POSITION B1	Engine: After warming up	2,000 rpm	Approx. 0.008 m
		4,000 rpm	Approx. 0.008 m
	Ignition switch: ON		Approx. 4.0 V
W/G ACTUATOR		Idle	Approx. 4.0 V
POSI SEN B1	Engine: After warming up	2,000 rpm	Approx. 4.0 V
		4,000 rpm	Approx. 4.0 V
	Ignition switch: ON		Approx. 1 deg
EGR VALVE POSI-		Idle	Approx. 0 deg
TION	Engine: After warming up	2,000 rpm	Approx. 0 deg
		4,000 rpm	Approx. 0 deg
	Ignition switch: ON		Approx. 1.26 V
EGR VALVE POSI-		Idle	Approx. 1.20 V
TION SEN	Engine: After warming up	2,000 rpm	Approx. 1.26 V
		4,000 rpm	Approx. 1.26 V
ECD DIEEEDEN		Idle	Approx. 1 kPa
EGR DIFFEREN- TIAL PRESS	Engine: After warming up	2,000 rpm	Approx. 1 kPa
		4,000 rpm	Approx. 3 kPa
ALT DUTY SIG	Power generation voltage variable of	control: Operating	ON
	Power generation voltage variable of	control: Not operating	OFF
I/P PULLY SPD	Vehicle speed: More than 20 km/h (	(12 MPH)	Almost the same speed as the tachometer indication

Monitor Item		Condition	Values/Status
VEHICLE SPEED	Turn drive wheels and compare CO tion.	NSULT value with the speedometer indica-	Almost the same speed as the speedometer indication
IDL A/V LEARN	Engine: running	Idle air volume learning has not been performed yet.	YET
IDL AV LEARN	Engine. running	Idle air volume learning has already been performed successfully.	CMPLT
TRVL AFTER MIL	Ignition switch: ON	Vehicle has traveled after MIL has illuminated.	0 - 65,535 km (0 - 40,723 miles)
ENG OIL TEMP	Engine: After warming up		More than 70°C (158°F)
A/F S1 HTR(B1)	Engine: After warming up, idle the e (More than 260 seconds after starting		4 - 100%
INT/A TEMP SE	Ignition switch: ON		Indicates intake air temperature
SET VHCL SPD	Engine: Running	ASCD: Operating	The preset vehicle speed is displayed
MAIN SW	Ignition switch: ON	MAIN switch: Pressed	ON
INIMIN OW	Ignition switch: ON	MAIN switch: Released	OFF
CANCEL SW	Ignition switch: ON	CANCEL switch: Pressed	ON
OANGEL SW	Ignition switch: ON	CANCEL switch: Released	OFF
	Ignition quitable ON	ACCEL/RES switch: Pressed	ON
RESUME/ACC SW	Ignition switch: ON	ACCEL/RES switch: Released	OFF
SET SW	Ignition quitable ON	COAST/SET switch: Pressed	ON
SELSW	Ignition switch: ON	COAST/SET switch: Released	OFF
BRAKE SW1		Brake pedal: Fully released	ON
(Brake pedal position switch)	Ignition switch: ON	Brake pedal: Slightly depressed	OFF
BRAKE SW2	Ignition switch: ON	Brake pedal: Fully released	OFF
(Stop lamp switch)	ignition switch. Or	Brake pedal: Slightly depressed	ON
VHCL SPD CUT	Ignition switch: ON		NON
LO SPEED CUT	Ignition switch: ON		NON
AT OD MONITOR	Ignition switch: ON		OFF
AT OD CANCEL	Ignition switch: ON		OFF
CRUISE LAMP	Ignition switch: ON	MAIN switch: Pressed at the 1st time $\rightarrow$ at the 2nd time	$ON \rightarrow OFF$
	MAIN switch: ON	ASCD: Operating	ON
SET LAMP	When vehicle speed is between     40 km/h (25 MPH) and 194     km/h (120 MPH)	ASCD: Not operating	OFF
FAN DUTY	Engine: Running	1	0 - 100%
ALT DUTY	Engine: Idle		0 - 80%
	Engine speed: Idle		
BAT CUR SEN	<ul> <li>Battery: Fully charged*2</li> <li>Selector lever: P or N (CVT), Neu</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	ntral (M/T)	Approx. 2,600 - 3,500 mV
A/F ADJ-B1	Engine: Running		-0.450 - 0.330
P/N POSI SW	Ignition switch: ON	Selector lever: P or N (CVT), Neutral (M/T)	ON
-		Selector lever: Except above	OFF

### **ECM**

Monitor Item		Condition	Values/Status
AC PRESS SEN	Engine: Idle     Both A/C switch and blower fan s	witch: ON (Compressor operates)	1.0 - 4.0 V
FUEL PRES SEN	Engine: After warming up     Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	2,000 rpm	Approx. 5.0 MPa Approx. 2.5 MPa
	Engine speed: Idle     Selector lever: D (CVT), Neutral (M/T)     Fuel: Premium gasoline	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>The readings of boost in the multi-func- tion meter are the same as the ambient pressure or more.</li> <li>Engine speed: More than 3,000 rpm</li> </ul>	3.07 - 3.15 V
FURBO BST SEN	Engine speed: Idle     Selector lever: D (CVT), Neutral (M/T)     Fuel: Regular gasoline	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>The readings of boost in the multi-func- tion meter are the same as the ambient pressure or more.</li> <li>Engine speed: More than 3,000 rpm</li> </ul>	2.91 - 2.99 V
	Engine: After warming up	Idle	Approx. 108 BTDC
FUEL INJ TIM	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	Approx68 BTDC
	Engine: After warming up	Idle	Approx. 1.1 msec
FUEL INJ B1	<ul> <li>Selector lever: P or N (CVT), Neutral (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	2,000 rpm	Approx. 1.2 msec
BAT TEMP SEN	Engine: After warming up     Selector lever: P or N (CVT),     Neutral (M/T)     Air conditioner switch: OFF     No load	Idle	Approx. 0.68 V
A/F SEN1 DIAG1	DTC P015A and P015B self-diagno	sis is incomplete.	INCMP
B1)	DTC P015A and P015B self-diagno	sis is complete.	CMPLT
/F SEN1 DIAG2	DTC P014C and P014D self-diagno	sis is incomplete.	INCMP
31)	DTC P014C and P014D self-diagno	sis is complete.	CMPLT
VF SEN1 DIAG3	The vehicle condition is not within the P015A or P015B.	ne diagnosis range of DTC P014C, P014D,	ABSNT
B1)	The vehicle condition is within the d P015A or P015B.	iagnosis range of DTC P014C, P014D,	PRSNT
	DTC P0139 self-diagnosis (delayed	response) has not been performed yet.	INCMP
HO2 S2 DIAG1(B1)	DTC P0139 self-diagnosis (delayed cessfully.	response) has already been performed suc-	CMPLT
	DTC P0139 self-diagnosis (slow res	ponse) has not been performed yet.	INCMP
HO2 S2 DIAG2(B1)	DTC P0139 self-diagnosis (slow rescessfully.	ponse) has already been performed suc-	CMPLT
	Engine: After warming up	Idle	Approx. 241 deg
H/P FUEL PUMP DEG	Selector lever: P or N (CVT), Neutral (M/T) Air conditioner switch: OFF No load	2,000 rpm	Approx. 245 deg

Monitor Item		Condition	Values/Status
	Engine: After warming up     Selector lever: P or N (CVT),	Idle	1,140 - 1,460 mV
FUEL PRES SEN V	Neutral (M/T)  • Air conditioner switch: OFF  • No load	Revving engine from idle to 4,000 rpm quickly	1,3000 - 2,900 mV
	Engine: After warming up     Selector lever: P or N (CVT),	Idle	1,250 - 1,400 mV
EOP SENSOR	Neutral (M/T)  • Air conditioner switch: OFF  • No load	2,000 rpm	1,400 - 2,200 mV
		Idle	0 %
BOOST S/V DUTY	Engine: After warming up	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>Engine speed: Below 3,000 rpm</li> </ul>	100 %
	7	<ul> <li>The accelerator pedal is depressed to a half stroke position or more.</li> <li>Engine speed: More than 3,000 rpm</li> </ul>	30 - 60 %
ATOM PRES SEN	Ignition switch: ON		3.15 - 4.60 V
A/F-S ATMSPHRC CRCT B1	Engine: After warming up, idle the	engine.	Varies depending on vehicle environment.
A/F-S ATMSPHRC CRCT UP B1	Fugine, Krinning		Varies depending on the number of updates.
ECM TEMP 1	5		Indicates the temperature around the ECM.
ECM TEMP 2	Engine: After cooling     Ignition switch: ON	0 +	Indicates the temperature around the ECM.
SL TRG VHCL SPD	Ignition switch: ON	Speed limiter operating	The preset vehicle speed is displayed
SL SET LAMP	Ignition switch: ON	Speed limiter: Not operating	OFF
OL OLI LAWII	Speed limiter MAIN switch: ON	Speed limiter: Operating	ON
SL LIMIT LAMP	Ignition switch: ON	Speed limiter MAIN switch: Pressed at the 1st time $\rightarrow$ at the 2nd time	$ON \to OFF$
SL MAIN SW	Ignition switch: ON	Speed limiter MAIN switch: Pressed	ON
	ig	Speed limiter MAIN switch: Released	OFF
KICKDOWN POS	Ignition switch: ON	Accelerator pedal: Fully released	OFF
		Accelerator pedal: Fully depressed	ON
THRTL STK CNT B1	<b>NOTE:</b> The item is indicated, but not used.		
FUEL T/TMP SE	Ignition switch: ON		Indicates fuel tank temperature.
FUEL LEVEL SE	Ignition switch: ON		Depending on fuel level of fuel tank
EVAP LEAK DIAG	Ignition switch: ON		Indicates the condition of EVAP leak diagnosis.
EVAP DIAG READY	Ignition switch: ON		Indicates the ready condition of EVAP leak diagnosis.
G SENSOR	Vehicle is level		Approx. 2.5 V
	Ignition switch: ON	Accelerator pedal: Fully released	Less than 1.4 V
TUMBLE POS SEN	<ul> <li>Engine coolant temperature: Between –)7°C (19°F) – (+)60°C (140°F)</li> </ul>	Accelerator pedal: Fully depressed	More than 2.8 V
EVAP SYS PRES	Ignition switch: ON		Approx 0.5 - 4.6 V

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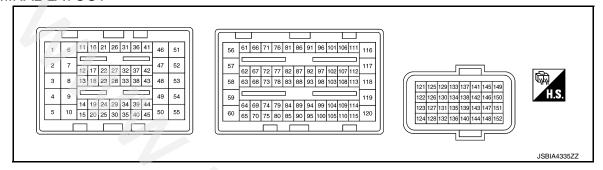
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Monitor Item	Condition	Values/Status
SYSTEM 1 DIAG-	DTC P219A self-diagnosis is incomplete.	INCMP
NOSIS A B1	DTC P219A self-diagnosis is complete.	CMPLT
SYSTEM 1 DIAG-	DTC P219A self-diagnosis is on standby.	ABSENT
NOSIS B B1	DTC P219A self-diagnosis is under diagnosis.	PRSENT

<sup>\*1:</sup> Accelerator pedal position sensor 2 signal and throttle position sensor 2 signal are converted by ECM internally. Thus, they differ from ECM terminals voltage signal.

#### TERMINAL LAYOUT



#### PHYSICAL VALUES

#### NOTE:

- ECM is located in the engine room left side near battery.
- Specification data are reference values and are measured between each terminal and ground.
- Pulse signal is measured by CONSULT.

	minal No. ire color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
1 (GR)	10 (B)	Fuel injector No. 1, 4 (HI)	Output	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed</li> <li>NOTE:</li> <li>The pulse cycle changes depending on rpm at idle</li> </ul>	2.7 V * 100mSec/div 20V/div JPBIA4718ZZ
2 (SB)	10 (B)	Fuel injector No. 2 (LO)	Output	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE:  The pulse cycle changes depending on rpm at idle</li> </ul>	2.7 V ★ 100mSec/div 20V/div  JPBIA4720ZZ
3 (W)	10 (B)	Fuel injector No. 3 (LO)	Output	[Engine is running] • Engine speed is 2,000 rpm	3 V ★ 100mSec/div 20V/div JPBIA4721ZZ

<sup>\*2:</sup> Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

	minal No. ire color)	Description		O an elikina	Value
+	-	Signal name	Input/ Output	Condition	(Approx.)
4 (G)	10 (B)	Fuel injector driver power supply 1	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)
5 (BR)	10 (B)	Fuel injector driver power supply 2	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)
6 (R)	10 (B)	Fuel injector No. 4 (LO)	Output	[Engine is running] • Engine speed is 2,000 rpm	3 V ★ 100mSec/div  20V/div  3 V ★ 100mSec/div  100mSec/div
7 (LG)	10 (B)	Fuel injector No. 2, 3 (HI)	Output	[Engine is running] • Engine speed is 2,000 rpm	3 V ★ 100mSec/div 20V/div JPBIA4719ZZ
8 (BR)	10 (B)	Fuel injector No. 1 (LO)	Output	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	2.7 V ★ 100mSec/div  20V/div  30V/div  30V/div  30V/div
9 (GR)	_	ECM ground	_	-(//	_
10 (B)	_	ECM ground	_	-	
11 (W)	13 (V)	Turbocharger boost sensor	Input	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed</li> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Engine speed is 2,000 rpm</li> </ul>	1.9 V 2.0 V
12 (P)	13 (V)	Refrigerant pressure sensor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Both A/C switch and blower fan motor switch: ON (Compressor operates)</li></ul>	1.0 - 4.0 V

#### **ECM**

	minal No. ire color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
13 (V)	4	Sensor ground G sensor Refrigerant pressure sensor Fuel rail pressure sensor Engine oil pressure sensor Intake air temperature sensor 2 Turbocharger boost sensor	_	_	
14 (—)	_	Shield	_	_	_
15 (W)	20 (B)	Knock sensor	Input	[Engine is running] • Idle speed	2.5 V
20 (B)	_	Sensor ground (Knock sensor)	_	_	_
22 (Y)	45 (P)	Engine oil temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine oil temperature.
23	13	Engine oil pressure sen-		<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.3 V★  5mSec/div  2V/div  JPBIA3359ZZ
(G)	(V)	sor	Input	[Engine is running] • Warm-up condition • Engine speed is 2,000 rpm	2.7 V★  5mSec/div  2V/div  JPBIA3360ZZ

	minal No. ire color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
				<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.3 V★  5mSec/div  2V/div  JPBIA3359ZZ
24 (G)	43 (BR)	EGR pressure sensor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed is 2,000 rpm</li></ul>	2.7 V★  5mSec/div  2V/div  JPBIA3360ZZ
			0	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed is 4,000 rpm</li></ul>	1 V★ 5mSec/div  5V/div  JSBIA5611ZZ
25	13			[Engine is running]  • Warm-up condition  • Idle speed	1.14 - 1.46 V
(GR)	(V)	Fuel rail pressure sensor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Revving engine from idle to 4,000 rpm quickly</li></ul>	1.3 - 2.9 V
26 (R)	42 (W)	Sensor power supply (Mass air flow sensor)	_	[Ignition switch: ON]	5 V
27 (G)	44 (W)	Sensor power supply (Crankshaft position sensor)	_	[Ignition switch: ON]	5 V
29 (L)	13 (V)	Sensor power supply     G sensor     Refrigerant pressure sensor     Fuel rail pressure sensor     Engine oil pressure sensor     Turbocharger boost sensor	_	[Ignition switch: ON]	5 V

Terminal No. (Wire color)		Description		Condition	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
30 (Y)	43 (BR)	Sensor power supply  Battery current sensor  EGR pressure sensor  Intake manifold runner control valve position sensor  Manifold absolute pressure sensor  EGR volume control valve	_	[Ignition switch: ON]	5 V	
31	43	Manifold absolute pres-	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.0 V	
(W)	(BR)	sure sensor	iiiput	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed is 2,000 rpm</li></ul>	0.9 V	
32 (BG)	43 (BR)	Battery temperature sensor	Input	[Engine is running]  • Battery temperature: 20°C (68°F)  • Idle speed	2.2 V	
33		44 Crankshaft position ser	44 Crankshaft position son	Inout	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	4.0 V★ 5mSec/div  5mSec/div  2V/div  JPBIA4728ZZ
(R)	(W)	sor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,000 rpm</li></ul>	4.0 V★ 5mSec/div  2V/div  JPBIA4729ZZ	
34 (G)	13 (V)	G sensor	Input	[Engine is running]  • Warm-up condition  • Idle speed	2.5 V	
35 (L)	45 (P)	Engine coolant tempera- ture sensor 1	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine coolant temperature.	
36 (Y)	42 (W)	Intake air temperature sensor 1	Input	[Engine is running]	0 - 4.8 V Output voltage varies with intake air temperature.	

Terminal No. (Wire color)		Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
				[Ignition switch: ON] • Engine stopped	Approx. 3,700 Hz
				<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	5,100 – 5,500 Hz
37 (G)	42 (W)	Mass air flow sensor	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,500 rpm</li></ul>	6,100 – 6,500 Hz
				<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine is revving from idle to about 4,000 rpm</li></ul>	5,100 – 5,500 to Approx. 7,000 Hz*
38 (G)	43 (BR)	Battery current sensor	Input	<ul><li>[Engine is running]</li><li>Battery: Fully charged*</li><li>Idle speed</li></ul>	2.6 - 3.5 V
20	40	Intake manifold runner		<ul> <li>[Ignition switch ON]</li> <li>Engine coolant temperature: Between -7°C (19°F) and 60°C (140°F)</li> <li>Accelerator pedal: Fully released</li> </ul>	Less than 1.4 V
39 (BR)	43 (BR)	control valve position sensor	Input	<ul> <li>[Ignition switch ON]</li> <li>Engine coolant temperature: Between -7°C (19°F) and 60°C (140°F)</li> <li>Accelerator pedal: Slightly depressed</li> </ul>	More than 2.8 V
40 (W)	45 (P)	Engine coolant tempera- ture sensor 2	Input	[Engine is running]	0 - 4.8 V Output voltage varies with engine coolant temperature.
42 (W)	_	Sensor ground (Mass air flow sensor, in- take air temperature sensor1)	_	E	_
43 (BR)	_	Sensor ground  Battery current sensor  Battery temperature sensor  EGR pressure sensor  Intake manifold runner control valve position sensor  Manifold absolute pressure sensor  EGR volume control valve	_	_	
44 (W)	_	Sensor ground (Crankshaft position sensor)	_	_	_
45 (P)	_	Sensor ground  • Engine oil temperature sensor  • Engine coolant temperature sensor 1  • Engine coolant temperature sensor 2	_	_	_
46	152 (GR)	Multi-way control valve power supply	Input	[Ignition switch: ON]	

	ninal No. re color)	Description		2	Value	
+	_	Signal name	Input/ Output	Condition	(Approx.)	
47 (R)	152 (GR)	High pressure fuel pump driver power supply	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)	
48 (BR)	49 (Y)	High pressure fuel pump	Output	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed</li> <li>NOTE:</li> <li>The pulse cycle changes depending on rpm at idle</li> </ul>	BATTERY VOLTAGE (11 - 14 V) ★ 20mSec/div  5V/div  JPBIA4722ZZ	
(DIX)	(1)			[Engine is running] • Engine speed is 2,000 rpm	BATTERY VOLTAGE  (11 - 14 V) ★  20mSec/div  5V/div  JPBIA4723ZZ	
49 (Y)		Output	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE:  The pulse cycle changes depending on rpm at idle</li> </ul>	BATTERY VOLTAGE  (11 - 14 V) *  20mSec/div  5V/div  JSBIA5612ZZ  BATTERY VOLTAGE		
					[Engine is running] • Engine speed is 2,000 rpm	(11 - 14 V) ★ 20mSec/div 5V/div  JSBIA5613ZZ
50 (B)	_	ECM ground	_	_	_	
51 (Y)	52 (G)	Multi-way control valve motor (–)	Output	[Ignition switch: ON]  • Cold condition	0 V	
52 (G)	51 (Y)	Multi-way control valve motor (+)	Output	[Ignition switch: ON] • Cold condition	0 V	
53 (R)	152 (GR)	Intake manifold runner control valve power supply	Input	[Ignition switch: ON]	Battery voltage (11 - 14 V)	
54 (B)	55 (W)	Intake manifold runner control valve (Open)	Output	<ul> <li>[Ignition switch ON]</li> <li>Engine coolant temperature: Between -7°C (19°F) and 39°C (102°F)</li> <li>Accelerator pedal: Fully released → depressed</li> </ul>	0 V	

	ninal No. re color)	Description		Condition	Value
+		Signal name	Input/ Output	Condition	(Approx.)
55 (W)	54 (B)	Intake manifold runner control valve (Close)	Output	<ul> <li>[Ignition switch ON]</li> <li>Engine coolant temperature: Between -7°C (19°F) and 39°C (102°F)</li> <li>Accelerator pedal: Depressed → fully released</li> </ul>	0 V
56 (R)	152 (GR)	EGR volume control valve power supply	Input	[Ignition switch: ON]	Battery voltage (11 - 14 V)
				[Ignition switch: ON]	0 V
57 (W)	58 (R)	EGR volume control valve motor (+)	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.1 V
				[Ignition switch: ON]	0 V
58 (R)	57 (W)	EGR volume control valve motor (-)	Output	[Engine is running]  • Warm-up condition  • Idle speed	1.1 V
60 (B)	_	ECM ground	_	_	_
61 (W)	72 (B)	Sensor power supply (Electric wastegate posi- tion sensor, Multi-way control valve position sen- sor)	Ō	[Ignition switch: ON]	5 V
63 (L)		Sensor ground (Exhaust valve timing control position sensor)	_	7, -	_
64 (—)		Shield	_		_
65 (R)	72 (B)	Electric wastegate position sensor	Input	[Ignition switch: ON]	4 V
66 (G)	71 (L)	Sensor power supply (Camshaft position sensor)	_	[Ignition switch: ON]	5 V
67	71	Campbaff position correct	lnout	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	1.0 - 2.0★ 10mSec/div  5V/div  JSBIA5617ZZ
(BR)	(L)	Camshaft position sensor	Input	[Engine is running] • Engine speed is 2,000 rpm	1.0 - 2.0★ 10mSec/div  10mSec/div  5V/div  JSBIA5618ZZ
68 (GR)	43 (BR)	EGR volume control valve position sensor	Input	[Ignition switch: ON]	1.2 V

#### **ECM**

#### < ECU DIAGNOSIS INFORMATION >

## [MR EXCEPT FOR NISMO RS MODELS]

	minal No. ire color)	Description		Condition	Value
+	-	Signal name	Input/ Output	Condition	(Approx.)
69 63	Exhaust valve timing con-		<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed NOTE: The pulse cycle changes depending on rpm at idle</li> </ul>	1.0 - 2.0★ 10mSec/div  10mSec/div  5V/div  JSBIA5619ZZ	
(LG)	(LG) (L) Exhaust valve tilling trol position sensor	trol position sensor	Input	[Engine is running] • Engine speed is 2,000 rpm	1.0 - 2.0★ 10mSec/div  1.0 - 2.0★ 5V/div  1.0 - 2.0★ 10mSec/div  1.0 - 2.0★
71 (L)	_	Sensor ground (Camshaft position sensor)		_	_
72 (B)	_	Sensor ground (Electric wastegate position sensor, Multi-way control valve position sensor)		<u> </u>	_
73 (GR)	63 (L)	Sensor power supply (Exhaust valve timing control position sensor)	_	[Ignition switch: ON]	5 V
74 (B)	152 (GR)	A/F sensor 1	Input	[Ignition switch: ON]	2.2 V

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	minal No. ire color)	Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
				[Ignition switch: ON] • Cold condition	4.5 V★  1mSec/div
		7		<ul> <li>[Engine is running]</li> <li>Engine speed: Idle speed</li> <li>Engine coolant temperature: 64°C (148°F)</li> </ul>	1.8 V
75 (L)	72 (B)	Multi-way control valve position sensor Input	Input	<ul> <li>[Engine is running]</li> <li>Engine speed: Idle speed</li> <li>Engine coolant temperature: 75°C (167°F)</li> </ul>	2.4 V★ 10mSec/div  5V/div  JSBIA5623ZZ
			0	<ul> <li>[Engine is running]</li> <li>• Engine speed: Idle speed</li> <li>• Engine coolant temperature: 86-100°C (187-212°F)</li> </ul>	2.8 V★ 10mSec/div  5V/div  JSBIA5625ZZ
77 (V)	13 (V)	Intake air temperature sensor 2	Input	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	0 - 4.8 V Output voltage varies with intake air temperature.
78 (R)	_	Sensor ground (Heated oxygen sensor 2)	_	- 9	_
79 (W)	152 (GR)	A/F sensor 1	Input	[Engine is running] • Engine speed is 2,000 rpm	2.3 V Output voltage varies with air fuel ratio.
80 (W)	85 (R)	Throttle position sensor 2	Input	[Ignition switch: ON]	Less than 4.75 V
				Selector lever: D (CVT)     Accelerator pedal: Fully depressed	More than 0.36 V
81 (BR)	152 (GR)	ECM relay (Self shut-off)	Output	<ul><li>[Engine is running]</li><li>[Ignition switch: OFF]</li><li>A few seconds after turning ignition switch OFF</li></ul>	0 - 1.0 V
(-··)	(3,	(,		[Ignition switch: OFF]     More than a few seconds after turning ignition switch OFF	BATTERY VOLTAGE (11 - 14 V)

Terminal No. (Wire color)		Description		Condition	Value
+	-	Signal name	Input/ Output	Condition	(Approx.)
82 (Y)	152 (GR)	Fuel pump relay	Output	[Ignition switch: ON]     For 1 second after turning ignition switch ON     [Engine is running]	0 - 1.0 V
83 (B)	152 (GR)	Sensor power supply (Throttle position sensor)	_	[Ignition switch: ON]	5 V
84 (W)	78 (R)	Heated oxygen sensor 2	Input	<ul> <li>[Engine is running]</li> <li>Revving engine from idle to 3,000 rpm quickly after the following conditions are met</li> <li>Engine: after warming up</li> <li>Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load</li> </ul>	0 - 1.7 V
85 (R)	_	Sensor ground (Throttle position sensor 1, 2)	_	_	_
88	88 85 Throttle position sensor 1	Input	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	More than 0.36 V	
(G)					[Ignition switch: ON]     Engine stopped     Selector lever: D (CVT), 1st (M/T)     Accelerator pedal: Fully depressed
95 (LG)		Ignition signal No. 2		[Engine is running]  • Warm-up condition	0 - 0.3 V <b>★</b> 100mSec/div
96 (R)	152 (GR)	Ignition signal No. 1	Output	Idle speed     NOTE:     The pulse cycle changes depending on rpm at idle	2V/div JPBIA4733ZZ
97 (Y)	152 (GR)	Throttle control motor re- lay	Output	[Ignition switch: OFF]	BATTERY VOLTAGE (11 - 14 V)
				[Ignition switch: ON]  [Engine is running]  • Warm-up condition	0 - 1.0 V 10 V
98 (R)	152 (GR)	Engine oil pressure control solenoid valve	Output	<ul><li>Idle speed</li><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 4,500 rpm or more</li></ul>	BATTERY VOLTAGE (11 - 14 V)
101 (SB)	152 (GR)	Ignition signal No. 4	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,000 rpm</li></ul>	0.2 - 0.5 V★ 100mSec/div 2V/div JPBIA4734ZZ

	ninal No. re color)	Description		Condition	Value					
+	_	Signal name	Input/ Output	Condition	(Approx.)					
103 (BR)	152 (GR)	PNP signal	Input	[Ignition switch: ON] • Selector lever: P or N (CVT), Neutral (M/T)	BATTERY VOLTAGE (11 - 14 V)					
(DIV)	(OIT)			[Ignition switch: ON] • Selector lever: Except above	0 V					
104 (P)	152 (GR)	Ignition signal No. 3	Output	[Engine is running]  • Warm-up condition  • Engine speed: 2,000 rpm	0.2 - 0.5 V★ 100mSec/div 2V/div  3PBIA4734ZZ					
105 (BR)	152 (GR)	Turbocharger bypass control valve	Output	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)					
106 (R)	152 (GR)	Electric wastegate control actuator power supply	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)					
				[Ignition switch: ON]	0.7 V					
				[Engine is running]  • Warm-up condition  • Idle speed	0.7 V					
107 (L/Y)	108 (P/L)	Electric wastegate control actuator motor (+)	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,000 rpm</li></ul>	0 V					
				<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 4,000 rpm</li></ul>	0 V					
				[Ignition switch: ON]	0.4 V					
			_	_	_	_	_	_	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	0 V
108 (P/L)	107 (L/Y)	Electric wastegate control actuator motor (–)							_	_
				<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 4,000 rpm</li></ul>	0.5 V					
110 (B)	_	ECM ground	_	_	\ <u>-</u>					
(5)				[Engine is running]  • Warm-up condition  • Idle speed	9 V					
111 (W)	152 (GR)	Intake valve timing control solenoid valve	Output	[Engine is running]  • Warm-up condition  • When revving engine up to 2,000rpm Quickly	BATTERY VOLTAGE  (11 - 14 V)★  5V/div					

Terminal No. (Wire color)		Description		Condition	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
112	152	Exhaust valve timing con-	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)
(G)	(GR)	trol solenoid valve	Output	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,000 rpm</li></ul>	9 V
113 (Y)	152 (GR)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
114	152	Intake valve timing inter-		<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	BATTERY VOLTAGE (11 - 14 V)
(L)	(GR)	mediate lock control sole- noid valve	Output	<ul> <li>[Engine is running]</li> <li>Cold condition [Engine coolant temperature: below 60°C (140°F)]</li> <li>Idle speed</li> </ul>	Battery voltage (11 - 14 V)
					BATTERY VOLTAGE (11 - 14 V)★
		EVAP canister purge vol-		<ul><li>[Engine is running]</li><li>Idle speed</li><li>Accelerator pedal: Not depressed even slightly, after engine starting</li></ul>	50mSec/div
115 (L)	10 102 Jume control solenoid	Output		10V/div <sub>JMBIA0327GB</sub>	
				<ul><li>[Engine is running]</li><li>Engine speed: About 2,000 rpm (More than 100 seconds after starting engine.)</li></ul>	50mSec/div 10V/div JMBIA0328GB
					2.9 - 8.8 V <b>★</b> 100mSec/div
116 (G)	152 (GR)	A/F sensor 1 heater	Input	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed (More than 260 seconds after starting engine)</li> </ul>	5 CMdi
				[Engine is running]  • Engine speed: Below 3,600 rpm af-	10 V★
117 (G)	78 (R)	Heated oxygen sensor 2 heater	Output	<ul> <li>Engine speed. Below 3,000 rpm alter the following conditions are met</li> <li>Engine: after warming up</li> <li>Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load</li> </ul>	50mSec/div
				[Ignition switch: ON]  • Engine stopped [Engine is running]  • Engine speed: Above 3,600 rpm	BATTERY VOLTAGE (11 - 14 V)
	152	Throttle control motor			BATTERY VOLTAGE

	ninal No. re color)	Description		0 155	Value
+	_	Signal name	Input/ Output	Condition	(Approx.)
119 (GR)	120 (BR)	Throttle control motor (Open)	Output	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT) • Accelerator pedal: Fully depressed	3.2 V★ 1mSec/div 5V/div JMBIA0324GB
120 (BR)	119 (GR)	Throttle control motor (Close)	Output	[Ignition switch: ON] • Engine stopped • Selector lever: D (CVT), 1st (M/T) • Accelerator pedal: Fully released	1.8 V★ 5mSec/div 5V/div JMBIA0326GB
121 (L)	148 (Y)	EVAP control system pressure sensor	Input	[Ignition switch: ON]	0.5 - 4.6 V
123 (P)	_	CAN communication line (CAN-L)	Input/ Output	_	_
124 (L)	_	CAN communication line (CAN-H)	Input/ Output	_	_
125 (G)	148 (Y)	Sensor power supply (EVAP control system pressure sensor)	_	[Ignition switch: ON]	5 V
128 (SB)	148 (Y)	Fuel tank temperature sensor	Input	[Engine is running]	0 - 4.8 V Output voltage varies with fuel tank temperature
132 (GR)	152 (GR)	Clutch pedal position switch	Input	[Ignition switch: ON]  • Clutch pedal: Fully released  [Ignition switch: ON]  • Clutch pedal: Fully depressed	0 V BATTERY VOLTAGE (11 - 14 V)
133	152			[Ignition switch: OFF]	0 V
(LG)	(GR)	Ignition switch	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
				[Ignition switch: ON] • ASCD steering switch: OFF	4 V
				[Ignition switch: ON] • MAIN switch: Pressed	0 V
134 (P)	135 (B)	ASCD steering switch	Input	[Ignition switch: ON] • CANCEL switch: Pressed	1 V
				[Ignition switch: ON] • ACCEL/RES switch: Pressed	3 V
				[Ignition switch: ON] • COAST/SET switch: Pressed	2 V
135 (B)	_	Sensor ground (ASCD steering switch)	_	_	_
139	152	Stop lamp switch	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0 V
(R)	(GR)	Ctop famp switch	input	[Ignition switch: OFF] • Brake pedal: Slightly depressed	BATTERY VOLTAGE (11 - 14 V)

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	ninal No. re color)	Description		O an alitina	Value
+	-	Signal name	Input/ Output	Condition	(Approx.)
140	152	Brake pedal position	Input	[Ignition switch: OFF] • Brake pedal: Fully released	0 V
(G)	(GR)	switch	прис	[Ignition switch: ON] • Brake pedal: Slightly depressed	0 V
141 (L)	152 (GR)	EVAP canister vent control valve	Output	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
142 (O)	144 (Y)	Sensor power supply (Accelerator pedal position sensor 2)	_	[Ignition switch: ON]	5 V
143	144	Accelerator pedal posi-	loout	[Ignition switch: ON]  • Engine stopped  • Accelerator pedal: Fully released	0.3 - 0.6 V
(W)	(Y)	tion sensor 2	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	1.95 - 2.1 V
144 (Y)	_	Sensor ground (Accelerator pedal position sensor 2)	_	_	_
145 (G)	152 (GR)	Power supply for ECM	Input	[Ignition switch: ON]	BATTERY VOLTAGE (11 - 14 V)
146 (V)	151 (GR)	Sensor power supply (Accelerator pedal position sensor 1)		[Ignition switch: ON]	5 V
147 (GR)	_	ECM ground	_	9/	_
148 (Y)	_	Sensor ground (EVAP control system pressure sensor, Fuel tank temperature sensor)	_	6	_
149 (GR)	_	ECM ground	_	- () /	_
150	151	Accelerator pedal posi-	Input	[Ignition switch: ON]  • Engine stopped  • Accelerator pedal: Fully released	0.6 - 0.9 V
(R)	(GR)	tion sensor 1	Input	[Ignition switch: ON] • Engine stopped • Accelerator pedal: Fully depressed	3.9 - 4.7 V
151 (GR)	_	Sensor ground (Accelerator pedal position sensor 1)	_	_	·/ <del>-</del> ^
152 (GR)	_	ECM ground	_	_	_

Fail Safe

#### Description

When a DTC is detected, ECM executes a mode (in the Fail-safe mode) applicable to the DTC. The fail-safe mode has the preset traveling control mode (accelerator angle variation and engine output limit) and device fix mode.

Fail sa	fe mode	Vehicle behavior
	Accelerator angle variation control	ECM controls the accelerator pedal depression speed to make it slower than actual speed. This causes a drop in accelerating performance and encourages the driver to repair malfunction.  NOTE:  ECM does not control the accelerator pedal releasing speed.
Traveling control mode	Engine output control	ECM reduces the engine output, according to the rise in engine speed. This reduces the vehicle speed to encourage the driver to repair malfunction.  • Engine output control 1: Limits the maximum speed to 120 km/h (75 MPH)*  • Engine output control 2: Limits the maximum speed to 55 km/h (34 MPH)*  *: This value is a reference value converted from engine power to vehicle speed.  Actual power limitation value differs due to the malfunctioning part and driving condition.
Device fix mode	4	<ul> <li>This mode fixes the IVT control solenoid valve and the EVT control solenoid valve in the reference position.</li> <li>A control signals is not transmitted to EGR volume control valve and the EGR volume control is deactivated.</li> <li>The Intake manifold runner control valve motor is turned OFF (Intake manifold runner control valve opens).</li> </ul>
	Stratified charge combustion control at starting	No stratified charge combustion at starting (cold start).
	Idle speed con- trol	Stops feedback control of idle speed and controls with specified speed.
Combustion control mode	Recovery speed control at decelerating	Stops recovery speed control by the fuel cut at decelerating and controls with specified speed.
	Idle neutral con- trol	Stops idle neutral control.
	Ignition timing correction control	Partially controls ignition timing control.
	Retardation control	Controls ignition timing delay control in the intermediate water temperature range.

#### Fail Safe Pattern

Pattern		Fail safe mode							
A		Accelerator angle variation control							
В	Traveling control mode	Engine output control 1							
С		Engine output control 2							
D	Device fix mode								
E		Stratified charge combustion control at starting							
F	Combustion control mode	<ul><li>Idle speed control</li><li>Recovery speed control at decelerating</li><li>Idle neutral control</li></ul>							
G		<ul><li>Ignition timing correction control</li><li>Retardation control</li></ul>							

Fail Safe List

×:Applicable —: Not applicable

DTC							Ve	enicie b	pehavior
No.	Detected items	Α	В	С	Patterr D	n E	F	G	Others
P0011 P0075 P052A P052B	Intake valve timing control		_	_	×	_	_	_	_
P0014 P0078	Exhaust valve timing control		_	_	×	_	_	_	_
P0046	Electric wastegate control actuator	×	×	_	×	_	_	_	The ECM stops the electric wastegate actuator control, engine can not be supercharged driving. The ECM requlates engine power limiter and EGR Off.
P0087 P0090	FRP control system	×	_	×	×	×	_	_	_
P0088	FRP control system	×	_	×	_	×	_	_	_
P00B3 P00B4	Engine coolant temperature sensor 2	_	_	_	_	_	_	_	High coolant temperature control does not function.
P0101 P0102 P0103	Mass air flow sensor	×	×	_	×	×	×	×	NOTE: Fail-safe mode may not start depending on malfunction type of ECM
P0117 P0118	Engine coolant temperature sensor 1	_			_	×	×	_	The engine speed does not exceed 2,000 rpm due to fuel cut
P0122 P0123 P0222 P0223 P2135	Throttle position sensor	1	_		×	_	_	_	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.  The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.  So, the acceleration will be poor.
P0171 P0172	Fuel injection system	×	_	_	_	×	×	-	-
P0190	FRP sensor	×	×	×	×	×	×	-	High pressure fuel pump is activated at maximum discharge pressure.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM
P0192	FRP sensor	×	×	_	_	×	_	_	High pressure fuel pump is activated at maximum discharge pressure.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM
P0193	FRP sensor	×	×	_	_	×	_	_	High pressure fuel pump is activated at maximum discharge pressure.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM
P0196 P0197 P0198	Engine oil temperature sensor	_	_	_	_	_	_	_	Exhaust valve timing control does not function.
P0201 P0202 P0203 P0204	Injector	×	_	×	_	×	_	_	_
P0237	Turbocharger boost sensor	×	×	_	×	_	_	_	_

							Ve	ehicle b	ehavior
DTC	Detected items				Patteri	n			
No.		Α	В	С	D	Е	F	G	Others
P0300 P0301 P0302 P0303 P0304	Misfire	×	_	_	_	×	×	_	_
P0335	Crankshaft position sensor	_	_	_	×	_	_	_	_
P0340	Camshaft position sensor	_	_	_	×	_	_	_	_
P0365	Exhaust valve timing control position sensor	_	_	_	×	_		_	_
P0401 P0402	EGR system	_	_	_	×	_	_	_	_
P0404	EGR volume control valve	×	_	×	×	×	×	_	_
P0407 P0408 P046E P046F P0486	EGR pressure sensor	_	_	_	×	_	_	_	_
P0448	EVAP canister vent control valve	×		_	×		_		_
P044A P044B P044C P044D P044E	EGR volume control valve position sensor	×	(		×	_	_	_	_
P0500		×	_			×	×	_	
P0501 P2159	Vehicle speed sensor	×	_	_	_	×	_	_	<del>_</del>
P050A	Cold start control	×	_	_	_	×	_	)-	_
P0524	Engine oil pressure	_	_	_	_	_	_	E	<ul> <li>ECM illuminates oil pressure warning lamp on the combination meter.</li> <li>Engine speed will not rise more than 4,000rpm due to the fuel cut.</li> <li>Fail-safe is canceled when ignition switch OFF → ON.</li> </ul>
P0603 P0607		×	×	_	_	_	_	_	<u> </u>
P0604 P0605 P0606 P060B	ECM	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P060A		×	×	_	×	_	_	_	NOTE:
P062B		×	_	×	_	×	_	_	Fail-safe mode may not start depending on malfunction type of ECM
P0643	Sensor power supply	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P119A	FRP sensor	×	_	_	_	×	_	_	_
P119B	FRP sensor	×	_	_	_	×	_	_	_
P119C	FRP sensor	×	_	_	_	×	_	_	_
P1197	Out of gas	_	_	×	×	_	_	_	_

DTC							Ve	enicie b	pehavior
No.	Detected items	A			Patterr D	n E	F		Others
		A	В	С	D	E	Г	G	The engine speed does not exceed 2,000
P1217	Engine over temperature	_	_	_	_	_	_	_	rpm due to fuel cut
P159B	G sensor	×	_	_	_	×	_	_	_
P2100 P2103	Throttle control motor relay	_	_	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P2004	Intake manifold runner control valve	_	_	_	×	_	_	_	_
P2014	Intake manifold runner control valve position sensor	_	_	_	×	_	_	_	_
P2016	Intake manifold runner control valve position sensor	_	_	_	×	_	_	_	_
P2017	Intake manifold runner control valve position sensor	_	_	_	×	_	_	_	_
P2018	Intake manifold runner control valve position sensor	_	_	_	×	_	_	_	_
P2101	Electric throttle control function	_		5	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P2118	Throttle control motor	_	-		×		_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.
P2119	Electric throttle control actuator	×	×	_	×	_	_	_	ECM stops the electric throttle control actuator control, throttle valve is maintained at a fixed opening (approx. 5 degrees) by the return spring.  NOTE: Fail-safe mode may not start depending on malfunction type of ECM
P2122 P2123 P2127 P2128 P2138	Accelerator pedal position sensor	_	_	_	×	_	_	_	The ECM controls the electric throttle control actuator in regulating the throttle opening in order for the idle position to be within +10 degrees.  The ECM regulates the opening speed of the throttle valve to be slower than the normal condition.  So, the acceleration will be poor.
P2162	Vehicle speed sensor	×	_	_	_	×	_	_	
P2263	Turbocharger system	×	×	_	×	_	_	_	_
P2562 P2566	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	The ECM stops the electric wastegate actuator control, engine can not be supercharged driving. The ECM requlates engine power limiter and EGR Off.
P2563	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	_
P2564	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	_

#### **ECM**

#### [MR EXCEPT FOR NISMO RS MODELS]

			Vehicle behavior										
DIC No.	DTC No. Detected items				Patter	n		Others					
		Α	В	С	D	Е	F	G	Others				
P2565	Electric wastegate control valve position sensor	×	×	_	×	_	_	_	_				
P26A3 P26A5 P26A6 P26A7	Multi-way control valve	_	_	_	_	_	_	_	<ul> <li>When detecting a malfunction with the valve closed, ECM fully opens the valve.</li> <li>When detecting a malfunction with the valve opened, ECM maintains valve angle.</li> <li>When detecting a malfunction in sensor, ECM fully opens the valve.</li> <li>ECM limits the engine output depending on malfunctions.</li> </ul>				

# DTC Inspection Priority Chart

INFOID:0000000012198248

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	Detected items (DTC)	A
1	U0101 U0122 U1000 CAN communication line  D0000 D0007 D0000 Little state of the state of th	
	P0096 P0097 P0098 Intake air temperature sensor 2     P0093 P0094 Engine scalent temperature sensor 3	
	P00B3 P00B4 Engine coolant temperature sensor 2     P0101 P0102 P0103 Mass air flow sensor	E
	P0106 Turbocharger boost sensor	
	P010A Manifold absolute pressure sensor	
	P0111 P0112 P0113 P0127 Intake air temperature sensor 1	(
	P0116 P0117 P0118 P0125 Engine coolant temperature sensor 1	,
	P011C Intake air temperature sensor	
	P0122 P0123 P0222 P0223 P1225 P1226 P2135 Throttle position sensor	
	P0181 P0182 P0183 Fuel tank temperature sensor	
	P0190 P0192 P0193 P119A P119B P119C FRP sensor	
	P0196 P0197 P0198 Engine oil temperature sensor	
	• P0327 P0328 Knock sensor	[
	P0335 Crankshaft position sensor (POS)     P0340 P0365 Camshaft position sensor (PHASE)	ı
	P0340 P0363 Camshall position sensor (PHASE)     P0407 P0408 P046E P046F P0486 EGR pressure sensor	
	P044A P044B P044C P044D P044E EGR volume control valve position sensor	
	P0460 P0461 P0462 P0463 Fuel level sensor	I
	P0500 P0501 P2159 P2162 Vehicle speed sensor	
	P0520 Engine oil pressure sensor	
	P0603 P0604 P0605 P0606 P0607 P060A P060B P0611 P062B P2610 ECM	(
	P062F Control module	
	P0643 Sensor power supply	
	P06DA P06DB Engine oil pressure control solenoid valve	
	P0850 Park/neutral position (PNP) switch	-
	• P1197 Out of gas	
	P1550 P1551 P1552 P1553 P1554 Battery current sensor	
	P1556 P1557 Batter temperature sensor     P1504 P1509 P	
	P158A P159B P159C P159D G sensor     P1610 - P1612 NATS	
	P2014 P2016 P2017 P2018 Intake manifold runner control valve position sensor	
	P2122 P2123 P2127 P2128 P2138 Accelerator pedal position sensor	
	P2562 P2563 P2564 P2565 P2566 Electric wastegate control valve position sensor	,
	• P2610 ECM	
	P26A5 P26A6 P26A7 P26AB Multi-way control valve position sensor	
		ı

Priority	Detected items (DTC)
2	P0030 P0031 P0032 Air fuel ratio (A/F) sensor 1 heater P0037 P0038 Heated oxygen sensor 2 heater P0046 Electric wastegate control actuator P0075 Intake valve timing control solenoid valve P0078 Exhaust valve timing control solenoid valve P0090 FRP control system P0001 P0002 Turbocharger bypass valve P0130 P0131 P0132 P014C P014D P015A P015B P2096 P2097 Air fuel ratio (A/F) sensor 1 P0137 P0138 P0139 Heated oxygen sensor 2 P0235 P0237 P0238 Turbocharger boost sensor P0402 P0404 EGR valve P0441 EVAP control system purge flow monitoring P0443 P0444 P0445 EVAP canister purge volume control solenoid valve P0447 P0448 EVAP canister vent control valve P0447 P0448 EVAP canister vent control valve P0451 P0452 P0453 EVAP control system pressure sensor P1217 Engine over temperature (OVERHEAT) P1451 Pressure sensor P1805 Brake switch P2004 Intake manifold runner control valve P2100 P2103 Throttle control motor relay P2118 Throttle control motor P2118 Throttle control motor
3	P0011 P052A P052B Intake valve timing control P0014 Exhaust valve timing control P0087 P0088 FRP control system P0171 P0172 Fuel injection system function P0201 P0202 P0203 P0204 Injector P02034 P2263 Turbocharger system P0300 P0301 P0302 P0303 P0304 Misfire P0401 EGR system P0401 EGR system P0420 Three way catalyst function P0456 EVAP control system (VERY SMALL LEAK) P0506 P0507 Idle speed control system P050A P0508 P050F P1423 P1424 Cold start control P0524 Engine oil pressure P100C Valve timing offset data not written P1148 Closed loop control P1121 TCS communication line P1564 ASCD steering switch P1572 ASCD brake switch P1574 ASCD vehicle speed sensor P2119 Electric throttle control actuator P219A Air fuel ratio sensor

#### NOTE

\*: If "P1197" is displayed with other DTC in priority 1, perform trouble diagnosis for "P1197" first.

### DTC Index

×:Applicable —: Not applicable

INFOID:0000000012198249

DTC	C*1	Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*8	page
U0101	0101	LOST COMM (TCM)	_	1	×	В	EC-796
U0122	0122	VDC MDL	_	2	×	В	EC-797
U1000	1000 <sup>*4</sup>	CAN COMM CIRCUIT	_	2	_	_	EC-798
P0000	0000	NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.	_	_	Flashing*7	_	_
P0011	0011	INT/V TIM CONT-B1	×	2	×	В	EC-799

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DTC	C*1	- Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*8	page
P0014	0014	EXH/V TIM CONT-B1	×	2	×	В	EC-802
P0030	0030	HO2S1 HTR B1		2	×	В	EC-805
P0031	0031	A/F SEN1 HTR (B1)	_	2	×	В	EC-805
P0032	0032	A/F SEN1 HTR (B1)	_	2	×	В	EC-805
P0037	0037	HO2 HTR (B1)	_	2	×	В	EC-808
P0038	0038	HO2 HTR (B1)	_	2	×	В	EC-808
P0046	0046	TC/SC BOOST CONTROL A	_	2	×	В	EC-811
P0075	0075	INT/V TIM V/CIR-B1	_	2	×	В	EC-813
P0078	0078	EX V/T ACT/CIRC-B1	_	2	×	В	EC-816
P0087	0087	LOW FUEL PRES	_	2	×	A or B	EC-819
P0088	0088	HIGH FUEL PRES	_	2	×	A or B	EC-823
P0090	0090	FUEL PUMP	_	2	×	В	EC-826
P0096	0096	IAT SENSOR 2 B1		2	×	В	EC-829
P0097	0097	IAT SENSOR 2 B1	_	2	×	В	EC-831
P0098	0098	IAT SENSOR 2 B1	_	2	×	В	EC-831
P00B3	00B3	RADIATOR COOLANT TEMP SEN	_	2	_	В	EC-834
P00B4	00B4	RADIATOR COOLANT TEMP SEN	-	2	_	В	EC-834
P00C1	00C1	TC/SC BYPASS VALVE B	_	2	×	В	EC-836
P00C2	00C2	TC/SC BYPASS VALVE B	-	2	×	В	EC-836
P0101	0101	MAF SEN/CIRCUIT-B1	_	2	×	В	EC-838
P0102	0102	MAF SEN/CIRCUIT-B1		1	×	В	EC-843
P0103	0103	MAF SEN/CIRCUIT-B1	_ (	1	×	В	EC-843
P0106	0106	ABSL PRES SEN/CIRC	_	2	×	В	EC-848
P010A	010A	ABSL PRES SEN/CIRC	_	2	×	В	EC-851
P0111	0111	IAT SENSOR 1 B1	_	2	×	Α	EC-854
P0112	0112	IAT SEN/CIRCUIT-B1	_	2	×	В	EC-856
P0113	0113	IAT SEN/CIRCUIT-B1	_	2	×	В	EC-856
P0116	0116	ECT SENSOR	_	2	×	Α	EC-858
P0117	0117	ECT SEN/CIRC	_	1	×	В	EC-860
P0118	0118	ECT SEN/CIRC	_	1	×	В	EC-860
P011C	011C	ECT SEN/CIRC	_	2	×	В	EC-862
P0122	0122	TP SEN 2/CIRC-B1		1	×	В	EC-864
P0123	0123	TP SEN 2/CIRC-B1	_	1	×	В	EC-864
P0125	0125	ECT SEN/CIRC		2	×	В	EC-867
P0127	0127	IAT SENSOR-B1	_	2	×	В	EC-869
P0130	0130	A/F SENSOR1 (B1)	×	2	×	Α	EC-871
P0131	0131	A/F SENSOR1 (B1)		2	×	В	EC-875
P0132	0132	A/F SENSOR1 (B1)	_	2	×	В	EC-878
P0137	0137	HO2S2 (B1)	×	2	×	Α	EC-881
P0138	0138	HO2S2 (B1)	×	2	×	А	EC-887
P0139	0139	HO2S2 (B1)	×	2	×	Α	EC-894

DTC <sup>-1</sup>		ECU DIAGNOSIS INFORMATION >			[MIN EXCEPT TON MISMO NS MIODEES						
CONSULT GST*2         ECM*3         (CONSULT screen terms)         code         Inp         MIL         DTC group*8         page           P014C         014C         AF SENSOR1 (B1)         x         2         x         A         EC.900           P015D         014D         AF SENSOR1 (B1)         x         2         x         A         EC.900           P015B         015B         AF SENSOR1 (B1)         x         2         x         A         EC.900           P015B         015B         AF SENSOR1 (B1)         x         2         x         A         EC.900           P0111         0171         FUEL SYS-LEAN-B1         -         2         x         B         EC.900           P0112         0172         FUEL SYS-RICHB1         -         2         x         A and B         EC.913           P0181         0181         FTT SENCIRCUIT         -         2         x         B         EC.913           P0182         0182         FTT SENCIRCUIT         -         2         x         B         EC.913           P0183         0183         FTR SENCIRC         -         1         x         B         EC.912           P0194 <t< td=""><td>DTC</td><td>,*1 </td><td>ltems</td><td>SRT</td><td></td><td></td><td>Permanent</td><td>Reference</td></t<>	DTC	,*1 	ltems	SRT			Permanent	Reference			
P014D		ECM*3			Trip	MIL	DTC group*8				
P015A	P014C	014C	A/F SENSOR1 (B1)	×	2	×	Α	EC-900			
P015B	P014D	014D	A/F SENSOR1 (B1)	×	2	×	А	EC-900			
P0171	P015A	015A	A/F SENSOR1 (B1)	×	2	×	Α	EC-900			
P0172	P015B	015B	A/F SENSOR1 (B1)	×	2	×	Α	EC-900			
P0181	P0171	0171	FUEL SYS-LEAN-B1	_	2	×	В	EC-905			
P0182	P0172	0172	FUEL SYS-RICH-B1	_	2	×	В	EC-909			
P0183	P0181	0181	FTT SENSOR	_	2	×	A and B	EC-913			
P0190	P0182	0182	FTT SEN/CIRCUIT	_	2	×	В	EC-913			
P0192	P0183	0183	FTT SEN/CIRCUIT	<u> </u>	2	×	В	EC-913			
P0193	P0190	0190	FUEL PRES SEN/CIRC	_	1	×	В	EC-919			
P0196         0196         EOT SENSOR         —         2         ×         A and B         EC-922           P0197         0197         EOT SENICIRC         —         2         ×         B         EC-926           P0198         0198         EOT SENICIRC         —         2         ×         B         EC-926           P0201         0201         INJECTOR CIRC-CYL1         —         2         ×         B         EC-928           P0202         0202         INJECTOR CIRC-CYL2         —         2         ×         B         EC-928           P0203         0203         INJECTOR CIRC-CYL3         —         2         ×         B         EC-928           P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-928           P0223         0223         TP SEN 1/CIRC-B1         —         1         ×         B         EC-928           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-932           P0237         0237	P0192	0192	FRP SEN/CIRC	_	2	×	В	EC-919			
P0197         0197         EOT SEN/CIRC         —         2         ×         B         EC-926           P0198         0198         EOT SEN/CIRC         —         2         ×         B         EC-926           P0201         0201         INJECTOR CIRC-CYL1         —         2         ×         B         EC-928           P0202         0202         INJECTOR CIRC-CYL2         —         2         ×         B         EC-928           P0203         0203         INJECTOR CIRC-CYL3         —         2         ×         B         EC-928           P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-928           P0234         0234         TC SYSTEM-B1         —         1         x         B         EC-929           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-9325           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-9328           P0330         0330	P0193	0193	FRP SEN/CIRC	_	2	×	В	EC-919			
P0198         0198         EOT SEN/CIRC         —         2         ×         B         EC-926           P0201         0201         INJECTOR CIRC-CYL1         —         2         ×         B         EC-928           P0202         0202         INJECTOR CIRC-CYL2         —         2         ×         B         EC-928           P0203         0203         INJECTOR CIRC-CYL3         —         2         ×         B         EC-928           P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-929           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-935           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-935           P0330         0330         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         <	P0196	0196	EOT SENSOR	<u> </u>	2	×	A and B	EC-922			
P0201         0201         INJECTOR CIRC-CYL1         —         2         ×         B         EC-928           P0202         0202         INJECTOR CIRC-CYL2         —         2         ×         B         EC-928           P0203         0203         INJECTOR CIRC-CYL3         —         2         ×         B         EC-928           P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-929           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-932           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-941           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301	P0197	0197	EOT SEN/CIRC	_	2	×	В	EC-926			
P0202         0202         INJECTOR CIRC-CYL2         —         2         ×         B         EC-928           P0203         0203         INJECTOR CIRC-CYL3         —         2         ×         B         EC-928           P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-929           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-938           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302 </td <td>P0198</td> <td>0198</td> <td>EOT SEN/CIRC</td> <td>_</td> <td>2</td> <td>×</td> <td>В</td> <td>EC-926</td>	P0198	0198	EOT SEN/CIRC	_	2	×	В	EC-926			
P0203         0203         INJECTOR CIRC-CYL3         —         2         ×         B         EC-928           P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-932           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-932           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-932           P038         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-932           P0301         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P03	P0201	0201	INJECTOR CIRC-CYL1	_	2	×	В	EC-928			
P0204         0204         INJECTOR CIRC-CYL4         —         2         ×         B         EC-928           P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0233         0223         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-932           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-932           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P030	P0202	0202	INJECTOR CIRC-CYL2	_	2	×	В	EC-928			
P0222         0222         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0223         0223         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-932           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-935           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941 <td< td=""><td>P0203</td><td>0203</td><td>INJECTOR CIRC-CYL3</td><td>_</td><td>2</td><td>×</td><td>В</td><td>EC-928</td></td<>	P0203	0203	INJECTOR CIRC-CYL3	_	2	×	В	EC-928			
P0223         0223         TP SEN 1/CIRC-B1         —         1         ×         B         EC-929           P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-932           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-935           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941	P0204	0204	INJECTOR CIRC-CYL4		2	×	В	EC-928			
P0234         0234         TC SYSTEM-B1         —         1 or 2         ×         B         EC-932           P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-935           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947	P0222	0222	TP SEN 1/CIRC-B1	2	1	×	В	EC-929			
P0235         0235         TURBO BOOST SENSOR         —         2         ×         B         EC-935           P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0307         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947 <t< td=""><td>P0223</td><td>0223</td><td>TP SEN 1/CIRC-B1</td><td></td><td>1</td><td>×</td><td>В</td><td>EC-929</td></t<>	P0223	0223	TP SEN 1/CIRC-B1		1	×	В	EC-929			
P0237         0237         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0307         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         ×         B         EC-949 <tr< td=""><td>P0234</td><td>0234</td><td>TC SYSTEM-B1</td><td></td><td>1 or 2</td><td>×</td><td>В</td><td>EC-932</td></tr<>	P0234	0234	TC SYSTEM-B1		1 or 2	×	В	EC-932			
P0238         0238         TC BOOST SEN/CIRC-B1         —         2         ×         B         EC-938           P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRC-B1         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-955 <td< td=""><td>P0235</td><td>0235</td><td>TURBO BOOST SENSOR</td><td></td><td>2</td><td>×</td><td>В</td><td>EC-935</td></td<>	P0235	0235	TURBO BOOST SENSOR		2	×	В	EC-935			
P0300         0300         MULTI CYL MISFIRE         —         1 or 2         × or —         B         EC-941           P0301         0301         CYL 1 MISFIRE         —         1 or 2         × or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRC-B1         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959	P0237	0237	TC BOOST SEN/CIRC-B1	_	2	×	В	EC-938			
P0301         0301         CYL 1 MISFIRE         —         1 or 2         x or —         B         EC-941           P0302         0302         CYL 2 MISFIRE         —         1 or 2         x or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         x or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         x or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRCUIT         —         2         x         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         x         B         EC-952           P0401         0401         EGR A FLOW INSUFFICIENT         x         1 or 2         x         A         EC-959           P0402         0402         EGRC-BPT VALVE         x         2         x         A         EC-961           P040	P0238	0238	TC BOOST SEN/CIRC-B1	_	2	×	В	EC-938			
P0302         0302         CYL 2 MISFIRE         —         1 or 2         × or —         B         EC-941           P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRC-B1         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-961           P0404	P0300	0300	MULTI CYL MISFIRE	_	1 or 2	× or —	В	EC-941			
P0303         0303         CYL 3 MISFIRE         —         1 or 2         × or —         B         EC-941           P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRCUIT         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0301	0301	CYL 1 MISFIRE	_	1 or 2	× or —	В	EC-941			
P0304         0304         CYL 4 MISFIRE         —         1 or 2         × or —         B         EC-941           P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRCUIT         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0302	0302	CYL 2 MISFIRE	_	1 or 2	× or —	В	EC-941			
P0327         0327         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRCUIT         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0303	0303	CYL 3 MISFIRE	_	1 or 2	× or —	В	EC-941			
P0328         0328         KNOCK SEN/CIRC-B1         —         2         —         —         EC-947           P0335         0335         CKP SEN/CIRCUIT         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0304	0304	CYL 4 MISFIRE	_	1 or 2	× or —	В	<u>EC-941</u>			
P0335         0335         CKP SEN/CIRCUIT         —         2         ×         B         EC-949           P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0327	0327	KNOCK SEN/CIRC-B1	_	2	_		EC-947			
P0340         0340         CMP SEN/CIRC-B1         —         2         ×         B         EC-952           P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0328	0328	KNOCK SEN/CIRC-B1	_	2	_	_	EC-947			
P0365         0365         CMP SEN/CIRC-B1         —         2         ×         B         EC-955           P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0335	0335	CKP SEN/CIRCUIT	_	2	×	В	EC-949			
P0401         0401         EGR A FLOW INSUFFICIENT         ×         1 or 2         ×         A         EC-959           P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0340	0340	CMP SEN/CIRC-B1	_	2	×	В	EC-952			
P0402         0402         EGRC-BPT VALVE         ×         2         ×         A         EC-959           P0404         0404         EGR A CONTROL         —         2         ×         B         EC-961	P0365	0365	CMP SEN/CIRC-B1	_	2	×	В	EC-955			
P0404	P0401	0401	EGR A FLOW INSUFFICIENT	×	1 or 2	×	Α	EC-959			
	P0402	0402	EGRC-BPT VALVE	×	2	×	Α	EC-959			
DOLOZ DOLOZ FOR SENICOR R	P0404	0404	EGR A CONTROL	_	2	×	В	EC-961			
PU4U/	P0407	0407	EGR SENSOR B	_	2	×	В	EC-963			
P0408	P0408	0408	EGR SENSOR B	_	2	×	В	EC-963			
P0420	P0420	0420	TW CATALYST SYS-B1	×	2	×	Α	EC-966			
P0441	P0441	0441	EVAP PURG FLOW/MON	×	2	×	А	EC-971			

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DTC	)*1 	- Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*8	page
P0443	0443	PURG VOLUME CONT/V	×	2	×	А	EC-977
P0444	0444	PURG VOLUME CONT/V	_	2	×	В	EC-982
P0445	0445	PURG VOLUME CONT/V	_	2	×	В	EC-982
P0447	0447	VENT CONTROL VALVE	_	2	×	В	EC-985
P0448	0448	VENT CONTROL VALVE	_	2	×	В	EC-989
P044A	044A	EGR SENSOR C	_	2	×	В	EC-993
P044B	044B	EGR SENSOR C	_	2	×	Α	EC-996
P044C	044C	EGR SENSOR C	_	2	×	В	EC-999
P044D	044D	EGR SENSOR C	_	2	×	В	EC-999
P044E	044E	EGR SENSOR C	_	2	×	В	EC-993
P0451	0451	EVAP SYS PRES SEN	_	2	×	А	EC-1002
P0452	0452	EVAP SYS PRES SEN	_	2	×	В	EC-1005
P0453	0453	EVAP SYS PRES SEN	_	2	×	А	EC-1008
P0456	0456	EVAP VERY SML LEAK	×	2	×	Α	EC-1012
P0460	0460	FUEL LEV SEN SLOSH	_	2	×	А	EC-1018
P0461	0461	FUEL LEVEL SENSOR	_	2	×	В	EC-1019
P0462	0462	FUEL LEVL SEN/CIRC	_	2	×	В	EC-1021
P0463	0463	FUEL LEVL SEN/CIRC	_	2	×	В	EC-1021
P046E	046E	EGR SENSOR B	<b>→</b>	2	×	В	EC-1022
P046F	046F	EGR SENSOR B	_	2	×	В	EC-1025
P0486	0486	EGR SENSOR B	_	2	×	В	EC-1025
P0500	0500	VEHICLE SPEED SEN A*5		2	×	В	EC-1027 (CVT) EC-1028 (I
P0501	0501	VEHICLE SPEED SEN A	_	2	×	В	EC-1031
P0506	0506	ISC SYSTEM	_	2	×	В	EC-1032
P0507	0507	ISC SYSTEM	_	2	×	В	EC-1034
P050A	050A	COLD START CONTROL	_	2	×	Α	EC-1036
P050B	050B	COLD START CONTROL	_	2	×	Α	EC-1036
P050E	050E	COLD START CONTROL	_	2	×	Α	EC-1036
P0520	0520	EOP SENSOR/SWITCH	_	2	_		EC-1038
P0524	0524	ENGINE OIL PRESSURE	_	1	_	_	EC-1041
P052A	052A	CAMSHAFT POSITION TIMING B1	×	2	×	В	EC-1044
P052B	052B	CAMSHAFT POSITION TIMING B1	×	2	×	В	EC-1044
P0603	0603	ECM BACK UP/CIRCUIT*6	_	2	× or —	В	EC-1050
P0604	0604	ECM	_	1	×	В	EC-1051
P0605	0605	ECM	_	1 or 2	×	В	EC-1052
P0606	0606	CONTROL MODULE	_	1	× or —	В	EC-1053
P0607	0607	ECM	_	1 or 2	× or —	В	EC-1054
P060A	060A	CONTROL MODULE	_	1	× or —	В	EC-1055
P060B	060B	CONTROL MODULE	_	1	×	В	EC-1056

DTC	<del></del>						
CONSULT GST*2	ECM*3	ltems (CONSULT screen terms)	SRT code	Trip	MIL	Permanent DTC group*8	Reference page
P0611	0611	FIC MODULE	_	2	×	В	EC-1057
P062B	062B	ECM	_	2	×	В	EC-1058
P062F	062F	CONTROL MODULE	_	1	×	В	EC-1059
P0643	0643	SENSOR POWER/CIRC	_	1	×	В	EC-1060
P06DA	06DA	ENGINE OIL PRESSURE CONTROL	_	2	_	В	EC-1063
P06DB	06DB	ENGINE OIL PRESSURE CONTROL	_	2	_	В	EC-1063
P0850	0850	P-N POS SW/CIRCUIT	_	2	×	В	EC-1065
P100C	100C	V/T OFFSET DATA NOT WRITTEN	_	2	_	В	EC-1069
P1148	1148	CLOSED LOOP-B1	_	1	×	А	EC-1070
P1197	1197	FUEL RUN OUT	_	2	_	_	EC-1071
P119A	119A	FUEL PRESSURE SENSOR		2	X	Α	EC-1073
P119B	119B	FUEL PRESSURE SENSOR		2	X	Α	EC-1073
P119C	119C	FUEL PRESSURE SENSOR		2	×	В	EC-1077
P1212	1212	TCS/CIRC	_	2	_	_	EC-1080
P1217	1217	ENG OVER TEMP		1	X	В	EC-1081
P1225	1225	CTP LEARNING-B1	_	2	_	_	EC-1084
P1226	1226	CTP LEARNING-B1	7 ->	2	_	_	EC-1085
P1423	1423	COLD START CONTROL		2	×	В	EC-1086
P1424	1424	COLD START CONTROL	_	2	×	В	EC-1086
P1451	1451	TC/SC PR/S-EVAP PR/S		2	×	В	EC-1088
P1550	1550	BAT CURRENT SENSOR		2	_	_	EC-1091
P1551	1551	BAT CURRENT SENSOR	_	2	_	_	EC-1094
P1552	1552	BAT CURRENT SENSOR		2	) ->	_	EC-1094
P1553	1553	BAT CURRENT SENSOR	_	2	_	_	EC-1097
P1554	1554	BAT CURRENT SENSOR	_	2		_	EC-1100
P1556	1556	BAT TMP SEN/CIRC	_	2		_	EC-1103
P1557	1557	BAT TMP SEN/CIRC	_	2		_	EC-1103
P1564	1564	ASCD SW	_	1	_	_	EC-1105
P1572	1572	ASCD BRAKE SW	_	1	_		EC-1108
P1574	1574	ASCD VHL SPD SEN	_	1	_	_	EC-1113
P158A	158A	G SENSOR	_	1	_	_	EC-1115
P159B	159B	G SENSOR	_	2	×	В	EC-1116
P159C	159C	G SENSOR	_	2	×	В	EC-1120
P159D	159D	G SENSOR	_	2	×	В	EC-1120
P1610	1610	LOCK MODE	_	2	_	_	SEC-50
P1611	1611	ID DISCORD, IMMU-ECM	_	2	_	_	SEC-51
P1612	1612	CHAIN OF ECM-IMMU	_	2	_	_	SEC-52
P1805	1805	BRAKE SW/CIRCUIT	_	2	_	_	EC-1124
P2004	2004	SWIRL CONT/V (B1)	_	2	×	А	EC-1126
P2014	2014	SWIRL CONT SEN/SW	_	2	×	В	EC-1129

DTC	)*1 	- Items	SRT			Permanent	Reference
CONSULT GST*2	ECM*3	(CONSULT screen terms)	code	Trip	MIL	DTC group*8	page
P2016	2016	IN/MANIFOLD RUNNER POS SEN B1	_	2	×	В	EC-1129
P2017	2017	IN/MANIFOLD RUNNER POS SEN B1	_	2	×	В	EC-1129
P2018	2018	IN/MANIFOLD RUNNER POS SEN B1	_	2	×	В	EC-1129
P2096	2096	POST CATALYST FUEL TRIM SYS B1	_	2	×	А	EC-1132
P2097	2097	POST CATALYST FUEL TRIM SYS B1	_	2	×	А	EC-1132
P2100	2100	ETC MOT PWR-B1	_	1	×	В	EC-1136
P2101	2101	ETC FNCTN/CIRC-B1	_	1	×	В	EC-1138
P2103	2103	ETC MOT PWR	_	1	×	В	EC-1136
P2118	2118	ETC MOT-B1		1	×	В	EC-1141
P2119	2119	ETC ACTR-B1	_	1	×	В	EC-1143
P2122	2122	APP SEN 1/CIRC	_	1	×	В	EC-1145
P2123	2123	APP SEN 1/CIRC	_	1	×	В	EC-1145
P2127	2127	APP SEN 2/CIRC	_	1	×	В	EC-1148
P2128	2128	APP SEN 2/CIRC	_	1	×	В	EC-1148
P2135	2135	TP SENSOR-B1		1	×	В	EC-1150
P2138	2138	APP SENSOR		1	×	В	EC-1153
P2159	2159	VEHICLE SPEED SEN B	_	2	×	В	EC-1031
P2162	2162	VEHICLE SPEED SEN A/B	(4)	2	×	В	EC-1156
P219A	219A	AIR FUEL RATIO		2	×	А	EC-1158
P2263	2263	TC SYSTEM-B1	- (	2	×	В	EC-1163
P2562	2562	TC BOOST CONTROL POSITN SEN A	_	2	×	В	EC-1168
P2563	2563	TC BOOST CONTROL POSITN SEN A	_	2	×	А	EC-1171
P2564	2564	TC BOOST CONTROL POSITN SEN A	_	2	×	В	EC-1174
P2565	2565	TC BOOST CONTROL POSITN SEN A	_	2	×	В	EC-1174
P2566	2566	TC BOOST CONTROL POSITN SEN A	_	2	×	В	EC-1168
P2610	2610	ECM/PCM INTERNAL ENG OFF TIMER	_	2	×	A and B	EC-1177
P26A3	26A3	ENGINE COOLANT BYPASS VALVE	_	1 or 2	×	В	EC-1179
P26A5	26A5	ENGINE COOLANT B/V A POSI SEN	_	2	×	А	EC-1181
P26A6	26A6	ENGINE COOLANT B/V A POSI SEN	_	2	×	В	EC-1184
P26A7	26A7	ENGINE COOLANT B/V A POSI SEN	_	2	×	В	EC-1184
P26AB	26AB	ENGINE COOLANT B/V A POSI SEN	_	2	×	Α	EC-1187

<sup>\*1: 1</sup>st trip DTC No. is the same as DTC No.

- \*2: This number is prescribed by SAE J1979/ ISO 15031-5.
- \*3: In Diagnostic Test Mode II (Self-diagnostic results), this number is controlled by NISSAN.
- \*4: The trouble diagnosis for this DTC needs CONSULT.
- \*5: When the fail-safe operations for both self-diagnoses occur, the MIL illuminates.
- \*6: This self-diagnosis is not for ECM power supply circuit, even though "ECM BACK UP/CIRCUIT" is displayed on CONSULT screen.
- \*7: When the ECM is in the mode that displays SRT status, MIL may blink. For details, Refer to EC-666, "On Board Diagnosis Function".
- \*8: Refer to EC-779, "Description".

#### Test Value and Test Limit

INFOID:0000000012820444

The following is the information specified in Service \$06 of SAE J1979/ISO 15031-5.

The test value is a parameter used to determine whether a system/circuit diagnostic test is OK or NG while being monitored by the ECM during self-diagnosis. The test limit is a reference value which is specified as the maximum or minimum value and is compared with the test value being monitored.

These data (test value and test limit) are specified by On Board Monitor ID (OBDMID), Test ID (TID), Unit and Scaling ID and can be displayed on the GST screen.

The items of the test value and test limit will be displayed with GST screen which items are provided by the ECM. (e.g., if bank 2 is not applied on this vehicle, only the items of bank 1 are displayed)

140	OBD-	Calf diamantin to this	DTO	li	e and Test mit display)	December						
Item	MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description						
			P0131	83H	0BH	Minimum sensor output voltage for test cycle						
			P0131	84H	0BH	Maximum sensor output voltage for test cycle						
			P0130	85H	0BH	Minimum sensor output voltage for test cycle						
		7	P0130	86H	0BH	Maximum sensor output voltage for test cycle						
			P0133	87H	04H	Response rate: Response ratio (lean to rich)						
			P0133	88H	04H	Response rate: Response ratio (rich to lean)						
									P2A00 or P2096	89H	84H	The amount of shift in air fuel ratio (too lean)
			P2A00 or P2097 8AH 84H The amount of shift in rich)		The amount of shift in air fuel ratio (too rich)							
			P0130	8BH	0BH	Difference in sensor output voltage						
		Air fuel ratio (A/F) sensor 1 (Bank 1)	P0133	8CH	83H	Response gain at the limited frequency						
O2S	01H		P014C	8DH	04H	O2 sensor slow response - Rich to lean bank 1 sensor 1						
			P014C	8EH	04H	O2 sensor slow response - Rich to lean bank 1 sensor 1						
			P014D	8FH	84H	O2 sensor slow response - Lean to rich bank 1 sensor 1						
			P014D	90H	84H	O2 sensor slow response - Lean to rich bank 1 sensor 1						
			P015A	91H	01H	O2 sensor delayed response - Rich to lean bank 1 sensor 1						
					P015A	92H	01H	O2 sensor delayed response - Rich to lean bank 1 sensor 1				
		P015B	93H	01H	O2 sensor delayed response - Lean to rich bank 1 sensor 1							
			P015B	94H	01H	O2 sensor delayed response - Lean to rich bank 1 sensor 1						
			P0133	95H	04H	Response rate: Response ratio (lean to rich)						
			P0133	96H	84H	Response rate: Response ratio (rich to lean)						

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Item	OBD-	Self-diagnostic test item	DTC	(GST	display)	Description
	MID		3.0	TID	Unitand Scaling ID	Boosiipuoli
			P0138	07H	0CH	Minimum sensor output voltage for tes cycle
		Heated oxygen sensor 2	P0137	08H	0CH	Maximum sensor output voltage for test cycle
	02H	(Bank 1)	P0138	80H	0CH	Sensor output voltage
			P0139	81H	0CH	Difference in sensor output voltage
			P0139	82H	11H	Rear O2 sensor delay response diagnosis
		4/_	P0143	07H	0CH	Minimum sensor output voltage for tes cycle
	03H	Heated oxygen sensor 3 (Bank 1)	P0144	08H	0CH	Maximum sensor output voltage for test cycle
			P0146	80H	0CH	Sensor output voltage
			P0145	81H	0CH	Difference in sensor output voltage
		Air fuel ratio (A/F) sensor 1 (Bank 2)	P0151	83H	0BH	Minimum sensor output voltage for tes cycle
			P0151	84H	0BH	Maximum sensor output voltage for test cycle
			P0150	85H	0BH	Minimum sensor output voltage for tes cycle
			P0150	86H	0BH	Maximum sensor output voltage for test cycle
HO2S			P0153	87H	04H	Response rate: Response ratio (lean to rich)
			P0153	88H	04H	Response rate: Response ratio (rich to lean)
			P2A03 or P2098	89H	84H	The amount of shift in air fuel ratio (too lean)
	0.511		P2A03 or P2099	8AH	84H	The amount of shift in air fuel ratio (too rich)
	05H		P0150	8BH	0BH	Difference in sensor output voltage
			P0153	8CH	83H	Response gain at the limited frequence
			P014E	8DH	04H	O2 sensor slow response - Rich to lean bank 2 sensor 1
			P014E	8EH	04H	O2 sensor slow response - Rich to lean bank 2 sensor 1
			P014F	8FH	84H	O2 sensor slow response - Lean to rich bank 2 sensor 1
			P014F	90H	84H	O2 sensor slow response - Lean to rick bank 2 sensor 1
			P015C	91H	01H	O2 sensor delayed response - Rich to lean bank 2 sensor 1
			P015C	92H	01H	O2 sensor delayed response - Rich to lean bank 2 sensor 1
			P015D	93H	01H	O2 sensor delayed response - Lean to rich bank 2 sensor 1

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ltone	OBD-	Colf diagnostic toot items	DTO		mit display)	Descriptio-
Item	MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
			P015D	94H	01H	O2 sensor delayed response - Lean to rich bank 2 sensor 1
	05H	Air fuel ratio (A/F) sensor 1 (Bank 2)	P0153	95H	04H	Response rate: Response ratio (lean to rich)
			P0153	96H	84H	Response rate: Response ratio (rich to lean)
		P0158	07H	0CH	Minimum sensor output voltage for test cycle	
	061	Heated oxygen sensor 2	P0157	08H	0CH	Maximum sensor output voltage for test cycle
HO2S	06H	(Bank 2)	P0158	80H	0CH	Sensor output voltage
			P0159	81H	0CH	Difference in sensor output voltage
		P0159	82H	11H	Rear O2 sensor delay response diagnosis	
07H		*/^	P0163	07H	0CH	Minimum sensor output voltage for test cycle
	07H	Heated oxygen sensor 3 (Bank2)	P0164	08H	0CH	Maximum sensor output voltage for test cycle
			P0166	80H	0CH	Sensor output voltage
			P0165	81H	0CH	Difference in sensor output voltage
		Three way catalyst function (Bank1)	P0420	80H	01H	O2 storage index
	21H		P0420	82H	01H	Switching time lag engine exhaust index value
	2111		P2423	83H	0CH	Difference in 3rd O2 sensor output voltage
CATA-			P2423	84H	84H	O2 storage index in HC trap catalyst
LYST			P0430	80H	01H	O2 storage index
	22H	Three way catalyst function	P0430	82H	01H	Switching time lag engine exhaust index value
	2211	(Bank2)	P2424	83H	0CH	Difference in 3rd O2 sensor output voltage
			P2424	84H	84H	O2 storage index in HC trap catalyst
			P0400	80H	96H	Low flow faults: EGR temp change rate (short term)
			P0400	81H	96H	Low flow faults: EGR temp change rate (long term)
EGR 04	2411	I EGR function	P0400	82H	96H	Low flow faults: Difference between max EGR temp and EGR temp under idling condition
SYSTEM	31H		P0400	83H	96H	Low flow faults: Max EGR temp
			P1402	84H	96H	High Flow Faults: EGR temp increase rate
			P0402	85H	FCH	EGR differential pressure high flow
			P0401	86H	37H	EGR differential pressure low flow
			P2457	87H	96H	EGR temperature

				li	e and Test mit	
Item	OBD- MID	Self-diagnostic test item	DTC	TID	Unitand Scaling ID	Description
			P0011	80H	9DH	VTC intake function diagnosis (VTC alignment check diagnosis)
			P0014	81H	9DH	VTC exhaust function diagnosis (VTC alignment check diagnosis)
			P0011	82H	9DH	VTC intake function diagnosis (VTC drive failure diagnosis)
	2511	VVT Monitor (Donks)	P0014	83H	9DH	VTC exhaust function diagnosis (VTC drive failure diagnosis)
	35H	VVT Monitor (Bank1)	P100A	84H	10H	VEL slow response diagnosis
			P1090	85H	10H	VEL servo system diagnosis
		17	P0011	86H	9DH	VTC intake intermediate lock function diagnosis (VTC intermediate position alignment check diagnosis)
VVT SYSTEM			Advanced: P052A Retarded: P052B	87H	9DH	VTC intake intermediate lock system diagnosis (VTC intermediate lock position check diagnosis)
		VVT Monitor (Bank2)	P0021	80H	9DH	VTC intake function diagnosis (VTC alignment check diagnosis)
			P0024	81H	9DH	VTC exhaust function diagnosis (VTC alignment check diagnosis)
			P0021	82H	9DH	VTC intake function diagnosis (VTC drive failure diagnosis)
	36H		P0024	83H	9DH	VTC exhaust function diagnosis (VTC drive failure diagnosis)
			P100B	84H	10H	VEL slow response diagnosis
			P1093	85H	10H	VEL servo system diagnosis
			P0021	86H	9DH	VTC intake intermediate lock function diagnosis (VTC intermediate position alignment check diagnosis)
			Advanced: P052C Retarded: P052D	87H	9DH	VTC intake intermediate lock system diagnosis (VTC intermediate lock position check diagnosis)
	39H	EVAP control system leak (Cap Off)	P0455	80H	0CH	Difference in pressure sensor output voltage before and after pull down
EVAP SYSTEM	3ВН	EVAP control system leak (Small leak)	P0442	80H	05H	Leak area index (for more than 0.04 inch)
	3СН	EVAP control system leak (Very small leak)	P0456	80H	05H	Leak area index (for more than 0.02 inch)
			P0456	81H	FDH	Maximum internal pressure of EVAP system during monitoring
			P0456	82H	FDH	Internal pressure of EVAP system at the end of monitoring
	3DH	Purge flow system	P0441	83H	0CH	Difference in pressure sensor output voltage before and after vent control valve close

ltaua	OBD-	Self-diadnostic test item	DTO	li	e and Test mit display)	Description
Item	MID		DTC	TID	Unitand Scaling ID	Description
41H 42H	41H	A/F sensor 1 heater (Bank 1)	Low Input: P0031 High Input: P0032	81H	0BH	Converted value of heater electric current to voltage
		P0030	83H	0BH	A/F sensor heater circuit malfunction	
	42H	Heated oxygen sensor 2 heater (Bank 1)	Low Input: P0037 High Input: P0038	80H	0CH	Converted value of heater electric cur rent to voltage
	ei (baik i)	P0141	81H	14H	Rear O2 sensor internal impedance	
02 SEN- SOR	43H	Heated oxygen sensor 3 heater (Bank 1)	P0043	80H	0CH	Converted value of heater electric current to voltage
IEATER	45H	A/F sensor 1 heater (Bank 2)	Low Input: P0051 High Input: P0052	81H	0BH	Converted value of heater electric cur rent to voltage
			P0036	83H	0BH	A/F sensor heater circuit malfunction
	46H	Heated oxygen sensor 2 heater (Bank 2)	Low Input: P0057 High Input: P0058	80H	0CH	Converted value of heater electric cur rent to voltage
			P0161	81H	14CH	Rear O2 sensor internal impedance
	47H	Heated oxygen sensor 3 heater (Bank 2)	P0063	80H	0CH	Converted value of heater electric cur rent to voltage
			P0411	80H	01H	Secondary air injection system incorrect flow detected
			Bank1: P0491 Bank2: P0492	81H	01H	Secondary air injection system insufficient flow
			P2445	82H	01H	Secondary air injection system pump stuck off
SEC- OND- ARY AIR	71H	H Secondary air system	P2448	83H	01H	Secondary air injection system high airflow
			Bank1: P2440 Bank2: P2442	84H	01H	Secondary air injection system switch ing valve stuck open
			P2440	85H	01H	Secondary air injection system switch ing valve stuck open
			P2444	86H	01H	Secondary air injection system pump stuck on

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	OBD-	Self-diagnostic test item		li	e and Test mit display)	
Item	MID		DTC	TID	Unitand Scaling ID	Description
			P0171 or P0172	80H	2FH	Long term fuel trim
			P0171 or P0172	81H	24H	The number of lambda control clamped
			P117A / P219A	82H	03H	Cylinder A/F imbalance monitoring
			P219C	83H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #1 cylinder parameter
			P219D	84H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #2 cylinder parameter
	81H	Fuel injection system function (Bank 1)	P219E	85H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #3 cylinder parameter
			P219F	86H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #4 cylinder parameter
FUEL			P21A0	87H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #5 cylinder parameter
SYSTEM			P21A2	89H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #7 cylinder parameter
			P0174 or P0175	80H	2FH	Long term fuel trim
		Fuel injection system function (Bank 2)	P0174 or P0175	81H	24H	The number of lambda control clamped
			P117B / P219B	82H	03H	Cylinder A/F imbalance monitoring
			P219D	84H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #2 cylinder parameter
	82H		P219F	86H	83H	Air-fuel ratio cylinder imbalance diagnosis CPS (Crankshaft Position Sensor) method #4 cylinder parameter
			P21A1	88H	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #6 cylinder parameter
			P21A3	8AH	83H	Air-fuel ratio cylinder imbalance diag- nosis CPS (Crankshaft Position Sen- sor) method #8 cylinder parameter

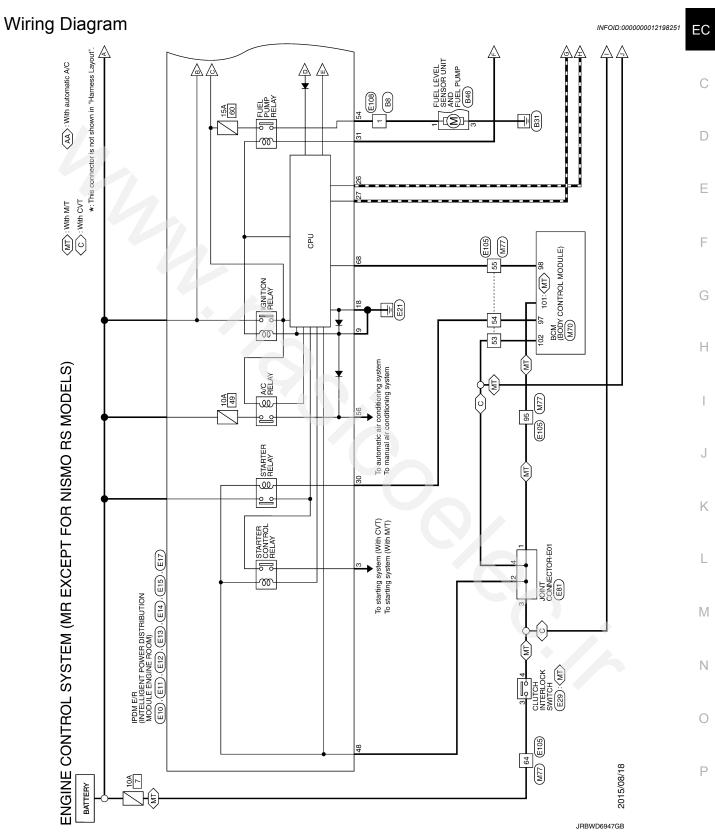
	OBD- MID	Self-diagnostic test item	DTC	Test value and Test limit (GST display)		
Item				TID	Unitand Scaling ID	Description
MISFIRE	A1H	Multiple cylinder misfires	P0301	80H	24H	Misfiring counter at 1000 revolution of the first cylinder
			P0302	81H	24H	Misfiring counter at 1000 revolution of the second cylinder
			P0303	82H	24H	Misfiring counter at 1000 revolution of the third cylinder
			P0304	83H	24H	Misfiring counter at 1000 revolution of the fourth cylinder
			P0305	84H	24H	Misfiring counter at 1000 revolution of the fifth cylinder
			P0306	85H	24H	Misfiring counter at 1000 revolution of the sixth cylinder
			P0307	86H	24H	Misfiring counter at 1000 revolution of the seventh cylinder
			P0308	87H	24H	Misfiring counter at 1000 revolution of the eighth cylinder
			P0300	88H	24H	Misfiring counter at 1000 revolution of the multiple cylinders
			P0301	89H	24H	Misfiring counter at 200 revolution of the first cylinder
			P0302	8AH	24H	Misfiring counter at 200 revolution of the second cylinder
			P0303	8BH	24H	Misfiring counter at 200 revolution of the third cylinder
			P0304	8CH	24H	Misfiring counter at 200 revolution of the fourth cylinder
			P0305	8DH	24H	Misfiring counter at 200 revolution of the fifth cylinder
			P0306	8EH	24H	Misfiring counter at 200 revolution of the sixth cylinder
			P0307	8FH	24H	Misfiring counter at 200 revolution of the seventh cylinder
			P0308	90H	24H	Misfiring counter at 200 revolution of the eighth cylinder
			P0300	91H	24H	Misfiring counter at 1000 revolution of the single cylinder
			P0300	92H	24H	Misfiring counter at 200 revolution of the single cylinder
			P0300	93H	24H	Misfiring counter at 200 revolution of the multiple cylinders

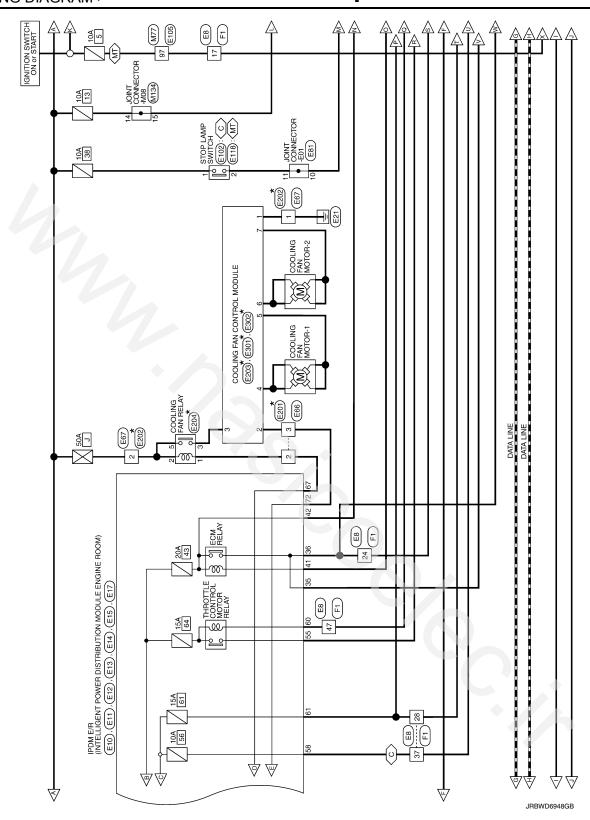
Item	OBD- MID	Self-diagnostic test item	DTC	Test value and Test limit (GST display)		Description
				MISFIRE	A2H	No. 1 cylinder misfire
P0301	0CH	24H	Misfire counts for last/current driving cycles			
АЗН	No. 2 cylinder misfire	P0302	ОВН		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0302	0CH		24H	Misfire counts for last/current driving cycles
A4H	No. 3 cylinder misfire	P0303	ОВН		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0303	0CH		24H	Misfire counts for last/current driving cycles
A5H	No. 4 cylinder misfire	P0304	0ВН		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0304	0CH		24H	Misfire counts for last/current driving cycles
А6Н	No. 5 cylinder misfire	P0305	ОВН		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0305	0CH		24H	Misfire counts for last/current driving cycles
А7Н	No. 6 cylinder misfire	P0306	овн		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0306	0CH		24H	Misfire counts for last/current driving cycles
А8Н	No. 7 cylinder misfire	P0307	ОВН		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0307	0CH		24H	Misfire counts for last/current driving cycles
А9Н	No. 8 cylinder misfire	P0308	ОВН		24H	EWMA (Exponential Weighted Moving Average) misfire counts for last 10 driving cycles
		P0308	0CH		24H	Misfire counts for last/current driving cycles

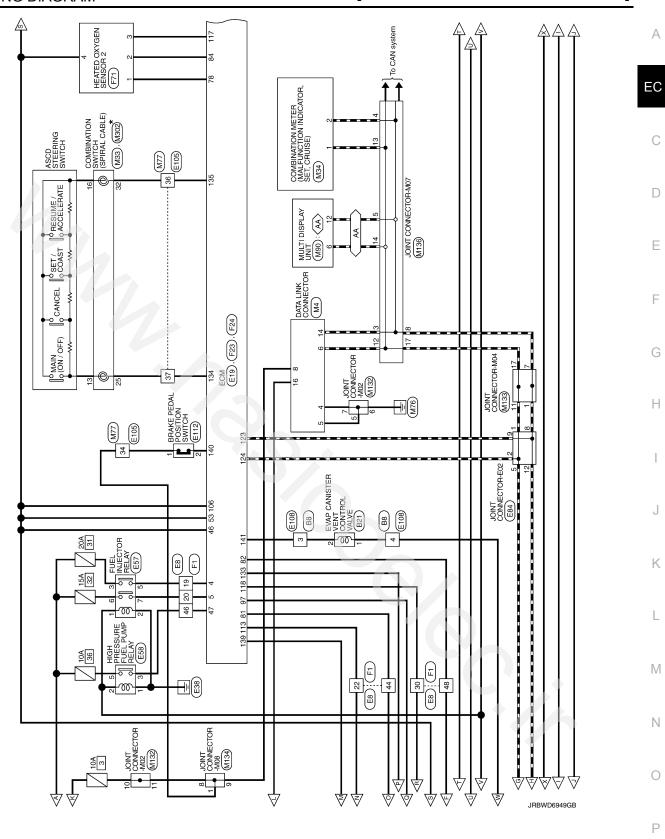
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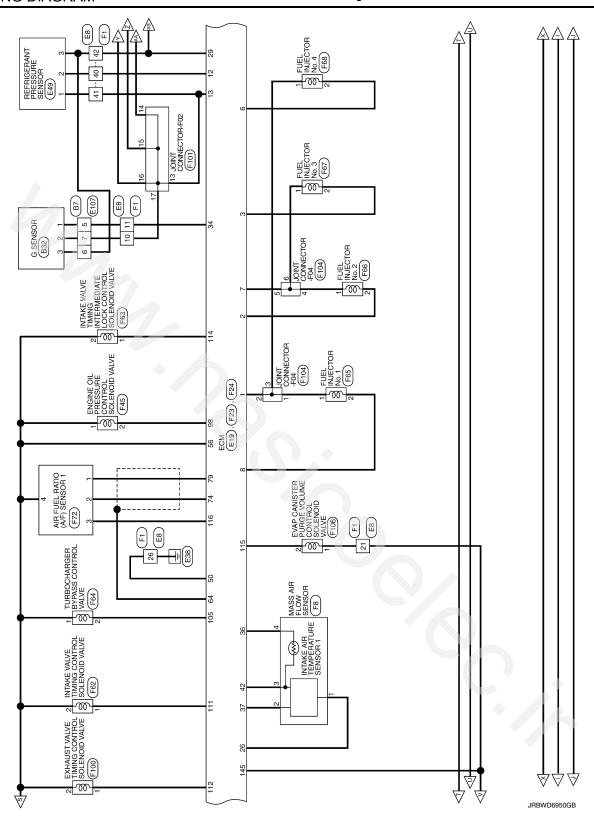
# WIRING DIAGRAM

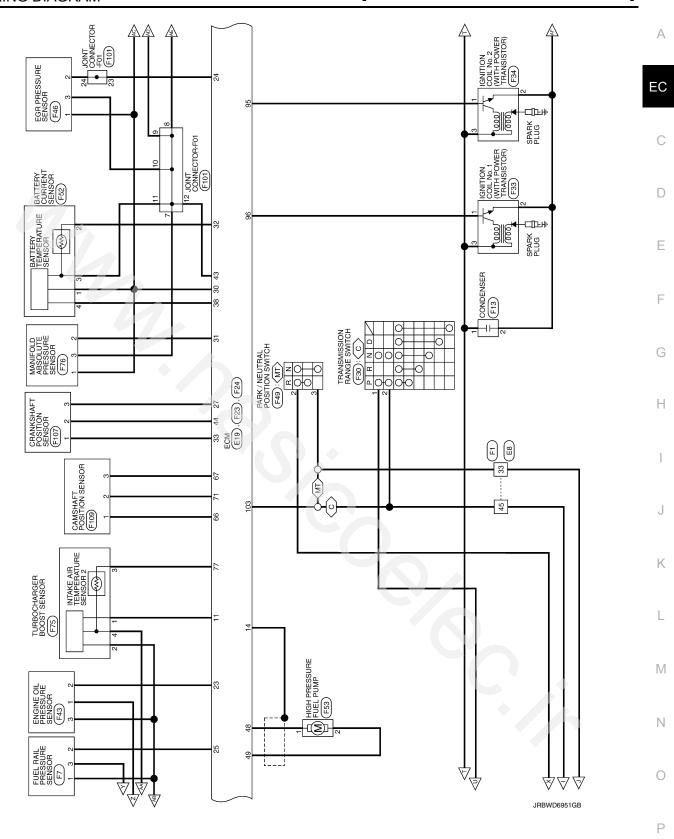
# **ENGINE CONTROL SYSTEM**

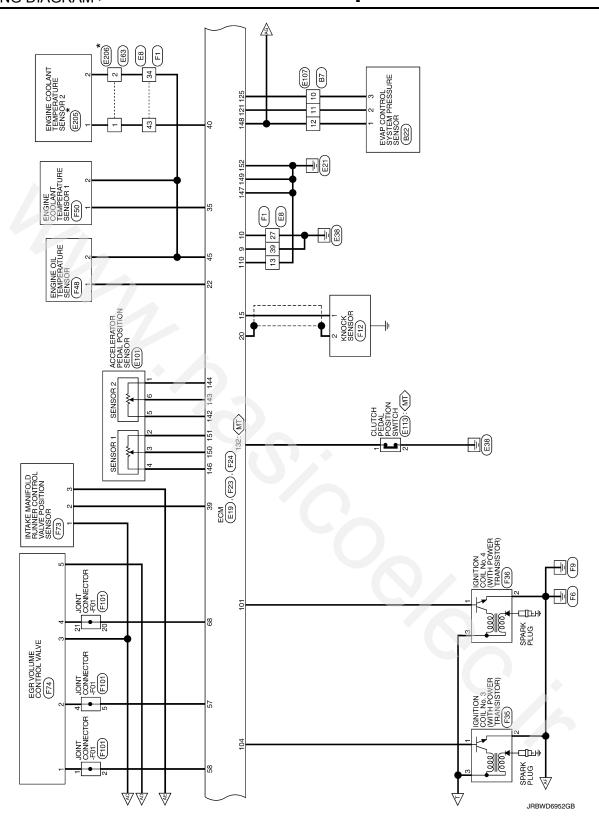












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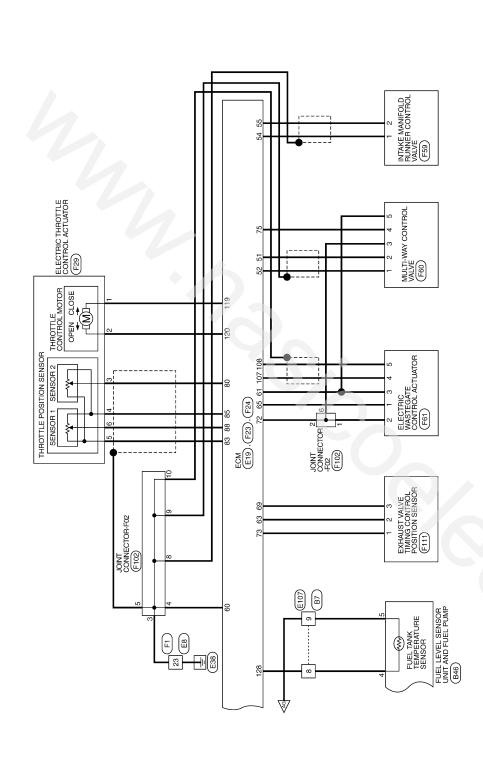
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Connector No. 1846 Connector Name Public Strison UNIT AND FLEE PLANE Connector Type (E05107-48)	p = 0 %	(A)	Terminal Color Of Signal Name [Specification] No. Wire 7	2   1	
Connector No. 822 Connector Name Pow Counto. SISTEM PRESSINE SENSON Connector Name E034 COVENS  THE.	Terminal   Color Of   Signal Name   Specification   No.   Wire     Y	Terminal Color Of No. Signal Name (Specification)	1 G SIGNAL 2 R GND 3 LG POWERSUPPLY		
COR NISMO RS MODELS)  Connector No. 88  Connector Name WIRE TO WIRE  Connector Type NSSAFW-CS  H.S. 1	Terminal   Color Of   Signal Name   Specification   No. Write	Tremnal Color Of	No.         Wire         Signal Name: Specification]           1         R         .           2         L         .		
Connector No.   197   Connector No.   187   Connector No.   188   Connector No.   189   Connector No.   189	CO ×	112 P V	21 W		

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### **ENGINE CONTROL SYSTEM**

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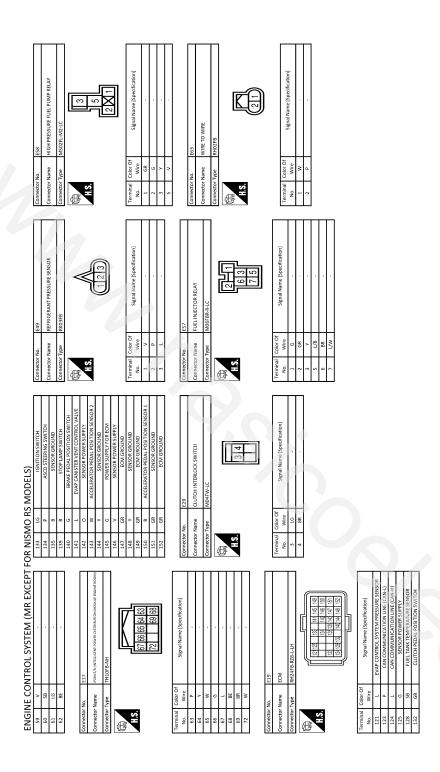
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Connector No. E14  Connector Name Prov. preventuans rown communic vicious monu.  Connector Type NS13FBA-C5  190	Terminal Color Of Signal Name   Specification	
Connector No. [122 Connector Name most on instrucent rower instruction connector Type NSOOFER-CS.  H.S.    Connector Type   NSOOFER-CS.	Signal Name   Sagnal Name   Specification   Cornector No.   1.00   Cornector No.   Cornector	
(MR EXCEPT FOR NISMO RS MODELS)   Connector No.   E10   E10	Terminal Color Of Signal Name (Specification)  3 R A 4 B P 5 LG 7 Y Y 8 W/R Connector Name (Nove transmission towns parametrization)  Connector Name (Nove transmission towns parametrization)  Connector Name (Nove transmission towns parametrization)  Terminal Color Of Name (Specification)  134 R S 135 R P 136 R P 137 R P 138 R P 139 R P 130	
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Revision: November 2015 EC-729 2016 JUKE



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### **ENGINE CONTROL SYSTEM**

Connector No. E105  Connector Name WIRE TO WIRE  Connector Type These Th	Terminal   Color Of   Signal Name   Specification     1	7.0 8.8
11   P	Terminal   Code Of   Signal Name   Specification	Terminal   Cobe Of   Signal Name   Specification
FOR NISMO RS MODELS)  Connector No. 1831  Connector Name A1271.  A1271  (12[11]10[9] 8 6 4 3 2 1	Terminal Color Of Signal Name Specification]  1 8R	Terminal Cotor Of Signal Name (Specification)  1
ENGINE CONTROL SYSTEM (MR EXCEPT FOR NISMO RS MODELS)  Connector No. 1666  Connector Name Wing TO Wing  Connector Name (1831  Connec	Terminal Color Of   Signal Name (Specification)   No.   Wive   Signal Name (Specification)   2	

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Connector No. 12331 Connector Name WIRETO WIRE Connector Type RH03M8  H.S.	Terminal   Color Of   Signal Name [Specification   2   2   2   2   2   2   2   2   2	Terminal Color Of   Nurse   Signal Name   Specification
Connector No. E113 Connector Name CLUTCH PEDAL POSITION SWITCH Connector Type MO258B-LC  The Con	Terminal Color Of Signa Name (Specification) No. Wire 1 GR 2 B Connector No. E118 Connector Name STOP LAMP SWITCH Connector Name M0276 LC  Connector Name STOP LAMP SWITCH Connector Name STOP LAMP SWITCH Connector Name STOP LAMP SWITCH	Termeal Color Of   Termeal Cycle Cycle Cycle Color Of   Termeal Cycle Cycl
FOR NISMO RS MODELS)  Gennector No. E108  Connector Name WIRE TO WIRE  Connector Type INSMAMW.CS  MS. AMM.CS  T. E.	Terminal   Color Of   Signal Name   Specification   1   P	Terminal Color Of Signal Name (Specification) No. Wire 1 8E - 6 7 6
ENGINE CONTROL SYSTEM (MR EXCEPT FOR NISMO RS MODELS)	Connector No. E107  Connector Type TH2AMM-NH  Connector Type TH2AMM-NH  (12) 4 5 6 7 8 9 10 1112  13 14 15 16 17 18 19 20 21 22 23 24  No. Write Signal Name [Specification]  1 R R  2 V  5 G	6 6 1 . Electrot for NISMO RS]  7 7 8

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Connector No.   F1   Connector No.   Connector No.   Connector Name   Wife TO WIFE   Connector Type   SAA36F9 RS10-S12	2   1	15   8   8   8   1   1   1   1   1   1   1	
Connector Name COOLING FAN CONTROL MODULE Connector Type 6188-0259  Terminal Color Of Signal Name (Specification)  No. Wire Signal Name (Specification)		No. Wire Signs share psentication)	
	1   W   MOV_TWI   2   P   GMD   GM		
CONTROL SYSTI	1   8   W   ROW	Terminal   Signal Name   Specification	
			JRBWD6959GB

Revision: November 2015 EC-733 2016 JUKE

Conna   Conn	Γ	Connector No.	1.13	54	0	EGR PRESSURE SENSOR
Fee NISMO RS   - (Except for NISMO RS   - (With Intelligent Key   - (With Intelligent Key   - (Fee NISMO RS   - (Except for NISMO RS   - (Except for NISMO RS   - (Fee NISMO RS   - (Fee NISMO RS		Γ		25	æ	FUEL RAIL PRESSURE SENSOR
- [Recept for MISMO RS] - [With nealigent key] - [With nealigent key] - [For MISMO RS] - [Recept for MISMO RS] - [Recept for MISMO RS] - [For MISMO RS]	Connector Name MASS AIR FLOW SENSOR	Connector Name	CONDENSER	56	œ	SENSOR POWER SUPPLY
- [Without intelligent Key] - [With Intelligent Key] - [Fer NISAO RS] - [Fer NISAO RS] - [Fer NISAO RS] - [Fer NISAO RS]	Connector Type RH04FB	Connector Type	M02FW-LC	27	ø	SENSOR POWER SUPPLY
- [With Intelligent Key] - [For MISAUG RS] - [Except for MISAUG RS] - [Except for MISAUG RS] - [For MISAUG RS] - [For MISAUG RS]				59	_	SENSOR POWER SUPPLY
[SA ONISMO RS] - [Revept for MISMO RS] - [Revept for M		F		30	٨	SENSOR POWER SUPPLY
- (Fer NISMO RS) - (Ferent on NISMO RS)	K	Ę	1	31	Μ	MANIFOLD ABSOLUTE PRESSURE SENSOR
- [For NISMO RS] - [Except for NISMO RS] - [Except for NISMO RS] - [For NISMO RS]		2		32	BG	BATTERY TEMPERATURE SENSOR
- [For NISMO RS] - [Except for NISMO RS] - [Except for NISMO RS] - [For NISMO RS]	((1 2 3 4))			33	ж	CRANKSHAFT POSITION SENSOR
- [Except for NISMO RS] - [Except for NISMO RS] - [For NISMO RS]			7	34	9	G SENSOR
- [Except for NISMO RS] - [For NISMO RS]			]	35	٦	ENGINE COOLANT TEMPERATURE SENSOR 1
- [For NISMO RS]				36	٨	INTAKE AIR TEMPERATURE SENSOR 1
	erminal Color Of Signal Name (Specification)	Terminal Color Of	[acitorificac)] concly [coni)	37	9	MASS AIR FLOW SENSOR
- [For NISMO RS]	No. Wire Signarian Specification	No. Wire	ognering labering on a	38	9	BATTERY CURRENT SENSOR
W - [Except for NISMO RS]	1 R	1. R		39	BR	INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR
BR - [Except for NISMO RS]		2 B		40	М	ENGINE COOLANT TEMPERATURE SENSOR 2
G - (For NISMO RS)	3 W			42	М	SENSOR GROUND
BR .	4 Y			43	BR	SENSOR GROUND
		Connector No.	F23	44	3	SENSOR GROUND
			******	45	۵	SENSOR GROUND
GR - [With Intelligent Key] Con	Connector No. F12	Connector Name	ECIM	46	œ	MULTI-WAY CONTROL VALVE POWER SUPPLY
· - [Without Intelligent Key]	CONTRACTOR AND	Connector Type	MAB35FB-MEB20-LH	47	œ	HIGH PRESSURE FUEL PUMP DRIVER POWER SUPPLY
				48	BR	HIGH PRESSURE FUEL PUMP (HI)
Con	Connector Type BS02FGY_B-AHY			49	>	HIGH PRESSURE FUEL PUMP (LO)
14		<u>-</u>	1 6 21	20	8	ECM GROUND
BOSINES SELIES BALL BRESSLIDE SERVICE		ė į	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	51	٨	MULTI-WAY CONTROL VALVE MOTOR (-)
FOEL MALL PRESSONE SENSON	4		4 9 54 54 54 54 54 54 54 54 54 54 54 54 54	52	9	MULTI-WAY CONTROL VALVE MOTOR (+)
RH03FB			5 10 15 20 25 20 25 20 25	53	۳	INTAKE MANIFOLD RUNNER CONTROL VALVE POWER SUPPLY
	<u>                                      </u>			54	œ	INTAKE MANIFOLD RUNNER CONTROL VALVE (OPEN)
				25	≯	INTAKE MANIFOLD RUNNER CONTROL VALVE (CLOSE)
<u>K</u> (		Terminal Color Of No. Wire	Signal Name [Specification]			
(3   5   1   1   1   1   1   1   1   1   1	rerminal Color Of	t	FUEL INJECTOR NO.1, 4 (HI)	Connector No.	r No.	F24
	No. Wire Signal Name (Specification)	2 SB	FUEL INJECTOR NO.2 (LO)	1		5 10 10 10 10 10 10 10 10 10 10 10 10 10
	1 w	3 M	FUEL INJECTOR NO.3 (LO)	כמווופרוי	all Pa	CCIM
	2 8	4 6	FUEL INJECTOR DRIVER POWER SUPPLY 1	Connector Type	r Type	MABSSFB-MEB10-LH
Color Of Simpal Name (Specification)		5 BR	FUEL INJECTOR DRIVER POWER SUPPLY 2	4		
Wire		6 R	FUEL INJECTOR NO.4 (LO)	B		
VPWR		7 16	FUEL INJECTOR NO.2, 3 (HI)	-		
GR FPS		8 BR	FUEL INJECTOR NO.1 (LO)	QII.		20 Mary 120
SS GND		9 GR	ECM GROUND			
		10 B	ECM GROUND			2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
		+	TURBOCHARGER BOOST SENSOR			
		ł	BEEDIGEDANT DRESSIBE SENSOR			
		7 2	SENSOR GROHND	Terminal	Color Of	L
		7 7	GNOOND NOCKED	ol ol		Signal Name [Specification]
		+	SUIELD	NO.		Control of the Contro
		+	NINGCH SENSON	200	: ا	ESK VOLDINE CONTROL VALVE FOWER SOFFLY
		20 8	SENSOR GROUND	/5	،	FOR YOUTHER CONTROL VALVE MOTOR (+)
		+	ENGINE OIL IEMPERALURE SENSOR	85	× ,	EGK VOLUME CONTROL VALVE MOTOR (-)
		23 G	ENGINE OIL PRESSURE SENSOR	09		ECM GROUND

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Connector No. F35 Connector Name (remon/col tex.) (with Forest transscrion)	Connector Type E03FGV-RS	F			)		Terminal Color Of	No. Wire Signal Name [Specification]	1 P	2 B .	3 R		200	Τ	Connector Name (GNITION COLL No. 4 (WITH POWER TRANSISTOR)	Connector Type E03FGY-RS	ģ	E						Terminal Color Of	No. Wire Signarivame (Specification)	1 \$8 .	2 8	3 R											
Connector No. F33 Connector Name (ewitox couts a jiwith rowige travision)	Connector Type E03FGV-RS			(612)			Terminal Color Of	No. Wire Signal Name [Specification]	1 R	2 в	3 R				Connector Name (GMTION COLL No. 2 (WITH POWER TRANSISTOR)	Connector Type E03FGY-RS	Ó	医						Terminal Color Of	No. Wire Sgrial Name [Specification]	1 16	2 8	3 2											
MI (MIK EXCEP) FOR NISMO RS MIODELS)  Generator No. R29 GROUND  COMPETOR NISMO RECEIVED  COMPETO	Connector Type RH06F8		#	((1 2 3 4 5 6))			Terminal Color Of	No. Wire Signal Name [Specification]			-	2 G - [For NISMO RS]	, , ,	5 B - [Except for NISMO RS]		6 G - (Except for NISMO RS)	6 GR - [For NISMO RS]			Connector No. F30	Connector Name TRANSMISSION RANGE SWITCH	Connector Tons	1			((8 4 3    /	0 6 5 1	41		Terminal Color Of	No. Wire Signal Name [Specification]	1 GR -	2 BR		+	+	- P	8 88	
NGINE CONTROL SYSTEM (MR EXCEP)   1-4	WASTEGATE CONTROL VALVE POSITION SENSOR SENSOR POWER SUPPLY	CAMSHAFT POSITION SENSOR EGR VOLUME CONTROL VALVE POSITION SENSOR	EXHAUST VALVE TIMING CONTROL POSITION SENSOR	SENSOR GROUND	SENSOR GROUND	SENSOR POWER SUPPLY	MULTI-WAY CONTROL VALVE POSITION SENSOR	INTAKE AIR TEMPERATURE SENSOR 2	SENSOR GROUND	A/F SENSOR 1	THROTTLE POSITION SENSOR 2	ECM RELAY (SELF SHUT-OFF)	FUEL PUMP RELAY	HEATED OXYGEN SENSOR 2	SENSOR GROUND	THROTTLE POSITION SENSOR 1	IGNITION SIGNAL NO.2	IGNITION SIGNAL NO.1	THROTTLE CONTROL MOTOR RELAY	ENGINE OIL PRESSURE CONTROL SOLENOID VALVE	IGNITION SIGNAL NO.4	TWINDIGHOUSING	TURBOCHARGER BYPASS CONTROL VALVE	ELECTRIC WASTEGATE CONTROL ACTUATOR POWER SUPPLY	ELECTRIC WASTEGATE CONTROL ACTUATOR MOTOR (+)	ELECTRIC WASTEGATE CONTROL ACTUATOR MOTOR (-)	ECM GROUND	INTAKE VALVE TIMING CONTROL SOLENGID VALVE		INTAKE VALVE TIMING INTERNEDIATE LOCK CONTROL SOLENOID VALVE	EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE		HEATED OXYGEN SENSOR 2 HEATER	I HROTILE CONTROL MOTOR POWER SUPPLY	THROTTLE CONTROL MOTOR (OPEN)	THROTTLE CONTROL MOTOR (CLOSE)			
61 W 63 L 64 SHIELD	65 R 66 G	67 BR 68 GR	Н	71 L	+	74 GK	+	۷ //	Н	$\dashv$	+	81 BR	+	84 W B	H	88 G	95 16	$\dashv$		98 R	+	104 BR	F	H	107 L/Y	108 P/L	4	111 W	+	114 L	115 L	Н	+	+	+	120 BR			

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ENGINE CONTROL SYSTEM (MR EXCEPT FOR NISMO RS MODELS)	FOR NISMO RS MODELS)	Connector No.	Connector Ma
Connector Name ENGINE OIL PRESSURE SENSOR	9	Je .	e e
Connector Type RH03FB	Connector Type H503FB-2V	Connector Type FEA03FG-LC	Connector Type SAZ04FGY
H.S.	#8 #8	HS.	H.S.
Terminal   Cobr Of   Signal Name [Specification]   No.   Wire   1   Signal Name [Specification]   2   G   Corp.     Corp.     Corp.	Terminal   Color Of   Signal Name [Specification]   No.   Wire   VCC   1   W   VCC   2   G   VOUT   3   Y   GND	Terminal   Color Of   Signal Name [Specification]   No.   Wire   1   G   2   58   .	Terminal Color Of   Signal Name [Specification]   Write   Signal Name [Specification]   1
Connector No. F15 Connector Name Issue control counce of the Section Science of Section Sec	Connector No. F48 Connector Name EVIGINE DIL TEMPERATURE SENSOR Connector Type E021FG7+85	Connector No. F50 Connector Name Endine COOLANT TEMPERATURE SENSOR 1 Connector Type [E02FGF18]	Connector No. F53  Connector Name HIGH PRESSURE FUEL PUMP  Connector Type HSDZFIGY-VR
SH SH	HS.	H3 H3	H.S.
Terminal   Coler Of   Signal Name   Specification   No.   Wire   VCC   1   R   VCC   2   R   SIGNAL	Terminal Color Of   Signal Name [Specification]   No.   Wire   1   Y	Terminal         Color Of Wire         Signal Name [specification]           No.         Wire         TW           1         L         TW           2         P         GND-TW	Terminal   Color Of   Signal Name   Specification   Name   Specification

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Connector No. FESS Connector Name FUEL INJECTOR No. 1 Connector Type HS0215GY	Terminal   Color Of   Signal Name   Specification     No.   Wife   Signal Name   Specification     1	Terminal   Color Of   Signal Name (Specification)
Connector No. 163 Connector Name Instact work most introduction control bosision was Connector Type (102788-NS-GY)	Terminal Color Of Signal Name (Specification)  2 R CONTRICTOR  Connector No. F64  Connect	Terminal Cabor Or
FOR NISMO RS MODELS)  Connector No.   Fist   Connector Nume   Established Connector Type   SSZID6FGV-5  (12 3)	Terminal Color Of   Signal Name [Specification]   No.   Wive   Signal Name [Specification]	Terminal   Color Of   Signal Name (Specification)   No.   Wire     W
ENGINE CONTROL SYSTEM (MR EXCEPT FOR NISMO RS MODELS)  Connector No. 1759  Connector No. 1761  Connector No. 1762  Connector N	Terminal   Color Of   Signal Name [specification]   No.   Wire   Signal Name [specification]   1	Terminal Color Of   Signal Name (Specification)

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Connector No.   Connector No.	Connector No. 175 Connector Name TurkBOCHARGER BOOST SENSOR Connector Type RHOUSE	Terminal Co No. 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3   24	12 3
Connector No. 4   Connector	Connector No. 173 Connector Name Instance Montage Connector Type Into 188	Terminal Color Of   Signal Na   No. Wife   Signal Na   1   V   1   2   ER     2   ER     3   ER     3   ER	Connector No. F74 Connector Name EEN VOLUME CONTROL VA. Connector Type HSUSF8  H.S.	Terminal Color Of   Signal N
	MR EXCEPT FOR NISMO RS MODELS)  Connector No.   171 Connector Name   HEATED ONYGEN SET Connector Type   RNIGHEDGY-P  A.S.  A.S.  (44)	Terminal Color Of No.   Wire     1	Connector No. Connector Name Connector Type	Terminal Color Of   No. Wire   1 W W   2 B   3 G   4 R   R   R   R   R   R   R   R   R

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Connector No. F107	JOINT CONNECTOR-F04 Connector Name CRANKSHAFT POSITION SENSOR	JFB Connector Type RH03FB		<u>k</u>		(6 5 4 3 2 1)				le L	No. Wire					. Connector No. F109	Connector Name CAMSHAFT POSITION SENSOR		Connector Type RH03FB	EVAP CAN STER PLAKE VOLUME COMPOL SOLENOID VALVE	E02FL-RS-LGY		[12]	) •		Terminal Color Of Signal Name [Specification]	t		2	- [Except for NISMO RS] 3 BR	- [For NISMO RS]	- [Except for NISMO RS]									
NISMO RS MODELS)	R · [For NISMO RS] Connector Name	В	14 SB - [Except for NISMO RS]	R - [For NISMO BS]	38	В	Н	Н	GR	BG - [For NISMO RS] Terminal C	21 GR - [Except for NISMO RS] No. Wire	G - [Except for NISMO RS]	W - (For NISMO RS) 3	24 G - [Except for NISMO RS] 4 LG	24 P - (For NISMO RS) 5 LG	6   R	I		Connector Name JOINT CONNECTOR-F02 F106	Connector Type RH10FB Connector Name EVAP CAI	Connector Type		<b>多</b>	5	9 8 6		erminal Color Of		1 B	+		SHIELD			+	10 SHIELD -					
ENGINE CONTROL SYSTEM (MR EXCEPT FOR NISMO RS MODELS)  COMPETED 120 B	EXHAUST VALVE TIMING CONTROL SOLEWOID VALVE	E02FG-RS-LGY			1	((1 2)) 				Signal Name [Specification]					F101	JOINT CONNECTOR-F01		SAA24FB-J Con	Cor		7 6 5 4 3 2 1	24 23 22 21 20 19 18 17 16 15 14 13			Of Signal Name [Specification]		NISMO RSI		- [Except for NISMO RS]		- [For NISMO RS]		]-				- [For NISMO RS]	- [Except for NISMO RS]	- [For NISMO RS]	- [Except for NISMO RS]	- IFOLNISMO KN
ENGINE C	Connector Name	Connector Type	Œ	arts.						ē	No.	7 ~			Connector No.	Connector Name		Connector Type	Œ.	AHA	ES.				ler	No. Wire	1 -	2 B	2 R	+	4 6	+	. S	6 B	+	+	1	4	10 B	+	11

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GR I-KEY WARN BUZZER	BR ACC RELAY CONT	SB STARTER RELAY CONT	P IGN RELAY (IPDM E/R) CONT	R IGN RELAY (F/B) CONT	P PASS DOOR REQ SW	Y CLUTCH INTERLOCK SW [FOR M/T MODELS]	Y IGN SPLY NO2. [EXCEPT FOR M/T MODELS]	L NEUTRAL SW [FOR M/T MODELS]	L P/N POSITION (EXCEPT FOR M/T MODELS)	S FR DEFROSI SW		Y BLWR RELAY CONT			o. M77	ame WIRETO WIRE	THROEM-CS16-TMA	1			7) 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			Color Of Signal Name [Specification]			a a		. 91	^	SHIELD .	. 91			,	В.		. · · · · · · · · · · · · · · · · · · ·		. 91	. 9	, ,	
93	96	6	86	66	100	101	101	102	102	103	105	106			Connector No.	Connector Name	Connector Type		偃	S				Terminal (	1	4	10	11	12	1	1	34	32	36	37	25	23	54	55	58	59	62	63
MANUAL MODE SHIFT DOWN SIGNAL	WASHER LEVEL SWITCH SIGNAL	SECURITY SIGNAL	AMBIENT SENSOR SIGNAL	AMBIENT SENSOR GROUND	GROUND	GROUND	GROUND	FUEL LEVEL SENSOR GROUND	VDCGROUND	PADDLE SHIFTER DOWN SWITCH SIGNAL	IGNITIONSIGNAL	PASSENGER SEAT BELT WARNING SIGNAL	A/C AUTO AMP, CONNECTION RECOGNITION SIGNAL	MANUAL MODE SIGNAL	NON-MANUAL MODE SIGNAL	ALTERNATOR SIGNAL		M70	BCM (BODY CONTROL MODULE)		I H4UFW-NH			91 92 93 93 96 97 98 99 110 111 113 100 100 116 100			Signal Name [Specification]	A/CIND OUTPUT	DR DOOR REQ SW	PUSHSW	DRIVER DOOR ANT+	DRIVER DOOR ANT-	PASS DOOR ANT+	PASS DOOR ANT-	REAR BMPR ANT+	REAR BMPR ANT-	ROOM ANT 1+	ROOM ANT 1-	ROOM ANT2 +	ROOM ANT2 -	PUSH-BTN IGN SW ILL PWR	ACC / ON IND	PUSH-BTN IGN SWIII GND
W	б	R	GR	æ	В	8	8	۱,	8 ;	> 2	es es	>	Ь	<b>&gt;</b>	9	d		tor No.	Connector Name	200	connector type		73				al Color Of Wire	SB	97	ΓG	Ь	>	BR .	9	×	8	BR	GR	۸	16	W	^	ď
16	17	18	19	20	21	22	23	24	52	07	2 00	29	31	36	37	38		Connector No.	Connec			厚	₹				Terminal No.	72	75	76	78	79	8	8	82	83	8	82	98	87	90	91	42
No. M33	Connector Name COMBINATION SWITCH (SPIRAL CARLE)		TK08FGY-1V				24 25 26	31 39 33 34	F0 00 20 10		Color Of	Wire Signal Name [Specification]	. 9		GR .	~ (	n >	91		ſ	No. Mame COMBINATION METER	,	1		2019181716151413 1110 9 8 7 6 5 4 2 1	38 37 38 27 38 27 38 22 27			_	Wire	L CAN-H	P CAN-L		PAD	FUEL	R AIR BAG SIGNAL	┪	W SEAT BELT BUCKLE SWITCH SIGNAL (DRIVER SIDE)	SB PARKING BRAKE SWITCH SIGNAL	G BRAKE FLUID LEVEL SWITCH SIGNAL	4	R MANUAL MODE SHIFT UP SIGNAL	ACC POWER SUPPLY
tor	Š		Connector Type	6	F	Ę	2				Torminal		1_1	┪	┪	十	T	T	1	- 13	5 5	2	I٦	•	Ø				=		_	┪	1	+	7	1			10	11	13	14	15
Connector No.	Journa	3	ပိ	LÆ	ك	_	•				į	Š	24	25	56	31	33 25	3 %			Connector Name	Connector Type		F	₹				Terminal	No.	1	2	4	5	9		00	6		Ш	ш		

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### **ENGINE CONTROL SYSTEM**

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Connector No. M136 Connector Name IONIT CONNECTOR-M07 Connector Type INITIAL B 7 6 5 4 3 2 1  [20 19 18 17 16 15 14 13 12 11 10]	Terminal Color Of Signal Name [Specification]  1
13   1	Comman   Color Of
OR NISMO RS MODELS)  Connector Nume (NITSOFL-OC COnnector Nume (NITSOFL-OC CONNECTO NUMBER (NITSOFL-OC CONNECTO NU	Ferminal   Color Of   Signal Name   Specification   No.   Wire   Signal Name   Specification   Specification
ENGINE CONTROL SYSTEM (MR EXCEPT FOR NISMO RS MODELS)  64 67 68 68 68 69 69 69 69 69 69 69 69 69 69 69 69 69	10   10   10   10   10   10   10   10

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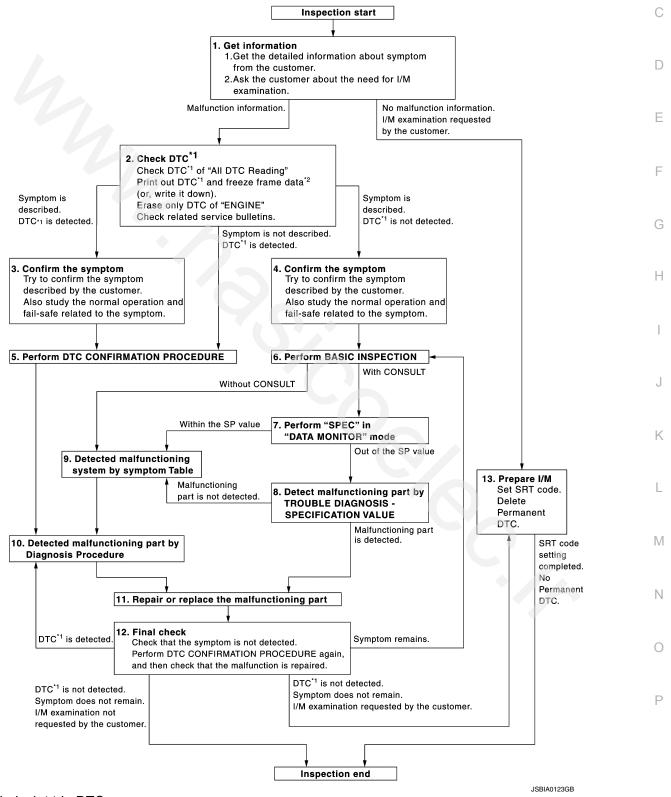
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# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

**OVERALL SEQUENCE** 



<sup>\*1:</sup> Include 1st trip DTC.

<sup>\*2:</sup> Include 1st trip freeze frame data.

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

#### **DETAILED FLOW**

# 1.GET INFORMATION FOR SYMPTOM

- 1. Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the "Diagnostic Work Sheet". (Refer to <a href="EC-746">EC-746</a>, "Diagnostic Work Sheet".)
- 2. Ask if the customer requests I/M examination.

Malfunction information, obtained>>GO TO 2.

No malfunction information, but a request for I/M examination>>GO TO 13.

### 2.CHECK DTC

- Check DTC.
- Perform the following procedure if DTC is displayed.
- Record DTC and freeze frame data. (Print them out using CONSULT or GST.)
- Erase DTC.
  - (E) With CONSULT: "How to Erase DTC and 1st Trip DTC" in EC-667, "CONSULT Function".
- Study the relationship between the cause detected by DTC and the symptom described by the customer. (Symptom Table is useful. Refer to <u>EC-1242, "Symptom Table"</u>.)
- 3. Check related service bulletins for information.

#### Is any symptom described and is any DTC detected?

Symptom is described, DTC is detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

### 3.confirm the symptom

Try to confirm the symptom described by the customer (except MIL ON).

Also study the normal operation and fail safe related to the symptom. Refer to <u>EC-1249</u>, "<u>Description</u>" and <u>EC-699</u>, "Fail Safe".

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

# 4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail safe related to the symptom. Refer to <u>EC-1249, "Description"</u> and <u>EC-699, "Fail Safe"</u>.

Diagnosis Work Sheet is useful to verify the incident.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

# 5. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the displayed DTC, and then make sure that DTC is detected again.

If two or more DTCs are detected, refer to <u>EC-704, "DTC Inspection Priority Chart"</u> and determine trouble diagnosis order.

#### NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIR-MATION PROCEDURE.

#### Is DTC detected?

YES >> GO TO 10.

NO >> Check according to EC-706, "DTC Index".

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

# 6.PERFORM BASIC INSPECTION

Perform EC-765, "Work Procedure".

Do you have CONSULT?

YES >> GO TO 7.

NO >> GO TO 9.

7. PERFORM SPEC IN DATA MONITOR MODE

#### (P)With CONSULT

Make sure that "MASS AIR FLOW SENSOR (Hz)", "B/FUEL SCHDL" and "A/F ALPHA-B1" are within the SP value using CONSULT in "SPEC" of "DATA MONITOR" mode. Refer to <a href="EC-785">EC-785</a>, "Component Function Check".

Is the measurement value within the SP value?

YES >> GO TO 9.

NO >> GO TO 8.

### 8.DETECT MALFUNCTIONING PART BY TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Detect malfunctioning part according to <a>EC-786</a>, "Diagnosis Procedure".

Is malfunctioning part detected?

YES >> GO TO 11.

NO >> GO TO 9.

### 9.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE

Detect malfunctioning system according to <u>EC-1242</u>, "Symptom Table" based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

>> GO TO 10.

# 10.DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

Inspect according to Diagnosis Procedure of the system.

#### NOTE:

The Diagnosis Procedure in EC section described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnosis Procedure. For details, refer to Circuit Inspection in GI-48, "Circuit Inspection".

Is malfunctioning part detected?

YES >> GO TO 11.

NO >> Monitor input data from related sensors or check the voltage of related ECM terminals using CON-SULT. Refer to <u>EC-679</u>, "Reference Value".

# 11. REPAIR OR REPLACE THE MALFUNCTIONING PART

- 1. Repair or replace the malfunctioning part.
- Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.
- 3. Check DTC. If DTC is displayed, erase it. Refer to the following.
- (a) With CONSULT: "How to Erase DTC and 1st Trip DTC" in EC-667, "CONSULT Function"

>> GO TO 12.

# 12.FINAL CHECK

When DTC was detected in step 2, perform DTC CONFIRMATION PROCEDURE or Component Function Check again, and then make sure that the malfunction have been repaired securely.

When symptom was described from the customer, refer to confirmed symptom in step 3 or 4, and make sure that the symptom is not detected.

#### Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 10.

YES-2 >> Symptom remains: GO TO 6.

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#### < BASIC INSPECTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

NO-1 >> No request for I/M examination from the customer: Before returning the vehicle to the customer, always erase unnecessary DTC in ECM and TCM (

With CONSULT: Refer to "How to Erase DTC and 1st Trip DTC" in EC-667, "CONSULT Function", If the completion of SRT is needed, drive vehicle under the specific driving pattern. Refer to EC-774, "SRT Set Driving Pattern".

NO-2 >> I/M examination, requested from the customer: GO TO 13.

# 13. PREPARE FOR I/M EXAMINATION

- Set SRT codes. Refer to <u>EC-773</u>, "<u>Description</u>".
- Erase permanent DTCs. Refer to <u>EC-779, "Description"</u>.

#### >> INSPECTION END

### **Diagnostic Work Sheet**

INFOID:0000000012198253

#### DESCRIPTION

There are many operating conditions that lead to the malfunction of engine components. A good grasp of such conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about a incident. It is important to fully understand the symptoms or conditions for a customer complaint.

Utilize a diagnostic worksheet like the one on the next page in order to organize all the information for troubleshooting.

Some conditions may cause the MIL to come on steady or blink and DTC to be detected. Examples:

- · Vehicle ran out of fuel, which caused the engine to misfire.
- Fuel filler cap was left off or incorrectly screwed on, allowing fuel to evaporate into the atmosphere.

#### **KEY POINTS**

WHAT ..... Vehicle & engine model
WHEN ..... Date, Frequencies
WHERE..... Road conditions
HOW ..... Operating conditions,
Weather conditions,
Symptoms

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< BASIC INSPECTION >

### [MR EXCEPT FOR NISMO RS MODELS]

### **WORKSHEET SAMPLE**

**Revision: November 2015** 

Customer name MR/MS		Model & Year	VIN		
Engine #		Trans.	Mileage		
Incident Date		Manuf. Date	In Service Date		
Fuel and fuel filler cap		☐ Vehicle ran out of fuel causing misfire ☐ Fuel filler cap was left off or incorrectly screwed on.			
Symptoms	☐ Startability	☐ Impossible to start ☐ No combust ☐ Partial combustion affected by th ☐ Partial combustion NOT affected ☐ Possible but hard to start ☐ Other	nrottle position I by throttle position		
	□ Idling	☐ No fast idle ☐ Unstable ☐ H☐ Others [	ligh idle ☐ Low idle		
	☐ Driveability	☐ Stumble ☐ Surge ☐ Knock ☐ Lack of power ☐ Intake backfire ☐ Exhaust backfire ☐ Others [ ]			
	☐ Engine stall	☐ At the time of start ☐ While idling ☐ While accelerating ☐ While dece ☐ Just after stopping ☐ While loadi	lerating		
Incident occurrence		☐ Just after delivery ☐ Recently ☐ In the morning ☐ At night ☐ In the daytime			
Frequency		☐ All the time ☐ Under certain conditions ☐ Sometimes			
Weather conditions		☐ Not affected			
Weather		☐ Fine ☐ Raining ☐ Snowing	☐ Others [ ]		
	Temperature	☐ Hot ☐ Warm ☐ Cool ☐	Cold Humid °F		
Engine conditions		☐ Cold ☐ During warm-up ☐ After warm-up			
		Engine speed0 2,000	4,000 6,000 8,000 rpm		
Road conditions		☐ In town ☐ In suburbs ☐ Hig	hway		
Driving conditions		□ Not affected     □ At starting □ While idling □ At racing     □ While accelerating □ While cruising     □ While decelerating □ While turning (RH/LH)			
		Vehicle speed	30 40 50 60 MPH		
Malfunction indicator lamp		☐ Turned on ☐ Not turned on			

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# SERVICE AFTER REPLACING OR REMOVING ENGINE PARTS [MR EXCEPT FOR NISMO RS MODELS]

< BASIC INSPECTION >

## SERVICE AFTER REPLACING OR REMOVING ENGINE PARTS

Description INFOID:000000012198254

#### SPECIAL REPAIR REQUIREMENT

x: Applicable

				A. Applicable
Destrone	Service performed		Demitted and to	Deference
Part name	Replacement	Removal*	Required service	Reference
	×		Additional service when replacing ECM	EC-749
ECM			Accelerator pedal released position learning	EC-753
		×	Throttle valve closed position learning	EC-754
Accelerator Pedal	×	×	Accelerator pedal released position learning	EC-753
G sensor	×	×	G sensor calibration	EC-763
Turk ask array assembly		×	Wastegate valve closed positon learning	EC-755
Turbocharger assembly	×		Idle air volume learning	EC-758
		×	Throttle valve closed position learning	EC-754
Electric throttle	×		Idle air volume learning	EC-758
	×		Air fuel ratio initial learning	EC-760
Mass air flow sensor	×		Air fact action in Martin and	EC-760
Fuel injector	×		Air fuel ratio initial learning	<u>EC-760</u>
Battery	×		Cumulative battery discharge current clear	EC-764
Comphaft			Valve timing offset data clear	EC-756
Camshaft	×		Valve timing offset data writing	EC-757
Timing chain			Valve timing offset data clear	EC-756
Timing chain	×		Valve timing offset data writing	EC-757
			Idle air volume learning	EC-758
	×		Air fuel ratio initial learning	EC-760
Engine accomply			Valve timing offset data clear	EC-756
Engine assembly			Valve timing offset data writing	EC-757
			Wastegate valve closed positon learning	EC-755
			Throttle valve closed position learning	EC-754

<sup>\*:</sup> Harness connector disconnection included.

### ADDITIONAL SERVICE WHEN REPLACING ECM

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

### ADDITIONAL SERVICE WHEN REPLACING ECM

Description INFOID:0000000012198255

When replacing ECM, the following procedure must be performed. (For details, refer to <u>EC-749, "Work Procedure"</u>.)

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#### PROGRAMMING OPERATION

NOTE:

After replacing with a blank ECM, programming is required to write ECM information. Be sure to follow the procedure to perform the programming.

INFOID:0000000012198256

#### Work Procedure

# 1. SAVE ECM DATA

(P) With CONSULT

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Turn ignition switch ON.
- 4. Select "SAVING DATA FOR REPLC CPU" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 5. Follow the instruction of CONSULT display.

#### NOTE:

Necessary data in ECM is copied and saved to CONSULT.

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>> GO TO 2.

### 2.CHECK ECM PART NUMBER

Check ECM part number to see whether it is blank ECM or not.

#### NOTE:

- Part number of blank ECM is 23703 xxxxx.
- Check the part number when ordering ECM or with the one included in the label on the container box.

#### Is the ECM a blank ECM?

YES >> GO TO 3.

NO >> GO TO 5.

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# 3.SAVE ECM PART NUMBER

Read out the part number from the old ECM and save the number, following the programming instructions. Refer to "CONSULT Operation Manual".

#### NOTE:

- The ECM part number is saved in CONSULT.
- Even when ECM part number is not saved in CONSULT, go to 4.

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>> GO TO 4.

#### 4.PERFORM ECM PROGRAMMING

After replacing ECM, perform the ECM programming. Refer to "CONSULT Operation Manual".

#### NOTE:

- Refer to EC-1256, "Removal and Installation" for replacement of ECM.
- During programming, maintain the following conditions:
- Ignition switch: ON
- Electric load: OFF
- Brake pedal: Not depressed

 Battery voltage: 12 – 13.5 V (Be sure to check the value of battery voltage by selecting "BATTERY VOLT" in "Data monitor" of CONSULT.)

>> GO TO 6.

### 5. REPLACE ECM

Replace ECM. Refer to EC-1256, "Removal and Installation".

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>> GO TO 6.

### 6. WRITE ECM DATA

- (I) With CONSULT
- 1. Select "WRITING DATA FOR REPLC CPU" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 2. Follow the instruction of CONSULT display.

#### NOTE

The data saved by "SAVE DATA FOR CPU REPLC" is written to ECM.

>> GO TO 7.

# 7.PERFORM VIN REGISTRATION

Refer to EC-752, "Description".

>> GO TO 8.

8.PERFORM INITIALIZATION OF NATS SYSTEM AND REGISTRATION OF ALL NATS IGNITION KEY IDS Refer to SEC-47, "ECM: Description".

>> GO TO 9.

## 9. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

Refer to EC-753, "Description".

>> GO TO 10.

# 10. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Refer to EC-754, "Description".

>> GO TO 11.

# 11. PERFORM WASTEGATE VALVE CLOSED POSITION LEARNING

Perform wastegate valve closed position learning. Refer to EC-755, "Description".

>> GO TO 12.

# 12. PERFORM IDLE AIR VOLUME LEARNING

Refer to EC-758, "Description".

>> GO TO 13.

# 13. PERFORM AIR FUEL RATIO INITIAL LEARNING

Perform air fuel ratio initial learning. Refer to EC-760, "Description".

>> GO TO 14.

# 14. PERFORM G SENSOR CALIBRATION

Refer to EC-763, "Description".

>> GO TO 15.

# 15. PERFORM VALVE TIMING OFFSET DATA CLEAR

Perform valve timing offset data clear. Refer to EC-756, "Description".

>> GO TO 16.

# ADDITIONAL SERVICE WHEN REPLACING ECM ON > [MR EXCEPT FOR NISMO RS MODELS]

< BASIC INSPECTION >

16. PERFORM VALVE TIMING OFFSET DATA WRITING

Perform valve timing offset data writing. Refer to EC-757, "Description".

>> END EC  $\mathsf{D}$ Е F Н K L 0

#### VIN REGISTRATION

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

### VIN REGISTRATION

Description INFOID:000000012198257

VIN Registration is an operation to registering VIN in ECM. It must be performed each time ECM is replaced. **NOTE**:

Accurate VIN which is registered in ECM may be required for Inspection & Maintenance (I/M). Refer to <u>EC-752</u>, "Work Procedure".

Work Procedure

# 1. CHECK VIN

Check the VIN of the vehicle and note it. Refer to GI-36, "Information About Identification or Model Code".

>> GO TO 2.

# 2.PERFORM VIN REGISTRATION

#### **With CONSULT**

- 1. Turn ignition switch ON and engine stopped.
- 2. Select "VIN REGISTRATION" in "WORK SUPPORT" mode of "ENGINE".
- 3. Follow the instruction of CONSULT display.

>> END

# ACCELERATOR PEDAL RELEASED POSITION LEARNING [MR EXCEPT FOR NISMO RS MODELS]

< BASIC INSPECTION >

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# ACCELERATOR PEDAL RELEASED POSITION LEARNING

Description INFOID:000000012198259

Accelerator Pedal Released Position Learning is a function of ECM to learn the fully released position of the accelerator pedal by monitoring the accelerator pedal position sensor output signal. It must be performed each time harness connector of accelerator pedal position sensor or ECM is disconnected. Refer to <a href="EC-753">EC-753</a>, "Work <a href="Work">Procedure</a>".

Work Procedure

**EC-753** 

# 1.START

- 1. Make sure that accelerator pedal is fully released.
- 2. Turn ignition switch ON and wait at least 2 seconds.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON and wait at least 2 seconds.
- 5. Turn ignition switch OFF and wait at least 10 seconds.

>> END

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#### THROTTLE VALVE CLOSED POSITION LEARNING

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

### THROTTLE VALVE CLOSED POSITION LEARNING

Description INFOID:000000012198261

Throttle Valve Closed Position Learning is a function of ECM to learn the fully closed position of the throttle valve by monitoring the throttle position sensor output signal. It must be performed each time the harness connector of the electric throttle control actuator or ECM is disconnected or electric throttle control actuator inside is cleaned. Refer to EC-754, "Work Procedure".

Work Procedure

# 1.START

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "CLSD THL POS LEARN" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 3. Follow the instructions on the CONSULT display.
- 4. Turn ignition switch OFF and wait at least 10 seconds.

  Check that throttle valve moves during the above 10 seconds by confirming the operating sound.

#### **♥Without CONSULT**

1. Start the engine.

#### NOTE:

Engine coolant temperature is 25°C (77°F) or less before engine starts.

2. Warm up the engine.

#### NOTE:

Raise engine coolant temperature until it reaches 65°C (149°F) or more.

3. Turn ignition switch OFF and wait at least 10 seconds. Check that throttle valve moves during the above 10 seconds by confirming the operating sound.

>> END

#### WASTEGATE VALVE CLOSED POSITION LEARNING

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

### WASTEGATE VALVE CLOSED POSITION LEARNING

Description INFOID:000000012198263

Wastegate valve closed position learning is a function of ECM to learn the fully closed position of the wastegate valve by monitoring the wastegate valve position sensor output signal. It must be performed under any of the following conditions:

- Turbocharger assembly is replaced or removed.
- · ECM is replaced.
- Engine assembly is replaced.

Refer to EC-755, "Work Procedure".

#### Work Procedure

1.START

- 1. Turn ignition switch ON and engine stopped.
- 2. On the CONSULT screen, select "ENGINE" >> "WORK SUPPORT" >> "WASTEGATE ACTUATOR POSI LEARN CLEAR".
- 3. Touch "Start".

>> END

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#### **VALVE TIMING OFFSET DATA CLEAR**

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

### VALVE TIMING OFFSET DATA CLEAR

Description INFOID:000000012198265

Valve timing offset data clear is an operation to erase engine valve timing offset data stored in ECM. This operation must be performed after the following parts are replaced:

- Camshaft
- Timing chain
- Engine assembly
- ECM

Refer to EC-756, "Work Procedure".

Work Procedure

#### CAUTION:

After replacing the following parts, remove 2D code label affixed to throttle valve.

- Camshaft
- Timing chain
- Engine assembly

1. ERASE VALVE TIMING OFFSET DATA

(II) With CONSULT

- 1. Turn ignition switch ON.
- Select "VALVE TIMING OFFSET DATA CLEAR" in "WORK SUPPORT" mode of "ENGINE" using CON-SULT.
- 3. Touch "START" and erase valve timing offset data.

>> INSPECTION END

## **VALVE TIMING OFFSET DATA WRITING**

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

## VALVE TIMING OFFSET DATA WRITING

Description INFOID:0000000012198267

Valve timing offset data writing is an operation to allow ECM to learn engine valve timing offset data. This operation must be performed after the following parts are replaced:

- ECM
- · Engine assembly

Refer to EC-757, "Work Procedure".

Work Procedure INFOID:0000000012198268

#### **CAUTION:**

- Perform the valve timing offset data clear operation beforehand. Refer to EC-756, "Description".
- If 2D code cannot be read, perform only the valve timing offset data clear operation.

1. WRITE VALVE TIMING OFFSET DATA

- (P) With CONSULT
- 1. Turn ignition switch ON.
- Select "VALVE TIMING OFFSET DATA WRITING" in "WORK SUPPORT" mode of "ENGINE" using CON-
- Observe the instructions displayed on the CONSULT screen to write 2D code affixed to the throttle valve.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Check that DTC P100C is not displayed.

>> INSPECTION END

**EC-757 Revision: November 2015 2016 JUKE**  EC

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## IDLE AIR VOLUME LEARNING

Description INFOID:000000012198269

Idle Air Volume Learning is a function of ECM to learn the idle air volume that keeps each engine idle speed within the specific range. It must be performed under any of the following conditions:

- · ECM is replaced.
- · Engine assembly is replaced.
- Electric throttle control actuator is replaced or removed.
- Turbocharger assembly is replaced or removed.
- · Idle speed or ignition timing is out of specification.

Refer to EC-758, "Work Procedure".

Work Procedure

# 1.PRECONDITIONING

Make sure that all of the following conditions are satisfied.

Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery voltage: More than 12.5 V (At idle)
- Engine coolant temperature: 70 100°C (158 212°F)
- Selector lever: P or N (CVT), Neutral (M/T)
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

# On vehicles equipped with daytime running light systems, set lighting switch to the 1st position to light only small lamps.

- Steering wheel: Neutral (Straight-ahead position)
- · Vehicle speed: Stopped
- · Transmission: Warmed-up
- CVT models
- With CONSULT: Drive vehicle until "ATF TENP SEN" in "DATA MONITOR" mode of "CVT" system indicates less than 0.9 V.
- · Without CONSULT: Drive vehicle for 10 minutes.
- M/T models
- Drive vehicle for 10 minutes.

#### Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 3.

# 2.IDLE AIR VOLUME LEARNING

### (I) With CONSULT

- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-753</u>. "Description".
- Perform Throttle Valve Closed Position Learning. Refer to <u>EC-754, "Description"</u>.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Select "IDLE AIR VOL LEARN" in "WORK SUPPORT" mode of "ENGINE".
- 5. Touch "START" and wait 20 seconds.

### Is "CMPLT" displayed on CONSULT screen?

YES >> GO TO 4. NO >> GO TO 5.

# 3.IDLE AIR VOLUME LEARNING

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#### NOTE:

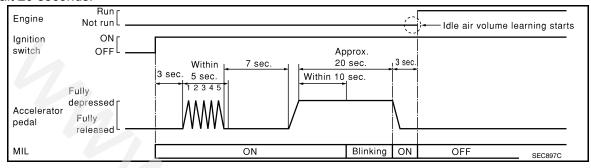
- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-753</u>, "<u>Description</u>".
- 2. Perform Throttle Valve Closed Position Learning. Refer to EC-754, "Description".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Turn ignition switch OFF and wait at least 10 seconds.

### **IDLE AIR VOLUME LEARNING**

#### < BASIC INSPECTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

- 5. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- 6. Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.
- 7. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- 8. Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- 9. Start engine and let it idle.
- 10. Wait 20 seconds.



>> GO TO 4

## 4. CHECK IDLE SPEED AND IGNITION TIMING

Rev up the engine two or three times and make sure that idle speed and ignition timing are within the specifications. For specification, refer to <u>EC-1258</u>, "Idle Speed" and <u>EC-1258</u>, "Ignition Timing".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

## 5. DETECT MALFUNCTIONING PART

#### Check the following

- Check that throttle valve is fully closed.
- Check PCV valve operation.
- Check that downstream of throttle valve is free from air leakage.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning part.

## $oldsymbol{6}.$ DETECT MALFUNCTIONING PART

Engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.

It is useful to perform "TROUBLE DIAGNOSIS - SPECIFICATION VALUE". Refer to <u>EC-785</u>, "<u>Description</u>". If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform Idle Air Volume Learning all over again:

- Engine stalls.
- · Erroneous idle.

## >> INSPECTION END

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### AIR FUEL RATIO INITIAL LEARNING

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

## AIR FUEL RATIO INITIAL LEARNING

Description INFOID:000000012198271

Air fuel ratio initial learning of ECM to learn the air fuel ratio that keeps each engine idle speed within the specific range. It must be performed under any of the following conditions:

- When ECM is replaced<sup>®</sup>
- When engine assembly is replaced<sup>\*</sup>
- When electric throttle control actuator is replaced
- · When mass air flow sensor is replaced
- · When fuel injector is replaced

Refer to EC-760, "Work Procedure".

#### CAUTION:

\*: Must be performed "IDLE AIR VOLUME LEARNING" when electric throttle control actuator or ECM is replaced. Refer to EC-758, "Description".

Work Procedure

# 1.PRECONDITIONING

Make sure that all of the following conditions are satisfied.

Learning will be cancelled if any of the following conditions are missed for even a moment.

- Battery temperature: More than 5°C (41°F)
- Engine coolant temperature: More than 70°C (158°F)
- Shift lever: P or N
- · Electric load switch: OFF

(Air conditioner, headlamp, rear window defogger)

- · Vehicle speed: Stopped
- Transmission: Warmed-up
- · Drive vehicle for 10 minutes.

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

## 2. AIR FUEL RATIO INITIAL LEARNING

#### (P) With CONSULT

- Perform "ACCELERATOR PEDAL RELEASED POSITION LEARNING". Refer to EC-753, "Description".
- Perform "THROTTLE VALVE CLOSED POSITION LEARNING". Refer to <u>EC-754, "Description"</u>.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Select "A/F INITIAL LEARNING" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 5. Touch "START" and wait 20 seconds.

#### "CMPLT" displayed on CONSULT screen?

YES >> INSPECTION END

NO >> GO TO 4.

# 3.AIR FUEL RATIO INITIAL LEARNING

#### ₩ Without CONSULT

#### NOTE:

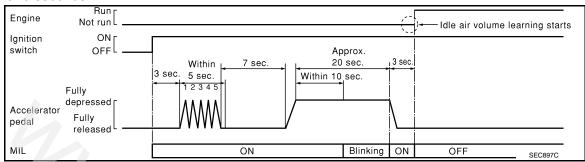
- It is better to count the time accurately with a clock.
- It is impossible to switch the diagnostic mode when an accelerator pedal position sensor circuit has a malfunction.
- Perform "ACCELERATOR PEDAL RELEASED POSITION LEARNING". Refer to <u>EC-753, "Description"</u>.
- 2. Perform "THROTTLE VALVE CLOSED POSITION LEARNING". Refer to EC-754, "Description".
- 3. Start engine and warm it up to normal operating temperature.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Confirm that accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
- Repeat the following procedure quickly five times within 5 seconds.
- Fully depress the accelerator pedal.
- Fully release the accelerator pedal.

## AIR FUEL RATIO INITIAL LEARNING

### < BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

- 7. Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
- 8. Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
- 9. Start engine and let it idle.
- 10. Wait 20 seconds.



#### >> INSPECTION END

# 4. DETECT MALFUNCTIONING PART

Engine component parts and their installation condition are questionable. Check and eliminate the cause of the incident.

It is useful to perform "TROUBLE DIAGNOSIS - SPECIFICATION VALUE". Refer to <u>EC-785</u>, "<u>Description</u>". If any of the following conditions occur after the engine has started, eliminate the cause of the incident and perform "AIR FUEL RATIO INITIAL LEARNING" all over again:

- · Engine stalls
- · Erroneous idle

>> INSPECTION END

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## MIXTURE RATIO SELF-LEARNING VALUE CLEAR

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

# MIXTURE RATIO SELF-LEARNING VALUE CLEAR

Description INFOID:0000000012198273

This describes how to erase the mixture ratio self-learning value. For the actual procedure, follow the instructions in "Diagnosis Procedure". Refer to  $\underline{\text{EC-762}}$ , "Work Procedure".

Work Procedure

# 1.START

### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Select "SELF-LEARNING CONT" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 3. Clear mixture ratio self-learning value by touching "CLEAR".

### With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF.
- 3. Disconnect mass air flow sensor harness connector.
- 4. Restart engine and let it idle for at least 5 seconds.
- 5. Stop engine and reconnect mass air flow sensor harness connector.
- 6. Select Service \$03 with GST. Make sure DTC P0102 is detected.
- 7. Select Service \$04 with GST to erase the DTC P0102.

>> END

## **G SENSOR CALIBRATION**

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

## **G SENSOR CALIBRATION**

Description INFOID:0000000012198275

ECM stores calibration data (inherent characteristic value) of G sensor to provide accurate control. Therefore, it is required to perform calibration of G sensor after the following work is performed.

- Removal/installation or replacement of G sensor
- · Replacement of ECM

Refer to EC-763, "Work Procedure".

Work Procedure INFOID:0000000012198276

# 1. PREPARATION BEFORE CALIBRATION PROCEDURE

- Park the vehicle on a level surface.
- Adjust air pressure of all tires to the specified pressure. WT-47, "Tire Air Pressure".

>> GO TO 2.

# 2.PERFORM CALIBRATION

(II) With CONSULT

Turn ignition switch ON.

#### **CAUTION:**

Never start engine.

- Select "Work Support" mode in "ENGINE.
- 3. Select "G SENSOR CALIBRATION".
- 4. Touch "Start".

#### **CAUTION:**

Never swing the vehicle during "G sensor calibration".

#### Is "COMPLETED" displayed?

YES >> END

NO >> Perform steps 1 and 2 again.

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# **CUMULATIVE BATTERY DISCHARGE CURRENT CLEAR**

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

## CUMULATIVE BATTERY DISCHARGE CURRENT CLEAR

Description INFOID:0000000012198277

Cumulative Battery Discharge Current Clear is a function of ECM to erase the cumulative battery discharge current. It must be performed when battery is replaced. Refer to EC-764, "Work Procedure".

Work Procedure INFOID:0000000012198278

1. ERASE CUMULATIVE BATTERY DISCHARGE CURRENT

- With CONSULT

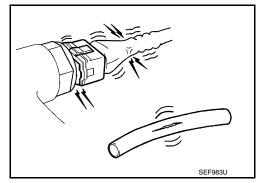
  1. Turn ignition s Turn ignition switch ON.
- Select "CML B/DCHRG CRNT CLEAR" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- Touch "CLEAR" and erase cumulative battery discharge current.

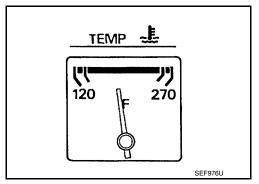
>> INSPECTION END

Work Procedure

# 1.INSPECTION START

- 1. Check service records for any recent repairs that may indicate a related malfunction, or a current need for scheduled maintenance.
- 2. Open engine hood and check the following:
- Harness connectors for improper connections
- Wiring harness for improper connections, pinches and cut
- Vacuum hoses for splits, kinks and improper connections
- Hoses and ducts for leaks
- Air cleaner clogging
- Gasket
- 3. Confirm that electrical or mechanical loads are not applied.
- Headlamp switch is OFF.
- Air conditioner switch is OFF.
- Rear window defogger switch is OFF.
- Steering wheel is in the straight-ahead position, etc.
- Start engine and warm it up until engine coolant temperature indicator points the middle of gauge. Ensure engine stays below 1,000 rpm.

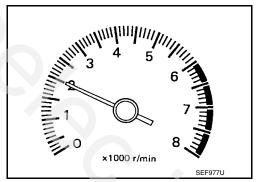




- 5. Run engine at about 2,000 rpm for about 2 minutes under no load.
- Make sure that no DTC is displayed with CONSULT or GST.

## Is any DTC detected?

YES >> GO TO 2. NO >> GO TO 3.



# 2. REPAIR OR REPLACE

Repair or replace components as necessary according to corresponding Diagnostic Procedure.

>> GO TO 3.

## 3. CHECK TARGET IDLE SPEED

1. Run engine at about 2,000 rpm for about 2 minutes under no load.

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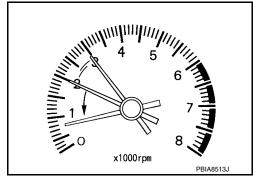
#### [MR EXCEPT FOR NISMO RS MODELS]

- 2. Rev engine (2,000 to 3,000 rpm) two or three times under no load, then run engine at idle speed for about 1 minute.
- 3. Check idle speed.

For procedure, refer to <u>EC-1250, "Inspection"</u>. For specification, refer to <u>EC-1258, "Idle Speed"</u>.

#### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 4.



# 4. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- 1. Stop engine.
- 2. Perform EC-753, "Description".

>> GO TO 5.

# 5. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-754, "Description".

>> GO TO 6.

## 6.PERFORM IDLE AIR VOLUME LEARNING

Perform EC-758, "Description".

### Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 7.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

## 7.CHECK TARGET IDLE SPEED AGAIN

- 1. Start engine and warm it up to normal operating temperature.
- 2. Check idle speed.

For procedure, refer to EC-1250, "Inspection".

For specification, refer to EC-1258, "Idle Speed".

#### Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 8.

# 8.DETECT MALFUNCTIONING PART

#### Check the Following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-952, "DTC Logic".
- Check crankshaft position sensor (POS) and circuit. Refer to EC-949, "DTC Logic"

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace. Then GO TO 4

## 9. CHECK ECM FUNCTION

- 1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- Perform initialization of NATS system and registration of all NATS ignition key IDs. Refer to <u>SEC-47</u>. "ECM: Description".

>> GO TO 4.

# 10. CHECK IGNITION TIMING

Run engine at idle.

#### < BASIC INSPECTION >

### [MR EXCEPT FOR NISMO RS MODELS]

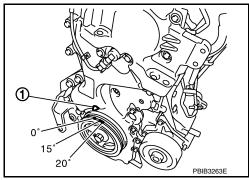
Check ignition timing with a timing light. For procedure, refer to EC-1251, "Inspection" For specification, refer to EC-1258, "Ignition Timing".

1 : Timing indicator

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> GO TO 11.



# 11. PERFORM ACCELERATOR PEDAL RELEASED POSITION LEARNING

- Stop engine.
- 2. Perform EC-753, "Description".

>> GO TO 12.

# 12. PERFORM THROTTLE VALVE CLOSED POSITION LEARNING

Perform EC-754, "Description".

>> GO TO 13.

# 13. PERFORM IDLE AIR VOLUME LEARNING

Perform EC-758, "Description".

Is Idle Air Volume Learning carried out successfully?

YES >> GO TO 14.

NO >> Follow the instruction of Idle Air Volume Learning. Then GO TO 4.

## 14. CHECK TARGET IDLE SPEED AGAIN

- Start engine and warm it up to normal operating temperature.
- Check idle speed.

For procedure, refer to EC-1250, "Inspection".

For specification, refer to EC-1258, "Idle Speed".

#### Is the inspection result normal?

YES >> GO TO 15.

NO >> GO TO 17.

# 15.check ignition timing again

Run engine at idle.

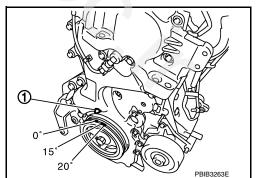
Check ignition timing with a timing light. For procedure, refer to EC-1251, "Inspection". For specification, refer to EC-1258, "Ignition Timing".

1 : Timing indicator

## Is the inspection result normal?

YES >> INSPECTION END.

NO >> GO TO 16.



# 16. CHECK TIMING CHAIN INSTALLATION

Check timing chain installation. Refer to EM-248, "Exploded View".

#### Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair the timing chain installation. Then GO TO 4.

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### < BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

# 17. DETECT MALFUNCTIONING PART

Check the following.

- Check camshaft position sensor (PHASE) and circuit. Refer to EC-952, "DTC Logic".
- Check crankshaft position sensor (POS) and circuit. Refer to <u>EC-949</u>, "<u>DTC Logic</u>".

### Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace. Then GO TO 4

# 18. CHECK ECM FUNCTION

- 1. Substitute another known-good ECM to check ECM function. (ECM may be the cause of an incident, but this is a rare case.)
- 2. Perform initialization of NATS system and registration of all NATS ignition key IDs. Refer to <u>SEC-47.</u> "ECM: Description".

>> GO TO 4.

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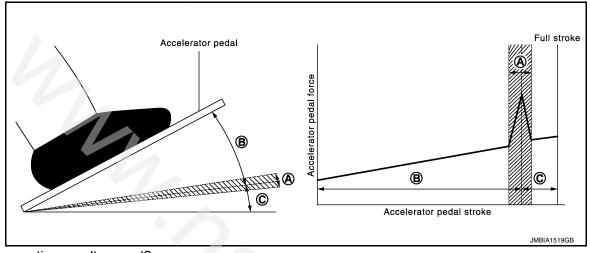
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## **ACCELERATOR PEDAL**

Work Procedure

# 1.PERFORM ACCELERATOR PEDAL FORCE-I

- 1. Turn ignition switch OFF.
- 2. Depress the accelerator pedal and check if there is a specific point (A) in the pedal stroke where the pedal force increase as shown in the figure.



#### Is the inspection result normal?

YES-1 >> (P)With CONSULT:GO TO 2.

YES-2 >> Without CONSULT:GO TO 3.

NO >> Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-753</u>, "<u>Description</u>".

# 2.PERFORM ACCELERATOR PEDAL FORCE-II

### With CONSULT

- Turn ignition switch ON.
- Select "KICKDOWN POS" in "DATA MONITOR" mode using CONSULT.
- 3. Check "KICKDOWN POS" indication under the following condition.

Monitor item	Condition	Indication
KICKDOWN POS	Depressing range of the accelerator pedal: Within (B) as indicated in the figure	OFF
RICKDOWN FOS	Depressing range of the accelerator pedal: Within (C) as indicated in the figure	ON

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-753</u>, "<u>Description</u>".

## 3.PERFORM ACCELERATOR PEDAL FORCE-III $\,$

#### 

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground under the following conditions.

ECM				Mallana	
Connector + Term		_	Condition	Voltage (Approx.)	
		ninal		(	
150 (APP sensor 1) 151 Depress		Depressing range of the accelerator pedal:	3.9 - 4.7 V		
	143 (APP sensor 2)	144	Within (C) as indicated in the figure	1.95 - 2.4 V	

## **ACCELERATOR PEDAL**

< BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform Accelerator Pedal Released Position Learning. Refer to <u>EC-753</u>, "<u>Description</u>".

## **FUEL PRESSURE**

Work Procedure INFOID:0000000012198281

### FUEL PRESSURE RELEASE

## 1. FUEL PRESSURE RELEASE

#### (P)With CONSULT

- Turn ignition switch ON.
- 2. Perform "FUEL PRESSURE RELEASE" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- Start engine. 3.
- After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF.

#### 

- 1. Remove fuel pump fuse located in IPDM E/R.
- Start engine.
- 3. After engine stalls, crank it two or three times to release all fuel pressure.
- Turn ignition switch OFF. 4.
- Reinstall fuel pump fuse after servicing fuel system.

>> END

#### FUEL PRESSURE CHECK

#### CAUTION:

- Before disconnecting fuel line, release fuel pressure from fuel line to eliminate danger.
- The fuel hose connection method used when taking fuel pressure check must not be used for other
- Be careful not to scratch or put debris around connection area when servicing, so that the quick connector maintains sealability with O-rings inside.
- Do not perform fuel pressure check with electrical systems operating (i.e. lights, rear defogger, A/C, etc.) Fuel pressure gauge may indicate false readings due to varying engine load and changes in manifold vacuum.

#### NOTE:

Prepare pans or saucers under the disconnected fuel line because the fuel may spill out. The fuel pressure cannot be completely released because F15 models do not have fuel return system.

## 1.FUEL PRESSURE CHECK

- Release fuel pressure to zero.
- Prepare fuel hose for fuel pressure check (B) and fuel tube adapter [SST: KV10120000] (D), then connect fuel pressure gauge (A).

: To quick connector

: To high pressure fuel pump

С : Clamp

**CAUTION:** 

- Use suitable fuel hose for fuel pressure check (genuine) NISSAN fuel hose without guick connector).
- To avoid unnecessary force or tension to hose, use moderately long fuel hose for fuel pressure check.
- · Do not use the fuel hose for checking fuel pressure with damage or cracks on it.
- Use Pressure Gauge to check fuel pressure.
- Remove fuel hose.

### **CAUTION:**

Do not twist or kink fuel hose because it is plastic hose.

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EC-771 **Revision: November 2015 2016 JUKE**  EC

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### **FUEL PRESSURE**

#### < BASIC INSPECTION >

#### [MR EXCEPT FOR NISMO RS MODELS]

1 - 2 mm

(3)

(0.04 - 0.08 in)

4. Connect fuel hose for fuel pressure check (1) to high pressure fuel pump (3) with clamp (2) as shown in the figure.

#### **CAUTION:**

- Wipe off oil or dirt from hose insertion part using cloth moistened with gasoline.
- Apply proper amount of gasoline between top of the high pressure fuel pump (3) and spool (4).
- Insert fuel hose for fuel pressure check until it touches the spool on high pressure fuel pump.
- Use NISSAN genuine hose clamp (part number: 16439 N4710 or 16439 40U00).
- When reconnecting fuel line, always use new clamps.
- · Use a torque driver to tighten clamps.

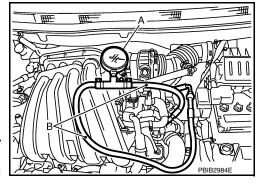


1 - 1.5 N·m (0.1 - 0.15 kg-m. 9 - 13 in-lb)

- Install hose clamp to the position within 1 2 mm (0.04 0.08 in).
- Make sure that clamp screw does not contact adjacent parts.
- After connecting fuel hose for fuel pressure check, pull the hose with a force of approximately 98
   N (10 kg, 22 lb) to confirm high pressure fuel pump does not come off.
- 5. Connect fuel tube adapter to quick connector.
  - A :Fuel pressure gauge
  - B :Fuel hose for fuel pressure check
- 6. Turn ignition switch ON and check for fuel leakage.
- 7. Start engine and check for fuel leakage.
- 8. Read the indication of fuel pressure gauge.

#### **CAUTION:**

- Do not perform fuel pressure check with system operating. Fuel pressure gauge may indicate false readings.
- During fuel pressure check, confirm for fuel leakage from fuel connection every 3 minutes.



At idling

: Approximately 500 kPa (5.0 bar, 5.1 kg/cm<sup>2</sup>, 73 psi)

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2. CHECK FUEL HOSES

#### Check the following.

- Fuel hoses for clogging
- · Fuel filter for clogging
- Low pressure fuel pump
- Fuel pressure regulator for clogging

#### Is the inspection result normal?

YES >> Replace fuel pressure regulator.

NO >> Repair or replace error-detected parts.

### **HOW TO SET SRT CODE**

[MR EXCEPT FOR NISMO RS MODELS]

## HOW TO SET SRT CODE

Description

### **OUTLINE**

In order to set all SRTs, the self-diagnoses as in the "SRT ITEM" table must have been performed at least once. Each diagnosis may require actual driving for a long period of time under various conditions.

#### **SRT ITEM**

The table below shows required self-diagnostic items to set the SRT to "CMPLT".

SRT item*1 (CONSULT indication)	Performance Priority* <sup>2</sup>	Required self-diagnostic items to set the SRT to "CMPLT"	Corresponding DTC No.
CATALYST	1	Three way catalyst function	P0420
EVAD SVSTEM	1	EVAP control system purge flow monitoring	P0441
EVAP SYSTEM 1		EVAP control system	P0443, P0456
HO2S Air fuel ratio (A/F) se		Air fuel ratio (A/F) sensor 1	P0130, P014C, P014D, P015A, P015B
	1	Heated oxygen sensor 2	P0137
	1	Heated oxygen sensor 2	P0138
	1	Heated oxygen sensor 2	P0139
EGR/VVT SYSTEM	2	Intake value timing control function P0011	

<sup>\*1:</sup> Though displayed on the CONSULT screen, "HO2S HTR" is not SRT item.

#### SRT SERVICE PROCEDURE

If a vehicle has failed the state emissions inspection due to one or more SRT items indicating "INCMP", review the flowchart diagnostic sequence, referring to the following flowchart.

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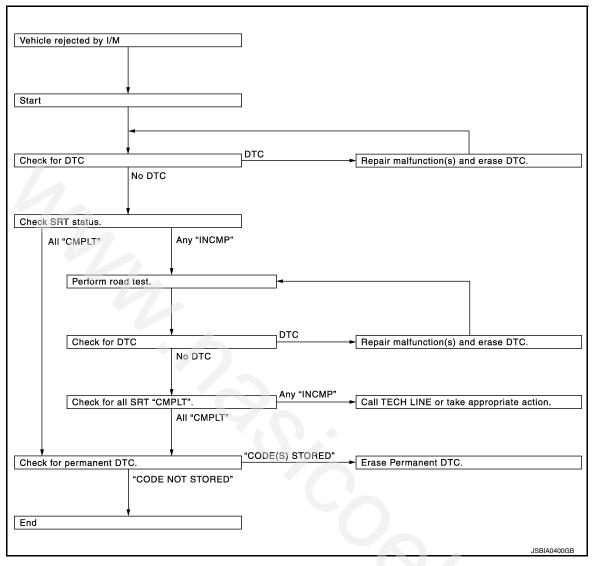
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<sup>\*2:</sup> If completion of several SRTs is required, perform driving patterns (DTC confirmation procedure), one by one based on the priority for models with CONSULT.

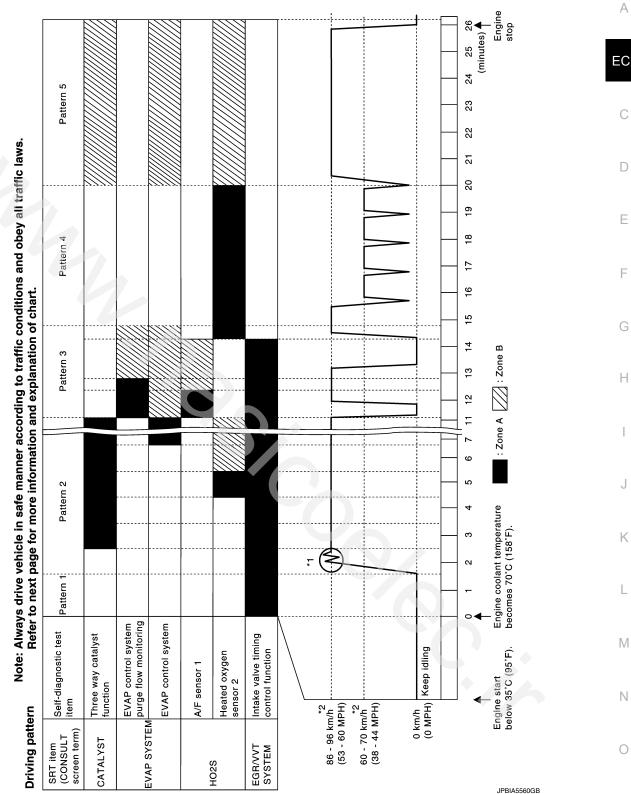


SRT Set Driving Pattern

INFOID:0000000012198283

**CAUTION:** 

Always drive the vehicle in safe manner according to traffic conditions and obey all traffic laws.



<sup>\*1:</sup> Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again.

<sup>\*2:</sup> Checking the vehicle speed with GST is advised.

The time required for each diagnosis varies with road surface conditions, weather, altitude, individual driving habits, etc.

<sup>• &</sup>quot;Zone A" is the fastest time where required for the diagnosis under normal conditions\*. If the diagnosis is not completed within "Zone A", the diagnosis can still be performed within "Zone B".

## **HOW TO SET SRT CODE**

#### [MR EXCEPT FOR NISMO RS MODELS]

#### < BASIC INSPECTION >

- \*: Normal conditions
- Sea level
- Flat road
- Ambient air temperature: 20 30°C (68 86°F)

#### NOTE:

Diagnosis is performed as quickly as possible under normal conditions. However, under other conditions, diagnosis may also be performed. [For example: ambient air temperature other than  $20 - 30^{\circ}$ C ( $68 - 86^{\circ}$ F)]

Work Procedure

# 1.CHECK DTC

Check DTC.

#### Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC. Refer to EC-706, "DTC\_Index".

NO >> GO TO 2.

## 2.CHECK SRT STATUS

### (P)With CONSULT

Select "SRT STATUS" in "DTC & SRT CONFIRMATION" mode of "ENGINE" using CONSULT.

#### 

Perform "SRT status" mode with EC-666, "On Board Diagnosis Function".

⊕With GST

Select Service \$01 with GST.

#### Is SRT code(s) set?

YES >> GO TO 11.

NO-1 >> (a) With CONSULT: GO TO 3.

NO-2 >> NWithout CONSULT: GO TO 4.

## 3.DTC CONFIRMATION PROCEDURE

- 1. Select "SRT WORK SUPPORT" in "DTC & SRT CONFIRMATION" mode of "ENGINE" using CONSULT.
- 2. For SRT(s) that is not set, perform the corresponding "DTC CONFIRMATION PROCEDURE" according to the "Performance Priority" in the "SRT ITEM" table. Refer to <a href="EC-773">EC-773</a>, "Description".
- Check DTC.

### Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC. Refer to <u>EC-706</u>, "<u>DTC Index</u>".

NO >> GO TO 10.

### 4.PERFORM ROAD TEST

- Check the "Performance Priority" in the "SRT ITEM" table. Refer to <u>EC-773, "Description"</u>.
- Perform the most efficient SRT set driving pattern to set the SRT properly. Refer to <u>EC-774, "SRT Set Driving Pattern"</u>.

In order to set all SRTs, the SRT set driving pattern must be performed at least once.

>> GO TO 5.

# 5. PATTERN 1

- Check the vehicle condition;
- Engine coolant temperature is –10 to 35°C (14 to 95°F).
- Fuel tank temperature is more than 0°C (32°F).
- 2. Start the engine.
- 3. Keep engine idling until the engine coolant temperature is greater than 70°C (158°F)

#### NOTE:

ECM terminal voltage is follows;

- Engine coolant temperature
- -10 to 35°C (14 to 95°F): 3.0 4.3 V
- 70°(158°F): Less than 1.4 V

>> GO TO 6.

#### < BASIC INSPECTION >

# 6.PATTERN 2

- 1. Drive the vehicle. And depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH), then release the accelerator pedal and keep it released for more than 10 seconds.
- 2. Depress the accelerator pedal until vehicle speed is 90 km/h (56 MPH) again

#### NOTE:

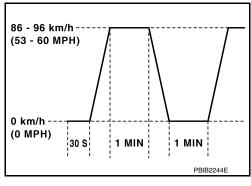
- Checking the vehicle speed with GST is advised.
- When steady-state driving is performed again even after it is interrupted, each diagnosis can be conducted.
   In this case, the time required for diagnosis may be extended.

>> GO TO 7.

## 7. PATTERN 3

- Operate vehicle following the driving pattern shown in the figure.
- Release the accelerator pedal during deceleration of vehicle speed from 90 km/h (56 MPH) to 0 km/h (0 MPH).

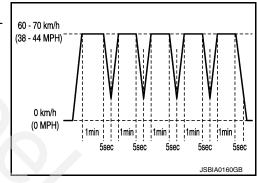
>> GO TO 8.



# 8. PATTERN 4

- Operate vehicle following the driving pattern shown in the figure.
- Drive the vehicle in a proper gear at 60 km/h (38 MPH) and maintain the speed.
- Release the accelerator pedal fully at least 5 seconds.
- Repeat the above two steps at least 5 times.

>> GO TO 9.



# 9. PATTERN 5

- The accelerator pedal must be held very steady during steady-state driving.
- If the accelerator pedal is moved, the test must be conducted again.

>> GO TO 10.

# 10. CHECK SRT STATUS

(P)With CONSULT

Select "SRT STATUS" in "DTC & SRT CONFIRMATION" mode of "ENGINE" using CONSULT.

Perform "SRT status" mode with EC-666, "On Board Diagnosis Function".

With GST

Select Service \$01 with GST.

#### Is SRT(s) set?

YES >> GO TO 11.

NO >> Call TECH LINE or take appropriate action.

# 11. CHECK PERMANENT DTC

#### NOTE

Permanent DTC cannot be checked with a tool other than CONSULT or GST.

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## **HOW TO SET SRT CODE**

### < BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

(P)With CONSULT

Select "SRT STATUS" in "DTC & SRT CONFIRMATION" mode with CONSULT.

@With GST

Select Service \$0A with GST.

Is permanent DTC(s) detected?

YES >> Proceed to EC-785, "Description".

NO >> END

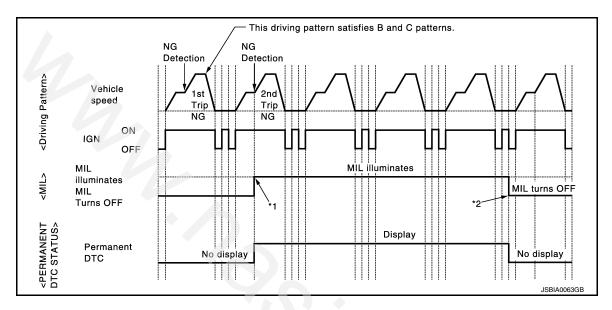
## HOW TO ERASE PERMANENT DTC

Description INFOID:000000012198285

#### **OUTLINE**

When a DTC is stored in ECM

When a DTC is stored in ECM and MIL is ON, a permanent DTC is erased with MIL shutoff if the same malfunction is not detected after performing the driving pattern for MIL shutoff three times in a raw.



<sup>\*1:</sup> When the same malfunction is detected in two consecutive trips, MIL will illuminate.

 MIL will turn off after vehicle is driven 3 times (driving pattern B) without any malfunctions.

#### When a DTC is not stored in ECM

The erasing method depends on a permanent DTC stored in ECM. Refer to the following table. **NOTE:** 

If the applicable permanent DTC includes multiple groups, perform the procedure of Group B first. If the permanent DTC is not erased, perform the procedure of Group A.

			×: Appl	icable —: Not applicable
Croup*	Perform "DTC CONFIRMATION PROCE-	Driving	pattern	Reference
Group	DURE" for applicable DTCs.	В	D	Reference
A	×	_	-	EC-780
В	_	×	×	EC-782

<sup>\*:</sup> For group, refer to EC-706, "DTC Index".

## PERMANENT DTC ITEM

For permanent DTC items, MIL turns ON. Refer to <a href="EC-706">EC-706</a>, "DTC Index".

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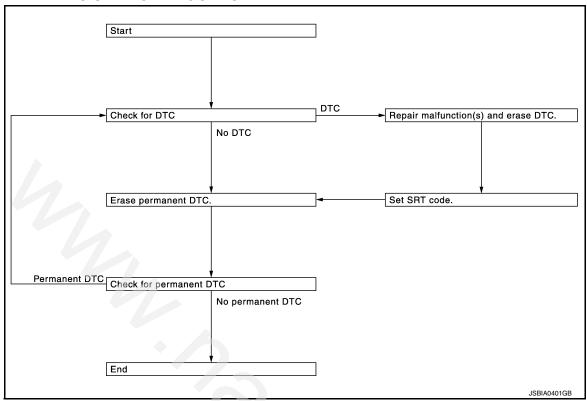
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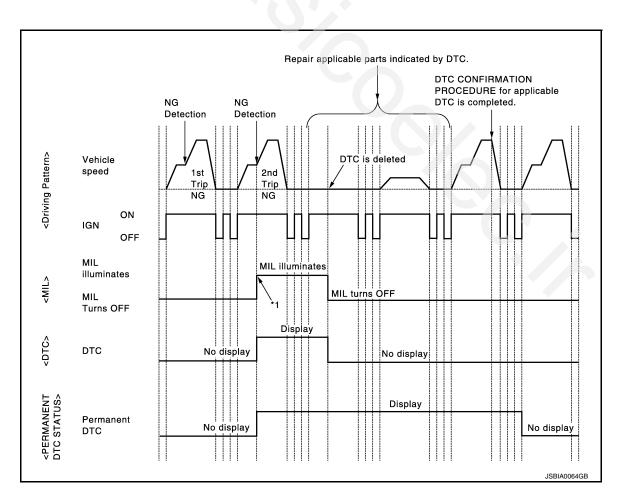
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### PERMANENT DTC SERVICE PROCEDURE



# Work Procedure (Group A)

INFOID:0000000012198286



## **HOW TO ERASE PERMANENT DTC**

< BASIC INSPECTION >

\*1: When the same malfunction is de-

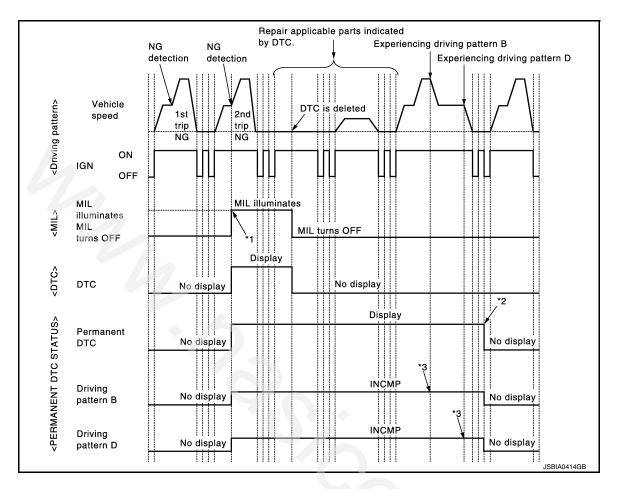
[MR EXCEPT FOR NISMO RS MODELS]

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tected in two consecutive trips, MIL will illuminate.	Α
1.CHECK DTC	EC
Check DTC.	
Is any DTC detected?	С
YES >> Repair malfunction(s) and erase DTC. Refer to <u>EC-666, "On Board Diagnosis Function"</u> , <u>EC-667, "CONSULT Function"</u> .  NO >> GO TO 2.	C
2. CHECK PERMANENT DTC	D
Z.CHECK PERMANENT DTC	
®With CONSULT	_
<ol> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> <li>Turn ignition switch ON.</li> </ol>	Е
3. Turn ignition switch OFF and wait at least 10 seconds.  OR Supplied to the control of the co	
4. Turn ignition switch ON.	F
5. Select "PERMANENT DTC STATUS" mode with CONSULT.	Г
With GST	
<ol> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> <li>Turn ignition switch ON.</li> </ol>	G
3. Turn ignition switch OFF and wait at least 10 seconds.	
4. Turn ignition switch ON.	
5. Select Service \$0A with GST.	Н
Is any permanent DTC detected?	
YES >> GO TO 3.	
NO >> END	
3.PERFORM DTC CONFIRMATION PROCEDURE	
Perform "DTC CONFIRMATION PROCEDURE" for DTCs which are the same as permanent DTCs stored in ECM. Refer to <a href="EC-706">EC-706</a> , "DTC Index".	J
>> GO TO 4.	K
4.CHECK PERMANENT DTC	
®With CONSULT	
1. Turn ignition switch OFF and wait at least 10 seconds.	L
<ol> <li>Turn ignition switch ON.</li> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> </ol>	
4. Turn ignition switch ON.	M
5. Select "PERMANENT DTC STATUS" mode with CONSULT.	IVI
With GST	
1. Turn ignition switch OFF and wait at least 10 seconds.	Ν
<ol> <li>Turn ignition switch ON.</li> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> </ol>	
4. Turn ignition switch ON.	
5. Select Service \$0A with GST.	0
Is any permanent DTC detected?	
YES >> GO TO 1.	
NO >> END	Р

Work Procedure (Group B)

INFOID:0000000012198287



- \*1: When the same malfunction is detected in two consecutive trips, MIL will illuminate.
- \*2: After experiencing driving pattern B and D, permanent DTC is erased.
- \*3: Indication does not change unless the ignition switch is turned from ON to OFF twice even after experiencing driving pattern B or D.

#### NOTE:

Drive the vehicle according to only driving patterns indicating "INCMP" in driving patterns B and D on the "PERMANENT DTC STATUS" screen.

# 1. CHECK DTC

Check DTC.

#### Is any DTC detected?

YES >> Repair malfunction(s) and erase DTC. Refer to <u>EC-666, "On Board Diagnosis Function"</u>, <u>EC-667, "CONSULT Function"</u>.

NO >> GO TO 2.

# 2.CHECK PERMANENT DTC

#### (I) With CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- Select "PERMANENT DTC STATUS" mode with CONSULT.

#### With GST

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **HOW TO ERASE PERMANENT DTC** [MR EXCEPT FOR NISMO RS MODELS] < BASIC INSPECTION > Turn ignition switch ON. Select Service \$0A with GST. Α Is any permanent DTC detected? YES >> GO TO 3. NO >> END EC 3.DRIVE DRIVING PATTERN B **CAUTION:** Always drive at a safe speed. Never erase self-diagnosis results. If self-diagnosis results are erased during the trip of driving pattern B or D, the counter of driving pattern B and D is reset. D (P)With CONSULT Start engine and warm it up to normal operating temperature. Use "PERMANENT DTC WORK SUPPORT" mode with CONSULT to drive the vehicle according to driving pattern B. Refer to EC-667, "CONSULT Function", EC-663, "DIAGNOSIS DESCRIPTION: Driving Pattern". Start engine and warm it up to normal operating temperature. Drive the vehicle according to driving pattern B. Refer to EC-663, "DIAGNOSIS DESCRIPTION: Driving Pattern". >> GO TO 4. 4. CHECK PERMANENT DTC (II) With CONSULT Turn ignition switch OFF and wait at least 10 seconds. 1. Turn ignition switch ON. Turn ignition switch OFF and wait at least 10 seconds. Turn ignition switch ON. Select "PERMANENT DTC STATUS" mode with CONSULT. 1. Turn ignition switch OFF and wait at least 10 seconds. 2. Turn ignition switch ON. Turn ignition switch OFF and wait at least 10 seconds.

#### **CAUTION:**

YES

NO

Always drive at a safe speed.

DRIVE DRIVING PATTERN D

4. Turn ignition switch ON.5. Select Service \$0A with GST.Is any permanent DTC detected?

>> GO TO 5.

>> END

- Never erase self-diagnosis results.
- If self-diagnosis results are erased during the trip of driving pattern B or D, the counter of driving pattern B and D is reset.

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Drive the vehicle according to driving pattern D. Refer to <u>EC-663</u>, "<u>DIAGNOSIS DESCRIPTION</u>: <u>Driving Pattern</u>".

>> GO TO 6.

## 6. CHECK PERMANENT DTC

#### With CONSULT

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.

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## **HOW TO ERASE PERMANENT DTC**

### < BASIC INSPECTION >

[MR EXCEPT FOR NISMO RS MODELS]

5. Select "PERMANENT DTC STATUS" mode with CONSULT.

With GST

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Select Service \$0A with GST.

## Is any permanent DTC detected?

YES >> GO TO 1.

NO >> END

### TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# DTC/CIRCUIT DIAGNOSIS

## TROUBLE DIAGNOSIS - SPECIFICATION VALUE

Description INFOID:0000000012198288

The specification (SP) value indicates the tolerance of the value that is displayed in "SPEC" of "DATA MONI-TOR" mode of CONSULT during normal operation of the Engine Control System. When the value in "SPEC" of "DATA MONITOR" mode is within the SP value, the Engine Control System is confirmed OK. When the value in "SPEC" of "DATA MONITOR" mode is NOT within the SP value, the Engine Control System may have one or more malfunctions.

The SP value is used to detect malfunctions that may affect the Engine Control System, but will not light the MIL.

The SP value will be displayed for the following three items:

- B/FUEL SCHDL (The fuel injection pulse width programmed into ECM prior to any learned on board correction)
- A/F ALPHA-B1 (The mean value of air-fuel ratio feedback correction factor per cycle)
- MASS AIR FLOW SENSOR (Hz) (The signal frequency of the mass air flow sensor)

## Component Function Check

1.start

Make sure that all of the following conditions are satisfied.

- Vehicle driven distance: More than 5,000 km (3,107 miles)
- Barometric pressure: 98.3 104.3 kPa (1.003 1.064 kg/cm<sup>2</sup>, 14.25 15.12 psi)
- Atmospheric temperature: 20 30°C (68 86°F)
- Engine coolant temperature: 75 95°C (167 203°F)
- Transmission: Warmed-up
- CVT models: After the engine is warmed up to normal operating temperature, drive vehicle until "FLUID TEMP SE" (CVT fluid temperature sensor signal) indicates more than 60°C (140°F).
- M/T models: After the engine is warmed up to normal operating temperature, drive vehicle for 5 minutes.
- Electrical load: Not applied
- Rear window defogger switch, air conditioner switch, lighting switch are OFF. Steering wheel is straight ahead.
- · Engine speed: Idle

>> GO TO 2.

# 2.PERFORM "SPEC" OF "DATA MONITOR" MODE

(P)With CONSULT

#### NOTE:

Perform "SPEC" in "DATA MONITOR" mode in maximum scale display.

- 1. Perform EC-765, "Work Procedure".
- Select "B/FUEL SCHDL", "A/F ALPHA-B1" and "MASS AIR FLOW SENSOR (Hz)" in "SPEC" of "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Make sure that monitor items are within the SP value.

#### Is the inspection result normal?

YES >> END

NO >> Proceed to EC-786, "Diagnosis Procedure".

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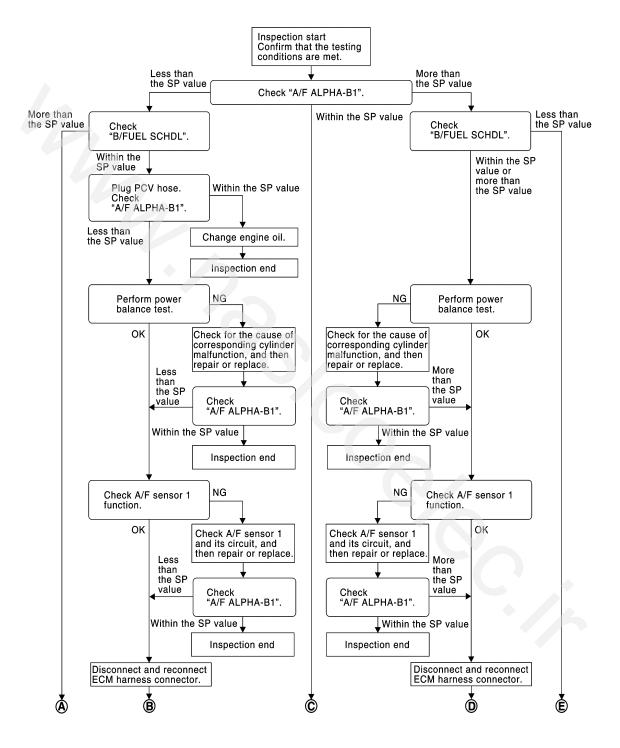
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# [MR EXCEPT FOR NISMO RS MODELS]

INFOID:0000000012198290

## Diagnosis Procedure

#### **OVERALL SEQUENCE**



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## < DTC/CIRCUIT DIAGNOSIS >

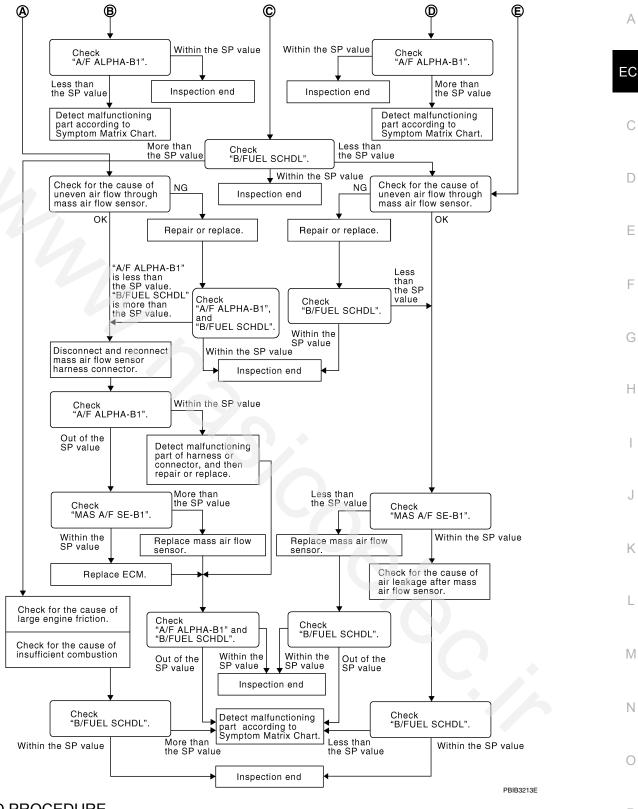
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#### DETAILED PROCEDURE

## 1.CHECK "A/F ALPHA-B1"

#### With CONSULT

- 2. Confirm that the testing conditions are met. Refer to EC-785, "Component Function Check".
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within 3. the SP value.

### TROUBLE DIAGNOSIS - SPECIFICATION VALUE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### NOTE:

Check "A/F ALPHA-B1" for approximately 1 minute because it may fluctuate. It is NG if the indication is out of the SP value even a little.

#### Is the measurement value within the SP value?

YES >> GO TO 14.

NO-1 >> Less than the SP value: GO TO 2.

NO-2 >> More than the SP value: GO TO 3.

## ${f 2.}$ CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 4.

NO >> More than the SP value: GO TO 16.

## ${f 3.}$ CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 6.

NO-1 >> More than the SP value: GO TO 6.

NO-2 >> Less than the SP value: GO TO 22.

## 4.CHECK "A/F ALPHA-B1"

- 1. Stop the engine.
- 2. Disconnect PCV hose, and then plug it.
- 3. Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 5.

NO >> GO TO 6.

# 5. CHANGE ENGINE OIL

- 1. Stop the engine.
- Change engine oil.

#### NOTE:

This symptom may occur when a large amount of gasoline is mixed with engine oil because of driving conditions (such as when engine oil temperature does not rise enough since a journey distance is too short during winter). The symptom will not be detected after changing engine oil or changing driving condition.

#### >> INSPECTION END

# 6. PERFORM POWER BALANCE TEST

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode.
- Make sure that the each cylinder produces a momentary engine speed drop.

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 7.

## .DETECT MALFUNCTIONING PART

#### Check the following.

- 1. Ignition coil and its circuit (Refer to EC-1229, "Component Function Check".)
- Fuel injector and its circuit (Refer to EC-1204, "Component Function Check".)
- 3. Intake air leakage
- 4. Low compression pressure (Refer to EM-182, "Inspection".)

#### Is the inspection result normal?

TROUBLE DIAGNOSIS - SPECIFICATION VALUE	
< DTC/CIRCUIT DIAGNOSIS > [MR EXCEPT FOR NISMO RS MODELS]	
YES >> Replace fuel injector and then GO TO 8.  NO >> Repair or replace malfunctioning part and then GO TO 8.	Α
8.CHECK "A/F ALPHA-B1"	
<ol> <li>Start engine.</li> <li>Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.</li> </ol>	EC
Is the measurement value within the SP value?	С
YES >> INSPECTION END NO >> GO TO 9.	
9. CHECK A/F SENSOR 1 FUNCTION	D
Perform all DTC CONFIRMATION PROCEDURE related with A/F sensor 1.	D
<ul> <li>For DTC P0130, refer to <u>EC-871, "DTC Logic"</u>.</li> <li>For DTC P0131, refer to <u>EC-875, "DTC Logic"</u>.</li> </ul>	_
<ul> <li>For DTC P0132, refer to <u>EC-878, "DTC Logic"</u>.</li> </ul>	Е
<ul> <li>For DTC P2096 or P2097, refer to <u>EC-1132, "DTC Logic"</u>.</li> <li>Is any DTC detected?</li> </ul>	
YES >> GO TO 10.	F
NO >> GO TO 12.	
10.check a/f sensor 1 circuit	G
Perform DIAGNOSTIC PROCEDURE according to corresponding DTC.	
>> GO TO 11.	Н
11.CHECK "A/F ALPHA-B1"	
1. Start engine.	1
<ol> <li>Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.</li> </ol>	ı
Is the measurement value within the SP value?	J
YES >> INSPECTION END NO >> GO TO 12.	
12. DISCONNECT AND RECONNECT ECM HARNESS CONNECTOR	K
1. Stop the engine.	
<ol> <li>Disconnect ECM harness connector.</li> <li>Check pin terminal and connector for damage, and then reconnect it.</li> </ol>	
3. Check pin terminal and connector for damage, and then reconnect it.	L
>> GO TO 13.	
13.check "a/f alpha-b1"	M
<ol> <li>Start engine.</li> <li>Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.</li> </ol>	Ν
Is the measurement value within the SP value?	
YES >> INSPECTION END NO >> Detect malfunctioning part according to <u>EC-1242, "Symptom Table"</u> .	0
14. CHECK "B/FUEL SCHDL"	
Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.	Р
Is the measurement value within the SP value?	
YES >> INSPECTION END	
NO-1 >> More than the SP value: GO TO 15. NO-2 >> Less than the SP value: GO TO 22.	
16	

15. DETECT MALFUNCTIONING PART

### TROUBLE DIAGNOSIS - SPECIFICATION VALUE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Check for the cause of large engine friction. Refer to the following.
- Engine oil level is too high
- Engine oil viscosity
- Belt tension of power steering, alternator, A/C compressor, etc. is excessive
- Noise from engine
- Noise from transmission, etc.
- Check for the cause of insufficient combustion. Refer to the following.
- Valve clearance malfunction
- Intake valve timing control function malfunction
- Camshaft sprocket installation malfunction, etc.

>> Repair or replace malfunctioning part, and then GO TO 27.

# 16. CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- Crushed air ducts
- Malfunctioning seal of air cleaner element
- · Uneven dirt of air cleaner element
- Improper specification of intake air system

#### Is the inspection result normal?

YES >> GO TO 21.

NO >> Repair or replace malfunctioning part, and then GO TO 17.

 $17.\mathtt{CHECK}$  "A/F ALPHA-B1", AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that each indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> "B/FUEL SCHDL" is more, "A/F ALPHA-B1" is less than the SP value: GO TO 18.

# $18. \mathsf{DISCONNECT}$ and reconnect mass air flow sensor harness connector

- Stop the engine.
- Disconnect mass air flow sensor harness connector.
- Check pin terminal and connector for damage and then reconnect it again.

>> GO TO 19.

# 19.CHECK "A/F ALPHA-B1"

- Start engine.
- Select "A/F ALPHA-B1" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

## Is the measurement value within the SP value?

>> Detect malfunctioning part of mass air flow sensor circuit and repair it. Refer to EC-843, "DTC YES <u>Logic"</u>. Then GO TO 26. >> GO TO 20.

NO

# 20.CHECK "MASS AIR FLOW SENSOR (HZ)"

Select "MASS AIR FLOW SENSOR (Hz)" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 21.

NO >> More than the SP value: Replace mass air flow sensor, and then GO TO 26.

# 21.REPLACE ECM

- Replace ECM.
- Perform EC-749, "Description".

>> GO TO 26.

## TROUBLE DIAGNOSIS - SPECIFICATION VALUE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# $\overline{22}$ .CHECK INTAKE SYSTEM

Check for the cause of uneven air flow through mass air flow sensor. Refer to the following.

- · Crushed air ducts
- Malfunctioning seal of air cleaner element
- · Uneven dirt of air cleaner element
- Improper specification of intake air system

## Is the inspection result normal?

YES >> GO TO 24.

NO >> Repair or replace malfunctioning part, and then GO TO 23.

# 23.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

>> INSPECTION END

NO >> Less than the SP value: GO TO 24.

## 24.CHECK "MASS AIR FLOW SENSOR (HZ)"

Select "MASS AIR FLOW SENSOR (Hz)" in "SPEC" of "DATA MONITOR" mode, and make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> GO TO 25.

NO >> Less than the SP value: Replace mass air flow sensor, and then GO TO 27.

# 25. CHECK INTAKE SYSTEM

Check for the cause of air leak after the mass air flow sensor. Refer to the following.

- Disconnection, looseness, and cracks in air duct
- Looseness of oil filler cap
- Disconnection of oil level gauge
- Open stuck, breakage, hose disconnection, or cracks of PCV valve
- Disconnection or cracks of EVAP purge hose, open stuck of EVAP canister purge volume control solenoid valve
- Malfunctioning seal of rocker cover gasket
- Disconnection, looseness, or cracks of hoses, such as vacuum hose, connecting to intake air system parts
- Malfunctioning seal of intake air system, etc.

### >> GO TO 27.

# 26.CHECK "A/F ALPHA-B1" AND "B/FUEL SCHDL"

Select "A/F ALPHA-B1" and "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and make sure that each indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

>> Detect malfunctioning part according to EC-1242, "Symptom Table". NO

## 27.CHECK "B/FUEL SCHDL"

Select "B/FUEL SCHDL" in "SPEC" of "DATA MONITOR" mode, and then make sure that the indication is within the SP value.

#### Is the measurement value within the SP value?

YES >> INSPECTION END

NO >> Detect malfunctioning part according to <a href="EC-1242">EC-1242</a>, "Symptom Table". EC

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## POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## POWER SUPPLY AND GROUND CIRCUIT

# Diagnosis Procedure

INFOID:0000000012198291

## 1.CHECK FUSE

Check that the following fuse is not blowing.

Location	Fuse No.	Capacity
IPDM E/R	#43	20 A
	#61	15 A

### Is the fuse blown (open)?

YES >> If the replaced fuse is blown again. Check IPDM E/R power supply.

NO >> GO TO 2.

# 2. CHECK GROUND CONNECTION

1. Turn ignition switch OFF.

2. Check ground connection E21 and E38. Refer to GI-48, "Circuit Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace ground connection.

# 3.CHECK ECM GROUND CIRCUIT

- Disconnect ECM harness connectors.
- 2. Check the continuity between ECM harness connector and ground.

+ ECM		_	Continuity	
Connector	Terminal			
	9			
F23	10	Ground	Existed	
	50			
F24	60			
	110			
	147			
E19	149			
·	152			

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK ECM POWER SUPPLY (MAIN)-I

- 1. Reconnect ECM harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector terminals.

ECM			
Connector	+	_	Voltage
Connector	Terr	minal	
E19	145	152	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 5.

### POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> GO TO 6.

## 5. CHECK ECM POWER SUPPLY (MAIN)-II

Turn ignition switch OFF and wait at least 10 seconds.

Check the voltage between ECM harness connector terminals as per the following.

ECM				Malla a a
Connector + _		Condition	Voltage (Approx.)	
	Terminal			, , ,
E19	145	152	After turning ignition switch OFF, battery voltage will exist for a few seconds	Drop to 0 V

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> GO TO 7.

## 6. CHECK ECM POWER SUPPLY (MAIN) CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connectors. 2.
- Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E19	145	E14	35	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

>> Perform the trouble diagnosis for IPDM E/R power supply circuit.

NO >> Repair or replace error-detected parts.

### 7.CHECK ECM RELAY CONTROL SIGNAL

Check the voltage between ECM harness connector terminals as per the following.

ECM				NAME OF THE PROPERTY OF THE PR	
Connector	+	Connector		Condition	Voltage (Approx.)
Connector	Terminal	Connector	Terminal		
				Ignition switch ON	0 V
F24	81	E19	152	Turn ignition switch OFF and wait at least 10 seconds.	Battery voltage

#### Is the inspection result normal?

YES >> Check Intermittent Incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 8.

### 8.CHECK ECM RELAY CONTROL SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

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### POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

+		-		
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	•
F24	81	E14	41	Existed

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-37, "Removal and Installation".

NO >> Repair or replace error-detected parts.

## 9. CHECK IGNITION SWITCH SIGNAL

- 1. Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals.

ECM					
Connector	+	-	Condition	Voltage (Approx.)	
Connector	Terminal			(	
E19	133	152	Ignition switch OFF	0 V	
L19	133	102	Ignition switch ON	Battery voltage	

### Is the inspection result normal?

YES >> GO TO 11.

NO >> GO TO 10.

## 10. CHECK IGNITION SWITCH SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
E19	133	E15	61	Existed

5. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 11. CHECK ECM POWER SUPPLY (BACK-UP)

Check the voltage between ECM harness connector terminals.

	+	-		
E	СМ	E	CM	Voltage
Connector	Terminal	Connector	Terminal	
F24	113	E19	152	Battery voltage

#### Is the inspection result normal?

YES >> Check Intermittent Incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 12.

## 12.CHECK ECM POWER SUPPLY (BACK-UP) CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.

### POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F24	113	E14	42	Existed

5. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

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### **U0101 CAN COMM CIRCUIT**

[MR EXCEPT FOR NISMO RS MODELS]

### U0101 CAN COMM CIRCUIT

Description INFOID:000000012198292

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic (NFOID:000000012198293

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
U0101	LOST COMM (TCM) (Lost communication with TCM)	When ECM is not transmitting or receiving CAN communication signal of OBD (emission-related diagnosis) with TCM for 2 seconds or more.	CAN communication line between TCM and ECM

### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- 2. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-796, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198294

Perform the trouble diagnosis for CAN communication system. Refer to <u>LAN-17</u>, "Trouble <u>Diagnosis Flow Chart"</u>.

### **U0122 VEHICLE DYNAMICS CONTROL MODULE**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### U0122 VEHICLE DYNAMICS CONTROL MODULE

Description INFOID:000000012198295

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
U0122	VDC MDL (Lost communication with vehi- cle dynamics control module)	When ECM is not transmitting or receiving CAN communication signal of OBD (emission related diagnosis) with ABS actuator and electric unit (control unit) for 2 seconds or more.	CAN communication line between ECM and ABS actuator and electric unit (control unit) (CAN communication line is open or shorted)

### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- 2. Check DTC.

### Is DTC detected?

YES >> Proceed to <u>EC-797</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

### Diagnosis Procedure

Perform the trouble diagnosis for CAN communication system. Refer to <u>LAN-17, "Trouble Diagnosis Flow</u>

Chart".

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INFOID:0000000012198297

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### **U1000 CAN COMM CIRCUIT**

[MR EXCEPT FOR NISMO RS MODELS]

### U1000 CAN COMM CIRCUIT

Description INFOID:000000012198298

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
U1000	CAN COMM CIRCUIT (CAN communication line)	When ECM is not transmitting or receiving CAN communication signal of OBD (emission related diagnosis) for 2 seconds or more.	Harness or connectors (CAN communication line is open or shorted)

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 3 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-798</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198300

Perform the trouble diagnosis for CAN communication system. Refer to <u>LAN-17</u>, "Trouble <u>Diagnosis Flow Chart"</u>.

### P0011 IVT CONTROL

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0011 IVT CONTROL

**DTC Logic** INFOID:0000000012198301

#### DTC DETECTION LOGIC

If DTC P0011 is displayed with DTC P0075, first perform the trouble diagnosis for EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0011	INT/V TIM CONT-B1 (Intake valve timing control performance)	There is a gap between angle of target and phase-control angle degree.	Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Intake valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for intake valve timing control

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON. 2.
- Turn ignition switch OFF and wait at least 10 seconds.

#### TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is between 10 V and 16 V at idle.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### (P)With CONSULT

- Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start engine and warm it up to normal operating temperature.
- Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

ENG SPEED	1,200 - 2,000 rpm
COOLAN TEMP/S	More than 60°C (140°F)
Selector lever	P or N position (CVT) Neutral position (M/T)

- Stop vehicle with engine running and let engine idle for 10 seconds.
- Check 1st trip DTC.

### With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-800, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.perform dtc confirmation procedure-ii

### With CONSULT

Maintain the following conditions for at least 20 consecutive seconds.

**EC-799 Revision: November 2015 2016 JUKE**  EC

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ENG SPEED	1,200 - 3,175 rpm (A constant rotation is maintained.)
COOLAN TEMP/S	More than 60°C (140°F)
Selector lever	D position (CVT) 1st or 2nd position (M/T)
Driving location	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)

#### **CAUTION:**

### Always drive at a safe speed.

2. Check 1st trip DTC.

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-800, "Diagnosis Procedure".

NO >> INSPECTION END

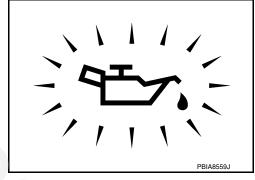
### Diagnosis Procedure

## 1. CHECK OIL PRESSURE WARNING LAMP

- Start engine.
- Check oil pressure warning lamp and confirm it is not illuminated.

### Is oil pressure warning lamp illuminated?

YES >> Check the engine oil level. Refer to <u>LU-28, "Inspection"</u>. NO >> GO TO 2.



INFOID:0000000012198302

## 2. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Check the intake valve timing control solenoid valve. Refer to <u>EC-801, "Component Inspection"</u>. <u>Is the inspection result normal?</u>

YES >> GO TO 3.

NO >> Replace intake valve timing control solenoid valve. Refer to EM-248, "Exploded View".

3.CHECK CRANKSHAFT POSITION SENSOR (POS)

Check the crankshaft position sensor (POS). Refer to EC-951, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS). Refer to EM-282, "Exploded View".

4. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Check the camshaft position sensor (PHASE). Refer to <u>EC-954, "Component Inspection"</u>.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace camshaft position sensor (PHASE). Refer to EM-260, "Exploded View".

### **5.**CHECK CAMSHAFT (INT)

Check the following.

### **P0011 IVT CONTROL**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

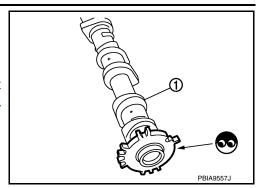
- Accumulation of debris to the signal plate of camshaft (1) rear end
- · Chipping signal plate of camshaft rear end

#### Is the inspection result normal?

>> GO TO 6. YES

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to EM-261, "Removal and Installation".



### 6.CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

>> Check timing chain installation. Refer to EM-249, "Removal and Installation".

>> GO TO 7. NO

### 7. CHECK LUBRICATION CIRCUIT

Refer to LU-28, "Inspection".

### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident". YES

NO >> Clean lubrication line.

### Component Inspection

## 1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- Disconnect intake valve timing control solenoid valve harness connector. 2.
- Check resistance between intake valve timing control solenoid valve terminals as per the following.

Intake valve timing control solenoid valve		
+ –		Resistance
Terr	minal	
1	2	6.7 - 7.7 Ω [at 20°C (68°F)]
1	Ground	$\Omega$
2	Ground	(Continuity should not exist)

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve. Refer to EM-248. "Exploded View".

### 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve. Refer to EM-248, "Exploded View"

Provide 12 V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

#### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

#### NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

#### Is the inspection result normal?

YES >> INSPECTION END

**Revision: November 2015** 

NO >> Replace intake valve timing control solenoid valve. Refer to EM-248, "Exploded View".

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**2016 JUKE** 

### P0014 EVT CONTROL

DTC Logic INFOID:000000012198304

#### DTC DETECTION LOGIC

#### NOTE:

• If DTC P0014 is displayed with DTC P0078, first perform trouble diagnosis for DTC P0078. Refer to EC-816, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0014	EXH/V TIM CONT-B1 (Exhaust valve timing control performance)	There is a gap between angle of target and phase-control angle degree.	Crankshaft position sensor (POS) Camshaft position sensor (PHASE) Exhaust valve timing control position sensor Exhaust valve control solenoid valve Accumulation of debris to the signal pick-up portion of the camshaft Timing chain installation Foreign matter caught in the oil groove for exhaust valve timing control

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is between 10 V and 16 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE-I

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to the normal operating temperature.
- Maintain the following conditions for at least 6 consecutive seconds. Hold the accelerator pedal as steady as possible.

ENG SPEED	1,200 - 2,000 rpm (A constant rotation is maintained.)	
COOLAN TEMP/S	More than 60°C (140°F)	
Selector lever	P or N position (CVT) Neutral position (M/T)	

- 4. Let engine idle for 10 seconds.
- Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-803, "Diagnosis Procedure"

NO >> GO TO 3.

## 3. PERFORM DTC CONFIRMATION PROCEDURE-II

(P)With CONSULT

### P0014 EVT CONTROL

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

1. Maintain the following conditions for at least 20 consecutive seconds.

ENG SPEED	1,200 - 3,175 rpm (A constant rotation is maintained.)	
COOLAN TEMP/S	More than 60°C (140°F)	
Selector lever	D position (CVT) 1st or 2nd position (M/T)	
Driving location uphill	Driving vehicle uphill (Increased engine load will help maintain the driving conditions required for this test.)	

#### **CAUTION:**

#### Always drive at a safe speed.

Check 1st trip DTC.

With GST

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-803, "Diagnosis Procedure"

NO >> INSPECTION END

### Diagnosis Procedure

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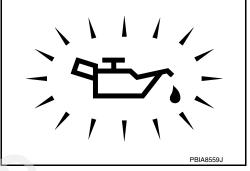
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### 1. CHECK OIL PRESSURE WARNING LAMP

- 1. Start engine.
- Check oil pressure warning lamp and confirm it is not illuminated.

### Is oil pressure warning lamp illuminated?

YES >> Check the engine oil level. Refer to <u>LU-28</u>, "<u>Inspection</u>". NO >> GO TO 2.



## 2.CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE

Check the exhaust valve timing control solenoid valve. Refer to <u>EC-801, "Component Inspection"</u>. Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-248, "Exploded View".

3.check crankshaft position sensor (pos)

Check the crankshaft position sensor (POS). Refer to EC-951, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace crankshaft position sensor (POS). Refer to <a href="EM-282">EM-282</a>, "Exploded View".

### 4. CHECK EXHAUST VALVE TIMING CONTROL POSITION SENSOR

Check the exhaust valve timing control position sensor. Refer to EC-954. "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace exhaust valve timing control position sensor. Refer to <a href="EM-260">EM-260</a>, "Exploded View".

### 5.CHECK CAMSHAFT (EXH)

Check the following.

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### P0014 EVT CONTROL

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

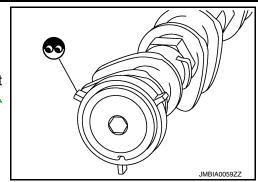
- · Accumulation of debris to the signal plate of camshaft rear end
- · Chipping signal plate of camshaft rear end

#### Is the inspection result normal?

YES >> GO TO 6.

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to <u>EM-261</u>, <u>"Removal and Installation"</u>.



### 6. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misaligned.

Are there any service records that may cause timing chain misaligned?

YES >> Check timing chain installation. Refer to EM-249, "Removal and Installation".

NO >> GO TO 7.

### 7. CHECK LUBRICATION CIRCUIT

Refer to LU-28, "Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Clean lubrication line.

### Component Inspection

INFOID:0000000012198306

## 1. CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing control solenoid valve harness connector.
- 3. Check resistance between exhaust valve timing control solenoid valve terminals as per the following.

Exhaust valve timing	control solenoid valve		
+ –		Resistance	
Terminal			
1	2	7.0 - 7.7 Ω [at 20°C (68°F)]	
1	Ground	$\Omega$	
2	Glound	(Continuity should not exist)	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-248. "Exploded View".

### 2.CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE-II

Remove exhaust valve timing control solenoid valve. Refer to EM-248, "Exploded View".

 Provide 12 V DC between exhaust valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Check that the plunger moves as shown in the figure.

### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in exhaust valve timing control solenoid valve.

NOTE:

Always replace O-ring when exhaust valve timing control solenoid valve is removed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-248, "Exploded View".

### P0030, P0031, P0032 A/F SENSOR HEATER

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0030, P0031, P0032 A/F SENSOR HEATER

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	(
P0030	A/F SEN 1 HTR (B1) (Air fuel ratio (A/F) sensor 1 heater control circuit)	Deterioration in A/F sensor 1 heater performance. (Voltage signal transmitted from A/F sensor 1 heater to ECM is higher/lower than voltage in the normal range.)	Harness or connectors	
P0031	A/F SEN 1 HTR (B1) (Air fuel ratio (A/F) sensor 1 heater control circuit low)	The current amperage in the A/F sensor 1 heater circuit is out of the normal range. (An excessively low voltage signal is sent to ECM through the A/F sensor 1 heater.)	<ul><li>(A/F sensor 1 heater circuit is open or shorted.)</li><li>A/F sensor 1 heater</li></ul>	E
P0032	A/F SEN 1 HTR (B1) (Air fuel ratio (A/F) sensor 1 heater control circuit high)	The current amperage in the A/F sensor 1 heater circuit is out of the normal range.  (An excessively high voltage signal is sent to ECM through the A/F sensor 1 heater.)	<ul> <li>Harness or connectors (A/F sensor 1 heater circuit is shorted.)</li> <li>A/F sensor 1 heater</li> </ul>	F

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than between 11 V at idle.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 10 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-805</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

### Diagnosis Procedure

### ${f 1}$ .CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- 1. Disconnect air fuel ratio (A/F) sensor 1 harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

+			
A/F sensor 1		_	Voltage
Connector	Terminal		
F72	4	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

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### P0030, P0031, P0032 A/F SENSOR HEATER

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# $\overline{2}$ .check a/f sensor 1 heater output signal circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

	+		_	
A/F se	ensor 1	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F72	3	F24	116	Existed

Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

### 3.CHECK A/F SENSOR 1 HEATER

Check the A/F sensor 1 heater. Refer to EC-806, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

### 4. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning air fuel ratio (A/F) sensor 1. Refer to EM-242. "Exploded View".

#### **CAUTION:**

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new A/F sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J-43897-12)] and approved Anti-seize Lubricant (commercial service tool).

### >> INSPECTION END

### Component Inspection

INFOID:0000000012198309

## 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- Check resistance between A/F sensor 1 terminals as per the following.

+	_	
A/F sensor 1		Resistance
Ter	minal	
	4	1.8 - 2.44 Ω [at 20°C (68°F)]
3	1	
	2	$\infty \Omega$
4	1	(Continuity should not exist)
	2	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-242, "Exploded View".

#### **CAUTION:**

### P0030, P0031, P0032 A/F SENSOR HEATER

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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### P0037, P0038 HO2S2 HEATER

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0037	HO2 HTR (B1) (Heated oxygen sensor 2 heater control circuit low)	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range.  (An excessively low voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	Harness or connectors     (Heated oxygen sensor 2 heater circuit is open or shorted.)     Heated oxygen sensor 2 heater
P0038	HO2 HTR (B1) (Heated oxygen sensor 2 heater control circuit high)	The current amperage in the heated oxygen sensor 2 heater circuit is out of the normal range. (An excessively high voltage signal is sent to ECM through the heated oxygen sensor 2 heater.)	Harness or connectors     (Heated oxygen sensor 2 heater circuit is shorted.)     Heated oxygen sensor 2 heater

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Check 1st trip DTC.
- **With GST**

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-808, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198311

## 1. CHECK HO2S2 POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between HO2S2 harness connector and ground.

	+		
HO2S2		_	Voltage
Connector	Terminal		
F71	4	Ground	Battery voltage

### P0037, P0038 HO2S2 HEATER

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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INFOID:0000000012198312

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YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.CHECK HO2S2 HEATER OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	3	F24	117	Existed

Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK HEATED OXYGEN SENSOR 2 HEATER

Check the heated oxygen sensor 2 heater. Refer to EC-809, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

### 4. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5. "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

## Component Inspection

### 1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 3. Check resistance between HO2S2 terminals as per the following.

+	_	
Heated oxygen sensor 2		Resistance
Terr	minal	
4	3	3.3 - 4.4 Ω [at 25°C (77°F)]
	2	
1	3	
	4	$\infty \Omega$
	1	(Continuity should not exist)
2	3	
	4	

Is the inspection result normal?

Revision: November 2015 EC-809 2016 JUKE

## P0037, P0038 HO2S2 HEATER

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> INSPECTION END

NO >> GO TO 2.

2. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5. "Exploded View".

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

### P0046 WASTEGATE CONTROL MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0046 WASTEGATE CONTROL MOTOR

DTC Logic (INFOID:000000012198313

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0046 is displayed with DTC P2562, and/or P2566 first perform the trouble diagnosis for DTC P2562, and/or P2566. Refer to <a href="EC-1168">EC-1168</a>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P0046	TC/SC BOOST CONTROL A (Turbocharger/supercharger boost control A circuit range/ performance)	When the following conditions are detected due to a malfunction in electric wastegate actuator motor:  Motor drive duty is 100% or more for 5 consecutive seconds  The difference between target stroke and actual stroke is 3mm or more for 5 consecutive seconds	Harness or connectors     (Electric wastegate control motor circuit is open or shorted.)     Electric wastegate control actuator

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

**TEST CONDITION:** 

Before performing the following procedure, confirm that battery voltage is between more than 11 V at idle.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- 1. Turn ignition switch ON and wait at least 10 seconds.
- 2. Start the engine and warm it up to nomal operating temperature.
- 3. Check 1st trip DTC. (If actuator motor is stuck on the valve closing side, 1st trip DTC is detected during the above procedure. If 1st trip DTC is not detected, actuator motor may be stuck on the valve opening side. In this case, follow the instruction below.)
- Drive the vehicle and accelerate from 20km/h (13 MPH) to 80km/h (50 MPH) within 10 seconds.
   CAUTION:

Always drive at safe speed.

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-811, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

## 1.check electric wastegate control actuator output signal circuit

- Turn ignition switch OFF.
- Disconnect electric wastegate control actuator harness connector and ECM harness connector.
- Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

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### P0046 WASTEGATE CONTROL MOTOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

	+	-		
	egate control	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F61	4	F24	107	Existed
101	5	1 24	108	LAISIGU

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

### 2.check electric wastegate control actuator

Check the electric wastegate control actuator. Refer to <u>EC-812</u>, "Component Inspection (<u>Electric Wastegate</u> Control Actuator)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45</u>, "Intermittent Incident".

NO >> Replace electric wastegate control actuator.

### Component Inspection (Electric Wastegate Control Actuator)

INFOID:0000000012198315

### 1. INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

### 2. CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

#### (P)With CONSULT

- Turn ignition switch ON and engine stopped.
- 2. On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "WASTEGATE ACTUATOR".
- 3. Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.002 m, and make a quick short note of value "V1" of "W/G ACTUATOR POSI SEN B1".
- 4. Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.006 m, and make a quick short note of value "V2" of "W/G ACTUATOR POSI SEN B1".

<u>Do the values of "V1" and "V2" change (visually, ACTUATOR SHAFT operates) and "V2" minus "V1" becomes equal to or more than 1.3V?</u>

YES >> INSPECTION END

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to <a href="EC-600">EC-600</a>, "ENGINE CONTROL SYSTEM: Component Parts Location".

## 3.check electric wastegate control actuator

#### 

- 1. Turn ignition switch OFF.
- 2. Disconnect Wastegate control actuator harness connector.
- While checking the POSITION SENSOR OUT voltage with an oscilloscope, apply a voltage of 12 V to the positive or negative terminal.

#### Does ACTUATOR SHAFT visually operate and POSITION SENSOR OUT voltage change?

YES >> INSPECTION END

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

### P0075 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0075 IVT CONTROL SOLENOID VALVE

DTC Logic INFOID:0000000012198316

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name ((Trouble diagnosis content))	DTC detecting condition	Possible cause
P0075	INT/V TIM V/CIR-B1 (Intake valve timing control solenoid valve circuit)	An improper voltage is sent to the ECM through intake valve timing control solenoid valve.	<ul> <li>Harness or connectors         (Intake valve timing control solenoid valve circuit is open or shorted.)</li> <li>Intake valve timing control solenoid valve</li> </ul>

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 5 seconds.
- Check 1st trip DTC. 2.

### Is 1st trip DTC detected?

YES >> Proceed to EC-813, "Diagnosis Procedure"

>> INSPECTION END NO

### Diagnosis Procedure

## 1.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing (IVT) control solenoid valve harness connector.
- Turn ignition switch ON. 3.
- Check the voltage between intake valve timing control solenoid valve harness connector and ground.

+			
IVT control solenoid valve		_	Voltage
Connector	Terminal		
F62	2	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between IVT control solenoid valve harness connector and IPDM E/R harness connector.

**EC-813 Revision: November 2015 2016 JUKE**  EC

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### P0075 IVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

	+		+	
IVT control s	olenoid valve	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F62	2	E14	36	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.check intake valve timing control solenoid valve ground circuit

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between IVT control solenoid valve harness connector and ECM harness connector.

	+		+	
IVT control s	olenoid valve	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F62	1	F24	111	Existed

4. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Check the intake valve timing control solenoid valve. Refer to EC-814, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace intake valve timing control solenoid valve.

### Component Inspection

INFOID:0000000012198318

## 1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as per the following.

Intake valve timing of	control solenoid valve		
+ –		Resistance	
Terr	ninal		
1	2	6.7 - 7.7 Ω [at 20°C (68°F)]	
1	Ground	$\Omega$	
2	Ground	(Continuity should not exist)	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace intake valve timing control solenoid valve. Refer to <a href="EM-248">EM-248</a>, "Exploded View".

### 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove intake valve timing control solenoid valve. Refer to <a href="EM-248">EM-248</a>, "Exploded View".

### P0075 IVT CONTROL SOLENOID VALVE

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

Provide 12 V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

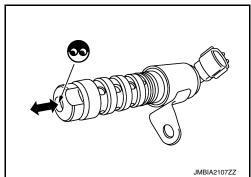
#### NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake valve timing control solenoid valve. Refer to EM-248, "Exploded View".



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### P0078 EVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0078 EVT CONTROL SOLENOID VALVE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0078	EX V/T ACT/CIRC-B1 (Exhaust valve timing control sole- noid valve circuit)	An improper voltage is sent to the ECM through exhaust valve timing control solenoid valve.	Harness or connectors     (Exhaust valve timing control solenoid valve circuit is open or shorted.)     Exhaust valve timing control solenoid valve

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 5 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-816, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198320

## 1. CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing (EVT) control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between exhaust valve timing control solenoid valve harness connector and ground.

	+		
EVT control s	solenoid valve	_	Voltage
Connector	Terminal		
F100	2	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between EVT control solenoid valve harness connector and IPDM E/R harness connector.

### P0078 EVT CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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+	-	-	+				
EVT control s	olenoid valve	IPDN	/I E/R	Continuity			
Connector	Terminal	Connector	Terminal	-			
F100	2	E14	36	Existed			
. Also che	ck harness	for short to g	ground.				
s the inspec							
		trouble diag			uit.		
_		place error-d	-		VALVE GROUND	CIDCLUT	
			GCONTRO	L SOLENOI	VALVE GROUND	CIRCUIT	
	ition switch	OFF. rness conne	ctor				
				olenoid valv	narness connector	r and ECM harness conne	:C-
tor.							
+			+				
EVT control s			CM To receive of	Continuity			
Connector	Terminal	Connector	Terminal	F :			
F100	1	F24	112	Existed			
s the inspec	tion result n	_	ground and t	o power.			
s the inspec YES >> 0 NO >> 1 1.CHECK E	tion result n GO TO 4. Repair or re XHAUST V	ormal? place error-d ALVE TIMIN	letected part	ts. L SOLENOII			
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### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-248, "Exploded View".

## 2. CHECK EXHAUST VALVE TIMING CONTROL SOLENOID VALVE-II

1. Remove exhaust valve timing control solenoid valve. Refer to <a href="EM-248">EM-248</a>, "Exploded View".

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### P0078 EVT CONTROL SOLENOID VALVE

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Provide 12 V DC between exhaust valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Check that the plunger moves as shown in the figure.

#### **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in exhaust valve timing control solenoid valve.

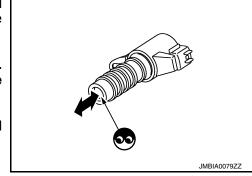
#### NOTE:

Always replace O-ring when exhaust valve timing control solenoid valve is removed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace exhaust valve timing control solenoid valve. Refer to EM-248, "Exploded View".



< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0087 FRP CONTROL SYSTEM

DTC Logic INFOID:0000000012198322

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0087 is displayed with DTC P0090 and/or P1197, first perform the trouble diagnosis for DTC P0090 and/or P1197. Refer to EC-826, "DTC Logic" and/or EC-1071, "DTC Logic".
- DTC P0087 may be displayed when running out of gas or air accumulation.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
	4	<ul> <li>Fuel rail pressure does not reach 1.3 MPa (13 bar, 13.3 kg/cm2, 188.5 psi) at engine cold start [water temperature 5°C (41°F) – 40°C (104°F)].</li> <li>Fuel rail pressure remains at 8.5 MPa</li> </ul>		
P0087	LOW FUEL PRES (High fuel pressure too low)	(85 bar, 86.7 kg/cm2, 1232.8 psi) or less for 1 second or more during engine idle condition after cold start [water temperature 5°C (41°F) – 40°C	<ul> <li>Fuel system</li> <li>Leakage in fuel line</li> <li>High pressure fuel pump</li> <li>Low pressure fuel pump</li> </ul>	
	• /	<ul> <li>(104°F)].</li> <li>The following condition continues for 5 seconds or more after engine start (regardless of water temperature):</li> </ul>	Damage in lifter	
		Target fuel pressure – Actual fuel pressure ≥ 2.7 MPa (27 bar, 27.5 kg/cm2, 392 psi).		

### DTC CONFIRMATION PROCEDURE

## 1. CHECK FUEL LEAKAGE

- Turn ignition switch ON.
- Visually check the piping between low pressure fuel pump and fuel injectors for fuel leakage.
- Start the engine.
- Visually check the piping between low pressure fuel pump and fuel injectors for fuel leakage.

### Is inspection result normal?

YES >> GO TO 2.

>> Repair or replace error-detected parts. NO

### 2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.
- Before performing the following procedure, check that the fuel tank is 1/8 full of fuel.

>> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-1 $\,$

### WITH CONSULT

- Turn ignition switch ON.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGNE" using CONSULT.
- Check the following condition;

**COOLAN TEMP/S**  $: 5 - 40^{\circ}C (41 - 104^{\circ}F)$ 

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

INFOID:0000000012198323

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is the condition satisfied?

YES >> GO TO 4.

NO >> 1. Satisfy the condition.

2. Retry from step 1.

### 4.PERFORM DTC CONFIRMATION PROCEDURE-2

#### (P)WITH CONSULT

- 1. Start the engine and let it idle for 10 seconds.
- 2. Check 1st trip DTC.

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-820</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 5.

### PERFORM DTC CONFIRMATION PROCEDURE-3

#### (P)WITH CONSULT

- 1. Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Maintain the following condition for 10 seconds or more at idle.

### COOLAN TEMP/S : 70°C (104°F) or more

3. Check 1st trip DTC.

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is 1st trip DTC detected?

YES >> Proceed to EC-820, "Diagnosis Procedure".

NO >> INSPECTION END.

### Diagnosis Procedure

BLEED THE FUEL LINE
 Start the engine, and let the engine run at idle at least for 10 minutes.

2. Perform DTC confirmation procedure of DTC P0087.

#### Is 1st trip DTC detected?

YES >> GO TO 2.

NO >> GO TO 6.

## 2. CHECK LOW FUEL PRESSURE

Check low fuel pressure. Refer to EC-771, "Work Procedure".

### Is inspection result normal?

YES >> GO TO 3.

NO >> Check low fuel pressure system. Refer to <a href="EC-1234">EC-1234</a>, "Diagnosis Procedure"

## ${f 3.}$ CHECK LOW PRESSURE FUEL LINE FOR INTERNAL LEAKAGE

- 1. Turn ignition switch OFF.
- 2. Turn ignition switch ON.
- 3. Check the following value 30 minutes after turning the ignition switch ON.

#### Low fuel pressure : 206 kPa (2.1 bar, 2.2 kgf/cm2, 30 psi) or more

#### Is inspection result normal?

YES >> GO TO 4.

NO >> Replace low pressure fuel pump. Refer to <u>FL-7, "2WD : Removal and Installation"</u> (2WD models), FL-11, "AWD : Removal and Installation" (AWD models).

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#### [MR EXCEPT FOR NISMO RS MODELS] < DTC/CIRCUIT DIAGNOSIS > f 4.CHECK HIGH PRESSURE FUEL PUMP Α Check high pressure fuel pump. Refer to EC-821, "Component Inspection (High Pressure Fuel Pump)". Is inspection result normal? YES >> GO TO 5. EC NO >> Repair or replace the error-detected parts. CHECK HIGH PRESSURE FUEL PUMP LIFTER Check high pressure fuel pump lifter. Refer to EM-203, "Removal and Installation". Does the lifter top surface have scratches and/or dents? YES >> Replace the error-detected parts. D NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". 6.CHECK LOW PRESSURE FUEL LINE FOR INTERNAL LEAKAGE Turn ignition switch OFF. 2. Connect fuel pressure gauge. Refer to EC-771, "Work Procedure". Turn ignition switch ON. Check the following value 30 minutes after turning the ignition switch ON. Low fuel pressure : 206 kPa (2.1 bar, 2.2 kgf/cm2, 30 psi) or more Is inspection result normal? YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident". >> Replace low pressure fuel pump. Refer to FL-7, "2WD: Removal and Installation" (2WD models), NO FL-11, "AWD: Removal and Installation" (AWD models). Н Component Inspection (High Pressure Fuel Pump) INFOID:0000000012198324 1. CHECK HIGH PRESSURE FUEL PUMP-1 Turn ignition switch OFF. Disconnect high pressure fuel pump harness connector. Check the resistance between high pressure fuel pump terminals. Resistance High pressure fuel pump Condition (Approx.) Terminal Temperature °C (°F) 20 - 30 (68 - 86) $0.46 - 0.51 \Omega$ Is the inspection result normal? YES >> GO TO 2. NO >> Replace high pressure fuel pump. Refer to EM-203, "Exploded View" 2.CHECK HIGH PRESSURE FUEL PUMP-2 **®WITH CONSULT** N 1. Reconnect high pressure fuel pump harness connector. Start the engine. 2.

Monitor item	Condition	Value (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
FUEL PRES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

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Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ECM" using CONSULT.

### **®WITHOUT CONSULT**

- 1. Reconnect high pressure fuel pump harness connector.
- 2. Start the engine.
- 3. Check FRP sensor signal voltage.

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< DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

	ECM			V-1 -
Connector	+	_	Condition	Value (Approx.)
Connector	Term	ninal		, , ,
F23	F23 25 13 —		Engine speed: idle	1.14 – 1.46 V
1 20			Engine speed: Revving engine from idle to 4,000 rpm quickly	1.3 – 2.9 V

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace high pressure fuel pump. Refer to <a href="EM-203">EM-203</a>, "Exploded View".

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0088 FRP CONTROL SYSTEM

**DTC Logic** INFOID:0000000012198325

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0088 is displayed with DTC P0090, first perform the trouble diagnosis for DTC P0090. Refer to EC-826, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P0088	HIGH FUEL PRES (High fuel pressure too high)	Fuel rail pressure remains at more than 16.5 MPa (165 bar, 168.3 kg/cm², 2392.5 psi) for 1 second or more during engine idle condition after cold start [water temperature 5°C (41°F) - 40°C (104°F)].      The following condition continues for 5 seconds or more after engine start (regardless of water temperature): Actual fuel pressure − Target fuel pressure ≥ 2.7 MPa (27 bar, 27.5 kg/cm², 392 psi)	Harness or connector (The high pressure fuel pump circuit is open or shorted) High pressure fuel pump	

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.
- Before performing the following procedure, check that the fuel tank is 1/8 full of fuel.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE-1

Warm up the engine to the normal operating temperature and keep the engine speed at idle for 15 seconds.

#### NOTE:

Warm up the engine until "COOLAN TEMP/S" on "DATA MONITOR" mode of "ENGINE" using CONSULT reaches at least 70°C (158°F).

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-826, "Diagnosis Procedure"

NO >> GO TO 3.

### 3.PERFORM DTC CONFIRMATION PROCEDURE-2

- Cool the engine until the engine coolant temperature reaches 60°C (140°F) or less.
- Start the engine and wait at least 40 seconds.
- 3. Check 1st trip DTC.

### Is 1st trip DTC detected?

>> Proceed to EC-826, "Diagnosis Procedure". YES

NO >> INSPECTION END

### Diagnosis Procedure

 ${f 1}$  .CHECK LOW FUEL PRESSURE

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INFOID:0000000012198326

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Check low fuel pressure. Refer to <u>EC-771</u>, "Work Procedure"

### Is inspection result normal?

YES >> GO TO 2.

NO >> Check low fuel pressure system. Refer to <u>EC-1234</u>, "<u>Diagnosis Procedure</u>".

### 2.CHECK HIGH PRESSURE FUEL PUMP

Check high pressure fuel pump. Refer to EC-824, "Component Inspection (High Pressure Fuel Pump)".

#### Is inspection result normal?

YES >> GO TO 3.

NO >> Replace error-detected parts.

## 3.CHECK FUEL LEAKAGE

- 1. Start the engine.
- Visually check that the fuel pump, fuel rail, and fuel piping have no fuel leakage.

#### Is inspection result normal?

YES >> Check that the fuel system has no breakage, bend, and crush. Refer to FL-5, "Inspection".

NO >> Replace or replace the error-detected parts.

### Component Inspection (High Pressure Fuel Pump)

INFOID:0000000012198327

## 1. CHECK HIGH PRESSURE FUEL PUMP-1

- Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump harness connector.
- 3. Check the resistance between high pressure fuel pump terminals.

+	-		Resistance		
High pressu	ire fuel pump	Condi	(Approx.)		
Terminal				( ) ,	
1	2	Temperature °C (°F)	$0.46$ - $0.51\Omega$		

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. Refer to EM-203, "Exploded View".

## 2.CHECK HIGH PRESSURE FUEL PUMP-2

### (I) WITH CONSULT

- 1. Reconnect high pressure fuel pump harness connector.
- Start the engine.
- Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ECM" using CONSULT.

Monitor item	Condition	Value (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
TOLET NES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

#### **NWITHOUT CONSULT**

- 1. Reconnect high pressure fuel pump harness connector.
- 2. Start the engine.
- 3. Check FRP sensor signal voltage.

< DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

	ECM			
Connector	+	_	Condition	Value (Approx.)
Connector	Term	ninal		(11 /
F23	F23   25   13		Engine speed: idle	1.14 – 1.46 V
1 20			Engine speed: Revving engine from idle to 4,000 rpm quickly	1.3 – 2.9 V

EC

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace high pressure fuel pump. Refer to <a href="EM-203">EM-203</a>, "Exploded View".

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### P0090 HIGH PRESSURE FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0090 HIGH PRESSURE FUEL PUMP

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0090 is displayed with DTC P1197, first perform the trouble diagnosis for DTC P1197. Refer to <u>EC-1071</u>, "DTC Logic".
- DTC P0090 may be displayed when running out of gas.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0090	FUEL PUMP (High pressure fuel pump circuit)	<ul> <li>Fuel rail pressure remains at 1.5 MPa (15 bar, 15.3 kg/ cm², 217.5 psi) or less for 3 seconds or more during engine rev.</li> <li>Fuel rail pressure remains at 18.5 MPa (185 bar, 188.7 kg/ cm², 2682.5 psi) or more for 0.3 seconds or more during engine rev.</li> </ul>	Harness or connectors (The fuel pump circuit is open or shorted.) High pressure fuel pump

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.
- Before performing the following procedure, check that the fuel tank is 1/8 full of fuel.

>> GO TO 2.

### 2. PERFORM DTC CONFIRMATION PROCEDURE-I

### (P)WITH CONSULT

- Start engine.
- 2. Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGNE" using CONSULT.
- Maintain the following condition for 5 seconds or more at idle.

## COOLAN TEMP/S : 70°C (104°F) or more

Check 1st trip DTC.

**WITH GST** 

Follow the above steps for "WITH CONSULT".

#### Is 1st trip DTC detected?

YES >> Proceed to EC-826, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198329

### 1. CHECK HIGH PRESSURE FUEL PUMP CIRCUIT

- Turn ignition switch ON.
- Disconnect ECM harness connector and high pressure fuel pump harness connector.
- 3. Check the continuity between ECM harness connector and high pressure fuel pump harness connector.

### P0090 HIGH PRESSURE FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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							1
	+	-	_				
EC	CM	High pressu	Sure fuel pump Value (Approx.)				
Connector	Terminal	Connector	Termina		,		Е
F23	48 49	F53	1 2	Existed	d		
4. Also che	eck harnes	s for short to	ground ar	nd to power.			(
s inspection		mal?					
_	GO TO 2. Renair or r	replace the err	ror-detect	ted narts			
_	•	SSURE FUEL		ica parto.			
				827 "Compone	ent Inspection	on (High Pressure Fuel Pump)".	
Is inspection			Ci to <u>Lo</u>	ozr, compon	SHE INOPCOLIC	sir (riigiri reessare raeri amp).	
YES >>	Check inte	rmittent incide		r to <u>GI-45, "Inte</u>	ermittent Inc	ident".	
NO >>	Replace th	ne error-detect	ted parts.				
Compone	nt Inspe	ction (High	Pressi	ure Fuel Pu	mp)	INFOID:000000012198330	
1 CHECK H	HIGH PRE	SSURE FUEL	PUMP-1	1			
	ition switch			•			
<ol><li>Disconn</li></ol>	ect high pr	ressure fuel pu		ess connector.			ı
<ol><li>Check th</li></ol>	ne resistan	ice between h	igh press	sure fuel pump	terminals.		1
+	_					-	
High pressur	e fuel pump		Condition	n	Resistance		
Term	ninal				(Approx.)		
1	2	Temperature	°C (°F)	20 – 30 (68 - 86)	0.46 - 0.51 Ω	-	
s the inspec	tion result	normal?	1			-	
	GO TO 2.			D.C. L. EM	200 115 11	1.176	
_	-	ign pressure τι SSURE FUEL		. Refer to EM-2	203, "Explo	ded View".	
		SSURE FUEL	. PUMP-2				
WITH CO		accura fual ni	ımn harnı	ess connector.			
<ol><li>Start the</li></ol>	engine.	•	•				
3. Check "I	FUEL PRE	ES SEN V" in "	DATA MO	ONITOR" mode	e of "ECM" ι	using CONSULT.	
					Ī	Value	
Monitor i	tem		Con	ndition		Value (Approx.)	
	E	ngine speed: idle	!			1,140 – 1,460 mV	

Monitor item	Condition	Value (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
TOLL FIXES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

### **®**WITHOUT CONSULT

- 1. Reconnect high pressure fuel pump harness connector.
- 2. Start the engine.
- 3. Check FRP sensor signal voltage.

**EC-827 Revision: November 2015 2016 JUKE** 

### P0090 HIGH PRESSURE FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

ECM				V-L -
Connector	+	_	Condition	Value (Approx.)
	Terminal			
F23	25	13	Engine speed: idle	1.14 – 1.46 V
			Engine speed: Revving engine from idle to 4,000 rpm quickly	1.3 – 2.9 V

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace high pressure fuel pump. Refer to <a href="EM-203">EM-203</a>, "Exploded View".

### P0096 IAT SENSOR 2

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

## P0096 IAT SENSOR 2

DTC Logic INFOID:0000000012198331

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0096	IAT SENSOR 2 B1 [Intake air temperature (IAT) sensor 2 circuit range/performance]	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor 1, IAT sensor 2, ECT sensor, FTT sensor, and EOT sensor) shows that the voltage signal of the IAT sensor 2 is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors (High or low resistance in the IAT sensor 2 circuit) IAT sensor 2

### DTC CONFIRMATION PROCEDURE

## 1.INSPECTION START

### Is it necessary to erase permanent DTC?

YES >> GO TO 3. NO >> GO TO 2.

# 2.PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-830, "Component Function Check".

Use the component function check to check the overall function of the IAT sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-830, "Diagnosis Procedure".

### 3.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 4.

### f 4 . PERFORM DTC CONFIRMATION PROCEDURE

Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 12 hours.

#### **CAUTION:**

Never turn ignition switch ON during this procedure.

The vehicle must be cooled with the hood open.

3. Start engine and let it idle for 5 minutes or more.

### **CAUTION:**

Never turn ignition switch OFF during idling.

Check 1st trip DTC.

**EC-829 Revision: November 2015 2016 JUKE** 

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### P0096 IAT SENSOR 2

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is 1st trip DTC detected?

YES >> Proceed to EC-830, "Diagnosis Procedure".

NO >> INSPECTION END

## Component Function Check

INFOID:0000000012198332

# 1. CHECK INTAKE AIR TEMPERATURE (IAT) SENSOR 2

- 1. Turn ignition switch OFF.
- 2. Disconnect turbocharger boost sensor harness connector.
- 3. Check resistance between turbocharger boost sensor terminals as follows.

Turbocharge	boost sensor			
+	-	Condition		Resistance (kΩ)
Terr	minal			
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to <u>EC-830</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

INFOID:0000000012198333

## 1. CHECK INTAKE AIR TEMPERATURE (IAT) SENSOR 2

Check intake air temperature sensor 2. Refer to EC-830, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor (with intake temperature sensor 2). Refer to <u>EM-194</u>, "<u>Exploded View</u>".

## Component Inspection

INFOID:0000000012198334

# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2

- Turn ignition switch OFF.
- Disconnect turbocharger boost sensor harness connector.
- 3. Check resistance between turbocharger boost sensor terminals as follows.

Turbocharge	r boost sensor	Condition		
+	_			Resistance ( $k\Omega$ )
Term	ninals			
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <u>EM-197</u>, "<u>Exploded View</u>".

### P0097, P0098 IAT SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0097, P0098 IAT SENSOR 2

DTC Logic INFOID:0000000012198335

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P0097	IAT SENSOR 2 B1 (Intake air temperature sensor 2 circuit low input)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the intake air temperature sensor 2 is 0.085 V or less.	Harness or connectors     (Intake air temperature sensor 2 circuit is open or shorted.)	
P0098	IAT SENSOR 2 B1 (Intake air temperature sensor 2 circuit high input)	ECM detects the following status continuously for 5 seconds or more:  A voltage signal transmitted from the intake air temperature sensor 2 is 4.84 V or more.	Intake air temperature sensor 2     Sensor power supply 2 circuit	

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 5 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-831, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

 ${f 1}$  .CHECK INTAKE AIR TEMPERATURE SENSOR 2 POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF.
- 2. Disconnect turbocharger boost sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between turbocharger boost sensor harness connector terminals.

Tu			
Connector	+	_	Voltage (Approx.)
Connector	Terr	minal	(
F75	3	4	5 V

### Is the inspection result normal?

YES >> GO TO 2. NO >> GO TO 4.

# 2.CHECK INTAKE AIR TEMPERATURE SENSOR 2 SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

**EC-831 Revision: November 2015 2016 JUKE** 

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INFOID:0000000012198336

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### P0097, P0098 IAT SENSOR 2

[MR EXCEPT FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

+			_	
Turbocharge	r boost sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F75	3	F24	77	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK INTAKE AIR TEMPERATURE SENSOR 2

Check intake air temperature sensor 2. Refer to EC-833, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <u>EM-194</u>, <u>"Exploded View"</u>.

## 4. CHECK INTAKE AIR TEMPERATURE SENSOR 2 POWER SUPPLY CIRCUIT-II

Check the voltage between turbocharger boost sensor harness connector terminal and ground.

	+		
Turbocharge	r boost sensor	_	Voltage (Approx.)
Connector	Connector Terminal		(-4-4)
F75	3	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 7.

## CHECK INTAKE AIR TEMPERATURE SENSOR 2 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

+			_	
Turbocharge	r boost sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F75	4	F23	13	Existed

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## 6.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

# P0097, P0098 IAT SENSOR 2

[MR EXCEPT FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

EC	CM				
Connector	Terminal	- Ground	Continu	iity	
	9				
F23	10				
	50				
	60				
F24	110	Ground	Existe	d	
	147				
E19	149				
	152				
the inspection i	result normal?				
		cident.Refer to		nittent Incident".	
•		or-detected parts			
CHECK SENS	SOR POWER SU	JPPLY 2 CIRCU	IT		
erform EC-1240	, "Diagnosis Pro	ocedure".			
the inspection i	result normal?				
'ES >> Perfo	rm the trouble s	liammaala fan mau			
	illi ille ilouble c	liagnosis for pow	ver supply circ	cuit.	
NO >> Repa	ir or replace err	or-detected parts	ver supply circ s.	cuit.	
NO >> Repa	ir or replace err	or-detected parts	ver supply cires.	cuit.	INFOID:000000012198337
NO >> Repa	nir or replace err	or-detected parts	S.	cuit.	INFOID:0000000012198337
NO >> Repa omponent Ir .CHECK INTAR	nir or replace err Inspection KE AIR TEMPER	RATURE SENSO	S.	cuit.	INFOID:000000012198337
NO >> Repaint Ir  CHECK INTAR  Turn ignition	nir or replace err Inspection (E AIR TEMPER Switch OFF.	or-detected parts	or 2	cuit.	INFOID:000000012198337
IO >> Repainment Ir  CHECK INTAR  Turn ignition Disconnect to	nir or replace err ISPECTION  KE AIR TEMPER  Switch OFF.  urbocharger boo	or-detected parts RATURE SENSO	DR 2		INFOID:000000012198337
IO >> Repainment Ir  CHECK INTAR  Turn ignition Disconnect to	nir or replace err ISPECTION  KE AIR TEMPER  Switch OFF.  urbocharger boo	or-detected parts RATURE SENSO	DR 2	ninals as follows.	INFOID:000000012198337
O >> Repainment Ir  CHECK INTAR  Turn ignition Disconnect to Check resista	nir or replace erranspection  KE AIR TEMPER  switch OFF.  urbocharger boch  ance between tu	or-detected parts RATURE SENSO	DR 2		INFOID:000000012198337
O >> Repainment Ir CHECK INTAR Turn ignition Disconnect to Check resista	nir or replace erranspection  KE AIR TEMPER  switch OFF.  urbocharger boch  ance between tu	or-detected parts RATURE SENSO	DR 2		INFOID:000000012198337
Omponent Ir  CHECK INTAK  Turn ignition Disconnect to Check resista	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger boo ance between tu	RATURE SENSO	DR 2	ninals as follows.	INFOID:000000012198337
O >> Repair Omponent Ir CHECK INTAR Turn ignition Disconnect to Check resistant Turbocharger book	nir or replace errorspection  KE AIR TEMPER switch OFF. urbocharger bochance between tuest sensor	RATURE SENSO	DR 2	ninals as follows.	INFOID:000000012198337
O >> Repair Omponent Ir CHECK INTAR Turn ignition Disconnect to Check resistant Turbocharger book + Terminals	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger boch ance between tu  st sensor  - 4 Temper	RATURE SENSO est sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows. Resistance (kΩ)	INFOID:000000012198337
Omponent Ir CHECK INTAK  Turn ignition Disconnect to Check resista  Turbocharger bood  + Terminals 3  the inspection of	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger boch ance between tu  st sensor  4 Temper result normal?	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
O >> Repair Omponent Ir CHECK INTAKE Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection in the inspection of the ins	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	INFOID:000000012198337
O >> Repair Omponent Ir CHECK INTAR Turn ignition Disconnect to Check resista  Turbocharger bood  + Terminals 3 the inspection of the insp	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger boch ance between tu  st sensor  4 Temper result normal?	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
Omponent Ir CHECK INTAK  Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection in its inspection in i	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
Omponent Ir CHECK INTAK  Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection in its inspection in i	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
Omponent Ir CHECK INTAK  Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection in its inspection in i	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
O >> Repair Omponent Ir CHECK INTAKE Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection of the ins	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
O >> Repair Omponent Ir CHECK INTAKE Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection of the ins	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	
O >> Repair Omponent Ir CHECK INTAKE Turn ignition Disconnect to Check resists  Turbocharger book  + Terminals 3 the inspection of the ins	nir or replace erronspection  KE AIR TEMPER switch OFF. urbocharger bod ance between tu  st sensor  - 4 Temper result normal? PECTION END ace turbocharge	RATURE SENSOnst sensor harnes rbocharger boos	DR 2 ss connector. st sensor term	ninals as follows.  Resistance (kΩ)  1.80 – 2.20	

## P00B3, P00B4 ENGINE COOLANT TEMPERATURE SENSOR 2

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P00B3, P00B4 ENGINE COOLANT TEMPERATURE SENSOR 2

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P00B3	RADIATOR COOLANT TEMP SEN (Radiator coolant temperature sensor circuit low)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the engine coolant temperature sensor 2 is 0.04 V or less.	Harness or connectors     (Engine coolant temperature sensor 2)
P00B4	RADIATOR COOLANT TEMP SEN (Radiator coolant temperature sensor circuit high)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the engine coolant temperature sensor 2 is 4.84 V or more.	circuit is open or shorted.)  • Engine coolant temperature sensor 2

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-834, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198339

# 1.CHECK ENGINE COOLANT TEMPERATURE SENSOR 2 POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature (ECT) sensor 2 harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between ECT sensor 2 harness connector and ground.

	+		
ECT s	ensor 2	_	Voltage (Approx.)
Connector	Terminal		, , ,
E205	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 2. NO >> GO TO 4.

## 2.CHECK ENGINE COOLANT TEMPERATURE SENSOR 2 GROUND CIRCUIT

## P00B3, P00B4 ENGINE COOLANT TEMPERATURE SENSOR 2

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between ECT sensor 2 harness connector and ECM harness connector.

	+		_	
ECT s	ensor 2	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
E205	2	F23	45	Existed

Also check harness for short to ground to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK ENGINE COOLANT TEMPERATURE SENSOR 2

Check the engine coolant temperature sensor 2. Refer to EC-835, "Component Inspection (Engine Coolant Temperature Sensor 2)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace engine coolant temperature sensor 2. Refer to <u>CO-46, "Exploded View"</u>.

## 4. CHECK ENGINE COOLANT TEMPERATURE SENSOR 2 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between ECT sensor 2 harness connector and ECM harness connector.

	+		-	
ECT s	ensor 2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
E205	1	F23	40	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

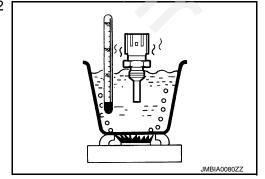
## Component Inspection (Engine Coolant Temperature Sensor 2)

INFOID:0000000012198340

# 1.check engine coolant temperature sensor ${\scriptstyle 2}$

- Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor 2 harness connector.
- 3. Remove engine coolant temperature sensor 2.
- 4. Check resistance between engine coolant temperature sensor 2 terminals by heating with hot water as shown in the figure.

ECT s	ensor 2			
+	-	Condition		Resistance
Terr	ninal			
			20 (68)	2.37 - 2.63 kΩ
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00 kΩ
		90 (194)		0.236 - 0.260 kΩ



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor 2. Refer to <u>CO-46, "Exploded View"</u>.

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## P00C1, P00C2 TURBOCHARGER BYPASS CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P00C1, P00C2 TURBOCHARGER BYPASS CONTROL VALVE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P00C1	TC/SC BYPASS VALVE B (Turbocharger/supercharger bypass valve B control circuit low)	An excessively low voltage from the turbo- charger bypass control valve is sent to ECM.	Harness or connectors     (Turbocharger bypass control valve cir-
P00C2	TC/SC BYPASS VALVE B (Turbocharger/supercharger bypass valve B control circuit high)	An excessively high voltage from the turbo- charger bypass control valve is sent to ECM.	cuit is open or shorted.)  • Turbocharger bypass control valve

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at ignition switch ON.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-836, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198342

# 1. TURBOCHARGER BYPASS CONTROL VALVE POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect turbocharger bypass control valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between turbocharger bypass control valve harness connector and ground.

	+		
Turbocharger bypass control valve		_	Voltage
Connector Terminal			
F64	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2. CHECK TURBOCHARGER BYPASS CONTROL VALVE INPUT SIGNAL CIRCUIT

1. Turn ignition switch OFF.

## P00C1, P00C2 TURBOCHARGER BYPASS CONTROL VALVE

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Disconnect ECM harness connector.

Check the continuity between turbocharger bypass control valve harness connector and ECM harness connector.

	+	_		
	ger bypass Il valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F64	2	F24	105	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK TURBOCHARGER BYPASS CONTROL VALVE

Check the turbocharger bypass control valve. Refer to EC-837, "Component Inspection (Turbocharger Bypass Control Valve)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger assembly (do not replace bypass control valve only). Refer to EM-242, "Exploded View".

## Component Inspection (Turbocharger Bypass Control Valve)

## 1. CHECK TURBOCHARGER BYPASS CONTROL VALVE

With consult

- Turn ignition switch ON and engine stopped or engine running (idling, less than 1200rpm).
- On the CONSULT screen, select ENGINE » ACTIVE TEST » "TC BYPASS VALVE".
- Operate "ON" or "OFF" and check if valve operating sound can be heard.

#### 

- Turn ignition switch OFF.
- Disconnect turbocharger bypass control valve harness connector.
- Apply a voltage of 12V to the positive or negative terminal.

### Can the valve operating sound be heard?

YFS >> INSPECTION END

NO >> Replace turbocharger assembly (do not replace bypass control valve only). Refer to EM-242, "Exploded View".

**EC-837 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198343

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0101 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0101	MAF SEN/CIRCUIT-B1 (Mass air flow sensor circuit range/performance)	<ul> <li>A high voltage from the sensor is sent to ECM under light load driving condition.</li> <li>A low voltage from the sensor is sent to ECM under heavy load driving condition.</li> </ul>	Harness or connectors (The sensor circuit is open or shorted.) Intake air leaks Mass air flow sensor EVAP control system pressure sensor Intake air temperature sensor 1

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- 2. Drive the vehicle for at least 5 seconds under the following conditions:

#### **CAUTION:**

Always drive vehicle at safe speed.

Selector lever	Suitable position
Vehicle speed	40 km/h (25 MPH) or more

### NOTE:

- · The gear must be fixed while driving the vehicle.
- Keep the accelerator pedal as steady as possible during cruising.
- 3. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-838, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198345

## 1. CHECK INTAKE SYSTEM

Check the following items to see the installation condition and the connection condition of the joint.

- · Air duct
- Vacuum hoses
- Intake air passage between air duct and intake manifold

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Reconnect or replace error-detected parts.

2.CHECK MASS AIR FLOW (MAF) SENSOR POWER SUPPLY

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

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- 1. Disconnect MAF sensor harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between MAF sensor harness connector and ground.

	+		
MAF sensor		_	Voltage
Connector	Terminal		
F8	1	Ground	Approx. 5 V

### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.check mass air flow (maf) sensor power supply circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F8	1	F23	26	Existed

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 4. CHECK MAF SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F8	2	F23	37	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

### ${f 5}$ .CHECK MAF SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

MAF	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F8	3	F23	42	Existed

2. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

## 6. CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check intake air temperature sensor 1. Refer to EC-840, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> Replace MAF sensor (with intake air temperature sensor 1).

# 7.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check EVAP control system pressure sensor. Refer to EC-1004, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP control system pressure sensor.

## 8. CHECK MAF SENSOR

Check MAF sensor. Refer to EC-840, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace MAF sensor. Refer to EM-192, "Exploded View".

## Component Inspection

INFOID:0000000012198346

# 1. CHECK MASS AIR FLOW (MAF) SENSOR-I

### (II) With CONSULT

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT and select "DATA MONITOR" mode.
- 5. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

Monitor item	Condition	Indication (Hz)
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
MASS AIR FLOW SENSOR (Hz)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### 

- I. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the frequency between ECM harness connector terminals under the following conditions.

ECM				
Connector	+	_	Condition	Frequency (Hz)
Connector	Terminal			
		27 42	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
F23	37 42		Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
123		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz	
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

# 2. CHECK FOR THE CAUSE OF UNEVEN AIR FLOW THROUGH MAF SENSOR

- 1. Turn ignition switch OFF.
- 2. Check for the cause of uneven air flow through MAF sensor. Refer to the following.

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. CHECK MAF SENSOR-II

### (P)With CONSULT

- Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.
- Connect CONSULT and select "DATA MONITOR" mode.
- Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

Monitor item	Condition	Indication (Hz)
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
MASS AIR FLOW SENSOR (Hz)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### 

- 1. Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- Check the frequency between ECM harness connector terminals under the following conditions.

	ECM				
Connector	+	_	Condition	Frequency (Hz)	
Connector	Terminal				
	37 42	27 42	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
F23			Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
F23		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz		
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

### 4.CHECK MAF SENSOR-III

### (P)With CONSULT

- Ĭ. Turn ignition switch OFF.
- 2. Disconnect MAF sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- Connect CONSULT and select "DATA MONITOR" mode.
- 5. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

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## [MR EXCEPT FOR NISMO RS MODELS]

Monitor item	Condition	Indication (Hz)
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
MASS AIR FLOW SENSOR (Hz	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### **WWithout CONSULT**

- 1. Turn ignition switch OFF.
- 2. Disconnect MAF sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the frequency between ECM harness connector terminals under the following conditions.

	ECM			
Connector	+ -		Condition	Frequency (Hz)
Connector	Terminal			
	37 42	42	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
F23			Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
F23		42	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace MAF sensor. Refer to <a href="EM-192">EM-192</a>, "Exploded View".

DTC Logic INFOID:0000000012198347

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0102	MAF SEN/CIRCUIT-B1 (Mass air flow sensor circuit low input)	An excessively low voltage from the mass air flow sensor is sent to ECM.	Harness or connectors     (Mass air flow sensor circuit is open or shorted.)     Intake air leaks     Mass air flow sensor
P0103	MAF SEN/CIRCUIT-B1 (Mass air flow sensor circuit high input)	An excessively high voltage from the mass air flow sensor is sent to ECM.	Harness or connectors     (Mass air flow sensor circuit is open or shorted.)     Mass air flow sensor

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

## 2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0102

- Start engine and wait at least 5 seconds.
- Check DTC.

#### Is DTC detected?

>> Proceed to EC-843, "Diagnosis Procedure".

>> INSPECTION END NO

## 3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P01 $\overline{\scriptscriptstyle 03-1}$

- Turn ignition switch ON and wait at least 5 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-843, "Diagnosis Procedure".

NO >> GO TO 4.

## f 4 .PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P0103-II

- Start engine and wait at least 5 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-843, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

1.INSPECTION START Confirm the detected DTC.

### Which DTC is detected?

P0102 >> GO TO 2.

P0103 >> GO TO 3.

**EC-843 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198348

### [MR EXCEPT FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

# 2. CHECK INTAKE SYSTEM

Check the following for connection.

- Air duct
- Vacuum hoses
- Intake air passage between air duct to intake manifold

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Reconnect the parts. Refer to EM-192, "Exploded View".

# 3.CHECK MAF SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow (MAF) sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between MAF sensor harness connector and ground.

	+		
MAF	sensor	_	Voltage
Connector	Terminal		
F8	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 4.

## f 4.CHECK MAF SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between MAF sensor harness connector and ECM harness connector.

	+		_	
MAF sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F8	1	F23	26	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## ${f 5.}$ CHECK MAF SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between MAF sensor harness connector and ECM harness connector.

	+		_	
MAF sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F8	3	F23	42	Existed

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### **6.**CHECK MAF SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between MAF sensor harness connector and ECM harness connector.

### [MR EXCEPT FOR NISMO RS MODELS]

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### < DTC/CIRCUIT DIAGNOSIS >

	+	_		
MAF sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F8	2	F23	37	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

### 7. CHECK MASS AIR FLOW SENSOR

Check the mass air flow sensor. Refer to EC-845, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor. Refer to <a href="EM-192">EM-192</a>, "Exploded View".

## Component Inspection

# 1. CHECK MASS AIR FLOW (MAF) SENSOR-I

### (II) With CONSULT

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT and select "DATA MONITOR" mode.
- 5. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

Monitor item	Condition	Indication (Hz)
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
MASS AIR FLOW SENSOR (Hz	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### 

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the frequency between ECM harness connector terminals under the following conditions.

ECM					
Connector	+	-	Condition	Frequency (Hz)	
Connector	Terminal				
F23	37 42	27 40	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
			Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz		
		Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*		

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# $\overline{2}$ .check for the cause of uneven air flow through maf sensor

- 1. Turn ignition switch OFF.
- 2. Check for the cause of uneven air flow through MAF sensor. Refer to the following.
- Crushed air ducts
- Malfunctioning seal of air cleaner element
- Uneven dirt of air cleaner element
- Improper specification of intake air system parts

#### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 3.

3. CHECK MAF SENSOR-II

### (P)With CONSULT

- 1. Repair or replace malfunctioning part.
- Start engine and warm it up to normal operating temperature.
- 3. Connect CONSULT and select "DATA MONITOR" mode.
- 4. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

Monitor item	Condition	Indication (Hz)
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
MASS AIR FLOW SENSOR (Hz)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### ®Without CONSULT

- Repair or replace malfunctioning part.
- 2. Start engine and warm it up to normal operating temperature.
- Check the frequency between ECM harness connector terminals under the following conditions.

ECM					
Connector	Connector + - Terminal		Condition	Frequency (Hz)	
Connector					
			Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
F23	500	37 42	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
F23 37	37 42	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz		
			Idle to about 4,000 rpm	5,100 - 5,500 to Approx. 7,000 Hz*	

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

4. CHECK MAF SENSOR-III

#### (P)With CONSULT

- Turn ignition switch OFF.
- 2. Disconnect MAF sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT and select "DATA MONITOR" mode.
- 5. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

### < DTC/CIRCUIT DIAGNOSIS >

## [MR EXCEPT FOR NISMO RS MODELS]

Monitor item	Condition	Indication (Hz)
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
MASS AIR FLOW SENSOR (Hz)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### 

- 1. Turn ignition switch OFF.
- 2. Disconnect MAF sensor harness connector and reconnect it again.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the frequency between ECM harness connector terminals under the following conditions.

ECM					
Connector	+	-	Condition	Frequency (Hz)	
		rminal			
	F23 37 42	F22 27 42	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
E23			Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
F23 37		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz		
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	

**EC-847** 

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Clean or replace MAF sensor. Refer to <a href="EM-192">EM-192</a>, "Exploded View".

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<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### P0106 TC BOOST SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0106	ABSL PRES SEN/CIRC (Turbocharger boost sensor circuit)	Difference between intake manifold air pressure and barometric pressure while engine stopped.	Harness or connectors     TC boost sensor

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 1 minute before conducting the next test.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Accelerate the vehicle to 60 km/h (37 MPH) in 2nd gear (M/T models), or "SPORT mode" (CVT models) and keep that status 15 seconds.
- Check DTC.

### Is DTC detected?

YES >> EC-848, "Diagnosis Procedure"

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198351

## 1.CHECK TURBOCHARGER BOOST SENSOR FITTING CONDITION

Check turbocharger boost sensor fitting condition.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Adjust parts fitting condition.

## 2.CHECK FOR CHARGE AIR LEAK

- 1. Start the engine and let it idle.
- Listen for an charge air leak.

### Is intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

## 3. CHECK TURBOCHARGER BOOST SENSOR HARNESS CONNECTOR CONNECTIONS

Check turbocharger boost sensor harness connector connection F75.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4.CHECK TURBOCHARGER BOOST SENSOR

Check turbocharger boost sensor. Refer to EC-849, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace error-detected parts.

## 5. CHECK TURBOCHARGER BOOST SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.

### P0106 TC BOOST SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

2. Check the power supply of the turbocharger boost sensor.

	+		
Turbocharge	r boost sensor	-	Voltage (Approx.)
Connector	Terminal		· · · · /
F75 2		Ground	5.0 V

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### Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform trouble diagnosis for power supply circuit.

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## 6.CHECK TURBOCHARGER BOOST SENSOR CIRCUIT FOR OPEN AND SHORT

Check turbocharger boost sensor circuit for open and short.

+		-		
E	СМ	Turbocharger boost sensor		Continuity
Connector	Terminal	Connector Terminal		
	11		1	
F23	13	F75	4	Existed
	29		2	

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## Component Inspection

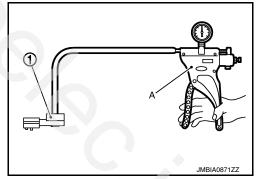
#### INFOID:0000000012198352

# 1. CHECK TURBOCHARGER BOOST SENSOR

- Turn ignition switch OFF.
- 2. Remove turbocharger boost sensor with its harness connector.
- Install pressure pump (A) to turbocharger boost sensor (1).
   CAUTION:

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- · Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

ECM					
Connector	+	_	Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)	
Terminal		ninal	, , , , , , , , , , , , , , , , , , ,	( 1-1 7	
F23	11 13		0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V	
125	11	13	40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V	

### Is the inspection result normal?

YES >> INSPECTION END

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NO >> Replace turbocharger boost sensor. Refer to <a href="EM-194">EM-194</a>, "Exploded View".

### P010A MANIFOLD ABSOLUTE PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P010A MANIFOLD ABSOLUTE PRESSURE SENSOR

**DTC Logic** INFOID:0000000012198353

#### DTC DETECTION LOGIC

### NOTE:

If DTC P010A is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P010A	Manifold absolute pressure sensor circuit	<ul> <li>An excessively low voltage from the sensor is sent to ECM.</li> <li>An excessively high voltage from the sensor is sent to ECM.</li> </ul>	Harness or connectors     (The sensor circuit is open or shorted.)     Manifold absolute pressure (MAP) sensor

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 10 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-851, "Diagnosis Procedure"

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK GROUND CONNECTION

- Turn ignition switch OFF.
- Check ground connection M95. Refer to Ground Inspection in GI-48, "Circuit Inspection".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace ground connection.

# 2.CHECK MAP SENSOR POWER SUPPLY CIRCUIT

- 1. Disconnect MAP sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between manifold absolute pressure sensor (MAP) sensor harness connector and ground.

MAP sensor  Connector Terminal		Ground	Voltage (V)
		Ground	voltage (v)
F76	1	Ground	Approx. 5

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

3.CHECK MAP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

EC-851 **Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198354

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### P010A MANIFOLD ABSOLUTE PRESSURE SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between MAP sensor harness connector and ECM harness connector.

MAP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F76	3	F23	43	Existed

4. Also check harness for short to ground and power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

## 4. CHECK MAP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check the continuity between MAP sensor harness connector and ECM harness connector.

MAP	sensor	E	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F76	2	F23	31	Existed

2. Also check harness for short to ground and power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

## 5. CHECK MAP SENSOR

Refer to EC-852, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace MAP sensor.

### 6. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

#### >> INSPECTION END

# Component Inspection

INFOID:0000000012198355

# 1. CHECK MAP SENSOR-I

- 1. Turn ignition switch OFF.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF, wait at least 5 seconds and then turn ON.
- 4. Check the voltage between ECM harness connector terminals as follows.

ECM				
Connector	+	_		
Connector	Terr	ninal		
F23	31 43			

#### NOTE:

- To avoid the influence of intake manifold vacuum, check the voltage 1 or more minutes past after engine is stopped.
- Because the sensor is absolute pressure sensor, output value may differ depending on atmospheric pressure and altitude.
- 5. Measure the atmospheric pressure.

### NOTE:

## P010A MANIFOLD ABSOLUTE PRESSURE SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

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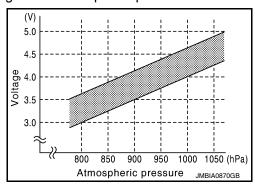
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As the atmospheric pressure described on the synoptic chart is the value at sea level, compensate the pressure with the following chart.

Altitude (m)	Compensated pressure (hPa)
0	0
200	-24
400	-47
600	-70
800	-92
1000	-114
1500	-168
2000	-218

6. Check the manifold absolute pressure sensor value corresponding to the atmospheric pressure.

Atmospheric pressure (hPa)	Voltage (V)				
800	3.1 – 3.7				
850	3.3 – 3.9				
900	3.5 – 4.1				
950	3.8 – 4.3				
1000	4.0 – 4.6				
1050	4.2 – 4.8				



### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace MAP sensor.

## 2.CHECK MAP SENSOR-II

- 1. Start engine and let it idle.
- 2. Check intake manifold vacuum.
- 3. Check the voltage between ECM harness connector terminals as follows.

ECM				
Connector	+	-		
Connector	Terr	ninal		
F23	31	43		

4. Confirm the difference of the voltage when engine is stopped and at idling is within the values shown in the following chart.

Intake manifold vacuum [kPa (mmHg)]	Voltage difference (V)
-40 (-300)	1.5 – 2.0
-53.3 (-400)	2.0 – 2.6
-66.7 (-500)	2.6 – 3.2
-80 (-600)	3.2 – 3.8

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace MAP sensor.

### P0111 IAT SENSOR 1

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0111	IAT SENSOR 1 B1 (Intake air temperature sensor 1 circuit range/performance)	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor, ECT sensor, FTT sensor, and EOT sensor) shows that the voltage signal of the IAT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors (High or low resistance in the IAT sensor 1 circuit) IAT sensor 1

### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

### Is it necessary to erase permanent DTC?

YES >> GO TO 3.

NO >> GO TO 2.

## 2. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-855, "Component Function Check".

#### NOTE:

Use the component function check to check the overall function of the IAT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-855, "Diagnosis Procedure".

## 3.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

- · Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- · Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE

1. Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 12 hours.

#### **CAUTION:**

Never turn ignition switch ON during this procedure.

#### NOTE:

The vehicle must be cooled with the hood open.

3. Start engine and let it idle for 5 minutes or more.

#### CAUTION:

Never turn ignition switch OFF during idling.

Check 1st trip DTC.

### P0111 IAT SENSOR 1

### < DTC/CIRCUIT DIAGNOSIS >

## [MR EXCEPT FOR NISMO RS MODELS]

<u>ls 1st trip DTC de</u>			
YES >> Proce	<u>tected?</u> eed to <u>EC-855, "Diagnosis Proce</u>	dura"	
	ECTION END	<u>dure</u> .	
Component F	unction Check		INFOID:000000012198357
		INCOD 4	
	E AIR TEMPERATURE (IAT) SE	ENSOR 1	
<ol> <li>Turn ignition s</li> <li>Disconnect m</li> </ol>	switch OFF. ass air flow sensor harness conr	nector.	
<ol><li>Check resista</li></ol>	nce between mass air flow sens	or terminals as follows.	
Terminals	Condition	Resistance (kΩ)	
3 and 4	Temperature [°C (°F)] 25 (77)	1,800 – 2,200	
s the inspection r		<u> </u>	
	k intermittent incident. Refer to G		
	ed to <u>EC-855, "Diagnosis Proce</u>	<u>dure"</u> .	
Diagnosis Pro	cedure		INFOID:0000000012198358
1.CHECK INTAK	E AIR TEMPERATURE (IAT) SE	ENSOR 1	
	emperature sensor 1. Refer to E		
s the inspection r			
	k intermittent incident. Refer to G		
	ice mass air flow sensor. Refer to	b <u>EM-192, "Exploded View"</u> .	
Component In	spection		INFOID:0000000012198359
1.CHECK INTAK	E AIR TEMPERATURE SENSO	R 1	
1. Turn ignition s	switch OFF		
rainiginuon (	,		
<ol><li>Disconnect m</li></ol>	ass air flow sensor harness conr		
<ol><li>Disconnect m</li></ol>			
<ol><li>Disconnect m</li></ol>	ass air flow sensor harness conr nce between mass air flow sens		
<ol> <li>Disconnect m</li> <li>Check resista</li> </ol>	ass air flow sensor harness conr nce between mass air flow sens		
Disconnect m     Check resista  Mass air flow sensor	ass air flow sensor harness conr nce between mass air flow sensor	or terminals as per the following. Resistance ( $k\Omega$ )	
2. Disconnect m 3. Check resista  Mass air flow senso  + -  Terminals  3 4	ass air flow sensor harness conruce between mass air flow sensor  Condition  Temperature [°C (°F)] 25 (77)	or terminals as per the following.	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  s the inspection r	ass air flow sensor harness conrunce between mass air flow sensor  Condition  Temperature [°C (°F)] 25 (77)  esult normal?	or terminals as per the following. Resistance ( $k\Omega$ )	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  s the inspection r  YES >> INSP	ass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect har	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  s the inspection r  YES >> INSP	ass air flow sensor harness conrunce between mass air flow sensor  Condition  Temperature [°C (°F)] 25 (77)  esult normal?	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  s the inspection r  YES >> INSP	ass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect har	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  Is the inspection r  YES >> INSPI	ass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect har	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  s the inspection r  YES >> INSP	ass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect har	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  Is the inspection r  YES >> INSPI	ass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect har	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	
2. Disconnect m 3. Check resista  Mass air flow sensor  + -  Terminals  3 4  s the inspection r  YES >> INSP	ass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect between mass air flow sensor harness conrect har	or terminals as per the following. Resistance ( $k\Omega$ )  1.800 - 2.200	

## P0112, P0113 IAT SENSOR 1

DTC Logic INFOID:0000000012198360

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0112	IAT SEN/CIRCUIT- B1 (Intake air temperature sensor 1 circuit low input)	An excessively low voltage from the intake air temperature sensor 1 is sent to ECM.	Harness or connectors     (Intake air temperature sensor 1 circuit is)
P0113	IAT SEN/CIRCUIT- B1 (Intake air temperature sensor 1 circuit high input)	An excessively high voltage from the intake air temperature sensor 1 is sent to ECM.	open or shorted.)  • Intake air temperature sensor 1

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-856, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198361

# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect mass air flow sensor (with intake air temperature sensor 1) harness connector.
- Turn ignition switch ON.
- Check the voltage between mass air flow sensor harness connector and ground.

+			\/altaga	
MAF sensor		<b>—</b> s	Voltage (Approx.)	
Connector Terminal			, , ,	
F8	4	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK INTAKE AIR TEMPERATURE SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between mass air flow sensor harness connector and ECM harness connector.

## **P0112, P0113 IAT SENSOR 1**

< DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

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	+	_	_				
MAF	sensor	EC	CM	Continuity			
Connector	Terminal	Connector	Terminal	-			
F8	4	F23	36	Existed			
. Also che	eck harness	for short to g	round.				
	ction result n						
YES >> NO >>	Perform the	trouble diagr place error-d	nosis for pov	wer supply cir	cuit.		
_		•	•	OR 1 GROUN	ID CIBCLIIT		
			OTTE OLIVO				
	nition switch sect ECM ha	off. rness connec	ctor.				
B. Check to	he continuity	between ma	ass air flow	sensor harnes	s connector	and ECM harness of	connector.
	+	-	-	O a matical visita v			
Connector	sensor Terminal	Connector	CM Terminal	Continuity			
F8	3	F23	42	Existed			
				LXISted			
		for short to p	ower.				
-	ction result n GO TO 4.	<u>ormar?</u>					
NO >>	Repail of le	place error-d	etected par	ts.			
4	•	•	etected part URE SENS				
<b>1.</b> CHECK I	NTAKE AIR	TEMPERAT	URE SENS	OR 1	Component I	nspection"	
4.CHECK I	NTAKE AIR ntake air tem	TEMPERAT	URE SENS		<u>Component li</u>	nspection".	
4.CHECK ICHECK ICHECK the inspector YES >>	NTAKE AIR ntake air tem ction result n Check interr	TEMPERATI perature sen ormal? mittent incide	URE SENSon 1. Referent. Refer to	OR 1  to <u>EC-857, "(</u> <u>GI-45, "Intern</u>	nittent Incider	<u>nt"</u> .	
Check the instance of the inspector of t	NTAKE AIR ntake air tem ction result n Check interr Replace ma	TEMPERATI perature sen ormal? mittent incide	URE SENSon 1. Referent. Refer to	OR 1  to <u>EC-857, "(</u> <u>GI-45, "Intern</u>	nittent Incider		192, "Explod
4.CHECK I Check the in s the inspec YES >> NO >>	NTAKE AIR take air tem ction result n Check interr Replace ma View"	TEMPERATION Perature sen ormal? Mittent incide ss air flow se	URE SENSon 1. Referent. Refer to	OR 1  to <u>EC-857, "(</u> <u>GI-45, "Intern</u>	nittent Incider	<u>nt"</u> .	192, "Explod
4.CHECK I Check the in s the inspec YES >> NO >>	NTAKE AIR ntake air tem ction result n Check interr Replace ma	TEMPERATION Perature sen ormal? Mittent incide ss air flow se	URE SENSon 1. Referent. Refer to	OR 1  to <u>EC-857, "(</u> <u>GI-45, "Intern</u>	nittent Incider	<u>nt"</u> .	•
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4.CHECK I Check the in s the inspec YES >> NO >> Compone 1.CHECK I	NTAKE AIR  Itake air tem  ction result n  Check interr  Replace ma  View"  Int Inspec	TEMPERATION TEMPERATION  TEMPERATION  TEMPERATION  TEMPERATION	URE SENS sor 1. Refer nt. Refer to ensor (with i	OR 1 to <u>EC-857, "</u> <u>GI-45, "Intern</u> ntake air temp	nittent Incider	<u>nt"</u> .	192, "Explod
4. CHECK I Check the in s the inspec YES >> NO >> Compone 1. CHECK I	NTAKE AIR  Itake air tem  Itake air	TEMPERATION TEMPERATION  TEMPERATION  TEMPERATION  TEMPERATION	URE SENSO sor 1. Refer nt. Refer to ensor (with i	OR 1  to <u>EC-857, "</u> <u>GI-45, "Intern</u> ntake air temp	nittent Incider	<u>nt"</u> .	•
4. CHECK I Check the in s the inspec YES >> NO >> Compone 1. CHECK I Turn ign 2. Disconn	ntake air temetion result name the control of the c	TEMPERATION TEMPERATION  TEMPER	ure sensor 1. Refer to ensor (with in the sensor with in the sensor the senso	OR 1  to <u>EC-857, "</u> <u>GI-45, "Intern</u> ntake air temp	nittent Incider perature sens	nt". sor 1). Refer to <u>EM-</u>	•
4. CHECK I Check the in s the inspec YES >> NO >> Compone 1. CHECK I Turn ign Disconne Check re	ntake air temetion result name tion result name the control of the	TEMPERATION TEMPERATION  TEMPER	ure sensor 1. Refer to ensor (with in the sensor with in the sensor the senso	OR 1  to EC-857, "  GI-45, "Intern  ntake air temp  OR 1  nnector.	nittent Incider perature sens	nt". sor 1). Refer to <u>EM-</u>	•
4. CHECK I Check the in s the inspect YES >> NO >> Compone 1. CHECK I 1. Turn ign 2. Disconn 3. Check re Mass	ntake air temetion result name the control of the c	TEMPERATION TEMPERATION  TEMPER	ure sensor 1. Refer to ensor (with in the sensor with in the sensor the senso	OR 1  To EC-857, "  GI-45, "Intern  ntake air temp  OR 1  nnector.  asor terminals	nittent Incider perature sens	nt". sor 1). Refer to EM-	•
4. CHECK I Check the in s the inspec YES >> NO >> Compone 1. CHECK I 1. Turn ign 2. Disconn 3. Check r  Mass +	ntake air temetion result name tion result name the control of the	TEMPERATION TEMPERATION  TEMPER	ure sensor 1. Refer to ensor (with in the sensor with in the sensor the senso	OR 1  to EC-857, "  GI-45, "Intern  ntake air temp  OR 1  nnector.	nittent Incider perature sens	nt". sor 1). Refer to <u>EM-</u>	•
4. CHECK I Check the in s the inspec YES >> NO >> Compone 1. CHECK I 1. Turn ign 2. Disconn 3. Check r  Mass +	ntake air temetion result name tion result name the control of the	TEMPERATION Perature sensormal? mittent incide ss air flow settion  TEMPERATION OFF. r flow sensor etween mass	ure sensor 1. Refer to ensor (with in the sensor with in the sensor the senso	OR 1  To EC-857, "  GI-45, "Intern  ntake air temp  OR 1  nnector.  asor terminals  Condition	nittent Incider perature sens	nt". sor 1). Refer to EM-	•

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to EM-192, "Exploded View".

**EC-857 Revision: November 2015 2016 JUKE** 

### **P0116 ENGINE COOLANT TEMPERATURE SENSOR 1**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0116 ENGINE COOLANT TEMPERATURE SENSOR 1

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0116	ECT SEN/CIRC (Engine coolant temperature sensor 1 circuit range/performance)	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor, ECT sensor, FTT sensor, and EOT sensor) shows that the voltage signal of the ECT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors     (High or low resistance in the ECT sensor circuit)     Engine coolant temperature sensor 1

### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

### Is it necessary to erase permanent DTC?

YES >> GO TO 3.

NO >> GO TO 2.

## 2. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-859, "Component Function Check".

#### NOTE:

Use the component function check to check the overall function of the ECT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-859, "Diagnosis Procedure".

### 3.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- · Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE

1. Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 12 hours.

#### **CAUTION:**

Never turn ignition switch ON during this procedure.

#### NOTE:

The vehicle must be cooled with the hood open.

3. Start engine and let it idle for 20 minutes or more.

#### CAUTION:

Never turn ignition switch OFF during idling.

Check 1st trip DTC.

### **P0116 ENGINE COOLANT TEMPERATURE SENSOR 1**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-859</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

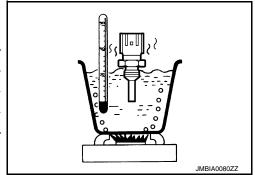
## Component Function Check

INFOID:0000000012198364

# 1. CHECK ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect ECT sensor 1 harness connector.
- 3. Remove ECT sensor 1. Refer to CO-54, "Exploded View".
- 4. Check resistance between ECT sensor 1 terminals by heating with hot water as shown in the figure.

Terminals	Condition	Resistance (kΩ)	
			2.37 – 2.63
1 and 2	Temperature [°C (°F)]	50 (122)	0.68 – 1.00
		90 (194)	0.236 - 0.260



### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45</u>, "<u>Intermittent Incident</u>".

NO >> Proceed to <u>EC-859</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

INFOID:0000000012198365

# 1. CHECK ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1

Check ECT sensor 1. Refer to EC-859, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace ECT sensor 1. Refer to CO-54, "Exploded View".

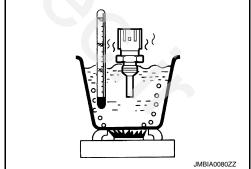
## Component Inspection

INFOID:0000000012198366

# 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- Disconnect engine coolant temperature sensor 1 harness connector.
- Remove engine coolant temperature sensor 1. Refer to <u>CO-54, "Exploded View"</u>.
- 4. Check resistance between engine coolant temperature sensor 1 terminals as per the following.

ECT :	sensor	Condition			
+	_			Resistance $(k\Omega)$	
Terr	minal				
			20 (68)	2.37 - 2.63	
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00	
			90 (194)	0.236 - 0.260	



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor 1. Refer to <u>CO-54, "Exploded View"</u>.

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# P0117, P0118 ENGINE COOLANT TEMPERATURE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0117, P0118 ENGINE COOLANT TEMPERATURE SENSOR 1

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P0117	ECT SEN/CIRC (Engine coolant temperature sensor 1 circuit low input)	An excessively low voltage from the engine coolant temperature sensor 1 is sent to ECM.	Harness or connectors     (Engine coolant temperature sensor 1)
P0118	ECT SEN/CIRC (Engine coolant temperature sensor 1 circuit high input)	An excessively high voltage from the engine coolant temperature sensor 1 is sent to ECM.	circuit is open or shorted.)  • Engine coolant temperature sensor 1

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-860, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198368

# 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature (ECT) sensor 1 harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECT sensor 1 harness connector and ground.

	+		Mallana
ECT se	ensor 1	_	Voltage (Approx.)
Connector	Terminal		, , , , , , , , , , , , , , , , , , ,
F50	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 2. NO >> GO TO 4.

# 2.CHECK ENGINE COOLANT TEMPERATURE SENSOR 1 GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between ECT sensor 1 harness connector and ECM harness connector.

## P0117, P0118 ENGINE COOLANT TEMPERATURE SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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+				
ECT sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F50	2	F23	45	Existed

4. Also check harness for short to ground to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# ${f 3.}$ CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

Check the engine coolant temperature sensor 1. Refer to <u>EC-861</u>, "Component Inspection (Engine Coolant Temperature Sensor 1)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace engine coolant temperature sensor 1. Refer to <u>CO-54. "Exploded View"</u>.

## 4. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between ECT sensor 1 harness connector and ECM harness connector.

+				
ECT sensor 1		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F50	1	F23	35	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

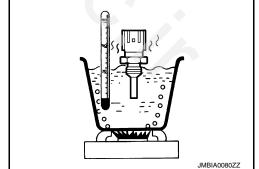
NO >> Repair or replace error-detected parts.

## Component Inspection (Engine Coolant Temperature Sensor 1)

# 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

- Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor 1 harness connector.
- 3. Remove engine coolant temperature sensor 1.
- 4. Check resistance between engine coolant temperature sensor 1 terminals by heating with hot water as shown in the figure.

ECT s	ensor 1	Condition		Resistance
+	_			
Terr	minal			
			20 (68)	2.37 - 2.63 kΩ
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00 kΩ
		, , , , , , , , , , , , , , , , , , , ,	90 (194)	0.236 - 0.260
			. ,	kΩ



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor 1. Refer to <u>CO-54, "Exploded View"</u>.

Revision: November 2015 EC-861 2016 JUKE

## P011C IAT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P011C	CAT/IAT CRRLTN B1 (Charge air temperature/Intake air temperature correlation)	<ul> <li>ECM detects a state that the temperature difference between intake air temperature sensor 1 and 2 remains 20°C (68°F) or less continuously for 5 seconds or more.</li> <li>ECM detects a state that the difference between the temperature of intake air temperature sensor 2 and its estimated temperature calculated by ECM from intake air temperature 1 and turbocharger boost sensor remains 106°C (223°F) or more continuously for 5 seconds or more.</li> </ul>	Harness or connectors     (High or low resistance in the intake air temperature sensor 1 circuit)     (High or low resistance in the intake air temperature sensor 2 circuit)     Intake air temperature sensor 1     Intake air temperature sensor 2

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-862, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198371

## 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2

Check intake air temperature sensor 2. Refer to <u>EC-863</u>, "Component Inspection (Intake Air Temperature Sensor 2)".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <a href="EM-194">EM-194</a>, <a href=""">"Exploded View"</a>.

## 2.CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check intake air temperature sensor 1. Refer to <u>EC-863</u>, "Component Inspection (Intake Air Temperature Sensor 1)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <u>EM-192, "Exploded View".</u>

### **P011C IAT SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

## Component Inspection (Intake Air Temperature Sensor 1)

#### INFOID:0000000012198372

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# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as follows.

Mass air f	low sensor	Condition			
+	_			Resistance ( $k\Omega$ )	
Terminal					
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor (with intake air temperature sensor 1). Refer to <u>EM-192, "Exploded View"</u>.

## Component Inspection (Intake Air Temperature Sensor 2)

### INFOID:0000000012198373

# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 2

- Turn ignition switch OFF.
- 2. Disconnect turbocharger boost sensor harness connector.
- 3. Check resistance between turbocharger boost sensor terminals as follows.

Turbocharger boost sensor			_	
+	_	Condition		Resistance ( $k\Omega$ )
Terminal				
3	4	Temperature [°C (°F)]	25 (77)	1.80 – 2.20

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor (with intake air temperature sensor 2). Refer to <u>EM-194</u>, "<u>Exploded View</u>".

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Revision: November 2015 EC-863

## P0122, P0123 TP SENSOR

DTC Logic INFOID:000000012198374

#### DTC DETECTION LOGIC

#### NOTE

If DTC P0122 or P0123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-1060</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0122	TP SEN 2/CIRC-B1 (Throttle position sensor 2 circuit low input)	An excessively low voltage from the TP sensor 2 is sent to ECM.	Harness or connectors     (TP sensor 2 circuit is open or shorted.)
P0123	TP SEN 2/CIRC-B1 (Throttle position sensor 2 circuit high input)	An excessively high voltage from the TP sensor 2 is sent to ECM.	<ul> <li>Electric throttle control actuator (TP sensor 2)</li> </ul>

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-864, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198375

## 1. CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between electric throttle control actuator harness connector and ground.

	+		
Electric throttle	control actuator	_	Voltage (Approx.)
Connector	Terminal		, , ,
F29	5	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK THROTTLE POSITION SENSOR 2 POWER SUPPLY CIRCUIT

### P0122, P0123 TP SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness con-

+			_	
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	5	F24	83	Existed

Also check harness for short to power.

#### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK THROTTLE POSITION SENSOR 2 GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness con-

+			-	
	e control actu- tor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F29	4	F24	85	Existed

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## $oldsymbol{4}.$ CHECK THROTTLE POSITION SENSOR 2 INPUT SIGNAL CIRCUIT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+			_	
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	3	F24	80	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## ${f 5}$ .CHECK THROTTLE POSITION SENSOR

Check the throttle position sensor. Refer to EC-865, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace electric throttle control actuator. Refer to EM-197, "Exploded View". NO

## Component Inspection

.CHECK THROTTLE POSITION SENSOR

**EC-865 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198376

## **P0122, P0123 TP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform "Throttle Valve Closed Position Learning". Refer to EC-754, "Description".
- 4. Turn ignition switch ON.
- 5. Set selector lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector terminals as per the following conditions.

	ECM			_	
Connector + - Terminal		Condition		Voltage	
90	9.9	88	Accelerator pedal	Fully released	More than 0.36V
F24	86			Fully depressed	Less than 4.75V
F24	80	65		Fully released	Less than 4.75V
			Fully depressed	More than 0.36V	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to <a href="EM-197">EM-197</a>, "Exploded View".

### P0125 ECT SENSOR

**DTC Logic** INFOID:0000000012198377

### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0125 is displayed with P0116, first perform the trouble diagnosis for DTC P0116. Refer to EC-858, "DTC Logic".
- If DTC P0125 is displayed with P0117 or P0118, first perform the trouble diagnosis for DTC P0117, P0118. Refer to EC-860, "DTC Logic".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0125	ECT SENSOR (Insufficient coolant temperature for closed loop fuel control)	<ul> <li>Voltage sent to ECM from the sensor is not practical, even when some time has passed after starting the engine.</li> <li>Engine coolant temperature is insufficient for closed loop fuel control.</li> </ul>	Harness or connectors     (High resistance in the circuit)     Engine coolant temperature sensor     1     Multi-way control valve

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.CHECK ENGINE COOLANT TEMPERATURE SENSOR 1 FUNCTION

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT.
- Check that "COOLANT TEMP/S" is above 10°C (50°F).

#### Is the temperature above 10°C (50°F)?

YES >> INSPECTION END

NO >> GO TO 3.

# 3.perform dtc confirmation procedure

### (P)With CONSULT

Start engine and run it for 65 minutes at idle speed.

If "COOLANT TEMP/S" increases to more than -7°C (19.4°F) within 65 minutes, stop engine because the test result will be OK.

CAUTION:

### Never overheat engine.

Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> EC-867, "Diagnosis Procedure"

>> INSPECTION END NO

# Diagnosis Procedure

## ${f 1}$ .CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

Check engine coolant temperature sensor 1. Refer to EC-868, "Component Inspection".

#### Is the inspection result normal?

>> GO TO 2. YES

NO >> Replace engine coolant temperature sensor 1.

**EC-867 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198378

### **P0125 ECT SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

# $\overline{2}$ .check multi-way control valve operation

When the engine is cold [lower than 64°C (147°F)] condition, grasp lower radiator hose and confirm that the engine coolant does not flow.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace water outlet (MCV). Refer to CO-54, "Exploded View".

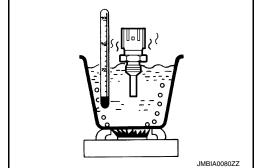
## Component Inspection

INFOID:0000000012198379

# 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect engine coolant temperature sensor 1 harness connector.
- 3. Remove engine coolant temperature sensor 1. Refer to CO-54, "Exploded View".
- 4. Check resistance between engine coolant temperature sensor 1 terminals as per the following.

ECT s	ensor 1			
+	_	Condition Resistance (kΩ)		Resistance $(k\Omega)$
Terr	minal		,	
			20 (68)	2.37 - 2.63
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
			90 (194)	0.236 - 0.260



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor 1. Refer to <u>CO-54, "Exploded View"</u>.

### **P0127 IAT SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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**2016 JUKE** 

### P0127 IAT SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0127	IAT SENSOR-B1 (Intake air temperature too high)	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signal from engine coolant temperature sensor 1.	Harness or connectors     (The sensor circuit is open or shorted)     Intake air temperature sensor 1

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

This test may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- 1. Wait until engine coolant temperature is less than 96°C (205°F)
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT.
- Check the engine coolant temperature.
- If the engine coolant temperature is not less than 96°C (205°F), turn ignition switch OFF and cool down engine.

#### NOTE:

Perform the following steps before engine coolant temperature is above 96°C (205°F).

- 2. Turn ignition switch ON.
- 3. Select "DATA MONITOR" mode with CONSULT.
- 4. Start engine.
- Hold vehicle speed at more than 70 km/h (43 MPH) for 100 consecutive seconds.

### **CAUTION:**

Always drive vehicle at a safe speed.

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-869, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. CHECK INTAKE AIR TEMPERATURE SENSOR 1

Check intake air temperature sensor 1. Refer to EC-870, "Component Inspection".

#### Is the inspection result normal?

**Revision: November 2015** 

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace mass air flow sensor (with intake air temperature sensor). Refer to <a href="EM-192">EM-192</a>. "Exploded View".

**EC-869** 

### **P0127 IAT SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

# **Component Inspection**

INFOID:0000000012198382

# 1.CHECK INTAKE AIR TEMPERATURE SENSOR 1

- 1. Turn ignition switch OFF.
- 2. Disconnect mass air flow sensor harness connector.
- 3. Check resistance between mass air flow sensor terminals as per the following.

Mass air f	low sensor					
+	_	Condition	Resistance ( $k\Omega$ )			
Tern	ninals					
3	4	Temperature [°C (°F)]	25 (77)	1.800 - 2.200		

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace mass air flow sensor. Refer to <a href="EM-192">EM-192</a>, "Exploded View".

**DTC Logic** INFOID:0000000012198383

### DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal fluctuates according to fuel feedback control.

DTC No.	Trouble diagnosis name	DTC detecting condition		Possible Cause
P0130	A/F SENSOR1 (B1) [Air fuel ratio (A/F) sensor 1	A)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly in the range other than approx. 2.2 V.	Harness or connectors     (A/F sensor 1 circuit is open or shorted.)
	circuit]	B)	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 2.2 V.	• A/F sensor 1

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

#### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Let it idle for 2 minutes.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-872, "Diagnosis Procedure".

NO-1 >> (P)With CONSULT: GO TO 3.

NO-2 >> NO-2 |

# 3.CHECK AIR FUEL RATIO (A/F) SENSOR 1 FUNCTION

- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Check "A/F SEN1 (B1)" indication.

### Does the indication fluctuates around 2.2 V?

YES >> GO TO 4.

NO >> Proceed to EC-872, "Diagnosis Procedure".

## $oldsymbol{4}.$ PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-I

- Select "A/F SEN1 (B1) P1276" of "A/F SEN1" in "DTC WORK SUPPORT" mode of "ENGINE" using CON-SULT.
- 2. Touch "START".
- 3. When the following conditions are met, "TESTING" will be displayed on the CONSULT screen.

ENG SPEED	1,150 - 2,250 rpm (CVT) 1,150 - 3,000 rpm (M/T)
VHCL SPEED SE	More than 64 km/h (40 mph)
B/FUEL SCHDL	1.0 - 8.0 msec
Selector lever	D position (CVT) 5th position (M/T)

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

If "TESTING" is not displayed after 20 seconds, retry from step 2.

**CAUTION:** 

Always drive vehicle at a safe speed.

Is "TESTING" displayed on CONSULT screen?

YES >> GO TO 5.

NO >> Check A/F sensor 1 function again. GO TO 3.

 ${f 5}$  PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-II

Release accelerator pedal fully.

NOTE:

Never apply brake during releasing the accelerator pedal.

Which does "TESTING" change to?

COMPLETED>>GO TO 6.

OUT OF CONDITION>>Retry DTC CONFIRMATION PROCEDURE. GO TO 4.

 $oldsymbol{6}$  .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B-III

Touch "SELF-DIAG RESULT"

Which is displayed on CONSULT screen?

YES >> INSPECTION END

NO >> Proceed to <u>EC-872</u>. "<u>Diagnosis Procedure</u>".

7.PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform Component Function Check. Refer to EC-872, "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the A/F sensor 1 circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-872, "Diagnosis Procedure"

# Component Function Check

INFOID:0000000012198384

# 1.PERFORM COMPONENT FUNCTION CHECK

### With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Drive the vehicle at a speed of 80 km/h (50 MPH) for a few minutes in the suitable gear position.
- Shift the selector lever to the D position (CVT) or 5th position (M/T), then release the accelerator pedal fully until the vehicle speed decreases to 50 km/h (31 MPH).

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

#### NOTÉ:

Never apply brake during releasing the accelerator pedal.

- 4. Repeat steps 2 to 3 for five times.
- 5. Stop the vehicle and turn ignition switch OFF.
- 6. Wait at least 10 seconds and restart engine.
- 7. Repeat steps 2 to 3 for five times.
- Stop the vehicle.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-872, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198385

# 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector.
- 3. Turn ignition switch ON.

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

4. Check the voltage between A/F sensor 1 harness connector and ground.

	+		
A/F se	ensor 1	_	Voltage
Connector	Connector Terminal		
F72	4	Ground	Battery voltage

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### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- I. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

+			_	
A/F sensor 1		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F72	4	E14	36	Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+					
A/F sensor 1		ECM		Continuity	
Connector	Terminal	Connector	Terminal		
F72	1	F24	79	Existed	
172	2	1 24	74	LXISIEU	

4. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

	+		
A/F se	ensor 1	_	Continuity
Connector	Connector Terminal		
F72	1	Ground	Not existed
172	2	Ground	Not existed

	+			
E	CM	_	Continuity	
Connector Terminal				
F24	74	Ground	Not existed	
1 24	79	Glound	Not existed	

5. Also check harness for short to power.

Is the inspection result normal?

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-242, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

DTC Logic INFOID:0000000012198386

### DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P0131	A/F SENSOR1 (B1) [Air fuel ratio (A/F) sensor 1 circuit low voltage]	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 0 V.	Harness or connectors     (A/F sensor 1 circuit is open or shorted.)     A/F sensor 1

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idle.

>> GO TO 2.

# 2.CHECK A/F SENSOR FUNCTION

### (P)With CONSULT

- Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check "A/F SEN1 (B1)" indication.

#### 

Follow the procedure "With CONSULT" above.

### Is the indication constantly approx. 0 V?

YES >> Proceed to EC-876, "Diagnosis Procedure"

NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

- Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine. **CAUTION:**

## Always drive vehicle at a safe speed.

Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Selector lever	Suitable position

### NOTE:

- Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- Check 1st trip DTC.

With GST

**EC-875 Revision: November 2015 2016 JUKE**  EC

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-876, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198387

# 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between A/F sensor 1 harness connector and ground.

	+		
A/F	sensor 1	_	Voltage
Connector	Terminal		
F72			Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

+		-		
A/F se	ensor 1	IPDN	I E/R	Continuity
Connector	Terminal	Connector Terminal		
F72	4	E14 36		Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check a/f sensor 1 input signal circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+				
A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector	Connector Terminal	
F72	F72		79	Existed
172	2	F24	74	LAISIEU

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

[MR EXCEPT FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

		T		
+				
A/F se	nsor 1	- Continuity		
Connector	Terminal			
F72	1	Ground	Not existed	
172	2	Ground	Not existed	
+				
EC	М	_	Continuity	
Connector	Terminal			
	74	_		
F24	79	Ground	Not existed	
Also check	harness for she	ort to nower		
	result normal	•		
ES >> GO		<u>.</u>		
		error-detected	parts.	
•	RMITTENT IN		•	
	'Intermittent In			
	result normal			
•		<u>.</u>		
ES >> CO	TO 5			
		error-detected	parts.	
O >> Rep	air or replace	error-detected		
O >> Rep REPLACE A	pair or replace of	O (A/F) SENSO	DR 1	dod Viou"
IO >> Rep REPLACE A eplace air fuel	pair or replace of	O (A/F) SENSO		ded View".
O >> Rep REPLACE A place air fuel UTION: Discard any s	pair or replace of the second replace of the	O (A/F) SENSO sor 1. Refer to has been dro	DR 1  EM-242, "Explo	
O >> Rep REPLACE A place air fuel AUTION: Discard any s surface such	pair or replace of the second ratio (A/F) senser which as a concrete	O (A/F) SENSO sor 1. Refer to has been drop floor; use a n	DR 1  EM-242, "Explo  pped from a head	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel AUTION: Discard any s surface such Before install	pair or replace of the second ratio (A/F) senser which as a concrete ling new senser	O (A/F) SENSO sor 1. Refer to has been drop floor; use a n sor, clean exha	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such defore install commercial	pair or replace of the second ratio (A/F) senser which as a concrete ling new senser	O (A/F) SENSO sor 1. Refer to has been drop floor; use a n sor, clean exha	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such defore install commercial	pair or replace of the second ratio (A/F) senser which as a concrete ling new senser	O (A/F) SENSO sor 1. Refer to has been drop floor; use a n sor, clean exha	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such defore install commercial ervice tool).	pair or replace of the second ratio (A/F) senser which as a concrete ling new senser	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such defore install commercial ervice tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel AUTION: Discard any s surface such Before install commercial service tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such Before install commercial ervice tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such defore install commercial ervice tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such Before install commercial ervice tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel UTION: Discard any s urface such defore install commercial ervice tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
O >> Rep REPLACE A place air fuel AUTION: Discard any s surface such Before install commercial service tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
REPLACE A splace air fuel AUTION: Discard any s surface such Before install commercial service tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ded View".  ight of more than 0.5 m (19.7 in) onto a hard reads using Oxygen Sensor Thread Cleaner I approved Anti-seize Lubricant (commercia
O >> Rep REPLACE A place air fuel AUTION: Discard any s surface such Before install commercial service tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard
IO >> Repare A REPLACE A REPLACE A REPLACE AUTION: Discard any sourface such Before install (commercial service tool).	pair or replace of the service tool (A/F) sensor which as a concrete ling new sensor tool (A/F) service tool (A/F)	O (A/F) SENSO sor 1. Refer to has been drop e floor; use a n sor, clean exhaus J-43897-18 or	DR 1  EM-242, "Explo  pped from a he new one. aust system th	ight of more than 0.5 m (19.7 in) onto a hard

DTC Logic

#### DTC DETECTION LOGIC

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the A/F sensor 1 signal is not inordinately high.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0132	A/F SENSOR1 (B1) [Air fuel ratio (A/F) sensor 1 circuit high voltage]	The A/F signal computed by ECM from the A/F sensor 1 signal is constantly approx. 5 V.	Harness or connectors     (A/F sensor 1 circuit is open or shorted.)     A/F sensor 1

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idle.

>> GO TO 2.

# 2.CHECK A/F SENSOR FUNCTION

### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- Select "A/F SEN1 (B1)" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "A/F SEN1 (B1)" indication.

With GST

Follow the procedure "With CONSULT" above.

#### Is the indication constantly approx. 5 V?

YES >> Proceed to EC-879, "Diagnosis Procedure".

NO >> GO TO 3.

# 3. PERFORM DTC CONFIRMATION PROCEDURE

### With CONSULT

- 1. Turn ignition switch OFF, wait at least 10 seconds and then restart engine.
- Drive and accelerate vehicle to more than 40 km/h (25 MPH) within 20 seconds after restarting engine.

#### Always drive vehicle at a safe speed.

3. Maintain the following conditions for about 20 consecutive seconds.

ENG SPEED	1,000 - 3,200 rpm
VHCL SPEED SE	More than 40 km/h (25 mph)
B/FUEL SCHDL	1.5 - 9.0 msec
Selector lever	Suitable position

#### NOTE:

- · Keep the accelerator pedal as steady as possible during the cruising.
- If this procedure is not completed within 1 minute after restarting engine at step 1, return to step
- Check 1st trip DTC.

#### With GST

Follow the procedure "With CONSULT" above.

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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1-	4 - 1	trip	$\neg$	$\sim$	:-	_1 _ 4			$\overline{}$
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YES >> Proceed to <u>EC-879</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

# Diagnosis Procedure

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# 1. CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between A/F sensor 1 harness connector and ground.

+ A/F sensor 1		-	Voltage
Connector	Terminal		
F72	4	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

	+		-	
A/F se	ensor 1	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F72	4	E14	36	Existed

Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

	+		_	
A/F se	ensor 1	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F72	1	F24	79	Existed
172	2	1 24	74	LXISIEU
			· · · · · · · · · · · · · · · · · · ·	

Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

	+		
A/F se	ensor 1	_	Continuity
Connector	Terminal		
F72	1	Ground	Not existed
F/2	2	Ground	Not existed

	+			
E	CM	_	Continuity	
Connector	Connector Terminal			
F24	74	Ground	Not existed	
1 24	79	Ground	Not existed	

5. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

4. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-242, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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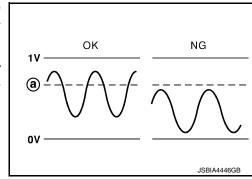
### P0137 H02S2

DTC Logic

### DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the maximum voltage of the sensor is sufficiently high during the various driving condition such as fuel-cut.





DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0137	HO2S2 (B1) (Heated oxygen sensor 2 circuit low voltage)	The maximum voltage from the heated oxygen sensor 2 is not reached to the specified voltage.	Harness or connectors (Heated oxygen sensor 2 circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector Intake air leaks

### DTC CONFIRMATION PROCEDURE

# 1.INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 5.

# 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30°C (32 to 86°F).

>> GO TO 3.

# 3. PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).
  - If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches 70°C (158°F).
- Open engine hood.
- 8. Select "HO2S2 (B1) P1147" of "HO2S2" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT.

### [MR EXCEPT FOR NISMO RS MODELS]

9. Follow the instruction of CONSULT.

#### NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

### Which is displayed on CONSULT screen?

OK >> INSPECTION END

NG >> Proceed to <u>EC-883</u>, "<u>Diagnosis Procedure</u>".

CAN NOT BE DIAGNOSED>>GO TO 4.

# 4. PERFORM DTC CONFIRMATION PROCEDURE AGAIN

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- Perform DTC CONFIRMATION PROCEDURE again.

>> GO TO 3.

# 5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to <a>EC-882</a>. "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-883, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012198391

# 1.PERFORM COMPONENT FUNCTION CHECK-I

### 

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	_	Condition Voltage		
Connector Terminal		minal			
F24	84	78	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.72 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	-	Condition	Voltage	
Connector	Terminal				
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.72 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

### [MR EXCEPT FOR NISMO RS MODELS]

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INFOID:0000000012198392

# 3.perform component function check-iii

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	_	Condition Voltage		
Connector	Terr	minal			
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.72 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-883</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

# 1. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- 1. Clear the mixture ratio self-learning value. Refer to EC-762, "Description".
- 2. Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0171 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171. Refer to <u>EC-905, "DTC Logic"</u>.

NO >> GO TO 2.

# 2.CHECK HO2S2 GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	1	F24	78	Existed

5. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK HO2S2 INPUT SIGNAL CIRCUIT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	2	F24	84	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	_	Continuity
Connector	Terminal		
F71	2	Ground	Not existed

	+		
E	CM		Continuity
Connector	Connector Terminal		
F24			Not existed

3. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-884, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

# 5. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

## Component Inspection

INFOID:0000000012198393

## 1.INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

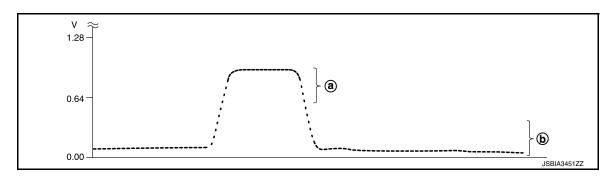
YES >> GO TO 2.

NO >> GO TO 3.

### 2.CHECK HEATED OXYGEN SENSOR 2

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Select "FUEL INJECTION" in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to  $\pm$  25%.



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(a) : The voltage should be above 0.72 V at least on time.

(b) : The voltage should be below 0.28 V at least on time.

"HO2S2 (B1)" should be above 0.72 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)" should be below 0.28 V at least once when the "FUEL INJECTION" is -25%.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

3.CHECK HEATED OXYGEN SENSOR 2-I

### 

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

ECM					
Connector	+	-	Condition	Voltage	
Connector	Terminal				
F24	84	78	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

## 4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	Connector + - Terminal		Condition	Voltage
Connector				
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

## 5.CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	Connector + Terminal		Condition	Voltage
Connector				
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

### P0137 HO2S2

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> GO TO 6.

6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to <u>EX-5</u>, "<u>Exploded View</u>". **CAUTION**:

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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# P0138 H02S2

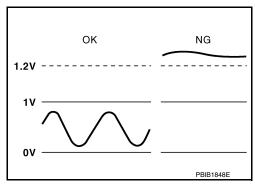
DTC Logic

### DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time.

### **MALFUNCTION A**

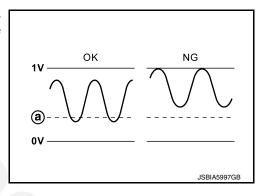
To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the voltage is unusually high during the various driving condition such as fuel-cut.



### **MALFUNCTION B**

To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the minimum voltage of sensor is sufficiently low during the various driving condition such as fuel-cut.

(a) : 0.28 V



DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible cause
	HO2S2 (B1)	A)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors     (The sensor circuit is open or shorted)     Heated oxygen sensor 2
P0138	(Heated oxygen sensor 2 circuit high voltage)	В)	The minimum voltage from the sensor is not reached to the specified voltage.	Harness or connectors (The sensor circuit is open or shorted) Heated oxygen sensor 2 Fuel pressure Fuel injector

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

### P0138 HO2S2

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 2 minutes.
- 5. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-889</u>, "<u>Diagnosis Procedure</u>".

NO-1 >> (P) With CONSULT: GO TO 3.

NO-2 >> Without CONSULT: GO TO 5.

## 3.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

#### NOTE:

### For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30°C (32 to 86°F).

- Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Make sure that "COOLAN TEMP/S" indication is more than 70°C (158°F).
  - If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches 70°C (158°F).
- 7. Open engine hood.
- Select "HO2S2 (B1) P1146" of "HO2S2" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 9. Follow the instruction of CONSULT.

#### NOTE:

It will take at most 10 minutes until "COMPLETED" is displayed.

10. Touch "SELF-DIAG RESULT".

### Which is displayed on CONSULT

OK >> INSPECTION END

NG >> Proceed to <u>EC-889</u>, "<u>Diagnosis Procedure</u>"

CAN NOT BE DIAGNOSED>>GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B AGAIN

- 1. Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle).
- 2. Perform DTC confirmation procedure again.

>> GO TO 3.

# 5. PERFORM COMPONENT FUNCTION CHECK FOR MALFUNCTION B

Perform component function check. Refer to <a>EC-889</a>. "Diagnosis Procedure"</a>.

#### NOTE:

Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-889</u>, "<u>Diagnosis Procedure</u>".

# Component Function Check

INFOID:0000000012198395

# 1. PERFORM COMPONENT FUNCTION CHECK-I

#### 

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground as per the following condition.

## [MR EXCEPT FOR NISMO RS MODELS]

	ECM				_
0	+	_	Condition	Voltage	
Connector –	Ter	minal			
F24	84	78	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.28 V at least once during this procedure.	
s the inspect	tion result	normal?			_
	NSPECTION	ON END			
_	30 TO 2.				
Z.PERFORI	M COMPO	NENT FUN	CTION CHECK-II		
Check the vo	Itage betw	een ECM h	arness connector and ground as	s per the following condition.	
					_
	ECM				
Connector	+	_	Condition	Voltage	
	Ter	minal			_
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.28 V at least once during this procedure.	
s the inspect	tion recult	normal?	······································	at load once daming the procedure.	_
3.perfori			CTION CHECK-III arness connector and ground as	s per the following condition.	
3.PERFOR	M COMPO			s per the following condition.	<del>-</del>
3.PERFOR	M COMPO		arness connector and ground as		_
3.PERFOR	M COMPO litage betw ECM +	een ECM h		s per the following condition.  Voltage	-
3.PERFORI	M COMPO litage betw ECM +		arness connector and ground as	Voltage	<u> </u>
3.PERFORI	M COMPO litage betw ECM +	een ECM h	arness connector and ground as		
3.PERFORI	M COMPO litage betw ECM + Ter 84	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position	Voltage  The voltage should be above 0.28 V	
Connector F24 s the inspect	ECM + Ter 84 tion result	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	Voltage  The voltage should be above 0.28 V	
Connector  F24  s the inspect YES >> I NO >> F	ECM + Ter 84 tion result NSPECTIO	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position	Voltage  The voltage should be above 0.28 V	
Connector F24 s the inspect	ECM + Ter 84 tion result NSPECTIO	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-
Connector  F24  s the inspect YES >> I NO >> F	ECM + Ter 84 tion result NSPECTIO	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	Voltage  The voltage should be above 0.28 V at least once during this procedure.	
Connector F24  s the inspect YES >> I NO >> F Diagnosis  1.INSPECT	ECM + Ter 84 tion result NSPECTIO Proceed to Procedul	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-
Connector F24  s the inspect YES >> I NO >> F Diagnosis  1.INSPECT	ECM + Ter 84 tion result NSPECTIO Procedu ION STAR	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)  Diagnosis Procedure".	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-
Connector  F24  s the inspect YES >> I NO >> F Diagnosis  I.INSPECT Confirm the content of the c	ECM + Ter 84 tion result NSPECTIO Proced to Procedu ION STAR detected maction is de	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)  Diagnosis Procedure".	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-
3.PERFORI Check the vo  Connector  F24  s the inspect YES >> I NO >> F Diagnosis  1.INSPECT Confirm the control of the control	ECM + Ter 84 tion result NSPECTIO Proced to Proced to Control of the control of t	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)  Diagnosis Procedure".	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-
3.PERFORI Check the vo  Connector  F24  s the inspect YES >> I NO >> F Diagnosis  1.INSPECT Confirm the control of the control	ECM + Ter 84 tion result NSPECTIO Proced to Proced to Control of the control of t	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)  Diagnosis Procedure".	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-
Connector  F24  s the inspect YES >> I NO >> F Diagnosis  I.INSPECT Confirm the continuous of the cont	ECM + Ter 84  tion result NSPECTIO Procedt ION STAR detected maction is detected maction.	reen ECM h	Condition  Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)  Diagnosis Procedure".	Voltage  The voltage should be above 0.28 V at least once during this procedure.	-

#### Water should not exist.

# Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

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# 3.CHECK HO2S2 GROUND CIRCUIT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between HO2S2 harness connector and ECM harness connector.

+				
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	1	F24	78	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK HO2S2 INPUT SIGNAL CIRCUIT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

+				
НО	2S2	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F71	2	F24	84	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	_	Continuity
Connector	Connector Terminal		
F71	F71 2		Not existed

	+		
E	CM	_	Continuity
Connector	Connector Terminal		
F24	84	Ground	Not existed

3. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

### 5. CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-892, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 6.

### O.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

### >> INSPECTION END

# $7.\mathtt{clear}$ the mixture ratio self-learning value

- Clear the mixture ratio self-learning value. Refer to EC-762, "Description".
- 2. Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0172. Refer to EC-887, "DTC Logic".

NO

### 8.CHECK HO2S2 GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- Check the continuity between HO2S2 harness connector and ECM harness connector.

	+		_	
НО	2S2	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F71	1	F24	78	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

### 9.CHECK HO2S2 INPUT SIGNAL CIRCUIT

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

+		-		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector Terminal		
F71	2	F24	84	Existed

Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	_	Continuity
Connector	Terminal		
F71	2	Ground	Not existed

	+		
E	СМ	_	Continuity
Connector	Terminal		
F24	84	Ground	Not existed

3. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 10.

>> Repair open circuit or short to ground or short to power in harness or connectors. NO

# 10.CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-892, "Component Inspection".

Is the inspection result normal?

EC-891 **Revision: November 2015 2016 JUKE**  EC

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YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 11.

# 11.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5. "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

# Component Inspection

INFOID:0000000012198397

# 1.INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

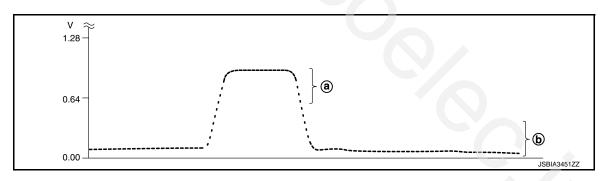
YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK HEATED OXYGEN SENSOR 2

### (E)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- 6. Select "FUEL INJECTION" in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to  $\pm$  25%.



- (a) : The voltage should be above 0.72 V at least on time.
- (b) : The voltage should be below 0.28 V at least on time.

"HO2S2 (B1)" should be above 0.72 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)" should be below 0.28 V at least once when the "FUEL INJECTION" is - 25%.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

# 3.CHECK HEATED OXYGEN SENSOR 2-I

### **⋈**Without CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.

### P0138 HO2S2

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

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5. Check the voltage between ECM harness connector and ground as per the following condition.

ECM					
Connector	+	_	Condition	Voltage	
Connector	Terminal				
F24	84	78	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

# 4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+		Condition	Voltage	
Connector	Terminal				
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

# 5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terr	minal			
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

### **O.** REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to <u>EX-5, "Exploded View"</u>.

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

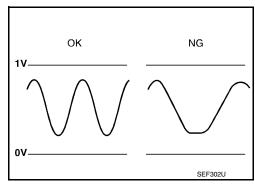
Revision: November 2015 EC-893 2016 JUKE

### P0139 H02S2

DTC Logic

#### DTC DETECTION LOGIC

The heated oxygen sensor 2 has a much longer switching time between rich and lean than the air fuel ratio (A/F) sensor 1. The oxygen storage capacity of the three way catalyst (manifold) causes the longer switching time. To judge the malfunctions of heated oxygen sensor 2, ECM monitors whether the switching response of the sensor's voltage is faster than specified during various driving conditions such as fuel cut.



		0'	V
DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0139	HO2S2 (B1) (Heated oxygen sensor 2 circuit slow response)	The switching time between rich and lean of a heated oxygen sensor 2 signal delays more than the specified time computed by ECM.	<ul> <li>Harness or connectors (The sensor circuit is open or shorted)</li> <li>Heated oxygen sensor 2</li> <li>Fuel system</li> <li>Intake air system</li> </ul>

### DTC CONFIRMATION PROCEDURE

## 1.INSPECTION START

Do you have CONSULT?

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 7.

# 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

For better results, perform "DTC WORK SUPPORT" at a temperature of 0 to 30°C (32 to 86°F).

>> GO TO 3.

# 3.perform dtc confirmation procedure

#### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to the normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 8. Make sure that "COOLAN TEMP/S" indicates more than 70°C (158°F).
- Drive the vehicle in a proper at 60 km/h (38MPH) and maintain the speed. CAUTION:

### Always drive vehicle at a safe speed.

#### [MR EXCEPT FOR NISMO RS MODELS]

- 10. Release the accelerator pedal fully at least 5 seconds. **CAUTION:** Α Enable engine brake. Always drive carefully. Never apply brake when releasing the accelerator pedal. EC 11. Repeat step 9 and 10 at least 8 times. 12. Check the following item of "DATA MONITOR". Data monitor item Status HO2 S2 DIAG1(B1) **CMPLT** HO2 S2 DIAG2(B1) Is "CMPLT" displayed on CONSULT screen? YES >> GO TO 6. NO-1: "CMPLT" is not displayed on DIAG 1>>Perform DTC confirmation procedure again. Е NO-2: "CMPLT" is not displayed on DIAG 2>>GO TO 4. 4.PERFORM DTC WORK SUPPORT 1. Open engine hood. 2. Select "HO2S2 (B1) P0139" in "DTC WORK SUPPORT" mode of "ENGINE" using CONSULT. Start engine and follow the instruction of CONSULT display. NOTE: It will take at most 10 minutes until "COMPLETED" is displayed. Is "COMPLETED" displayed on CONSULT screen? Н YES >> GO TO 6. NO >> GO TO 5.  ${f 5}$  PERFORM DTC CONFIRMATION PROCEDURE AGAIN Turn ignition switch OFF and leave the vehicle in a cool place (soak the vehicle). Perform DTC confirmation procedure again. >> GO TO 3. 6.PERFORM SELF-DIAGNOSIS (P)With CONSULT Perform ECM self-diagnosis. Is DTC "P0139" detected? YES >> Proceed to EC-896, "Diagnosis Procedure". NO >> INSPECTION END /.PERFORM COMPONENT FUNCTION CHECK Perform component function check. Refer to EC-895, "Component Function Check" NOTE: Use component function check to check the overall function of the heated oxygen sensor 2 circuit. During this check, a 1st trip DTC might not be confirmed. Is the inspection result normal? YES >> INSPECTION END NO >> Proceed to EC-896, "Diagnosis Procedure". Component Function Check INFOID:0000000012198399 Р 1.PERFORM COMPONENT FUNCTION CHECK-I Start engine and warm it up to normal operating temperature.
  - Turn ignition switch OFF and wait at least 10 seconds.
  - Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- Check the voltage between ECM harness connector and ground as per the following condition.

EC-895 **Revision: November 2015 2016 JUKE** 

	ECM				
Connector	+	_	Condition	Voltage	
Termin		minal			
F24	F24 84 78		Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.66 V at least once during this procedure.	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	-	Condition	Voltage
Connector	Terminal			
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.66 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

# 3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground as per the following condition.

ECM + -					
		Condition	Voltage		
Connector	Terminal				
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.66 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-883, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012198400

# 1. CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-762, "Description"</u>.
- 2. Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-905, "DTC Logic"</u> or <u>EC-909, "DTC Logic"</u>.

NO >> GO TO 2.

# 2.CHECK HO2S2 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

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+		-		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	1	F24	78	Existed

5. Also check harness for short to power.

### Is the inspection result normal?

>> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK HO2S2 INPUT SIGNAL CIRCUIT

Check the continuity between HO2S2 harness connector and ECM harness connector.

+		_		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	2	F24	84	Existed

2. Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	-	Continuity
Connector	Terminal		
F71	2	Ground	Not existed

E(	+ CM	_	Continuity
Connector	Terminal		
F24	84	Ground	Not existed

3. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4.CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-898, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

## ${f 5}$ .REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

### >> INSPECTION END

# Component Inspection

INFOID:0000000012198401

# 1. INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

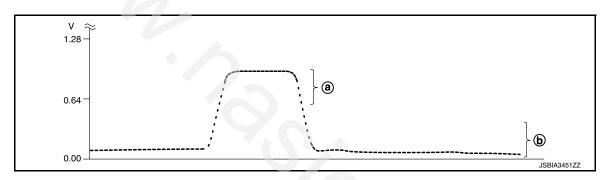
YES >> GO TO 2.

NO >> GO TO 3.

# 2. CHECK HEATED OXYGEN SENSOR 2

### (P)With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 5. Let engine idle for 1 minute.
- Select FUEL INJECTION in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to  $\pm$  25%.



- (a) : The voltage should be above 0.72 V at least on time.
- (b) : The voltage should be below 0.28 V at least on time.

"HO2S2 (B1)" should be above 0.72 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)" should be below 0.28 V at least once when the "FUEL INJECTION" is - 25%.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

# 3.check heated oxygen sensor 2-1

### 

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	_	Condition	Voltage
Connector	Terminal			
F24	84	78	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

### P0139 HO2S2

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

# 4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground as per the following condition.

ECM				
Connector	+	-	Condition	Voltage
Connector	Terminal			
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

# 5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Terminal				
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

### 6.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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### P014C, P014D, P015A, P015B A/F SENSOR 1

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P014C, P014D, P015A, P015B A/F SENSOR 1

DTC Description

#### DTC DETECTION LOGIC

To judge malfunctions, this diagnosis measures response time of the A/F signal computed by ECM from the A/F sensor 1 signal. The time is compensated by engine operating (speed and load), fuel feedback control constant, and the A/F sensor 1 temperature index. Judgment is based on whether the compensated time (the A/F signal cycling time index) is inordinately long or not.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P014C	A/F SENSOR1 (B1) (O2 sensor slow response - rich to lean bank 1 sen- sor 1)	The response time of a A/F sensor 1 signal delays more than the specified time computed by ECM.	Harness or connectors     (The A/F sensor 1 circuit is open or short-
P014D	A/F SENSOR1 (B1) (O2 sensor slow response - lean to rich bank 1 sen- sor 1)		
P015A	A/F SENSOR1 (B1) (O2 sensor delayed response - rich to lean bank 1 sensor 1)		
P015B	A/F SENSOR1 (B1) (O2 sensor delayed response - lean to rich bank 1 sensor 1)		

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

### Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 6.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-1

#### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 6. Let engine idle for 1 minute.
- 7. Increase the engine speed up to about 3,600 rpm and keep it for 10 seconds.
- 8. Fully release accelerator pedal and then let engine idle for about 1 minute.
- 9. Check the items status of "DATA MONITOR" as follows.

#### NOTE:

If "PRSNT" changed to "ABSNT", refer to EC-785, "Component Function Check".

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Data monitor item	Status	
A/F SEN1 DIAG3 (B1)	PRSNT	
s "PRSNT" displayed on	1 CONSULT screen?	
YES >> GO TO 4.		
NO >> GO TO 3.	UEIDMATION PROCEDURE O	
	NFIRMATION PROCEDURE-2	
With CONSULT Perform DTC confirmation	on procedure 1 again	
s "PRSNT" displayed on		
YES >> GO TO 4.		
	-785, "Component Function Check".	
PERFORM DTC CON	NFIRMATION PROCEDURE-2	
With CONSULT		
<ul><li>Wait for about 20 sec</li><li>Check the items state</li></ul>	tus of "DATA MONITOR" as follows.	
NOTE:		
it "CMPLI" change	ed to "INCMP", refer to EC-785, "Component Function Check".	
Data monitor item	Status	
A/F SEN1 DIAG1 (B1)	OMPLE	
A/F SEN1 DIAG2 (B1)	CMPLT	
"CMPLT" displayed on	CONSULT screen?	
YES >> GO TO 5.	705 Il Commonant Function Chapter	
NO >> Refer to <u>EC-</u> D.PERFORM SELF-DIA	-785, "Component Function Check".	
	AGNOSIS	
With CONSULT Check the "SELF-DIAG F	RESULT".	
s any DTC detected?		
YES >> Proceed to	EC-902, "Diagnosis Procedure".	
NO >> INSPECTION		
CHECK AIR-FUEL RA	ATIO SELF-LEARNING VALUE	
With GST	rm it up to normal operating temperature.	
2. Select Service \$01 w		
	alue of "Short term fuel trim" and "Long term fuel trim" indications.	
s the total percentage wi	<u>vithin ±15%?</u>	
YES >> GO TO 8. NO >> GO TO 7.		
7.DETECT MALFUNCT	FIONING PART	
Check the following.		
Intake air leaks		
Exhaust gas leaks Incorrect fuel pressure		
Lack of fuel		
Fuel injector Incorrect PCV hose cor	nnection	
PCV valve		
Mass air flow sensor		

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

>> Repair or replace malfunctioning part.

## 8. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 6. Increase the engine speed up to about 3,600 rpm and keep it for 10 seconds.
- 7. Fully release accelerator pedal and then let engine idle for about 1 minute.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-902, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198403

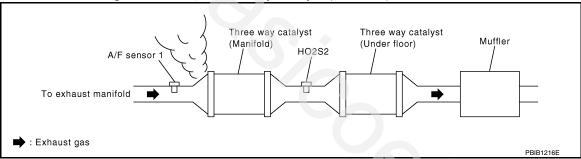
## 1.RETIGHTEN A/F SENSOR 1

Loosen and retighten the A/F sensor 1. Refer to EM-242, "Exploded View".

>> GO TO 2.

## 2.CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

## 3.CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

#### Is intake air leak detected?

YES >> Repair or replace.

NO >> GO TO 4.

### 4.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-762, "Description"</u>.
- Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0171 or P172 detected? Is it difficult to start engine?

YES >> Perform trouble diagnosis for DTC P0171 or P0172. Refer to <u>EC-905, "DTC Logic"</u> or <u>EC-909, "DTC Logic"</u>.

NO >> GO TO 5.

## 5.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between A/F sensor 1 harness connector and ground.

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

	+		
A/F sensor 1		_	Voltage
Connector	Terminal		
F72	4	Ground	Battery voltage

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#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## 6. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		-		
A/F s	sensor 1 ECM Continuity		ECM	
Connector	Terminal	Connector	Terminal	
F72	1	F24	79	Existed
172	2	124	74	LXISIEU

4. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

	+		
A/F sensor 1		_	Continuity
Connector	Terminal		
F72	1	Ground	Not existed
F72	2	Ground	Not existed

	+		
E	CM	_	Continuity
Connector	Terminal		
F24	74	Ground	Not existed
1 24	79	Giodila	NOT EXISTED

5. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

## 7. CHECK AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Refer to EC-806, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 11.

## 8. CHECK MASS AIR FLOW SENSOR

Refer to EC-845, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace mass air flow sensor. Refer to EM-242, "Exploded View".

## 9. CHECK PCV VALVE

Revision: November 2015 EC-903 2016 JUKE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Refer to EC-1255, "Inspection".

Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace PCV valve. Refer to <a href="EM-214">EM-214</a>, "Exploded View".

10. CHECK INTERMITTENT INCIDENT

Perform GI-45, "Intermittent Incident".

Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace.

11.REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace air fuel ratio (A/F) sensor 1. Refer to EM-242, "Exploded View".

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0171 FUEL INJECTION SYSTEM FUNCTION

DTC Logic INFOID:0000000012198404

#### DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too lean.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	Density of oxygen in exhaust gas (Mixture ratio feedback signal)	Fuel injection control	Fuel injector

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0171	FUEL SYS-LEAN-B1 (Fuel injection system too lean)	Fuel injection system does not operate properly.     The amount of mixture ratio compensation is too large. (The mixture ratio is too lean.)	<ul> <li>Intake air leaks</li> <li>A/F sensor 1</li> <li>Fuel injector</li> <li>Exhaust gas leaks</li> <li>Incorrect fuel pressure</li> <li>Lack of fuel</li> <li>Mass air flow sensor</li> <li>Incorrect PCV hose connection</li> </ul>

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Clear the mixture ratio self-learning value. Refer to EC-762, "Description".
- 2. Start engine.

#### Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

## 3.restart engine

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

#### NOTE:

When depressing accelerator pedal three-fourths (3/4) or more, the control system does not start the engine. Do not depress accelerator pedal too much.

#### Does engine start?

YES >> Proceed to EC-906, "Diagnosis Procedure".

NO >> Check exhaust and intake air leak visually.

### f 4 .PERFORM DTC CONFIRMATION PROCEDURE-II

- Start engine and let it idle for at least 5 minutes.
- 2. Check 1st trip DTC.

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**EC-905 Revision: November 2015 2016 JUKE** 

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is 1st trip DTC detected?

YES >> Proceed to EC-906, "Diagnosis Procedure".

NO >> GO TO 5.

# 5. PERFORM DTC CONFIRMATION PROCEDURE-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine.
- 3. Maintain the following conditions for at least 10 consecutive minutes. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE 50 - 120 km/h (31 - 75 MPH)

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-906, "Diagnosis Procedure".

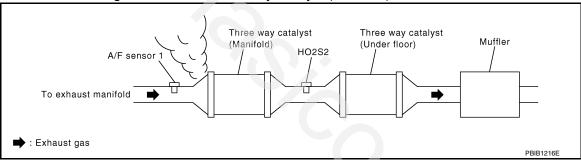
NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198405

## 1. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak before three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 2.

## 2.CHECK FOR INTAKE AIR LEAK

- 1. Listen for an intake air leak after the mass air flow sensor.
- Check PCV hose connection.

### Intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

# 3.check a/f sensor 1 input signal circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		_		
A/F sensor 1		E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F72	1	F24	79	Existed
172	2	127	74	LAISIEU

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

5. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

	+			
A/F se	ensor 1	_	Continuity	
Connector	Terminal			
F72	1	Ground	Not existed	
1 72	2	Ground	NOT EXISTED	

E	+ CM	_	Continuity	
Connector	Terminal			
F24	79 74	Ground	Not existed	

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4.CHECK FUEL PRESSURE

Check fuel pressure. Refer to EC-771, "Work Procedure".

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

## 5. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging. Refer to EM-203. "Exploded View".

#### Is the inspection result normal?

YES >> Replace "fuel filter and fuel pump assembly". Refer to <u>FL-6, "2WD : Exploded View"</u> (2WD) or <u>FL-10, "AWD : Exploded View"</u> (AWD).

NO >> Repair or replace error-detected parts.

### 6.CHECK MASS AIR FLOW SENSOR

#### (P)With CONSULT

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Connect CONSULT and select "DATA MONITOR" mode.
- 5. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

Monitor item	Condition	Indication (Hz)	Γ
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
MASS AIR FLOW SENSOR (Hz)	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz	
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	F

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### 

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the frequency between ECM harness connector terminals under the following conditions.

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### [MR EXCEPT FOR NISMO RS MODELS]

	ECM			_	
Connector	+	_	Condition	Frequency (Hz)	
Connector	Terminal				
	F23 37 42	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz		
E23		27 42	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
F23		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz		
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to <u>EC-843</u>, "<u>DTC Logic</u>".

## 7. CHECK FUNCTION OF FUEL INJECTOR

### (I) With CONSULT

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Make sure that each circuit produces a momentary engine speed drop.

### **⋈**Without CONSULT

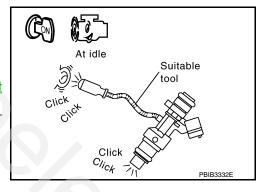
- 1. Let engine idle.
- 2. Listen to each fuel injector operating sound

#### Clicking noise should be heard.

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Perform trouble diagnosis for "FUEL INJECTOR", refer to EC-1204, "Component Function Check".



< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0172 FUEL INJECTION SYSTEM FUNCTION

DTC Logic

#### DTC DETECTION LOGIC

With the Air/Fuel Mixture Ratio Self-Learning Control, the actual mixture ratio can be brought closely to the theoretical mixture ratio based on the mixture ratio feedback signal from the A/F sensors 1. The ECM calculates the necessary compensation to correct the offset between the actual and the theoretical ratios.

In case the amount of the compensation value is extremely large (The actual mixture ratio is too rich.), the ECM judges the condition as the fuel injection system malfunction and lights up the MIL (2 trip detection logic).

Sensor	Input signal to ECM	ECM function	Actuator
A/F sensor 1	F sensor 1 Density of oxygen in exhaust gas (Mixture ratio feedback signal)		Fuel injector

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0172	FUEL SYS-RICH-B1 (Fuel injection system too rich)	Fuel injection system does not operate properly.     The amount of mixture ratio compensation is too large. (The mixture ratio is too rich.)	A/F sensor 1     Fuel injector     Exhaust gas leaks     Incorrect fuel pressure     Mass air flow sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE-I

- Clear the mixture ratio self-learning value. Refer to <u>EC-762, "Description"</u>.
- 2. Start engine.

#### Is it difficult to start engine?

YES >> GO TO 3.

NO >> GO TO 4.

## 3.restart engine

If it is difficult to start engine, the fuel injection system has a malfunction, too.

Crank engine while depressing accelerator pedal.

#### NOTE:

When depressing accelerator pedal three-fourths (3/4) or more, the control system does not start the engine. Do not depress accelerator pedal too much.

#### Does engine start?

YES >> Proceed to EC-910, "Diagnosis Procedure".

NO >> Check exhaust and intake air leak visually.

### 4.PERFORM DTC CONFIRMATION PROCEDURE-II

- 1. Start engine and let it idle for at least 5 minutes.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-910, "Diagnosis Procedure".

NO >> GO TO 5.

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 5. PERFORM DTC CONFIRMATION PROCEDURE-III

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start engine.
- 3. Maintain the following conditions for at least 10 consecutive minutes. Hold the accelerator pedal as steady as possible.

VHCL SPEED SE 50 - 120 km/h (31 - 75 MPH)

#### **CAUTION:**

#### Always drive vehicle at a safe speed.

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-910, "Diagnosis Procedure".

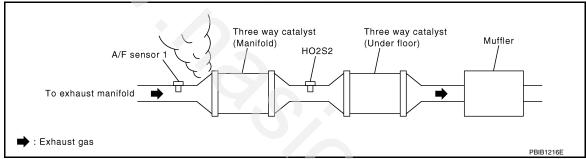
NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198407

# 1. CHECK EXHAUST GAS LEAK

- Start engine and run it at idle.
- Listen for an exhaust gas leak before three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 2.

### 2 . CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

#### Intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

## 3.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect corresponding A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

+		_		
A/F sensor 1		ECM		Continuity
Connector	Terminal	Connector Terminal		
F72	1	F24	79	Existed
F1Z	2	F2 <del>4</del>	74	Existed

5. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

< DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

+	<u> </u>			
A/F se	nsor 1	_	Continuity	
Connector	Terminal			
F72	1	Ground	Not existed	
172	2	Ground	TVOT CAISTOU	
+ EC		_	Continuity	
Connector	Terminal		Continuity	
	79			
F24	74	Ground	Not existed	
6. Also check	harness for	short to power.		
s the inspection		ial?		
YES >> GO		o orror detected se	urto	
NO $>>$ Rep $f 4.$ CHECK FUE	•	e error-detected pa	II (S.	
s the inspection		to <u>EC-771, "Work P</u>	<u>rocedure"</u> .	
YES >> GO		iai:		
NO >> GO				
5. DETECT MA	ALFUNCTIO	NING PART		
Check fuel hose	es and fuel to	ubes for clogging. R	efer to EM-203, "Exploded V	<u>iew"</u> .
s the inspection				
		ter and fuel pump a <u>loded View"</u> (AWD)		<u>/D : Exploded View"</u> (2WD) or <u>FL-</u>
		ce error-detected pa		
CHECK MAS	SS AIR FLO	N SENSOR		
	LT			
l. Turn ignitio	n switch OFI			
		connectors disconne t up to normal oper		
		l select "DATA MON		
			and check the indication.	
Monitor	item		Condition	Indication (Hz)
		Ignition switch ON (Er		Approx. 3,700 Hz
MASS AIR FLOW	SENSOR (H-)		d-up to normal operating temperatur	
IVIAGO AIR FLUW	SENSOR (FIZ)	2,500 rpm (Engine is w	armed-up to normal operating temp	er- 6 100 – 6 500 Hz

Monitor item	Condition	Indication (Hz)	
	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	Ν
MASS AIR FLOW SENSOR (Hz)	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz	0
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

### **®**Without CONSULT

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- Start engine and warm it up to normal operating temperature.
- Check the frequency between ECM harness connector terminals under the following conditions.

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#### [MR EXCEPT FOR NISMO RS MODELS]

	ECM				
Connector	+	_	Condition	Frequency (Hz)	
Connector	Terminal				
			Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
F23	20 07	37 42	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz	
F23	37 42		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz	
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to <u>EC-843. "DTC Logic"</u>.

## 7. CHECK FUNCTION OF FUEL INJECTOR

### (I) With CONSULT

- Start engine.
- 2. Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Make sure that each circuit produces a momentary engine speed drop.

### **⋈**Without CONSULT

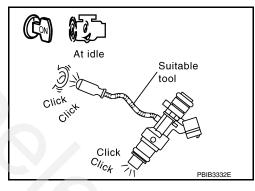
- 1. Let engine idle.
- 2. Listen to each fuel injector operating sound.

#### Clicking noise should be heard.

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.

NO >> Perform trouble diagnosis for "FUEL INJECTOR", refer to EC-1204, "Component Function Check".



#### [MR EXCEPT FOR NISMO RS MODELS]

### P0181 FTT SENSOR

DTC Logic INFOID:0000000012198408

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)		DTC detecting condition	Possible cause
		A)	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from ECT sensor and intake air temperature sensor.	Harness or connectors     (The FTT sensor circuit is open or shorted)     FTT sensor
P0181	FTT SENSOR (Fuel temperature sensor a circuit range/performance)	В)	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor, ECT sensor, EOT sensor, and FTT sensor) shows that the voltage signal of the FTT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or connectors     (High or low resistance in the FTT sensor circuit)     FTT sensor

#### DTC CONFIRMATION PROCEDURE

## 1.INSPECTION START

Is it necessary to erase permanent DTC?

YES >> GO TO 7.

NO >> GO TO 2.

## 2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 3.

# 3.perform dtc confirmation procedure for malfunction a-I

- Turn ignition switch ON and wait at least 10 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-915, "Diagnosis Procedure".

NO >> GO TO 4.

### 4.CHECK ENGINE COOLANT TEMPERATURE

- (P)With CONSULT
- Select "COOLANT TEMP/S" in "DATA MONITOR" with CONSULT.
- Check "COOLANT TEMP/S" value.

Follow the procedure "With CONSULT" above.

"COOLANT\_TEMP/S" less than 60°C (140°F)?

YES >> INSPECTION END

NO >> GO TO 5.

## 5.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A-II

#### (P)With CONSULT

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Cool engine down until "COOLANT TEMP/S" is less than 60°C (140°F).

### P0181 FTT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Wait at least 10 seconds.
- Check 1st trip DTC.

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-915</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 6.

### $oldsymbol{6}$ .PERFORM COMPONENT FUNCTION CHECK (FOR MALFUNCTION B)

Perform component function check. Refer to EC-914, "Component Function Check".

#### NOTE:

Use the component function check to check the overall function of the FTT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-915</u>, "<u>Diagnosis Procedure</u>".

### 7.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- · Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 8.

## 8. PERFORM DTC CONFIRMATION PROCEDURE B

Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 12 hours.

#### **CAUTION:**

Never turn ignition switch ON during this procedure.

#### NOTE:

The vehicle must be cooled with the hood open.

3. Start engine and let it idle for 5 minutes or more.

#### CAUTION:

Never turn ignition switch OFF during idling.

Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-915</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Component Function Check

INFOID:0000000012198409

## 1. CHECK FUEL TANK TEMPERATURE (FTT) SENSOR

- Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit and fuel pump harness connector.
- 3. Remove fuel level sensor unit. Refer to <u>FL-7</u>, "2WD : Removal and Installation" (2WD models), <u>FL-11</u>, "AWD : Removal and Installation" (AWD models).

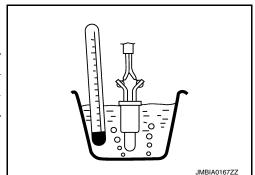
### P0181 FTT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR EXCEPT FOR NISMO RS MODELS]

Check resistance between fuel level sensor unit and fuel pump terminals by heating with hot water as shown in the figure.

Terminals	Condition	Resistance (kΩ)	
4 and 5	Temperature [°C (°F)]	20 (68)	2.3 – 2.7
4 and 5	remperature [ O ( 1 )]	50 (122)	0.79 - 0.90



#### Is the inspection result normal?

YES >> GO TO 2.

>> Proceed to EC-915, "Diagnosis Procedure". NO

## 2.CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-915, "Diagnosis Procedure".

## Diagnosis Procedure

## 1.INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-913, "DTC Logic".

## Which malfunction is detected?

Α >> GO TO 2.

В >> GO TO 5.

## 2.CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect fuel level sensor unit and fuel pump harness connector. 2.
- 3. Turn ignition switch ON.
- Check the voltage between fuel level sensor unit and fuel pump harness connector and ground.

Fuel level sensor	unit and fuel pump	Ground	Voltage	
Connector	Terminal	Ground	voltage	
B46	4	Ground	Approx. 5 V	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between fuel tank temperature sensor harness connector and ECM harness connec-

Fuel level sensor unit and fuel pump		ECM		Continuity
Connector	Terminal	Connector Terminal		
B46	4	E19	128	Existed

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## $oldsymbol{4}.$ CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.

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### **P0181 FTT SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR EXCEPT FOR NISMO RS MODELS]

Check the continuity between fuel level sensor unit and fuel pump harness connector and ECM harness connector.

Fuel level sensor unit and fuel pump		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
B46	5	E19	148	Existed

4. Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit, short to ground or short to power in harness or connector.

## 5. CHECK FUEL TANK TEMPERATURE SENSOR

Check fuel tank temperature sensor. Refer to EC-916, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace fuel level sensor unit and fuel pump. Refer to <u>FL-7</u>, "2WD: Removal and Installation" (2WD models), <u>FL-11</u>, "AWD: Removal and Installation" (AWD models).

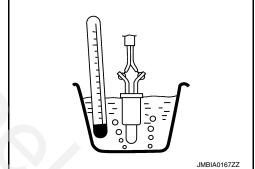
## Component Inspection

INFOID:0000000012198411

## 1. CHECK FUEL TANK TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- Remove fuel level sensor unit. Refer to <u>FL-7</u>, "2WD : Removal and Installation" (2WD models), <u>FL-11</u>, "AWD : Removal and Installation" (AWD models).
- 3. Check resistance between "fuel level sensor unit and fuel pump" terminals by heating with hot water as shown in the figure.

Mass air flow sensor					
+	-	Condition		Resistance ( $k\Omega$ )	
Terminals					
4	5	Temperature [°C (°F)]	20 (68)	2.3 - 2.7 kΩ	
4	5	remperature [ C ( F)]	50 (122)	0.79 - 0.90 kΩ	



#### Is the inspection result normal?

YES >> INSPECTION END

NO

>> Replace fuel level sensor unit and fuel pump. Refer to <u>FL-7, "2WD : Removal and Installation"</u> (2WD models), <u>FL-11, "AWD : Removal and Installation"</u> (AWD models).

## **P0182, P0183 FTT SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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## P0182, P0183 FTT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P0182	FTT_SEN/CIRCUIT (Fuel temperature sensor "A" circuit low)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors     (The sensor circuit is open or shorted.)	
P0183	FTT_SEN/CIRCUIT (Fuel temperature sensor "A" circuit high)	An excessively high voltage from the sensor is sent to ECM.	Fuel tank temperature sensor	

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-917, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. INSPECTION START

Confirm the detected malfunction (A or B). Refer to EC-913, "DTC Logic".

#### Which malfunction is detected?

A >> GO TO 2.

B >> GO TO 5.

# 2.CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect fuel level sensor unit and fuel pump harness connector.
- Turn ignition switch ON.
- Check the voltage between fuel level sensor unit and fuel pump harness connector and ground.

Fuel level sensor	unit and fuel pump	Ground	Voltage	
Connector	Connector Terminal		vollage	
B46	4	Ground	Approx. 5 V	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.CHECK FUEL TANK TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.

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- 2. Disconnect ECM harness connector.
- Check the continuity between fuel tank temperature sensor harness connector and ECM harness connector.

Fuel level sensor unit and fuel pump		ECM		Continuity
Connector	Terminal	Connector	Terminal	
B46	4	E19	128	Existed

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 4. CHECK FUEL TANK TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between fuel level sensor unit and fuel pump harness connector and ECM harness connector

Fuel level sensor unit and fuel pump		E	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
B46	5	E19	148	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO

NO >> Repair open circuit, short to ground or short to power in harness or connector.

## 5. CHECK FUEL TANK TEMPERATURE SENSOR

Check fuel tank temperature sensor. Refer to EC-916, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace fuel level sensor unit and fuel pump. Refer to <u>FL-7</u>, "2WD : <u>Removal and Installation</u>" (2WD models), <u>FL-11</u>, "AWD : <u>Removal and Installation</u>" (AWD models).

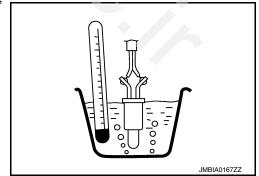
## Component Inspection

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## 1. CHECK FUEL TANK TEMPERATURE SENSOR

- Turn ignition switch OFF.
- 2. Remove fuel level sensor unit. Refer to <u>FL-7</u>, "<u>2WD</u>: <u>Removal and Installation</u>" (2WD models), <u>FL-11</u>, "<u>AWD</u>: <u>Removal and Installation</u>" (AWD models).
- 3. Check resistance between "fuel level sensor unit and fuel pump" terminals by heating with hot water as shown in the figure.

Mass air flow sensor				
+	-	Condition		Resistance (k $\Omega$ )
Term	ninals			
4	5	Temperature [°C (°F)]	20 (68)	2.3 - 2.7 kΩ
4	3	remperature [ C ( F)]	50 (122)	0.79 - 0.90 kΩ



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit and fuel pump. Refer to <u>FL-7</u>, "2WD: Removal and Installation" (2WD models), <u>FL-11</u>, "AWD: Removal and Installation" (AWD models).

### P0190, P0192, P0193 FRP SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0190, P0192, P0193 FRP SENSOR

**DTC Logic** INFOID:0000000012198415

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0193 is displayed with DTC P0190 or P119C, perform the trouble diagnosis for DTC P0190 or P119C. Refer to EC-706, "DTC Index".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0190	FUEL PRES SEN/CIRCUIT (Fuel rail pressure sensor circuit low input and high in- put)	Signal voltage from the fuel rail pressure sensor remains at more than 4.84 V / less than 0.2 V for 5 seconds or more.	Harness or connectors
P0192	FRP SEN/CIRC (Fuel rail pressure sensor circuit low input)	Signal voltage from the fuel rail pressure sensor remains at less than 0.37 V for 5 seconds or more.	<ul> <li>(Fuel rail pressure sensor circuit is open or shorted.)</li> <li>Fuel rail pressure sensor</li> <li>Sensor power supply 2</li> </ul>
P0193	FRP SEN/CIRC (Fuel rail pressure sensor circuit high input)	Signal voltage from the fuel rail pressure sensor remains at more than 3.46 V for 5 seconds or more.	

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start the engine ON and wait at least 60 seconds.
- Check DTC or 1st trip DTC.

### Is DTC or 1st trip DTC detected?

YES >> Proceed to EC-919, "Diagnosis Procedure".

>> INSPECTION END

#### Diagnosis Procedure

Turning the ignition switch ON with FRP sensor harness connector disconnected causes ECM to detect DTC P0190. Be sure to erase the DTC when the diagnosis procedure.

1.CHECK FUEL RAIL PRESSURE (FRP) SENSOR POWER SUPPLY-I

- Turn ignition switch OFF.
- Disconnect FRP sensor connector. 2.
- Turn ignition switch ON. 3.
- Check the voltage between FRP sensor harness connector terminals.

	FRP sensor		
Connector	+	_	Voltage (Approx.)
Connector	tern	ninal	(
F7	1	3	5 V

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## P0190, P0192, P0193 FRP SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### **Inspection result normal?**

YES >> GO TO 6.

NO >> GO TO 2.

# 2. CHECK FRP SENSOR POWER SUPPLY-II

Check the voltage between FRP sensor harness connector and the ground.

	+		Valla a
FRP	sensor	_	Voltage (Approx.)
Connector Terminal			, , ,
F7	1	Ground	5 V

#### Is inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

## 3. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 4. CHECK FRP SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

	+		-	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F7	3	F23	13	Existed

4. Also check harness for short to power.

#### Is inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and the ground.

ECM		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
	9			
F23	10		Existed	
F24	50			
	60	Ground		
F2 <del>4</del>	110	Ground		
	147			
E19	149			
	152			

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## P0190, P0192, P0193 FRP SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

# 6. CHECK FRP SENSOR SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

	+		_	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F7	2	F23	25	Existed

4. Also check harness for short to ground and to power.

#### Is inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

## 7. CHECK FRP SENSOR

Check the FRP sensor. Refer to EC-921, "Component Inspection".

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

# Component Inspection

INFOID:0000000012198417

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## 1. CHECK FRP SENSOR

#### (P)WITH CONSULT

- Turn ignition switch OFF.
- 2. Reconnect harness connector disconnected.
- Start the engine.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check that the "FUEL PRES SEN V" indication.

Monitor Item	Condition	Values/Status
	Engine speed: Idle	1,140 – 1,460 mV
FUEL PRES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

#### 

- 1. Turn ignition switch OFF.
- Reconnect harness connector disconnected.
- 3. Start the engine.
- 4. Check FRP sensor signal voltage.

	ECM			Val.
Connector	+	_	Condition	Value (Approx.)
Connector	Tern	ninal		
500	25	13	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.14– 1.46 V
F23	25	13	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Revving engine from idle to 4,000 rpm quickly</li></ul>	1.3 – 2.9 V

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace FRP sensor. Refer to <a href="EM-208">EM-208</a>, "Exploded View".

Revision: November 2015 EC-921 2016 JUKE

### P0196 EOT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0196 is displayed with DTC P0197 or P0198, first perform the trouble diagnosis for DTC P0197 or P0198. Refer to <a href="EC-926">EC-926</a>, "DTC Logic".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition		Possi	ble cause
	4	A)	Rationally incorrect voltage from the sensor is sent to ECM, compared with the voltage signals from EOT sensor and intake air temperature sensor.	Harness or conf (The EOT sensor shorted) EOT sensor	nectors or circuit is open or
P0196	EOT SENSOR (Engine oil temperature sensor range/performance)	В)	The comparison result of signals transmitted to ECM from each temperature sensor (IAT sensor, ECT sensor, FTT sensor, and EOT sensor) shows that the signal voltage of the EOT sensor is higher/lower than that of other temperature sensors when the engine is started with its cold state.	Harness or conr (High or low res sensor circuit) EOT sensor	nectors istance in the EOT

#### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

#### Is it necessary to erase permanent DTC?

YES >> GO TO 6.

NO >> GO TO 2.

## 2.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 3.

# 3.perform dtc confirmation procedure for mulfunction a-i

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and let it idle for 5 minutes and 10 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-924, "Diagnosis Procedure".

NO >> GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE FOR MULFUNCTION A-II

#### (P)With CONSULT

- Select "DATA MONITOR" mode with CONSULT.
- 2. Check that "COOLANT TEMP/S" indicates above  $70^{\circ}$ C (158°F). If it is above  $70^{\circ}$ C (158°F), go to the following steps.

### P0196 EOT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR EXCEPT FOR NISMO RS MODELS]

If it is below 70°C (158°F), warm engine up until "COOLANT TEMP/S" indicates more than 70°C (158°F). Then perform the following steps.

- 3. Turn ignition switch OFF and soak the vehicle in a cool place.
- 4. Turn ignition switch ON.

#### NOTE:

Do not turn ignition switch OFF until step 8.

- Select "DATA MONITOR" mode with CONSULT.
- Check the following.

COOLANT TEMP/S	Below 40°C (104°F)
INT/A TEMP SE	Below 40°C (104°F)
Difference between "COOLANT TEMP/S" and "INT/A TEMP SE"	Within 6°C (11°F)

If they are within the specified range, perform the following steps.

If they are out of the specified range, soak the vehicle to meet the above conditions. Then perform the following steps.

#### NOTE:

- Do not turn ignition switch OFF.
- If it is supposed to need a long period of time, do not deplete the battery.
- Start engine and let it idle for 5 minutes.
- 8. Check 1st trip DTC.

#### 

Follow the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-924, "Diagnosis Procedure".

NO >> GO TO 5.

## 5. PERFORM COMPONENT FUNCTION CHECK (FOR MULFUNCTION B)

Perform component function check. Refer to EC-924, "Component Function Check".

#### NOTE:

Use the component function check to check the overall function of the EOT sensor circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-924, "Diagnosis Procedure".

### 6.PRECONDITIONING

If DTC CONFIRMATION PROCEDURE has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds. 1.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, do not add fuel.
- Before performing the following procedure, check that fuel level is between 1/4 and 4/4.
- Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 7.

#### / .PERFORM DTC CONFIRMATION PROCEDURE B

Move the vehicle to a cool place.

#### NOTE:

Cool the vehicle in an environment of ambient air temperature between -10°C (14°F) and 35°C (95°F).

2. Turn ignition switch OFF and leave the vehicle for 12 hours.

#### **CAUTION:**

Never turn ignition switch ON during this procedure.

#### NOTE:

The vehicle must be cooled with the hood open.

Start engine and let it idle for 5 minutes or more.

**EC-923 Revision: November 2015 2016 JUKE**  EC

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#### **CAUTION:**

### Never turn ignition switch OFF during idling.

4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-924, "Diagnosis Procedure".

NO >> INSPECTION END

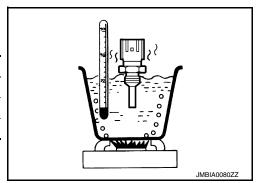
### Component Function Check

INFOID:0000000012198419

# 1. CHECK ENGINE OIL TEMPERATURE (EOT) SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect EOT sensor harness connector.
- 3. Remove EOT sensor. Refer to EM-286, "Exploded View".
- 4. Check resistance between EOT sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition	Resistance (kΩ)	
		20 (68)	2.37 – 2.63
1 and 2	Temperature [°C (°F)]	50 (122)	0.68 – 1.00
		90 (194)	0.236 - 0.260



#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to <u>EC-924</u>, "<u>Diagnosis Procedure</u>".

## 2. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-45, "Intermittent Incident".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-924, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198420

## 1. CHECK ENGINE OIL TEMPERATURE SENSOR

Check engine oil temperature sensor. Refer to EC-924, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace engine oil temperature sensor. Refer to EM-286, "Exploded View".

## Component Inspection

INFOID:0000000012198421

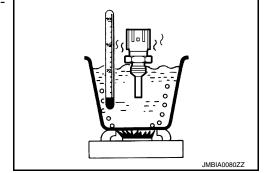
## 1. CHECK ENGINE OIL TEMPERATURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Disconnect engine oil temperature sensor harness connector.
- 3. Remove engine oil temperature sensor. Refer to EM-286, "Exploded View".
- 4. Check resistance between engine oil temperature sensor terminals by heating with hot water as shown in the figure.

Terminals	Condition		Resistance (kΩ)
		20 (68)	2.37 - 2.63
1 and 2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
		90 (194)	0.236 - 0.260

### Is the inspection result normal?

YES >> INSPECTION END



### **P0196 EOT SENSOR**

>> Replace engine oil temperature sensor. Refer to EM-286, "Exploded View". NO

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## P0197, P0198 EOT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC Detecting Condition	Possible Cause
P0197	EOT SEN/CIRC (Engine oil temperature sensor circuit low input)	An excessively low voltage from the engine oil temperature sensor is sent to ECM.	Harness or connectors     (EOT sensor circuit is open or shorted.)
P0198	EOT SEN/CIRC (Engine oil temperature sensor circuit high input)	An excessively high voltage from the engine oil temperature sensor is sent to ECM.	Engine oil temperature sensor

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-926, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198423

# 1. CHECK ENGINE OIL TEMPERATURE SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect engine oil temperature (EOT) sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between EOT sensor harness connector and ground.

	+		Voltage	
EOT:	sensor	-	Voltage (Approx.)	
Connector Terminal			, , ,	
F48	1	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.CHECK ENGINE OIL TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EOT sensor harness connector and ECM harness connector.

### **P0197, P0198 EOT SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

+		-	_	
EOT sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F48	1	F23	22	Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check eot sensor ground circuit

- Turn ignition switch OFF. 1.
- 2. Disconnect ECM harness connector.
- Check the continuity between EOT sensor harness connector and ECM harness connector.

+			_	
EOT sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F48	2	F23	45	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## f 4 . CHECK ENGINE OIL TEMPERATURE SENSOR

Check the engine oil temperature sensor. Refer to EC-927, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

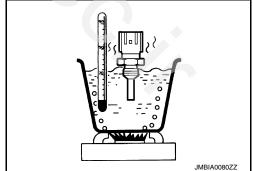
NO >> Replace engine oil temperature sensor. Refer to EM-286, "Exploded View".

## Component Inspection

# 1. CHECK ENGINE OIL TEMPERATURE SENSOR

- Turn ignition switch OFF.
- Disconnect engine oil temperature sensor harness connector.
- 3. Remove engine oil temperature sensor.
- Check resistance between engine oil temperature sensor terminals by heating with hot water as shown in the figure.

•	temperature nsor	O a differen		<b>-</b>
+ –		Condition		Resistance (kΩ)
Terminal				
			20 (68)	2.37 - 2.63
1	1 7 '	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
		1 2 ( 1 /1		0.236 - 0.260



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine oil temperature sensor. Refer to EM-286, "Exploded View".

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## P0201, P0202, P0203, P0204 FUEL INJECTOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P0201, P0202, P0203, P0204 FUEL INJECTOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0201	INJECTOR CIRC-CYL1 (No.1 fuel injector circuit)	ECM detects No. 1 injector circuit is open or shorted.	
P0202	INJECTOR CIRC-CYL2 (No. 2 fuel injector circuit)	ECM detects No. 2 injector circuit is open or shorted.	The fuel injector circuit is open or shorted     Fuel injector
P0203	INJECTOR CIRC-CYL3 (No. 3 fuel injector circuit)	ECM detects No. 3 injector circuit is open or shorted.	• ECM
P0204	INJECTOR CIRC-CYL4 (No. 4 fuel injector circuit)	ECM detects No. 4 injector circuit is open or shorted.	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, conform that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Start the engine and let it idle at least 30 seconds.
- 3. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-928, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198426

## 1. PERFORM TROUBLE DIAGNOSIS FOR INJECTOR

Perform trouble diagnosis for injector. Refer to <u>EC-1204</u>, "Component Function Check". Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

### **P0222, P0223 TP SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0222. P0223 TP SENSOR

**DTC Logic** INFOID:0000000012198427

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0222 or P0223 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-952, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0222	TP SEN 1/CIRC-B1 (Throttle position sensor 1 circuit low input)	An excessively low voltage from the TP sensor 1 is sent to ECM.	Harness or connectors     (TP sensor 1 circuit is open or shorted.)
P0223	TP SEN 1/CIRC-B1 (Throttle position sensor 1 circuit high input)	An excessively high voltage from the TP sensor 1 is sent to ECM.	Electric throttle control actuator (TP sensor 1)

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- Start engine and let it idle for 1 second.
- 2. Check DTC.

#### Is DTC detected?

>> Proceed to EC-929, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

## ${f 1}$ .CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

+			\	
Electric throttle control actuator		_	Voltage (Approx.)	
Connector	Terminal			
F29	5	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2 .CHECK THROTTLE POSITION SENSOR 1 POWER SUPPLY CIRCUIT

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INFOID:0000000012198428

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### **P0222, P0223 TP SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		ı		
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	5	F24	83	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK THROTTLE POSITION SENSOR 1 GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector

+		-		
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	4	F24	85	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK THROTTLE POSITION SENSOR 1 INPUT SIGNAL CIRCUIT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		-		
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	6	F24	88	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

## ${f 5.}$ CHECK THROTTLE POSITION SENSOR

Check the throttle position sensor. Refer to EC-931, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

## **P0222, P0223 TP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

## **Component Inspection**

INFOID:0000000012198429

# 1. CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Perform "Throttle Valve Closed Position Learning". Refer to EC-754, "Description".
- 4. Turn ignition switch ON.
- 5. Set selector lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector terminals as per the following conditions.

	ECM		Condition				
Connector	+	_			Condition Voltage		Voltage
Connector	Terr	ninal					
	88			Fully released	More than 0.36V		
F24	00	85	Accelerator	Fully depressed	Less than 4.75V		
ΓZ <del>4</del>	90	65	pedal	Fully released	Less than 4.75V		
	80			Fully depressed	More than 0.36V		

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to <a href="EM-197">EM-197</a>, "Exploded View".

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### P0234 TC SYSTEM

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0234 is displayed with DTC P0237 or P0238, first perform the trouble diagnosis for DTC P0237 or P0238. Refer to <u>EC-938</u>. "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0234	TC SYSTEM-B1 (Turbocharger overboost condition)	Turbocharger boost is higher than the target value.	Turbocharger boost sensor Turbocharger bypass control valve solenoid valve Exhaust manifold and turbocharger assembly Disconnection, looseness or improper connection of boost control actuator hose

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-932, "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the turbocharger system circuit. During this check, DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-933</u>, "<u>Diagnosis Procedure</u>".

### Component Function Check

INFOID:0000000012198431

## 1.INSPECTION START

Do you have CONSULT?

#### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

## 2. CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

#### (II) With CONSULT

- Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "WASTEGATE ACTUATOR".
- 3. Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.002 m, and make a quick short note of value "V1" of "W/G ACTUATOR POSI SEN B1".
- 4. Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.006 m, and make a quick short note of value "V2" of "W/G ACTUATOR POSI SEN B1".

<u>Do the values of "V1" and "V2" change (visually, ACTUATOR SHAFT operates) and "V2" minus "V1" becomes equal to or more than 1.3V?</u>

YES >> INSPECTION END

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

# 3. CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

### Without CONSULT

- 1. Turn ignition switch OFF.
- 2. Disconnect Wastegate control actuator harness connector.
- 3. While checking the POSITION SENSOR OUT voltage with an oscilloscope, apply a voltage of 12 V to the positive or negative terminal.

#### Does ACTUATOR SHAFT visually operate and POSITION SENSOR OUT voltage change?

YES >> INSPECTION END

#### P0234 TC SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

## Diagnosis Procedure

INFOID:0000000012198432

## 1. CHECK BOOST CONTROL ACTUATOR HOSE

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Check disconnection, looseness or improper connection of hose between turbocharger bypass control valve solenoid valve and boost control actuator.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

# 2.CHECK TURBOCHARGER BYPASS CONTROL VALVE POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect turbocharger bypass control valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between turbocharger bypass control valve harness connector and ground.

	+		
Turbocharger by	pass control valve	_	Voltage
Connector Terminal			
F64	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.check turbocharger bypass control valve power supply circuit

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between turbocharger bypass control valve harness connector and IPDM E/R harness connector.

+		_		
•	r bypass con- valve	IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		
F64	1	E14	36	Existed

Also check harness for short to ground and short.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 4. CHECK TURBOCHARGER BYPASS CONTROL VALVE GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between turbocharger bypass control valve harness connector and ECM harness connector.

+		_		
•	r bypass con- valve	ECM		Continuity
Connector	Terminal	Connector Terminal		
F64	2	F24 105		Existed

Also check harness for short to power.

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### P0234 TC SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5. CHECK TURBOCHARGER BYPASS CONTROL VALVE

Check the turbocharger bypass control valve. Refer to EM-244, "Inspection".

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace turbocharger bypass control valve. Refer to EM-242, "Exploded View".

## 6. CHECK BOOST CONTROL ACTUATOR

Check the boost control actuator. Refer to EM-244, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace exhaust manifold and turbocharger assembly. Refer to EM-242, "Exploded View".

### 7. CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-939, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View".

### P0235 TC BOOST SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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INFOID:0000000012198434

### P0235 TC BOOST SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause	1
P0235	TURBO BOOST SENSOR (Turbocharger/supercharger boost sensor A circuit)	An excessively low voltage from the turbocharger boost sensor is sent to ECM.	,	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-935, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

# 1. CHECK TURBOCHARGER BOOST SENSOR POWER SUPPLY

- 1. Disconnect turbocharger boost sensor harness connector.
- Turn ignition switch ON.
- 3. Check the voltage between turbocharger boost sensor harness connector and ground.

+			\	
Turbocharger boost sensor		_	Voltage (Approx.)	
Connector	Terminal		,	
F75	2	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

#### Perform EC-1240, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK TURBOCHARGER BOOST SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

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+		_		
Turbocharge	boost sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F75	4	F23	13	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK TURBOCHARGER BOOST SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

+		<del>-</del>		
Turbocharger boost sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F75	1	F23	11	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-936, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Replace turbocharger boost sensor. Refer to <a href="EM-194"><u>EM-194</a>, "Exploded View"</u>.

## Component Inspection

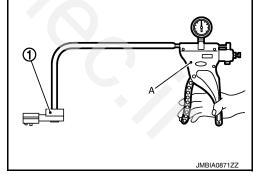
INFOID:0000000012198435

## 1. CHECK TURBOCHARGER BOOST SENSOR

- 1. Turn ignition switch OFF.
- Remove turbocharger boost sensor with its harness connector.
- 3. Install pressure pump (A) to turbocharger boost sensor (1). **CAUTION:**

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- · Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

### **P0235 TC BOOST SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

ECM			On all the ID was no (Delether to all	
Connector	+	_	Condition [Pressure (Relative to atmospheric pressure)]	•
Terminal		ninal	7	(
F23	11	13	0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V
125	"	13	40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	(Approx.) 2.03 V

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View".

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### P0237, P0238 TC BOOST SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0237	TC BOOST SEN/CIRC-B1 (Turbocharger boost sensor circuit low input)	An excessively low voltage from the turbocharger boost sensor is sent to ECM.	Harness or connectors     (Turbocharger boost sensor circuit is open or shorted.)
P0238	TC BOOST SEN/CIRC-B1 (Turbocharger boost sensor circuit high input)	An excessively high voltage from the turbocharger boost sensor is sent to ECM.	Turbocharger boost sensor     Sensor power supply 2 circuit

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-938, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198437

## 1. CHECK TURBOCHARGER BOOST SENSOR POWER SUPPLY

- Disconnect turbocharger boost sensor harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between turbocharger boost sensor harness connector and ground.

	+			
Turbocharge	boost sensor	_	Voltage (Approx.)	
Connector Terminal			, , ,	
F75	2	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

### 2.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK TURBOCHARGER BOOST SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.

### P0237, P0238 TC BOOST SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

+			_	
Turbocharger boost sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F75	4	F23	13	Existed

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Also check harness for short to power.

### Is the inspection result normal?

YFS >> GO TO 4.

NO >> Repair or replace error-detected parts. D

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### f 4.CHECK TURBOCHARGER BOOST SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between turbocharger boost sensor harness connector and ECM harness connector.

	+		_	
Turbocharger boost sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F75	1	F23	11	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

>> GO TO 5. YES

NO >> Repair or replace error-detected parts.

### 5.CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-939, "Component Inspection".

### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident". YES

>> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View". NO

### Component Inspection

INFOID:0000000012198438

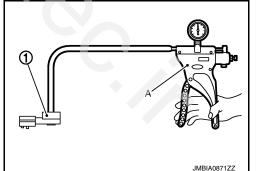
## 1. CHECK TURBOCHARGER BOOST SENSOR

- Turn ignition switch OFF.
- 2. Remove turbocharger boost sensor with its harness connector.
- 3. Install pressure pump (A) to turbocharger boost sensor (1).

#### **CAUTION:**

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



### NOTE:

- Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

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### P0237, P0238 TC BOOST SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

ECM			On differ Days on (Date), a to at	
Connector	+	_	Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)
Connector	Tern	ninal		V 11 - 7
F23		0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V	
1 23	11	13	40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View".

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0300, P0301, P0302, P0303, P0304 MISFIRE

DTC Logic INFOID:0000000012198439

#### DTC DETECTION LOGIC

When a misfire occurs, engine speed will fluctuate. If the engine speed fluctuates enough to cause the crankshaft position (CKP) sensor (POS) signal to vary, ECM can determine that a misfire is occurring.

Sensor	Input signal to ECM	ECM function
Crankshaft position sensor (POS)	Engine speed	On board diagnosis of misfire

The misfire detection logic consists of the following two conditions.

1. One Trip Detection Logic (Three Way Catalyst Damage)

On the 1st trip, when a misfire condition occurs that can damage the three way catalyst (TWC) due to overheating, the MIL will blink.

When a misfire condition occurs, the ECM monitors the CKP sensor signal every 200 engine revolutions for a change.

When the misfire condition decreases to a level that will not damage the TWC, the MIL will turn off. If another misfire condition occurs that can damage the TWC on a second trip, the MIL will blink. When the misfire condition decreases to a level that will not damage the TWC, the MIL will remain on. If another misfire condition occurs that can damage the TWC, the MIL will begin to blink again.

Two Trip Detection Logic (Exhaust quality deterioration)

For misfire conditions that will not damage the TWC (but will affect vehicle emissions), the MIL will only light when the misfire is detected on a second trip. During this condition, the ECM monitors the CKP sensor signal every 1,000 engine revolutions.

A misfire malfunction can be detected on any one cylinder or on multiple cylinders.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0300	MULTI CYL MISFIRE (Multiple cylinder misfire detected)	Multiple cylinder misfire.	Improper spark plug Insufficient compression Incorrect fuel pressure Fuel Injector circuit is open or shorted Fuel injector Intake air leak Ignition signal circuit is open or shorted Lack of fuel Signal plate A/F sensor 1 Incorrect PCV hose connection

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE-I

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Restart engine and let it idle for following time.

About 15 minutes

Check 1st trip DTC.

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is 1st trip DTC detected?

YES >> Proceed to EC-942, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-II

- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and drive the vehicle as per the similar conditions to (1st trip) Freeze Frame Data for a certain time. Refer to the table below.

### Hold the accelerator pedal as steady as possible.

The similar conditions to (1st trip) Freeze Frame Data means the vehicle operation that the following conditions should be satisfied at the same time.

#### **CAUTION:**

Always drive vehicle in safe manner according to traffic conditions and obey all traffic laws when driving.

Engine speed	Engine speed in the freeze frame data $\pm$ 400 rpm
Vehicle speed	Vehicle speed in the freeze frame data $\pm$ 10 km/h (6 MPH)
Engine coolant temperature (T)	When the freeze frame data shows lower than 70°C (158°F), T should be lower than 70°C (158°F).
condition	When the freeze frame data shows higher than or equal to 70°C (158°F), T should be higher than or equal to 70°C (158°F).

The time to driving varies according to the engine speed in the freeze frame data.

Engine speed	Time
Around 1,000 rpm	Approximately 10 minutes
Around 2,000 rpm	Approximately 5 minutes
More than 3,000 rpm	Approximately 3.5 minutes

### 3. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-942, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198440

### 1. CHECK GROUND CONNECTION

#### Check the following.

- Connection condition of the ground F6 and F9
- Connection condition of the ground harness between engine assembly and vehicle body (If equipped)

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.CHECK FOR INTAKE AIR LEAK AND PCV HOSE

- 1. Start engine and run it at idle speed.
- Listen for the sound of the intake air leak.
- 3. Check PCV hose connection.

#### Is intake air leak detected?

YES >> Discover air leak location and repair.

NO >> GO TO 3.

### 3.CHECK FOR EXHAUST SYSTEM CLOGGING

Stop engine and visually check exhaust tube, three way catalyst and muffler for dents.

### Is the inspection result normal?

YES-1 >> (P)With CONSULT: GO TO 4.

YES-2 >> NWithout CONSULT: GO TO 5.

### [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS > NO

### >> Repair or replace it. 4.PERFORM POWER BALANCE TEST

### (P)With CONSULT

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Make sure that each circuit produces a momentary engine speed drop.

#### Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 5.

### ${f 5}.$ CHECK FUNCTION OF FUEL INJECTOR

- Start engine and let engine idle.
- 2. Listen to each fuel injector operating sound.

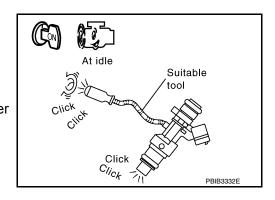
### Clicking noise should be heard.

### Is the inspection result normal?

YES >> GO TO 6.

NO

>> Perform trouble diagnosis for FUEL INJECTOR. Refer to EC-1204, "Diagnosis Procedure".



### 6.CHECK FUNCTION OF IGNITION COIL-I

#### CAUTION:

Do the following procedure in the place where ventilation is good without the combustible.

- Turn ignition switch OFF.
- Remove fuel pump fuse in IPDM E/R to release fuel pressure.

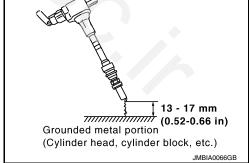
Do not use CONSULT to release fuel pressure, or fuel pressure applies again during the following procedure.

- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- 7. Remove ignition coil and spark plug of the cylinder to be checked.
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 -0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.

#### Spark should be generated.

#### CAUTION:

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20 kV or more.



 It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

#### Is the inspection result normal?

YES >> GO TO 10.

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> GO TO 7.

### 7.CHECK FUNCTION OF IGNITION COIL-II

- 1. Turn ignition switch OFF.
- Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

### Spark should be generated.

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-1229, "Diagnosis Procedure".

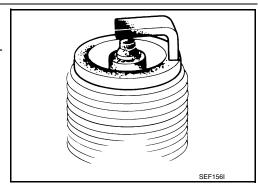
### 8. CHECK SPARK PLUG

Check the initial spark plug for fouling, etc.

#### Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <a href="EM-190">EM-190</a>, "Inspection".

NO >> Repair or clean spark plug. Then GO TO 9.



## 9. CHECK FUNCTION OF IGNITION COIL-III

- 1. Reconnect the initial spark plugs.
- 2. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

#### Spark should be generated.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type. Refer to <u>EM-214</u>, "Removal and Installation".

## 10. CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-182, "Inspection".

### Is the inspection result normal?

YES >> GO TO 11.

NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.

### 11. CHECK FUEL PRESSURE

- 1. Install all removed parts.
- Release fuel pressure to zero. Refer to <u>EC-771, "Work Procedure"</u>.
- Install fuel pressure gauge and check fuel pressure. Refer to <u>EC-771, "Work Procedure"</u>.

### At idling: Approximately 500 kPa (5.0 bar, 5.1 kg/cm<sup>2</sup>, 73 psi)

#### Is the inspection result normal?

YES >> GO TO 13. NO >> GO TO 12.

## 12. DETECT MALFUNCTIONING PART

Check fuel hoses and fuel tubes for clogging.

Is the inspection result normal?

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< DTC/CIRCUIT DIAGNOSIS > [MR EXCEPT FOR NISMO RS MODELS]
YES >> Replace "fuel filter and fuel pump assembly". Refer to FL-6, "2WD : Exploded View" (2WD) or FL-10, "AWD : Exploded View" (AWD).
NO >> Repair or replace.
13.CHECK IGNITION TIMING
Check the following items.
For procedure, refer to EC-765, "Work Procedure".

For specification, refer to <u>EC-1258</u>, "Ignition Timing". Is the inspection result normal?

YES >> GO TO 14.

NO >> Follow the EC-765, "Work Procedure".

## 14. CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect A/F sensor 1 harness connector.
- 3. Disconnect ECM harness connector.
- 4. Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

	+		_	
A/F se	ensor 1	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F72	1	F24	79	Existed

5. Check the continuity between A/F sensor 1 harness connector or ECM harness connector and ground.

A/F sensor 1	_	Continuity
Connector Terminal		
F72 1	Ground	Not existed

	+		
ECM		_	Continuity
Connector Terminal			
F24	79	Ground	Not existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 15.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

## 15. CHECK A/F SENSOR 1 HEATER

Check the A/F sensor 1 heater. Refer to EC-806, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace A/F sensor 1. Refer to EM-242, "Exploded View".

### 16. CHECK MASS AIR FLOW SENSOR

#### (P)With CONSULT

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- Connect CONSULT and select "DATA MONITOR" mode.
- 5. Select "MASS AIR FLOW SENSOR (Hz)" and check the indication.

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Monitor item	Condition	Indication (Hz)
MASS AIR FLOW SENSOR (Hz)	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz
	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
	2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz
	Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### 

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Start engine and warm it up to normal operating temperature.
- 4. Check the frequency between ECM harness connector terminals under the following conditions.

	ECM				
Connector +		-	Condition	Frequency (Hz)	
Connector	Terminal				
	F23 37 42	F22 27 42	Ignition switch ON (Engine stopped.)	Approx. 3,700 Hz	
E23			42	Idle (Engine is warmed-up to normal operating temperature.)	5,100 – 5,500 Hz
F25 31		2,500 rpm (Engine is warmed-up to normal operating temperature.)	6,100 – 6,500 Hz		
			Idle to about 4,000 rpm	5,100 – 5,500 to Approx. 7,000 Hz*	

<sup>\*:</sup> Check for linear frequency rise in response to engine being increased to about 4,000 rpm.

#### Is the inspection result normal?

YES >> GO TO 17.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or ground. Refer to <a href="EC-843">EC-843</a>, "DTC Logic".

## 17. CHECK SYMPTOM TABLE

Check items on the rough idle symptom in EC-1242, "Symptom Table"

#### Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace error-detected parts.

## 18. ERASE THE 1ST TRIP DTC

Some tests may cause a 1st trip DTC to be set.

Erase the 1st trip DTC from the ECM memory after performing the tests. Refer to <u>EC-658</u>, "<u>Diagnosis Description</u>".

>> GO TO 19.

### 19. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

>> INSPECTION END

### [MR EXCEPT FOR NISMO RS MODELS]

### P0327, P0328 KS

**DTC Logic** INFOID:0000000012198441

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detected condition	Possible cause
P0327	KNOCK SEN/CIRC-B1 (Knock sensor circuit low input)	An excessively low voltage from the knock sensor is sent to ECM.	Harness or connectors     (Knock sensor circuit is open or short-
P0328	KNOCK SEN/CIRC-B1 (Knock sensor circuit high input)	An excessively high voltage from the knock sensor is sent to ECM.	ed.) • Knock sensor

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at idle.

>> GO TO 2.

### 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and run it for at least 5 seconds at idle speed.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-947, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

CHECK KNOCK SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect knock sensor harness connector.
- Disconnect ECM harness connector.
- Check the continuity between knock sensor harness connector and ECM harness connector.

+				
Knock	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F12	2	F23	20	Existed

5. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

### 2.CHECK KNOCK SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between knock sensor harness connector and ECM harness connector.

**EC-947 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198442

+		_		
Knock	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F12	1	F23	15	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

## 3. CHECK KNOCK SENSOR

Check the knock sensor. Refer to EC-948, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace knock sensor. Refer to EM-286, "Exploded View".

### Component Inspection

INFOID:0000000012198443

## 1. CHECK KNOCK SENSOR

- 1. Turn ignition switch OFF.
- Disconnect knock sensor harness connector.
- 3. Check resistance between knock sensor terminals as per the following.

#### NOTE

It is necessary to use an ohmmeter which can measure more than 10 M $\Omega$ .

Knock sensor		
+	-	Resistance
Terminals		
1 2		Approx. 532 - 588 kΩ [at 20°C (68°F)]

#### **CAUTION:**

Do not use any knock sensors that have been dropped or physically damaged. Use only new ones.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace knock sensor. Refer to <a href="EM-286">EM-286</a>, "Exploded View".

### P0335 CKP SENSOR (POS)

**DTC Logic** INFOID:0000000012198444

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0340 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0335	CKP SEN/CIRCUIT [Crankshaft position sensor (POS) circuit]	<ul> <li>The crankshaft position sensor (POS) signal is not detected by the ECM during the first few seconds of engine cranking.</li> <li>The proper pulse signal from the crankshaft position sensor (POS) is not sent to ECM while the engine is running.</li> <li>The crankshaft position sensor (POS) signal is not in the normal pattern during engine running.</li> </ul>	Harness or connectors [Crankshaft position sensor (POS) circuit is open or shorted.] Crankshaft position sensor (POS) Signal plate

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V with ignition switch ON.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- Start engine and let it idle for at least 5 seconds. If engine does not start, crank engine for at least 2 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-949, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

## $1. {\sf CHECK} \ {\sf CRANKSHAFT} \ {\sf POSITION} \ ({\sf CKP}) \ {\sf SENSOR} \ ({\sf POS}) \ {\sf POWER} \ {\sf SUPPLY}$

- Disconnect crankshaft position (CKP) sensor (POS) harness connector.
- Turn ignition switch ON.
- Check the voltage between CKP sensor (POS) harness connector and ground.

	+		V-11
CKP sen	sor (POS)	_	Voltage (Approx.)
Connector	Terminal		(
F107	3	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

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# $\overline{2}$ .check ckp sensor (pos) power supply circuit

- 1. Turn ignition switch OFF
- Disconnect ECM harness connector.
- 3. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

+			_	
CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F107	3	F23	27	Existed

4. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK CKP SENSOR (POS) GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

+			-	
CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F107	2	F23	44	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK CKP SENSOR (POS) INPUT SIGNAL CIRCUIT

Check the continuity between CKP sensor (POS) harness connector and ECM harness connector.

+			_	
CKP sen	sor (POS)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F107	1	F23	33	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

### ${f 5.}$ CHECK CRANKSHAFT POSITION SENSOR (POS)

Check the crankshaft position sensor (POS). Refer to EC-951, "Component Inspection".

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Replace crankshaft position sensor (POS). Refer to EM-286, "Exploded View".

### **O.**CHECK GEAR TOOTH

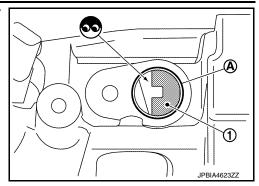
Remove crankshaft position sensor (POS). Refer to <u>EM-286, "Exploded View"</u>.

### P0335 CKP SENSOR (POS)

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

2. Look into the mounting hole (A) of the crankshaft position sensor (POS) to check that there is no missing gear tooth in the signal plate (1).



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Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Replace the signal plate. Refer to EM-286, "Exploded View".

### Component Inspection

INFOID:0000000012198446

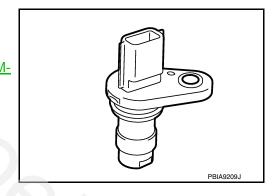
## 1. CHECK CRANKSHAFT POSITION SENSOR (POS)-I

- Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect crankshaft position sensor (POS) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace crankshaft position sensor (POS). Refer to EM-286, "Exploded View".



## 2.CHECK CRANKSHAFT POSITION SENSOR (POS)-II

Check the resistance between crankshaft position sensor (POS) terminals as per the following.

ion sensor (POS)	
_	Resistance [at 25°C (77°F)]
(Polarity)	
2	
3	Except 0 or $\infty \Omega$
3	
	_

## IV

Is the inspection result normal?

>> INSPECTION END

YES

NO >> Replace crankshaft position sensor (POS). Refer to EM-286, "Exploded View".

### P0340 CMP SENSOR (PHASE)

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0340	CMP SEN/CIRC-B1 [Camshaft position sensor (PHASE) circuit]	<ul> <li>The cylinder No. signal is not sent to ECM for the first few seconds during engine cranking.</li> <li>The cylinder No. signal is not sent to ECM during engine running.</li> <li>The cylinder No. signal is not in the normal pattern during engine running.</li> </ul>	Harness or connectors     (Camshaft position sensor circuit is open or shorted)     Camshaft position sensor     Camshaft (Intake)     Starter motor     Starting system circuit     Dead (Weak) battery     Sensor power supply 2 circuit

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V with ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Start engine and let it idle for at least 5 seconds.
  - If engine does not start, crank engine for at least 2 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-952</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-I

- 1. Maintaining engine speed at more than 800 rpm for at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-952, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198448

### 1. CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over? Does the starter motor operate?

YES >> GO TO 2.

NO >> Check starting system (Refer to EC-743, "Work Flow".).

### 2.CHECK CAMSHAFT POSITION (CMP) SENSOR (PHASE) POWER SUPPLY

1. Turn ignition switch OFF.

### P0340 CMP SENSOR (PHASE)

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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- 2. Disconnect camshaft position (CMP) sensor (PHASE) harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between CMP sensor (PHASE) harness connector and ground.

+			Vallana	
CMP sensor (PHASE)		_	Voltage (Approx.)	
Connector	Terminal		, , ,	
F109	1	Ground	5 V	

Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

3. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240. "Diagnosis Procedure".

Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

4.CHECK CMP SENSOR (PHASE) GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

+		-		
CMP sens	or (PHASE)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F109	2	F24	71	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

5.CHECK CMP SENSOR (PHASE) INPUT SIGNAL CIRCUIT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between CMP sensor (PHASE) harness connector and ECM harness connector.

+		_		
CMP sens	or (PHASE)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F109	3	F24	67	Existed

3. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

6. CHECK CAMSHAFT POSITION SENSOR (PHASE)

Check the camshaft position sensor (PHASE). Refer to EC-954, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace camshaft position sensor (PHASE). Refer to EM-261, "Removal and Installation".

### .CHECK CAMSHAFT (INT)

Check the following.

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### P0340 CMP SENSOR (PHASE)

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

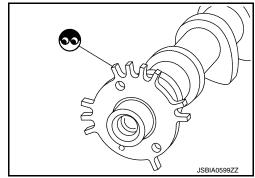
- · Accumulation of debris to the signal plate of camshaft rear end
- · Chipping signal plate of camshaft rear end

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <u>GI-45. "Intermittent Incident"</u>.

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to <u>EM-261</u>. "Removal and Installation".



INFOID:0000000012198449

## **Component Inspection**

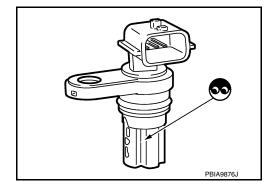
## 1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-I

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace camshaft position sensor (PHASE).



## 2.CHECK CAMSHAFT POSITION SENSOR (PHASE)-II

Check the resistance camshaft position sensor (PHASE) terminals as per the following.

Camshaft position sensor (PHASE)		
+ –		Resistance [Ω at 25°C (77°F)]
Terminals	(Polarity)	
1	2	
ı	3	Except 0 or ∞
2	3	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace camshaft position sensor (PHASE). Refer to EM-261, "Removal and Installation".

## P0365 EXHAUST VALVE TIMING CONTROL POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0365 EXHAUST VALVE TIMING CONTROL POSITION SENSOR

**DTC** Description INFOID:0000000012198450

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition
P0365	CMP SEN/CIRC-B1 (Camshaft position sensor circuit bank 1)	<ul> <li>EVT control position sensor signal is not sent to ECM during engine cranking.</li> <li>EVT control position sensor signal is not sent to ECM during engine running.</li> <li>The pulse signal sent from the EVT control position sensor to ECM is not in the normal pattern during engine running.</li> </ul>

### Possible Cause

- Harness or connectors
- Exhaust valve timing control position sensor circuit is open or shorted.
- Sensor power supply 2 circuit is shorted.
- Exhaust valve timing control position sensor
- Exhaust camshaft
- · Starter motor
- Starting circuit
- Battery deterioration
- Sensor power supply 1 circuit sensors

#### FAIL-SAFE

Engine operating condition in fail-safe mode			
Fail safe mode Vehicle behavior			
Device fix mode	<ul> <li>This mode fixes the IVT control solenoid valve and the EVT control solenoid valve in the reference position.</li> <li>The intake manifold runner control valve motor is turned OFF (intake manifold runner control valve opens).</li> </ul>		

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5 V at idling.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-1

- Start engine and let it idle for at least 5 seconds.
  - If engine does not start, crank engine for at least 2 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-956, "Diagnosis Procedure".

NO >> GO TO 3.

### 3.PERFORM DTC CONFIRMATION PROCEDURE-2

- Keep the engine speed at more than 800 rpm for at least 5 seconds.
- Check 1st trip DTC.

**EC-955 Revision: November 2015 2016 JUKE**  EC

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### P0365 EXHAUST VALVE TIMING CONTROL POSITION SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-956</u>, "<u>Diagnosis Procedure</u>".

NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".

NO-2 >> Confirmation after repair: INSPECTION END

### Diagnosis Procedure

INFOID:0000000012198451

### 1. CHECK STARTING SYSTEM

Turn ignition switch to START position.

Does the engine turn over? Does the starter motor operate?

YES >> GO TO 2.

NO >> Check starting system. Refer to <u>EC-743, "Work Flow"</u>.

2.CHECK EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR POWER SUPPLY CIRCUIT-1

- 1. Turn ignition switch OFF.
- 2. Disconnect exhaust valve timing (EVT) control position sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between EVT control position sensor harness connector terminals.

EV			
Connector	+	-	Voltage (Approx.)
Connector	Tern	ninals	(
F111	1	2	5 V

### Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

3.CHECK EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR POWER SUPPLY CIRCUIT-2

Check the voltage between EVT control position sensor harness connector and ground.

+			
EVT control position sensor		_	Voltage (Approx.)
Connector Terminal			, , ,
F111	1	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 4.

4. CHECK EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR POWER SUPPLY CIRCUIT-3

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVT control position sensor harness connector and ECM harness connector.

+		_		
EVT control p	osition sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F111	1	F24	73	Existed

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

**5.**CHECK SENSOR POWER SUPPLY 1 CIRCUIT

## P0365 EXHAUST VALVE TIMING CONTROL POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Refer to EC-1061, "Diagnosis Procedure".

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning parts.

### 6.CHECK EVT CONTROL POSITION SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVT control position sensor harness connector and ECM harness connec-

+		-		
EVT control p	osition sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F111	2	F24	63	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

### 7. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

	+ CM		Continuity	
Connector			o o	
	9			
F23	10			
	50	Ground	Existed	
F24	60			
F2 <del>4</del>	110	Giodila		
E19	147			
	149			
	152			

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace error-detected parts.

### 8.CHECK EVT CONTROL POSITION SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between EVT control position sensor harness connector and ECM harness connector.

+		_		
EVT control position sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F111	3	F24	69	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

**EC-957 Revision: November 2015 2016 JUKE**  EC

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### P0365 EXHAUST VALVE TIMING CONTROL POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

## 9. CHECK EVT CONTROL POSITION SENSOR

Refer to EC-958, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 10.

NO >> Replace EVT control position sensor. Refer to EM-248, "Exploded View".

## 10. CHECK CAMSHAFT (EXT)

### Check the following.

- · Accumulation of debris to the signal plate of camshaft rear end
- · Chipping signal plate of camshaft rear end

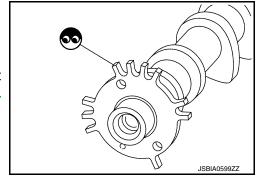
#### Is the inspection result normal?

YES

>> INSPECTION END

NO

>> Remove debris and clean the signal plate of camshaft rear end or replace camshaft. Refer to EM-261, "Removal and Installation".



INFOID:0000000012198452

### Component Inspection

## 1. EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR-1

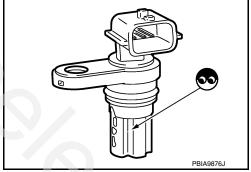
- Turn ignition switch OFF.
- 2. Loosen the sensor mounting bolt.
- Disconnect the EVT control position sensor harness connector.
- Remove the EVT control position sensor.
- Visually check the sensor for chipping.

### Is the inspection result normal?

YES >> GO TO 2.

NO

>> Replace the EVT control position sensor. Refer to EM-248, "Exploded View".



## 2.EXHAUST VALVE TIMING (EVT) CONTROL POSITION SENSOR-2

Check resistance between EVT control position sensor terminals as shown below.

EVT control position sensor			
+ -		Resistance	
Terminals		1	
1	2		
ı	3	Except 0 Ω [at 25°C (77°F)]	
2	3	1	

### Is the inspection result normal?

YES >> INSPECTION END

>> Replace the EVT control position sensor. Refer to EM-248, "Exploded View". NO

**EC-958 Revision: November 2015 2016 JUKE** 

### P0401, P0402 EGR SYSTEM

**DTC Logic** INFOID:0000000012198453

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0404 is displayed with DTCs of mass air flow sensor, first perform trouble diagnosis for DTCs of mass air flow sensor. Refer to EC-843, "DTC Logic".
- · If DTC P0404 is displayed with DTCs of EGR pressure sensor, first perform trouble diagnosis for DTCs of EGR pressure sensor. Refer to EC-1025, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0401	EGR A FLOW INSUFFI- CIENT (EGR A flow insufficient de- tected)	ECM detects that the difference between the differential pressure value (between before and behind the EGR volume control valve) calculated based on intake air amount and the estimated EGR pressure sensor output value is equal to or less than the specified lower limit value for 6 seconds.	EGR cooler clogging     EGR pipe clogging
P0402	EGRC-BPT VALVE (EGR A flow excessive detected)	ECM detects that the difference between the differential pressure value (between before and behind the EGR volume control valve) calculated based on intake air amount and the estimated EGR sensor output value is equal to or more than the specified upper limit value for 6 seconds.	EGR pipe disconnection

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- Start engine and warm it up to normal operating temperature.
- Drive the vehicle and accelerate from 50 km/h (32 MPH) to 80 km/h (50 MPH) within 15 seconds. CAUTION:

Always drive at safe speed.

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-959, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### CHECK EGR PASSAGE

Check the following for clogging and cracks.

- EGR tube
- EGR hose
- EGR cooler

### Is the inspection result normal?

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**2016 JUKE** 

### **P0401, P0402 EGR SYSTEM**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## $2.\mathsf{CHECK}$ EGR VOLUME CONTROL VALVE VISUALLY

- 1. Remove the EGR volume control valve.
- 2. Check if foreign matter is caught between the EGR volume control valve and the housing.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK EGR COOLER VISUALLY

- 1. Remove the EGR cooler.
- 2. Check if foreign matter is caught between the EGR cooler and the housing.

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

### P0404 EGR VOLUME CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0404 EGR VOLUME CONTROL VALVE

**DTC Logic** INFOID:0000000012198455

#### DTC DETECTION LOGIC

### NOTE:

If DTC P0404 is displayed with DTC P044A, or P044E, first perform trouble diagnosis for DTC P044A, or P044E. Refer to EC-993, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0404	EGR A CONTROL (EGR A control circuit range/ performance)	<ul> <li>ECM detects that the current sent to the EGR volume control valve motor is equal to or more than the threshold value for 2 seconds or more under the condition that the target angle of EGR volume control valve is constant.</li> <li>ECM detects that the difference between the target angle of EGR volume control valve and actual valve angle is equal to or more than the threshold value for 5 seconds or more.</li> </ul>	EGR volume control valve     Foreigh objects interferes with EGR volume control valve

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### >> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

Start the engine when the following conditions are met.

Intake air temperature	0°C (32°F) or more
Engine coolant temperature	75°C (167°F) or more

- Drive the vehicle at 50 km/h (32 MPH) or more for at least 5 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-961, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

### Diagnosis Procedure

### 1. CHECK EGR VOLUME CONTROL VALVE

Check the EGR volume control valve. Refer to EC-961, "Component Inspection (EGR Volume Control Valve)" Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace EGR volume control valve. Refer to EC-600, "ENGINE CONTROL NO Component Parts Location".

### Component Inspection (EGR Volume Control Valve)

.CHECK EGR VOLUME CONTROL VALVE-1

#### **EC-961 Revision: November 2015 2016 JUKE**

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### P0404 EGR VOLUME CONTROL VALVE

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### (P)With CONSULT

- 1. Turn ignition switch ON and engine stopped.
- 2. On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "EGR CONTROL VALVE".
- 3. Operate "Up" or "Down", set "EGR VALVE POSITION" to 0 deg, and check value "V1" of "EGR VALVE POSITION SEN".

### Does "V1" become 1.2±0.15 V?

YES >> GO TO 2.

NO >> Replace EGR volume control valve. Refer to <u>EC-600, "ENGINE CONTROL SYSTEM : Component Parts Location".</u>

### 2. CHECK EGR VOLUME CONTROL VALVE-2

### (P)With CONSULT

1. Operate "Up" or "Down", set "EGR VALVE POSITION" to 70 deg, and check value "V2" of "EGR VALVE POSITION SEN".

### Does "V2" become 4.0±0.15 V?

YES >> GO TO 3.

NO >> Replace EGR volume control valve. Refer to <u>EC-600, "ENGINE CONTROL SYSTEM : Component Parts Location".</u>

# ${f 3.}$ CHECK EGR VOLUME CONTROL VALVE VISUALLY

- 1. Turn ignition switch OFF.
- 2. Check if any foreign objects interferes with EGR volume control valve.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Repair or replace the error-detected parts.

### P0407, P0408 EGR PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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### P0407, P0408 EGR PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0407	EGR SENSOR B (EGR sensor B circuit low)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the EGR pressure sensor is 0.294 V or less.	Harness or connectors     (EGR pressure sensor circuit is open
P0408	EGR SENSOR B (EGR sensor B circuit high)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the EGR pressure sensor is 4.84 V or more.	or shorted.) • EGR pressure sensor

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

**TEST CONDITION:** 

Before performing the following procedure, confirm that battery voltage is 11 V or more at ignition switch ON.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-963</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK EGR PRESSURE SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect EGR pressure sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between EGR pressure sensor harness connector and ground.

	+		Maltana	
EGR pressure sensor		_	Voltage (Approx.)	
Connector	Terminal			
F46	1	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

## 2.CHECK EGR PRESSURE SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

Revision: November 2015 EC-963 2016 JUKE

### P0407, P0408 EGR PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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+		_		
EGR press	sure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F46	3	F23	43	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK EGR PRESSURE SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

	+	_		
EGR press	sure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F46	2	F23	24	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK EGR PRESSURE SENSOR

Check the EGR pressure sensor. Refer to EC-1026, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Replace EGR pressure sensor.

### 5.CHECK EGR PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

	+		_	
EGR press	sure sensor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F46	1	F23	30	Existed

4. Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### Component Inspection (EGR pressure sensor)

## 1. CHECK EGR PRESSURE SENSOR

- Turn ignition switch OFF.
- Remove EGR pressure sensor hose (intake and exhaust).
- 3. Install pressure pump to EGR pressure sensor port (intake side).
- 4. Turn ignition switch ON and check output voltage between ECM connector terminals as follows.

### P0407, P0408 EGR PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

EGR press	sure sensor			
+	-	Con	Voltage	
Terr	minal			
2	3	Applied pressure kPa	Not applied	1.0 V
	3	(kg/cm <sup>2</sup> , PSI)	100 (1.02, 14.5)	4.5 V

### **CAUTION:**

Never apply pressure over 150kPa (1.53 kg/cm<sup>2</sup>, 21.75 PSI)

Is inspection result normal?

>> INSPECTION END YES

>> Replace EGR pressure sensor. Refer to FL-27, "2WD : Exploded View". NO

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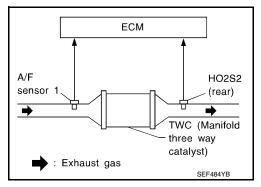
DTC Logic

#### DTC DETECTION LOGIC

The ECM monitors the switching frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2.

A three way catalyst (manifold) with high oxygen storage capacity will indicate a low switching frequency of heated oxygen sensor 2. As oxygen storage capacity decreases, the heated oxygen sensor 2 switching frequency will increase.

When the frequency ratio of air fuel ratio (A/F) sensor 1 and heated oxygen sensor 2 approaches a specified limit value, the three way catalyst (manifold) malfunction is diagnosed.



			: Exhaust gas
DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0420	TW CATALYST SYS-B1 (Catalyst system efficiency below threshold)	Three way catalyst (manifold) does not operate properly. Three way catalyst (manifold) does not have enough oxygen storage capacity.	Three way catalyst (manifold)  Exhaust tube Intake air leaks Fuel injector Fuel injector leaks Spark plug Improper ignition timing

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### Will CONSULT be used?

YES >> GO TO 2. NO >> GO TO 6.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### With CONSULT

#### **TESTING CONDITION:**

### Do not hold engine speed for more than the specified minutes below.

- 1. Start engine and warm it up to the normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 6. Let engine idle for 1 minute.
- 7. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 8. Check that "COOLAN TEMP/S" indicates more than 70°C (158°F).

  If not, warm up engine and go to next step when "COOLAN TEMP/S" indication reaches to 70°C (158°F).
- Open engine hood.
- Select "DTC & SRT CONFIRMATION" then "SRT WORK SUPPORT" mode of "ENGINE" using CON-SULT.
- 11. Rev engine up to 2,000 to 3,000 rpm and hold it for 3 consecutive minutes then release the accelerator pedal completely.

PU420 THREE WAY CATAL	
< DTC/CIRCUIT DIAGNOSIS >	[MR EXCEPT FOR NISMO RS MODELS]
12. Check the indication of "CATALYST".	Α.
Which is displayed on CONSULT screen?	A
CMPLT >> GO TO 5. INCMP >> GO TO 3.	
3. PERFORM DTC CONFIRMATION PROCEDURE-II	EC
2. Rev engine up to 2,000 to 3,000 rpm and maintain it until "I will take approximately 5 minutes).	NCMP" of "CATALYST" changes to "CMPLT" (It
Does the indication change to "CMPLT"?	
YES >> GO TO 5. NO >> GO TO 4.	D
4. PERFORM DTC CONFIRMATION PROCEDURE AGAIN	
<ol> <li>Stop engine and cool it down to less than 70°C (158°F).</li> <li>Perform DTC confirmation procedure again.</li> </ol>	E
>> CO TO 2	F
>> GO TO 2.	1
5.PERFORM DTC CONFIRMATION PROCEDURE-III	
Check 1st trip DTC.	G
Is 1st trip DTC detected?	
YES >> Proceed to <u>EC-968</u> , " <u>Diagnosis Procedure</u> ".  NO >> INSPECTION END	Н
6.PERFORM COMPONENT FUNCTION CHECK	
Perform component function check. Refer to <u>EC-967</u> , "Compor <b>NOTE</b> :	nent Function Check".
Use component function check to check the overall function of check, a 1st trip DTC might not be confirmed.	f the three way catalyst (manifold). During this
Is the inspection result normal?	J
YES >> INSPECTION END	
NO >> Proceed to <u>EC-968, "Diagnosis Procedure"</u> .	K
Component Function Check	INFOID:000000012198468
1.PERFORM COMPONENT FUNCTION CHECK	
<b>®</b> Without CONSULT	
<ol> <li>Start engine and warm it up to the normal operating tempe</li> <li>Turn ignition switch OFF and wait at least 10 seconds.</li> </ol>	rature.
<ol> <li>Restart engine and keep the engine speed between 3,500</li> </ol>	) and 4,000 rpm for at least 1 minute under no $^{ m M}$
load.	
<ul><li>4. Let engine idle for 1 minute.</li><li>5. Open engine hood.</li></ul>	N
<ol> <li>Check the voltage between ECM harness connector termine</li> </ol>	
<del>-</del>	

ECM					0
Connector	+	-	Condition	Voltage (V)	
Connector	Terminal				P
F24	84	78	Keeping engine speed at 2500 rpm constant under no load	The voltage fluctuation cycle takes more than 5 seconds.  • 1 cycle: 0.6 - 1.0 → 0 - 0.3 → 0.6 - 1.0	1

### Is the inspection result normal?

YES >> INSPECTION END

>> Proceed to <u>EC-968</u>, "<u>Diagnosis Procedure</u>". NO

EC-967 **2016 JUKE Revision: November 2015** 

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Diagnosis Procedure

INFOID:0000000012198469

### 1. CHECK EXHAUST SYSTEM

Visually check exhaust tubes and muffler for dent.

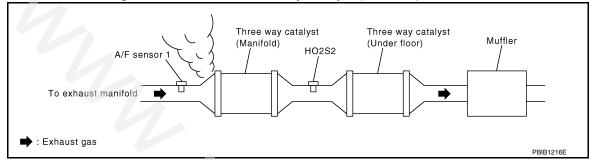
### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2. CHECK EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- Listen for an exhaust gas leak before the three way catalyst (manifold).



#### Is exhaust gas leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 3.

### 3. CHECK INTAKE AIR LEAK

Listen for an intake air leak after the mass air flow sensor.

#### Is intake air leak detected?

YES >> Repair or replace error-detected parts.

NO >> GO TO 4.

### 4.CHECK IGNITION TIMING AND IDLE SPEED

Check the following items. Refer to EC-765, "Work Procedure"

For specification, refer to EC-1258, "Ignition Timing"

For specification, refer to EC-1258, "Idle Speed".

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Follow the <u>EC-765</u>, "Work Procedure".

### 5. CHECK FUEL INJECTOR

Check the fuel injector. Refer to EC-1204, "Component Function Check".

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform <u>EC-1204</u>, "<u>Diagnosis Procedure</u>".

### $\mathsf{6}.$ CHECK FUNCTION OF IGNITION COIL-I

#### **CAUTION:**

### Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- 2. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

#### NOTE:

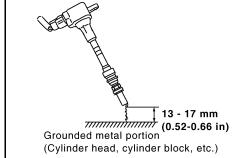
Do not use CONSULT to release fuel pressure, or fuel pressure applies again during the following procedure.

- 3. Start engine.
- 4. After engine stalls, crank it two or three times to release all fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils.
- Remove ignition coil and spark plug of the cylinder to be checked.

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- Connect spark plug and harness connector to ignition coil.
- 10. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- 11. Crank engine for about 3 seconds, and check whether spark is generated between the spark plug and the grounded metal portion.



### Spark should be generated.

#### **CAUTION:**

 Do not approach to the spark plug and the ignition coil within 50 cm (19.7 in). Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20 kV or more.

• It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

#### Is the inspection result normal?

YES >> GO TO 10. NO >> GO TO 7.

### 7.CHECK FUNCTION OF IGNITION COIL-II

1. Turn ignition switch OFF.

- Disconnect spark plug and connect a known-good spark plug.
- 3. Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded metal portion.

#### Spark should be generated.

### Is the inspection result normal?

YES >> GO TO 8.

NO >> Check ignition coil, power transistor and their circuits. Refer to EC-1229, "Diagnosis Procedure".

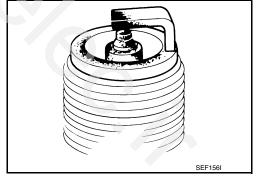
### 8.CHECK SPARK PLUG

Check the initial spark plug for fouling, etc. Refer to <u>EM-190</u>, "Inspection".

### Is the inspection result normal?

YES >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <a href="EM-190">EM-190</a>, "Inspection".

NO >> Repair or clean spark plug. Refer to <u>EM-189</u>, <u>"Exploded View"</u>. Then GO TO 9.



## 9. CHECK FUNCTION OF IGNITION COIL-III

- Reconnect the initial spark plugs.
- Crank engine for about 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

### Spark should be generated.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <u>EM-189</u>, "Removal and Installation".

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< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 10. PERFORM DTC CONFIRMATION PROCEDURE

- Replace three way catalyst assembly. Refer to <u>EX-5</u>, "<u>Exploded View</u>".
   Perform DTC confirmation procedure. Refer to <u>EC-966</u>, "<u>DTC Logic</u>".

### Is DTC P0420 detected again?

YES >> Replace fuel injector. Refer to EM-208, "Exploded View".

>> INSPECTION END NO

### P0441 EVAP CONTROL SYSTEM

**DTC Logic** INFOID:0000000012198470

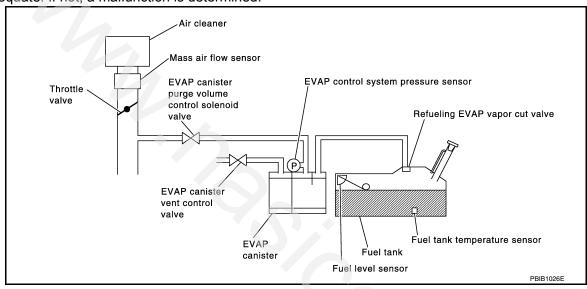
#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0441 is displayed with other DTC such as P2122, P2123, P2127, P2128 or P2138, first perform trouble diagnosis for other DTC.

In this evaporative emission (EVAP) control system, purge flow occurs during non-closed throttle conditions. Purge volume is related to air intake volume. Under normal purge conditions (non-closed throttle), the EVAP canister purge volume control solenoid valve is open to admit purge flow. Purge flow exposes the EVAP control system pressure sensor to intake manifold vacuum.

Under normal conditions (non-closed throttle), sensor output voltage indicates if pressure drop and purge flow are adequate. If not, a malfunction is determined.



DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0441	EVAP PURG FLOW/MON (Evaporative emission system incorrect purge flow)	EVAP control system does not operate properly, EVAP control system has a leakage between intake manifold and EVAP control system pressure sensor.	EVAP canister purge volume control solenoid valve stuck closed     EVAP control system pressure sensor and the circuit     Loose, disconnected or improper connection of rubber tube     Blocked rubber tube     Cracked EVAP canister     EVAP canister purge volume control solenoid valve circuit     Accelerator pedal position sensor     Blocked purge port     Blocked purge line     EVAP canister vent control valve     EVAP control system pressure sensor removed

### DTC CONFIRMATION PROCEDURE

### 1.INSPECTION START

Will CONSULT be used?

Will CONSULT be used?

YES >> GO TO 2. NO >> GO TO 6.

2.PRECONDITIONING

EC-971 **Revision: November 2015 2016 JUKE**  Е

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### P0441 EVAP CONTROL SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 3.

## 3.perform dtc confirmation procedure-i

### (P)With CONSULT

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and let it idle for at least 70 seconds.
- Select "PURG FLOW P0441" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CON-SULT.
- 7. Touch "START".

#### Is "COMPLETED" displayed on CONSULT screen?

YES >> GO TO 5.

NO >> GO TO 4.

### 4. PERFORM DTC CONFIRMATION PROCEDURE-II

When the following conditions are met, "TESTING" will be displayed on the CONSULT screen. Maintain the conditions continuously until "TESTING" changes to "COMPLETED". (It will take at least 35 seconds.)

Selector lever	Suitable position	
VHCL SPEED SE	32 - 120 km/h (20 - 75 mph)	
ENG SPEED	500 - 3,000 rpm	
B/FUEL SCHDL	1.25 - 6.5 msec	
COOLANT TEMP/S	More than 0°C (32°F)	

### **CAUTION:**

### Always drive vehicle at a safe speed.

If "TESTING" does not change for a long time, retry from step 2.

### Is "COMPLETED" displayed on CONSULT screen?

YES >> GO TO 5.

NO >> Perform DTC CONFIRMATION PROCEDURE again. GO TO 3.

### 5. PERFORM DTC CONFIRMATION PROCEDURE-III

Touch "SELF-DIAG RESULTS".

#### Which is displayed on CONSULT screen?

OK >> INSPECTION END

NG >> Proceed to EC-973, "Diagnosis Procedure".

### $oldsymbol{6}$ .PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-973, "Component Function Check".

#### NOTE:

Use component function check to check the overall monitoring function of the EVAP control system purge flow monitoring. During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-973, "Diagnosis Procedure".

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## Component Function Check

INFOID:0000000012198471

# 1.PERFORM COMPONENT FUNCTION CHECK

#### Without CONSULT

- 1. Lift up drive wheels.
- 2. Start engine (VDC switch OFF) and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF, wait at least 10 seconds.
- Turn ignition switch ON.
- 5. Turn ignition switch OFF, wait at least 10 seconds.
- 6. Start engine and wait at least 70 seconds.
- 7. Set voltmeter probes to ECM harness connector terminals under the following conditions.

	ECM	
Connector	+	_
Connector	Terr	minal
E19	121	148

- 8. Check EVAP control system pressure sensor value at idle speed and note it.
- 9. Establish and maintain the following conditions for at least 1 minute.

Air conditioner switch	ON
Head lamp switch	ON
Rear window defogger switch	ON
Engine speed	Approx. 3,000 rpm
Gear position	Any position other than P, N or R

10. Verify that EVAP control system pressure sensor value stays 0.1 V less than the value at idle speed (measured at step 6) for at least 1 second.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-973, "Diagnosis Procedure".

# Diagnosis Procedure

# 1. CHECK EVAP CANISTER

- Turn ignition switch OFF.
- 2. Check EVAP canister for cracks.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 2.

YES-2 >> Without CONSULT: GO TO 3.

NO >> Replace EVAP canister. Refer to <u>FL-27</u>, "<u>2WD</u>: <u>Removal and Installation</u>" (2WD models), <u>FL-30</u>, "<u>AWD</u>: <u>Removal and Installation</u>" (AWD models).

#### 2.CHECK PURGE FLOW

#### (P)With CONSULT

- 1. Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to <a href="EC-650">EC-650</a>, "EVAPORATIVE EMISSION SYSTEM: System Description".
- Start engine and let it idle.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT.
- Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL CONT/V" opening and check vacuum existence.

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

PURG VOL CONT/V	Vacuum
100%	Existed
0%	Not existed

#### Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 4.

# 3. CHECK PURGE FLOW

#### **⋈** Without CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Stop engine.
- Disconnect vacuum hose connected to EVAP canister purge volume control solenoid valve at EVAP service port and install vacuum gauge. For the location of EVAP service port, refer to <a href="EC-650"><u>EC-650</a>, "EVAPORATIVE EMISSION SYSTEM: System Description".
  </u>
- 4. Start engine and let it idle.

#### Do not depress accelerator pedal even slightly.

5. Check vacuum gauge indication before 60 seconds pass after starting engine.

#### Vacuum should not exist.

6. Rev engine up to 2,000 rpm after 100 seconds pass after starting engine.

#### Vacuum should exist.

#### Is the inspection result normal?

YES >> GO TO 7. NO >> GO TO 4.

# 4. CHECK EVAP PURGE LINE

- 1. Turn ignition switch OFF.
- Check EVAP purge line for improper connection or disconnection. Refer to <u>EC-1252</u>, "<u>Inspection</u>".

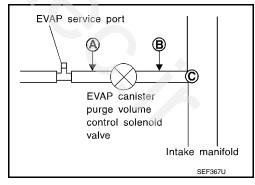
#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair EVAP purge line.

# 5. CHECK EVAP PURGE HOSE AND PURGE PORT

- 1. Disconnect purge hoses connected to EVAP service port **A** and EVAP canister purge volume control solenoid valve **B**.
- 2. Blow air into each hose and EVAP purge port **C**.



#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

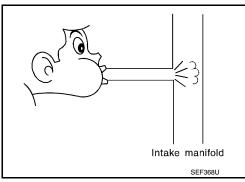
Check that air flows freely.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 6.

YES-2 >> Without CONSULT: GO TO 7.

NO >> Repair or clean hoses and/or purge port.



# 6.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

(P)With CONSULT

Start engine.

Perform "PURG VOL C/V" in "ACTIVE TEST" mode with CONSULT. Check that engine speed varies according to the valve opening.

Does engine speed vary according to the valve opening?

YES >> GO TO 8.

NO >> GO TO 7.

### .CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Check EVAP canister purge volume control solenoid valve. Refer to EC-980, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EC-600, "ENGINE CON-TROL SYSTEM: Component Parts Location".

# 8.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- Check that water is not inside connectors.

#### Is the inspection result normal?

YES >> GO TO 9.

>> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Removal and Installation" NO (2WD models), FL-30, "AWD: Removal and Installation" (AWD models).

# 9.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR FUNCTION

Check EVAP control system pressure sensor function. Refer to EC-1005, "DTC Logic" for DTC P0452, EC-1008, "DTC Logic" for DTC P0453.

#### Is the inspection result normal?

YES >> GO TO 10.

>> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Removal and Installation" NO (2WD models), FL-30, "AWD: Removal and Installation" (AWD models).

# 10.CHECK RUBBER TUBE FOR CLOGGING

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YFS >> GO TO 11.

NO >> Clean the rubber tube using an air blower.

### 11.CHECK EVAP CANISTER VENT CONTROL VALVE

Check EVAP canister vent control valve. Refer to EC-986, "Component Inspection".

#### Is the inspection result normal?

>> GO TO 12. YES

>> Replace EVAP canister vent control valve. Refer to FL-27, "2WD: Removal and Installation" NO (2WD models), FL-30, "AWD: Removal and Installation" (AWD models).

**EC-975 Revision: November 2015 2016 JUKE**  EC

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< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 12. CHECK EVAP PURGE LINE

Inspect EVAP purge line (pipe and rubber tube). Check for evidence of leakage. Refer to EC-650, "EVAPORATIVE EMISSION SYSTEM: System Description".

#### Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair EVAP purge line.

13. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

< DTC/CIRCUIT DIAGNOSIS >

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# P0443 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

DTC Logic INFOID:0000000012198473

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)		DTC detecting condition		Possible cause
P0443	PURG VOLUME CONT/V (Evaporative emission system	А	The canister purge flow is detected during the vehicle is stopped while the engine is running, even when EVAP canister purge volume control solenoid valve is completely closed.		EVAP control system pressure sensor EVAP canister purge volume control solenoid valve (The valve is stuck open.) EVAP canister vent control valve
1 0440	purge control valve circuit)	В	The canister purge flow is detected during the specified driving conditions, even when EVAP canister purge volume control solenoid valve is completely closed.	•	EVAP canister Hoses (Hoses are connected incorrectly or clogged.)

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Perform "DTC CONFIRMATION PROCEDURE" when the fuel level is between 1/4 and 3/4 full, and vehicle is placed on flat level surface.
- Always perform test at a temperature of 5 to 60°C (41 to 140°F).
- Cool the vehicle so that engine coolant temperature becomes same level as ambient temperature.

#### Do you have CONSULT

YES >> GO TO 2.

NO >> GO TO 4.

# 2.PERFORM DTC CONFIRMATION PROCEDURE A

#### (P)With CONSULT

- Turn ignition switch ON.
- Check that the following condition are met. FUEL T/TMP SE: 0 - 35°C (32 - 95°F)
- Start engine and wait at least 60 seconds.
- Check 1st trip DTC.

#### IS 1st trip DTC detected?

YES >> Proceed to EC-978, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE B

#### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Select "PURG VOL CN/V P1444" of "EVAPORATIVE SYSTEM" in "DTC WORK SUPPORT" mode with CONSULT.
- Touch "START".
- Start engine and let it idle until "TESTING" on CONSULT changes to "COMPLETED". (It will take approximately 10 seconds.)

If "TESTING" is not displayed after 5 minutes, retry from step 2.

Touch "SELF-DIAG RESULTS".

#### Which is displayed on CONSULT screen?

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#### < DTC/CIRCUIT DIAGNOSIS >

YES >> INSPECTION END

NO >> Proceed to EC-978, "Diagnosis Procedure".

### $oldsymbol{4}$ .PERFORM DTC CONFIRMATION PROCEDURE A

#### 

- 1. Turn ignition switch ON.
- Set voltmeter probes to ECM harness connector terminals.

	ECM		
Connector	+	_	Voltage (V)
Connector	Terr	minal	
E19	128	148	3.1 - 4.0

- Start engine and wait at least 60 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-978, "Diagnosis Procedure".

NO >> GO TO 5.

# 5.PERFORM DTC CONFIRMATION PROCEDURE B

#### ■With GST

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and let it idle for at least 20 seconds.
- 6. Check 1st trip DTC.

#### Is 1st trip DTC displayed?

>> Proceed to EC-978, "Diagnosis Procedure" YES

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198474

# 1.check evap canister purge volume control solenoid valve power supply

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

•	rge volume control id valve	Ground	Voltage
Connector	Terminal		
F106	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

# 2.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 9.

1101 30161	urge volume con- noid valve	EC	CM	Continuity	
Connector	Terminal	Connector	Terminal		_
F106	2	F24	115	Existed	<u>.</u>
	harness for sho	•	nd short to pow	er.	
•	<u>n result normal′</u> ) TO 3.	<u>{</u>			
		t, short to grour	nd or short to p	ower in harnes:	or connectors.
3.CHECK EV	AP CONTROL S	SYSTEM PRES	SURE SENSO	R CONNECTO	R
	EVAP control s			ss connector.	
	water is not ins n result normal		•		
	) TO 4.	<u> </u>			
NO >> Re					"2WD : Removal and Installation"
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	ontrol system pr n result normal		Relei (0 EC-10	<del>704. Compone</del>	nt inspection.
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	place EVAP cor VD models), <u>FL</u>				"2WD : Removal and Installation" models).
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With CONS	JLT				
	n switch OFF.				
<ol> <li>Turn ignition</li> <li>Reconnect</li> </ol>	n switch OFF. harness conne	ctors disconnec	cted.		
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< DTC/CIRCUIT DIAGNOSIS >

>> Replace EVAP canister vent control valve. Refer to FL-27, "2WD: Removal and Installation" (2WD models), FL-30, "AWD: Removal and Installation" (AWD models).

# 9.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached. Refer to FL-27. "2WD: Removal and Installation" (2WD models), FL-30, "AWD: Removal and Installation" (AWD models).

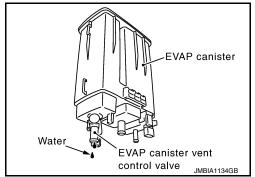
#### Does water drain from the EVAP canister?

YES >> GO TO 10.

NO

NO

>> Check intermittent incident. Refer to GI-45. "Intermittent Incident".



# 10. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor

#### The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 11.

# 11. DETECT MALFUNCTIONING PART

#### Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
  - >> Repair hose or replace EVAP canister. Refer to FL-27, "2WD: Removal and Installation" (2WD models), FL-30, "AWD: Removal and Installation" (AWD models).

# Component Inspection

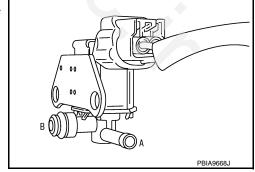
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# 1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### (P)With CONSULT

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- Start engine.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode with CONSULT.
- Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL CONT/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition (PURG VOL CONT/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



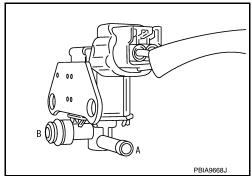
#### **®Without CONSULT**

- Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.

< DTC/CIRCUIT DIAGNOSIS >

Check air passage continuity of EVAP canister purge volume control solenoid valve under the following conditions.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals 1 and 2	Existed
No supply	Not existed



#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EC-600, "ENGINE CON-TROL SYSTEM: Component Parts Location".

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# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0444	PURG VOLUME CONT/V (EVAP canister purge volume control solenoid valve circuit open)	An excessively low voltage signal is sent to ECM through the EVAP canister purge volume control solenoid valve.	Harness or connectors     (EVAP canister purge volume control solenoid valve circuit is open or shorted.)     EVAP canister purge volume control solenoid valve
P0445	PURG VOLUME CONT/V (Evaporative emission system purge control valve circuit short- ed)	An excessively high voltage signal is sent to ECM through the EVAP canister purge volume control solenoid valve.	Harness or connectors     (EVAP canister purge volume control solenoid valve circuit is shorted.)     EVAP canister purge volume control solenoid valve

#### DTC CONFIRMATION PROCEDURE

# 1.conditioning

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 13 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-982, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198477

# 1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

	+		
	purge volume enoid valve	_	Voltage
Connector	Terminal		
F106	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> GO TO 2.

# 2.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and IPDM E/R harness connector.

ι	٠
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+			_	
	r purge volume lenoid valve	IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F106	1	E14	35	Existed

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Also check harness for short to ground.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 4.

YES-2 >> Without CONSULT: GO TO 5.

NO >> Repair or replace error-detected parts.

# 3.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

+			-	
	r purge volume lenoid valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F106	2	F24	115	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 4.

YES-2 >> Without CONSULT: GO TO 5.

NO >> Repair or replace error-detected parts.

# 4.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

#### (P)With CONSULT

- 1. Reconnect all harness connectors disconnected.
- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 4. Check that engine speed varies according to the valve opening.

#### Does engine speed vary according to the valve opening?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

# ${f 5}.$ CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Check the EVAP canister purge volume control solenoid valve. Refer to <u>EC-984, "Component Inspection"</u>. <u>Is the inspection result normal?</u>

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to <u>EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".</u>

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# P0444, P0445 EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# Component Inspection

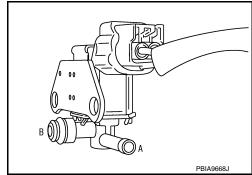
INFOID:0000000012198478

# 1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### (I) With CONSULT

- 1. Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Start engine.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL C/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

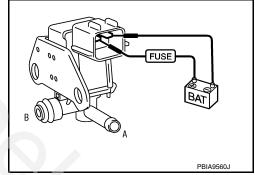
Condition (PURG VOL C/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



#### 

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals 1 and 2	Existed
No supply	Not existed



#### Is the inspection result normal?

YES >> INSPECTION END

NO

>> Replace EVAP canister purge volume control solenoid valve. Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0447 EVAP CANISTER VENT CONTROL VALVE

DTC Logic INFOID:0000000012198479

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0447	VENT CONTROL VALVE (Evaporative emission system vent control circuit open)	An improper voltage signal is sent to ECM through EVAP canister vent control valve.	Harness or connectors     (The valve circuit is open or shorted.)     EVAP canister vent control valve     Hoses     (Hoses are connected incorrectly or clogged.)

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and wait at least 8 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-985, "Diagnosis Procedure".

>> INSPECTION END

### Diagnosis Procedure

1.INSPECTION START

Will CONSULT be used?

Will CONSULT be used?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK EVAP CANISTER VENT CONTROL VALVE CIRCUIT

#### (P)With CONSULT

- Turn ignition switch OFF and then ON.
- Select "VENT CONTROL/V" in "ACTIVE TEST" mode with CONSULT.
- Touch "ON/OFF" on CONSULT screen.
- Check for operating sound of the valve.

#### Clicking sound should be heard.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 3.

# 3.CHECK EVAP CANISTER VENT CONTROL VALVE POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect EVAP canister vent control valve harness connector.

**EC-985 Revision: November 2015 2016 JUKE**  EC

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Turn ignition switch ON.
- 4. Check the voltage between EVAP canister vent control valve harness connector and ground.

EVAP canister vent control valve		Ground	Voltage
Connector	Terminal	Ground	voltage
B21	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform the trouble diagnosis for power supply circuit.

# 4. CHECK EVAP CANISTER VENT CONTROL VALVE OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between ECM harness connector and EVAP canister vent control valve harness connector.

Refer to Wiring Diagram.

EVAP canister v	AP canister vent control valve ECM		alve ECM	
Connector	Terminal	Connector Terminal		Continuity
B21	2	E19	141	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

# 5. CHECK RUBBER TUBE FOR CLOGGING

- Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Clean the rubber tube using an air blower.

#### 6. CHECK EVAP CANISTER VENT CONTROL VALVE

Check EVAP canister vent control valve. Refer to EC-986, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27, "2WD : Removal and Installation"</u> (2WD models), <u>FL-30, "AWD : Removal and Installation"</u> (AWD models).

# Component Inspection

INFOID:0000000012198481

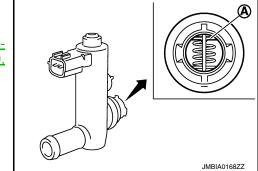
# 1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

- Remove EVAP canister vent control valve from EVAP canister. Refer to <u>FL-27, "2WD : Removal and Installation"</u>(2WD) or <u>FL-30, "AWD : Removal and Installation"</u>(AWD).
- 2. Check portion (A) of EVAP canister vent control valve for rust.

#### Is it rusted?

YES >> Replace EVAP canister vent control valve. Refer to <u>FL-27</u>, "2WD: Removal and Installation"(2WD) or <u>FL-30</u>, "AWD: Removal and Installation"(AWD).

NO >> GO TO 2.



< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 2. CHECK EVAP CANISTER VENT CONTROL VALVE-II

#### (P)With CONSULT

- 1. Reconnect harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 4. Check air passage continuity and operation delay time. Check that new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

#### **♥Without CONSULT**

- 1. Disconnect EVAP canister vent control valve harness connector.
- Check air passage continuity and operation delay time under the following conditions.

#### Check that new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals 1 and 2	Not existed
OFF	Existed

#### Operation takes less than 1 second.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

# 3.CHECK EVAP CANISTER VENT CONTROL VALVE-III

### With CONSULT

- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 3. Check air passage continuity and operation delay time. Check that new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	No
OFF	Yes

Operation takes less than 1 second.

#### **♥Without CONSULT**

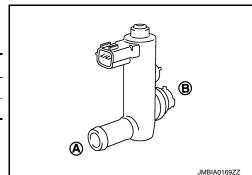
- 1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.
- 2. Check air passage continuity and operation delay time under the following conditions. Check that new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals (1) and (2)	No
OFF	Yes

Operation takes less than 1 second.

#### Is the inspection result normal?

YES >> INSPECTION END



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< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27, "2WD : Removal and Installation"</u>(2WD) or <u>FL-30, "AWD : Removal and Installation"</u>(AWD).

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0448 EVAP CANISTER VENT CONTROL VALVE

DTC Logic INFOID:0000000012198482

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause	С
P0448	VENT CONTROL VALVE (Evaporative emission system vent control circuit shorted)	EVAP canister vent control valve remains closed under specified driving conditions.	<ul> <li>EVAP canister vent control valve</li> <li>EVAP control system pressure sensor and the circuit</li> <li>Blocked rubber tube to EVAP canister vent control valve</li> <li>EVAP canister is saturated with water</li> </ul>	D

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

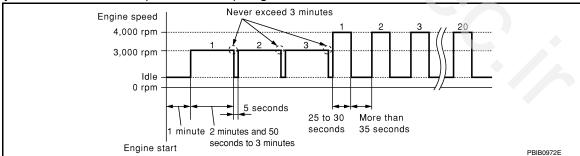
# 2.PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- Turn ignition switch ON and wait at least 5 seconds.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON and select "DATA MONITOR" mode with CONSULT.
- 4. Start engine and let it idle for at least 1 minute.
- Repeat next procedures 3 times.
- Increase the engine speed up to 3,000 to 3,500 rpm and keep it for 2 minutes and 50 seconds to 3 minutes.

#### Never exceed 3 minutes.

- Fully released accelerator pedal and keep engine idle for about 5 seconds.
- Repeat next procedure 20 times.
- Quickly increase the engine speed up to 4,000 to 4,500 rpm or more and keep it for 25 to 30 seconds.
- Fully released accelerator pedal and keep engine idle for at least 35 seconds.



Repeat the step 1 to 5 three times.

#### NOTE:

Before starting another cycle, relief the fuel tank negative pressure with removing and refitting the fuel filler cap.

8. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-990, "Diagnosis Procedure".

NO >> INSPECTION END

**EC-989 Revision: November 2015 2016 JUKE**  EC

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# Diagnosis Procedure

INFOID:0000000012198483

# 1. CHECK RUBBER TUBE

- 1. Turn ignition switch OFF.
- 2. Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Clean rubber tube using an air blower.

# 2.CHECK EVAP CANISTER VENT CONTROL VALVE

Check EVAP canister vent control valve. Refer to <a>EC-991</a>, <a>"Component Inspection"</a>.

#### Is he inspection result normal?

YES >> GO TO 3.

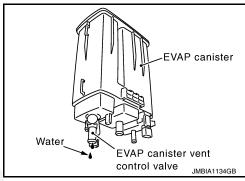
NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27</u>, "2WD : Removal and Installation"(2WD) or <u>FL-30</u>, "AWD : Removal and Installation"(AWD).

# 3.CHECK IF EVAP CANISTER SATURATED WITH WATER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached. Refer to <u>FL-27</u>, "2WD: Removal and Installation" (2WD) or <u>FL-30</u>, "AWD: Removal and Installation" (AWD).
- 2. Check if water will drain from the EVAP canister.

#### Does water drain from the EVAP canister?

YES >> GO TO 4. NO >> GO TO 6.



# 4. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> GO TO 6. NO >> GO TO 5.

### 5. DETECT MALFUNCTIONING PART

#### Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
  - >> Repair hose or replace EVAP canister. Refer to <u>FL-27</u>, <u>"2WD : Removal and Installation"</u>(2WD) or <u>FL-30</u>, "<u>AWD : Removal and Installation"</u>(AWD).

### 6.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR

- Disconnect EVAP control system pressure sensor harness connector.
- 2. Check that water is not inside connectors.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Removal and Installation" (2WD)</u> or FL-30, "AWD : Removal and Installation" (AWD).

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 7.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check EVAP control system pressure sensor. Refer to EC-1004, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Removal and Installa-NO tion"(2WD) or FL-30, "AWD: Removal and Installation"(AWD).

# Component Inspection

# 1. CHECK EVAP CANISTER VENT CONTROL VALVE-I

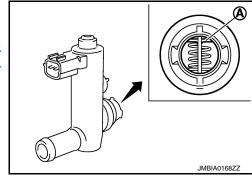
Remove EVAP canister vent control valve from EVAP canister. Refer to FL-27, "2WD: Removal and Installation" (2WD) or FL-30, "AWD: Removal and Installation" (AWD).

2. Check portion (A) of EVAP canister vent control valve for rust.

#### Is it rusted?

YES >> Replace EVAP canister vent control valve. Refer to FL-27, "2WD: Removal and Installation" (2WD) or FL-30, "AWD: Removal and Installation" (AWD).

NO >> GO TO 2.



# 2.CHECK EVAP CANISTER VENT CONTROL VALVE-II

#### (P)With CONSULT

- Reconnect harness connectors disconnected.
- Turn ignition switch ON.
- 3. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 4. Check air passage continuity and operation delay time. Check that new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	Not existed
OFF	Existed

Operation takes less than 1 second.

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- Disconnect EVAP canister vent control valve harness connector.
- Check air passage continuity and operation delay time under the following conditions.

#### Check that new O-ring is installed properly.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals 1 and 2	Not existed
OFF	Existed

#### Operation takes less than 1 second.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

# 3.CHECK EVAP CANISTER VENT CONTROL VALVE-III

#### (P)With CONSULT

1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

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EC-991 **Revision: November 2015 2016 JUKE** 

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- 2. Perform "VENT CONTROL/V" in "ACTIVE TEST" mode.
- 3. Check air passage continuity and operation delay time. Check that new O-ring is installed properly.

Condition VENT CONTROL/V	Air passage continuity between (A) and (B)
ON	No
OFF	Yes

Operation takes less than 1 second.

#### **Without CONSULT**

1. Clean the air passage [portion (A) to (B)] of EVAP canister vent control valve using an air blower.

Check air passage continuity and operation delay time under the following conditions.
 Check that new O-ring is installed properly.

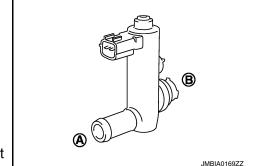
Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals (1) and (2)	No
OFF	Yes

Operation takes less than 1 second.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27</u>, "2WD : Removal and Installation" (2WD) or <u>FL-30</u>, "AWD : Removal and Installation" (AWD).



### P044A, P044E EGR VOLUME CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

## P044A. P044E EGR VOLUME CONTROL VALVE POSITION SENSOR

DTC Logic INFOID:0000000012198485

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P044A, or P044E is displayed with DTC P0643, first perform trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P044A	EGR SENSOR C (EGR sensor C circuit low)	ECM detects that a voltage signal from EGR volume control valve position sensor is less than 4.81 V for 5 consecutive seconds.	Harness or connectors     (EGR volume control valve position
P044E	EGR SENSOR C (EGR sensor C circuit high)	ECM detects that a voltage signal from EGR volume control valve position sensor is less than 0.275 V for 5 consecutive seconds.	sensor circuit is open or shorted.)  • EGR volume control valve

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-993, "Diagnosis Procedure". YES

NO >> INSPECTION END

# Diagnosis Procedure

1.check egr volume control valve position sensor power supply circuit

- Turn ignition switch OFF.
- 2. Disconnect EGR volume control valve harness connector.
- Turn ignition switch ON.
- Check voltage between EGR volume control valve harness connector and ground.

+ EGR volume control valve		_	Voltage (Approx.)
Connector Terminal			(
F74 3		Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

# 2.check egr volume control valve position sensor ground circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness continuity between EGR volume control valve harness connector and ECM harness connector.

EC-993 **Revision: November 2015 2016 JUKE**  EC

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### P044A, P044E EGR VOLUME CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

EGR volume control valve		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F74	5	F23	43	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# $oldsymbol{3}.$ CHECK EGR VOLUME CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check harness continuity between EGR volume control valve harness connector and ECM harness connector.

EGR volume control valve		ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F74	4	F24	68	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4.CHECK EGR VOLUME CONTROL VALVE

Check the EGR volume control valve. Refer to EC-961, "Component Inspection (EGR Volume Control Valve)". Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident". YES

>> Replace EGR volume control valve. Refer to EC-600, "ENGINE CONTROL SYSTEM : NO Component Parts Location".

# Component Inspection (EGR Volume Control Valve)

# 1.CHECK EGR VOLUME CONTROL VALVE-1

#### (P)With CONSULT

- Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "EGR CONTROL VALVE".
- Operate "Up" or "Down", set "EGR VALVE POSITION" to 0 deg, and check value "V1" of "EGR VALVE POSITION SEN".

#### Does "V1" become 1.2±0.15 V?

YES >> GO TO 2.

NO >> Replace EGR volume control valve. Refer to EC-600, "ENGINE CONTROL SYSTEM : Component Parts Location".

# 2.CHECK EGR VOLUME CONTROL VALVE-2

#### (P)With CONSULT

Operate "Up" or "Down", set "EGR VALVE POSITION" to 70 deg, and check value "V2" of "EGR VALVE POSITION SEN".

#### Does "V2" become 4.0±0.15 V?

YES >> GO TO 3.

>> Replace EGR volume control valve. Refer to EC-600, "ENGINE CONTROL SYSTEM : NO Component Parts Location".

# 3.CHECK EGR VOLUME CONTROL VALVE VISUALLY

- Turn ignition switch OFF.
- Check if any foreign objects interferes with EGR volume control valve.

#### Is the inspection result normal?

# P044A, P044E EGR VOLUME CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

YES >> INSPECTION END NO >> Repair or replace the error-detected parts.

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#### P044B EXHAUST GAS RECIRCULATION SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P044B EXHAUST GAS RECIRCULATION SYSTEM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P044B	EGR SENSOR C (EGR sensor C circuit range/ performance)	<ul> <li>ECM detects the following status continuously for 0.5 seconds or more: A voltage signal transmitted from the EGR volume control valve position sensor is between 0.32 V and 1.08 V under the following conditions: <ul> <li>After the ignition switch is turned OFF and the engine is stopped by "Self Shut-OFF". This diagnosis works only when the ignition switch is turned OFF and the engine is stopped by "Self Shut-OFF".</li> <li>Engine coolant temperature: 65°C (149°F) or more</li> <li>Intake air temperature: 5°C (41°F) or more</li> </ul> </li> </ul>	EGR volume control valve is stuck     EGR volume control valve is jammed with foreign objects     Improper specification of EGR volume control valve position sensor

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

**TEST CONDITION:** 

Before performing the following procedure, confirm that battery voltage is 11 V or more at ignition switch ON.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode with CONSULT.
- 3. Check that "COOLANT TEMP/S" indicates 65°C (149°F) or more.
- 4. Check that "INT/A TEMP SE" indicates 5°C (41°F) or more.
- 5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-996, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198489

# 1.check egr volume control valve position sensor power supply

- 1. Turn ignition switch OFF.
- Disconnect EGR volume control valve harness connector.
- Turn ignition switch ON.
- 4. Check voltage between EGR volume control valve harness connector and ground.

+			Voltage	
EGR volume control valve		-	Voltage (Approx.)	
Connector	Terminal		, , ,	
F74	3	Ground	5 V	

### P044B EXHAUST GAS RECIRCULATION SYSTEM

### < DTC/CIRCUIT DIAGNOSIS > Is the inspection result normal?

YES >> GO TO 2.

>> GO TO 5. NO

# 2.check egr volume control valve position sensor ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check harness continuity between EGR volume control valve harness connector and ECM harness connector.

	+	_		
EGR volume	control valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F74	5	F23	43	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.check egr volume control valve position sensor input signal circuit

Check harness continuity between EGR volume control valve harness connector and ECM harness connector.

	+		-	
EGR volume	control valve	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F74	4	F24	68	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

>> GO TO 4. YES

NO >> Repair or replace error-detected parts.

### 4. CHECK EGR VOLUME CONTROL VALVE

Check the EGR volume control valve, Refer to EC-961, "Component Inspection (EGR Volume Control Valve)", Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EGR volume control valve. Refer to EC-600, "ENGINE CONTROL Component Parts Location".

# 5.check egr volume control valve position sensor power supply circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between EGR volume control valve harness connector and ECM harness connector.

	+		_	
EGR volume	control valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F74	3	F23	30	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

>> Perform the trouble diagnosis for ECM power supply circuit. Refer to EC-792, "Diagnosis Proce-YES dure".

NO >> Repair or replace error-detected parts.

**EC-997 Revision: November 2015 2016 JUKE**  EC

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#### P044B EXHAUST GAS RECIRCULATION SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Component Inspection (EGR Volume Control Valve)

INFOID:0000000012198490

# 1. CHECK EGR VOLUME CONTROL VALVE-1

#### (P)With CONSULT

- 1. Turn ignition switch ON and engine stopped.
- 2. On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "EGR CONTROL VALVE".
- Operate "Up" or "Down", set "EGR VALVE POSITION" to 0 deg, and check value of "EGR VALVE POSI-TION SEN".

#### Does value become 1.2±0.15 V?

YES >> GO TO 2.

NO >> Replace EGR volume control valve. Refer to <a href="EM-239">EM-239</a>, "Removal and Installation".

# 2.CHECK EGR VOLUME CONTROL VALVE-2

#### (P)With CONSULT

 Operate "Up" or "Down", set "EGR VALVE POSITION" to 70 deg, and check value of "EGR VALVE POSI-TION SEN".

#### Does value become 4.0±0.15 V?

YES >> INSPECTION END

NO >> Replace EGR volume control valve. Refer to <a href="EM-239">EM-239</a>, "Removal and Installation".

### P044C, P044D EGR VOLUME CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

# P044C, P044D EGR VOLUME CONTROL VALVE POSITION SENSOR

DTC Logic INFOID:0000000012198491

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	•
P044C	EGR SENSOR C (EGR sensor C circuit low)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the EGR volume control valve position sensor is 0.32 V or less.	Harness or connectors     (EGR volume control valve position)	
P044D	EGR SENSOR C (EGR sensor C circuit high)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the EGR volume control valve position sensor is 4.67 V or more.	sensor circuit is open or shorted.)  • EGR volume control valve	

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-999, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

 ${f 1}$  .CHECK EGR VOLUME CONTROL VALVE POSITION SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect EGR volume control valve harness connector.
- Turn ignition switch ON.
- Check voltage between EGR volume control valve harness connector and ground.

+ EGR volume control valve		_	Voltage	
Connector	Terminal		(Approx.)	
F74	3	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

# 2.CHECK EGR VOLUME CONTROL VALVE POSITION SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.

**EC-999 Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198492

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### P044C, P044D EGR VOLUME CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

Check harness continuity between EGR volume control valve harness connector and ECM harness connector.

EGR volume control valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F74	5	F23	43	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

>> Repair or replace error-detected parts. NO

# 3.CHECK EGR VOLUME CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check harness continuity between EGR volume control valve harness connector and ECM harness connector.

EGR volume	control valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F74	4	F24	68	Existed

2. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YFS >> GO TO 4.

NO >> Repair or replace error-detected parts.

#### 4.CHECK EGR VOLUME CONTROL VALVE

Check the EGR volume control valve. Refer to EC-961, "Component Inspection (EGR Volume Control Valve)". Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident". YES

>> Replace EGR volume control valve. Refer to EC-600, "ENGINE CONTROL SYSTEM: NO Component Parts Location".

# 5. CHECK EGR VOLUME CONTROL VALVE POSITION SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EGR volume control valve harness connector and ECM harness connector.

EGR volume control valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F74	3	F23	30	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for ECM power supply circuit. Refer to EC-792, "Diagnosis Procedure".

NO >> Repair or replace error-detected parts.

# Component Inspection (EGR Volume Control Valve)

INFOID:0000000012198493

# CHECK EGR VOLUME CONTROL VALVE-1

#### (P)With CONSULT

- 1. Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "EGR CONTROL VALVE".
- Operate "Up" or "Down", set "EGR VALVE POSITION" to 0 deg, and check value of "EGR VALVE POSI-TION SEN".

#### Does value become 1.2±0.15 V?

### P044C, P044D EGR VOLUME CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 2.

NO >> Replace EGR volume control valve. Refer to EM-239, "Removal and Installation".

2. CHECK EGR VOLUME CONTROL VALVE-2

#### (P)With CONSULT

Operate "Up" or "Down", set "EGR VALVE POSITION" to 70 deg, and check value of "EGR VALVE POSI-TION SEN".

#### Does value become 4.0±0.15 V?

YES >> INSPECTION END

NO >> Replace EGR volume control valve. Refer to EM-239, "Removal and Installation". EC

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#### P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0451	EVAP SYS PRES SEN (Evaporative emission system pressure sensor/switch range/performance)	ECM detects a sloshing signal from the EVAP control system pressure sensor	Harness or connectors     (EVAP control system pressure sensor circuit is shorted.)     EVAP control system pressure sensor

#### DTC CONFIRMATION PROCEDURE

#### NOTE:

Never remove fuel filler cap during DTC confirmation procedure.

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### (I) With CONSULT>>GO TO 2.

Without CONSULT>>GO TO 5.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-1

#### (P)With CONSULT

1. Start engine and let it idle for least 40 seconds.

#### NOTE:

Do not depress accelerator pedal even slightly.

Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1003, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.PERFORM DTC CONFIRMATION PROCEDURE-2

#### (P)With CONSULT

- 1. Select "EVAP DIAG READY" in "DATA MONITOR" mode of "ENGINE".
- Let it idle until "OFF" of "EVAP DIAG READY" changes to "ON".

#### NOTE:

It will take at most 2 hours until "OFF" of "EVAP DIAG READY" changes to "ON".

3. Turn ignition switch OFF and wait at least 90 minutes.

#### NOTE:

Never turn ignition switch ON during 90 minutes.

- Turn ignition switch ON.
- 5. Select "EVAP LEAK DIAG" in "DATA MONITOR" mode of "ENGINE".
- 6. Check that "EVAP LEAK DIAG" indication.

#### Which is displayed on CONSULT?

CMPLT >> GO TO 4.

YET >> 1. Perform DTC CONFIRMATION PROCEDURE again.

2. GO TO 1.

# 4. PERFORM DTC CONFIRMATION PROCEDURE-3

With CONSULT Check 1st trip DTC.

#### Is 1st trip DTC detected?

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### P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

[MR EXCEPT FOR NISMO RS MODELS] < DTC/CIRCUIT DIAGNOSIS > YES >> Proceed to EC-1003, "Diagnosis Procedure" NO >> INSPECTION END Α  ${f 5}$  .PERFORM DTC CONFIRMATION PROCEDURE-4 ⊕With GST EC Start engine and let it idle for least 40 seconds. NOTE: Do not depress accelerator pedal even slightly. 2. Check 1st trip DTC. Is 1st trip DTC detected? YES >> Proceed to EC-1003, "Diagnosis Procedure". D NO >> GO TO 6. O.PERFORM DTC CONFIRMATION PROCEDURE-5 Е 1. Let it idle for at least 2 hours. Turn ignition switch OFF and wait at least 90 minutes. NOTE: Never turn ignition switch ON during 90 minutes. Turn ignition switch ON. Check 1st trip DTC. Is 1st trip DTC detected? >> Proceed to EC-1003, "Diagnosis Procedure". YES >> INSPECTION END NO Н Diagnosis Procedure INFOID:0000000012198495  ${f 1}$  .CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR CONNECTOR FOR WATER Disconnect EVAP control system pressure sensor harness connector. Check that water is not inside connectors. Is the inspection result normal? YES >> GO TO 2. NO >> Repair or replace error-detected parts. 2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY K Turn ignition switch ON. Check the voltage between EVAP control system pressure sensor harness connector and ground. EVAP control system pressure sensor Voltage (V) Connector **Terminal** B22 3 Ground Approx. 5 Is the inspection result normal? N YES >> GO TO 4. NO >> GO TO 3. 3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT Turn ignition switch OFF.

- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control syste	em pressure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B22	3	E19	125	Existed

Revision: November 2015 EC-1003 2016 JUKE

#### P0451 EVAP CONTROL SYSTEM PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

# f 4.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control syste	EVAP control system pressure sensor		ECM	
Connector	Terminal	Connector	Terminal	Continuity
B22	1	E19	148	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

### 5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check EVAP control system pressure sensor. Refer to EC-1004, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27</u>, "2WD : Removal and Installation" (2WD), <u>FL-30</u>, "AWD : Removal and Installation" (AWD).

# Component Inspection

INFOID:0000000012198496

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EVAP control system pressure sensor with its harness connector. Refer to <u>FL-27</u>, "2WD : <u>Removal and Installation"</u> (2WD), <u>FL-30</u>, "AWD : <u>Removal and Installation"</u> (AWD).

#### Always replace O-ring with a new one.

- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM terminals under the following conditions.

	ECM	=			
Connector +		_	Applied vacuum kPa (kg/cm <sup>2</sup> , psi)	Voltage	
Connector	Terminal	Terminal Terminal			
			Not applied	1.8 - 4.8 V	
E19	121	148	-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- · Always calibrate the vacuum pump gauge when using it.
- Never apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm<sup>2</sup>, 14.69 psi).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Removal and Installation"</u> (2WD), <u>FL-30, "AWD : Removal and Installation"</u> (AWD).

### P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Logic INFOID:0000000012198497

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0452	EVAP SYS PRES SEN (Evaporative emission system pressure sensor/switch low)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors     (EVAP control system pressure sensor circuit is open or shorted.)     EVAP control system pressure sensor

#### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2

# 2.PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds. 4.
- Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT.
- 7. Check that "FUEL T/TMP SE" is more than 0°C (32°F).
- 8. Start engine and wait at least 20 seconds.
- 9. Check 1st trip DTC.

#### **With GST**

- 1. Start engine and warm it up to normal operating temperature.
- Set voltmeter probes to ECM harness connector terminals under the following conditions.

ECM				
Connector	+	_		
Connector	Terr	ninal		
E19	128	148		

- Check that the voltage is less than 4.2 V.
- Turn ignition switch OFF and wait at least 10 seconds. 4.
- Turn ignition switch ON.
- 6. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and wait at least 20 seconds.
- 8. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1006, "Diagnosis Procedure".

NO >> INSPECTION END

EC-1005 **Revision: November 2015 2016 JUKE**  EC

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### P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Diagnosis Procedure

INFOID:0000000012198498

# 1. CHECK CONNECTOR

- 1. Disconnect EVAP control system pressure sensor harness connector.
- 2. Check that water is not inside connector.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace harness connector.

# 2. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY

- 1. Turn ignition switch ON.
- Check the voltage between EVAP control system pressure sensor harness connector and ground.

+			Mallana (M)	
EVAP control system pressure sensor		_	Voltage (V)	
Connector	Terminal			
B22	3	Ground	Approx. 5	

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B22	3	E19	125	Existed

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Repair or replace harness connector.

### 4. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B22	1	E19	148	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

### 5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

## P0452 EVAP CONTROL SYSTEM PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Continuity	
Connector Terminal Connector Terminal	
B22 2 E19 121 Existed	
Also check harness for short to ground and short to power.	
he inspection result normal?	
ES >> GO TO 6.	Co
O >> Repair open circuit, short to ground or short to power in harness or connect	tors.
CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR	
eck EVAP control system pressure sensor. Refer to <u>EC-1007, "Component Inspection</u>	<u>n"</u> .
he inspection result normal?	
<ul> <li>&gt;&gt; Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>.</li> <li>&gt;&gt; Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Released in FL-27, "2WD : R</u></li></ul>	moval and Installation
(2WD), <u>FL-30</u> , "AWD: Removal and Installation" (AWD).	movai and mstaliation
emponent Inspection	INFOID:00000000121984
	INFOID.00000000121984
CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR	
Turn ignition switch OFF.	
Remove EVAP control system pressure sensor with its harness connector. Re	efer to FL-27, "2WD
Removal and Installation" (2WD), FL-30, "AWD: Removal and Installation" (AWD). Always replace O-ring with a new one.	
Install a vacuum pump to EVAP control system pressure sensor.	
	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the ECM	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the ECM  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Applied vacuum kPa (kg/cm², psi)	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under th  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Not applied  1.8 - 4.8 V	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the ECM  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Applied vacuum kPa (kg/cm², psi)	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the ECM    ECM	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the service of the service of the system pressure sensor.  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Not applied 1.8 - 4.8 V  2.1 to 2.5 V lower than	e following conditions
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under th  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Not applied  1.8 - 4.8 V  -26.7 (-0.272, -3.87)  CAUTION:  Always calibrate the vacuum pump gauge when using it.  Never apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101	
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Not applied  1.8 - 4.8 V  -26.7 (-0.272, -3.87)  CAUTION:  Applied vacuum kPa (kg/cm², psi)  Not applied  1.8 - 4.8 V  -26.7 (-0.272, -3.87)  2.1 to 2.5 V lower than above value  CAUTION:  Always calibrate the vacuum pump gauge when using it.  Never apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101 14.69 psi).	
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under th  ECM	
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under the  ECM  Applied vacuum kPa (kg/cm², psi)  Terminal  Not applied  1.8 - 4.8 V  -26.7 (-0.272, -3.87)  CAUTION:  Always calibrate the vacuum pump gauge when using it.  Never apply below -93.3 kPa (-0.952 kg/cm², -13.53 psi) or pressure over 101 14.69 psi).  he inspection result normal?  ES >> INSPECTION END	.3 kPa (1.033 kg/cm²
Install a vacuum pump to EVAP control system pressure sensor.  Turn ignition switch ON and check output voltage between ECM terminals under th  ECM	.3 kPa (1.033 kg/cm²

# P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0453	EVAP SYS PRES SEN (Evaporative emission system pressure sensor/switch high)	An excessively high voltage from the sensor is sent to ECM.	Harness or connectors     (EVAP control system pressure sensor circuit is open or shorted.)     EVAP control system pressure sensor     EVAP canister vent control valve     EVAP canister     Rubber hose from EVAP canister vent control valve to vehicle frame

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Always perform test at a temperature of 5°C (41°F) or more.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

#### (P)With CONSULT

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON.
- 6. Select "DATA MONITOR" mode with CONSULT.
- 7. Check that "FUEL T/TMP SE" is more than 0°C (32°F).
- 8. Start engine and wait at least 20 seconds.
- 9. Check 1st trip DTC.

#### With GST

- 1. Start engine and warm it up to normal operating temperature.
- 2. Set voltmeter probes to ECM harness connector terminals.

ECM				
Connector	+	_		
Connector	Terminal			
E19	128	148		

- 3. Check that the voltage is less than 4.2 V.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON.
- 6. Turn ignition switch OFF and wait at least 10 seconds.
- Start engine and wait at least 20 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1009, "Diagnosis Procedure".

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#### P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198501

## 1. CHECK CONNECTOR

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- 1. Disconnect EVAP control system pressure sensor harness connector.
- 2. Check that water is not inside connectors.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace harness connector.

## 2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR POWER SUPPLY

1. Turn ignition switch ON.

2. Check the voltage between EVAP control system pressure sensor harness connector and ground.

	+		
EVAP control syste	em pressure sensor	_	Voltage (V)
Connector	Terminal		
B22	3	Ground	Approx. 5

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

## 3.check evap control system pressure sensor power supply circuit

Turn ignition switch OFF.

- 2. Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control syste	em pressure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B22	3	E19	125	Existed

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair open circuit.

## 4.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR GROUND CIRCUIT

Turn ignition switch OFF.

- Disconnect ECM harness connector.
- Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

EVAP control syste	EVAP control system pressure sensor		ECM	
Connector	Terminal	Connector	Terminal	Continuity
B22	1	E19	148	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

### 5. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between EVAP control system pressure sensor harness connector and ECM harness connector.

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## P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

[MR EXCEPT FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

EVAP control system pressure sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B22	2	E19	121	Existed

2. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

#### 6.CHECK RUBBER TUBE

- 1. Disconnect rubber tube connected to EVAP canister vent control valve.
- Check the rubber tube for clogging.

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Clean the rubber tube using an air blower, repair or replace rubber tube.

#### .CHECK EVAP CANISTER VENT CONTROL VALVE

Check EVAP canister vent control valve. Refer to EC-1011, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace EVAP canister vent control valve. Refer to <u>FL-27</u>, "2WD : Removal and Installation" (2WD), <u>FL-30</u>, "AWD : Removal and Installation" (AWD).

## 8. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check EVAP control system pressure sensor. Refer to EC-1011, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Removal and Installation"</u> (2WD), FL-30, "AWD : Removal and Installation" (AWD).

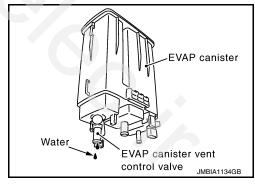
## 9.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

- 1. Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached. Refer to <u>FL-27</u>, "2WD: Removal and Installation" (2WD), <u>FL-30</u>, "AWD: Removal and Installation" (AWD).
- Check if water will drain from the EVAP canister.

#### Does water drain from the EVAP canister?

YES >> GO TO 10.

NO >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".



## 10. CHECK EVAP CANISTER

Weigh the EVAP canister with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 11.

## 11. DETECT MALFUNCTIONING PART

Check the following.

EVAP canister for damage

### P0453 EVAP CONTROL SYSTEM PRESSURE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection
  - >> Repair hose or replace EVAP canister. Refer to <u>FL-27, "2WD : Removal and Installation"</u> (2WD), <u>FL-30, "AWD : Removal and Installation"</u> (AWD).

## Component Inspection

INFOID:0000000012198502

## 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- Remove EVAP control system pressure sensor with its harness connector. Refer to <u>FL-27</u>, "2WD : <u>Removal and Installation</u>" (2WD), <u>FL-30</u>, "AWD : <u>Removal and Installation</u>" (AWD).
   Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM terminals under the following conditions.

ECM			A marking division was InDe		
Connector	+	_	Applied vacuum kPa (kg/cm², psi)	Voltage	
Connector	Terminal	Terminal	(Ng/om , pol)		
			Not applied	1.8 - 4.8 V	
E19	121	148	-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- Always calibrate the vacuum pump gauge when using it.
- Never apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/cm<sup>2</sup>, 14.69 psi).

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP control system pressure sensor. Refer to <u>FL-27, "2WD : Removal and Installation"</u> (2WD), <u>FL-30, "AWD : Removal and Installation"</u> (AWD).

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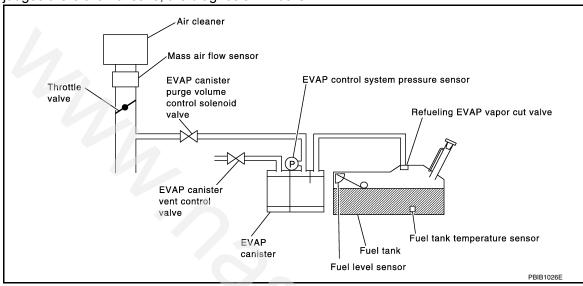
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DTC Logic

#### DTC DETECTION LOGIC

This diagnosis detects leaks in the EVAP line between fuel tank and EVAP canister purge volume control solenoid valve, using the negative pressure caused by decrease of fuel temperature in the fuel tank after turning ignition switch OFF.

If ECM judges there are no leaks, the diagnosis will be OK.



DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0456	EVAP VERY SML LEAK [Evaporative emission system leak detected (very small leak)]	<ul> <li>EVAP system has a leak.</li> <li>EVAP system does not operate properly.</li> </ul>	<ul> <li>Incorrect fuel tank vacuum relief valve</li> <li>Incorrect fuel filler cap used</li> <li>Fuel filler cap remains open or fails to close.</li> <li>Foreign matter caught in fuel filler cap.</li> <li>Leak is in line between intake manifold and EVAP canister purge volume control solenoid valve.</li> <li>Foreign matter caught in EVAP canister vent control valve.</li> <li>EVAP canister or fuel tank leaks</li> <li>EVAP purge line (pipe and rubber tube) leaks</li> <li>EVAP purge line rubber tube bent</li> <li>Loose or disconnected rubber tube</li> <li>EVAP canister vent control valve and the circuit</li> <li>EVAP canister purge volume control solenoid valve and the circuit</li> <li>Fuel tank temperature sensor</li> <li>O-ring of EVAP canister vent control valve is missing or damaged</li> <li>EVAP canister is saturated with water</li> <li>EVAP control system pressure sensor</li> <li>Refueling EVAP vapor cut valve</li> <li>ORVR system leaks</li> <li>Fuel level sensor and the circuit</li> <li>Foreign matter caught in EVAP canister purge volume control solenoid valve</li> </ul>

#### **CAUTION:**

- Use only a genuine NISSAN fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may come on.
- If the fuel filler cap is not tightened properly, the MIL may come on.
- Use only a genuine NISSAN rubber tube as a replacement.

#### DTC CONFIRMATION PROCEDURE

### P0456 EVAP CONTROL SYSTEM [MR EXCEPT FOR NISMO RS MODELS] < DTC/CIRCUIT DIAGNOSIS > 1.PRECONDITIONING If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test. Turn ignition switch OFF and wait at least 10 seconds. 1. Turn ignition switch ON. Turn ignition switch OFF and wait at least 10 seconds. Do you have CONSULT? YES >> GO TO 2. NO >> GO TO 4. 2.PERFORM DTC CONFIRMATION PROCEDURE-I (P)With CONSULT Turn ignition switch ON and select "EVAP DIAG READY" in "DATA MONITOR" mode with CONSULT. Start engine and wait at idle until "OFF" of "EVAP DIAG READY" changes to "ON". NOTE: It will take at most 2 hours until "OFF" of "EVAP DIAG READY" changes to "ON". Turn ignition switch OFF and wait at least 90 minutes. NOTE: Never turn ignition switch ON during 90 minutes. 4. Turn ignition switch ON and select "EVAP LEAK DIAG" in "DATA MONITOR" mode with CONSULT. Check that "EVAP LEAK DIAG" indication. Which is displayed on CONSULT? CMPLT>> GO TO 3. >> Perform DTC CONFIRMATION PROCEDURE again. GO TO 1. 3.perform dtc confirmation procedure-ii Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Go to EC-1013, "Diagnosis Procedure"

NO >> INSPECTION END.

## f 4.PERFORM DTC CONFIRMATION PROCEDURE

#### 

- 1. Start engine and wait engine idle for at least 2 hours.
- Turn ignition switch OFF and wait at least 90 minutes.

#### NOTE:

#### Never turn ignition switch ON during 90 minutes.

- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Go to EC-1013, "Diagnosis Procedure".

>> INSPECTION END. NO

#### Diagnosis Procedure

## 1.CHECK FUEL FILLER CAP DESIGN

Turn ignition switch OFF.

EC-1013 **Revision: November 2015 2016 JUKE**  EC

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#### < DTC/CIRCUIT DIAGNOSIS >

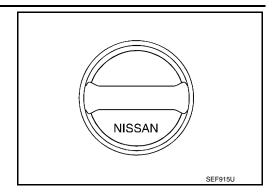
[MR EXCEPT FOR NISMO RS MODELS]

2. Check for genuine NISSAN fuel filler cap design.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace with genuine NISSAN fuel filler cap.



## 2. CHECK FUEL FILLER CAP INSTALLATION

Check that the cap is tightened properly by rotating the cap clockwise.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Open fuel filler cap, then clean cap and fuel filler neck threads using air blower. Then retighten until ratcheting sound is heard.

## 3. CHECK FUEL FILLER CAP FUNCTION

Check for air releasing sound while opening the fuel filler cap.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

### 4. CHECK FUEL TANK VACUUM RELIEF VALVE

Refer to EC-1017, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace fuel filler cap with a genuine one.

#### 5.CHECK FOR EVAP LEAK

Refer to EC-1253, "Inspection".

#### Is there any leak in EVAP line?

YES >> Repair or replace.

NO >> GO TO 6.

### 6.CHECK EVAP CANISTER VENT CONTROL VALVE

#### Check the following.

EVAP canister vent control valve is installed properly.

Refer to FL-27, "2WD: Removal and Installation" (2WD) or FL-30, "AWD: Removal and Installation" (AWD).

EVAP canister vent control valve.

Refer to EC-986, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace EVAP canister vent control valve and O-ring.

### 7.CHECK IF EVAP CANISTER SATURATED WITH WATER

#### < DTC/CIRCUIT DIAGNOSIS >

#### [MR EXCEPT FOR NISMO RS MODELS]

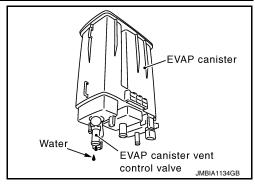
- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Check if water will drain from the EVAP canister.

#### Does water drain from EVAP canister?

>> GO TO 8. YES

NO-1 >> With CONSULT: GO TO 10.

NO-2 >> Without CONSULT: GO TO 11.



## 8. CHECK EVAP CANISTER

Weigh the EVAP canister assembly with the EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 10.

YES-2 >> Without CONSULT: GO TO 11.

NO >> GO TO 9.

## 9. DETECT MALFUNCTIONING PART

Check the following.

- EVAP canister for damage
- EVAP hose between EVAP canister and vehicle frame for clogging or poor connection

>> Repair hose or replace EVAP canister.

## 10.check evap canister purge volume control solenoid valve operation

#### (P)With CONSULT

- 1. Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 2. Start engine and let it idle.
- 3. Select "PURG VOL CONT/V" in "ACTIVE TEST" mode.
- Touch "Qu" on CONSULT screen to increase "PURG VOL CONT/V" opening to 100%.
- Check vacuum hose for vacuum.

#### Vacuum should exist.

#### Is the inspection result normal?

YFS >> GO TO 13.

NO >> GO TO 12.

## 11.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

#### **♥Without CONSULT**

- 1. Start engine and warm it up to normal operating temperature.
- 2. Stop engine.
- Disconnect vacuum hose to EVAP canister purge volume control solenoid valve at EVAP service port.
- 4. Start engine and let it idle for at least 80 seconds.
- 5. Check vacuum hose for vacuum when revving engine up to 2,000 rpm.

#### Vacuum should exist.

#### Is the inspection result normal?

YES >> GO TO 13.

NO >> GO TO 12.

## 12. CHECK VACUUM HOSE

Check vacuum hoses for clogging or disconnection. Refer to FL-27, "2WD: Exploded View" (2WD) or FL-30, "AWD: Exploded View"(AWD).

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#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 13.

NO >> Repair or reconnect the hose.

# 13. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### Refer to EC-980, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace EVAP canister purge volume control solenoid valve.

## 14. CHECK FUEL TANK TEMPERATURE SENSOR

#### Refer to EC-916, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel level sensor unit.

## 15. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

#### Refer to EC-1004, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace EVAP control system pressure sensor.

## 16. CHECK EVAP PURGE LINE

Check EVAP purge line (pipe, rubber tube, fuel tank and EVAP canister) for cracks or improper connection. Refer to FL-26, "2WD: Hydraulic Layout" (2WD) or FL-28, "AWD: Hydraulic Layout" (AWD).

#### Is the inspection result normal?

YES >> GO TO 17.

NO >> Repair or reconnect the hose.

## 17. CLEAN EVAP PURGE LINE

Clean EVAP purge line (pipe and rubber tube) using air blower.

>> GO TO 18.

## 18. CHECK EVAP/ORVR LINE

Check EVAP/ORVR line between EVAP canister and fuel tank for clogging, kink, looseness and improper connection. For location, refer to <u>FL-26</u>, "<u>2WD</u>: <u>Hydraulic Layout</u>"(2WD) or <u>FL-28</u>, "<u>AWD</u>: <u>Hydraulic Layout</u>"(AWD).

#### Is the inspection result normal?

YES >> GO TO 19.

NO >> Repair or replace hoses and tubes.

## 19. CHECK RECIRCULATION LINE

Check recirculation line between fuel filler tube and fuel tank for clogging, kink, cracks, looseness and improper connection.

#### Is the inspection result normal?

YES >> GO TO 20.

NO >> Repair or replace hose, tube or fuel filler tube.

## 20. CHECK REFUELING EVAP VAPOR CUT VALVE

#### Refer to FL-28, "2WD: Inspection" (2WD) or FL-31, "AWD: Inspection" (AWD).

#### Is the inspection result normal?

YES >> GO TO 21.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

## 21. CHECK FUEL LEVEL SENSOR

#### Refer to EC-1017, "Component Inspection".

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> GO TO 22.

NO >> Replace fuel level sensor unit.

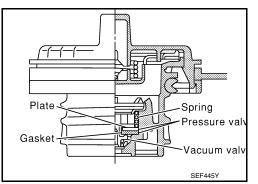
## 22. CHECK INTERMITTENT INCIDENT

Refer to GI-45, "Intermittent Incident".

>> INSPECTION END

# Component Inspection

- 1. CHECK FUEL FILLER CAP
- Turn ignition switch OFF. Remove fuel filler cap. 2.
- Wipe clean valve housing.



- Install fuel filler cap adapter (commercial service tool) to fuel filler cap.
- Check valve opening pressure and vacuum.

Pressure: 15.3 - 20.0 kPa (0.156 - 0.204 kg/cm<sup>2</sup>, 2.22 -

Vacuum: -6.0 to -3.3 kPa (-0.061 to -0.034 kg/cm<sup>2</sup>,

-0.87 to -0.48 psi)

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

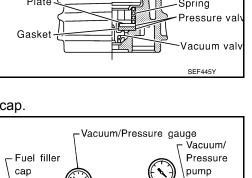
## 2.REPLACE FUEL FILLER CAP

Replace fuel filler cap.

#### **CAUTION:**

Use only a genuine fuel filler cap as a replacement. If an incorrect fuel filler cap is used, the MIL may illuminate.

>> INSPECTION END



One-way valve

SEF943S

Fuel filler cap adapter

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### **P0460 FUEL LEVEL SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0460 FUEL LEVEL SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0460 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0460 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1054</u>, "<u>DTC Logic"</u>.

When the vehicle is parked, the fuel level in the fuel tank is naturally stable. It means that output signal of the fuel level sensor does not change. If ECM senses sloshing signal from the sensor, fuel level sensor malfunction is detected.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0460	FUEL LEV SEN SLOSH (Fuel level sensor "A" circuit)	Even though the vehicle is parked, a signal being varied is sent from the fuel level sensor to ECM.	Harness or connectors     (The CAN communication line is open or shorted)     Harness or connectors     (The sensor circuit is open or shorted)     Combination meter     Fuel level sensor

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and wait maximum of 2 consecutive minutes.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1018, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198507

## 1. CHECK COMBINATION METER FUNCTION

Check combination meter function. Refer to MWI-22, "CONSULT Function".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to MWI-55, "Diagnosis Procedure".

#### P0461 FUEL LEVEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P0461 FUEL LEVEL SENSOR

DTC Logic INFOID:0000000012198508

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0461 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0461 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-1054, "DTC Logic".

Driving long distances naturally affect fuel gauge level.

This diagnosis detects the fuel gauge malfunction of the gauge not moving even after a long distance has been driven.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0461	FUEL LEVEL SENSOR (Fuel level sensor "A" circuit range/performance)	The output signal of the fuel level sensor does not change within the specified range even though the vehicle has been driven a long distance.	Harness or connectors (The CAN communication line is open or shorted) Harness or connectors (The sensor circuit is open or shorted) Combination meter Fuel level sensor

#### DTC CONFIRMATION PROCEDURE

## 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-1019, "Component Function Check".

Use component function check to check the overall function of the fuel level sensor. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1020, "Diagnosis Procedure".

## Component Function Check

## 1.PRECONDITIONING

#### WARNING:

When performing the following procedure, always observe the handling of the fuel. Refer to FL-2, "General Precautions"

#### **TESTING CONDITION:**

Before starting component function check, preparation of draining fuel and refilling fuel is required.

#### Will CONSULT be used?

YES >> GO TO 2. NO >> GO TO 3.

2.PERFORM COMPONENT FUNCTION CHECK

#### (P)With CONSULT

#### NOTE:

Start from step 10, if it is possible to confirm that the fuel cannot be drained by 30  $\,\ell$  (7-7/8 US gal, 6-5/ 8 Imp gal) in advance.

- 1. Prepare a fuel container and a spare hose.
- Release fuel pressure from fuel line, refer to EC-771, "Work Procedure".
- 3. Remove the fuel feed hose on the fuel level sensor unit.
- Connect a spare fuel hose where the fuel feed hose was removed.
- Turn ignition switch OFF and wait at least 10 seconds then turn ON.
- Select "FUEL LEVEL SE" in "DATA MONITOR" mode with CONSULT.
- Check "FUEL LEVEL SE" output voltage and note it. 7.
- Select "FUEL PUMP RELAY" in "ACTIVE TEST" mode with CONSULT.

EC-1019 **Revision: November 2015 2016 JUKE**  EC

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#### P0461 FUEL LEVEL SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- 9. Touch "ON" and drain fuel approximately 30  $\ell$  (7-7/8 US gal, 6-5/8 lmp gal) and stop it.
- 10. Check "FUEL LEVEL SE" output voltage and note it.
- 11. Fill fuel into the fuel tank for 30  $\ell$  (7-7/8 US gal, 6-5/8 Imp gal).
- 12. Check "FUEL LEVEL SE" output voltage and note it.
- 13. Confirm whether the voltage changes more than 0.03 V during step 7 to 10 and 10 to 12.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1020, "Diagnosis Procedure".

## 3.perform component function check

#### **Without CONSULT**

#### NOTE:

Start from step 8, if it is possible to confirm that the fuel cannot be drained by 30  $\ell$  (7-7/8 US gal, 6-5/8 Imp gal) in advance.

- 1. Prepare a fuel container and a spare hose.
- 2. Release fuel pressure from fuel line. Refer to EC-771, "Work Procedure".
- 3. Remove the fuel feed hose on the fuel level sensor unit. Refer to FL-7, "2WD: Removal and Installation".
- 4. Connect a spare fuel hose where the fuel feed hose was removed.
- 5. Turn ignition switch ON.
- 6. Drain fuel by 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal) from the fuel tank using proper equipment.
- 7. Confirm that the fuel gauge indication varies.
- 8. Fill fuel into the fuel tank for 30 ℓ (7-7/8 US gal, 6-5/8 Imp gal).
- Confirm that the fuel gauge indication varies.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1020, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198510

## 1. CHECK COMBINATION METER FUNCTION

Check combination meter function. Refer to MWI-22. "CONSULT Function".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to MWI-54, "Component Function Check".

## P0462, P0463 FUEL LEVEL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0462, P0463 FUEL LEVEL SENSOR

**DTC Logic** INFOID:0000000012198511

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0462 or P0463 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0462 or P0463 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607.Refer to EC-1054, "DTC Logic".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0462	FUEL LEVL SEN/CIRC (Fuel level sensor "A" circuit low)	An excessively low voltage from the sensor is sent to ECM.	Harness or connectors     (The CAN communication line is open or
P0463	FUEL LEVL SEN/CIRC (Fuel level sensor "A" circuit high)	An excessively high voltage from the sensor is sent to ECM.	<ul> <li>shorted)</li> <li>Harness or connectors (The sensor circuit is open or shorted)</li> <li>Combination meter</li> <li>Fuel level sensor</li> </ul>

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1021, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

## CHECK COMBINATION METER FUNCTION

Check combination meter function. Refer to MWI-22, "CONSULT Function".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Proceed to MWI-55, "Diagnosis Procedure". EC

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#### P046E EGR PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### P046E EGR PRESSURE SENSOR

DTC Logic INFOID:000000012198513

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P046E is displayed with DTC related to the EGR volume control valve, first perform the trouble diagnosis for DTC related to the EGR volume control valve. Refer to <a href="EC-706">EC-706</a>, "DTC Index".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P046E	EGR SENSOR B (EGR sensor B circuit range/ performance)	ECM detects the following status continuously for 5 seconds or more: A difference between the output level of EGR pressure sensor and the differential pressure before and after EGR volume control valve calculated by ECM based on "target working factor of EGR" is bigger than specified value.	,

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### TEST CONDITION:

Before performing the following procedure, confirm that battery voltage is 11 V or more at ignition switch ON.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE-1

- 1. Turn ignition switch ON.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1022, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-2

- 1. Start the engine and warm it up to the normal operating temperature.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1022, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198514

## $1.\mathsf{check}$ egr pressure sensor power supply

- 1. Turn ignition switch OFF.
- Disconnect EGR pressure sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between EGR pressure sensor harness connector and ground.

### **P046E EGR PRESSURE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

+			
EGR press	EGR pressure sensor		Voltage (Approx.)
Connector	Connector Terminal		,
F46	1	Ground	5 V

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#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 5.

## 2.check egr pressure sensor ground circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

	+		_	
EGR press	sure sensor	E	CM	Continuity
Connector	Terminal	Connector	Terminal	
F46	3	F23	43	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK EGR PRESSURE SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

	+		_	
EGR press	sure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F46	2	F23	24	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK EGR PRESSURE SENSOR

Check the EGR pressure sensor. Refer to EC-1026, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EGR pressure sensor.

## 5.CHECK EGR PRESSURE SENSOR POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

	+		_	
EGR press	sure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F46	1	F23	30	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

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#### P046E EGR PRESSURE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection (EGR pressure sensor)

INFOID:0000000012198515

## 1. CHECK EGR PRESSURE SENSOR

- 1. Turn ignition switch OFF.
- 2. Remove EGR pressure sensor hose (intake and exhaust).
- 3. Install pressure pump to EGR pressure sensor port (intake side).
- 4. Turn ignition switch ON and check output voltage between ECM connector terminals as follows.

EGR pressure sensor				
+	-	Condition		Voltage
Terminal				
2	3	Applied pressure kPa	Not applied	1.0 V
	3	(kg/cm <sup>2</sup> , PSI)	100 (1.02, 14.5)	4.5 V

#### **CAUTION:**

## Never apply pressure over 150kPa (1.53 kg/cm<sup>2</sup>, 21.75 PSI)

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Replace EGR pressure sensor. Refer to <u>FL-27, "2WD : Exploded View"</u>.

#### P046F, P0486 EGR PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P046F, P0486 EGR PRESSURE SENSOR

**DTC Logic** INFOID:0000000012198516

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P046F, or P0486 is displayed with DTC P0643, first perform trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P046F	EGR SENSOR B (EGR sensor B circuit intermit- tent/erratic)	ECM detects that a voltage signal from EGR pressure sensor is less than 4.8 V for 5 consecutive seconds.	Harness or connectors     (EGR pressure sensor circuit is open or
P0486	EGR SENSOR B (EGR sensor B circuit)	ECM detects that a voltage signal from EGR pressure sensor is less than 0.5 V for 5 consecutive seconds.	shorted.) • EGR pressure sensor

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

**TEST CONDITION:** 

Before performing the following procedure, confirm that battery voltage is 10 V or more at ignition switch ON.

>> GO TO 2.

## 2 PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 5 seconds.
- Check 1st trip DTC. 2.

#### Is 1st trip DTC detected?

>> Proceed to EC-1025, "Diagnosis Procedure". YES

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK EGR PRESSURE SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect EGR pressure sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between EGR pressure sensor harness connector and ground.

+			\
EGR pressure sensor		_	Voltage (Approx.)
Connector	Terminal		, , ,
F46	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2.check egr pressure sensor ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.

EC-1025 **Revision: November 2015 2016 JUKE**  EC

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#### P046F, P0486 EGR PRESSURE SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

+		ı		
EGR press	sure sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F46	3	F23	43	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.check egr pressure sensor input signal circuit

Check the continuity between EGR pressure sensor harness connector and ECM harness connector.

	+		_	
EGR press	sure sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F46	2	F23	24	Existed

Also check harness for short to ground and to power.

#### Is the inspection result normal?

>> GO TO 4. YES

NO >> Repair or replace error-detected parts.

## 4. CHECK EGR PRESSURE SENSOR

Check the EGR pressure sensor. Refer to EC-1026, "Component Inspection".

#### Is the inspection result normal?

YES

>> Check intermittent incident. Refer to <u>GI-45, "Intermittent Incident"</u>. >> Replace EGR pressure sensor. Refer to <u>EC-1256, "Removal and Installation"</u>. NO

## Component Inspection

INFOID:0000000012198518

## 1. CHECK EGR PRESSURE SENSOR

- Turn ignition switch OFF.
- Remove EGR pressure sensor tube (intake and exhaust).
- Install pressure pump to EGR pressure sensor hose connector (intake side)
- Turn ignition switch ON and check output voltage between ECM connector terminals as follows.

EGR press	sure sensor			
+	-	Condition		Voltage
Terr	minal			
2	3	Applied pressure kPa	Not applied	1.0 V
2	3	(mbar, mmHg, inHg)	100 (1,000, 750, 29.53)	4.5 V

Never apply pressure over 150kPa (1,500 mbar, 1,125 mmHg, 44.29 inHg)

#### Is inspection result normal?

YES >> INSPECTION END

NO >> Replace EGR pressure sensor. Refer to <a>EM-238</a>, "Exploded View"</a>.

#### [MR EXCEPT FOR NISMO RS MODELS]

#### P0500 VSS

#### **EXCEPT FOR M/T MODELS**

## **EXCEPT FOR M/T MODELS: Description**

INFOID:0000000012198519

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ECM receives vehicle speed signals from two different paths via CAN communication line: One is from the ABS actuator and electric unit (control unit) via the combination unit and the other is from TCM.

## EXCEPT FOR M/T MODELS: DTC Logic

#### INFOID:0000000012198520

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0500 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.

If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1054</u>, "DTC Logic".

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0500	VEH SPEED SEN/CIRC (Vehicle speed sensor)	At 20 km/h (13 MPH), ECM detects the following status continuously for 5 seconds or more: The difference between a vehicle speed calculated by a output speed sensor transmitted from TCM to ECM via CAN communication and the vehicle speed indicated on the combination meter exceeds 15km/h (10 MPH).	Harness or connector     (CAN communication line is open or shorted.)     Combination meter     ABS actuator and electric unit (control unit)     Wheel sensor     TCM     Output speed sensor

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine.
- Shift the selector lever to D range and wait at least for 2 seconds.
- 3. Drive the vehicle at least 5 seconds at 20 km/h (13 MPH) or more.

### CAUTION:

#### Always drive vehicle at a safe speed.

#### NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

4. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1027, "EXCEPT FOR M/T MODELS : Diagnosis Procedure"

NO >> INSPECTION END

## EXCEPT FOR M/T MODELS: Diagnosis Procedure

#### INFOID:0000000012198521

## 1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-414, "DTC Index".

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

## 2.CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-50, "DTC Index".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform trouble shooting relevant to DTC indicated.

## 3. CHECK DTC WITH COMBINATION METER

Check DTC with combination meter. Refer to MWI-33, "DTC Index".

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform trouble shooting relevant to DTC indicated.

## 4. CHECK OUTPUT SPEED SENSOR

Check output speed sensor. Refer to TM-523, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace or replace error-detected parts.

## 5. CHECK WHEEL SENSOR

Check wheel sensor. Refer to BRC-88. "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace or replace error-detected parts.

#### M/T MODELS

### M/T MODELS: Description

INFOID:0000000012198522

The vehicle speed signal is sent to the combination meter from the "ABS actuator and electric unit (control unit)" via the CAN communication line. The combination meter then sends a signal to the ECM via the CAN communication line.

## M/T MODELS: DTC Logic

INFOID:0000000012198523

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P0500 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P0500 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1054</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0500	VEH SPEED SEN/CIRC (Vehicle speed sensor)	The vehicle speed signal sent to ECM is almost 0 km/h (0 MPH) even when vehicle is being driven.	Harness or connectors (CAN communication line is open or shorted) Harness or connectors (Vehicle speed signal circuit is open or shorted) Wheel sensor Combination meter ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

Do you have CONSULT?

#### Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 5.

#### [MR EXCEPT FOR NISMO RS MODELS]

# $\overline{2}$ .PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 3.

## 3.CHECK VEHICLE SPEED SIGNAL

#### NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

(P)With CONSULT

- Start engine.
- Read "VHCL SPEED SE" in "DATA MONITOR" mode of "ENGINE" using CONSULT. The vehicle speed on CONSULT should exceed 10 km/h (6 mph) when rotating wheels with suitable gear position.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Proceed to EC-1030, "M/T MODELS: Diagnosis Procedure".

## $oldsymbol{4}_{ ext{-}}$ PERFORM DTC CONFIRMATION PROCEDURE

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Warm engine up to normal operating temperature.
- Maintain the following conditions for at least 50 consecutive seconds.

Always drive vehicle at a safe speed.

ENG SPEED	1,800 - 6,000 rpm	
COOLAN TEMP/S	More than 65°C (149°F)	
B/FUEL SCHDL	4.7 - 31.8 msec	
Selector lever	Except Neutral position	
PW/ST SIGNAL	OFF	

#### 4. Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-1030, "M/T MODELS: Diagnosis Procedure"

NO >> INSPECTION END

### ${f 5}$ .PERFORM COMPONENT FUNCTION CHECK

check, a 1st trip DTC might not be confirmed.

Perform component function check. Refer to EC-1029, "M/T MODELS: Component Function Check" Use component function check to check the overall function of the vehicle speed signal circuit. During this

#### Is the inspection result normal?

YES >> INSPECTION END

>> Proceed to EC-1030, "M/T MODELS: Diagnosis Procedure".

### M/T MODELS : Component Function Check

## ${f 1}$ .PERFORM COMPONENT FUNCTION CHECK

#### With GST

- 1. Lift up drive wheels.
- Start engine.
- Read vehicle speed signal in Service \$01 with GST.

The vehicle speed signal on GST should be able to exceed 10 km/h (6 MPH) when rotating wheels with suitable gear position.

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INFOID:0000000012198524

#### P0500 VSS

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1030, "M/T MODELS : Diagnosis Procedure".

## M/T MODELS: Diagnosis Procedure

INFOID:0000000012198525

## 1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-50, "DTC Index".

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble shooting relevant to DTC indicated.

## 2. CHECK DTC WITH COMBINATION METER

Check DTC with combination meter. Refer to MWI-33, "DTC Index".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform trouble shooting relevant to DTC indicated.

### P0501, P2159 VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0501, P2159 VEHICLE SPEED SENSOR

Description INFOID:0000000012198526

ECM receives a rear wheel sensor signal from ABS actuator and electric unit (control unit) via CAN communication to switch combustion for the direct injection gasoline system. For the direct injection gasoline system, refer to EC-630, "DIRECT INJECTION GASOLINE SYSTEM: System Description".

INFOID:0000000012198527

## DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0501 or P2159 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX. Refer to EC-706, "DTC Index".

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0501	VEHICLE SPEED SEN A (Vehicle speed sensor A range/ performance)	ECM detects a rear LH wheel sensor mal- function signal transmitted from the ABS ac- tuator and electric unit (control unit) via CAN communication at least for 5 seconds in a row.	Harness or connectors     (The CAN communication line is open or shorted)     Rear LH wheel sensor     ABS actuator and electric unit (control unit)
P2159	Vehicle speed sensor B (Vehicle speed sensor B range/ performance)	ECM detects a rear RH wheel sensor mal- function signal transmitted from the ABS ac- tuator and electric unit (control unit) via CAN communication at least for 5 seconds in a row.	Harness or connectors     (The CAN communication line is open or shorted)     Rear RH wheel sensor     ABS actuator and electric unit (control unit)

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 9 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1031, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

 ${f 1}.$ CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-50, "DTC Index".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Perform Diagnosis Procedure corresponding to DTC indicated.

EC-1031 **Revision: November 2015 2016 JUKE** 

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INFOID:0000000012198528

#### P0506 ISC SYSTEM

Description INFOID:000000012198529

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic (INFOID:000000012198530

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0506 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0506	ISC SYSTEM (Idle air control system RPM lower than expected)	The idle speed is less than the target idle speed by 100 rpm or more.	Electric throttle control actuator     Intake air leakage

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

If the target idle speed is out of the specified value, perform <u>EC-758</u>, <u>"Description"</u>, before conducting DTC CONFIRMATION PROCEDURE.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.
- Always perform the test at a temperature above -10°C(14°F).

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Restart engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1032, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198531

## 1. CHECK INTAKE AIR LEAKAGE

- Start engine and let it idle.
- Listen for an intake air leakage after the mass air flow sensor.

#### Is intake air leakage detected?

YES >> Discover air leakage location and repair.

### **P0506 ISC SYSTEM**

NO >> Replace ECM. Refer to EC-1256, "Removal and Installation".

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#### P0507 ISC SYSTEM

Description INFOID:000000012198532

The ECM controls the engine idle speed to a specified level through the fine adjustment of the air, which is let into the intake manifold, by operating the electric throttle control actuator. The operating of the throttle valve is varied to allow for optimum control of the engine idling speed. The crankshaft position sensor (POS) detects the actual engine speed and sends a signal to the ECM.

The ECM controls the electric throttle control actuator so that the engine speed coincides with the target value memorized in the ECM. The target engine speed is the lowest speed at which the engine can operate steadily. The optimum value stored in the ECM is determined by taking into consideration various engine conditions, such as during warming up, deceleration and engine load (air conditioner, power steering and cooling fan operation, etc.).

DTC Logic (INFOID:000000012198533

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P0507 is displayed with other DTC, first perform the trouble diagnosis for the other DTC.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0507	ISC SYSTEM (Idle air control system RPM higher than expected)	The idle speed is more than the target idle speed by 200 rpm or more.	Electric throttle control actuator     Intake air leakage     PCV system

#### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

If the target idle speed is out of the specified value, perform <u>EC-758</u>, "<u>Description</u>", before conducting DTC Confirmation Procedure.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.
- Always perform the test at a temperature above –10°C(14°F).

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Restart engine and run it for at least 1 minute at idle speed.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1034, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198534

## 1. CHECK PCV HOSE CONNECTION

Confirm that PCV hose is connected correctly.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning part.

#### **P0507 ISC SYSTEM**

# 2.CHECK INTAKE AIR LEAKAGE

- 1. Start engine and let it idle.
- 2. Listen for an intake air leakage after the mass air flow sensor.

#### Is intake air leakage detected?

- YES >> Discover air leakage location and repair.
- NO >> Replace ECM. Refer to EC-1256, "Removal and Installation".

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#### P050A, P050B, P050E COLD START CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P050A, P050B, P050E COLD START CONTROL

Description INFOID.000000012198535

ECM controls ignition timing and engine idle speed when engine is started with pre-warming up condition. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P050A, P050B or P050E is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P050A	Cold start idle air control system performance	ECM does not control engine idle speed properly when engine is started with pre-warming up condition.	
P050B	Cold start ignition timing performance	ECM does not control engine timing properly when engine is started with pre-warming up condition.	<ul><li>Lack of intake air volume</li><li>Fuel injection system</li><li>ECM</li></ul>
P050E	Cold start engine exhaust temperature too low	The temperature of the catalyst inlet does not rise to the proper temperature when the engine is started with pre-warming up condition.	

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

#### (P)WITH CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Select "DATA MONITOR" mode with CONSULT.
- Check the indication of "COOLAN TEMP/S".

**WITH GST** 

Follow the procedure "With CONSULT" above.

Is the value of "COOLAN TEMP/S" between 5°C (41°F) and 36°C (97°F)?

YES >> GO TO 3.

NO-1 [If it is below 5°C (41°F)]>>Warm up the engine until the value of "COOLAN TEMP/S" reaches 5°C (41°F) or more. Retry from step 1.

NO-2 [If it is above 36°C (97°F)]>>Cool engine down to less than 36°C (97°F). Retry from step 1.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-II

#### (P)WITH CONSULT

- Set the select lever in N range.
- Start the engine and warm up in idle with the value of "COOLAN TEMP/S" between 5°C (41°F) and 40°C (104°F) for more than 15 seconds.
- Check 1st trip DTC.

P050A, P050B, P050E COLD START CONTROL	
< DTC/CIRCUIT DIAGNOSIS > [MR EXCEPT FOR NISMO RS MODEL	S]
WITH GST Follow the procedure "With CONSULT" above.	А
Is 1st trip DTC detected?  YES >> Proceed to EC-1037, "Diagnosis Procedure".  NO >> INSPECTION END	EC
Diagnosis Procedure	98537
1.PERFORM IDLE AIR VOLUME LEARNING	С
Perform EC-758, "Description".	—
Is Idle Air Volume Learning carried out successfully?	D
YES >> GO TO 2.  NO >> Follow the instruction of Idle Air Volume Learning.	
2.CHECK INTAKE SYSTEM	Е
Check for the cause of intake air volume lacking. Refer to the following.  • Crushed intake air passage	
Intake air passage clogging	F
Clogging of throttle body     Is the inspection result normal?	
YES >> GO TO 3.	G
NO >> Repair or replace malfunctioning part	
3. CHECK FUEL INJECTION SYSTEM FUNCTION	L
Perform DTC Confirmation Procedure for DTC P0171. Refer to EC-905, "DTC Logic".	
Is the inspection result normal?	
YES >> GO TO 4.  NO >> Proceed to <u>EC-906, "Diagnosis Procedure"</u> for DTC P0171.	
4.PERFORM DTC CONFIRMATION PROCEDURE	
1. Turn ignition switch ON.	<del>-</del> J
2. Erase DTC.	
3. Perform DTC Confirmation Procedure.  See EC-1036, "DTC Logic".	k
Is the 1st trip DTC P050A, P050B or P050E displayed again?	11
YES >> GO TO 5.	
NO >> INSPECTION END	L
5.REPLACE ECM	
Replace ECM. Refer to EC-1256, "Removal and Installation"	N
>> INSPECTION END	
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## P0520 EOP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis (Trouble diagnosis content)	Detecting condition	Possible cause
P0520	EOP SENSOR/SWITCH [Engine oil pressure (EOP) sensor circuit]	<ul> <li>ECM detects the following status continuously for 5 seconds or more:</li> <li>A voltage signal transmitted from the engine oil pressure sensor is lower than 0.3 V.</li> <li>A voltage signal transmitted from the engine oil pressure sensor is higher than 5.02 V.</li> </ul>	Harness or connectors     (EOP sensor circuit is open or shorted.)     Engine oil level abnormality     EOP sensor     Sensor power supply 2 circuit

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 seconds.
- 2. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1038, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198539

## 1. CHECK EOP SENSOR POWER SUPPLY-I

- Turn ignition switch OFF.
- Disconnect EOP sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between EOP sensor harness connector terminals.

	EOP sensor	Voltage		
Connector	+	-	Voltage (Approx.)	
Connector	tern	ninal	(	
F43	3	1	5 V	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2.CHECK EOP SENSOR SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connectors.
- 3. Check the continuity between EOP sensor harness connector and ECM harness connector.

#### < DTC/CIRCUIT DIAGNOSIS >

+		_		
EOP	sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F43	2	F23	23	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK EOP SENSOR

Check EOP sensor. Refer to EC-1040, "Component Inspection".

#### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 4. CHECK EOP SENSOR POWER SUPPLY-II

Check the voltage between EOP sensor harness connector terminal and ground.

	+		Mallana
EOP :	sensor	-	Voltage (Approx.)
Connector Terminal			, II ,
F43	3	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

## ${f 5}.$ CHECK EOP SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connectors. 2.
- Check the continuity between EOP sensor harness connector and ECM harness connector.

+				
EOP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F43	3	F23	29	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> Check sensor power supply 2 circuit. Refer to EC-1240, "Diagnosis Procedure

>> Repair or replace error-detected parts. NO

#### $\mathsf{6}.$ CHECK EOP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector. 2.
- Check the continuity between EOP sensor harness connector and ECM harness connector.

+		_		
EOP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F43	1	F23	13	Existed

#### Is the inspection result normal?

YES >> GO TO 7. EC

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#### **P0520 EOP SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> Repair or replace error-detected parts.

## 7. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

E	CM	Ground	Continuity	
Connector	Connector Terminal		Continuity	
	9			
F23	10		Existed	
	50			
F24	60	Ground		
Γ24	110	Giouna		
	147			
E19	149			
	152			

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45. "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## Component Inspection

INFOID:0000000012198540

## 1. CHECK EOP SENSOR

- Turn ignition switch OFF.
- Disconnect EOP sensor harness connector.
- Check resistance between EOP sensor connector terminals.

+ Terminal			Resistance (kΩ)
		Condition	
1	2	None	$4 \text{ k}\Omega - 10 \text{ k}\Omega$
·	3		2 kΩ – 8 kΩ
2	1		4 kΩ – 10 kΩ
2	3		1 kΩ – 3 kΩ
3	1		2 kΩ – 8 kΩ
	2		1 kΩ – 3 kΩ

#### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace EOP sensor. Refer to EM-286, "Exploded View".

#### **P0524 ENGINE OIL PRESSURE**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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#### P0524 ENGINE OIL PRESSURE

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0524	ENGINE OIL PRESSURE (Engine oil pressure too low)	An EOP sensor signal voltage applied to ECM remains lower than the specified value continuously for 10 seconds or more when the engine speed is 1,000 rpm or more.	<ul> <li>Decrease in engine oil pressure</li> <li>Decrease in engine oil level</li> <li>Engine oil condition</li> <li>EOP sensor</li> <li>Engine body</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

If "EC-1042, "Diagnosis Procedure" is unfinished, be sure to perform Step 3 and 4.

## 1.PRECONDITIONING-1

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PRECONDITIONING-2

#### Is "Diagnosis Procedure" of DTC P0524 finished?

YES >> GO TO 3.

NO >> GO TO 4.

## 3.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and warm it up to normal operating temperature.
- Maintain the following conditions for about 10 consecutive seconds.

Selector lever	P or N position (CVT) N position (M/T)
Engine coolant temperature	70°C (158°F) or more
Engine speed	1,000 rpm or more

#### NOTE:

With engine speed set around 4,000 rpm, the phenomenon can be reproduced more easily.

3. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-1042, "Diagnosis Procedure".

NO >> INSPECTION END

#### CHECK ENGINE OIL LEVEL

Check engine oil level. Refer to LU-28, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Proceed to EC-1042, "Diagnosis Procedure".

### 5.CHECK ENGINE OIL PRESSURE

#### **P0524 ENGINE OIL PRESSURE**

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start the engine and check that "EOP SENSOR" changes, according to engine speeds.

Monitor item	Condition		Value (Approx.)
500 05N000	Engine oil temperature: 80°C (176°F)     Selector lever: P or N position (CVT)     Selector lever: N position (M/T)     Air conditioner switch: OFF     No load	Engine speed: Idle	1,250 - 1,400 mV
EOP SENSOR		Engine speed: 2,000 rpm	1,400 - 2,200 mV

#### 

Check engine oil pressure. Refer to <u>LU-28</u>. "Inspection".

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to <u>EC-1042</u>, "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

INFOID:0000000012198542

## 1. CHECK ENGINE OIL LEVEL

- 1. Turn ignition switch OFF.
- 2. Check engine oil level. Refer to LU-28, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2.CHECK ENGINE OIL PRESSURE

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Start the engine and check that "EOP SENSOR" changes, according to engine speeds.

Monitor item	Condition		Value (Approx.)
500 05N000	<ul> <li>Engine oil temperature: 80°C (176°F)</li> <li>Selector lever: P or N position (CVT)</li> <li>Selector lever: N position (M/T)</li> <li>Air conditioner switch: OFF</li> <li>No load</li> </ul>	Engine speed: Idle	1,250 - 1,400 mV
EOP SENSOR		Engine speed: 2,000 rpm	1,400 - 2,200 mV

#### 

Check engine oil pressure. Refer to LU-28, "Inspection".

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Check oil pump. Refer to <u>LU-36</u>, "Inspection".

## 3.CHECK EOP SENSOR

Check EOP sensor. Refer to EC-1040, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

### 4.CHECK ENGINE OIL LEAKAGE

Check engine oil leakage. Refer to LU-25, "Engine Lubrication System".

#### Is the inspection result normal?

YES >> GO TO 5.

### **P0524 ENGINE OIL PRESSURE**

### < DTC/CIRCUIT DIAGNOSIS >

## [MR EXCEPT FOR NISMO RS MODELS]

NO >> Repair or replace error-detected parts.

## 5. CHECK CAUSE OF ENGINE OIL CONSUMPTION

Check the following item.

Step	Inspection item	Equipment	Standard	Reference
1	PCV valve	EC-1255. "Inspection"		
2	Turbocharger	EM-244, "Inspection"		
3	Exhaust front tube	Visual	<ul><li>No blocking</li><li>No abnormal sounds</li></ul>	_
4	Oil pump	Visual	<ul><li>No blocking</li><li>No abnormal sounds</li></ul>	_
4	Oil pump	LU-36, "Inspection"		
5	<ul><li>Piston</li><li>Piston pin</li><li>Piston ring</li></ul>	Piston to piston pin oil clearance     Piston ring side clearance     Piston ring end gap		EM-304
6	Cylinder block	Cylinder block top surface distortion     Piston to cylinder bore clearance		<u>EM-294</u>

>> Repair or replace error-detected parts.

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#### P052A, P052B INTAKE VALVE TIMING CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P052A, P052B INTAKE VALVE TIMING CONTROL

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P052A or P052B is displayed with DTC P0075, perform the trouble diagnosis for DTC P0075. Refer to <u>EC-813</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis (Trouble diagnosis content)	Detecting condition	Possible cause
P052A	CAMSHAFT POSITION TIM- ING B1 (Cold start "A" camshaft posi- tion timing over-advanced bank 1)	There is a gap between angle of target and phase-control angle degree when the engine is in a cold condition.	<ul> <li>Crankshaft position sensor</li> <li>Camshaft position sensor</li> <li>Intake valve timing control solenoid valve</li> <li>Intake valve timing intermediate lock control solenoid valve</li> </ul>
P052B	CAMSHAFT POSITION TIM- ING B1 (Cold start "A" camshaft posi- tion timing over-retarded bank 1)		<ul> <li>Accumulation of debris to the signal pick-up portion of the camshaft</li> <li>Timing chain installation</li> <li>Foreign matter caught in the oil groove for intake valve timing control</li> </ul>

#### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 10 V or more at idle.

#### (P)With CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. On the CONSULT screen, select "ENGINE" >> "DATA MONITOR" >> "COOLAN TEMP/S".
- Check "COOLAN TEMP/S" indication value.

#### 

Follow the procedure "With CONSULT" above.

#### Is the value of "COOLAN TEMP/S"-5°C (23°F) and 45°C (113°F)?

YES >> GO TO 2.

NO-1 [if it is below – 5°C (23°F)]>>Warm up the engine until the value of "COOLAN TEMP/S" indicates –5°C (23°F) and 45°C (113°F). And then GO TO 2.

NO-2 [if it is above 45°C (113°F)]>>Cool the engine down to the value of "COOLAN TEMP/S" indicates –5°C (23°F) and 45°C (113°F). And then GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch OFF and wait at 10 seconds.
- 2. Turn ignition switch ON.
- 3. Set the selector lever in N range.
- 4. Start the engine and let it idle for 20 seconds or more.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1044, "Diagnosis Procedure"

NO >> INSPECTION END

## Diagnosis Procedure

1.INSPECTION START

INFOID:0000000012198544

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

With CONSULT>>GO TO 2. Without CONSULT>>GO TO 3.

## 2.CHECK VTC POSITION

## (P)With CONSULT

- Turn ignition switch ON.
- On the CONSULT screen, select "ENGINE" >> "DATA MONITOR" >> "COOLAN TEMP/S".
- Check that the "COOLAN TEMP/S" indication value is between -5°C (23°F) and 45°C (113°F).
- Start engine and wait at least 5 seconds.
- On the CONSULT screen, select "ENGINE" >> "DATA MONITOR" >> "INT/V TIM(B1)".
- Check that the data monitor item indicates as follows:

Item	Value (°CA)
INT/V TIM(B1)	10 ± 2

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 3.

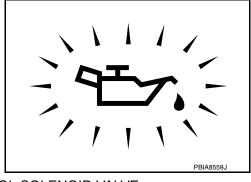
## 3.CHECK OIL PRESSURE WARNING LAMP

- Start engine.
- Check that oil pressure warning lamp is not illuminated.

## Is oil pressure warning lamp illuminated?

YES >> Refer to LU-28, "Inspection".

NO >> GO TO 4.



## f 4.CHECK INTAKE VALVE TIMING INTERMEDIATE LOCK CONTROL SOLENOID VALVE

Perform Component Inspection of the intake valve timing intermediate lock control solenoid valve. Refer to EC-1047, "Component Inspection (Intake Valve Timing Intermediate Lock Control Solenoid Valve)".

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## ${f 5.}$ CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE

Perform Component Inspection of the intake valve timing control solenoid valve. Refer to EC-1046, nent Inspection (Intake Valve Timing Control Solenoid Valve)".

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

## $oldsymbol{6}.$ CHECK CRANKSHAFT POSITION SENSOR

Perform Component Inspection of the crankshaft position sensor. Refer to EC-1047, "Component Inspection (Crankshaft Position sensor)".

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

## 7.CHECK CAMSHAFT POSITION SENSOR

Perform Component Inspection of the camshaft position sensor. Refer to EC-1048, "Component Inspection (Camshaft position sensor)".

## Is the inspection result normal?

EC-1045 **Revision: November 2015 2016 JUKE**  EC

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

## 8.CHECK CAMSHAFT (INTAKE)

Check the following.

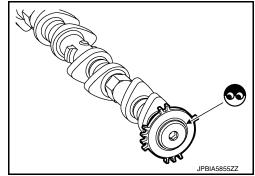
- 1. Accumulation of debris on the signal plate of camshaft front end
- 2. Chipping signal plate of camshaft front end

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Remove

>> Remove debris and clean the signal plate of camshaft front end or replace camshaft. Refer to <u>EM-261</u>, "Removal and Installation".



## 9. CHECK TIMING CHAIN INSTALLATION

Check service records for any recent repairs that may cause timing chain misalignment.

Are there any service records that may cause timing chain misalignment?

YES >> Check timing chain installation. Refer to EM-249, "Removal and Installation".

NO >> GO TO 10.

## 10. CHECK LUBRICATION CIRCUIT

Perform "Inspection of Camshaft Sprocket (INT) Oil Groove". Refer to EM-264. "Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Clean lubrication line.

## Component Inspection (Intake Valve Timing Control Solenoid Valve)

INFOID:0000000012198545

# 1. CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-I

- 1. Turn ignition switch OFF.
- Disconnect intake valve timing control solenoid valve harness connector.
- 3. Check resistance between intake valve timing control solenoid valve terminals as per the following.

Terminals	Resistance	
1 and 2	7.0 - 7.7 Ω [at 20°C (68°F)]	
1 or 2 and ground	$\stackrel{\infty}{\Omega}$ (Continuity should not exist)	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning intake valve timing control solenoid valve. Refer to <a href="EM-248">EM-248</a>. "Exploded View".

## 2.CHECK INTAKE VALVE TIMING CONTROL SOLENOID VALVE-II

Remove intake valve timing control solenoid valve. Refer to <u>EM-248, "Exploded View"</u>.

### < DTC/CIRCUIT DIAGNOSIS >

## [MR EXCEPT FOR NISMO RS MODELS]

Provide 12 V DC between intake valve timing control solenoid valve terminals 1 and 2, and then interrupt it. Check that the plunger moves as shown in the figure.

#### CAUTION:

Never apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing control solenoid valve.

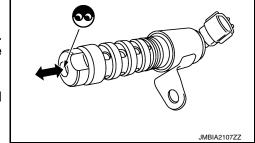
#### NOTE:

Always replace O-ring when intake valve timing control solenoid valve is removed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning intake valve timing control solenoid valve. Refer to EM-248, "Exploded View".



Component Inspection (Intake Valve Timing Intermediate Lock Control Solenoid Valve)

INFOID:0000000012198546

# 1.check intake valve timing intermediate lock control solenoid valve-i

- Turn ignition switch OFF.
- 2. Disconnect intake valve timing intermediate lock control solenoid valve harness connector.
- Check resistance between intake valve timing intermediate lock control solenoid valve terminals as per the following.

Terminals	Resistance	
1 and 2	7.0 - 7.7 Ω [at 20°C (68°F)]	
1 or 2 and ground	$\stackrel{\infty}{}_{\Omega}\Omega$ (Continuity should not exist)	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning intake valve timing intermediate lock control solenoid valve. Refer to EM-248. "Exploded View".

# 2.CHECK INTAKE VALVE TIMING INTERMEDIATE LOCK CONTROL SOLENOID VALVE-II

Remove intake valve timing intermediate lock control solenoid valve. Refer to EM-248, "Exploded View"

2. Provide 12 V DC between intake valve timing intermediate lock control solenoid valve terminals 1 and 2, and then interrupt it. Check that the plunger moves as shown in the figure.

#### **CAUTION:**

Never apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in intake valve timing intermediate lock control solenoid valve. NOTE:

Always replace O-ring when intake valve timing intermediate lock control solenoid valve is removed.

### Is the inspection result normal?

YFS >> INSPECTION END

NO >> Replace malfunctioning intake valve timing intermediate lock control solenoid valve. Refer to EM-248, "Exploded View".

## Component Inspection (Crankshaft Position sensor)

# 1.CHECK CRANKSHAFT POSITION SENSOR (POS)-1

- Turn ignition switch OFF.
- Loosen the fixing bolt of the sensor.
- 3. Disconnect crankshaft position sensor (POS) harness connector.
- Remove the sensor.

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INFOID:0000000012198547

## < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

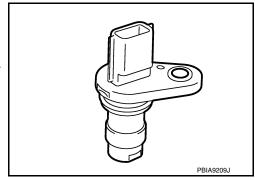
5. Visually check the sensor for chipping.

### Is the inspection result normal?

YES >> GO TO 2.

NO

>> Replace crankshaft position sensor (POS). Refer to EM-282, "Exploded View".



## 2. CHECK CRANKSHAFT POSITION SENSOR (POS)-2

Check the resistance between crankshaft position sensor (POS) terminals as per the following.

Crankshaft posit	ion sensor (POS)		
+		Resistance [at 25°C (77°F)]	
Terminal	(Polarity)		
1	2		
ı	3	Except 0 or $\infty \Omega$	
2	3		

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace crankshaft position sensor (POS). Refer to EM-282, "Exploded View".

## Component Inspection (Camshaft position sensor)

INFOID:0000000012198548

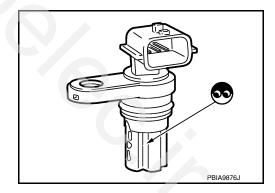
## 1. CHECK CAMSHAFT POSITION SENSOR (PHASE)-1

- 1. Turn ignition switch OFF.
- 2. Loosen the fixing bolt of the sensor.
- 3. Disconnect camshaft position sensor (PHASE) harness connector.
- 4. Remove the sensor.
- 5. Visually check the sensor for chipping.

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace camshaft position sensor (PHASE).



## 2. CHECK CAMSHAFT POSITION SENSOR (PHASE)-2

Check the resistance camshaft position sensor (PHASE) terminals as per the following.

Camshaft position	n sensor (PHASE)		
+ –		Resistance [Ω at 25°C (77°F)]	
Terminals	(Polarity)		
1	2		
1	3	Except 0 or ∞	
2	3		

Is the inspection result normal?

# P052A, P052B INTAKE VALVE TIMING CONTROL AGNOSIS > [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

YES >> INSPECTION END

NO >> Replace camshaft position sensor (PHASE). Refer to <a href="EM-260">EM-260</a>, "Exploded View".

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## P0603 ECM

DTC Logic INFOID:000000012198553

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0603	ECM BACK UP CIRCUIT [Internal control module keep alive memory (KAM) error]	<ul> <li>Malfunction in the internal back up RAM of ECM.</li> <li>Malfunction in the internal EEP-ROM system of ECM.</li> </ul>	ECM power supply     ECM

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Repeat step 1 and 2 for 10 times.
- Turn ignition switch ON.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1050, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198554

## 1. CHECK ECM POWER SUPPLY AND GROUND CIRCUIT

Perform trouble diagnosis for ECM power supply and ground circuit. Refer to <u>EC-792, "Diagnosis Procedure"</u>. <u>Is the inspection result normal?</u>

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Refer to GI-45, "Intermittent Incident"

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- 2. Erase DTC.
- 3. Perform DTC confirmation procedure. Refer to <a>EC-1050</a>, "DTC Logic".

### Is the 1st trip DTC P0603 displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

## **P0604 ECM**

#### [MR EXCEPT FOR NISMO RS MODELS]

## P0604 ECM

**DTC** Logic INFOID:0000000012198555

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0604	ECM [Internal control module random access memory (RAM) error]	Malfunction in the internal RAM of ECM.	ECM

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

Turn ignition switch ON (engine stopped) and wait least 20 minutes.

#### **CAUTION:**

Never start engine during this procedure.

- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1051, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to <a>EC-1051</a>, "DTC Logic"</a>.

### Is the 1st trip DTC P0604 displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

EC-1051 **Revision: November 2015 2016 JUKE**  EC

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## P0605 ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0605	ECM [Internal control module read only memory (ROM) error]	Malfunction in the internal ROM of ECM.	ECM

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON (engine stopped) and wait least 20 minutes.

#### **CAUTION:**

### Never start engine during this procedure.

- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1052, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198558

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Erase DTC.
- 3. Perform DTC confirmation procedure. Refer to EC-1052, "DTC Logic".

### Is the 1st trip DTC P0605 displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

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INFOID:0000000012198560

## P0606 ECM

DTC Logic

## DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0606	CONTROL MODULE (Control module processor)	Malfunction in ECM processor.	ECM

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

1. Turn ignition switch ON (engine stopped) and wait at least 10 seconds.

### **CAUTION:**

## Never start engine during this procedure.

- Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1053, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-II

- Start engine.
- 2. Rev up the engine quickly to approximately 3,000 rpm under unloaded condition and completely release the accelerator pedal.
- 3. Let the engine idle and wait at least 10 seconds.
- Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1053, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- Perform DTC confirmation procedure for 3 times. Refer to <u>EC-1053, "DTC Logic"</u>.

### Is the 1st trip DTC P0606 displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

Revision: November 2015 EC-1053 2016 JUKE

## P0607 ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0607	ECM (Control module performance)	ECM internal communication system is malfunctioning.	ECM

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON (engine stopped) and wait least 10 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-1054, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198562

## 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- Perform DTC confirmation procedure. Refer to <u>EC-1054, "DTC Logic"</u>

## Is the 1st trip DTC P0607 displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

## P060A ECM

### [MR EXCEPT FOR NISMO RS MODELS]

## P060A ECM

**DTC** Logic INFOID:0000000012198563

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P060A	CONTROL MODULE (Internal control module monitoring processor per- formance)	ECM internal monitoring processor is malfunctioning.	ECM

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- Start engine and wait at least 10 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- Repeat step 1 and 2 for 5 times.
- Turn ignition switch ON.
- 5. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1055, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC. 2.
- Perform DTC confirmation procedure. Refer to <u>EC-1055</u>, "<u>DTC Logic</u>".

## Is the 1st trip DTC P060A displayed again?

>> Replace ECM. Refer to EC-1256, "Removal and Installation". YES

>> INSPECTION END NO

EC-1055 **Revision: November 2015 2016 JUKE**  EC

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## P060B ECM

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P060B	CONTROL MODULE (Internal control module A/ D processing performance)	ECM internal analog/digital conversion processing system is malfunctioning.	ECM

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more with ignition switch ON.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON (engine stopped) and wait least 10 seconds.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-1056, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198566

## 1.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Erase DTC.
- Perform DTC confirmation procedure. Refer to <u>EC-1056</u>, "DTC Logic".

## Is the 1st trip DTC P060B displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

## **P0611 ECM PROTECTION**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P0611 ECM PROTECTION

Description INFOID:0000000012198567

This DTC is detected when the ECM protective function is activated due to an extreme temperature increase in ECM, resulting from severe conditions such as heavy load driving.

INFOID:0000000012198568

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# DTC DETECTION LOGIC

DTC Logic

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0611	FIC MODULE (ECM protection)	ECM overheat protection control is activated.	ECM overheated

## DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

This DTC is displayed as protection function history. If no malfunction is detected after the diagnosis, the customer must be informed of the activation of the protection function.

>> Proceed to EC-1057, "Diagnosis Procedure".

## Diagnosis Procedure

## 1. INSPECTION START

- 1. Perform DTC confirmation procedure. Refer to EC-1052, "DTC Logic".
- 2. Check 1st trip DTC.

### Is DTC P0605 detected?

YES >> Proceed to EC-1052, "Diagnosis Procedure"

NO >> Explain the customer about the activation of the protection function.

INFOID:0000000012198569

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## P062B ECM

Description INFOID:000000012198570

This DTC is detected when the ECM-integrated injector driver unit has a malfunction. For injector driver unit, refer to <a href="EC-606">EC-606</a>, <a href=""ECM"</a>.

DTC Logic (INFOID:000000012198571

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P062B	ECM (Internal control module fuel injector control performance)	Injector driver unit is malfunctioning.	Harness and connectors     (Injector circuit is open or shorted)     Battery power supply     ECM (injector driver unit)

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start the engine and keep the engine speed at idle for 30 seconds.
- 2. Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-1058, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198572

## 1. CHECK FUEL INJECTOR

Check fuel injector. Refer to EC-1204, "Component Function Check".

## Is inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure again. Refer to EC-1058, "DTC Logic".
- Check 1st trip DTC.

## Is the DTC P062B displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

## P062F CONTROL MODULE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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INFOID:0000000012198574

## P062F CONTROL MODULE

DTC Logic

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P062F	CONTROL MODULE (Internal control module EEPROM error)	ECM calculation is function malfunctioning.	• ECM	

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure is previously conducted, always turn ignition switch OFF and wait at least 30 seconds before conducting the next test.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 5 second.
- 2. Check the DTC.

## Is the DTC detected?

YES >> INSPECTION END

NO >> Proceed to EC-1059, "Diagnosis Procedure".

## Diagnosis Procedure

## 1.INSPECTION START

- Perform DTC Confirmation Procedure. Refer to EC-1058, "DTC Logic".
- 2. Erase DTC.

## Is DTC erased?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.REPLACE ECM

- Replace ECM. Refer to <u>EC-1256</u>, "Removal and Installation".
- 2. Perform EC-749, "Description".

>> INSPECTION END

Revision: November 2015 EC-1059 2016 JUKE

## P0643 SENSOR POWER SUPPLY

Description INFOID:000000012198575

ECM supplies a voltage of 5 V to some of the sensors systematically divided into 2 groups, respectively. Accordingly, when a short circuit develops in a sensor power source, a malfunction may occur simultaneously in the sensors belonging to the same group as the short-circuited sensor.

#### Sensor power supply 1

- · Crankshaft position sensor
- · Battery current sensor
- · EGR pressure sensor
- · Intake manifold runner control valve position sensor
- · Manifold absolute pressure sensor
- · EGR volume control valve
- · Electric wastegate position sensor
- Multi-way control valve position sensor
- Exhaust valve timing control position sensor
- Throttle position sensor
- Accelerator pedal position sensor 1

#### NOTE:

If sensor power supply 1 circuit is malfunctioning, DTC P0643 is displayed.

## Sensor power supply 2

- · Mass air flow sensor
- G sensor
- Refrigerant pressure sensor
- Fuel rail pressure sensor
- Engine oil pressure sensor
- · Turbocharger boost sensor
- · Camshaft position sensor
- Accelerator pedal position sensor 2

## DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P0643	SENSOR POWER/ CIRC (Sensor power supply 1 circuit short)	ECM detects a voltage of power source for sensor is excessively low or high.	Sensor power supply 1 circuit

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

## **P0643 SENSOR POWER SUPPLY**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is DTC detected?

YES >> Proceed to <u>EC-1061</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

## INFOID:0000000012198577

## 1. CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT-1

- 1. Turn ignition switch OFF.
- 2. Disconnect accelerator pedal position (APP) sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between APP sensor harness connector and ground.

	+	_	
APP	sensor		Voltage (Approx.)
Connector	Terminal		( 44)
E101	4	Ground	5 V

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT-2

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

+		-	-	
APP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	4	E19	146	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit.

## 3. CHECK SENSOR POWER SUPPLY 1 CIRCUIT

- 1. Disconnect following sensors harness connector.
- Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor			
Connector	Terminal	Name	Connector	Terminal	
E19	146	APP sensor 1	E101	4	
	30	Battery current sensor	F52	1	
	27	Crankshaft position sensor	F107	3	
	30	EGR pressure sensor	F46	1	
F23	30	Intake manifold runner control valve position sensor	F73	1	
	30	Manifold absolute pressure sensor	F76	1	
		EGR volume control valve	F74	3	
	61	Electric wastegate position sensor	F61	3	
	01	Multi-way control valve position sensor	F60	5	
F24	73	Exhaust valve timing control position sensor	F111	1	
	83	Throttle position sensor	F29	5	

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### P0643 SENSOR POWER SUPPLY

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair short to ground or short to power in harness or connectors.

## 4. CHECK COMPONENTS

### Check the following.

- APP sensor 1 (Refer to EC-1155, "Component Inspection".)
- Battery current sensor (Refer to EC-1026, "Component Inspection".)
- EGR pressure sensor (Refer to EC-1026, "Component Inspection".)
- Crankshaft position sensor (Refer to <u>EC-951, "Component Inspection"</u>.)
- Intake manifold runner control valve position sensor (Refer to <u>EC-1127</u>, "Component Inspection (Intake Manifold Runner Control Valve)".)
- Manifold absolute pressure sensor (Refer to <u>EC-845, "Component Inspection"</u>.)
- EGR volume control valve (Refer to EC-994, "Component Inspection (EGR Volume Control Valve)".)
- Electric wastegate position sensor (Refer to <u>EC-1169</u>, "Component Inspection (Electric Wastegate Control <u>Actuator</u>)".)
- Multi-way control valve position sensor (Refer to <u>EC-1183, "Component Inspection (Multi-way Control Valve)"</u>.)
- Exhaust valve timing control position sensor (Refer to <a>EC-958</a>, "Component Inspection"</a>.)
- Throttle position sensor (Refer to EC-1151, "Component Inspection".)

## Is the inspection result normal?

YES >> Perform GI-45, "Intermittent Incident".

NO >> Replace malfunctioning component.

## P06DA, P06DB ENGINE OIL PRESSURE CONTROL SOLENOID VALVE [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

P06DA, P06DB ENGINE OIL PRESSURE CONTROL SOLENOID VALVE DTC Logic

## DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P06DA	ENGINE OIL PRESSURE CONTROL (Engine oil pressure control cir- cuit/open)	ECM detects the following status continuously for 5 seconds or more: A voltage signal from engine oil pressure control solenoid valve is around 0V or more and less than normal operating voltage	Harness or connectors     (Engine oil pressure control solenoid valve circuit is open or shorted.)
P06DB	ENGINE OIL PRESSURE CONTROL (Engine oil pressure control cir- cuit low)	ECM detects the following status continuously for 5 seconds or more: A voltage signal from engine oil pressure control solenoid valve is around 0V	Engine oil pressure control solenoid valve

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start the engine.
- 2. Maintain engine speed at 4,500 rpm or more for at least 5 seconds.
- Check DTC.

## Is DTC detected?

YES >> Proceed to EC-1063, "Diagnosis Procedure".

>> INSPECTION END NO

## Diagnosis Procedure

## 1.check engine oil pressure control solenoid valve power supply

- Turn ignition switch OFF.
- 2. Disconnect engine oil pressure control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between engine oil pressure control solenoid valve harness connector and ground.

	+		
• .	sure control sole- valve	_	Voltage
Connector Terminal			
F45 1		Ground	Battery voltage

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2.CHECK ENGINE OIL PRESSURE CONTROL SOLENOID VALVE INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.

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## P06DA, P06DB ENGINE OIL PRESSURE CONTROL SOLENOID VALVE [MR EXCEPT FOR NISMO RS MODELS]

#### < DTC/CIRCUIT DIAGNOSIS >

Check the continuity between engine oil pressure control solenoid valve harness connector and ECM harness connector.

	+		_	
Engine oil pressure control solenoid valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F45	2	F24	98	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK ENGINE OIL PRESSURE CONTROL SOLENOID VALVE

Check the engine oil pressure control solenoid valve. Refer to EC-1064, "Component Inspection (Engine Oil Pressure Control Solenoid Valve)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace engine oil pressure control solenoid valve. Refer to EM-200, "Exploded View".

## Component Inspection (Engine Oil Pressure Control Solenoid Valve)

INFOID:0000000012198580

## 1. CHECK ENGINE OIL PRESSURE CONTROL SOLENOID VALVE-1

- Turn ignition switch OFF.
- Disconnect engine oil pressure control solenoid valve harness connector.
- Check resistance between engine oil pressure control solenoid valve terminals as follows.

Engine oil pressure control solenoid valve		Condition		Resistance
+ –				
Terr	ninal			
1	2			19.8 - 24.2 Ω
1	0 1	Temperature	20°C (68°F)	∞ Ω
2	Ground			(Continuity should not exist)

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace engine oil pressure control solenoid valve. Refer to EM-200, "Exploded View"

# 2.CHECK ENGINE OIL PRESSURE CONTROL SOLENOID VALVE-2

- Remove engine oil pressure control solenoid valve. Refer to EM-200, "Exploded View".
- Provide 12 V DC between engine oil pressure control solenoid valve terminals 1 and 2, and then interrupt it. Make sure that the plunger moves as shown in the figure.

## **CAUTION:**

Do not apply 12 V DC continuously for 5 seconds or more. Doing so may result in damage to the coil in engine oil pressure control solenoid valve. NOTE:

Always replace O-ring when engine oil pressure control solenoid valve is removed.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine oil pressure control solenoid valve. Refer to EM-200, "Exploded View".

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## P0850 PNP SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

## P0850 PNP SWITCH

Description INFOID:0000000012198581

For CVT models, transmission range switch is turn ON when the selector lever is P or N.

For M/T models, park/neutral position (PNP) range switch is ON when the selector lever is Neutral position. ECM detects the position because the continuity of the line (the ON) exists.

**DTC Logic** INFOID:0000000012198582

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P0850	P-N POS SW/CIRCUIT (Park/neutral position switch)	<ul> <li>For CVT models, the signal of transmission range switch is not changed in the process of engine starting and driving.</li> <li>For M/T models, the signal of the park/neutral position (PNP) switch is not changed in the process of engine starting and driving.</li> </ul>	Harness or connectors [The transmission range switch circuit is open or shorted.(CVT models)] [The park/neutral position (PNP) switch circuit is open or shorted.(M/T models)]     Transmission range switch (CVT models)     Park/neutral position (PNP) switch (M/T models)

#### DTC CONFIRMATION PROCEDURE

## 1. INSPECTION START

Do you have CONSULT?

Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 5.

## 2.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 3.

# 3.CHECK PNP SIGNAL FUNCTION

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "P/N POSI SW" in "DATA MONITOR" mode of "ENGINE" using CONSULT. Then check the "P/N POSI SW" signal as per the following conditions.

Selector lever position	Known-good signal
N or P position (CVT) Neutral position (M/T)	ON
Except above position	OFF

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Proceed to EC-1066, "Diagnosis Procedure".

- Start engine and warm it up to normal operating temperature.

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## f 4.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Select "DATA MONITOR" mode of "ENGINE" using CONSULT.

Maintain the following conditions for at least 60 consecutive seconds. CAUTION:

Always drive vehicle at a safe speed.

ENG SPEED	1,125 - 6,375 rpm (CVT) 1,820 - 6,375 rpm (M/T)
COOLAN TEMP/S	More than 70°C (158°F)
B/FUEL SCHDL	3.3 - 31.8 msec (CVT) 1.2 - 31.8 msec (M/T)
VHCL SPEED SE	More than 64 km/h (40 mph)
Selector lever	Suitable position

### Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1066, "Diagnosis Procedure".

NO >> INSPECTION END

## 5. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-1066, "Component Function Check".

#### NOTE:

Use component function check the overall function of the transmission range switch circuit (CVT models) or the park/neutral position (PNP) switch circuit (M/T models). During this check, a 1st trip DTC might not be confirmed.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1066, "Diagnosis Procedure".

## Component Function Check

INFOID:0000000012198583

## 1. PERFORM COMPONENT FUNCTION CHECK

- Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector and ground as per the following conditions.

	E	СМ				
Connector	+	Connector	-	Condition Voltage (Approx.)		
Connector	Terminal	Connector	Terminal			(
F24	103	E19	152	Selector lever P or N (CVT) Neutral (M/T)		0 V
					Except above	Battery voltage

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-1066</u>. "<u>Diagnosis Procedure</u>".

## Diagnosis Procedure

INFOID:0000000012198584

## 1.INSPECTION START

Check which type of transmission the vehicle is equipped with.

## Which type of transmission?

CVT >> GO TO 2.

M/T >> GO TO 6.

# 2.CHECK TRANSMISSION RANGE SWITCH POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect transmission range switch harness connector.
- Turn ignition switch ON.

## P0850 PNP SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

Check the voltage between transmission range switch harness connector and ground.

	+		
Transmission range switch		_	Voltage
Connector	Terminal		
F30	1	Ground	Battery voltage

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## Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 3.

# 3.check transmission range switch power supply circuit

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector. 2.
- Check the continuity between transmission range switch harness connector and IPDM E/R harness connector.

	+		_	
Transmission	range switch	IPDI	M E/R	Continuity
Connector	Terminal	Connector	Terminal	
F30	1	E15	58	Existed

Also check harness for short to ground.

### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## f 4.CHECK TRANSMISSION RANGE SWITCH SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between transmission range switch harness connector and ECM harness connector.

	+		_	
Transmission	range switch	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F30	2	F24	103	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## ${f 5.}$ CHECK TRANSMISSION RANGE SWITCH

Check the transmission range switch. Refer to TM-458, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace transmission range switch. Refer to TM-577, "Removal and Installation".

## O.CHECK PARK/NEUTRAL POSITION (PNP) SWITCH POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect PNP switch harness connector. 2.
- 3. Turn ignition switch ON.
- Check the voltage between PNP switch harness connector and ground.

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## P0850 PNP SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

+			
PNP switch		_	Voltage
Connector	Terminal		
F49	2	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Perform the trouble diagnosis for power supply circuit.

# 7.CHECK PNP SWITCH INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between PNP switch harness connector and ECM harness connector.

	+		_	
PNP	switch	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F49	3	F24	103	Existed

4. Also check harness for short to ground and to power.

## Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

## 8. CHECK PNP SWITCH

Check the PNP switch. Refer to TM-20, "PARK/NEUTRAL POSITION (PNP) SWITCH: Component Inspection".

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace PNP switch. Refer to TM-24, "Removal and Installation".

## P100C VALVE TIMING OFFSET DATA

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P100C VALVE TIMING OFFSET DATA

Description INFOID:0000000012198585

Valve timing offset data is measured per engine and written in ECM at the factory. ECM controls VTC according to the information written in ECM to correct the variation in valve timing which depends on engine. After ECM or engine assembly is replaced, the 2D code affixed to the VTC cover must be written in ECM. If valve timing offset data writing is not completed, ECM detects DTC.

DTC Logic INFOID:0000000012198586

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P100C	V/T OFFSET DATA NOT WRITTEN (Valve timing offset data not written)	ECM detects the initial value of valve timing offset data.	Valve timing offset data writing is not yet implemented.

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 5 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1069, "Diagnosis Procedure".

>> INSPECTION END NO

## Diagnosis Procedure

1. PERFORM VALVE TIMING OFFSET DATA WRITING

Perform "VALVE TIMING OFFSET DATA WRITING". Refer to EC-757. "Description".

>> INSPECTION END

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INFOID:0000000012198587

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## P1148 CLOSED LOOP CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P1148 CLOSED LOOP CONTROL

DTC Logic

## DTC DETECTION LOGIC

NOTE:

DTC P1148 is displayed with another DTC for A/F sensor 1. Perform the trouble diagnosis for the corresponding DTC.

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1148	CLOSED LOOP-B1 (Closed loop bank 1)	The closed loop control function for bank 1 does not operate even when vehicle is being driven in the specified condition.	<ul> <li>Harness or connectors (The A/F sensor 1 circuit is open or shorted.)</li> <li>A/F sensor 1</li> <li>A/F sensor 1 heater</li> </ul>

## P1197 OUT OF GAS

Description INFOID:0000000012198589

This diagnosis result is detected when the fuel level of the fuel tank is extremely low and the engine does not run normally.

INFOID:0000000012198590

## DTC DETECTION LOGIC

DTC Logic

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1197	FUEL RUN OUT (Out of gas)	<ul> <li>Fuel rail pressure remains at 1.1 MPa (11 bar, 11.2 kg/cm², 159.5 psi) or less for 5 seconds or more with the fuel level too low.</li> <li>Fuel rail pressure remains 2.7 MPa (27 bar, 27.5 kg/cm², 392 psi) lower than a target fuel pressure for 5 seconds or more with the fuel level too low.</li> </ul>	Out of gas Harness or connectors (Low pressure fuel pump circuit is open or shorted.) Low pressure fuel pump Fuel pressure regulator Low pressure fuel system Harness or connectors (High pressure fuel pump circuit is shorted.) High pressure fuel pump High pressure fuel system Fuel rail pressure sensor Disconnection of the fuel hose

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-I

Start the engine.

#### Does the engine start?

YES >> GO TO 3.

NO >> Proceed to EC-1071, "Diagnosis Procedure".

## 3.PERFORM DTC CONFIRMATION PROCEDURE-II

Warm up the engine to the normal operating temperature.

### NOTE:

For best results, warm up the engine until "COOLAN TEMP/S" on "DATA MONITOR" mode of "ENGINE" using CONSULT reaches at least 70°C (158°F).

- 2. Keep the engine speed at 3,500 rpm for 5 seconds and let it idle at least 60 seconds.
- 3. Check the 1st trip DTC.

#### NOTE:

If the fuel tank has sufficient fuel, this diagnosis result may not be detected.

### Is 1st trip DTC detected?

YFS >> Proceed to EC-1071, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

.REFUEL THE VEHICLE

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INFOID:0000000012198591

## P1197 OUT OF GAS

## < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

1. Refuel 10 liter (10 US qt, 8 imp qt).

#### **CAUTION:**

### Never refuel more than 10 liter.

2. Start the engine and keep the engine speed at 3,000 rpm for 30 seconds.

#### NOTE:

For best results, warm up the engine until "COOLAN TEMP/S" on "DATA MONITOR" mode of "ENGINE" using CONSULT reaches at least 70°C (158°F).

- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Turn ignition switch ON.
- 5. Turn ignition switch OFF and wait at least 10 seconds.
- 6. Turn ignition switch ON.
- 7. Erase the DTC.
- 8. Start the engine and let it idle at least 60 seconds.
- 9. Perform DTC confirmation procedure again. Refer to EC-1071, "DTC Logic".

#### Is 1st trip DTC detected?

YES >> GO TO 2.

NO >> INSPECTION END

# 2.CHECK LOW PRESSURE FUEL PUMP

## Refer to EC-1234, "Component Function Check".

### Is inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK HIGH PRESSURE FUEL PUMP

## Refer to EC-1212, "Component Function Check".

## Is inspection result normal?

YES >> Check the fuel hose for disconnection and looseness.

NO >> Repair or replace error-detected parts.

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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## P119A, P119B FUEL RAIL PRESSURE SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P119A	FUEL PRESSURE SENSOR (Fuel pressure sensor)	<ul> <li>All of the following conditions are satisfied:</li> <li>Battery voltage: 8 V or more</li> <li>Under engine start condition</li> <li>Engine coolant temperature at previous ignition switch OFF: 65°C (149°F) or more</li> <li>Engine coolant temperature: 35°C (65°F) or less</li> <li>Temperature difference between engine coolant and intake air: Less than 6°C (42°F)</li> <li>Fuel rail pressure: Less than 1.0 MPa (10.2 kg/cm², 145 psi) (calculated by ECM)</li> <li>Fuel system monitor: Excessively RICH</li> </ul>	Harness or connectors     (Fuel rail pressure sensor circuit is)
P119B	FUEL PRESSURE SENSOR (Fuel pressure sensor)	<ul> <li>All of the following conditions are satisfied:</li> <li>Battery voltage: 8 V or more</li> <li>Ignition switch: ON (engine stopped)</li> <li>Engine coolant temperature at previous ignition switch OFF: 65°C (149°F) or more</li> <li>Engine coolant temperature: 35°C (65°F) or less</li> <li>Temperature difference between engine coolant and intake air: Less than 6°C (42°F)</li> <li>Fuel rail pressure: More than 1.5 MPa (15.3 kg/cm², 217 psi) (calculated by ECM)</li> <li>Fuel system monitor: Excessively LEAN</li> </ul>	open or shorted.)  Fuel rail pressure sensor  Sensor power supply 2

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING-1

If DTC Confirmation Procedure is previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, check that battery voltage is 9 V or more with ignition switch ON.

>> GO TO 2.

## 2.PRECONDITIONING-2

#### NOTE:

- When it is certain that the previous driving is performed with the engine warmed up, the next steps can be performed.
- When it is difficult to satisfy the conditions, performing Component Function Check can identify the presence or absence of malfunction in the part/system that may result in a possible cause of this DTC. (Perform DTC Confirmation Procedure as much as possible.)
- 1. Start the engine and warm it up until engine coolant temperature reaches 70°C (158°F) or more.
- 2. Stop the engine and leave the vehicle in a cool place (soak the engine) until the engine coolant temperature reaches 35°C (95°F) or less.

## **CAUTION:**

- The difference between air temperature and engine coolant temperature must be 5°C (9°F) or less.
- Never turn ignition switch ON during soak the engine.

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## Are the conditions satisfied?

YES >> GO TO 4.

NO >> GO TO 3.

## 3.component function check

## **With CONSULT**

- Turn ignition switch OFF.
- Start the engine.
- 3. On CONSULT screen, select "DATA MONITOR" mode of "ENGINE".
- 4. Check the value of "FUEL PRES SEN V" under the following conditions.

Monitor Item	Condition	Values/Status
	Engine speed: Idle	1,140 – 1,460 mV
FUEL PRES SEN V	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

### Without CONSULT

- Turn ignition switch OFF.
- Start the engine.
- 3. Check fuel rail pressure sensor signal voltage.

	ECM		4	
Connector	+	-	Condition	Value (Approx.)
Connector Terminal		ninal		(, , , , , , , , , , , , , , , , , , ,
F7	2	3	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	1.14 – 1.46 V
Γ7	2	3	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Revving engine from idle to 4,000 rpm quickly</li></ul>	1.3 – 2.9 V

### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Proceed to <u>EC-1074</u>, "<u>Diagnosis Procedure</u>".

## 4. PERFORM DTC CONFIRMATION PROCEDURE-1

#### (II) With CONSULT

- 1. Turn ignition switch ON (engine stopped).
- 2. On CONSULT screen, select "ENGINE" >> "DATA MONITOR" >> "COOLAN TEMP/S" and "INT/A TEMP SE".
- Check that the indicated value of "COOLAN TEMP/S" is less than 35°C (95°F).
- Check that the difference between "INT/A TEMP SE" and "COOLAN TEMP/S" is 5°C (41°F) or less.
- 5. Check "Self-diagnostic result" of "ENGINE".

### Is the DTC detected?

YES >> Proceed to EC-1074, "Diagnosis Procedure".

NO-1 (Conditions satisfied)>>GO TO 5.

NO-2 (Conditions not satisfied)>>GO TO 2.

## ${f 5}$ .PERFORM DTC CONFIRMATION PROCEDURE-2

- Start the engine (or cranking) at least 1 second.
- Check "Self-diagnostic result" of "ENGINE".

#### Is the DTC detected?

- YES >> Proceed to EC-1074, "Diagnosis Procedure".
- NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident".

NO-2 >> Confirmation after repair: INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198593

#### NOTE:

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Turning the ignition switch ON with FRP sensor harness connector disconnected causes ECM to detect DTC P0190. Be sure to erase the DTC when the diagnosis procedure.

 ${f 1.}$ CHECK FUEL RAIL PRESSURE (FRP) SENSOR POWER SUPPLY-1

- Turn ignition switch OFF.
- 2. Disconnect FRP sensor connector.
- 3. Turn ignition switch ON.
- Check the voltage between FRP sensor harness connector terminals.

FRP sensor			
Connector	+	-	Voltage (Approx.)
Connector	tern	, , ,	
F7	1	3	5 V

### Inspection result normal?

YES >> GO TO 7.

NO >> GO TO 2.

## 2.CHECK FRP SENSOR POWER SUPPLY-2

Check the voltage between FRP sensor harness connector and the ground.

+			Vallara
FRP sensor		-	Voltage (Approx.)
Connector	Terminal		, , ,
F7	1	Ground	5 V

#### Is inspection result normal?

YES >> GO TO 5.

NO >> GO TO 3.

# 3.check sensor power supply circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check harness connector for short to power and short to ground, between the following terminals.

	+		_	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F7	1	F23	29	Existed

Also check harness for short to power and short to ground.

#### Is inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

## Perform EC-1240, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected part.

## ${f 5.}$ CHECK FRP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

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[MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

	+		_	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F7	3	F23	13	Existed

4. Also check harness for short to power.

## Is inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

# 6. CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and the ground.

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
	9			
F23	10			
	50			
F24	60	Ground	Existed	
F2 <del>4</del>	110	Ground		
	147			
E19	149			
	152			

### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 7.CHECK FRP SENSOR SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between FRP sensor harness connector and ECM harness connector.

	+	,	_	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F7	2	F23	25	Existed

4. Also check harness for short to ground and to power.

### Is inspection result normal?

YES >> Replace fuel rail pressure sensor. Refer to EM-208. "Exploded View".

NO >> Repair or replace error-detected parts.

## P119C FUEL RAIL PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P119C FUEL RAIL PRESSURE SENSOR

DTC Logic INFOID:0000000012198594

#### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause	С
P119C	FUEL PRESSURE SENSOR (Fuel pressure sensor)	All of the following conditions are satisfied:  Battery voltage: 8 V or more  Engine speed: 50 rpm or more  Engine coolant temperature: With a background of 65°C (149°F) or more during the trip  Remaining fuel amount: 15% or more  Fuel cut: No	Harness or connectors (Fuel rail pressure sensor circuit is open or shorted.) Fuel rail pressure sensor Sensor power supply 2	D E

#### DTC CONFIRMATION PROCEDURE

## 1. CHECK DTC PRIORITY

If DTC P119C is displayed with DTC P0190, first perform the confirmation procedure (trouble diagnosis) for DTC P0190.

### Is applicable DTC detected?

YES >> Perform diagnosis of applicable. Refer to <a>EC-919</a>, "DTC Logic"</a>.

NO >> GO TO 2.

## 2.PRECONDITIONING-1

If DTC Confirmation Procedure is previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

- Before performing the following procedure, check that battery voltage is 9 V or more with ignition switch ON.
- Remaining fuel amount must be 15% or more.

>> GO TO 3.

## 3.perform dtc confirmation procedure

- Start the engine and warm it up until the engine coolant temperature reaches 70°C (158°F) or more.
- Drive the vehicle and accelerate 3 consecutive seconds or more with the engine speed 1.500 rpm or 2.
- Check "Self-diagnostic result" of "ENGINE".

#### Is the DTC detected?

>> Proceed to EC-1077, "Diagnosis Procedure".

NO-1 >> To check malfunction symptom before repair: Refer to GI-45, "Intermittent Incident"

detect DTC P119C. Be sure to erase the DTC when the diagnosis procedure.

NO-2 >> Confirmation after repair: INSPECTION END

## Diagnosis Procedure

Turning the ignition switch ON with FRP sensor harness connector disconnected causes ECM to

# CHECK DTC PRIORITY

If DTC P119C is displayed with DTC P0190, first perform the confirmation procedure (trouble diagnosis) for DTC P0190.

#### Is applicable DTC detected?

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INFOID:0000000012198595

## P119C FUEL RAIL PRESSURE SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> Perform diagnosis of applicable. Refer to <u>EC-1077, "DTC Logic"</u>.

NO >> GO TO 2.

# 2.CHECK FUEL RAIL PRESSURE (FRP) SENSOR POWER SUPPLY-1

- Turn ignition switch OFF.
- 2. Disconnect FRP sensor connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between FRP sensor harness connector terminals.

Connector	+	_	Voltage (Approx.)
Connector	tern	, , ,	
F7	1	3	5 V

### Inspection result normal?

YES >> GO TO 8.

NO >> GO TO 3.

## 3. CHECK FRP SENSOR POWER SUPPLY-2

Check the voltage between FRP sensor harness connector and the ground.

+			Vallara
FRP sensor		-	Voltage (Approx.)
Connector Terminal			, , ,
F7	1	Ground	5 V

#### Is inspection result normal?

YES >> GO TO 6.

NO >> GO TO 4.

## 4. CHECK SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check harness connector for short to power and short to ground, between the following terminals.

	+		_	
FRP	sensor	E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F7	1	F23	29	Existed

4. Also check harness for short to power and short to ground.

#### Is inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

## Perform EC-1240, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected part.

## 6.CHECK FRP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

## P119C FUEL RAIL PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

+		_		
FRP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F7	3	F23	13	Existed

4. Also check harness for short to power.

### Is inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

## 7.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and the ground.

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
	9			
F23	10			
	50			
F24	60 Ground		Existed	
	110	Ground	Existed	
E19	147			
	149			
	152			

## Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 8. CHECK FRP SENSOR SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between FRP sensor harness connector and ECM harness connector.

+		-		
FRP	FRP sensor		CM	Continuity
Connector	Terminal	Connector	Terminal	
F7	2	F23	25	Existed

4. Also check harness for short to ground and to power.

### Is inspection result normal?

YES >> Replace fuel rail pressure sensor. Refer to EM-208, "Exploded View".

NO >> Repair or replace error-detected parts.

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## P1212 TCS COMMUNICATION LINE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

INFOID:0000000012198598

## P1212 TCS COMMUNICATION LINE

Description INFOID:000000012198596

This CAN communication line is used to control the smooth engine operation during the TCS operation. Pulse signals are exchanged between ECM and "ABS actuator and electric unit (control unit)".

Be sure to erase the malfunction information such as DTC not only for "ABS actuator and electric unit (control unit)" but also for ECM after TCS related repair.

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1212 is displayed with DTC U1001, first perform the trouble diagnosis for DTC U1001. Refer to <u>EC-798</u>, "<u>DTC Logic"</u>.
- If DTC P1212 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1054</u>, "<u>DTC Logic"</u>.

Freeze frame data is not stored in the ECM for this self-diagnosis.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P1212	TCS/CIRC (TCS communication line)	ECM can not receive the information from "ABS actuator and electric unit (control unit)" continuously.	Harness or connectors     (CAN communication line is open or shorted.)     ABS actuator and electric unit (control unit)     Dead (Weak) battery

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10.5V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 10 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1080, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

Perform the trouble diagnosis for TCS. Refer to <u>BRC-59</u>, "Work Flow".

If DTC P1212 is displayed with DTC UXXXX and/or P0607, perform the following trouble diagnosis.

- Trouble diagnosis for DTC UXXXX Refer to <u>EC-706</u>, "<u>DTC Index</u>".
- Trouble diagnosis for DTC P0607 Refer to <u>EC-1054</u>, "DTC Logic".

### P1217 ENGINE OVER TEMPERATURE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P1217 ENGINE OVER TEMPERATURE

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1217 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX.
- If DTC P1217 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1054</u>, "<u>DTC Logic"</u>.

If the cooling fan or another component in the cooling system malfunctions, engine coolant temperature will rise.

When the engine coolant temperature reaches an abnormally high temperature condition, a malfunction is indicated.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1217	ENG OVER TEMP [Engine over tempera- ture (Overheat)]	<ul> <li>Cooling fan does not operate properly (Overheat).</li> <li>Cooling fan system does not operate properly (Overheat).</li> <li>Engine coolant was not added to the system using the proper filling method.</li> <li>Engine coolant is not within the specified range.</li> </ul>	Harness or connectors     (Cooling fan circuit is open or shorted.)     IPDM E/R     Cooling fan control module     Cooling fan motor     Radiator hose     Radiator     Radiator cap     Reservoir tank     Water pump     Thermostat     Water control valve

#### **CAUTION:**

When a malfunction is indicated, be sure to replace the coolant. Refer to <u>CO-40, "Draining and Filling"</u>. Also, replace the engine oil. Refer to <u>CO-40, "Draining and Filling"</u>.

- 1. Fill radiator with coolant up to specified level with a filling speed of 2 liters per minute. Be sure to use coolant with the proper mixture ratio. Refer to MA-13, "Anti-Freeze Coolant Mixture Ratio".
- 2. After refilling coolant, run engine to ensure that no water-flow noise is emitted.

#### DTC CONFIRMATION PROCEDURE

# 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-1081, "Component Function Check".

#### NOTE

Use component function check to check the overall function of the cooling fan. During this check, a DTC might not be confirmed.

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-1082</u>, "<u>Diagnosis Procedure</u>".

## Component Function Check

1.PERFORM COMPONENT FUNCTION CHECK-I

## **WARNING:**

Never remove the radiator cap when the engine is hot. Serious burns could be caused by high pressure fluid escaping from the radiator.

Wrap a thick cloth around cap. Carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. Then turn the cap all the way off.

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INFOID:0000000012198600

## P1217 ENGINE OVER TEMPERATURE

## < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

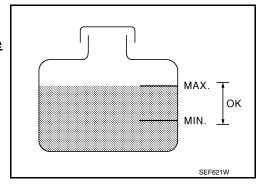
Check the coolant level in the reservoir tank and radiator.

Allow engine to cool before checking coolant level.

<u>Is the coolant level in the reservoir tank and/or radiator below the proper range?</u>

YES >> Proceed to EC-1082, "Diagnosis Procedure".

NO >> GO TO 2.



# 2. PERFORM COMPONENT FUNCTION CHECK-II

Confirm whether customer filled the coolant or not.

Did customer fill the coolant?

YES >> Proceed to EC-1082, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.perform component function check-iii

## (II) With CONSULT

- 1. Turn ignition switch ON.
- Perform "FAN DUTY CONTROL" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that cooling fan speed varies according to the percentage.

#### 

- 1. Activate IPDM E/R auto active test and check cooling fan motors operation. Refer to <a href="PCS-12">PCS-12</a>, "Diagnosis Description".
- 2. Check that cooling fan operates.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1082, "Diagnosis Procedure"

# Diagnosis Procedure

INFOID:0000000012198601

# 1. CHECK COOLING FAN OPERATION

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- 2. Perform "FAN DUTY CONTROL" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that cooling fan speed varies according to the percentage.

#### **®**Without CONSULT

- Activate IPDM E/R auto active test and check cooling fan motors operation. Refer to <u>PCS-12</u>, "<u>Diagnosis</u> <u>Description</u>".
- Check that cooling fan operates.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Proceed to EC-1196, "Diagnosis Procedure".

# 2. CHECK COOLING SYSTEM FOR LEAK-I

Check cooling system for leak. Refer to CO-40, "Inspection".

## Is leakage detected?

YES >> GO TO 3.

NO >> GO TO 4.

# 3.check cooling system for leak-ii

### Check the following for leak.

- Hose (Refer to <u>CO-40, "Inspection"</u>.)
- Radiator (Refer to <u>CO-49, "Inspection"</u>.)
- Water pump (Refer to CO-53, "Inspection".)

>> Repair or replace malfunctioning part.	
4.CHECK RADIATOR CAP	A
Check radiator cap. Refer to CO-45, "Radiator Cap Inspection".	
Is the inspection result normal?	EC
YES >> GO TO 5.  NO >> Replace radiator cap. Refer to <u>CO-46, "Exploded View"</u> .	
5.CHECK THERMOSTAT	C
Check thermostat.	
Is the inspection result normal?	D
YES >> GO TO 6. NO >> Replace thermostat.	
6. CHECK WATER CONTROL VALVE	
Check water control valve.	E
Is the inspection result normal?	
YES >> GO TO 7.	F
NO >> Replace water control valve.	
7. CHECK ENGINE COOLANT TEMPERATURE SENSOR	
Refer to EC-861, "Component Inspection (Engine Coolant Temperature Sensor 1)".	
Is the inspection result normal?  YES >> GO TO 8.	
NO >> Replace engine coolant temperature sensor.	-
8. OVERHEATING CAUSE ANALYSIS	
If the cause cannot be isolated, check the CO-38, "Diagnosis Chart by Symptom".	
>> INCRECTION FND	
>> INSPECTION END	J
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# P1225 TP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1225	CTP LEARNING-B1 [Closed throttle position learning performance]	Closed throttle position learning value is excessively low.	Electric throttle control actuator (TP sensor 1 and 2)

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1084, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198603

# 1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- 1. Turn ignition switch OFF.
- Remove the intake air duct. Refer to EM-192, "Exploded View".
- 3. Check if foreign matter is caught between the throttle valve and the housing.

### Is the inspection result normal?

YES >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to EC-754, "Description".

## P1226 TP SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P1226 TP SENSOR

DTC Logic INFOID:0000000012198604

## DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1226	CTP LEARNING-B1 (Closed throttle position learning performance)	Closed throttle position learning is not performed successfully, repeatedly.	Electric throttle control actuator (TP sensor 1 and 2)

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Turn ignition switch OFF, wait at least 10 seconds.
- Turn ignition switch ON.
- Repeat steps 2 and 3 for 32 times.
- Check 1st trip DTC.

#### Is 1st trip DTC detected?

>> Proceed to EC-1085, "Diagnosis Procedure". YES

NO >> INSPECTION END

# Diagnosis Procedure

# 1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Turn ignition switch OFF.
- Remove the intake air duct. Refer to EM-192, "Exploded View".
- Check if foreign matter is caught between the throttle valve and the housing.

## Is the inspection result normal?

YES >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

>> Remove the foreign matter and clean the electric throttle control actuator inside, then perform NO throttle valve closed position learning. Refer to EC-754, "Description".

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# P1423, P1424 COLD START CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

INFOID:0000000012198608

# P1423, P1424 COLD START CONTROL

Description INFOID.000000012198606

ECM controls fuel injection timing and fuel injection quantity when engine is started with the engine cold. This control promotes the activation of three way catalyst by heating the catalyst and reduces emissions.

DTC Logic

## DTC DETECTION LOGIC

#### NOTE:

If DTC P1423 or P1424 is displayed with other DTC, first perform the trouble diagnosis for other DTC.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1423	COLD START CONTROL (Cold start emission reduction strategy monitoring)	ECM does not control fuel injection timing properly when engine is started with the engine cold.	ECM
P1424	COLD START CONTROL (Cold start emission reduction strategy monitoring)	ECM does not control fuel injection quantity properly when engine is started with the engine cold.	LOW

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

## (P)WITH CONSULT

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check that "COOLAN TEMP/S".
- If it is between 5°C (41°F) and 40°C (104°F) go to the following steps.
- If it is below 5°C (41°F) warm engine up to more than 5°C (41°F) and retry from step 1.
- If it is above 40°C (104°F) cool engine down to less than 40°C (104°F) and retry from step 1.
- 5. Start engine and let it idle for 5 minutes.
- 6. Check 1st trip DTC.

#### **WITH GST**

Follow the procedure "With CONSULT" above.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1086, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# 1.INSPECTION START

- 1. Turn ignition switch ON.
- Erase DTC.
- Perform DTC confirmation procedure. Refer to <u>EC-1086, "DTC Logic"</u>.
- Check 1st trip DTC.

# P1423, P1424 COLD START CONTROL

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## Is the 1st trip DTC P1423 or P1424 displayed again?

>> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

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# P1451 PRESSURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P1451 is displayed with DTC P0452 or P0453, first perform the trouble diagnosis for DTC P0452 or P0453. Refer to <a href="EC-1005">EC-1005</a>, "DTC Logic" or <a href="EC-1008">EC-1008</a>, "DTC Logic".

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1451	TC/SC PRES-EVAP PRES (EVAP control system pressure sensor/turbocharger boost sen- sor correlation)	ECM detects a state that the pressure difference remains –13.0 kPa (–98 mmHg, –3.83 inHg) or less/13.5 kPa (102 mmHg, 3.99 inHg) or more for continuously for 5 seconds or more under the condition that the pressure of the EVAP control system pressure sensor and that of the turbocharger boost sensor are equal.	<ul> <li>EVAP control system pressure sensor</li> <li>Turbocharger boost sensor</li> <li>Clogging, crushing, or damage in hose or piping</li> </ul>

#### DTC CONFIRMATION PROCEDURE

#### NOTE:

Never refuel before and during the following procedure.

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.perform dtc confirmation procedure

- 1. Start engine and warm it up to normal operating temperature
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start the engine. Wait at least for 15 seconds after the start of idle running.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-1088, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198610

# 1. CHECK HOSE AND PIPING

- 1. Turn ignition switch OFF.
- Check the following.
- Blockage, crush, or damage in the hose and the piping of EVAP purge line between fuel tank and intake manifold.
- Blockage, crush, or damage in the hose and the piping of intake air passage between inlet air duct and intake manifold.

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts

# 2.CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

Check EVAP control system pressure sensor. Refer to <u>EC-1089</u>, "Component Inspection (<u>EVAP Control System Pressure Sensor</u>)".

### Is the inspection result normal?

## P1451 PRESSURE SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> GO TO 3.

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View".

## 3.CHECK TURBOCHARGER BOOST SENSOR

Check turbocharger boost sensor. Refer to EC-1089, "Component Inspection (Turbocharger Boost Sensor)". Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View".

# Component Inspection (EVAP Control System Pressure Sensor)

INFOID:0000000012198611

# 1. CHECK EVAP CONTROL SYSTEM PRESSURE SENSOR

- Turn ignition switch OFF.
- Remove EVAP control system pressure sensor with its harness connector connected from EVAP canister. Always replace O-ring with a new one.
- 3. Install a vacuum pump to EVAP control system pressure sensor.
- 4. Turn ignition switch ON and check output voltage between ECM harness connector and ground under the following conditions.

ECM			Condition		
Connector	+	-	Condition [Applied vacuum kPa (kg/cm <sup>2</sup> , psi)]	Voltage	
Connector	Terminal		[ .ppea raesa It a (iig.em , pei/j		
E19	121	148	Not applied	0.5 - 4.6 V	
L19	121   140		-26.7 (-0.272, -3.87)	2.1 to 2.5 V lower than above value	

#### **CAUTION:**

- · Always calibrate the vacuum pump gauge when using it.
- Do not apply below -93.3 kPa (-0.952 kg/cm<sup>2</sup>, -13.53 psi) or pressure over 101.3 kPa (1.033 kg/ cm<sup>2</sup>, 14.69 psi).

#### Is the inspection result normal?

>> INSPECTION END YES

NO >> Replace EVAP control system pressure sensor. Refer to FL-27, "2WD: Exploded View".

# Component Inspection (Turbocharger Boost Sensor)

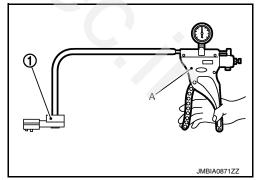
INFOID:0000000012198612

# 1. CHECK TURBOCHARGER BOOST SENSOR

- Turn ignition switch OFF.
- Remove turbocharger boost sensor with its harness connector.
- Install pressure pump (A) to turbocharger boost sensor (1). **CAUTION:**

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

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# **P1451 PRESSURE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

ECM			On all the Poster on (Delether to de	
Connector	+	_	Condition [Pressure (Relative to atmospheric pressure)]	Voltage (Approx.)
Connector	Terminal			( FF. 5)
F23	11	11 13	0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V
	11   13		40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to <a href="EM-242">EM-242</a>, "Exploded View".

# P1550 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P1550 BATTERY CURRENT SENSOR

DTC Logic INFOID:0000000012198613

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1550	BAT CURRENT SENSOR (Battery current sensor circuit range/performance)	The output voltage of the battery current sensor remains within the specified range while engine is running.	Harness or connectors     (Battery current sensor circuit is open or shorted.)     Battery current sensor     Camshaft position sensor     Camshaft (Intake)     Starter motor     Starting system circuit     Dead (Weak) battery     Sensor power supply 2 circuit

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and wait at least 10 seconds.
- Check 1st trip DTC.

# Is 1st trip DTC detected?

YES >> Proceed to EC-1091, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect battery current sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

	+		Voltage (Approx.)	
Battery cur	rent sensor	-		
Connector	Terminal			
F52	1	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

EC-1091 **Revision: November 2015 2016 JUKE**  EC

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## P1550 BATTERY CURRENT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check battery current sensor ground circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

+			_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F23	43	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

+				
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	4	F23	38	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

# CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-1092, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace battery negative cable assembly.

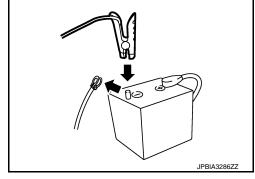
# Component Inspection

INFOID:00000000012198615

# 1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- Disconnect battery negative cable.
- 4. Install jumper cable between battery negative terminal and body ground.
- 5. Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

	ECM		V 11
Connector	+	-	Voltage (Approx.)
Connector	Ter	minal	( 11 - 7
F23	38	43	2.5 V*



<sup>\*:</sup> Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

# **P1550 BATTERY CURRENT SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

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[MR EXCEPT FOR NISMO RS MODELS]

# P1551, P1552 BATTERY CURRENT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1551	BAT CURRENT SENSOR (Battery current sensor circuit low input)	An excessively low voltage from the sensor is sent to ECM.	or shorted.)
P1552	BAT CURRENT SENSOR (Battery current sensor circuit high input)	An excessively high voltage from the sensor is sent to ECM.	Battery current sensor Camshaft position sensor Camshaft (Intake) Starter motor Starting system circuit Dead (Weak) battery Sensor power supply 2 circuit

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V with ignition switch ON

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 10 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-1094, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198617

# 1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between battery current sensor harness connector and ground.

	+		
Battery current sensor		-	Voltage (Approx.)
Connector	Terminal		, , ,
F52	1	Ground	5 V

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# $2.\mathsf{CHECK}$ SENSOR POWER SUPPLY 2 CIRCUIT

## P1551, P1552 BATTERY CURRENT SENSOR

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Perform EC-1240, "Diagnosis Procedure".

#### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check battery current sensor ground circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between battery current sensor harness connector and ECM harness connector.

	+		_	
Battery cui	rent sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F23	43	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# f 4.CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between battery current sensor harness connector and ECM harness connector.

	+		-	
Battery cur	rent sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	4	F23	38	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

### CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-1092, "Component Inspection".

#### Is the inspection result normal?

YFS >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

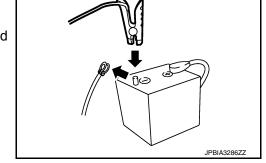
NO >> Replace battery negative cable assembly.

# Component Inspection

# 1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- Install jumper cable between battery negative terminal and body ground.
- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

	ECM		\ / II
Connector	+	-	Voltage (Approx.)
Connector	Ter	minal	(
F23	38	43	2.5 V*



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**2016 JUKE** 

# P1551, P1552 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

\*: Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

# P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P1553 BATTERY CURRENT SENSOR

DTC Logic INFOID:0000000012198619

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1553	BAT CURRENT SENSOR (Battery current sensor performance)	The signal voltage transmitted from the sensor to ECM is higher than the amount of the maximum power generation.	Harness or connectors     (Battery current sensor circuit is open or shorted.)     Battery current sensor     Camshaft position sensor     Camshaft (Intake)     Starter motor     Starting system circuit     Dead (Weak) battery     Sensor power supply 2 circuit

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and wait at least 10 seconds.
- Check 1st trip DTC.

# Is 1st trip DTC detected?

YES >> Proceed to EC-1097, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect battery current sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

	+		Voltage	
Battery current sensor		-	Voltage (Approx.)	
Connector	Terminal		<b>(11</b> /	
F52	1	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

EC-1097 **Revision: November 2015 2016 JUKE**  EC

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## P1553 BATTERY CURRENT SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check battery current sensor ground circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

	+		_	
Battery cur	rent sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F23	43	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

	+		-	
Battery cur	rent sensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	4	F23	38	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

# CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-1092, "Component Inspection".

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace battery negative cable assembly.

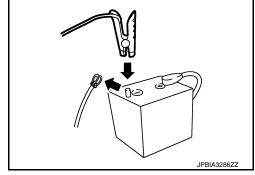
# Component Inspection

INFOID:0000000012198621

# 1. CHECK BATTERY CURRENT SENSOR

- Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- Disconnect battery negative cable.
- 4. Install jumper cable between battery negative terminal and body ground.
- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

	ECM		V 11
Connector	+	-	Voltage (Approx.)
Connector	Ter	minal	, ,
F23	38	43	2.5 V



<sup>\*:</sup> Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

# P1553 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

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## P1554 BATTERY CURRENT SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P1554 BATTERY CURRENT SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1554	BAT CURRENT SENSOR (Battery current sensor performance)	The output voltage of the battery current sensor is lower than the specified value while the battery voltage is high enough.	Harness or connectors     (Battery current sensor circuit is open or shorted.)     Battery current sensor     Camshaft position sensor     Camshaft (Intake)     Starter motor     Starting system circuit     Dead (Weak) battery     Sensor power supply 2 circuit

### DTC CONFIRMATION PROCEDURE

# 1. PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-1100, "Component Function Check".

#### NOTE:

Use component function check to check the overall function of the battery current sensor circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1101, "Diagnosis Procedure".

# Component Function Check

INFOID:0000000012198623

# 1.PRECONDITIONING

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 12.8 V at idle.
- Before performing the following procedure, confirm that all load switches and A/C switch are turned OFF.

>> GO TO 2.

# 2.PERFORM COMPONENT FUNCTION CHECK

#### (P)With CONSULT

- Start engine and let it idle.
- 2. Select "BAT CUR SEN" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "BAT CUR SEN" indication for 10 seconds.
- "BAT CUR SEN" should be above 2,300 mV at least once.

## **Without CONSULT**

- 1. Start engine and let it idle.
- 2. Check the voltage between ECM harness connector and ground.

	ECM			
Connector	+	-	Voltage	
Connector	Tern	ninal		
F23	38	43	Above 2.3 V at least once	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1101, "Diagnosis Procedure".

## P1554 BATTERY CURRENT SENSOR

## < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# Diagnosis Procedure

INFOID:0000000012198624

# 1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

	+			
Battery cur	rent sensor	-	Voltage (Approx.)	
Connector Terminal			( , , , , , , , , , , , , , , , , , , ,	
F52	1	Ground	5 V	

## Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

# 2.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between battery current sensor harness connector and ECM harness connector.

	+		_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F23	43	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# $oldsymbol{4}.$ CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between battery current sensor harness connector and ECM harness connector.

EC-1101

+			_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	4	F23	38	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

# 5. CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-1092, "Component Inspection".

#### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

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## P1554 BATTERY CURRENT SENSOR

## < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> Replace battery negative cable assembly.

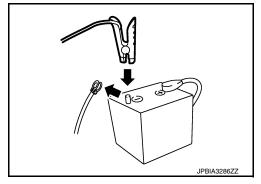
# Component Inspection

INFOID:0000000012198625

# 1. CHECK BATTERY CURRENT SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- 4. Install jumper cable between battery negative terminal and body ground.
- 5. Turn ignition switch ON.
- 6. Check the voltage between ECM harness connector and ground.

	ECM	V/ I/	
Connector	+	-	Voltage (Approx.)
Connector	Ter	minal	, ,
F23	38	43	2.5 V*



<sup>\*:</sup> Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

# P1556, P1557 BATTERY TEMPERATURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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# P1556, P1557 BATTERY TEMPERATURE SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1556	BAT TMP SEN/CIRC (Battery temperature sensor circuit low input)	Signal voltage from Battery temperature sensor remains 0.16V or less for 5 seconds or more.	Harness or connectors     [Battery current sensor (Battery temperature sensor) circuit is shorted.]
P1557	BAT TMP SEN/CIRC (Battery temperature sensor circuit high input)	Signal voltage from Battery temperature sensor remains 4.84V or more for 5 seconds or more.	Battery current sensor (Battery temperature sensor)

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 10 V or more at idle.

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start the engine and let it idle at least 10 seconds.
- Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-1103, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# 1. CHECK BATTERY TEMPERATURE SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between battery current sensor harness connector and ground.

	+		\ / I'	
Battery cur	rent sensor	_	Voltage (Approx.)	
Connector Terminal			( )	
F52	2	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK BATTERY TEMPERATURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

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# P1556, P1557 BATTERY TEMPERATURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

+		-	_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	2	F23	32	Existed

4. Also check harness for short to ground.

## Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# ${f 3}.$ CHECK BATTERY TEMPERATURE SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between battery current sensor harness connector and ECM harness connector.

+		-	_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F23	43	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

# 4. CHECK BATTERY TEMPERATURE SENSOR

Check the battery temperature sensor. Refer to EC-1104, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace battery negative cable assembly.

# Component Inspection

INFOID:0000000012198628

# 1. CHECK BATTERY TEMPERATURE SENSOR

- Turn ignition switch OFF.
- 2. Disconnect battery current sensor.
- Check the resistance between battery current sensor connector terminals.

Battery cur	rent sensor	
+	_	Resistance
Terminal		
2 3		Continuity with the resistance value 100 $\Omega$ or more

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

## P1564 ASCD STEERING SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P1564 ASCD STEERING SWITCH

**DTC Logic** INFOID:0000000012198629

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P1564 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-1052, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1564	ASCD SW (ASCD steering switch)	<ul> <li>An excessively high voltage signal from the ASCD steering switch is sent to ECM.</li> <li>ECM detects that input signal from the ASCD steering switch is out of the specified range.</li> <li>ECM detects that the ASCD steering switch is stuck ON.</li> </ul>	Harness or connectors     (ASCD steering switch circuit is open or shorted.)     ASCD steering switch     ECM

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### >> GO TO 2.

# 2.perform dtc confirmation procedure

- Turn ignition switch ON.
- 2. Wait at least 10 seconds.
- Press MAIN switch for at least 10 seconds, then release it and wait at least 10 seconds.
- Press CANCEL switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 5. Press ACCEL/RES switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 6. Press COAST/SET switch for at least 10 seconds, then release it and wait at least 10 seconds.
- 7. Check DTC.

## Is DTC detected?

YES >> Proceed to EC-1105, "Diagnosis Procedure".

>> INSPECTION END NO

## Diagnosis Procedure

# CHECK ASCD STEERING SWITCH CIRCUIT

### (P)With CONSULT

- Turn ignition switch ON.
- Select "CANCEL SW", "RESUME/ACC SW" and "SET SW" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check each item indication as per the following conditions.

Monitor item	Condition		Indication
MAIN SW	MAIN switch	Pressed	ON
		Released	OFF
CANCEL SW	CANCEL switch	Pressed	ON
CANGLE SW		Released	OFF
CANCEL SW	CANCEL switch		

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## P1564 ASCD STEERING SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Monitor item	Condition	Indication	
RESUME/ACC	ACCEL/RES switch	Pressed	ON
SW	ACCEL/RES SWILCTI		OFF
SET SW	COAST/SET switch	Pressed	ON
SLI SW	COAST/SET SWILLI	Released	OFF

#### 

- 1. Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals.

	ECM			
Connector + - Terminal		-	Condition	Voltage (Approx.)
		minal		(/ (pp. 6/)
			MAIN switch: Pressed	0 V
			CANCEL switch: Pressed	1 V
E19	134	135	COAST/SET switch: Pressed	2 V
		ACCEL/RES switch: Pressed	3 V	
			All ASCD steering switches: Released	4 V

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 2.

# 2.check ascd steering switch ground circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect combination switch (spiral cable) harness connector.
- 4. Check the continuity between combination switch (spiral cable) and ECM harness connector.

	+		_	
	tion switch cable)	ECM		Continuity
Connector	Terminal	Connector	Terminal	
M33	32	E19	135	Existed

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# ${f 3}.$ check ascd steering switch input signal circuit

1. Check the continuity between ECM harness connector and combination switch.

	+		_	
Combination switch (Spiral cable)		ECM		Continuity
Connector Terminal		Connector	Terminal	
M33	25	E19	134	Existed

2. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## P1564 ASCD STEERING SWITCH

## < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 4. CHECK ASCD STEERING SWITCH

Refer to EC-1107, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace ASCD steering switch. Refer to <a href="SR-12">SR-12</a>, "Exploded View".

# Component Inspection

#### INFOID:0000000012198631

# 1. CHECK ASCD STEERING SWITCH

1. Disconnect combination switch (spiral cable) harness connector.

Check the resistance between combination switch harness connector terminals as per the following conditions.

Connector + -				Resistance (Approx.)
		-	Condition	
Connector	Connector Terminals			
			MAIN switch: Pressed	0 Ω
			CANCEL switch: Pressed	250 Ω
M302	13	16	COAST/SET switch: Pressed	660 Ω
			ACCEL/RES switch: Pressed	1,480 Ω
			All ASCD steering switches: Released	4,000 Ω

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace ASCD steering switch. Refer to <u>SR-12</u>, "Exploded View".

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DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1572 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to <u>EC-1052</u>, "<u>DTC Logic"</u>.
- This self-diagnosis has the one trip detection logic. When malfunction A is detected, DTC is not stored in ECM memory. And in that case, 1st trip DTC and 1st trip freeze frame data are displayed. 1st trip DTC is erased when ignition switch OFF. And even when malfunction A is detected in two consecutive trips, DTC is not stored in ECM memory.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition		Possible cause
	ASCD BRAKE SW	A)	When the vehicle speed is above 30 km/h (19 MPH), ON signals from the stop lamp switch and the brake pedal position switch are sent to the ECM at the same time.	Harness or connectors     (Stop lamp switch circuit is shorted.)     (Brake pedal position switch circuit is shorted.)     Stop lamp switch
P1572 (ASCD brake switch)	B)	Brake pedal position switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Brake pedal position switch Incorrect stop lamp switch installation Incorrect brake pedal position switch installation ECM	

## DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### NOTE:

Procedure for malfunction B is not described here. It takes extremely long time to complete procedure for malfunction B. By performing procedure for malfunction A, the incident that causes malfunction B can be detected.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION A

- 1. Start engine.
- Press MAIN switch and make sure that CRUISE indicator is displayed in combination meter.
- 3. Drive the vehicle for at least 5 consecutive seconds as per the following conditions.

#### **CAUTION:**

Always drive vehicle at a safe speed.

#### NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
Selector lever	Suitable position

## 4. Check DTC.

#### Is DTC detected?

YES >> Proceed to <u>EC-1113</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 3.

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# $\overline{3}$ .PERFORM DTC CONFIRMATION PROCEDURE FOR MALFUNCTION B

Drive the vehicle for at least 5 consecutive seconds as per the following conditions. **CAUTION:** 

Always drive vehicle at a safe speed.

NOTE:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Vehicle speed	More than 30 km/h (19 mph)
<u> </u>	( , , ,
Selector lever	Suitable position
Driving location	Depress the brake pedal for more than five seconds so as not to come off from the above-mentioned vehicle speed.

Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-1113, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# 1.CHECK OVERALL FUNCTION-I

(P)With CONSULT

- 1. Turn ignition switch ON.
- Select "BRAKE SW1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check "BRAKE SW1" indication as per the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake pedal	Slightly depressed	OFF
BIVARL SWI	brake pedar	Fully released	ON

#### 

- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals as per the following.

ECM					Mallana
Connector	+	_	Condition		Voltage (Approx.)
Connector	Terr	ninal			(11 )
E19	140	152	Brake nedal	Slightly depressed	0 V
L19	140	132	Brake pedal	Fully released	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

# 2.CHECK OVERALL FUNCTION-II

(P)With CONSULT

Select "BRAKE SW2" and check indication as per the following conditions.

Monitor item	C	Indication	
BRAKE SW2	Brake pedal	Slightly depressed	ON
DIVARL OWZ	вгаке редаг	Fully released	OFF

Check the voltage between ECM harness connector terminals as per the following conditions.

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#### < DTC/CIRCUIT DIAGNOSIS >

	ECM		Condition				
Connector	+	_					Voltage (Approx.)
Connector	Tern	ninal			( ) )		
E19	139	152	Brake pedal	Slightly depressed	Battery voltage		
LIJ	133	102	brake pedar	Fully released	0 V		

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 6.

# 3.check brake pedal position switch power supply

- Turn ignition switch OFF.
- 2. Disconnect brake pedal position switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between brake pedal position switch harness connector and ground.

+			
Brake pedal p	osition switch	_	Voltage
Connector	Terminal		
E112	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform the trouble diagnosis for power supply circuit.

# 4. CHECK BRAKE PEDAL POSITION SWITCH INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between brake pedal position switch harness connector and ECM harness connector

+		-		
Brake pedal position switch		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E112	2	E19	140	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

# 5. CHECK BRAKE PEDAL POSITION SWITCH

Check the brake pedal position switch. Refer to <u>EC-1111</u>, "Component Inspection (Brake Pedal Position Switch)".

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace brake pedal position switch. Refer to <u>BR-20</u>, "Exploded View".

# **6.**CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the voltage between stop lamp switch harness connector and ground.

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### < DTC/CIRCUIT DIAGNOSIS >

-	-		
Stop lamp switch		_	Voltage
Connector	Terminal		
E102 <sup>*1</sup> E118 <sup>*2</sup>	1	Ground	Battery voltage

\*1: CVT models

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Perform the trouble diagnosis for power supply circuit.

# 7.CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT

- Disconnect ECM harness connector.
- Check the continuity between stop lamp switch harness connector and ECM harness connector.

+		-		
Stop lamp switch		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E102 <sup>*1</sup> E118 <sup>*2</sup>	2	E19	139	Existed

\*1: CVT models

3. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

# 8.CHECK STOP LAMP SWITCH

Check the stop lamp switch. Refer to EC-1112, "Component Inspection (Stop Lamp Switch)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace stop lamp switch. Refer to <u>BR-20, "Exploded View"</u>.

# Component Inspection (Brake Pedal Position Switch)

# 1. CHECK BRAKE PEDAL POSITION SWITCH-I

- Turn ignition switch OFF.
- Disconnect brake pedal position harness connector.
- 3. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal position switch				
+	-	Condition		Continuity
Term	ninals			
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2. CHECK BRAKE PEDAL POSITION SWITCH-II

<sup>\*2:</sup> M/T models

<sup>\*2:</sup> M/T models

## < DTC/CIRCUIT DIAGNOSIS >

## [MR EXCEPT FOR NISMO RS MODELS]

- Adjust brake pedal position switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal p	Brake pedal position switch			
+	-	Condition		Continuity
Tern	ninals			
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace brake pedal position switch. Refer to <u>BR-20</u>, "Exploded View".

# Component Inspection (Stop Lamp Switch)

INFOID:0000000012198635

# 1. CHECK STOP LAMP SWITCH-I

- Turn ignition switch OFF.
- 2. Disconnect stop lamp switch harness connector.
- 3. Check the continuity between stop lamp switch terminals as per the following conditions.

Stop lamp switch				
+	-	Condition		Continuity
Tern	ninals			
			Fully released	Not existed
1	2	Brake pedal	Slightly de- pressed	Existed

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.CHECK STOP LAMP SWITCH-II

- 1. Adjust stop lamp switch installation. Refer to BR-9, "Inspection and Adjustment".
- 2. Check the continuity between stop lamp switch terminals as per the following conditions.

Stop lamp switch				
+	-	Condition		Continuity
Tern	ninals			
			Fully released	Not existed
1	2	Brake pedal	Slightly de- pressed	Existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to <a href="mailto:BR-20">BR-20</a>, "Exploded View".

## P1574 ASCD VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# P1574 ASCD VEHICLE SPEED SENSOR

Description INFOID:0000000012198636

The ECM receives two vehicle speed sensor signals via CAN communication line. One is sent from combination meter, and the other is from TCM (Transmission control module). The ECM uses these signals for ASCD control. Refer to EC-653, "AUTOMATIC SPEED CONTROL DEVICE (ASCD): System Description" for ASCD functions.

DTC Logic INFOID:0000000012198637

### DTC DETECTION LOGIC

#### NOTE:

- If DTC P1574 is displayed with DTC U1001, first perform the trouble diagnosis for DTC U1001. Refer to EC-798. "DTC Logic".
- If DTC P1574 is displayed with DTC P0500, first perform the trouble diagnosis for DTC P0500. Refer to EC-1027, "EXCEPT FOR M/T MODELS: DTC Logic"
- If DTC P1574 is displayed with DTC P0605, first perform the trouble diagnosis for DTC P0605. Refer to EC-1052, "DTC Logic"
- If DTC P1574 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to EC-1054, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P1574	ASCD VHL SPD SEN (ASCD vehicle speed sensor)	ECM detects a difference between two vehicle speed signals is out of the specified range.	<ul> <li>Harness or connectors (CAN communication line is open or shorted.)</li> <li>ABS actuator and electric unit (control unit)</li> <li>TCM</li> <li>ECM</li> </ul>

## DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine.
- Drive the vehicle at more than 40 km/h (25 MPH).

#### **CAUTION:**

Always drive vehicle at a safe speed.

NOTÉ:

This procedure may be conducted with the drive wheels lifted in the shop or by driving the vehicle. If a road test is expected to be easier, it is unnecessary to lift the vehicle.

Check DTC.

## Is DTC detected?

>> Proceed to EC-1113, "Diagnosis Procedure". YES

>> INSPECTION END

# Diagnosis Procedure

1. CHECK DTC WITH TCM

Check DTC with TCM. Refer to TM-397, "CONSULT Function".

EC-1113 **Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198638

## P1574 ASCD VEHICLE SPEED SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is DTC detected?

NO >> GO TO 2.

YES >> Perform trouble shooting relevant to DTC indicated.

 $2.\mathsf{CHECK}\ \mathsf{DTC}\ \mathsf{WITH}\ \mathsf{``ABS}\ \mathsf{ACTUATOR}\ \mathsf{AND}\ \mathsf{ELECTRIC}\ \mathsf{UNIT}\ (\mathsf{CONTROL}\ \mathsf{UNIT})"$ 

Check DTC with ABS actuator and electric unit (control unit). Refer to <u>BRC-39</u>, "CONSULT Function". Is DTC detected?

NO >> INSPECTION END

YES >> Perform trouble shooting relevant to DTC indicated.

# **P158A G SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

# [MR EXCEPT FOR NISMO RS MODELS]

# P158A G SENSOR

DTC Logic

DTC Lo	gic		INFOID:0000000012198639			
				EC		
DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause*			
P158A	G SENSOR (G sensor calibration is incomplete)	ECM detects a state that calibration of the G sensor is incomplete.	G sensor calibration is incomplete	С		
4		calibration is incomplete, there is not replaceme	ent parts.	D		
1.PREC	ONDITIONING					
before co 1. Turn	If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.  1. Turn ignition switch OFF and wait at least 10 seconds.  2. Turn ignition switch ON.					
3. Turn	ignition switch OFF and wai	t at least 10 seconds.		F		
>	>> GO TO 2.					
2.PERF	ORM DTC CONFIRMATION	I PROCEDURE		G		
2. Chec	2. Check DTC.					
	Is DTC detected?					
YES >	>> Proceed to <u>EC-1115, "Dia</u> >> INSPECTION END	agnosis Procedure".				
Diagnosis Procedure						
1.PERF	1. PERFORM CALIBRATION OF G SENSOR					

Perform calibration of G sensor. Refer to EC-763, "Description".

>> INSPECTION END

Revision: November 2015 EC-1115 2016 JUKE

# P159B G SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P159B	G SENSOR (G sensor circuit range/perfor- mance)	Every time when the vehicle is stopped, ECM detects the following status 13 times in a row: A voltage signal transmitted from the G sensor is less than 2.275V or more than 2.725 V continuously for 5 seconds or more.	Harness or connectors (G sensor circuit is open or shorted.) (Intake air temperature sensor 2 circuit is open or shorted.) G sensor Sensor power supply 2

### DTC CONFIRMATION PROCEDURE

# 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine.
- 2. Drive the vehicle for at least 5 seconds at 35 km/h (22 MPH) or more.
- 3. Stop the vehicle and let it idle for at least 5 seconds.

#### NOTE:

- Depress the brake pedal to bring the vehicle to a full stop.
- Never depress the accelerator pedal while the vehicle is stopped.
- 4. Repeat Step 2 and Step 3 thirteen times.
- 5. Check 1st trip DTC.

#### Is 1st trip DTC detected?

YES >> Proceed to EC-1116, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012198642

# 1. PERFORM CALIBRATION OF G SENSOR

Perform calibration of G sensor. Refer to EC-763, "Description".

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC Confirmation Procedure. Refer to EC-1116, "DTC Logic".

#### Is 1st trip DTC detected?

YES >> GO TO 3.

NO >> INSPECTION END

# 3.check g sensor fitting condition

Check G sensor fitting condition.

## Is the inspection result normal?

YES >> GO TO 4.

### P159B G SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

NO >> 1. Adjust parts fitting condition.

Perform calibration of G sensor. Refer to EC-763, "Description".

### 4.CHECK G SENSOR POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF.
- 2. Disconnect G sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between G sensor harness connector terminals.

	G sensor			
Connector	+	_	Voltage (Approx.)	
Connector	Terminal			
B32	3	2	5 V	

### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 7.

## 5. CHECK G SENSOR SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between G sensor harness connector and ECM harness connector.

G sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
B32	1	F23	34	Existed

Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### **6.**CHECK G SENSOR

Check G sensor. Refer to EC-1118, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> 1. Replace G sensor.

Perform calibration of G sensor. Refer to EC-763, "Description".

## 7.CHECK G SENSOR POWER SUPPLY CIRCUIT-II

Check the voltage between G sensor harness connector terminal and ground.

+ G sensor		_	Voltage (Approx.)	
Connector	Terminal		(, , , , , , , , , , , , , , , , , , ,	
B32	3	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 10.

### 8.CHECK G SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between G sensor harness connector and ECM harness connector.

EC-1117 **Revision: November 2015 2016 JUKE**  EC

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G se	ensor	ECM		Continuity
Connector	Terminal	Connector Terminal		Continuity
B32	2	F23	13	Existed

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

## 9.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

ECM		- Ground	Continuity	
Connector	Connector Terminal		Continuity	
	9		Existed	
F23	10			
	50			
F24	60	Ground		
Γ2 <del>4</del>	110	Ground		
	147			
E19	149			
	152			

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 10. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection

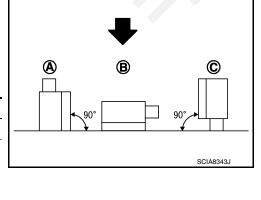
INFOID:0000000012198643

## 1. CHECK G SENSOR

### (II) With CONSULT

- Remove G sensor.
- Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- Turn ignition switch ON.
- Select "G SENSOR" in "DATA MONITOR" mode of "ENGINE" using CONSULT to check indications according to the following conditions:
  - : Direction of gravitational force

Monitor item	Condition	Value (V)
G SENSOR	Parallel with the table (0G) (B)	2.18 – 2.82
	Vertical to the table (–1G) (A) ↓	0.85 – 1.49* ↓
o oznoon	Parallel with the table (0G) (B) ↓	2.18 – 2.82* ↓
	Vertical to the table (1G) (C)	3.51 – 4.15*



<sup>\*:</sup> Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

### **P159B G SENSOR**

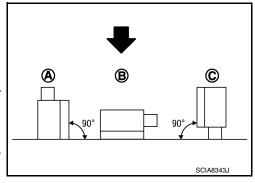
### [MR EXCEPT FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

### **⋈**Without CONSULT

- 1. Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminal and ground.
  - : Direction of gravitational force

	+ ECM		Condition	Voltage (V)
Connector	Terminal			
			Parallel with the table (0G) (B)	2.18 – 2.82
F23	34	Ground	Vertical to the table (-1G)  (A)  ↓  Parallel with the table  (0G) (B)  ↓  Vertical to the table (1G)  (C)	0.85 - 1.49* ↓ 2.18 - 2.82* ↓ 3.51 - 4.15*



\*: Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace G sensor.

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## P159C, P159D G SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis (Trouble diagnosis content)	DTC detecting condition	Possible cause
P159A	G SENSOR (G sensor circuit)	When ECM detects the following status: A voltage signal transmitted from the G sensor is less than 0.5 V or more than 5.02 V continuously for 5 seconds or more.	
P159C	G SENSOR (G sensor circuit low input)	When ECM detects the following status: A voltage signal transmitted from the G sensor is less than 0.5 V continuously for 5 seconds or more.	<ul> <li>Harness or connectors (G sensor circuit is open or shorted.)</li> <li>G sensor</li> <li>Sensor power supply 2 circuit</li> </ul>
P159D	G SENSOR (G sensor circuit high input)	When ECM detects the following status: A voltage signal transmitted from the G sensor is more than 4.5 V continuously for 5 seconds or more.	

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for at least 5 seconds.
- 2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1120, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198645

## 1. CHECK G SENSOR POWER SUPPLY CIRCUIT-I

- 1. Turn ignition switch OFF.
- 2. Disconnect G sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between G sensor harness connector terminals.

Connector	+	_	Voltage (Approx.)
Connector	( 1-1 )		
B32	3	2	5 V

### Is the inspection result normal?

YES >> GO TO 2. NO >> GO TO 4.

### P159C, P159D G SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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# 2.check g sensor signal circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between G sensor harness connector and ECM harness connector.

	+	_		
G se	ensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B32	1	F23	34	Existed

4. Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK G SENSOR

Check G sensor. Refer to EC-1122, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> 1. Replace G sensor.

2. Perform calibration of G sensor. Refer to EC-763, "Description".

### 4. CHECK G SENSOR POWER SUPPLY CIRCUIT-II

Check the voltage between G sensor harness connector terminal and ground.

+			
G sensor		-	Voltage (Approx.)
Connector	Terminal		( PP
B32	3	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 7.

## 5. CHECK G SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between G sensor harness connector and ECM harness connector.

-					
	+				
	G se	ensor	ECM		Continuity
-	Connector	Terminal	Connector	Terminal	
Ī	B32	3	F23	29	Existed

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity	
Connector	Terminal	Ground	Continuity	
	9			
F23	10			
	50		Existed	
F24	60	Ground		
Γ2 <del>4</del>	110	Ground		
	147			
E19	149			
	152			

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <a href="GI-45">GI-45</a>, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 7. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection

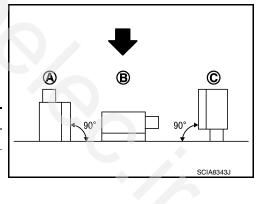
INFOID:0000000012198646

## 1. CHECK G SENSOR

### **With CONSULT**

- 1. Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.
- Select "G SENSOR" in "DATA MONITOR" mode of "ENGINE" using CONSULT to check indications according to the following conditions:
  - : Direction of gravitational force

Monitor item	Condition	Value (V)
	Parallel with the table (0G) (B)	2.18 – 2.82
G SENSOR	Vertical to the table (−1G) (A) ↓ Parallel with the table (0G) (B)	0.85 – 1.49* ↓ 2.18 – 2.82*
	↓ Vertical to the table (1G) (C)	↓ 3.51 – 4.15*



<sup>\*:</sup> Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

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- Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.

## P159C, P159D G SENSOR

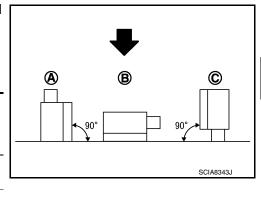
### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

5. Check the voltage between ECM harness connector terminal and ground.

: Direction of gravitational force

	+ CM	_	Condition	Voltage (V)
Connector	Terminal			
			Parallel with the table (0G) (B)	2.18 – 2.82
F23	34	Ground	Vertical to the table (-1G)  (A)  ↓  Parallel with the table  (0G) (B)  ↓  Vertical to the table (1G)  (C)	0.85 - 1.49* ↓ 2.18 - 2.82* ↓ 3.51 - 4.15*



\*: Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace G sensor.

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### P1805 BRAKE SWITCH

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P1805	BRAKE SW/CIRCUIT (Brake switch)	A stop lamp switch signal is not sent to ECM for extremely long time while the vehicle is driving.	Harness or connectors     (Stop lamp switch circuit is open or shorted.)     Stop lamp switch

### DTC CONFIRMATION PROCEDURE

## 1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Fully depress the brake pedal for at least 5 seconds.
- Erase the DTC.
- 4. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1124, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198648

## 1. CHECK STOP LAMP SWITCH POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect stop lamp switch harness connector.
- 3. Check the voltage between stop lamp switch harness connector and ground.

-	-		
Stop lamp switch		_	Voltage
Connector	Terminal		
E102 <sup>*1</sup> E118 <sup>*2</sup>	1	Ground	Battery voltage

<sup>\*1:</sup> CVT models

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2.CHECK STOP LAMP SWITCH INPUT SIGNAL CIRCUIT

- Disconnect ECM harness connector.
- 2. Check the continuity between stop lamp switch harness connector and ECM harness connector.

+		-	-	
Stop lamp switch		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E102 <sup>*1</sup> E118 <sup>*2</sup>	2	E19	139	Existed

<sup>\*1:</sup> CVT models

<sup>\*2:</sup> M/T models

<sup>\*2:</sup> M/T models

<sup>3.</sup> Also check harness for short to ground and to power.

## P1805 BRAKE SWITCH

< DTC/CIRCU	IT DIAGNOSIS	S >		[MR EXCEPT	FOR NISMO RS MODELS]	
Is the inspectio	n result normal	?				
	) TO 3.					Α
_	pair or replace	·	parts.			
3.CHECK STO	OP LAMP SWIT	CH				EC
•	•		<u>5, "Component I</u>	nspection (Stop La	mp Switch)".	
Is the inspectio						
			r to <u>GI-45, "Inter</u> to <u>BR-20, "Explo</u>	mittent Incident". oded View".		С
Component	Inspection (	Stop Lamp	Switch)		INFOID:000000012198649	
1.CHECK STO	OP LAMP SWIT	CH-I				D
1. Turn ignition	n switch OFF.					_
	t stop lamp swit			as per the followin	a conditions	Е
3. Check the	continuity between	een stop lamp :	switch terminals	as per the followin	g conditions.	
Stop lan	np switch					F
+	-	Cor	ndition	Continuity		
-	l ninals	00.		o o		
			Fully released	Not existed		G
1	2	Brake pedal	Slightly de- pressed	Existed		Н
Is the inspectio	n result normal	?				- 11
•	SPECTION EN	_				
_	) TO 2.					
2.CHECK STO	OP LAMP SWIT	CH-II				
				ection and Adjustm		J
2. Check the	continuity between	een stop lamp s	switch terminals	as per the followin	g conditions.	
Ston lan	np switch					
+		Cor	ndition	Continuity		K
Tern	l ninals			o o manage		
			Fully released	Not existed		L
1	2	Brake pedal	Slightly de-			
			pressed	Existed		
Is the inspectio	n result normal	?		_		M
	SPECTION EN		ta DD 00 "Eval	adad Marril		
NO >> Re	place stop lamp	switch. Refer	to BR-20, "Explo	oded view .		Ν
						0

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### P2004 INTAKE MANIFOLD RUNNER CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P2004 INTAKE MANIFOLD RUNNER CONTROL VALVE

DTC Logic

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2004	TUMBLE CONT/V (Intake manifold runner control stuck open bank 1)	The target angle of intake manifold runner control valve controlled by ECM and the input signal from intake manifold runner control valve position sensor is not in the normal range.	Harness or connectors     (Intake manifold runner control valve circuit is open or shorted.)     Intake manifold runner control valve     Intake manifold runner control valve is stuck

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

#### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.
- Always perform the test at a temperature above –12°C (10°F)

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode using CONSULT.
- Make sure that "COOLANT TEMP/S" indicates 5°C (41°F) or more.
   If not, cool engine down or warm engine up until "COOLANT TEMP/S" indicates 5°C (41°F) or more. Then go to the following steps.
- 4. Fully release accelerator pedal and wait at least 10 seconds.
- 5. Depress accelerator pedal and wait at least 10 seconds.
- 6. Check 1st trip DTC.

**With GST** 

Following the procedure "With CONSULT" above.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1126, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198651

## 1. CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE POWER SUPPLY

- 1. Turn ignition switch ON.
- Check the voltage between ECM harness connector.

	+		-	Voltage
Connector	Terminal	Connector	Terminal	
F23	53	E19	152	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE POWER SUPPLY CIRCUIT

### P2004 INTAKE MANIFOLD RUNNER CONTROL VALVE

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

+		-		
E	СМ	IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		
F23	53	E14	36	Existed

Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

### 3.CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE OUTPUT SIGNAL CIRCUIT

Disconnect intake manifold runner control valve harness connector.

Check the continuity between intake manifold runner control valve harness connector and ECM harness connector.

+				
Intake manifold runner con- trol valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
1	1	1 F23	54	Existed
F59	.50		55	Not existed
1 09	c		54	Not existed
	2		55	Existed

Also check harness for short to ground and to power.

#### Is the inspection result normal?

>> GO TO 4. YES

NO >> Repair or replace error-detected parts.

## $oldsymbol{4}.$ CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE

Check the intake manifold runner control valve. Refer to EC-1127, "Component Inspection (Intake Manifold Runner Control Valve)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace intake manifold assembly. Refer to EM-197, "Removal and Installation"

## Component Inspection (Intake Manifold Runner Control Valve)

## 1.CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE

#### (P) With CONSULT

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode with CONSULT.
- Make sure that "COOLAN TEMP/S" indicates between -12°C (10°F) to 59°C (138°F). If not, cool engine down or warm engine up until "COOLAN TEMP/S" indicates between -12°C (10°F) to 59°C (138°F). Then go to the following steps.
- 4. Fully release accelerator pedal and make sure that "TUMBLE POS SEN" indicates between 2.8 V to 4.1 V.
- Depress accelerator pedal and make sure that "TUMBLE POS SEN" indicates between 0.2 V to 1.4 V.
- Check 1st trip DTC.

#### 

Following the procedure "With CONSULT" above.

EC-1127 **Revision: November 2015 2016 JUKE**  EC

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### P2004 INTAKE MANIFOLD RUNNER CONTROL VALVE

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is 1st trip DTC detected?

YES >> Replace intake manifold assembly. Refer to EM-197, "Removal and Installation".

NO >> GO TO 2.

## $2.\mathsf{CHECK}$ INTAKE MANIFOLD RUNNER CONTROL VALVE

- 1. Turn ignition switch OFF.
- 2. Disconnect intake manifold runner control valve harness connector.
- 3. Check the resistance between intake manifold runner control valve terminals as per the following.

Intake manifold ru	unner control valve	5
+ -		Resistance (Approx.)
Tern	ninals	, , ,
1	2	3 - 8 Ω [at 25°C (77°F)]

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace intake manifold assembly. Refer to EM-197, "Removal and Installation".

### P2014, P2016, P2017, P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE **POSITION SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P2014, P2016, P2017, P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR

DTC Logic INFOID:0000000012198653

#### DTC DETECTION LOGIC

#### NOTE:

If DTC P2014, P2016, P2017 or P2018 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2014	IN/MANIFOLD RUNNER POS SEN B1 (Intake manifold runner position sensor/switch circuit bank 1)	An excessively low voltage from the sensor	
P2016	IN/MANIFOLD RUNNER POS SEN B1 (Intake manifold runner position sensor/switch circuit low bank 1)	is sent to ECM.  • Harness or connector	Trainicos or conficciors
P2017	IN/MANIFOLD RUNNER POS SEN B1 (Intake manifold runner position sensor/switch circuit high bank 1)	An excessively high voltage from the sensor	<ul> <li>(Intake manifold runner control position sensor circuit is shorted.)</li> <li>Intake manifold runner control position sensor</li> </ul>
P2018	IN/MANIFOLD RUNNER POS SEN B1 (Intake manifold runner position sensor/switch circuit intermittent bank 1)	is sent to ECM.	

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

TESTING CONDITION:

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 10 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1129, "Diagnosis Procedure".

>> INSPECTION END NO

## Diagnosis Procedure

## 1.check intake manifold runner control valve position sensor power supply

- Turn ignition switch OFF.
- Disconnect intake valve manifold runner control valve position sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between intake valve manifold runner control valve position sensor harness connector.

EC-1129 **Revision: November 2015 2016 JUKE** 

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# P2014, P2016, P2017, P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Intake manifold	Mallana		
Connector	+	-	Voltage (Approx.)
	Terr	, , ,	
F73	1	3	5 V

### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 2.

# 2.CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR POWER SUPPLY CIRCUIT

Check the voltage between intake valve manifold runner control valve position sensor harness connector and ground.

	+		
	nner control valve n sensor	<u>-</u>	Voltage (Approx.)
Connector	Terminal		
F73	1	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Perform the trouble diagnosis for power supply circuit.

## 3.CHECK ECM GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between ECM harness connector and ground.

	+			
E	CM	-	Continuity	
Connector	Terminal			
	9			
F23	10		Existed	
	50			
F24	60	Ground		
Γ2 <del>4</del>	110	Ground		
	147			
E19	149			
	152			

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

## 4. CHECK INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between intake manifold runner control valve position sensor harness connector and ECM harness connector.

# P2014, P2016, P2017, P2018 INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

				1	
Intake manifol		EC	<u></u>	Continuity	
trol valve pos				Continuity	
Connector	Terminal	Connector	Terminal		
F73	3	F23	43	Existed	
	tion result n	for short to p ormal?	ower.		
	GO TO 5.	olace error-de	etected nart	te	
			•		POSITION SENSOR INPUT SIGNAL CIRCUIT
. Check th		between inta			rol valve position sensor harness connector and
+					
Intake manifolo trol valve pos		EC	;M	Continuity	
Connector	Terminal	Connector	Terminal	<u> </u>	
F73	2	F23	39	Existed	
the inspect	ck harness t tion result no GO TO 6.	for short to g ormal?	round and t	o power.	
NO >> F	Repair or rep	olace error-de NT INCIDEN		ts.	
		lent. Refer to	GI-45, "Into		
•	tion result no	- man a 10		<u>ermittent Inc</u>	<u>dent"</u> .
	Replace inta		assembly. R		
				Refer to <u>EM-1</u>	dent". 97, "Removal and Installation".
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	
		ke manifold a		Refer to <u>EM-1</u>	

## P2096, P2097 A/F SENSOR 1

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P2096	POST CAT FUEL TRIM SYS B1 (Post catalyst fuel trim system too lean bank 1)	The output voltage computed by ECM from the A/F sensor 1 signal is shifts to the lean side for a specified period.	<ul> <li>A/F sensor 1</li> <li>A/F sensor 1 heater</li> <li>Heated oxygen sensor 2</li> <li>Fuel pressure</li> </ul>
P2097	POST CAT FUEL TRIM SYS B1 (Post catalyst fuel trim system too rich bank 1)	The A/F signal computed by ECM from the A/F sensor 1 signal is shifts to the rich side for a specified period.	<ul><li>Fuel injector</li><li>Intake air leaks</li><li>Exhaust gas leaks</li></ul>

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- Clear the mixture ratio self-learning value. Refer to <u>EC-762, "Description"</u>.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Turn ignition switch ON.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start engine and keep the engine speed between 3,500 and 4,000 rpm for 1 minute under no load.
- 6. Let engine idle for 1 minute.
- 7. Keep engine speed between 2,500 and 3,000 rpm for 20 minutes.
- 8. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1132, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198658

## ${f 1}$ .RETIGHTEN A/F SENSOR 1 AND HEATED OXYGEN SENSOR 2

Loosen and retighten the A/F sensor 1 and heated oxygen sensor 2. Refer to <u>EM-242, "Exploded View"</u> (A/F sensor 1), <u>EX-5, "Exploded View"</u> (Heated oxygen sensor 2).

>> GO TO 2.

### 2. CHECK FOR EXHAUST GAS LEAK

- Start engine and run it at idle.
- Listen for an exhaust gas leak before the three way catalyst (under floor).

### Is exhaust gas leak detected?

YES >> Repair or replace.

NO >> GO TO 3.

### P2096, P2097 A/F SENSOR 1

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 3.CHECK FOR INTAKE AIR LEAKAGE

Start engine and run it at idle.

Listen for an intake air leakage after the mass air flow sensor.

### Is intake air leakage detected?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning part.

## f 4.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE

- Clear the mixture ratio self-learning value. Refer to <u>EC-762</u>, "<u>Description</u>".
- Run engine for at least 10 minutes at idle speed.

### Is the 1st trip DTC P0171 or P0172 detected? Is it difficult to start engine?

>> Perform trouble diagnosis for DTC P0171 or P0172. Refer to EC-905, "DTC Logic" (P0171) or EC-909, "DTC Logic" (P0172).

NO >> GO TO 5.

## 5. CHECK HARNESS CONNECTOR

- Turn ignition switch OFF.
- Disconnect A/F sensor 1 harness connector. 2.
- Check harness connector for water.

#### Water should not exit.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace harness connector.

## O.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY

- Disconnect A/F sensor 1 harness connector.
- 2. Turn ignition switch ON.
- Check the voltage between A/F sensor 1 harness connector and ground.

A/F s	ensor	Ground	Voltage (V)	
Connector Terminal			voltage (v)	
F72	4	Ground	Battery voltage	

### Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

## $\emph{/}$ .CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between A/F sensor 1 harness connector and IPDM E/R harness connector.

	A/F se	ensor 1	IPDN	/I E/R	Continuity
	Connector	Terminal	rminal Connector Termina		Continuity
_	F72	4	E14	36	Existed

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 8.CHECK A/F SENSOR 1 INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between A/F sensor 1 harness connector and ECM harness connector.

EC-1133

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A/F sensor 1		ECM		Continuity	
Connector	Terminal	Connector Terminal		Continuity	
F72	1	F24	79	Existed	
172	2	1 24	74	LAISIGU	

4. Check the continuity between A/F sensor 1 harness connector and ground, or ECM harness connector and ground.

A/F se	ensor 1	Ground	Continuity	
Connector	Connector Terminal		Continuity	
F72	1 2	Ground	Not existed	

E	СМ	Ground	Continuity	
Connector	Terminal	Ground	Continuity	
F24	74	Ground	Not existed	
1 24	79	Giodila	INOL EXISTED	

5. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair open circuit, short to ground or short to power in harness or connectors.

## 9.CHECK A/F SENSOR 1 HEATER

Check A/F sensor 1 heater. Refer to EC-806, "Component Inspection".

#### Is the inspection result normal?

YES >> GO TO 10.

NO >> GO TO 12.

## 10. CHECK HEATED OXYGEN SENSOR 2

Check heated oxygen sensor 2. Refer to EC-884, "Component Inspection"

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Replace malfunctioning heated oxygen sensor 2.

## 11. CHECK INTERMITTENT INCIDENT

Check intermittent incident. Perform GI-45, "Intermittent Incident".

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning part.

## 12. REPLACE AIR FUEL RATIO (A/F) SENSOR 1

Replace malfunctioning air fuel ratio (A/F) sensor 1. Refer to EM-242, "Exploded View".

### Do you have CONSULT?

YES >> GO TO 13.

NO >> GO TO 14.

13. CONFIRM A/F ADJUSTMENT DATA

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT.
- 3. Make sure that "0.000" is displayed on CONSULT screen.

### Is "0.000" displayed?

YES >> INSPECTION END

P2096, P2097 A/F SENSOR 1	
< DTC/CIRCUIT DIAGNOSIS > [MR EXCEPT FOR NISMO RS MODELS]	
NO >> GO TO 14.	-
14.CLEAR THE MIXTURE RATIO SELF-LEARNING VALUE	Α
Clear the mixture ratio self-learning value. Refer to EC-762, "Description".	-
Do you have CONSULT?	EC
YES >> GO TO 15. NO >> INSPECTION END	
15. CONFIRM A/F ADJUSTMENT DATA	С
<ul> <li>With CONSULT</li> <li>1. Turn ignition switch ON.</li> <li>2. Select "A/F ADJ-B1" in "DATA MONITOR" mode with CONSULT.</li> <li>3. Make sure that "0.000" is displayed on CONSULT screen.</li> </ul>	D
>> INSPECTION END	Е
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### P2100, P2103 THROTTLE CONTROL MOTOR RELAY

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P2100, P2103 THROTTLE CONTROL MOTOR RELAY

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2100	ETC MOT PWR-B1 (Throttle control motor relay circuit open)	ECM detects a voltage of power source for throttle control motor is excessively low.	Harness or connectors     (Throttle control motor relay circuit is open)     Throttle control motor relay
P2103	ETC MOT PWR (Throttle control motor relay circuit short)	ECM detect the throttle control motor relay is stuck ON.	Harness or connectors     (Throttle control motor relay circuit is shorted)     Throttle control motor relay

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V.

#### Witch DTC is detected?

P2100 >> GO TO 2.

P2103 >> GO TO 3.

## 2.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2100

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1136, "Diagnosis Procedure".

NO >> INSPECTION END

## 3.PERFORM DTC CONFIRMATION PROCEDURE FOR DTC P2103

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Check DTC.

#### Is DTC detected?

YES >> Proceed to EC-1136, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198660

## 1. CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY

- 1. Turn ignition switch OFF.
- Check the voltage between ECM harness connector and ground.

	+	-		
	E	CM		Voltage
Connector	Terminal	Connector	Terminal	
F24	97	E19	152	Battery voltage

### P2100, P2103 THROTTLE CONTROL MOTOR RELAY

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

- Disconnect ECM harness connector.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between ECM harness connector and IPDM E/R harness connector.

+		_		
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F24	97	E15	60	Existed

Also check harness for short to ground.

### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL

Check the voltage between ECM harness connector and ground as per the following conditions.

	E	CM			
Connector	+	Connector	-	Condition	Voltage (Approx.)
Connector	Terminal		Terminal		( , , , , , , , , , , , , , , , , , , ,
F24	118	E19	152	Ignition switch: OFF	0 V
F24	110	L19	132	Ignition switch: ON	Battery voltage

### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

## f 4.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F24	118	E15	55	Existed

5. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Repair or replace error-detected parts. NO

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### **P2101 ELECTRIC THROTTLE CONTROL FUNCTION**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P2101 ELECTRIC THROTTLE CONTROL FUNCTION

DTC Logic

#### DTC DETECTION LOGIC

#### NOTE:

- If DTC P2101 is displayed with DTC P2100, first perform the trouble diagnosis for DTC P2100. Refer to <u>EC-1136</u>, "<u>DTC Logic"</u>.
- If DTC P2101 is displayed with DTC P2119, first perform the trouble diagnosis for DTC P2119. Refer to EC-1143, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P2101	ETC FNCTN/CIRC-B1 (Electric throttle control performance)	Electric throttle control function does not operate properly.	Harness or connectors     (Throttle control motor circuit is open or shorted)     Electric throttle control actuator

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V when engine is running.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 2 seconds.
- 2. Start engine and let it idle for 5 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1138, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198662

## 1.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL

Check the voltage between ECM harness connector terminals as per the following conditions.

	ECM				Mallana	
Connector	+	Connector	_	Condition	Voltage (Approx.)	
Connector	Terminal	Connector	Terminal		( ) [ ]	
F24	118	E19	152	Ignition switch: OFF	0 V	
1 27	F24 118		102	Ignition switch: ON	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 4. NO >> GO TO 2.

## 2.CHECK THROTTLE CONTROL MOTOR RELAY INPUT SIGNAL CIRCUIT

1. Turn ignition switch OFF.

### P2101 ELECTRIC THROTTLE CONTROL FUNCTION

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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- 2. Disconnect ECM harness connector.
- Disconnect IPDM E/R harness connector.
- 4. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F24	118	E15	55	Existed

5. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK THROTTLE CONTROL MOTOR RELAY POWER SUPPLY CIRCUIT

1. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+			_	
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F24	97	E15	60	Existed

2. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 4. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		_		
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
	2	F24	120	Existed
F29			119	Not existed
			120	Not existed
			119	Existed

5. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5.CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

- Remove the intake air duct. Refer to <u>EM-192</u>, "<u>Exploded View</u>".
- Check if foreign matter is caught between the throttle valve and the housing.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to <a href="EC-754">EC-754</a>, "Description".

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### P2101 ELECTRIC THROTTLE CONTROL FUNCTION

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## 6. CHECK THROTTLE CONTROL MOTOR

Check the throttle control motor. Refer to EC-1140, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

### Component Inspection

INFOID:0000000012198663

## 1. CHECK THROTTLE CONTROL MOTOR

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Check the resistance between electric throttle control actuator terminals as per the following.

Electric throttle	control actuator	
+	-	Resistance (Approx.)
Tern	ninals	(* tpp: 5/11)
2	1	1 - 15 Ω [at 25°C (77°F)]

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

### **P2118 THROTTLE CONTROL MOTOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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### P2118 THROTTLE CONTROL MOTOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2118	ETC MOT-B1 (Throttle control motor circuit short)	ECM detects short in both circuits between ECM and throttle control motor.	Harness or connectors     (Throttle control motor circuit is shorted.)     Electric throttle control actuator     (Throttle control motor)

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 2 seconds.
- Start engine and let it idle for 5 seconds.
- Check DTC.

### Is DTC detected?

YES >> Proceed to <u>EC-1141, "Diagnosis Procedure"</u>.

NO >> INSPECTION END

## Diagnosis Procedure

1. CHECK THROTTLE CONTROL MOTOR OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

	+		_	
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector Terminal		
	1	2 F24	120	Existed
F29			119	Not existed
1 23			120	Not existed
			119	Existed

5. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

Revision: November 2015 EC-1141 2016 JUKE

### **P2118 THROTTLE CONTROL MOTOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## $\overline{2}$ .check throttle control motor

Check the throttle control motor. Refer to EC-1142, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

## Component Inspection

INFOID:0000000012198666

## 1. CHECK THROTTLE CONTROL MOTOR

- Turn ignition switch OFF.
- 2. Disconnect electric throttle control actuator harness connector.
- 3. Check the resistance between electric throttle control actuator terminals as per the following.

Electric throttle	control actuator	
+ -		Resistance (Approx.)
Tern	ninals	(* tpp: 5/11)
2	1	1 - 15 Ω [at 25°C (77°F)]

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

### P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

DTC Logic

### DTC DETECTION LOGIC

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DTC No.	Trouble diagnosis name (Trouble diagnosis content)			Possible cause
FTC ACTR-B1	ETC ACTR-B1	Α	Electric throttle control actuator does not function properly due to the return spring malfunction.	
P2119		В	Throttle valve opening angle in fail-safe mode is not in specified range.	Electric throttle control actuator
		С	ECM detect the throttle valve is stuck open.	

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

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If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## 2.perform dtc confirmation procedure for malfunction a and b

- 1. Turn ignition switch ON and wait at least 1 second.
- 2. Set selector lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 3. Set selector lever to P (CVT) or Neutral (M/T) position.
- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Turn ignition switch ON and wait at least 1 second.
- 6. Set selector lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 7. Set selector lever to P (CVT) or Neutral (M/T) position.
- 8. Turn ignition switch OFF, wait at least 10 seconds and then turn ON.
- 9. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1143, "Diagnosis Procedure".

NO >> GO TO 3.

## 3.perform dtc confirmation procedure for malfunction c

1. Turn ignition switch ON and wait at least 1 second.

- Set selector lever to D (CVT) or 1st (M/T) position and wait at least 3 seconds.
- 3. Set selector lever to P (CVT) or Neutral (M/T) position.
- 4. Start engine and let it idle for 3 seconds.
- 5. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1143, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198668

## 1. CHECK ELECTRIC THROTTLE CONTROL ACTUATOR VISUALLY

Remove the intake air duct, Refer to EM-192, "Exploded View".

Revision: November 2015 EC-1143 2016 JUKE

### P2119 ELECTRIC THROTTLE CONTROL ACTUATOR

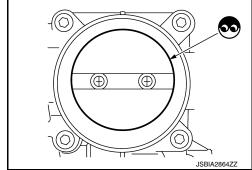
### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Check if foreign matter is caught between the throttle valve and the housing.

### Is the inspection result normal?

- YES >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".
- NO >> Remove the foreign matter and clean the electric throttle control actuator inside, then perform throttle valve closed position learning. Refer to <a href="EC-754"><u>EC-754</u></a>, "Description".



[MR EXCEPT FOR NISMO RS MODELS]

## P2122. P2123 APP SENSOR

**DTC Logic** INFOID:0000000012198669

#### DTC DETECTION LOGIC

### NOTE:

If DTC P2122 or P2123 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause	
P2122	APP SEN 1/CIRC (Accelerator pedal position sensor 1 circuit low input)	An excessively low voltage from the APP sensor 1 is sent to ECM.	Harness or connectors     (APP sensor 1 circuit is open or shorted.)	
P2123	APP SEN 1/CIRC (Accelerator pedal position sensor 1 circuit high input)	An excessively high voltage from the APP sensor 1 is sent to ECM.	Accelerator pedal position sensor (APP sensor 1)	

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.perform dtc confirmation procedure

- Start engine and let it idle for 1 second.
- 2. Check DTC.

### Is DTC detected?

>> Proceed to EC-1145, "Diagnosis Procedure". YES

>> INSPECTION END NO

## Diagnosis Procedure

## 1.CHECK APP SENSOR 1 POWER SUPPLY

- Turn ignition switch OFF.
- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

	+		Malla a a	
APP :	sensor	_	Voltage (Approx.)	
Connector	Terminal		( FF - 7	
E101	4	Ground	5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

### 2 .CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

EC-1145 **Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198670

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### **P2122, P2123 APP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

+				
APP sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E101	4	E19	146	Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK APP SENSOR 1 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

	+		_	
APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	2	E19	151	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### 4. CHECK APP SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between APP sensor harness connector and ECM harness connector.

	+		_	
APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	3	E19	150	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts.

## 5. CHECK APP SENSOR

Check the APP sensor. Refer to EC-1146, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace accelerator pedal assembly. Refer to <u>ACC-4, "Exploded View"</u>.

## Component Inspection

INFOID:0000000012198671

## 1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals as per the following condition.

## **P2122, P2123 APP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

## [MR EXCEPT FOR NISMO RS MODELS]

ECM					
+	_	Condition		Voltage	
Terminal					
150 151	151	- Accelerator pedal -	Fully released	0.6 - 0.9 V	
			Fully depressed	3.9 - 4.7 V	
	144		Fully released	0.3 - 0.6 V	
143	144		Fully depressed	1.95 - 2.4 V	
	+ Terr	+ – Terminal 150 151	+ - Cond Terminal  150 151 Accelerator pedal	+ - Condition  Terminal  150 151  Accelerator pedal  Fully released Fully released Fully released	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accelerator pedal assembly. Refer to ACC-4, "Exploded View".

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## P2127, P2128 APP SENSOR

DTC Logic

#### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2127	APP SEN 2/CIRC (Accelerator pedal position sensor 2 circuit low input)	An excessively low voltage from the APP sensor 2 is sent to ECM.	Harness or connectors     (APP sensor 2 circuit is open or shorted.)     Accelerator pedal position sensor
P2128	APP SEN 2/CIRC (Accelerator pedal position sensor 2 circuit high input)	An excessively high voltage from the APP sensor 2 is sent to ECM.	(APP sensor 2)  Sensor power supply 2 circuit

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1148, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198673

## 1. CHECK APP SENSOR 2 POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between APP sensor harness connector and ground.

	+		Valtage	
APP :	sensor	_	Voltage (Approx.)	
Connector	Terminal		, , ,	
E101	5	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

### 2.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

Perform EC-1240, "Diagnosis Procedure".

#### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

### **P2127, P2128 APP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

NO >> Repair or replace error-detected parts.

## 3.CHECK APP SENSOR 2 GROUND CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between APP sensor harness connector and ECM harness connector.

+		_		
APP :	sensor	E	СМ	Continuity
Connector	Terminal	Connector Terminal		
E101	1	E19	144	Existed

Also check harness for short to power.

### Is the inspection result normal?

>> GO TO 4. YES

NO >> Repair or replace error-detected parts.

### 4. CHECK APP SENSOR 2 INPUT SIGNAL CIRCUIT

Check the continuity between APP sensor harness connector and ECM harness connector.

+				
APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	6	E19	143	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YFS >> GO TO 5.

NO >> Repair or replace error-detected parts

### CHECK APP SENSOR

Check the APP sensor. Refer to EC-1149, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace accelerator pedal assembly. Refer to ACC-4, "Exploded View". NO

## Component Inspection

## 1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected. 2.
- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals as per the following condition.

ECM		Condition			
Connector + -				Voltage	
Connector	Terr	minal			
	150	151	Applorator nodel	Fully released	0.6 - 0.9 V
E19	130	131		Fully depressed	3.9 - 4.7 V
	143	144	Accelerator pedal	Fully released	0.3 - 0.6 V
	143	144		Fully depressed	1.95 - 2.4 V

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accelerator pedal assembly. Refer to ACC-4, "Exploded View".

EC-1149 **Revision: November 2015 2016 JUKE**  EC

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### P2135 TP SENSOR

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

If DTC P2135 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-1060, "DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)		Possible cause
P2135	TP SENSOR-B1 (Throttle position sensor circuit range/perfor- mance)	Rationally incorrect voltage is sent to ECM compared with the signals from TP sensor 1 and TP sensor 2.	Harness or connector     (TP sensor 1 or 2 circuit is open or shorted.)     Electric throttle control actuator     (TP sensor 1 or 2)

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

#### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Start engine and let it idle for 1 second.
- 2. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1150, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198676

## 1. CHECK THROTTLE POSITION SENSOR POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect electric throttle control actuator harness connector.
- Turn ignition switch ON.
- Check the voltage between electric throttle control actuator harness connector and ground.

	+			
Electric throttle	control actuator	_	Voltage (Approx.)	
Connector	Terminal		<b>(11</b> /	
F29	5	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

## 2.CHECK THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ground.

+		_		
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	5	F24 83		Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

>> Perform the trouble diagnosis for power supply circuit.

>> Repair or replace error-detected parts. NO

## 3.check throttle position sensor ground circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+				
	e control actu- tor	ECM		Continuity
Connector	Terminal	Connector Terminal		
F29	4	F24	85	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

>> Repair or replace error-detected parts. NO

### f 4.CHECK THROTTLE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between electric throttle control actuator harness connector and ECM harness connector.

+		_		
Electric throttle control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F29	6	F24	F24 88	Existed
1 29	3	1 24	80	LAISIEU

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair open circuit or short to ground or short to power in harness or connectors.

### ${f 5.}$ CHECK THROTTLE POSITION SENSOR

Check the throttle position sensor. Refer to EC-1151, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

### Component Inspection

## 1.CHECK THROTTLE POSITION SENSOR

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.

EC-1151 **Revision: November 2015 2016 JUKE**  EC

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INFOID:0000000012198677

## **P2135 TP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

- 3. Perform "Throttle Valve Closed Position Learning". Refer to EC-754, "Description".
- 4. Turn ignition switch ON.
- 5. Set selector lever to D (CVT) or 1st (M/T) position.
- 6. Check the voltage between ECM harness connector terminals as per the following conditions.

ECM						
Connector	+	-	Condition		Condition Voltage	
Connector	Terr	ninal				
F24 80	9.0			Fully released	More than 0.36V	
	85	Accelerator	Fully depressed	Less than 4.75V		
	90	65	pedal	Fully released	Less than 4.75V	
	30			Fully depressed	More than 0.36V	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace electric throttle control actuator. Refer to EM-197, "Exploded View".

### P2138 APP SENSOR

**DTC Logic** INFOID:0000000012198678

### DTC DETECTION LOGIC

### NOTE:

If DTC P2138 is displayed with DTC P0643, first perform the trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2138	APP SENSOR (Accelerator pedal position sensor circuit range/ performance)	Rationally incorrect voltage is sent to ECM compared with the signals from APP sensor 1 and APP sensor 2.	<ul> <li>Harness or connector (APP sensor 1 or 2 circuit is open or shorted.)</li> <li>Accelerator pedal position sensor (APP sensor 1 or 2)</li> <li>Sensor power supply 2 circuit</li> </ul>

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 8 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start engine and let it idle for 1 second.
- 2. Check DTC.

### Is DTC detected?

YES >> Proceed to EC-1153, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1.CHECK APP SENSOR 1 POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect accelerator pedal position (APP) sensor harness connector.
- Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

	+		V-11
APP :	sensor	_	Voltage (Approx.)
Connector	Terminal		, , ,
E101	4	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

### 2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT

Turn ignition switch OFF.

EC-1153 **Revision: November 2015 2016 JUKE** 

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### **P2138 APP SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

- Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

+		,	_	
APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	4	E19	146	Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## 3.CHECK APP SENSOR 2 POWER SUPPLY

Check the voltage between APP sensor harness connector and ground.

APP s	sensor	-	Voltage (Approx.)
Connector	Terminal		(
E101	5	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

## f 4.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

### Perform EC-1240, "Diagnosis Procedure".

### Is inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## ${f 5.}$ CHECK APP SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

+		-		
APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	1	E19	144	Existed
LIVI	2	L19	151	LAISIEU

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6. CHECK APP SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between APP sensor harness connector and ECM harness connector.

### **P2138 APP SENSOR**

### [MR EXCEPT FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

	+		_	
APP sensor		ECM		Continuity
Connector	Terminal	Connector Terminal		
E101	3	E19	150	Existed
	6	L19	143	LAISIEU

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts

### .CHECK APP SENSOR

Check the APP sensor. Refer to EC-1149, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace accelerator pedal assembly. Refer to EM-197, "Exploded View".

## Component Inspection

INFOID:0000000012198680

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# 1. CHECK ACCELERATOR PEDAL POSITION SENSOR

- Turn ignition switch OFF.
- 2. Reconnect all harness connectors disconnected.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals as per the following condition.

	ECM				
Connector	+	_	Condition		Voltage
Connector	Terr	minal			
	150	151	- Accelerator pedal -	Fully released	0.6 - 0.9 V
E19	100	101		Fully depressed	3.9 - 4.7 V
LIS	143	142 144		Fully released	0.3 - 0.6 V
	143   144		Fully depressed	1.95 - 2.4 V	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace accelerator pedal assembly. Refer to EM-197, "Exploded View".

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### **P2162 VEHICLE SPEED SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P2162 VEHICLE SPEED SENSOR

Description INFOID.000000012198681

ECM receives a rear wheel sensor signal from ABS actuator and electric unit (control unit) via CAN communication to switch combustion for the direct injection gasoline system. For the direct injection gasoline system, refer to <a href="EC-630">EC-630</a>, "DIRECT INJECTION GASOLINE SYSTEM: System Description".

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

- If DTC P2162 is displayed with DTC UXXXX, first perform the trouble diagnosis for DTC UXXXX. Refer to EC-706, "DTC Index".
- If DTC P2162 is displayed with DTC P0607, first perform the trouble diagnosis for DTC P0607. Refer to <u>EC-1054</u>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2162	VEHICLE SPEED SEN A/B (Vehicle speed sensor A/B correlation)	ECM detects a rear LH wheel sensor signal or a rear RH wheel sensor signal transmitted from the ABS actuator and electric unit (control unit) via CAN communication at least for 15 seconds in a row when the vehicle is in stopped condition.	Harness or connectors     (The CAN communication line is open or shorted)     Rear LH wheel sensor     Rear RH wheel sensor     ABS actuator and electric unit (control unit)

### DTC CONFIRMATION PROCEDURE

### 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 9 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start engine and let it idle for at least 30 seconds.

#### NOTE:

Never depress the accelerator pedal during idle running.

2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1156, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198683

## 1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

(P)With CONSULT

Check DTC with ABS actuator and electric unit (control unit). Refer to BRC-39, "CONSULT Function".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform diagnosis procedure corresponding to DTC indicated.

2.CHECK REAR WHEEL SENSOR-I

### **P2162 VEHICLE SPEED SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

(P)With CONSULT

- Stop the vehicle.
- 2. Set the parking brake.
- Use CONSULT to select "RR LH SENSOR" and "RR RH SENSOR" in "DATA MONITOR" mode of "ABS"
- 4. Check indications of "RR LH SENSOR" and "RR RH SENSOR".

NOTE:

Never cause the vehicle to vibrate.

Is 0 km/h (0 MPH) indicated for both "RR LH SENSOR" and "RR RH SENSOR"?

YES >> GO TO 3.

NO >> Perform trouble diagnosis of the rear wheel sensor if 0 km/h (0 MPH) is not displayed. Refer to BRC-88, "Diagnosis Procedure".

# 3.CHECK REAR WHEEL SENSOR-II

(P)With CONSULT

1. Drive the vehicle at 20 km/h (13 MPH).

**CAUTION:** 

Always drive vehicle at a safe speed.

Check indications of "RR LH SENSOR" and "RR RH SENSOR".

Is the difference between the indicated values of "RR LH SENSOR" and "RR RH SENSOR" within  $\pm$  1 km/h (1 MPH)?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Perform trouble diagnosis of the rear wheel sensor. Refer to BRC-88, "Diagnosis Procedure" EC

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### P219A AIR FUEL RATIO

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

• If DTC P219A is displayed with other DTC, first perform the trouble diagnosis for the other DTC. Refer to <a href="EC-706">EC-706</a>, "DTC Index".

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P219A	AIR FUEL RATIO B1 (AIR FUEL RATIO B1)	ECM detects a lean/rich air fuel ratio state in any cylinder for a specified length of time.	Fuel injector     Exhaust gas leaks     Incorrect fuel pressure     Mass air flow sensor     Intake air leaks     Lack of fuel     Incorrect PCV hose connection     Improper spark plug     Insufficient compression     The fuel injector circuit is open or shorted     ignition coil     The ignition signal circuit is open or shorted

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING-1

If DTC Confirmation Procedure has been previously conducted, always perform the following before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### NOTE:

Before performing the following procedure, confirm that battery voltage is 11 V or more at idle.

>> GO TO 2.

## 2.PRECONDITIONING-2

- 1. Turn ignition switch ON.
- 2. Clear the mixture ratio self-learning value. Refer to EC-762, "Description".

#### Will CONSULT be used?

YES >> GO TO 3.

NO >> GO TO 6.

# 3.perform dtc confirmation procedure-1

- Turn ignition switch ON.
- Select "COOLAN TEMP/S" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Start the engine.
- 4. Make sure that "COOLAN TEMP/S" indicates more than 80°C (176°F).

>> GO TO 4.

## 4. PERFORM DTC CONFIRMATION PROCEDURE-2

### (P)With CONSULT

- 1. Select "SYSTEM 1 DIAGNOSIS B B1" and "SYSTEM 1 DIAGNOSIS A B1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Drive vehicle under the following conditions for at least 5 consecutive seconds. CAUTION:

### **P219A AIR FUEL RATIO**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

•	<b>Always</b>	drive	vehicle	at a	safe	speed.
	AIVUUS	MIIV C	<b>VCIIICIC</b>	at a	Juic	SDCCU.

ENG SPEED	1,800 – 2,400rpm
COOLAN TEMP/S	More than 80°C (176°F)
B/FUEL SCHDL	5 – 13 msec
Selector lever	CVT: D position M/T: 6th position
SYSTEM 1 DIAGNOSIS B B1	PRSENT

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#### NOTE:

- Drive the vehicle at approximately 88 km/h (55MPH) allows easy diagnosis.
- Keep the accelerator pedal as possible during crusing.
- 3. Check "SYSTEM 1 DIAGNOSIS A B1" indication.

### Is "CMPLT" displayed?

YES >> GO TO 5.

NO >> GO TO 2.

## 5.PERFORM DTC CONFIRMATION PROCEDURE- $^{3}$

Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-1159</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## 6.PERFORM DTC CONFIRMATION PROCEDURE-4

## Without CONSULT

- 1. Start the engine and warm it up to normal operating temperature.
- 2. Drive vehicle under the following conditions for at least 5 consecutive seconds.

#### **CAUTION:**

Always drive vehicle at a safe speed.

Engine speed	1,800 – 2,400rpm
Calculated load value	20 – 72 %
Selector lever	CVT: D position M/T: 6th position

### NOTE:

- Drive the vehicle at approximately 88 km/h (55MPH) allows easy diagnosis.
- Keep the accelerator pedal as possible during crusing.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-1159</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

### INFOID:0000000012826672

## Diagnosis Procedure

## 1.CHECK FOR INTAKE AIR LEAK

- 1. Stop engine and check the following for connection.
- Air duct
- Vacuum hoses
- PCV hose
- Intake air passage between air duct to intake manifold
- Start engine and let it idle.
- Listen for an intake air leak after the mass air flow sensor.

### Is the inspection result normal?

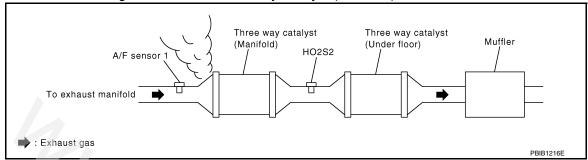
YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

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# 2.CHECK EXHAUST GAS LEAK

- 1. Stop engine and visually check exhaust tube, three way catalyst and muffler for dents connection.
- 2. Start engine and let it idle.
- Listen for an exhaust gas leak before three way catalyst (manifold).



### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK FUEL PRESSURE

- 1. Release fuel pressure to zero. Refer to <a>EC-771</a>, "Work Procedure".
- Check fuel pressure. Refer to <u>EC-771, "Work Procedure"</u>.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 8.

## 4. CHECK MASS AIR FLOW SENSOR

### (P)With CONSULT

Check "MASS AIRFLOW" in "DATA MONITOR" mode of "ENGINE" using CONSULT.

For specification, refer to EC-1258, "Mass Air Flow Sensor".

### 

Check mass air flow sensor signal in Service \$01 using GST.

For specification, refer to EC-1258, "Mass Air Flow Sensor".

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Check connectors for rusted terminals or loose connections in the mass air flow sensor circuit or grounds. Refer to <u>EC-838</u>, "<u>Diagnosis Procedure</u>".

## 5. CHECK FUNCTION OF FUEL INJECTOR

### (I) With CONSULT

- Start engine.
- Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that each circuit produces a momentary engine speed drop.

### **⊗Without CONSULT**

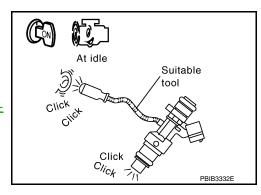
- Let engine idle.
- Listen to each fuel injector operating sound.

### Clicking noise should be heard.

### Is the inspection result normal?

YES >> GO TO 6. NO >> Perform to

>> Perform trouble diagnosis for fuel injector, refer to <u>EC-1204</u>, "Component Function Check".



# 6.CHECK FUNCTION OF IGNITION COIL-1

Perform the following steps in a well-ventilated area with no combustibles.

- Turn ignition switch OFF.
- 2. Remove fuel pump fuse from IPDM E/R to release fuel pressure.

#### NOTE:

CONSULT must not be used to release fuel pressure. It develops again during the following steps, if released by using CONSULT.

- Start the engine.
- After an engine stall, crank the engine two or three times to release all the fuel pressure.
- 5. Turn ignition switch OFF.
- 6. Disconnect all the harness connectors of ignition coil to prevent electric discharge from occurring in ignition coil.
- Remove ignition coil assembly and spark plug of cylinder. Refer to EM-214, "Removal and Installation".
- 8. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 9. Connect spark plug and harness connector to ignition coil.
- 10. Allow a 13-17mm (0.52-0.66 in) spacing between spark plug and grounded metal portion as shown in the figure to fix the ignition coil with a rope or an equivalent.
- 11. Crank the engine for approximately 3 seconds to see if sparking occurs between spark plug and the grounded metal portion.

### Spark should be generated.

#### CAUTION:

- The discharge voltage becomes 20 kV or higher. Therefore, always stay away from the spark plug and ignition coil at least 50 cm (19.7 in) during the inspection.
- Leaving a space of more than 17mm (0.66 in) may damage the ignition coil.

#### NOTE:

When the gap is less than 13 mm (0.52 in), a the spark might be generated even if the coil is malfunctioning.

### Is the inspection result normal?

>> GO TO 7. YES

NO >> GO TO 9.

## 7.CHECK COMPRESSION PRESSURE

Check compression pressure. Refer to EM-182, "Inspection".

### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

- YES
- NO

- 1.
- 2.
- plug and the grounded metal portion.

### Spark should be generated.

### Is the inspection result normal?

NO >> Check pistons, piston rings, valves, valve seats and cylinder head gaskets.  $oldsymbol{8}$  . DETECT MALFUNCTIONING PART Check fuel hoses and fuel tubes for clogging. Is the inspection result normal? >> Replace fuel filter and fuel pump assembly. Refer to FL-6, "2WD : Exploded View" (2WD models) or FL-10, "AWD: Exploded View" (AWD models). >> Repair or replace error-detected parts. 9. CHECK FUNCTION OF IGNITION COIL-2 Turn ignition switch OFF. Disconnect spark plug and connect a non-malfunctioning spark plug. Crank engine for approximately 3 seconds, and recheck whether spark is generated between the spark

13 - 17 mm Grounded metal portion (Cylinder head, cylinder block, etc.)

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EC-1161 **Revision: November 2015 2016 JUKE** 

### **P219A AIR FUEL RATIO**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> GO TO 10.

NO >> Check ignition coil, power transistor and their circuits. Refer to <u>EC-1229, "Component Function Check"</u>.

# 10. CHECK SPARK PLUG

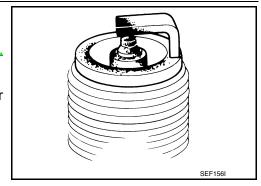
Check the initial spark plug for fouling, etc.

### Is the inspection result normal?

YES >> 1. Repair or clean spark plug. Refer to <u>EM-214</u>, "Exploded View".

2. GO TO 11.

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <a href="EM-312">EM-312</a>, "Spark Plug".



# 11. CHECK FUNCTION OF IGNITION COIL-3

- 1. Reconnect the initial spark plugs.
- 2. Crank engine for approximately 3 seconds, and recheck whether spark is generated between the spark plug and the grounded portion.

### Spark should be generated.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace spark plug(s) with standard type one(s). For spark plug type, refer to <u>EM-312, "Spark Plug"</u>.

**DTC Logic** INFOID:0000000012198684

### DTC DETECTION LOGIC

### NOTE:

If DTC P2263 is displayed with DTC P0237 or P0238, first perform the trouble diagnosis for DTC P0237 or P0238. Refer to EC-938, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2263	TC SYSTEM-B1 (Turbocharger boost system performance)	In spite of the boosting area, the boost does not increase.	Intake air leaks Exhaust gas leaks Turbocharger boost sensor Turbocharger boost control solenoid valve Exhaust manifold and turbocharger assembly Electric wastegate control actuator Harness or connectors (Electric wastegate control actuator circuit is open or shorted.) Turbocharger bypass control valve Harness or connectors (Turbocharger bypass control valve circuit is open or shorted.)

### DTC CONFIRMATION PROCEDURE

## $oldsymbol{1}$ .PERFORM COMPONENT FUNCTION CHECK

Perform component function check. Refer to EC-1163, "Component Function Check".

### NOTE:

Use component function check to check the overall function of the turbocharger system circuit. During this check, a 1st trip DTC might not be confirmed.

#### Is the inspection result normal?

>> INSPECTION END YES

>> Proceed to EC-1164, "Diagnosis Procedure". NO

## Component Function Check

## 1.INSPECTION START

Do you have CONSULT?

Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

## 2.check electric wastegate control actuator

### (P)With CONSULT

- Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "WASTEGATE ACTUATOR".
- Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.002 m, and make a quick short note of value "V1" of "W/G ACTUATOR POSI SEN B1".
- 4. Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.006 m, and make a quick short note of value "V2" of "W/G ACTUATOR POSI SEN B1".

Do the values of "V1" and "V2" change (visually, ACTUATOR SHAFT operates) and "V2" minus "V1" becomes equal to or more than 1.3V?

YES >> INSPECTION END

NO >> Refer to EC-1164, "Diagnosis Procedure".

3.CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

EC-1163 **Revision: November 2015 2016 JUKE**  EC

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### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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- 1. Turn ignition switch OFF.
- 2. Disconnect Wastegate control actuator harness connector.
- While checking the POSITION SENSOR OUT voltage with an oscilloscope, apply a voltage of 12 V to the positive or negative terminal.

### Does ACTUATOR SHAFT visually operate and POSITION SENSOR OUT voltage change?

YES >> INSPECTION END

NO >> Refer to EC-1164, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198686

## 1. CHECK FOR EXHAUST GAS LEAK

- 1. Start engine and run it at idle.
- 2. Listen for an exhaust gas leak of exhaust manifold.

### Is exhaust gas leak detected?

YES >> Repair or replace malfunction parts.

NO >> GO TO 2.

## 2. CHECK FOR INTAKE AIR LEAK

Listen for an intake air leak between electric throttle control actuator and compressor wheel.

### Is intake air leak detected?

YES >> Repair or replace malfunction parts.

NO >> GO TO 3.

## 3. CHECK RECIRCULATION VALVE

- Turn ignition switch OFF.
- 2. Check recirculation valve. Refer to EM-244, "Inspection".

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace recirculation valve. Refer to EM-242, "Exploded View".

## 4. CHECK TURBOCHARGER BYPASS CONTROL VALVE POWER SUPPLY

- Disconnect turbocharger bypass control valve harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between turbocharger bypass control valve harness connector and ground.

	+		
Turbocharger by	pass control valve	_	Voltage
Connector	Connector Terminal		
F64	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5.

## 5.CHECK TURBOCHARGER BYPASS CONTROL VALVE POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- Check the continuity between turbocharger bypass control valve harness connector and IPDM E/R harness connector.

	+		_	
Turbocharger bypass control valve		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F64	1	E14	36	Existed

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply.

NO >> Repair or replace error-detected parts.

## 6.CHECK TURBOCHARGER BYPASS CONTROL VALVE OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between turbocharger bypass control valve harness connector and ECM harness connector.

	+		_	
Turbocharger bypass control valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F64	2	F24	105	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

### .CHECK TURBOCHARGER BYPASS CONTROL VALVE

Check the turbocharger bypass control valve. Refer to <u>EC-1167</u>, "Component Inspection (Turbocharger Bypass Control Valve)".

### Is the inspection result normal?

YES >> GO TO 8.

NO >> Replace turbocharger bypass control valve. Refer to <a href="EM-242">EM-242</a>, "Exploded View".

## 8.CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect electric wastegate control actuator harness connector and ECM harness connector.
- 3. Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

+		_		
Electric wastegate control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F61	4	F24	107	Existed
101	5	127	108	LAISIEU

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

## 9.check wastegate control valve position sensor power supply

- Turn ignition switch OFF.
- Disconnect electric wastegate control actuator harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between electric wastegate control actuator harness connector and ground.

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	+		
_	ate control actua- or	_	Voltage (Approx.)
Connector	Terminal		
F61	3	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 10.

NO >> Perform the trouble diagnosis for power supply circuit.

## 10.check wastegate control valve position sensor ground circuit

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

	+		_	
Electric wastegate control actuator		E	СМ	Continuity
Connector	Terminal	Connector	Terminal	
F61	2	F24	72	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts.

## 11. CHECK WASTEGATE CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

+			_	
Electric wastegate control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	•
F61	1	F24	65	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace error-detected parts.

## 12. CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

Check the electric wastegate control actuator. Refer to <a>EC-811</a>, "Diagnosis Procedure"</a>.

### Is the inspection result normal?

YES >> GO TO 13.

NO >> Replace exhaust manifold and turbocharger assembly. Refer to EM-242, "Exploded View".

## 13. CHECK TURBOCHARGER BOOST SENSOR

Check the turbocharger boost sensor. Refer to EC-1167, "Component Inspection (Turbocharger Boost Sensor)".

### Is the inspection result normal?

YES >> GO TO 14.

NO >> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View".

14. CHECK EXHAUST MANIFOLD AND TURBOCHARGER ASSEMBLY

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

Check the exhaust manifold and turbocharger assembly. Refer to EM-244, "Inspection".

### Is the inspection result normal?

YES >> CHECK INTERMITTENT INCIDENT. Refer to GI-45, "Intermittent Incident".

NO >> Replace exhaust manifold and turbocharger assembly. Refer to EM-242, "Exploded View".

## Component Inspection (Turbocharger Bypass Control Valve)

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## 1.CHECK TURBOCHARGER BYPASS CONTROL VALVE

### (P)With consult

- Turn ignition switch ON and engine stopped or engine running (idling, less than 1200rpm).
- On the CONSULT screen, select ENGINE » ACTIVE TEST » "TC BYPASS VALVE".
- Operate "ON" or "OFF" and check if valve operating sound can be heard.

### 

- 1. Turn ignition switch OFF.
- Disconnect turbocharger bypass control valve harness connector.
- Apply a voltage of 12V to the positive or negative terminal.

### Can the valve operating sound be heard?

>> INSPECTION END YES

NO >> Replace turbocharger assembly (do not replace bypass control valve only). Refer to EM-242, "Exploded View".

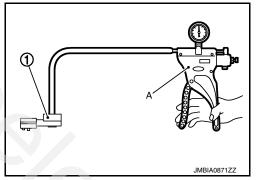
## Component Inspection (Turbocharger Boost Sensor)

## 1. CHECK TURBOCHARGER BOOST SENSOR

- 1. Turn ignition switch OFF.
- Remove turbocharger boost sensor with its harness connector.
- Install pressure pump (A) to turbocharger boost sensor (1).

When insert a pressure pump hose to the sensor, be careful to the damage of the sensor housing.

- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminals as per the following conditions.



#### NOTE:

- Always calibrate the pressure pump gauge when using it.
- Inspection should be done at room temperature [10 30°C (50 86°F)].

	ECM		On different Parameter (Parlation to a few	Valla
Connector	+	-	. ,	Voltage (Approx.)
	Tern	ninal	, , , , , , , , , , , , , , , , , , , ,	, , ,
F23	11	13	0 kPa (0 mbar, 0 mmHg, 0 inHg)	2.03 V
1 20	''	10	40 kPa (400 mbar, 300 mmHg, 11.81 inHg)	2.67 V

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace turbocharger boost sensor. Refer to EM-194, "Exploded View".

### P2562, P2566 WASTEGATE CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

# P2562, P2566 WASTEGATE CONTROL VALVE POSITION SENSOR

**DTC Logic** INFOID:0000000012198693

### DTC DETECTION LOGIC

#### NOTE:

If DTC P2562 or P2566 is displayed with DTC P0643 first perform the trouble diagnosis for DTC P0643. Refer to EC-1060, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P2562	TC BOOST CONTROL POSI- TION SEN A (Turbocharger boost control po- sition sensor A circuit)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the wastegate control valve position sensor is 4.7 V or more.	Harness or connectors     (Wastegate control valve position sen-
P2566	TC BOOST CONTROL POSI- TION SEN A (Turbocharger boost control po- sition sensor A circuit intermit- tent)	ECM detects the following status continuously for 0.5 seconds or more: A voltage signal transmitted from the wastegate control valve position sensor is 0.25 V or less.	sor circuit is open or shorted.)  • Electric wastegate control actuator

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Start the engine and let it idle for 10 seconds.
- 2. Check 1st trip DTC.

## Is 1st trip DTC detected?

YES >> Proceed to EC-1168, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198694

## 1.check wastegate control valve position sensor power supply

- Turn ignition switch OFF.
- Disconnect electric wastegate control actuator harness connector.
- Turn ignition switch ON.
- Check the voltage between electric wastegate control actuator harness connector and ground.

	+		
	ate control actua- or	_	Voltage (Approx.)
Connector Terminal			
F61	3	Ground	5 V

### Is the inspection result normal?

YES >> GO TO 2.

### P2562, P2566 WASTEGATE CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

>> Perform the trouble diagnosis for power supply circuit.

## 2.check wastegate control valve position sensor ground circuit

Turn ignition switch OFF.

NO

- Disconnect ECM harness connector.
- Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

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+				
Electric wastegate control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F61	2	F24	72	Existed

Also check harness for short to power.

### Is the inspection result normal?

>> GO TO 3. YES

NO >> Repair or replace error-detected parts.

## 3.CHECK WASTEGATE CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

+			-	
Electric wastegate control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F61	1	F24	65	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### f 4 .CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

Check the electric wastegate control actuator. Refer to EC-1169, "Component Inspection (Electric Wastegate Control Actuator)".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace electric wastegate control actuator. Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

## Component Inspection (Electric Wastegate Control Actuator)

## INFOID:0000000012198695

## 1.INSPECTION START

NO

Do you have CONSULT?

### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

## 2.CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

### With CONSULT

- 1. Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "WASTEGATE ACTUATOR".
- Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.002 m, and make a quick short note of value "V1" of "W/G ACTUATOR POSI SEN B1".

EC-1169 **Revision: November 2015 2016 JUKE** 

### P2562, P2566 WASTEGATE CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.006 m, and make a quick short note of value "V2" of "W/G ACTUATOR POSI SEN B1".

Do the values of "V1" and "V2" change (visually, ACTUATOR SHAFT operates) and "V2" minus "V1" becomes equal to or more than 1.3V?

>> INSPECTION END YES

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

3.check electric wastegate control actuator

### 

- Turn ignition switch OFF.
- Disconnect Wastegate control actuator harness connector.
- While checking the POSITION SENSOR OUT voltage with an oscilloscope, apply a voltage of 12 V to the positive or negative terminal.

Does ACTUATOR SHAFT visually operate and POSITION SENSOR OUT voltage change?

YES >> INSPECTION END

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

EC-1170 **Revision: November 2015 2016 JUKE** 

### P2563 WASTEGATE CONTROL VALVE POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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INFOID:0000000012198697

## P2563 WASTEGATE CONTROL VALVE POSITION SENSOR

DTC Logic

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P2563	TC BOOST CONTROL POSI- TION SEN A (Turbocharger boost control po- sition sensor A circuit range/per- formance)	ECM detects the following status when ECM operates the fully closed position learning of a wastegate control valve immediately after engine cold start: A voltage signal transmitted from the turbocharger boost control position sensor is higher than 1.78 V, or lower than 0.60 V.	Electric wastegate control actuator

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

1. Start the engine, and warm it up until the following condition is satisfied.

Engine coolant temperature	65°C (149°F) or more
Engine oil temperature	80°C (176°F) or more

- 2. Move the vehicle to a cool place.
- Stop the engine, and cool it down until the following condition is satisfied.

Engine coolant temperature	50°C (122°F) or less
Engine oil temperature	30 G (122 1 ) 01 less

#### CAUTION:

Never turn ignition switch ON during soaking.

4. Start engine and let it idle for 5 seconds or more.

### **CAUTION:**

Never turn ignition switch OFF during idling.

Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1171, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

## 1. CHECK WASTEGATE CONTROL VALVE POSITION SENSOR POWER SUPPLY

Turn ignition switch OFF.

Disconnect electric wastegate control actuator harness connector.
 Turn ignition switch ON.
 Check the voltage between electric wastegate control actuator harness connector and ground.

Revision: November 2015
EC-1171
2016 JUKE

### P2563 WASTEGATE CONTROL VALVE POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

	+		
J	ate control actua- or	_	Voltage (Approx.)
Connector	Terminal		
F61 3		Ground	5 V

### Is the inspection result normal?

YES >> GO TO 2. NO >> GO TO 5.

## 2.CHECK WASTEGATE CONTROL VALVE POSITION SENSOR GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

	+		_	
	tegate control ECM		Continuity	
Connector	Terminal	Connector	Terminal	
F61	2	F24	72	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## ${f 3}$ .CHECK WASTEGATE CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

 Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

	+		_	
	Electric wastegate control actuator ECM		Continuity	
Connector	Terminal	Connector Terminal		•
F61	1	F24	65	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO

NO >> Repair or replace error-detected parts.

### 4. CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

Check the electric wastegate control actuator. Refer to <u>EC-1173</u>, "Component Inspection (<u>Electric Wastegate Control Actuator</u>)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace electric wastegate control actuator. Refer to <a href="EC-600">EC-600</a>, "ENGINE CONTROL SYSTEM: Component Parts Location".

# 5.CHECK WASTEGATE CONTROL VALVE POSITION SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

## P2563 WASTEGATE CONTROL VALVE POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

	tegate control uator	EC	СМ	Continuity	
Connector	Terminal	Connector	Terminal		
F61	3	F24	61	Existed	
. Also che	eck harness	for short to g	round and s	short to powe	
•	ction result n				
	Perform the dure".	trouble diagi	nosis for EC	CM power su	circuit. Refer to <u>EC-792, "Diagnosis Proce-</u>
		place error-d	etected part	S.	
ompone	nt Inspec	tion (Elect	ric Waste	egate Con	Actuator) INFOID:000000012198698
		`		90.10	
.INSPECT	TION START				
-	CONSULT'				
=	CO TO 2	<u>?</u>			
	GO TO 2. GO TO 3.				
.CHECK	ELECTRIC V	VASTEGATE	CONTROL	. ACTUATOF	
With CON	ISULT				
Turn ign	ition switch	ON and engi			
					「" >> "WASTEGATE ACTUATOR".
		wn", set "W/C JATOR POSI			to 0.002 m, and make a quick short note of
					to 0.006 m, and make a quick short note of
		JATOR POSI			
			e (visually,	ACTUATOR	FT operates) and "V2" minus "V1" becomes
-	nore than 1.3	<u></u>			
	INSPECTIO		ssembly (de	not replace	tric wastegate control actuator only). Refer
					nt Parts Location".
		VASTEGATE			
)Without C					( ) /
	ition switch	OFF.			
Disconn	ect Wastega	ate control ac			
			ENSOR OU	T voltage wi	oscilloscope, apply a voltage of 12 V to the
•	or negative				ND OLIT welfans also as a 2
			erate and F	<u>OSITION SE</u>	OR OUT voltage change?
	INSPECTIO Replace Tur		ssembly (do	not replace	tric wastegate control actuator only). Refer
					nt Parts Location".

### P2564, P2565 WASTEGATE CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

# P2564, P2565 WASTEGATE CONTROL VALVE POSITION SENSOR

DTC Logic INFOID:0000000012198699

### DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P2564	TC BOOST CONTROL POSI- TION SEN A (Turbocharger boost control po- sition sensor A circuit low)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the wastegate control valve position sensor is 0.25 V or less.	Harness or connectors     (Wastegate control valve position sen-
P2565	TC BOOST CONTROL POSI- TION SEN A (Turbocharger boost control po- sition sensor A circuit high)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the wastegate control valve position sensor is 4.63 V or more.	sor circuit is open or shorted.)  • Electric wastegate control actuator

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

**TEST CONDITION:** 

Before performing the following procedure, confirm that battery voltage is more than 11 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 10 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1174, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198700

## ${f 1}$ .CHECK WASTEGATE CONTROL VALVE POSITION SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect electric wastegate control actuator harness connector.
- Turn ignition switch ON. 3.
- Check the voltage between electric wastegate control actuator harness connector and ground.

	+		
_	ate control actua- or	_	Voltage (Approx.)
Connector	Terminal		
F61 3		Ground	5 V

### Is the inspection result normal?

YES >> GO TO 2. >> GO TO 5. NO

## 2.CHECK WASTEGATE CONTROL VALVE POSITION SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.

EC-1174 **Revision: November 2015 2016 JUKE** 

### P2564, P2565 WASTEGATE CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

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< DTC/CIRCUIT DIAGNOSIS >

Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

+			_	
Electric wastegate control actuator		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F61	2	F24	72	Existed

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK WASTEGATE CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

	+	-		
	tegate control uator	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F61	1	F24	65	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### f 4 . CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

Check the electric wastegate control actuator. Refer to EC-1175, "Component Inspection (Electric Wastegate Control Actuator)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace electric wastegate control actuator. Refer to <u>EC-600</u>, "<u>ENGINE CONTROL SYSTEM</u>: Component Parts Location".

## 5.check wastegate control valve position sensor power supply circuit

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between electric wastegate control actuator harness connector and ECM harness connector.

	Electric wastegate control actuator		ECM		
Connector	Terminal	Connector	Terminal		
F61	3	F24	61	Existed	

4. Also check harness for short to ground and short to power.

### Is the inspection result normal?

>> Perform the trouble diagnosis for ECM power supply circuit. Refer to EC-792, "Diagnosis Proce-YES dure".

NO >> Repair or replace error-detected parts.

## Component Inspection (Electric Wastegate Control Actuator)

1.INSPECTION START

EC-1175 **Revision: November 2015 2016 JUKE** 

### P2564, P2565 WASTEGATE CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

### < DTC/CIRCUIT DIAGNOSIS >

Do you have CONSULT?

Do you have CONSULT?

YES >> GO TO 2. NO >> GO TO 3.

## 2.CHECK ELECTRIC WASTEGATE CONTROL ACTUATOR

### (P)With CONSULT

- 1. Turn ignition switch ON and engine stopped.
- 2. On the CONSULT screen, select "ENGINE" >> "ACTIVE TEST" >> "WASTEGATE ACTUATOR".
- Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.002 m, and make a guick short note of value of "W/G ACTUATOR POSI SEN B1". Assume this value to be "V1".
- 4. Operate "Up" or "Down", set "W/G ACTUATOR POSITION B1" to 0.006 m, and make a quick short note of value of "W/G ACTUATOR POSI SEN B1". Assume this value to be "V2".

Do the values of "V1" and "V2" change (visually, ACTUATOR SHAFT operates) and "V2" minus "V1" becomes equal to or more than 1.3V?

YES >> INSPECTION END

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

## 3.check electric wastegate control actuator

### 

- Turn ignition switch OFF.
- Disconnect Wastegate control actuator harness connector.
- While checking the POSITION SENSOR OUT voltage with an oscilloscope, apply a voltage of 12 V to the positive or negative terminal.

### Does ACTUATOR SHAFT visually operate and POSITION SENSOR OUT voltage change?

YES >> INSPECTION END

NO >> Replace Turbocharger Assembly (do not replace electric wastegate control actuator only). Refer to EC-600, "ENGINE CONTROL SYSTEM: Component Parts Location".

EC-1176 **Revision: November 2015 2016 JUKE** 

### **P2610 ECM INTERNAL TIMER**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P2610 ECM INTERNAL TIMER

Description INFOID:0000000012198702

This ECM contains a timer and measures time between an ignition switch OFF and the next ignition switch ON. This enables the judging of the state of engine cooling at an engine start.

INFOID:0000000012198703

## DTC Logic

### DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC detecting condition	Possible cause
P2610	ECM/PCM INTERNAL ENG OFF TIMER (ECM/PCM internal engine off timer performance)	<ul> <li>ECM internal engine off timer is malfunctioning.</li> <li>The time calculated by ECM based on a descent allowance of engine coolant temperatures during ignition switch OFF is extremely shorter than the time counted by the Engine internal OFF timer.</li> </ul>	• ECM • ECM power supply

### DTC CONFIRMATION PROCEDURE

### 1.INSPECTION START

### It is necessary to erase permanent DTC?

YES >> GO TO 4. NO >> GO TO 2.

## 2.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

Before performing the following procedure, confirm that battery voltage is 12 V or more under ignition switch OFF condition.

>> GO TO 3.

## 3.perform dtc confirmation procedure-i

- Turn ignition switch ON and wait at least 190 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

>> Proceed to EC-1178, "Diagnosis Procedure".

NO >> INSPECTION END

### 4.PRECONDITIONING

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON. 2.
- Turn ignition switch OFF and wait at least 10 seconds.

### **TESTING CONDITION:**

- Before performing the following procedure, confirm that battery voltage is 12 V or more under ignition switch OFF condition.
- Before performing the following procedure, check that fuel level is between 2/8 and 7/8.

>> GO TO 5.

## ${f 5}$ Perform DTC confirmation procedure-i

Turn ignition switch ON and wait at least 190 seconds.

EC-1177 **Revision: November 2015 2016 JUKE**  EC

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### **P2610 ECM INTERNAL TIMER**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1178, "Diagnosis Procedure".

NO >> GO TO 6.

6.PERFORM DTC CONFIRMATION PROCEDURE-II

### **CAUTION:**

To start this self-diagnosis, the conditions listed bellow are required to be satisfied. Perform the following steps to satisfy the conditions.

- Engine coolant temperature decrease by 55°C (131°F) or more during the time between an ignition switch OFF (after engine warm-up) and the second ignition switch ON.
- A fuel temperature at the second ignition switch ON is −5°C (23°F) or more and less than 35°C (95°F).
- The temperature difference between engine coolant and fuel is 5°C (41°F) or more.

### NOTE:

This self-diagnosis is not performed if the distance traveled is extremely short.

- 1. Turn ignition switch ON.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and soak the vehicle for at least 12 hours.

#### **CAUTION:**

- Never turn ON the ignition switch during soaking.
- · Never open the fuel filler cap and perform refueling during soaking.
- 4. Turn ignition switch ON and wait at least 190 seconds.
- 5. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1178, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198704

## 1. CHECK ECM POWER SUPPLY AND GROUND CIRCUIT

Check ECM power supply and ground circuit. Refer to EC-792, "Diagnosis Procedure".

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2.CHECK SELF-DIAGNOSTIC RESULT

Check that DTCs related to the fuel system and the cooling system are not detected.

### Is the inspection result normal?

YES >> Check the DTC. Refer to EC-706, "DTC Index".

NO >> GO TO 3.

## 3. PERFORM DTC CONFIRMATION PROCEDURE

- Erase DTC.
- Perform DTC Confirmation Procedure again. Refer to <u>EC-1177</u>, "DTC Logic".

### Is the 1st trip DTC P2610 displayed again?

YES >> Replace ECM. Refer to EC-1256, "Removal and Installation".

NO >> INSPECTION END

### P26A3 MULTI-WAY CONTROL VALVE MOTOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P26A3 MULTI-WAY CONTROL VALVE MOTOR

**DTC Logic** INFOID:0000000012198705

### DTC DETECTION LOGIC

### NOTE:

If DTC P26A3 is displayed with DTC P26A5, P26A6, and/or P26A7 first perform the trouble diagnosis for DTC P26A5, P26A6, and/or P26A7. Refer to EC-706, "DTC Index".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P26A3	ENGINE COOLANT BYPASS VALVE (Engine coolant bypass valve A range/performance)	ECM detects the following status continuously for 10 seconds or more: Target valve angle - actual valve angle $\geq \pm 5^\circ$	(Multi-way control valve motor circuit is

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

#### TEST CONDITION:

Before performing the following procedure, confirm that battery voltage is between more than 10 V and less than 16 V at idle.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON and wait at least 10 seconds.
- Start the engine and let it idle for 60 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1179, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

## 1. CHECK MULTI-WAY CONTROL VALVE MOTOR OUTPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect multi-way control valve harness connector and ECM harness connector.
- Check the continuity between multi-way control valve harness connector and ECM harness connector.

+		_		
Multi-way control valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F60	1	F23	52	Existed
F0U	2	1 23	51	LAISIEU

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

## 2. CHECK MULTI-WAY CONTROL VALVE MOTOR

Check the multi-way control valve motor. Refer to EC-1180, "Component Inspection (Multi-way Control Valve)".

EC-1179 **Revision: November 2015 2016 JUKE**  EC

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INFOID:000000001219870

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### P26A3 MULTI-WAY CONTROL VALVE MOTOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace multi-way control valve. Refer to CO-54, "Removal and Installation".

## Component Inspection (Multi-way Control Valve)

INFOID:0000000012198707

## 1. CHECK MULTI-WAY CONTROL VALVE-1

### (P)With CONSULT

- 1. Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "WORK SUPPORT" >> "ENGINE COOLANT BYPASS VALVE".
- 3. Check that indication of "ENGINE COOLANT B/V POSI".

### Is "205°" or more displayed on CONSULT screen?

YES >> GO TO 2.

NO >> Replace multi-way control valve. Refer to CO-54, "Removal and Installation".

## 2.CHECK MULTI-WAY CONTROL VALVE-2

### (P)With CONSULT

- 1. Start the engine.
- Warm engine up to the normal operating temperature.
- 3. Check the following condition.

COOLANT TEMP/S	10 - 100°C (50 - 212°F)
ENG OIL TEMP	120°C (248°F) or less
A/C switch	OFF

- 4. Turn ignition switch OFF and wait at least 10 seconds.
- 5. Start the engine.
- Check "ENGINE COOLANT B/V POSI" approximately 2 seconds after engine start.

### Is "40°" or less displayed on CONSULT screen?

YES >> INSPECTION END

NO >> Replace multi-way control valve. Refer to CO-54, "Removal and Installation".

### P26A5 MULTI-WAY CONTROL VALVE POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P26A5 MULTI-WAY CONTROL VALVE POSITION SENSOR

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

- If DTC P26A5 is displayed with DTC P0117 or P0118, first perform the trouble diagnosis for DTC P0117 or P0118. Refer to <u>EC-706</u>, "<u>DTC Index</u>".
- If DTC P26A5 is displayed with DTC P26A3 first perform the trouble diagnosis for DTC P26A3. Refer to EC-1179, "DTC Logic".
- If DTC P26A5 is displayed with DTC P26A6, or P26A7 first perform the trouble diagnosis for DTC P26A6, or P26A7. Refer to <u>EC-1184</u>, "<u>DTC Logic"</u>.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P26A5	ENGINE COOLANT B/V A POSI SEN (Engine coolant bypass valve A position sensor circuit range/ performance)	<ul> <li>ECM detects the following status:</li> <li>A voltage signal transmitted from the multi-way control valve position sensor is 4.76 V or more/4.3 V or less. Outside the above threshold when the valve is moved to the upper side stopper after ignition OFF.</li> <li>A voltage signal transmitted from the multi-way control valve position sensor is 0.8 V or more/0.34 or less. Outside the threshold when the valve is moved to the lower side stopper after engine start.</li> </ul>	Harness or connectors     (Multi-way control valve position sensor circuit is open or shorted.)     Multi-way control valve position sensor

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 10 V at ignition switch ON.

>> GO TO 2.

## 2.PERFORM DTC CONFIRMATION PROCEDURE-1

- 1. Start the engine and let it idle.
- Maintain the following conditions for at least 10 consecutive seconds.

Engine outlet coolant temperature (engine coolant temperature sensor 1)	10°C (50°F) or more
Engine oil temperature	135°C (275°F) or less
Engine speed	4,500 rpm or less
Accelerator pedal	Fully released

3. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-1182</u>, "<u>Diagnosis Procedure</u>".

NO >> GO TO 3.

**Revision: November 2015** 

## 3. PERFORM DTC CONFIRMATION PROCEDURE-2

1. Turn ignition switch OFF and wait at least 10 seconds.

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## P26A5 MULTI-WAY CONTROL VALVE POSITION SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Start the engine and let it idle.
- Maintain the following conditions for at least 10 consecutive seconds.

Engine outlet coolant temperature (engine coolant temperature sensor 1)	10°C (50°F) or more
Engine oil temperature	135°C (275°F) or less
Engine speed	4,500 rpm or less

4. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1182, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198709

## 1. CHECK MULTI-WAY CONTROL VALVE POSITION SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect multi-way control valve harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between multi-way control valve harness connector and ground.

+			V-11	
Multi-way control valve		-	Voltage (Approx.)	
Connector Terminal				
F60	5	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

# 2. CHECK MULTI-WAY CONTROL VALVE POSITION SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between multi-way control valve harness connector and ECM harness connector.

+		_		
Multi-way control valve		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F60	3	F24	72	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK MULTI-WAY CONTROL VALVE POSITION SENSOR INPUT SIGNAL CIRCUIT

Check the continuity between multi-way control valve harness connector and ECM harness connector.

	+		_		
	Multi-way c	ılti-way control valve ECM		СМ	Continuity
•	Connector	Terminal	Connector	Terminal	
•	F60	4	F24	75	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

## P26A5 MULTI-WAY CONTROL VALVE POSITION SENSOR

PZ6A5 WUL OTC/CIRCUIT DIAGNOSIS	[MR EXCEPT FOR NISMO RS MODELS]	
NO >> Repair or replace	<u> </u>	
<u>'</u>	FROL VALVE POSITION SENSOR	Α
-	alve position sensor. Refer to EC-1183, "Component Inspection (Multi-way Con-	
trol Valve)".	aive position sensor. Refer to EC-1163, Component inspection (Multi-way Con-	
Is the inspection result normal	<u>?</u>	EC
	t incident. Refer to GI-45, "Intermittent Incident".	
NO >> Replace multi-way	y control valve. Refer to <u>CO-54, "Removal and Installation"</u> .	С
Component Inspection	(Multi-way Control Valve)	
1. CHECK MULTI-WAY CONT	TROL VALVE-1	D
With CONSULT		
<ol> <li>Turn ignition switch ON ar</li> <li>On the CONSULT screen</li> </ol>	nd engine stopped.  n, select "ENGINE" >> "WORK SUPPORT" >> "ENGINE COOLANT BYPASS"	Е
VALVE".	i, select engine >> WORK SUPPORT >> Engine COOLANT BYPASS	
3. Check that indication of "E	ENGINE COOLANT B/V POSI".	
Is "205°" or more displayed on	CONSULT screen?	F
YES >> GO TO 2. NO >> Replace multi-way	control valve. Refer to CO-54, "Removal and Installation".	
2.CHECK MULTI-WAY CON		G
·	TROL VALVE-2	
<ul><li>With CONSULT</li><li>Start the engine.</li></ul>		
	rmal operating temperature.	Н
<ol><li>Check the following condi</li></ol>	tion.	
		1
COOLANT TEMP/S	10 - 100°C (50 - 212°F)	
ENG OIL TEMP	120°C (248°F) or less	
A/C switch	OFF	J
<ul><li>4. Turn ignition switch OFF a</li><li>5. Start the engine.</li></ul>	and wait at least 10 seconds.	
	NT B/V POSI" approximately 2 seconds after engine start.	K
Is "40°" or less displayed on C	ONSULT screen?	
YES >> INSPECTION EN		
NO >> Replace multi-way	y control valve. Refer to CO-54, "Removal and Installation".	L
		M
		Ν
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## P26A6 P26A7 MULTI-WAY CONTROL VALVE POSITION SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## P26A6 P26A7 MULTI-WAY CONTROL VALVE POSITION SENSOR

DTC Logic

### DTC DETECTION LOGIC

#### NOTE:

If DTC P26A6 or P26A7 is displayed with DTC P0643 first perform the trouble diagnosis for DTC P0643. Refer to <u>EC-1060</u>, "DTC Logic".

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible Cause
P26A6	ENGINE COOLANT B/V A POSI SEN (Engine coolant bypass valve A position sensor circuit low)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the multiway control valve position sensor is 0.34 V or less.	Harness or connectors     (Multi-way control valve position sensor)
P26A7	ENGINE COOLANT B/V A POSI SEN (Engine coolant bypass valve A position sensor circuit high)	ECM detects the following status continuously for 5 seconds or more: A voltage signal transmitted from the multiway control valve position sensor is 4.76 V or more.	circuit is open or shorted.)  • Multi-way control valve position sens

### DTC CONFIRMATION PROCEDURE

## 1.PRECONDITIONING

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- 2. Turn ignition switch ON.
- 3. Turn ignition switch OFF and wait at least 10 seconds.

### **TEST CONDITION:**

Before performing the following procedure, confirm that battery voltage is more than 11 V at ignition switch ON.

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON and wait at least 10 seconds.
- 2. Start the engine and let it idle for 20 seconds.
- Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to <u>EC-1184</u>, "<u>Diagnosis Procedure</u>".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198712

# 1. CHECK MULTI-WAY CONTROL VALVE POSITION SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect multi-way control valve harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between multi-way control valve harness connector and ground.

+				
Multi-way control valve		_	Voltage (Approx.)	
Connector	Terminal		( 1:10:00:0)	
F60	5	Ground	5 V	

### Is the inspection result normal?

## P26A6 P26A7 MULTI-WAY CONTROL VALVE POSITION SENSOR

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2.check multi-way control valve position sensor ground circuit

Turn ignition switch OFF.

- Disconnect ECM harness connector. 2.
- Check the continuity between multi-way control valve harness connector and ECM harness connector.

+			_	
Multi-way o	ontrol valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F60	3	F24	72	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

>> GO TO 3. YES

NO >> Repair or replace error-detected parts.

## 3.check multi-way control valve position sensor input signal circuit

Check the continuity between multi-way control valve harness connector and ECM harness connector.

	+	•	-	
Multi-way o	control valve	ECM		Continuity
Connector	Terminal	Connector	Terminal	
F60	4	F24	75	Existed

2. Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### f 4 .CHECK MULTI-WAY CONTROL VALVE POSITION SENSOR

Check the multi-way control valve position sensor. Refer to EC-1183, "Component Inspection (Multi-way Control Valve)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace multi-way control valve. Refer to CO-54, "Removal and Installation"

## Component Inspection (Multi-way Control Valve)

## ${f 1}$ .CHECK MULTI-WAY CONTROL VALVE-1

### (P)With CONSULT

- Turn ignition switch ON and engine stopped.
- On the CONSULT screen, select "ENGINE" >> "WORK SUPPORT" >> "ENGINE COOLANT BYPASS VALVE".
- Check that indication of "ENGINE COOLANT B/V POSI".

### Is "205°" or more displayed on CONSULT screen?

YES >> GO TO 2.

NO >> Replace multi-way control valve. Refer to CO-54, "Removal and Installation".

## 2.CHECK MULTI-WAY CONTROL VALVE-2

### (P)With CONSULT

- Start the engine.
- Warm engine up to the normal operating temperature.
- Check the following condition.

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## P26A6 P26A7 MULTI-WAY CONTROL VALVE POSITION SENSOR [MR EXCEPT FOR NISMO RS MODELS]

< DTC/CIRCUIT DIAGNOSIS >

COOLANT TEMP/S	10 - 100°C (50 - 212°F)
ENG OIL TEMP	120°C (248°F) or less
A/C switch	OFF

- Turn ignition switch OFF and wait at least 10 seconds.
- Start the engine.
- 6. Check "ENGINE COOLANT B/V POSI" approximately 2 seconds after engine start.

### Is "40°" or less displayed on CONSULT screen?

>> INSPECTION END YES

>> Replace multi-way control valve. Refer to CO-54, "Removal and Installation". NO

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### **P26AB MULTI-WAY CONTROL VALVE**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### P26AB MULTI-WAY CONTROL VALVE

**DTC Logic** INFOID:0000000012198714

### DTC DETECTION LOGIC

### NOTE:

If DTC P26AB is displayed with DTC P0300, P0301, P0302, P0303 or P0304, first perform the trouble diagnosis for P0300, P0301, P0302, P0303, P0304. Refer to EC-941, "DTC Logic".

Engine coolant temperature has not risen enough to open the multi-way control valve even though the engine has run long enough.

This is due to a leak in the seal or the multi-way control valve being stuck open.

DTC No.	Trouble diagnosis name (Trouble diagnosis content)	DTC detecting condition	Possible cause
P26AB	SEN (Engine coolant bypass valve "A" stuck/open)	The engine coolant temperature does not reach to specified temperature even though the engine has run long enough.	Multi-way control valve     Leakage from multi-way control valve     Engine coolant temperature sensor 1

### DTC CONFIRMATION PROCEDURE

#### NOTE:

Never refuel before and during the following procedure.

### 1.PRECONDITIONING-1

If DTC Confirmation Procedure has been previously conducted, always perform the following procedure before conducting the next test.

- 1. Turn ignition switch OFF and wait at least 10 seconds.
- Turn ignition switch ON.
- Turn ignition switch OFF and wait at least 10 seconds.

>> GO TO 2.

## ${f 2.}$ PRECONDITIONING-2

### (P)With CONSULT

- Turn ignition switch ON.
- Check the following conditions:

Ambient temperature	-10°C (14°F) or more
A/C switch	OFF
Blower fan switch	OFF

- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Check the following conditions:

COOLAN TEMP/S	[(-10°C) - (+52°C) (14 - 126°F)]

### Is the condition satisfied?

YES >> GO TO 3.

NO >> 1. Satisfy the condition.

GO TO 3.

## 3.PERFORM DTC CONFIRMATION PROCEDURE-1 $\,$

### (P)With CONSULT

- 1. Start engine.
- Drive the vehicle until the following condition is satisfied.

Always drive vehicle at safe speed.

STEP 1

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### **P26AB MULTI-WAY CONTROL VALVE**

### < DTC/CIRCUIT DIAGNOSIS >

60°C (140°F)

### [MR EXCEPT FOR NISMO RS MODELS]

Drive the vehicle under the conditions instructed below until the difference between "COOLAN TEMP/S" and "FUEL T/TMP SE" becomes at least 23°C (73°F).

COOLAN TEMP/S	68°C (154°F) or less	
FUEL T/TMP SE	Less than the value calculated by subtracting 28°C (82°F) from "COOLAN TEMP/S".*	
*: Example		
COOLAN TEMP/S	FUEL T/TMP SE	
65°C (149°F)	37°C (99°F) or less	

### STEP 2

Drive the vehicle at 60 km/h (37 MPH) or more with the difference between "COOLAN TEMP/S" and "FUEL T/TMP SE" maintained at 28°C (82°F) or more.

#### NOTE:

Keep the accelerator pedal as steady as possible during cruising.

STEP 3

Drive the vehicle at 60 km/h (37 MPH) or more until "COOLAN TEMP/S" increases by 6°C (43°F).

32°C (89°F) or less

#### NOTE:

Keep the accelerator pedal as steady as possible during cruising.

### Is the condition satisfied?

YES >> GO TO 4.

NO >> GO TO 1.

## 4. PERFORM DTC CONFIRMATION PROCEDURE-2

### (P)With CONSULT

1. Drive the vehicle until the following condition is satisfied.

COOLAN TEMP/S 68°C (154°F) or more	
------------------------------------	--

### **CAUTION:**

### Always drive vehicle at safe speed.

2. Check 1st trip DTC.

### Is 1st trip DTC detected?

YES >> Proceed to EC-1188, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198715

## 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

Check the engine coolant temperature sensor 1. Refer to <a>EC-1188</a>, <a>"Component Inspection"</a>.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace engine coolant temperature sensor 1. Refer to <u>CO-54, "Exploded View"</u>.

## 2.CHECK MULTI-WAY CONTROL VALVE

Check the multi-way control valve. Refer to EC-1183, "Component Inspection (Multi-way Control Valve)".

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace multi-way control valve. Refer to CO-54, "Removal and Installation".

## Component Inspection

INFOID:0000000012198716

## 1. CHECK ENGINE COOLANT TEMPERATURE SENSOR 1

- Turn ignition switch OFF.
- Disconnect engine coolant temperature sensor harness connector.

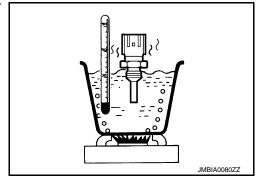
### **P26AB MULTI-WAY CONTROL VALVE**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

- 3. Remove engine coolant temperature sensor.
- 4. Check resistance between engine coolant temperature sensor terminals by heating with hot water as shown in the figure.

Engine coolant tem- perature sensor		Condition		Decista es (1.0)
+	_	Condition		Resistance (kΩ)
Terr	minal			
		T 1 50	20 (68)	2.37 - 2.63
1	2	Temperature [°C (°F)]	50 (122)	0.68 - 1.00
		( )1	90 (194)	0.236 - 0.260



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace engine coolant temperature sensor 1. Refer to <u>CO-54. "Exploded View"</u>.

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### **BATTERY CURRENT SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## **BATTERY CURRENT SENSOR**

## Component Function Check

INFOID:0000000012198717

# 1. CHECK BATTERY CURRENT SENSOR

- 1. Start engine and warm it up to normal operating temperature.
- 2. Check the voltage between ECM harness connector terminals.

	ECM	Malla a a	
Connector	Connector +		Voltage (Approx.)
Connector	Ter	minal	,
F23	38	43	2.6 - 3.5 V*

<sup>\*:</sup> Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1190, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198718

# 1. CHECK BATTERY CURRENT SENSOR POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect battery current sensor harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between battery current sensor harness connector and ground.

	+		Valtage	
Battery cur	rent sensor	-	Voltage (Approx.)	
Connector	Terminal			
F52	F52 1		5 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2.check sensor power supply 2 circuit

Perform EC-1240, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3. CHECK BATTERY CURRENT SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between battery current sensor harness connector and ECM harness connector.

+		_		
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	3	F23	43	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

### **BATTERY CURRENT SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 4. CHECK BATTERY CURRENT SENSOR INPUT SIGNAL CIRCUIT

1. Check the continuity between battery current sensor harness connector and ECM harness connector.

+			_	
Battery current sensor		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F52	4	F23	38	Existed

Also check harness for short to ground and to power.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

### 5. CHECK BATTERY CURRENT SENSOR

Check the battery current sensor. Refer to EC-1092, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

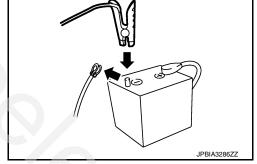
NO >> Replace battery negative cable assembly.

# Component Inspection

1. CHECK BATTERY CURRENT SENSOR

- 1. Turn ignition switch OFF.
- 2. Reconnect harness connectors disconnected.
- 3. Disconnect battery negative cable.
- Install jumper cable between battery negative terminal and body ground.
- 5. Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

	ECM	Vallana	
Connector	+	-	Voltage (Approx.)
Connector	Terminal		, , ,
F23	38	43	2.5 V*



<sup>\*:</sup> Before measuring the terminal voltage, confirm that the battery is fully charged. Refer to PG-97, "How to Handle Battery".

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace battery negative cable assembly.

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INFOID:0000000012198719

### **BRAKE PEDAL POSITION SWITCH**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# BRAKE PEDAL POSITION SWITCH

# Component Function Check

INFOID:0000000012198720

# 1. CHECK BRAKE PEDAL POSITION SWITCH FUNCTION

### (I) With CONSULT

- 1. Turn ignition switch ON.
- 2. Select "BRAKE SW1" in "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 3. Check "BRAKE SW1" indication as per the following conditions.

Monitor item	Condition		Indication
BRAKE SW1	Brake nedal	Slightly depressed	OFF
	Brake pedal	Fully released	ON

### Without CONSULT

- 1. Turn ignition switch ON.
- 2. Check the voltage between ECM harness connector terminals as per the following.

	ECM						
Connector	+	_	Condition		Condition Voltage (Approx.)		Voltage (Approx.)
Connector	Tern	ninal			( 1-1 )		
E19	140	152	Brake pedal	Slightly depressed	0 V		
	140	102	втаке редаг	Fully released	Battery voltage		

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1192, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012198721

# 1. CHECK BRAKE PEDAL POSITION SWITCH POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect brake pedal position switch harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between brake pedal position switch harness connector and ground.

+	-		Voltage	
Brake pedal p	osition switch	_		
Connector	Terminal			
E112	1	Ground	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform the trouble diagnosis for power supply circuit.

## 2.CHECK BRAKE PEDAL POSITION SWITCH INPUT SIGNAL CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between brake pedal position switch harness connector and ECM harness connector.

+		-		
Brake pedal position switch		ECM		Continuity
Connector	Terminal	Connector	Terminal	
E112	2	E19	140	Existed

### **BRAKE PEDAL POSITION SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK BRAKE PEDAL POSITION SWITCH

Check the brake pedal position switch. Refer to <u>EC-1193</u>, "Component Inspection (Brake Pedal Position Switch)"

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace brake pedal position switch. Refer to <u>BR-20, "Exploded View"</u>.

## Component Inspection (Brake Pedal Position Switch)

INFOID:0000000012198722

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# 1. CHECK BRAKE PEDAL POSITION SWITCH-I

- 1. Turn ignition switch OFF.
- Disconnect brake pedal position harness connector.
- 3. Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal position switch				
+	-	Condition		Continuity
Terminals				
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2.CHECK BRAKE PEDAL POSITION SWITCH-II

- Adjust brake pedal position switch installation. Refer to BR-21. "Inspection and Adjustment".
- Check the continuity between brake pedal position switch terminals as per the following conditions.

Brake pedal position switch				
+	-	Condition		Continuity
Tern	ninals			
			Fully released	Existed
1	2	Brake pedal	Slightly de- pressed	Not existed

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace brake pedal position switch. Refer to <a href="BR-20">BR-20</a>, "Exploded View".

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### **CLUTCH PEDAL POSITION SWITCH**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# **CLUTCH PEDAL POSITION SWITCH**

## **Component Function Check**

INFOID:0000000012198723

# 1. CHECK FOR CLUTCH PEDAL POSITION SWITCH FUNCTION

- 1. Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

	ECM			) / - H			
Connector	+	_	Condition				Voltage (Approx.)
Connector	Ter	minal			,		
E19	132	152	Clutch pedal	Slightly depressed	Battery voltage		
LIS	132	132	Ciulcii peuai	Fully released	0V		

### Is the inspection result normal?

YES >> INSPECTION END.

NO >> Proceed to EC-1194, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198724

# 1. CHECK CLUTCH PEDAL POSITION INPUT SIGNAL

- 1. Turn ignition switch OFF.
- 2. Disconnect clutch pedal position switch harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between clutch pedal position switch harness connector and ground.

	+		
Clutch pedal	position switch	_	Voltage
Connector	Terminal		
E113	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK CLUTCH PEDAL POSITION SWITCH INPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connectors.
- Check the continuity between clutch pedal position switch harness connector and ECM harness connector.

-	+	-		
Clutch pedal position switch		ECM		Continuity
Connector	Terminal	Connector Terminal		
E113	1	E19	132	Existed

4. Also check harness for short to ground and to power.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3. Check clutch pedal position switch ground circuit

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connectors.

### **CLUTCH PEDAL POSITION SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

Check the continuity between clutch pedal position switch harness connector and ground

-	+		
Clutch pedal p	oosition switch	_	Continuity
Connector	Terminal		
E113 2		Ground	Existed

4. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK CLUTCH PEDAL POSITION SWITCH

Check the clutch pedal position switch. Refer to EC-1195, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

>> Replace clutch pedal position switch. Refer to BR-20, "Exploded View". NO

## Component Inspection

# 1. CHECK CLUTCH PEDAL POSITION SWITCH-I

- 1. Turn ignition switch OFF.
- 2. Disconnect clutch pedal position switch harness connector.
- Check the continuity between clutch pedal position switch terminals as per the following conditions.

Clutch pedal position switch					
+	_	Condition		Continuity	
Terr	ninal				
1	2	Clutch pedal	Fully released	Existed	
	2	Ciutcii pedai	Slightly depressed	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.CHECK CLUTCH PEDAL POSITION SWITCH-II

- Adjust clutch pedal position switch installation. Refer to CL-12, "Inspection and Adjustment".
- Check the continuity between clutch pedal position switch terminals as per the following conditions.

Clutch pedal	position switch			
+	_	Condition		Continuity
Terminal				
1	2	Clutch pedal	Fully released	Existed
	2	Ciuton pedai	Slightly depressed	Not existed

#### Is the inspection result normal?

YES >> INSPECTION END

>> Replace clutch pedal position switch. Refer to CL-11, "Exploded View". NO

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### **COOLING FAN**

## **Component Function Check**

INFOID:0000000012198726

# 1. CHECK COOLING FAN FUNCTION

#### (P)With CONSULT

- Turn ignition switch ON.
- Perform "FAN DUTY CONTROL" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that cooling fan speed varies according to the percentage.

#### 

- Activate IPDM E/R auto active test and check cooling fan motors operation. Refer to <u>PCS-12, "Diagnosis</u> Description".
- 2. Check that cooling fan operates.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1196, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198727

# 1. CHECK COOLING FAN CONTROL MODULE POWER SUPPLY

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan control nodule harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between cooling fan control nodule harness connector and ground.

	+		
Cooling fan c	ontrol module	_	Voltage
Connector	Terminal		
E203	3	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 2.

# 2.CHECK COOLING FAN CONTROL MODULE POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect cooling fan relay harness connector.
- Check the continuity between cooling fan control nodule harness connector and cooling fan relay harness connector.

	+			
Cooling fan control module		Cooling fan relay		Continuity
Connector	Terminal	Connector Terminal		
E203	3	E204 3		Existed

Also check harness for short to ground.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK COOLING FAN RELAY POWER SUPPLY CIRCUIT

- 1. Disconnect IPDM E/R harness connector.
- 2. Check the continuity between cooling fan relay harness connector and IPDM E/R harness connector.

### **COOLING FAN**

### [MR EXCEPT FOR NISMO RS MODELS]

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<del>-</del>		-	- 4.5./D		
Cooling			1 E/R	Continuity	
Connector	Terminal	Connector	Terminal		
E204	1	E17	67	Existed	
		for short to g	round.		
•	tion result n GO TO 4.	iormai?			
		place error-d	etected par	ts.	
•	COOLING FA	•			
			.1198 "Com	nonent Inspe	ection (Cooling Fan Relay)".
	tion result n		1130, 0011	іропсті шэрі	CHOTT (GOOINING FAIT INCIDAY).
			nosis for po	wer supply ci	·cuit.
		oling fan relay			
.CHECK C	COOLING FA	AN CONTRO	L MODULE	GROUND (	IRCUIT
. Turn ign	ition switch	OFF.			
			oling fan co	ntrol nodule l	arness connector and ground.
	+				
Cooling fa	an control mod	ule	-	Continuity	
Connector	Termi	nal			
E203	1		round	Existed	
		for short to p	ower.		
•	tion result n	ormal?			
_	GO TO 6. Repair or re	place error-d	etected par	ts	
	•	AN CONTRO	•		
		/R harness co		0110011	
				ontrol nodule	harness connector and IPDM E/R harness con-
nector.		,	<b>J</b>		
		_			
-		-	_		
Cooling fan co	ontrol module	IPDN	I E/R	Continuity	
Connector	Terminal	Connector	Terminal		
E203	2	E17	72	Existed	
		for short to g	round and t	to power.	
-	tion result n	ormal?			
	GO TO 7. Renair or re	place error-d	etected nar	te	
_					CNAL CIDCUIT
.UHEUN (	JUULING F	AN CONTRO	INIODOLE	5 00 1701 5	GNAL CIRCUIT

1. Reconnect all harness connectors disconnected.

- 2. Disconnect cooling fan control module harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between cooling fan control module terminals and ground.

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	+			
Cooling fan c	ontrol module	_	Voltage	
Connector	Connector Terminal			
E301	4	Ground	Battery voltage	
E302	6	Giodila	Dattery Voltage	

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

### 8. CHECK COOLING FAN MOTORS -1 AND -2

Check the cooling fan motor. Refer to EC-1198, "Component Inspection (Cooling Fan Motor)".

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace cooling motor. Refer to CO-50, "Exploded View".

### Component Inspection (Cooling Fan Motor)

INFOID:0000000012198728

# 1. CHECK COOLING FAN MOTOR

- 1. Turn ignition switch OFF.
- Disconnect cooling fan control module harness connector.
- Supply cooling fan control module harness connector terminals with battery voltage as per the following, and check operation.

(	Cooling fan contro			
Motor	Connector		ninal	Operation
WOO	Connector	(+)	(-)	
1	E301	4	5	Cooling fan operates.
2	E302	6	7	Cooling lan operates.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning cooling fan motor. Refer to <a href="CO-50">CO-50</a>, "Exploded View".

# Component Inspection (Cooling Fan Relay)

INFOID:0000000012198729

# 1. CHECK COOLING FAN RELAY

- 1. Turn ignition switch OFF.
- Remove cooling fan relay.
- 3. Check the continuity between cooling fan relay terminals under the following conditions.

Cooling	fan relay		
+	-	Conditions	Continuity
Terr	minal		
3	5	12 V direct current supply between terminals 1 and 2	Existed
		No current supply	Not existed

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace cooling fan relay.

### **ELECTRICAL LOAD SIGNAL**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

### ELECTRICAL LOAD SIGNAL

Description INFOID:0000000012198730

The electrical load signal (Headlamp switch signal, rear window defogger switch signal, etc.) is transferred via the CAN communication line.

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## Component Function Check

# ${f 1}$ .CHECK REAR WINDOW DEFOGGER SWITCH FUNCTION

### (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- Select "LOAD SIGNAL" and check indication as per the following conditions.

Monitor item	Condition		Indication
LOAD SIGNAL	Rear window defogger switch	ON	ON
	rtear window delogger switch	OFF	OFF

#### Is the inspection result normal?

YES >> GO TO 2.

>> Proceed to EC-1199, "Diagnosis Procedure". NO

## 2.CHECK LIGHTING SWITCH FUNCTION

### (P)With CONSULT

Check "LOAD SIGNAL" indication as per the following conditions.

Monitor item	Con	Indication	
LOAD SIGNAL	Lighting switch	ON at 2nd position	ON
		OFF	OFF

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Proceed to EC-1199, "Diagnosis Procedure".

### 3. CHECK HEATER FAN CONTROL SWITCH FUNCTION

#### With CONSULT

Select "HEATER FAN SW" and check indication as per the following conditions.

Monitor item	Condition	Indication	
HEATER FAN	ATER FAN Heater fan control switch		ON
SW	Heater fair control switch	OFF	OFF

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1199, "Diagnosis Procedure".

## Diagnosis Procedure

# 1.INSPECTION START

Confirm the malfunctioning circuit (rear window defogger, headlamp or heater fan). Refer to EC-1199. "Component Function Check".

#### Which circuit is related to the incident?

Rear window defogger>>GO TO 2.

Headlamp>>GO TO 3.

Heater fan>>GO TO 4.

#### EC-1199 **Revision: November 2015 2016 JUKE**

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### **ELECTRICAL LOAD SIGNAL**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 2.CHECK REAR WINDOW DEFOGGER SYSTEM

Check the rear window defogger system. Refer to DEF-18, "Work Flow".

#### >> INSPECTION END

# 3. CHECK HEADLAMP SYSTEM

Check the headlamp system. Refer to EXL-47, "Work Flow".

### >> INSPECTION END

## 4. CHECK HEATER FAN CONTROL SYSTEM

Perform trouble diagnosis of air conditioning system. Check type of air conditioning system <u>HA-15, "Work Flow"</u> and refer to the follows.

HAC-45, "Work Flow"

>> INSPECTION END

### **EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

# Component Function Check

INFOID:0000000012198733

# 1.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE FUNCTION

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#### (P)With CONSULT

- Turn ignition switch OFF.
- 2. Disconnect the EVAP purge hose from EVAP canister purge volume control solenoid valve (EVAP canister side).
- 3. Start engine and let it idle.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode wit CONSULT.
- 5. Touch "Qu" and "Qd" on CONSULT screen to adjust "PURG VOL CONT/V" and check vacuum existence under the following conditions.

PURG VOL CONT/V	Vacuum
100%	Existed
0 %	Not existed

#### 

- 1. Turn ignition switch OFF.
- 2. Disconnect the EVAP purge hose from EVAP canister purge volume control solenoid valve (EVAP canister side).
- 3. Start engine and let it idle for at least 100 seconds.
- 4. Check vacuum existence under the following conditions.

Condition	Vacuum
At idle	Not existed
Approx. 2,000 rpm	Existed

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1201, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012198734

# 1.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between EVAP canister purge volume control solenoid valve harness connector and ground.

+			
EVAP canister purge volume control solenoid valve		_	Voltage
Connector Terminal			
F106	1	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and IPDM E/R harness connector.

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### **EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

+		_		
EVAP canister purge volume control solenoid valve		IPDM E/R		Continuity
Connector	Terminal	Connector Terminal		
F106	1	E14	35	Existed

Also check harness for short to ground.

### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 4.

YES-2 >> Without CONSULT: GO TO 5.

NO >> Repair or replace error-detected parts.

## 3.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between EVAP canister purge volume control solenoid valve harness connector and ECM harness connector.

+		-		
EVAP canister purge volume control solenoid valve		ECM		Continuity
Connector	Terminal	Connector Terminal		
F106	2	F24	115	Existed

Also check harness for short to power.

#### Is the inspection result normal?

YES-1 >> With CONSULT: GO TO 4.

YES-2 >> Without CONSULT: GO TO 5.

NO >> Repair or replace error-detected parts.

# 4.CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE OPERATION

#### (P)With CONSULT

- 1. Reconnect all harness connectors disconnected.
- Start engine.
- Perform "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Check that engine speed varies according to the valve opening.

#### <u>Does engine speed vary according to the valve opening?</u>

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 5.

# ${f 5.}$ CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

Check the EVAP canister purge volume control solenoid valve. Refer to <u>EC-1202</u>, "Component Inspection". <u>Is the inspection result normal?</u>

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EM-197, "Exploded View".

## Component Inspection

NFOID:000000001219873

# 1. CHECK EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE

#### (P)With CONSULT

- Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- Start engine.
- Select "PURG VOL CONT/V" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.

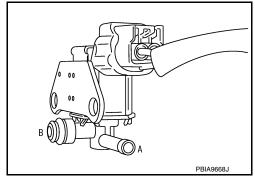
### **EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

 Touch "Qd" and "Qu" on CONSULT screen to adjust "PURG VOL C/V" opening and check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

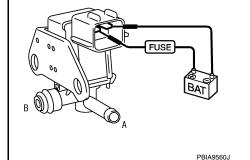
Condition (PURG VOL C/V value)	Air passage continuity between (A) and (B)
100%	Existed
0%	Not existed



#### Without CONSULT

- 1. Turn ignition switch OFF.
- 2. Disconnect EVAP canister purge volume control solenoid valve harness connector.
- 3. Disconnect EVAP purge hoses connected to EVAP canister purge volume control solenoid valve.
- 4. Check air passage continuity of EVAP canister purge volume control solenoid valve as per the following conditions.

Condition	Air passage continuity between (A) and (B)
12 V direct current supply between terminals 1 and 2	Existed
No supply	Not existed



### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace EVAP canister purge volume control solenoid valve. Refer to EM-197, "Exploded View".

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### **FUEL INJECTOR**

## Component Function Check

INFOID:0000000012198736

## 1. INSPECTION START

Turn ignition switch to START.

### Is any cylinder ignited?

YES >> GO TO 2.

NO >> Proceed to EC-1204, "Diagnosis Procedure".

# 2.CHECK FUEL INJECTOR FUNCTION

### (P)With CONSULT

- 1. Start engine.
- 2. Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 3. Check that each circuit produces a momentary engine speed drop.

### Without CONSULT

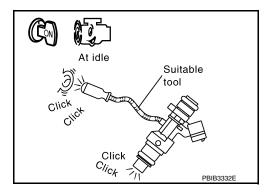
- 1. Let engine idle.
- 2. Listen to each fuel injector operating sound.

### Clicking noise should be heard.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1204, "Diagnosis Procedure".



## Diagnosis Procedure

INFOID:0000000012198737

# 1. CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect fuel injector harness connector.
- Turn ignition switch ON.
- Check the voltage between fuel injector harness connector and ground.

+				
Fuel injector			_	Voltage
Cylinder	Connector	Terminal		
1	F65	1		
2	F66	1	Ground	Battery voltage
3	F67	1	Ground	
4	F68	1		

### Is the inspection result normal?

YES >> GO TO 9. NO >> GO TO 2.

# 2.CHECK FUEL INJECTOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between fuel injector harness connector and ECM harness connector.

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Fuel injector			ECM		Continuity
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F65	1		1	
2	F66	1	F23	7	Existed
3	F67	1	F23	,	LAISIEU
4	F68	1		1	

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3. CHECK FUEL INJECTOR DRIVER POWER SUPPLY

- Reconnect ECM harness connector.
- 2. Turn ignition switch ON.
- 3. Check the voltage between ECM harness connector and ground.

+ ECM		-	Voltage
Connector	Terminal	<b>*</b>	
F23	4	Ground	Battery voltage
1 23	5	Ground	Dattery Voltage

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> GO TO 4.

# 4.CHECK FUEL INJECTOR DRIVER POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Disconnect fuel injector relay harness connector.
- 4. Check the continuity between ECM harness connector and fuel injector relay harness connector.

ECM		Fuel injector relay		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F23	4	E57	5	Existed
1 20	5	L37	7	LAISIEU

5. Also check harness for short to ground.

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace error-detected parts

# 5. CHECK FUEL INJECTOR RELAY POWER SUPPLY (CONTACT SIDE)

Check the voltage between fuel injector relay harness connector and ground.

+				
Fuel inje	ctor relay	_	Voltage	
Connector	Terminal		l	
E57	3	Ground	Battery voltage	
L37	6	Glound	Battery voltage	

#### Is the inspection result normal?

YES >> GO TO 6.

### **FUEL INJECTOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> Perform the trouble diagnosis for power supply circuit.

# 6.CHECK FUEL INJECTOR RELAY POWER SUPPLY (EXCITATION COIL SIDE)

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- 3. Check the voltage between fuel injector relay harness connector and ground.

	+		
Fuel inje	Fuel injector relay		Voltage
Connector	Terminal		
E57	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 8.

NO >> GO TO 7.

# 7.check fuel injector relay power supply circuit (excitation coil side)

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel injector relay harness connector.
- 3. Disconnect IPDM E/R harness connector.
- 4. Check the continuity between IPDM E/R harness connector and fuel injector harness connector.

IPDI	IPDM E/R		ctor relay	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E14	35	E57	1	Existed

5. Also check harness for short to ground.

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 8.CHECK FUEL INJECTOR RELAY GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel injector relay harness connector.
- Check the continuity between fuel injector relay harness connector and ground.

Fuel injector relay			Continuity
Connector	Terminal	_	Continuity
E57	2	Ground	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 10.

NO >> Repair or replace error-detected parts.

### 9. CHECK FUEL INJECTOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between fuel injector harness connector and ECM harness connector.

Fuel injector			E	СМ	0
Cylinder	Connector	Terminal	Connector	Terminal	Continuity
1	F65	2		8	
2	F66	2	F23	2	Existed
3	F67	2	123	3	
4	F68	2		6	
4. Also check harness for short to ground and to power.					
Is the inspection result normal?					
YES >> GO TO 11.					
NO >> Repair or replace error-detected parts.					

## 10. CHECK FUEL INJECTOR RELAY

Check the fuel injector relay. Refer to EC-1207, "Component Inspection (Fuel Injector Relay)".

### Is the inspection result normal?

YFS >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace fuel injector relay.

# 11. CHECK FUEL INJECTOR

Check the fuel injector. Refer to EC-1207, "Component Inspection (Fuel Injector)".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident"

NO >> Replace malfunctioning fuel injector. Refer to EM-208, "Exploded View".

## Component Inspection (Fuel Injector)

# 1. CHECK FUEL INJECTOR

Turn ignition switch OFF.

Disconnect fuel injector harness connector.

Check resistance between fuel injector terminals as per the following.

Fuel injector			
+	_	Resistance	
Terminals			
1	2	1.44 - 1.73 Ω [at 10 - 60°C (50 - 140°F)]	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning fuel injector. EM-208, "Exploded View"

# Component Inspection (Fuel Injector Relay)

# 1. CHECK FUEL INJECTOR RELAY

- Turn ignition switch OFF.
- 2. Remove fuel injector relay.
- Check the continuity between fuel heater relay terminals as per the following conditions.

+	_			
Fuel injector relay		Conditions	Continuity	
Terr	minal			
3	5	12 V direct current supply between terminals 1 and 2	Existed	
		No current supply	Not existed	

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### **FUEL INJECTOR**

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

+	-			
Fuel injector relay		Conditions	Continuity	
Terr	minal			
6	7	12 V direct current supply between terminals 1 and 2	Existed	
		No current supply	Not existed	

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel injector relay.

# **G SENSOR**

## Component Function Check

#### INFOID:0000000012198740

# 1. CHECK G SENSOR FUNCTION

- Turn ignition switch ON.
- Check the voltage between ECM harness connector terminals.

	ECM			Mallana
Connector	+	_	Condition	Voltage (Approx.)
	Terr	minal		,
F23	34	13	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Idle speed</li></ul>	0 V

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1209, "Diagnosis Procedure".

## Diagnosis Procedure

#### INFOID:0000000012198741

# 1. CHECK G SENSOR POWER SUPPLY CIRCUIT-I

- Turn ignition switch OFF.
- Disconnect G sensor harness connector. 2.
- 3. Turn ignition switch ON.
- Check the voltage between G sensor harness connector terminals.

	N/ 11		
Connector	+	_	Voltage (Approx.)
	Terr	minal	
B32	3	2	5 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

# 2.CHECK G SENSOR SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- Check the continuity between G sensor harness connector and ECM harness connector.

+		_		
G se	ensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B32	1	F23	34	Existed

Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3.CHECK G SENSOR

Check G sensor. Refer to EC-1210, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> 1. Replace G sensor.

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#### 2. Perform calibration of G sensor.

# 4. CHECK G SENSOR POWER SUPPLY CIRCUIT-II

Check the voltage between G sensor harness connector terminal and ground.

	+		Voltage	
G se	ensor	_	Voltage (Approx.)	
Connector	Terminal		, , ,	
B32	3	Ground	5 V	

### Is the inspection result normal?

YES >> GO TO 5. NO >> GO TO 7.

# 5. CHECK G SENSOR GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between G sensor harness connector and ECM harness connector.

+			_	
G se	ensor	ECM		Continuity
Connector	Terminal	Connector	Terminal	
B32	2	F23	13	Existed

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

# 6.CHECK ECM GROUND CIRCUIT

Check the continuity between ECM harness connector and ground.

ECM		Ground	Continuity	
Connector	Terminal	Giodila	Continuity	
	9			
F23	10			
	50			
F24	60	Ground	Existed	
F2 <del>4</del>	110	Giodila		
	147			
E19	149			
	152			

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Repair or replace error-detected parts.

# 7.CHECK SENSOR POWER SUPPLY 2 CIRCUIT

### Perform EC-1240, "Diagnosis Procedure".

#### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

## Component Inspection

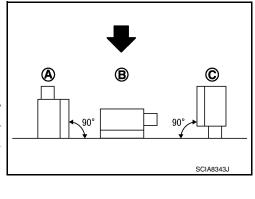
INFOID:0000000012198742

# 1. CHECK G SENSOR

### (P)With CONSULT

- 1. Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.
- Select "G SENSOR" in "DATA MONITOR" mode of "ENGINE" using CONSULT to check indications according to the following conditions:
  - : Direction of gravitational force

Monitor item	Condition	Value (V)
	Parallel with the table (0G) (B)	2.18 – 2.82
G SENSOR	Vertical to the table (−1G) (A) ↓ Parallel with the table (0G) (B) ↓ Vertical to the table (1G) (C)	0.85 – 1.49* ↓ 2.18 – 2.82* ↓ 3.51 – 4.15*

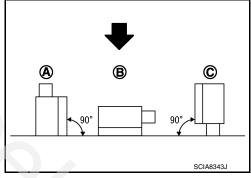


<sup>\*:</sup> Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

#### 

- 1. Remove G sensor.
- 2. Reconnect all harness connectors disconnected.
- 3. Place the G sensor on a flat table.
- 4. Turn ignition switch ON.
- 5. Check the voltage between ECM harness connector terminal and ground.
  - : Direction of gravitational force

+ ECM Connector Terminal		_	Condition	Voltage (V)
			Parallel with the table (0G) (B)	2.18 – 2.82
F23	34	Ground	Vertical to the table (-1G)  (A)  ↓  Parallel with the table  (0G) (B)  ↓  Vertical to the table (1G)  (C)	0.85 - 1.49*  ↓  2.18 - 2.82*  ↓  3.51 - 4.15*



\*: Check that voltage rises as the G sensor measurement condition changes in the order of (A), (B), and (C).

### Is the inspection result normal?

YES >> INSPECTION END NO >> Replace G sensor.

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## HIGH PRESSURE FUEL PUMP

# Component Function Check

INFOID:0000000012198743

# 1.check high pressure fuel pump function

# With CONSULTStart engine.

- Check "FUEL PRES SEN V" in "DATA MONITOR" mode of "ENGINE" using CONSULT.

Monitor Item	Condition	Values/Status
FUEL PRES SEN V	Engine speed: Idle	1,140 – 1,460 mV
	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

### Without CONSULT

- 1. Start engine.
- 2. Check the voltage between ECM harness connector terminals as per the following conditions.

	ECM			
Connector	+	_	Condition	Voltage
Connector –	Tern	ninal		
F23	48	49	<ul> <li>[Engine is running]</li> <li>Warm-up condition</li> <li>Idle speed</li> <li>NOTE:</li> <li>The pulse cycle changes depending on rpm at idle</li> </ul>	BATTERY VOLTAGE  (11 - 14 V) ★  20mSec/div  5V/div  JPBIA4722ZZ
~		·	<ul><li>[Engine is running]</li><li>Warm-up condition</li><li>Engine speed: 2,000 rpm</li></ul>	BATTERY VOLTAGE  (11 - 14 V) *  20mSec/div  5V/div  JPBIA4723ZZ

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1212, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012198744

# $1.\mathsf{check}$ high pressure fuel pump power supply

- Turn ignition switch ON.
- Check the voltage between ECM harness connector and ground.

	+			
E	CM	_	Voltage	
Connector	Terminal			
F24	47	Ground	Battery voltage	

Is inspection result normal?

### HIGH PRESSURE FUEL PUMP

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

YES	>> GO TO 8
NΟ	>> GO TO 2

# 2.CHECK HIGH PRESSURE FUEL PUMP POWER SUPPLY CIRCUIT

Turn ignition switch OFF.

- 2. Disconnect ECM harness connector.
- 3. Disconnect fuel injector relay harness connector.
- 4. Check the continuity between ECM harness connector and high pressure fuel pump relay harness connector.

+		_		
E	CM	High pressure fuel pump re- lay		Continuity
Connector	Terminal	Connector	Terminal	
F24	47	E58	3	Existed

5. Also check harness for short to ground.

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts

# 3.CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY (CONTACT SIDE)

Check the voltage between high pressure fuel pump relay harness connector and ground.

+			
High pressure fuel pump relay		-	Voltage
Connector	Terminal		
E58	5	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> Perform the trouble diagnosis for power supply circuit.

# 4. CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY (EXCITATION COIL SIDE)

- 1. Reconnect all harness connectors disconnected.
- 2. Turn ignition switch ON.
- Check the voltage between high pressure fuel pump relay harness connector and ground.

	+		
High pressure fuel pump relay		_	Voltage
Connector	Terminal		
E58	2	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> GO TO 5

# 5. CHECK HIGH PRESSURE FUEL PUMP RELAY POWER SUPPLY CIRCUIT (EXCITATION COIL SIDE)

- 1. Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump relay harness connector.
- 3. Disconnect IPDM E/R harness connector.
- check the continuity between IPDM E/R harness connector and high pressure fuel pump harness connector.

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+		_		
IPDN	M E/R	High pressure fuel pump re- lay		Continuity
Connector	Terminal	Connector Terminal		
E14	35	E58	2	Existed

5. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 6. CHECK HIGH PRESSURE FUEL PUMP RELAY GROUND CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump relay harness connector.
- Check the continuity between high pressure fuel pump relay harness connector and ground.

-		+		
-	High pressure	fuel pump relay	_	Continuity
-	Connector	Terminal		
	E58	1	Ground	Existed

4. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

# 7.CHECK HIGH PRESSURE FUEL PUMP RELAY

Check the high pressure fuel pump relay. Refer to <u>EC-1216</u>, "Component Inspection (High Pressure Fuel Pump Relay)".

### Is inspection result normal?

YES >> GO TO 8.

NO >> Replace high pressure fuel pump relay.

# 8.CHECK HIGH PRESSURE FUEL PUMP CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect ECM harness connector and high pressure fuel pump harness connector.
- 3. Check the continuity between ECM harness connector and high pressure fuel pump harness connector.

+		-		
E	СМ	High pressure fuel pump		Continuity
Connector	Terminal	Connector Terminal		
F24	48	F53	1	Existed
1 24	49	1 33	2	LAISIEU

4. Also check harness for short to ground and to power.

#### Is inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace error-detected parts.

### 9. CHECK HIGH PRESSURE FUEL PUMP

Check the high pressure fuel pump. Refer to <u>EC-1215</u>, "Component Inspection (High Pressure Fuel Pump)". <u>Is inspection result normal?</u>

YES >> GO TO 10.

NO >> Replace high pressure fuel pump. Refer to <a href="EM-203">EM-203</a>, "Exploded View".

### HIGH PRESSURE FUEL PUMP

#### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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INFOID:0000000012198745

# 10.check high pressure fuel pump installation condition

Turn ignition switch OFF.

Check that the high pressure fuel pump is installed with no backlash and looseness.

#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace error-detected parts.

# 11. CHECK CAMSHAFT

- 1. Remove camshaft. Refer to EM-260, "Exploded View".
- 2. Check camshaft. Refer to EM-264, "Inspection".

#### Is inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace camshaft. Refer to EM-260. "Exploded View".

## Component Inspection (High Pressure Fuel Pump)

1. CHECK HIGH PRESSURE FUEL PUMP-I

- Turn ignition switch OFF.
- 2. Disconnect high pressure fuel pump harness connector.
- 3. Check the resistance between high pressure fuel pump terminals as follows.

High pressu	ire fuel pump	Condition		Resistance	
+	-				
Terr	minal				
1	2	Temperature °C (°F)	20 – 30 (68 - 86)	0.46 - 0.51 Ω	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace high pressure fuel pump. Refer to <a>EM-203</a>, "Exploded View".

# 2.CHECK HIGH PRESSURE FUEL PUMP-II

### (E)With CONSULT

- 1. Reconnect high pressure fuel pump harness connector.
- Start the engine.
- 3. Check "FUEL PRES SEN" in "DATA MONITOR" of "ENGINE" using CONSULT.

Data monitor item	Condition	Voltage (Approx.)
FUEL PRES SEN V	Engine speed: idle	1,140 – 1,460 mV
TOLLTINLO SLIV	Engine speed: Revving engine from idle to 4,000 rpm quickly	1,300 – 2,900 mV

#### 

- 1. Start the engine.
- Check fuel rail pressure sensor signal voltage.

+ Fuel rail pressure sensor		_	Condition	Value (Approx.)	
Connector	Terminal			(, ipp. 5/)	
			Engine speed: idle	1.14 – 1.46 V	
F7	F7 2 Ground		Engine speed: Revving engine from idle to 4,000 rpm quickly	1.3 – 2.9 V	

#### Is the inspection result normal?

YES >> INSPECTION END

### HIGH PRESSURE FUEL PUMP

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

NO >> Replace high pressure fuel pump. Refer to <a href="EM-203">EM-203</a>, "Exploded View".

## Component Inspection (High Pressure Fuel Pump Relay)

INFOID:0000000012198746

# 1. CHECK HIGH PRESSURE FUEL PUMP RELAY

- 1. Turn ignition switch OFF.
- 2. Remove high pressure fuel pump relay.
- 3. Check the continuity between high pressure fuel pump relay terminals as per the following conditions.

+	_			
High pressure fuel pump relay		Conditions	Continuity	
Terminal				
3	5	12 V direct current supply between terminals 1 and 2	Existed	
		No current supply	Not existed	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace high pressure fuel pump relay.

### HO2S2

## **Component Function Check**

INFOID:0000000012198747

# 1.PERFORM COMPONENT FUNCTION CHECK-I

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INFOID:0000000012198748

#### 

- Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	-	Condition	Voltage	
Connector	Terminal				
F24	84 78		Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

## 2. PERFORM COMPONENT FUNCTION CHECK-II

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal				
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 3.

### 3. PERFORM COMPONENT FUNCTION CHECK-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	tor + - Condition  Terminal		Voltage	
Connector				
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1217, "Diagnosis Procedure".

# Diagnosis Procedure

# 1. CHECK HO2S2 GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- Disconnect ECM harness connector.
- 4. Check the continuity between HO2S2 harness connector and ECM harness connector.

+		_		
НО	2S2	ECM		Continuity
Connector	Terminal	Connector Terminal		
F71	1	F24	78	Existed

5. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

# 2.check ho2s2 input signal circuit

1. Check the continuity between HO2S2 harness connector and ECM harness connector.

+		_		
HO2S2		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	2	F24	84	Existed

2. Check the continuity between HO2S2 harness connector and ground, or ECM harness connector and ground.

	+		
НО	2S2	-	Continuity
Connector	Terminal		
F71	2	Ground	Not existed

	+		
E	CM	_	Continuity
Connector	Terminal		
F24	84	Ground	Not existed

3. Also check harness for short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

# 3.CHECK HEATED OXYGEN SENSOR 2

Check the heated oxygen sensor 2. Refer to EC-1219, "Component Inspection".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

### 4. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2.

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

## Component Inspection

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## 1. INSPECTION START

Do you have CONSULT?

### Do you have CONSULT?

YES >> GO TO 2.

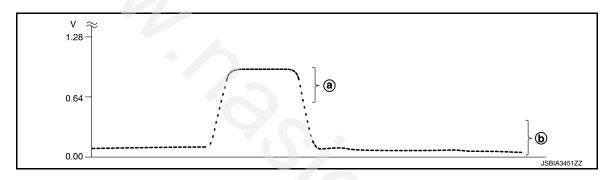
NO >> GO TO 3.

# 2. CHECK HEATED OXYGEN SENSOR 2

# K HEATED OXYGEN SENSOR 2

### With CONSULT

- 1. Turn ignition switch ON and select "DATA MONITOR" mode of "ENGINE" using CONSULT.
- 2. Start engine and warm it up to normal operating temperature.
- 3. Turn ignition switch OFF and wait at least 10 seconds.
- 4. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 6. Select "FUEL INJECTION" in "ACTIVE TEST" mode of "ENGINE" using CONSULT, and select "HO2S2 (B1)" as the monitor item with CONSULT.
- 7. Check "HO2S2 (B1)" at idle speed when adjusting "FUEL INJECTION" to  $\pm$  25%.



- (a) : The voltage should be above 0.72 V at least on time.
- (b) : The voltage should be below 0.28 V at least on time.

"HO2S2 (B1)" should be above 0.72 V at least once when the "FUEL INJECTION" is + 25%. "HO2S2 (B1)" should be below 0.28 V at least once when the "FUEL INJECTION" is - 25%.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

# 3.CHECK HEATED OXYGEN SENSOR 2-I

#### 

- 1. Start engine and warm it up to normal operating temperature.
- 2. Turn ignition switch OFF and wait at least 10 seconds.
- 3. Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				O
Connector	+	-	Condition	Voltage	
Connector	Terr	minal			Р
F24	84	78	Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 4.

## 4. CHECK HEATED OXYGEN SENSOR 2-II

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Terminal				
F24	84	78	Keeping engine speed at idle for 10 minutes	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 5.

# 5. CHECK HEATED OXYGEN SENSOR 2-III

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terr	ninal		
F24	84	78	Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.72 V at least once during this procedure. The voltage should be below 0.28 V at least once during this procedure.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 6.

#### 6. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

### **HO2S2 HEATER**

#### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

### **HO2S2 HEATER**

## Component Function Check

#### INFOID:0000000012198750

# 1.PERFORM COMPONENT FUNCTION CHECK-I

- Start engine and warm it up to normal operating temperature.
- Turn ignition switch OFF and wait at least 10 seconds. 2.
- Start engine and keep the engine speed between 3,500 and 4,000 rpm for at least 1 minute under no load.
- 4. Let engine idle for 1 minute.
- 5. Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	Connector + -		Condition	Voltage
Terminal				
F71 84 78		Revving up to 4,000 rpm under no load at least 10 times	The voltage should be above 0.68 V at least once during this procedure.	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.perform component function check-ii

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM			
Connector	+	_	Condition	Voltage
Connector	Terr	minal		
F71	84 78		Keeping engine speed at idle for 10 minutes	The voltage should be above 0.68 V at least once during this procedure.

#### Is the inspection result normal?

>> INSPECTION END YES

NO >> GO TO 3.

# 3.perform component function check-iii

Check the voltage between ECM harness connector and ground as per the following condition.

	ECM				
Connector	+	_	Condition	Voltage	
Connector	Terminal				
F71	F71 84 78		Coasting from 80 km/h (50 MPH) in D position (CVT), 4th gear position (M/T)	The voltage should be above 0.68 V at least once during this procedure.	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1221, "Diagnosis Procedure".

## Diagnosis Procedure

# 1. CHECK HO2S2 POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect heated oxygen sensor 2 (HO2S2) harness connector. 2.
- Turn ignition switch ON. 3.

**Revision: November 2015** 

Check the voltage between HO2S2 harness connector and ground.

EC-1221 **2016 JUKE** 

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	+		
НО	2S2	_	Voltage
Connector	Terminal		
F71	4	Ground	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace error-detected parts.

# 2.CHECK HO2S2 OUTPUT SIGNAL CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Check the continuity between HO2S2 harness connector and ECM harness connector.

	+			
HO2S2		ECM		Continuity
Connector	Terminal	Connector	Terminal	
F71	3	F24	117	Existed

4. Also check harness for short to ground and short to power.

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace error-detected parts.

## 3. CHECK HEATED OXYGEN SENSOR 2 HEATER

Check the heated oxygen sensor 2 heater. Refer to EC-1222, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> GO TO 4.

### 4. REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

#### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

#### >> INSPECTION END

# Component Inspection

INFOID:0000000012198752

# 1. CHECK HEATED OXYGEN SENSOR 2 HEATER

- 1. Turn ignition switch OFF.
- 2. Disconnect heated oxygen sensor 2 (HO2S2) harness connector.
- Check resistance between HO2S2 terminals as per the following.

+	_		
Heated oxygen sensor 2		Resistance	
Terr	minal		
4	3	3.3 - 4.4 Ω [at 25°C (77°F)]	

### **HO2S2 HEATER**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

+	_		•
Heated oxygen sensor 2		Resistance	A
Terminal			_
1	2	$\infty  \Omega$ (Continuity should not exist)	E
	3		
	4		
2	1		
	4		
	3		
Is the inspection	on result norma	<u>l?</u>	
VEC S INCRECTION FND			

YES >> INSPECTION END

NO >> GO TO 2.

# 2.REPLACE HEATED OXYGEN SENSOR 2

Replace heated oxygen sensor 2. Refer to EX-5, "Exploded View".

### **CAUTION:**

- Discard any sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.
- Before installing new sensor, clean exhaust system threads using Oxygen Sensor Thread Cleaner [commercial service tool (J-43897-18 or J43897-12)] and approved Anti-seize Lubricant (commercial service tool).

>> INSPECTION END

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## ON BOARD REFUELING VAPOR RECOVERY (ORVR)

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# ON BOARD REFUELING VAPOR RECOVERY (ORVR)

# Component Function Check

INFOID:0000000012198753

# 1. CHECK ORVR FUNCTION

Check whether the following symptoms are present.

- Fuel odor from EVAP canister is strong.
- Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

#### Is any symptom present?

YES >> Proceed to EC-1224, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012198754

# 1. INSPECTION START

Check whether the following symptoms are present.

A: Fuel odor from EVAP canister is strong.

B: Cannot refuel/Fuel odor from the fuel filler opening is strong while refueling.

### Which symptom is present?

A >> GO TO 2.

B >> GO TO 8.

# 2. CHECK EVAP CANISTER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

#### Is the inspection result normal?

YES >> GO TO 3.

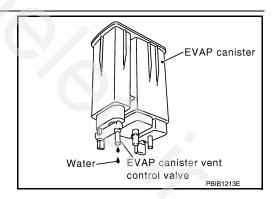
NO >> GO TO 4.

## 3.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

Check if water will drain from EVAP canister.

### Does water drain from the EVAP canister?

YES >> GO TO 4. NO >> GO TO 7.



# 4. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 5.

## 5. CHECK DRAIN FILTER

Refer to EC-1228, "Component Inspection (Drain filter)".

#### Is the inspection result normal?

OK >> GO TO 6.

NO >> Replace drain filter.

### $\mathsf{6}.\mathsf{DETECT}$ MALFUNCTIONING PART

# ON BOARD REFUELING VAPOR RECOVERY (ORVR)

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

## 7.CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-1226, "Component Inspection (Refueling EVAP vapor cut valve)".

### Is the inspection result normal?

>> INSPECTION END YES

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

# 8. CHECK EVAP CANISTER

- Remove EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.
- 2. Weigh the EVAP canister with EVAP canister vent control valve and EVAP control system pressure sensor attached.

The weight should be less than 1.9 kg (4.2 lb).

### Is the inspection result normal?

>> GO TO 9. YES

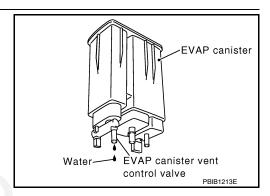
NO >> GO TO 10.

## 9.CHECK IF EVAP CANISTER IS SATURATED WITH WATER

Check if water will drain from EVAP canister.

### Does water drain from the EVAP canister?

YES >> GO TO 10. >> GO TO 13. NO



# 10. REPLACE EVAP CANISTER

Replace EVAP canister with a new one.

>> GO TO 11.

# 11. CHECK DRAIN FILTER

Refer to EC-1228, "Component Inspection (Drain filter)".

### Is the inspection result normal?

OK >> GO TO 12.

NO >> Replace drain filter.

# 12. DETECT MALFUNCTIONING PART

Check the EVAP hose between EVAP canister and vehicle frame for clogging or poor connection.

>> Repair or replace EVAP hose.

# 13. CHECK VENT HOSES AND VENT TUBES

Check hoses and tubes between EVAP canister and refueling control valve for clogging, kink, looseness and improper connection.

### Is the inspection result normal?

YES >> GO TO 14.

NO >> Repair or replace hoses and tubes.

# 14. CHECK RECIRCULATION LINE

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EC-1225 **Revision: November 2015 2016 JUKE** 

## ON BOARD REFUELING VAPOR RECOVERY (ORVR)

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

Check recirculation line for clogging, dents and cracks.

### Is the inspection result normal?

YES >> GO TO 15.

NO >> Replace fuel filler tube.

# 15. CHECK REFUELING EVAP VAPOR CUT VALVE

Refer to EC-1226, "Component Inspection (Refueling EVAP vapor cut valve)".

### Is the inspection result normal?

YES >> GO TO 16.

NO >> Replace refueling EVAP vapor cut valve with fuel tank.

# 16. CHECK FUEL FILLER TUBE

Check fuel filler tube and hose connected to the fuel tank for clogging, dents and cracks.

### Is the inspection result normal?

YES >> GO TO 17.

NO >> Replace fuel filler tube.

# 17. CHECK ONE-WAY FUEL VALVE-I

Check one-way valve for clogging.

### Is the inspection result normal?

YES >> GO TO 18.

NO >> Repair or replace one-way fuel valve with fuel tank.

# 18. CHECK ONE-WAY FUEL VALVE-II

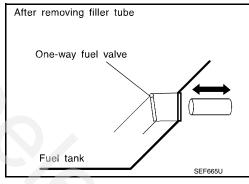
- 1. Make sure that fuel is drained from the tank.
- 2. Remove fuel filler tube and hose.
- Check one-way fuel valve for operation as per the following. When a stick is inserted, the valve should open, when removing stick it should close.

Do not drop any material into the tank.

### Is the inspection result normal?

YES >> INSPECTION END

>> Replace fuel filler tube or replace one-way fuel valve with fuel tank.



# Component Inspection (Refueling EVAP vapor cut valve)

INFOID:0000000012198755

# 1.INSPECTION START

NO

Do you have CONSULT?

### Do you have CONSULT?

YES >> GO TO 2.

NO >> GO TO 3.

## 2.CHECK REFUELING EVAP VAPOR CUT VALVE

### With CONSULT

- 1. Remove fuel tank. Refer to FL-18, "2WD: Removal and Installation".
- Drain fuel from the tank as per the following:
- Remove fuel feed hose located on the fuel gauge retainer.
- Connect a spare fuel hose, one side to fuel gauge retainer where the hose was removed and the other side to a fuel container.
- Drain fuel using "FUEL PUMP RELAY" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- Check refueling EVAP vapor cut valve for being stuck to close as per the following.
   Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- 4. Check refueling EVAP vapor cut valve for being stuck to open as per the following.

### ON BOARD REFUELING VAPOR RECOVERY (ORVR)

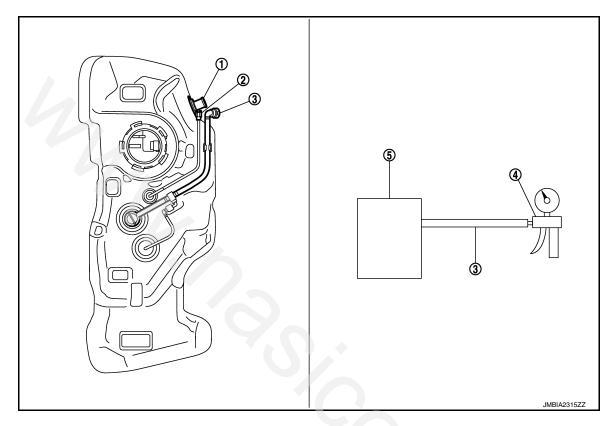
### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

### Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [–13.3 kPa (–0.136 kg/cm<sup>3</sup>, –1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.



Filler tube

- 2. Recirculation line
- EVAP/ORVR line

- 4. Vacuum/pressure handy pump
- 5. Fuel tank

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank. Refer to FL-27, "2WD : Exploded View".

## 3.CHECK REFUELING EVAP VAPOR CUT VALVE

### **⋈**Without CONSULT

- 1. Remove fuel tank. Refer to FL-18, "2WD: Exploded View".
- 2. Drain fuel from the tank as per the following:
- Remove fuel gauge retainer.
- Drain fuel from the tank using a handy pump into a fuel container.
- Check refueling EVAP vapor cut valve for being stuck to close as per the following.
   Blow air into the refueling EVAP vapor cut valve (from the end of EVAP/ORVR line hose), and check that the air flows freely into the tank.
- Check refueling EVAP vapor cut valve for being stuck to open as per the following.
- Connect vacuum pump to hose end.
- Remove fuel gauge retainer with fuel gauge unit.

### Always replace O-ring with new one.

- Put fuel tank upside down.
- Apply vacuum pressure to hose end [–13.3 kPa (–0.136 kg/cm³, –1.93 psi)] with fuel gauge retainer remaining open and check that the pressure is applicable.

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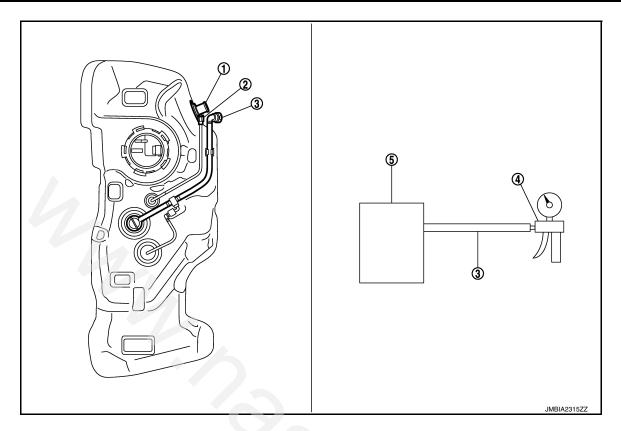
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Revision: November 2015 EC-1227 2016 JUKE



1. Filler tube

- Recirculation line
- 5. Fuel tank

3. EVAP/ORVR line

Is the inspection result normal?

Vacuum/pressure handy pump

YES >> INSPECTION END

NO >> Replace refueling EVAP vapor cut valve with fuel tank .Refer to FL-27, "2WD : Exploded View".

## Component Inspection (Drain filter)

INFOID:0000000012198756

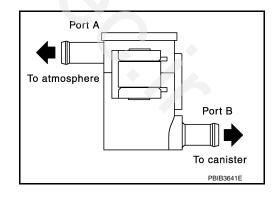
# 1. CHECK DRAIN FILTER

- 1. Check visually for insect nests in the drain filter air inlet.
- 2. Check visually for cracks or flaws in the appearance.
- 3. Check visually for cracks or flaws in the hose.
- 4. Blow air into port A and check that it flows freely out of port B.
- Block port B.
- 6. Blow air into port A and check that there is no leakage.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace drain filter.



## **IGNITION SIGNAL**

## **Component Function Check**

INFOID:0000000012198757

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INFOID:0000000012198758

## 1.INSPECTION START

Turn ignition switch OFF, and restart engine.

### Does the engine start?

YES >> GO TO 2.

NO >> Proceed to <u>EC-1229</u>, "Diagnosis Procedure".

# 2. IGNITION SIGNAL FUNCTION

### (P)With CONSULT

- 1. Perform "POWER BALANCE" in "ACTIVE TEST" mode of "ENGINE" using CONSULT.
- 2. Check that each circuit produces a momentary engine speed drop.

### WWithout CONSULT

- 1. Let engine idle.
- 2. Check the voltage signal between ECM harness connector and ground with an oscilloscope.

	ECM			
	+		_	Voltage signal
Connector	Terminal	Connector	Terminal	
	96			
	95			100mSec/div
F0.4	104	F40	450	
F24		E19	152	= -
	101			
				2V/div JPBIA4733ZZ

### NOTE:

The pulse cycle changes depending on rpm at idle.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-1229</u>, "<u>Diagnosis Procedure</u>".

# Diagnosis Procedure

# 1. CHECK CONDENSER POWER SUPPLY

- Turn ignition switch OFF.
- 2. Disconnect condenser harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between condenser harness connector and ground.

Cond	+ lenser	_	Voltage
Connector	Terminal		
F13	1	Ground	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2. CHECK CONDENSER POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- 3. Check the continuity between IPDM E/R harness connector and condenser harness connector.

	+		_	
IPDM E/R		Condenser		Continuity
Connector	Terminal	Connector	Terminal	
E15	61	F13	1	Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.check condenser ground circuit

- 1. Turn ignition switch OFF.
- 2. Check the continuity between Condenser harness connector and ground.

	+		
Cond	enser	_	Continuity
Connector	Terminal		
F13	2	Ground	Existed

3. Also check harness for short to power.

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace error-detected parts.

## 4. CHECK CONDENSER

Check the condenser. refer to EC-1232, "Component Inspection (Condenser)".

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Replace condenser.

# 5. CHECK IGNITION COIL POWER SUPPLY

- 1. Reconnect all harness connectors disconnected.
- 2. Disconnect ignition coil harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between ignition coil harness connector and ground.

	+			
	Ignition coil		_	Voltage
Cylinder	Connector	Terminal		
1	F33	3		
2	F34	3	Ground	Battery voltage
3	F35	3	Giouna	Battery voltage
4	F36	3		

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Perform the trouble diagnosis for power supply circuit.

### 6. CHECK IGNITION COIL GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Check the continuity between ignition coil harness connector and ground.

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INFOID:0000000012198759

	+			
	Ignition coil			Continuity
Cylinder	Connector	Terminal		
1	F33	2		
2	F34	2	Ground	Existed
3	F35	2	Giodila	LAISIEU
4	F36	2		

Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace error-detected parts.

### /.CHECK IGNITION COIL OUTPUT SIGNAL CIRCUIT

- 1. Disconnect ECM harness connector.
- 2. Check the continuity between ECM harness connector and ignition coil harness connector.

	+		-	-	
	Ignition coil		EC	M	Continuity
Cylinder	Connector	Terminal	Connector	Terminal	
1	F33	1		96	
2	F34	1	F24	95	Existed
3	F35	1	Γ2 <del>4</del>	104	Existed
4	F36	1		101	

Also check harness for short to ground and short to power.

### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace error-detected parts.

## 8.CHECK IGNITION COIL WITH POWER TRANSISTOR

Check the ignition coil with power transistor. Refer to <u>EC-1231, "Component Inspection (Ignition Coil with Power Transistor)"</u>.

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-214, "Exploded View".

### Component Inspection (Ignition Coil with Power Transistor)

# 1. CHECK IGNITION COIL WITH POWER TRANSISTOR-I

- Turn ignition switch OFF.
- Disconnect ignition coil harness connector.
- Check resistance between ignition coil terminals as per the following.

Ignition coil with	power transistor		
+ –		Resistance [Ω at 25°C (77°F)]	
Terr	minal		
1	2	Except 0 or ∞	
'	3	Except 0	
2	3	– Ехсері О	

Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-214, "Exploded View".

2.check ignition coil with power transistor-ii

### **CAUTION:**

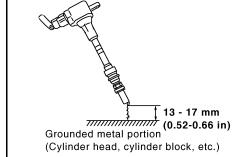
Do the following procedure in the place where ventilation is good without the combustible.

- 1. Turn ignition switch OFF.
- Reconnect all harness connectors disconnected.
- 3. Remove fuel pump fuse in IPDM E/R to release fuel pressure.

#### NOTE:

Do not use CONSULT to release fuel pressure, or fuel pressure applies again during the following procedure.

- Start engine.
- 5. After engine stalls, crank it two or three times to release all fuel pressure.
- 6. Turn ignition switch OFF.
- 7. Remove all ignition coil harness connectors to avoid the electrical discharge from the ignition coils. Refer to <a href="EM-214">EM-214</a>, "Exploded View".
- 8. Remove ignition coil and spark plug of the cylinder to be checked. Refer to EM-214, "Exploded View".
- 9. Crank engine for 5 seconds or more to remove combustion gas in the cylinder.
- 10. Connect spark plug and harness connector to ignition coil.
- 11. Fix ignition coil using a rope etc. with gap of 13 17 mm (0.52 0.66 in) between the edge of the spark plug and grounded metal portion as shown in the figure.
- Crank engine for about three seconds, and check whether spark is generated between the spark plug and the grounded metal portion.



### Spark should be generated.

#### CAUTION:

- During the operation, always stay 0.5 cm (19.7 in) away from the spark plug and the ignition coil. Be careful not to get an electrical shock while checking, because the electrical discharge voltage becomes 20 kV or more.
- It might cause to damage the ignition coil if the gap of more than 17 mm (0.66 in) is taken. NOTE:

When the gap is less than 13 mm (0.52 in), the spark might be generated even if the coil is malfunctioning.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace malfunctioning ignition coil with power transistor. Refer to EM-214, "Exploded View".

# Component Inspection (Condenser)

INFOID:0000000012198760

# 1. CHECK CONDENSER

- 1. Turn ignition switch OFF.
- 2. Disconnect condenser harness connector.
- Check resistance between condenser terminals as per the following.

Cond	lenser	
+	_	Resistance
Terr	ninal	
1	2	Above 1 MΩ [at 25°C (77°F)]

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace Condenser.

### **INFORMATION DISPLAY (ASCD)**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## **INFORMATION DISPLAY (ASCD)** Α Component Function Check INFOID:0000000012198761 1. CHECK INFORMATION DISPLAY EC Start engine. Press ASCD MAIN switch on ASCD steering switch. Drive the vehicle at more than 40 km/h (25 MPH). **CAUTION:** Always drive vehicle at a safe speed. Press COAST/SET switch. D 5. Check that the reading of the speedometer shows the same value as the set speed indicated in the information display while driving the vehicle on a flat road. Is the inspection result normal? Е >> INSPECTION END YES NO >> Proceed to EC-1233, "Diagnosis Procedure". Diagnosis Procedure INFOID:0000000012198762 1.CHECK DTC Check that DTC UXXXX, P0500 or P1574 is not displayed. Is the inspection result normal? YES >> GO TO 2. NO-1 >> Perform trouble diagnosis for DTC UXXXX. Н NO-2 >> Perform trouble diagnosis for DTC P0500. Refer to EC-1027, "EXCEPT FOR M/T MODELS : DTC NO-3 >> Perform trouble diagnosis for DTC P1574. Refer to EC-1113, "DTC Logic". 2 .CHECK DTC WITH COMBINATION METER Refer to MWI-22, "CONSULT Function". Is the inspection result normal? YES >> GO TO 3. NO >> Perform trouble diagnosis for DTC indicated. K 3.check intermittent incident Perform GI-45, "Intermittent Incident". Is the inspection result normal? YES >> Replace combination meter. Refer to MWI-64, "Removal and Installation" NO >> Repair or replace error-detected parts. Ν Р

### LOW PRESSURE FUEL PUMP

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# LOW PRESSURE FUEL PUMP

## **Component Function Check**

#### INFOID:0000000012198763

# 1. CHECK FUEL PUMP FUNCTION

- 1. Turn ignition switch ON.
- 2. Pinch fuel feed hose with two fingers.

### NOTE:

Fuel pressure pulsation should be felt on the fuel feed hose for 1 second after ignition switch is turned ON.

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to EC-1234, "Diagnosis Procedure".

## Diagnosis Procedure

#### INFOID:0000000012198764

# 1. CHECK FUEL PUMP RELAY POWER SUPPLY

- 1. Turn ignition switch OFF.
- Disconnect ECM harness connector.
- 3. Turn ignition switch ON.
- 4. Check the voltage between ECM harness connector terminals.

	E	CM		
Connector	+	Connector	-	Voltage
Connector	Terminal	Connector	Terminal	
F24	82	E19	152	Battery voltage

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK FUEL PUMP RELAY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R harness connector.
- 3. Check the continuity between ECM harness connector and IPDM E/R harness connector.

+				
ECM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
F24	82	E13	31	Existed

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3.CHECK LOW FUEL PUMP POWER SUPPLY

- Turn ignition switch OFF.
- Reconnect ECM harness connector.
- 3. Disconnect fuel level sensor unit harness connector.
- 4. Turn ignition switch ON.
- 5. Check the voltage between fuel level sensor unit harness connector and ground.

### LOW PRESSURE FUEL PUMP

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

	+		
Fuel level	sensor unit	-	Voltage
Connector	Terminal		
B46	1	Ground	Battery voltage should for exist 1 second after ignition switch is turn ON.

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 4.

# 4.CHECK LOW FUEL PUMP POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect IPDM E/R harness connector.
- Check the continuity between fuel level sensor unit harness connector and IPDM E/R harness connector.

	+		_	
Fuel level sensor unit		IPDI	Continuity	
Connector	Terminal	Connector	Terminal	
B46	1	E15	54	Existed

Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 5. CHECK LOW FUEL PUMP GROUND CIRCUIT

- Turn ignition switch OFF.
- Check the continuity between fuel level sensor unit harness connector and ground.

	+		
Fuel level sensor unit		-	Continuity
Connector	Terminal		
B46	3	Ground	Existed

3. Also check harness for short to power.

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace error-detected parts.

### 6.CHECK LOW FUEL PUMP

Check the low fuel pump. Refer to EC-1235, "Component Inspection (Low Pressure Fuel Pump)"

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-45, "Intermittent Incident".

NO >> Replace fuel level sensor unit. Refer to FL-6, "2WD : Exploded View" (2WD) or FL-10, "AWD : Exploded View" (AWD).

### Component Inspection (Low Pressure Fuel Pump)

# 1. CHECK FUEL PRESSURE REGULATOR

- Turn ignition switch OFF.
- Check low fuel pressure. Refer to <u>EC-771</u>, "Work Procedure".

### Is inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

EC-1235 **Revision: November 2015 2016 JUKE** 

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INFOID:0000000012198765

### LOW PRESSURE FUEL PUMP

### < DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# 2.CHECK LOW PRESSURE FUEL PUMP

- 1. Turn ignition switch OFF.
- 2. Disconnect fuel level sensor unit.
- 3. Check resistance between fuel level sensor unit terminals as follows.

Fuel level	sensor unit					
+	_	Condition	Resistance			
Tern	ninals					
1	3	Temperature: 25°C (77°F)	0.2 - 5.0 Ω			

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace fuel level sensor unit. Refer to <u>FL-6</u>, "<u>2WD</u> : <u>Exploded View"</u> (2WD) or <u>FL-10</u>, "<u>AWD</u> : <u>Exploded View"</u> (AWD).

## **MALFUNCTION INDICATOR LAMP**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

MALFUNCTION INDICATOR LAMP	
Component Function Check	А
1.CHECK MIL FUNCTION	EC
1. Turn ignition switch ON. 2. Check that MIL lights up.  Is the inspection result normal?  YES >> INSPECTION END  NO >> Proceed to EC-1237, "Diagnosis Procedure".	С
Diagnosis Procedure	D
1.CHECK DTC	E
Check that DTC UXXXX is not displayed.  Is the inspection result normal?  YES >> GO TO 2.  NO >> Perform trouble diagnosis for DTC UXXXX.  2.CHECK DTC WITH METER	F
Refer to MWI-22, "CONSULT Function".  Is the inspection result normal?  YES >> GO TO 3.	G H
NO >> Perform trouble diagnosis for DTC indicated.  3.CHECK INTERMITTENT INCIDENT	
Refer to GI-45, "Intermittent Incident".	
Is the inspection result normal?  YES >> Replace combination meter. Refer to MWI-64, "Removal and Installation".  NO >> Repair or replace error-detected parts.	J
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### REFRIGERANT PRESSURE SENSOR

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# REFRIGERANT PRESSURE SENSOR

# **Component Function Check**

INFOID:0000000012198768

# 1. CHECK REFRIGERANT PRESSURE SENSOR OVERALL FUNCTION

- 1. Start engine and warm it up to normal operating temperature.
- Turn A/C switch and blower fan switch ON.
- 3. Check the voltage between ECM harness connector and ground.

Connector	+	_	Voltage
Connector	Teri	minal	
F23	12	13	1.0 - 4.0V

### Is the inspection result normal?

YES >> INSPECTION END

NO >> Proceed to <u>EC-1238</u>, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012198769

# 1. CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY

- 1. Turn ignition OFF.
- 2. Disconnect refrigerant pressure sensor harness connector.
- Turn ignition switch ON.
- 4. Check the voltage between refrigerant pressure sensor harness connector and ground.

	+						
Refrigerant pr	essure sensor	_	Voltage (Approx.)				
Connector	Terminal		( )				
E49	3	Ground	5 V				

### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2.CHECK REFRIGERANT PRESSURE SENSOR POWER SUPPLY CIRCUIT

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector.

	+					
Refrigerant pr	essure sensor	E	Continuity			
Connector	Terminal	Connector	Terminal			
E49	3	F23	29	Existed		

4. Also check harness for short to ground.

### Is the inspection result normal?

YES >> Perform the trouble diagnosis for power supply circuit.

NO >> Repair or replace error-detected parts.

# 3. CHECK REFRIGERANT PRESSURE SENSOR GROUND

- Turn ignition switch OFF.
- Disconnect ECM harness connector.
- Check the continuity between refrigerant pressure sensor harness connector and ECM harness connector.

## **REFRIGERANT PRESSURE SENSOR**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

	+	-	-					
Connector	essure sensor Terminal	Connector	Terminal	Continuity				
E49	1	F23	13	Existed				
	-	for short to p		LAISted				
	tion result n	-	OWEI.					
-	GO TO 4.	<u>omman.</u>						
NO >>	Repair or rep	place error-d	etected part	S.				
.CHECK F	REFRIGERA	NT PRESSU	JRE SENSO	R INPUT SIG	SNAL CIR	CUIT		
. Check th	ne continuity	between E0	CM harness	connector ar	nd refrigera	ant pressui	re sensor h	arness conne
tor.								
	+	-		Continuity				
Connector	essure sensor Terminal	Connector	Terminal	Continuity				
E49	2	F23	12	Cylintod				
-				Existed				
		for short to g	round and t	o power.				
the inspec	tion result n	ormal?						
	GO TO 5.							
		place error-d		S.				
CHECK I	NTERMITTE	ENT INCIDE	NT.					
erform GI-4	15, "Intermitt	ent Incident"						
the inspec	tion result n	ormal?						
				Refer to HA-	36, "Explo	oded View".		
NO >>	Repair or rep	place error-d	etected part	s.				

### **SENSOR POWER SUPPLY 2 CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## SENSOR POWER SUPPLY 2 CIRCUIT

Description INFOID:000000012198770

ECM supplies a voltage of 5 V to some of the sensors systematically divided into 2 groups, respectively. Accordingly, when a short circuit develops in a sensor power source, a malfunction may occur simultaneously in the sensors belonging to the same group as the short-circuited sensor.

### Sensor power supply 1

- · Crankshaft position sensor
- · Battery current sensor
- EGR pressure sensor
- Intake manifold runner control valve position sensor
- · Manifold absolute pressure sensor
- · EGR volume control valve
- Electric wastegate position sensor
- · Multi-way control valve position sensor
- Exhaust valve timing control position sensor
- Throttle position sensor
- Accelerator pedal position sensor 1

#### NOTE:

If sensor power supply 1 circuit is malfunctioning, DTC P0643 is displayed.

### Sensor power supply 2

- · Mass air flow sensor
- G sensor
- Refrigerant pressure sensor
- Fuel rail pressure sensor
- · Engine oil pressure sensor
- Turbocharger boost sensor
- · Camshaft position sensor
- Accelerator pedal position sensor 2

# Diagnosis Procedure

INFOID:000000001219877

# 1. CHECK APP SENSOR 2 POWER SUPPLY CIRCUIT-1

- 1. Turn ignition switch OFF.
- Disconnect accelerator pedal position (APP) sensor harness connector.
- 3. Turn ignition switch ON.
- Check the voltage between APP sensor harness connector and ground.

	+						
APP s	sensor	_	Voltage (Approx.)				
Connector	Terminal						
E101	5	Ground	5 V				

## Is the inspection result normal?

YES >> INSPECTION END

NO >> GO TO 2.

# 2.CHECK APP SENSOR 1 POWER SUPPLY CIRCUIT-2

- 1. Turn ignition switch OFF.
- 2. Disconnect ECM harness connector.
- 3. Check the continuity between APP sensor harness connector and ECM harness connector.

### **SENSOR POWER SUPPLY 2 CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

### [MR EXCEPT FOR NISMO RS MODELS]

+		-				
APP sensor		EC	Continuity			
Connector	Terminal	Connector	Terminal			
E101	5	E19	142	Existed		

EC

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### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair open circuit.

3. CHECK SENSOR POWER SUPPLY 2 CIRCUIT

- 1. Disconnect following sensors harness connector.
- 2. Check harness for short to power and short to ground, between the following terminals.

ECM		Sensor							
Connector	Terminal	Name	Connector	Terminal					
E19	142	APP sensor 2	E101	5					
26		Mass air flow sensor	F8	1					
		G sensor	B32	3					
F23		Refrigerant pressure sensor	E49	3					
FZS	29	EOP sensor	F43	3					
		Turbocharger boost sensor	F75	2					
		FRP sensor	F7	1					
F24	66	CMP sensor	F109	1					

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair short to ground or short to power in harness or connectors.

## 4. CHECK COMPONENTS

### Check the following.

- APP sensor 2 (Refer to <u>EC-1146, "Component Inspection"</u>.)
- FRP sensor (Refer to EC-921, "Component Inspection".)
- EOP sensor (Refer to EC-1040, "Component Inspection".)
- Turbocharger boost sensor (Refer to <u>EC-939</u>, "Component Inspection".)
- Camshaft position sensor (PHASE) (Refer to EC-954, "Component Inspection".)
- Mass air flow sensor (Refer to EC-845, "Component Inspection".)
- Refrigerant pressure sensor (Refer to EC-1238, "Diagnosis Procedure".)
- G sensor (Refer to <u>EC-1122, "Component Inspection"</u>.)

### Is the inspection result normal?

YES >> Perform <u>GI-45</u>, "Intermittent Incident".

NO >> Replace malfunctioning component. <u>EC-921</u>, "Component Inspection"

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# SYMPTOM DIAGNOSIS

# **ENGINE CONTROL SYSTEM**

Symptom Table

SYSTEM — BASIC ENGINE CONTROL SYSTEM

-							S	/MPT	OM						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
	y symptom code	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	НА	
Fuel	Low pressure fuel pump circuit	1	1	2	3	2		2	2			3		2	EC-1234
	Fuel pressure regulator system	3	3	4	4	4	4	4	4	4		4			EC-771
	Fuel injector circuit	1	1	2	3	2		2	2			2			EC-1204
	Evaporative emission system	3	3	4	4	4	4	4	4	4		4			EC-1252
	FRP sensor circuit	1	1	2	2	2		2	2			2			EC-919
	High pressure fuel pump circuit			4		3									EC-1212
Air	Positive crankcase ventilation system	3	3	4	4	4	4	4	4	4		4	1		EC-1255
	Incorrect idle speed adjustment						1	1	1	1		1			EC-1250
	Electric throttle control actuator	1	1	2	3	3	2	2	2	2		2		2	EC-1138, EC-1143
Ignition	Incorrect ignition timing adjustment	3	3	1	1	1		1	1			1			EC-1251
	Ignition circuit	1	1	2	2	2		2	2			2			EC-1229
Main po	wer supply and ground circuit	2	2	3	3	3		3	3		2	3			EC-792
Mass air	flow sensor circuit	1			2										EC-843
Engine	coolant temperature sensor circuit					Ÿ	3			3					EC-860
Air fuel ı	Air fuel ratio (A/F) sensor 1 circuit		1	2	3	2		2	2			2			EC-871, EC-875, EC-878, EC-900
Throttle	Throttle position sensor circuit						2			2					EC-864, EC-929, EC-1084, EC-1085
Accelera	ator pedal position sensor circuit			3	2	1									EC-1145, EC-1148, EC-1153

## **ENGINE CONTROL SYSTEM**

< SYMPTOM DIAGNOSIS >

# [MR EXCEPT FOR NISMO RS MODELS]

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	SYMPTOM													
	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Heated oxygen sensor 2 circuit			6		6		6	6			5			EC-881, EC-887, EC-894
Knock sensor circuit			2								3			EC-947
Engine oil temperature sensor circuit			4		2						3			EC-926
Engine oil pressure sensor circuit			4		4	3	3	3			3			EC-1038
Crankshaft position sensor (POS) circuit	2	2												EC-949
Camshaft position sensor (PHASE) circuit	3	2												EC-952
Turbocharger boost sensor circuit			3		3									EC-938
Manifold absolute pressure sensor circuit					2									EC-851
Vehicle speed signal circuit		2	3		3						3			EC-1027, EC-1031
ECM	2	2	3	3	3	3	3	3	3	3	3			EC-1050, EC-1052, EC-1054, EC-1057, EC-1058
Intake valve timing control solenoid valve circuit	2	2	2		2		2	2						EC-799, EC-813
Intake intermediate valve timing control sole- noid valve circuit	2	2	2		2		2	2						EC-799, EC-813
Exhaust valve timing control solenoid valve circuit	2	2	2		2		2	2						EC-802, EC-816
Exhaust valve timing control position sensor circuit	2	2			3									EC-955
EGR pressure sensor											5			EC-1025
Intake manifold runner control valve motor circuit	5	4	4	2	4		4	4			4			EC-1126
Intake manifold runner control valve position sensor circuit														EC-1129
Turbocharger bypass control valve circuit			3		3									EC-932
Electric wastegate valve circuit					1									EC-1168
Electric recircuration valve circuit					1									EC-836
PNP signal circuit			3		3		3	3			3			EC-1065
Refrigerant pressure sensor circuit		2				3			3		4			EC-1238
Cooling fan control module circuit	5	5	5	5	5		5	5	5	4	5			EC-1196

### [MR EXCEPT FOR NISMO RS MODELS]

						S١	/MPT	OM						
	HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty symptom code	AA	AB	AC	AD	ΑE	AF	AG	AH	AJ	AK	AL	AM	HA	
Atmospheric pressure sensor circuit											3			EC-851
Battery current sensor circuit						4	5	5					3	EC-1091, EC-1094, EC-1097, EC-1100
Electrical load signal circuit							3							EC-1199
Air conditioner circuit	2	2	3	3	3	3	3	3	3		3		2	HAC-45
ABS actuator and electric unit (control unit)			4											BRC-59

<sup>1 - 6:</sup> The numbers refer to the order of inspection. (continued on next page)

# SYSTEM — ENGINE MECHANICAL & OTHER

							S	YMPT	ОМ						
		HARD/NO START/RESTART (EXCP. HA)	ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty s	symptom code	A A	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Fuel	Fuel tank	5													FL-18, FL-23
	Fuel piping			5	5	5		5	5			5			EM-213
	Vapor lock		5												_
	Valve deposit														_
	Poor fuel (Heavy weight gasoline, Low octane)	5		5	5	5		5	5			5			_

## **ENGINE CONTROL SYSTEM**

# [MR EXCEPT FOR NISMO RS MODELS]

							S'	YMPT	ОМ							^
						z					HIGH					Α
		(EXCP. HA)		SPOT		ACCELERATION					ATURE HI	NOI	z	(GE)		EC
		ESTART (E)		ING/FLAT S	FONATION	OOR ACCE	щ	JING		I TO IDLE	OVERHEATS/WATER TEMPERATURE	CONSUMPTION	CONSUMPTION	NDER CHARGE)	Reference	С
		O START/RESTART	STALL	HESITATION/SURGING/FLAT	SPARK KNOCK/DETONATION	: POWER/POOR	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	:ATS/WATE	EXCESSIVE FUEL (	IVE OIL CC	Y DEAD (UNDER	page	D
	4	HARD/NO	ENGINE STALL	HESITAT	SPARK K	LACK OF	HIGH IDI	ROUGH	IDLING \	SLOW/N	OVERHE	EXCESS	EXCESSIVE OIL	BATTERY		Е
Warranty s	ymptom code	A A	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА		F
Air	Air duct														EM-192	
	Air cleaner  Air leakage from air duct (Mass air flow sensor — electric		5	5		5		5	5		-	5			<u>EM-192</u>	G
	throttle control actuator)  Electric throttle control actuator  Air leakage from intake manifold/	5			5		5			5					<u>EM-197</u>	Н
	Collector/Gasket															
Cranking	Battery	1	1	1		1		1	1					1	PG-105	
	Generator circuit Starter circuit	3								-					CHG-8 STR-6	
	Signal plate	6										1			EM-287	J
	PNP signal	4	-												TM-24, TM-326	K
Engine	Cylinder head Cylinder head gasket	5	5	5	5	5		5	5		4	5	3		EM-273	N
	Cylinder block															L
	Piston												4			
	Piston ring	6	6	6	6	6		6	6			6			EM-287	IV
	Connecting rod	0	0	0	0	0		0	0			0			<u> </u>	
	Bearing															
	Crankshaft															Ν
Valve	Timing chain														EM-249	
mecha- nism	Camshaft														EM-261	С
	Intake valve timing control	5	5	5	5	5		5	5			5			EM-249	
	Exhaust valve timing control														<u>EM-249</u>	
	Intake valve												3		EM-261	Р
	Exhaust valve															

# [MR EXCEPT FOR NISMO RS MODELS]

		SYMPTOM													
			ENGINE STALL	HESITATION/SURGING/FLAT SPOT	SPARK KNOCK/DETONATION	LACK OF POWER/POOR ACCELERATION	HIGH IDLE/LOW IDLE	ROUGH IDLE/HUNTING	IDLING VIBRATION	SLOW/NO RETURN TO IDLE	OVERHEATS/WATER TEMPERATURE HIGH	EXCESSIVE FUEL CONSUMPTION	EXCESSIVE OIL CONSUMPTION	BATTERY DEAD (UNDER CHARGE)	Reference page
Warranty s	symptom code	A A	AB	AC	AD	AE	AF	AG	АН	AJ	AK	AL	AM	НА	
Exhaust	Exhaust manifold/Tube/Muffler/ Gasket  Three way catalyst	5	5	5	5	5		5	5			5			EX-10, EM-243 EM-232, EM-235, EX-10
	EGR valve		5		5	5			5		5	5			EC-961, EC-993
Lubrica- tion	Oil pan/Oil strainer/Oil pump/Oil filter/Oil gallery/Oil cooler Oil level (Low)/Filthy oil	5	5	5	5	5		5	5			5			EM-200, EM-282, LU-32,
	Variable displacement oil pump	5	5		4							4			EC-1041
Cooling	Radiator/Hose/Radiator filler cap														<u>CO-46</u>
-	Thermostat									5				:	<u>CO-57</u>
	Water pump	-													<u>CO-52</u>
	Water gallery	5	5	5	5	5		5	5		4	5			<u>CO-54</u>
	Cooling fan														<u>CO-50</u>
	Coolant level (Low)/Contaminated coolant									5					<u>CO-40</u>
	Multi-way control valve	5	5	5	5	5		5	5	5	4	4			EC-1179, EC-1181, EC-1184
NATS (Nis	san Anti-theft System)	1	1												SEC-16

<sup>1 - 6:</sup> The numbers refer to the order of inspection.

### **ASCD MAIN SWITCH DOES NOT TURN ON/OFF**

< SYMPTOM DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

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# ASCD MAIN SWITCH DOES NOT TURN ON/OFF Α Diagnosis Procedure INFOID:0000000012198773 1. CHECK DTC WITH ECM EC Check that DTC is not displayed. Is the inspection result normal? C YES >> GO TO 2. NO >> Perform trouble diagnosis relevant to DTC indicated. 2. CHECK ASCD MAIN SWITCH D Refer to EC-1233, "Component Function Check". Is the inspection result normal? >> Perform GI-45, "Intermittent Incident". Е YES NO >> Repair or replace malfunctioning part. F Н K M Ν 0

# ASCD TEMPORARY RELEASE CANNOT BE PERFORMED BY THE CLUTCH PEDAL

< SYMPTOM DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

# ASCD TEMPORARY RELEASE CANNOT BE PERFORMED BY THE CLUTCH PEDAL

Diagnosis Procedure

INFOID:0000000012198774

# 1. CHECK DTC WITH ECM

Check that DTC is not displayed.

Is the inspection result normal?

YES >> GO TO 2.

NO >> Perform trouble diagnosis relevant to DTC indicated.

2.CHECK CLUTCH PEDAL POSITION SWITCH

Refer to EC-1194. "Component Function Check".

Is the inspection result normal?

YES >> Perform <u>GI-45</u>, "Intermittent Incident".

NO >> Repair or replace malfunctioning part.

## NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

[MR EXCEPT FOR NISMO RS MODELS]

## NORMAL OPERATING CONDITION

Description INFOID:0000000012198775

### FUEL CUT CONTROL (AT NO LOAD AND HIGH ENGINE SPEED)

If the engine speed is above 1,800 rpm under no load (for example, the selector lever position is neutral and engine speed is over 1,800 rpm) fuel will be cut off after some time. The exact time when the fuel is cut off varies based on engine speed.

Fuel cut will be operated until the engine speed reaches 1,500 rpm, then fuel cut will be cancelled. **NOTE:** 

This function is different from deceleration control listed under direct injection gasoline system, <u>EC-630</u>, "<u>DIRECT INJECTION GASOLINE SYSTEM</u>: System Description".

Revision: November 2015 EC-1249 2016 JUKE

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### **IDLE SPEED**

[MR EXCEPT FOR NISMO RS MODELS]

# PERIODIC MAINTENANCE

**IDLE SPEED** 

Inspection INFOID:000000012198776

1. CHECK IDLE SPEED

With CONSULT

Check idle speed in "DATA MONITOR" mode with CONSULT.

>> INSPECTION END

## **IGNITION TIMING**

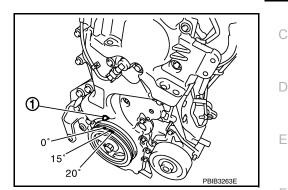
### [MR EXCEPT FOR NISMO RS MODELS]

# **IGNITION TIMING**

Inspection INFOID:0000000012198777

# 1. CHECK IGNITION TIMING

- Attach timing light to the ignition coil No.1 harness.
- Check ignition timing.
  - 1 : Timing indicator
  - >> INSPECTION END



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### **EVAPORATIVE EMISSION SYSTEM**

< PERIODIC MAINTENANCE >

[MR EXCEPT FOR NISMO RS MODELS]

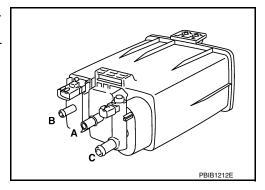
## **EVAPORATIVE EMISSION SYSTEM**

Inspection INFOID:000000012198778

# 1. CHECK EVAP CANISTER

- 1. Block port (B).
- 2. Blow air into port (A) and check that it flows freely out of port (C).
- 3. Release blocked port (B).
- 4. Apply vacuum pressure to port (B) and check that vacuum pressure exists at the ports (A) and (C).
- 5. Block port (A) and (B).
- 6. Apply pressure to port (C) and check that there is no leakage.

>> INSPECTION END



### **EVAP LEAK CHECK**

Inspection INFOID:0000000012198779

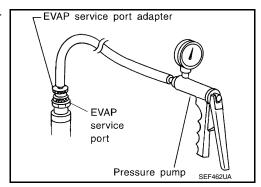
### **CAUTION:**

- Do not use compressed air or a high pressure pump.
- Do not exceed 4.12 kPa (0.042 kg/cm<sup>2</sup>, 0.6 psi) of pressure in EVAP system. NOTE:
- · Do not start engine.
- Improper installation of EVAP service port adapter [commercial service tool: (J-41413-OBD)] to the EVAP service port may cause a leak.

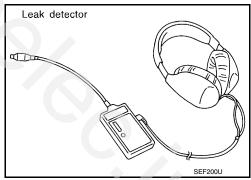
## 1.EVAP LEAK CHECK

### (P)With CONSULT

1. Install EVAP service port adapter [commercial service tool: (J-41413-OBD)] and pressure pump to EVAP service port.

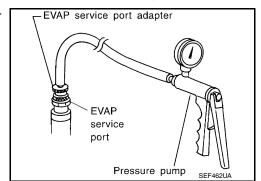


- 2. Turn ignition switch ON.
- 3. Select the "EVAP SYSTEM CLOSE" in "WORK SUPPORT" mode of "ENGINE" using CONSULT.
- 4. Touch "START". A bar graph (Pressure indicating display) will appear on the screen.
- Apply positive pressure to the EVAP system until the pressure indicator reaches the middle of the bar graph.
- 6. Remove EVAP service port adapter [commercial service tool: (J-41413-OBD)] and hose with pressure pump.
- Locate the leak using a leak detector [commercial service tool: (J-41416)]. Refer to <u>EC-650</u>, "<u>EVAPORATIVE EMISSION SYS-</u> TEM: System Description".



### 

1. Install EVAP service port adapter [commercial service tool: (J-41413-OBD)] and pressure pump to EVAP service port.



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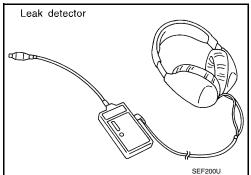
### **EVAP LEAK CHECK**

### < PERIODIC MAINTENANCE >

### [MR EXCEPT FOR NISMO RS MODELS]

- 2. Apply battery voltage between the terminals of EVAP canister vent control valve to make a closed EVAP system.
- 3. To locate the leak, deliver positive pressure to the EVAP system until pressure gauge points reach 1.38 to 2.76 kPa (0.014 to 0.028 kg/cm<sup>2</sup>, 0.2 to 0.4 psi).
- 4. Remove EVAP service port adapter [commercial service tool: (J-41413-OBD)] and hose with pressure pump.
- 5. Locate the leak using a leak detector [commercial service tool: (J-41416)]. Refer to <u>EC-650</u>, "<u>EVAPORATIVE EMISSION SYSTEM</u>: System Description".

>> INSPECTION END



### **POSITIVE CRANKCASE VENTILATION**

< PERIODIC MAINTENANCE >

[MR EXCEPT FOR NISMO RS MODELS]

# POSITIVE CRANKCASE VENTILATION

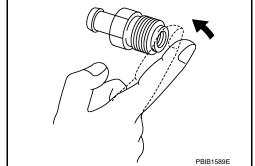
Inspection INFOID:0000000012198780

# 1. CHECK PCV VALVE

With engine running at idle, remove PCV valve from rocker cover. A properly working valve makes a hissing noise as air passes through it. A strong vacuum should be felt immediately when a finger is placed over valve inlet.

### Is the inspection result normal?

YES >> INSPECTION END NO >> Replace PCV valve.



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# REMOVAL AND INSTALLATION

**ECM** 

### Removal and Installation

INFOID:0000000012198781

### **CAUTION:**

Perform ADDITIONAL SERVICE WHEN REPLACING ECM. Refer to EC-749, "Work Procedure".

### **REMOVAL**

- 1. Remove fusible link bracket. Keep a service area.
- 2. Disconnect ECM harness connectors. Refer to PG-6, "Harness Connector".
- 3. Remove ECM mounting nuts, and then remove ECM.

### INSTALLATION

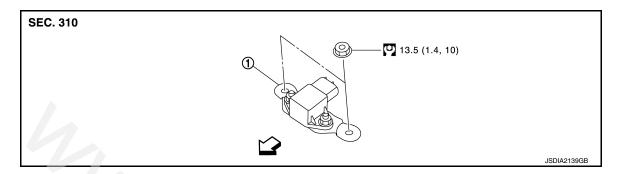
Install in the reverse order of removal.

### [MR EXCEPT FOR NISMO RS MODELS]

# **G SENSOR**

**Exploded View** 

INFOID:0000000012198782



1. G sensor

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<br />
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: N·m (kg-m, ft-lb)

### Removal and Installation

#### **CAUTION:**

- Never drop or strike G sensor, because it has little tolerance for impact.
- Never use a power tool to avoid impact.

### REMOVAL

- 1. Disconnect the battery cable from the negative terminal. Refer to PG-106, "Removal and Installation".
- 2. Remove driver seat (LHD) or passenger seat (RHD). Refer to SE-21, "Removal and Installation".
- 3. Remove center pillar lower garnish (left side) and dash side finisher (left side). Refer to <a href="INT-22">INT-22</a>, "CENTER PILLAR LOWER GARNISH: Removal and Installation" (center pillar lower garnish) and <a href="INT-21">INT-21</a>, "DASH SIDE FINISHER: Removal and Installation" (dash side finisher).
- 4. Pull up floor carpet. Refer to INT-24, "Removal and Installation".
- 5. Disconnect G sensor harness connector.
- Remove G sensor.

### **INSTALLATION**

Installation is the reverse order of removal.

Adjustment INFOID:000000012198784

### ADJUSTMENT AFTER INSTALLATION

Perform "CALIBRATION OF G SENSOR". Refer to EC-763, "Description".

Revision: November 2015 EC-1257 2016 JUKE

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## **SERVICE DATA AND SPECIFICATIONS (SDS)**

< SERVICE DATA AND SPECIFICATIONS (SDS)

[MR EXCEPT FOR NISMO RS MODELS]

# SERVICE DATA AND SPECIFICATIONS (SDS)

# SERVICE DATA AND SPECIFICATIONS (SDS)

Idle Speed

Transmission	Transmission Condition				
CVT	No load* (in P or N position)	650 ± 50 rpm			
M/T	No load* (in Neutral position)	600 ± 50 rpm			

<sup>\*:</sup> Under the following conditions

- · A/C switch: OFF
- · Electric load: OFF (Lights, heater fan & rear window defogger)
- · Steering wheel: Kept in straight-ahead position

# **Ignition Timing**

INFOID:0000000012198786

Transmission	Condition	Specification
CVT	No load* (in P or N position)	5 ± 2° BTDC
M/T	No load* (in Neutral position)	5 ± 2° BTDC

<sup>\*:</sup> Under the following conditions

- · A/C switch: OFF
- · Electric load: OFF (Lights, heater fan & rear window defogger)
- · Steering wheel: Kept in straight-ahead position

## Calculated Load Value

INFOID:0000000012198787

	Specification (Using CONSULT)				
۸ ± : ما اه	CVT (in N position)	Approx. 21 %			
At idle	M/T (in Neutral position)	Approx. 17%			
At 2,500 rpm		Approx. 15 %			

## Mass Air Flow Sensor

INFOID:0000000012198788

Condition	Specification (Using CONSULT)
At idle*	Approx. 1.6 g/sec
At 2,500 rpm*	Approx. 5.0 g/sec

<sup>\*:</sup> Engine is warmed up to normal operating temperature and running under no load.

# **SERVICE DATA AND SPECIFICATIONS (SDS)**

< SERVICE DATA AND SPECIFICATIONS (SDS)

[MR EXCEPT FOR NISMO RS MODELS]

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