



长安汽车  
CHANGAN

# CS35 Workshop Manual

## Cruise Control System

CS35RM2H/1/1

www.nasicoelec.ir

[www.nasicoelec.ir](http://www.nasicoelec.ir)

**GROUP**

**3**

# **Powertrain**

---

**3.1 Engine - 1.6L**

3.2.14 Cruise Control System ..... 3.1.14-1

*www.nasicoelec.ir*

[www.nasicoelec.ir](http://www.nasicoelec.ir)

**Specification****General Specifications****Torque Specifications**

<b>Description</b>	<b>Nm</b>	<b>lb-ft</b>	<b>lb-in</b>
ECM retaining bolt	10	-	89
Retaining nut of steering wheel	33	24	-

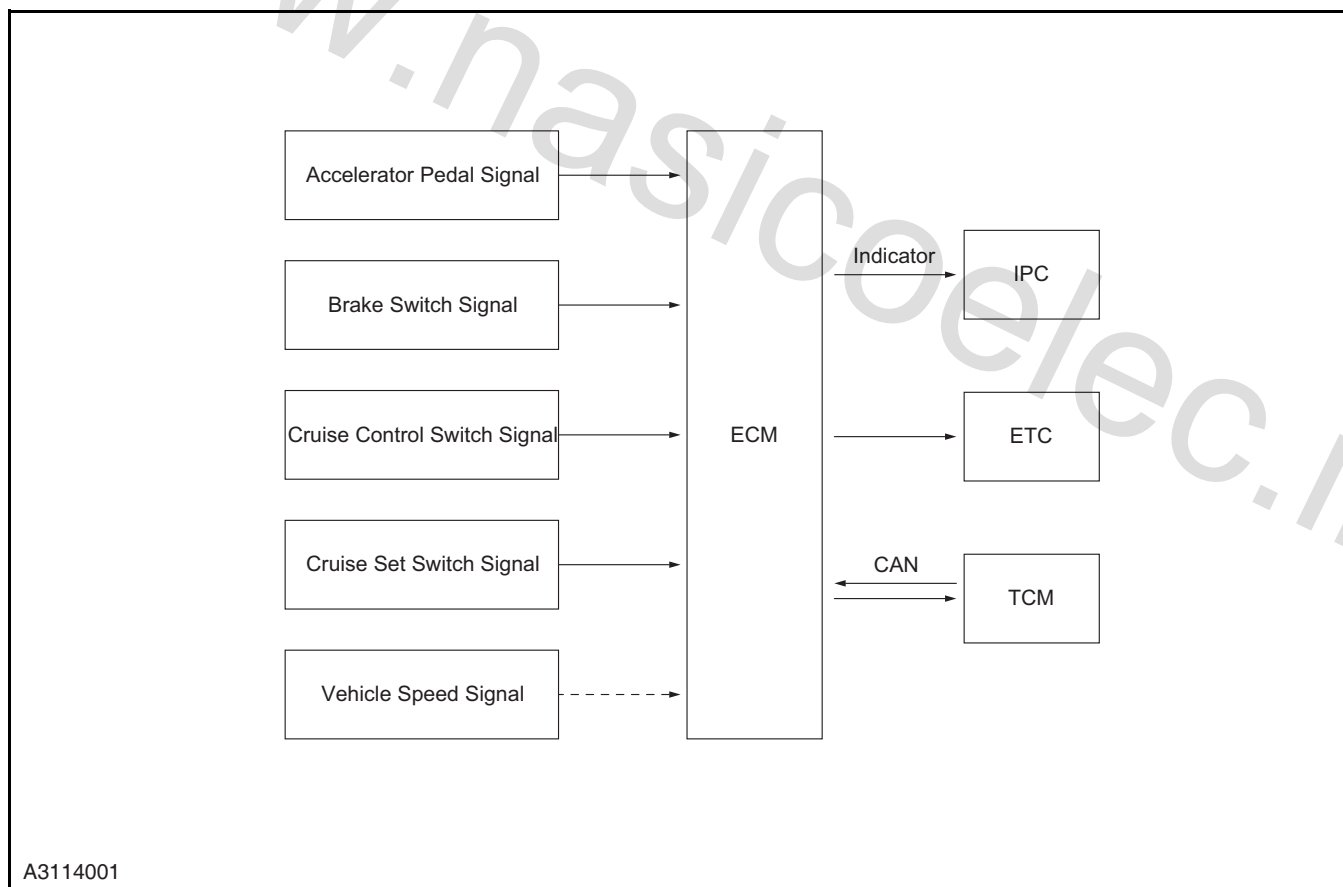
[www.nasicoelec.ir](http://www.nasicoelec.ir)

## Description and Operation

### System Overview

The cruise control system is a speed control system, based on the start of the cruise control switch on the steering wheel, the cruise control system will initiate and adjust the speed. It is to maintain a desired speed higher than 40 km / h under normal driving conditions. The steep slope may cause the change of the selected speed. After pressing the cruise control switch when the vehicle reaches a speed of 60 ~ 125 km / h, press the cruise set switch button "SET" on the steering wheel, the vehicle will cruise according to the current set vehicle speed, and the indicator on the instrument cluster is on.

After activating the cruise control system, the driver can change the speed of the current set through the "SET / - (Set / -)" switch and "RES / + (reset / +)" switch. After the cruise control system is activated, press and hold the "SET / - (set / -)" switch, in case of the vehicle not turning off the cruise control system, so that the speed began to decline from the current set speed. When the "SET / - (Set / -)" switch is released, the engine control module records the current vehicle speed as a new set vehicle speed. After activating the cruise control system, briefly press the "SET / - (Set / -)" switch so that each time after shortly pressing the SET / - (Setup / -)", the vehicle decelerates in the amplitude of 2 km / h with the minimum speed of 40 km / h. After activating the cruise control system, press and hold the "+ RES (+ reset)" switch so that the vehicle accelerates, and the speed exceeds the current set speed. When the switch "RES / + (reset / +)" is released, the engine control module records the current vehicle speed as a new set vehicle speed.



Conditions to activate cruise control :

- The speed is higher than 60 km / h and lower than 125 km / h.
- Vehicle runs at the gear 1, 2, 3 and 4.
- The system voltage is between 9 ~ 16 V.
- Parking brake not applied.

Condition to disable the cruise control system:

- Brake lamp switch signal
- Cruise control switch "OFF" signal

When the cruise control system is disabled, the engine control module will send a corresponding signal to the dashboard instrument cluster (IPC) to extinguish the cruise enabled indicator.

### Cruise Control System Disabled

In case of any circumstance below, the engine control module (ECM) will disable the cruise control operation:

- Cruise Control switch off.
- The engine control module detects the brake pedal depressed or the failure of the brake signal.
- Cruise control system DTC available (such as electronic throttle malfunction, speed failure, hardware failure, etc.).
- The vehicle speed is lower than 60 km / h or higher than 125 km / h.
- The vehicle is in park, reverse, neutral gears.
- The engine speed is too low or too high.
- The system voltage is not between 9 ~ 16 V.

The cruise control system consists of the following components:

- Accelerator pedal
- Stop lamp switch
- Cruise control switch
- Cruise set switch
- Engine control module (ECM)
- Throttle actuator control (ETC) motor
- Vehicle speed sensor (VSS)
- Instrument cluster (IPC)

## Component Description

### Cruise control switch

The cruise control switch is the CRUISE (ON / OFF) switch, located on the steering wheel. The cruise control switch is designed as a normally on switch, if energized, the engine control module detects a particular voltage signal detected in the cruise control switch circuit, and the engine control module obtains the cruise function enable signal via a cruise control switch. When the cruise control switch is turned off, the engine control module detects a ground voltage signal in the cruise control switch circuit and the engine control module turns off the cruise control system.

### Cruise set switch

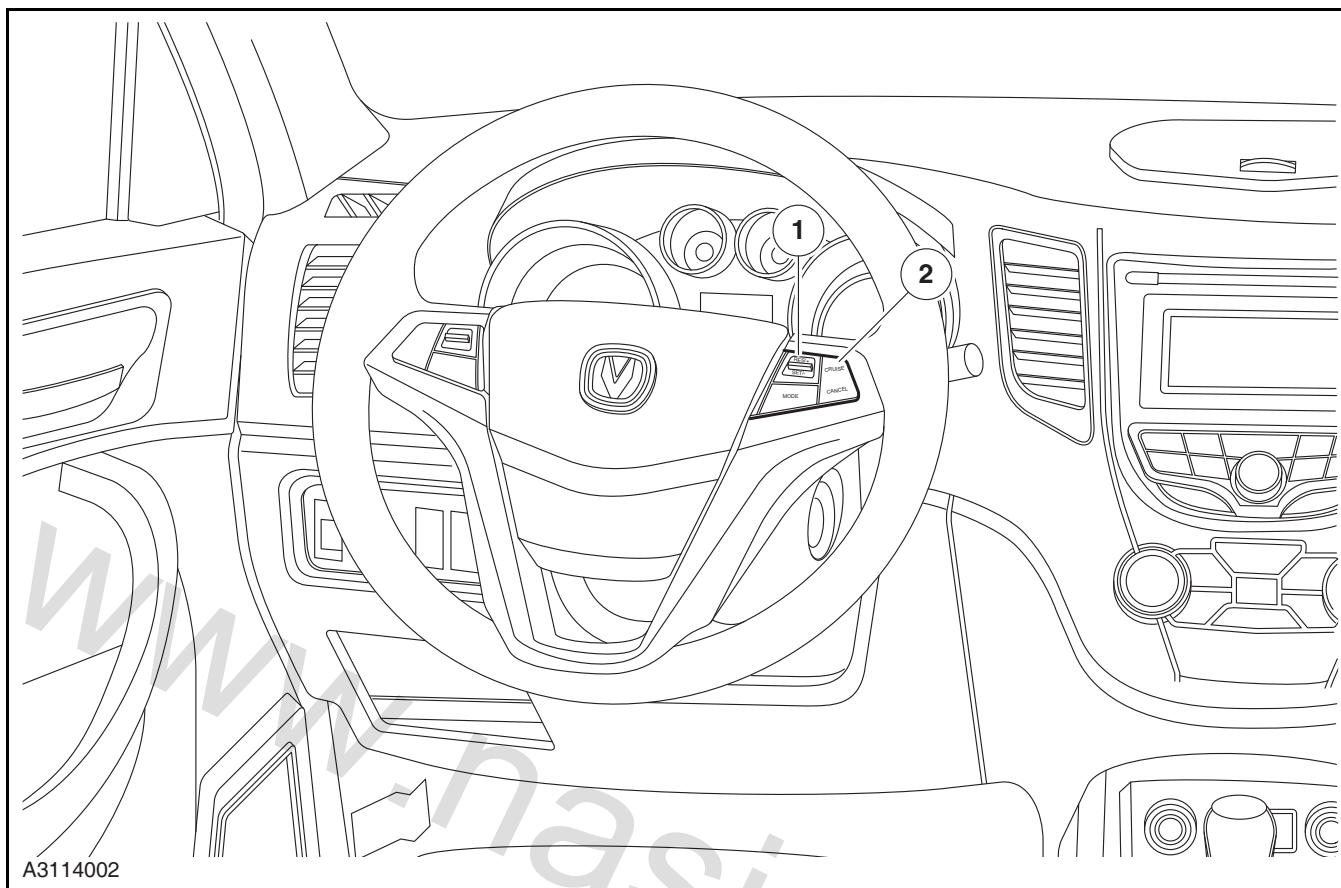
The cruise set switch is designed as switch type to transfer a specific voltage signal. The cruise set switch is located on the steering wheel, including the following two switches:

- RES / + (reset / +) switch
- SET / - (Set / -) switch

The engine control module detects the voltage related to the enabled cruise control function via different pins. When the normally on switch "RES / + (recovery / acceleration), SET / - (Set / deceleration) is pressed, the switch is closed, the engine control module obtains the corresponding cruise set signal. After activating the cruise control system, shortly press the "RES / + (reset / +) switch so that each time the vehicle accelerates in the amplitude of 2 km / h with the maximum acceleration 20 km / h higher than the current set speed. After depressing the brake pedal to turn off the cruise control system, instantly start the "RES / + (reset / +)" switch to return to the previously set speed.

### Brake lamp switch

The brake lamp switch is mounted on the holder of the brake pedal. When the brake pedal is depressed, the normally on brake lamp switch is closed, and the normally closed brake lamp switch is open. The engine control module monitors the brake lamp signal circuit via the discrete input signal, indicating the brake state. When the two signals indicate that the brake pedal is depressed, the engine control module will turn off the cruise control system.

**Location View**

Item	Description
1	Cruise set switch
2	Cruise control switch



## General Procedures

### General Equipment

Digital Multimeter
Changan Auto Special Diagnostic Tool

1. Inspect the after-sales rectified devices, which may affect the cruise control system.
2. Inspect the easy - to - access or visible system components, in order to identify whether there is significant damage or other problems that may cause failure.
3. Confirm that the following cruise control switches and cruise set switches are not block in the on position:
  - ON / OFF (CRUISE) switch
  - Set / Deceleration (SET / -) switch
  - Recovery / Acceleration (RES / +) switch
4. Rotate the steering wheel both sides to limit positions, respectively operate each cruise set switch, with the diagnostic tool to observe the cruise set switch parameters in the engine control module (ECM) cruise control data list. This will help to eliminate the possibility of the steering wheel module coil of the airbag system has an internal short circuit.
5. Check if the brake lamp works normally.

**Refer to: Brake Lamp (4.3.6 Lighting System, Description and Operation).**

## Symptom Diagnosis and Testing

### General Equipment

Digital Multimeter
Diagnostic Tool

## Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical damage or electric damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible), before proceeding to the next step.
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

### Visual inspection chart

Mechanical	Electrical
<ul style="list-style-type: none"> <li>• Electrical throttle</li> <li>• Brake Pedal</li> </ul>	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Brake signal switch sensor</li> <li>• Cruise control switch</li> <li>• Cruise set switch</li> <li>• ETC circuit</li> <li>• ECM circuit</li> <li>• IPC circuit</li> </ul>

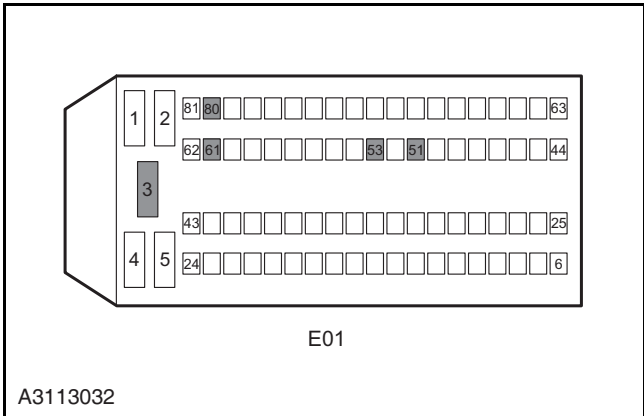
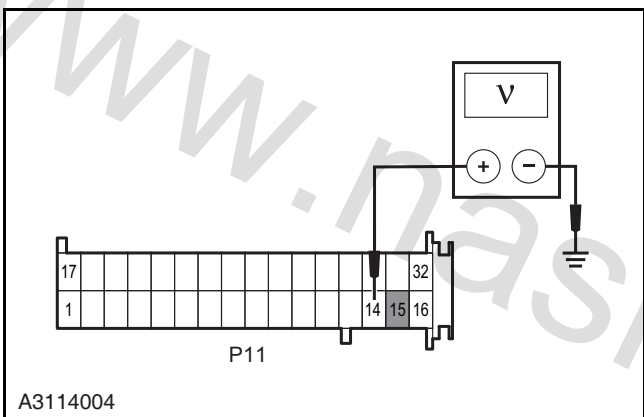
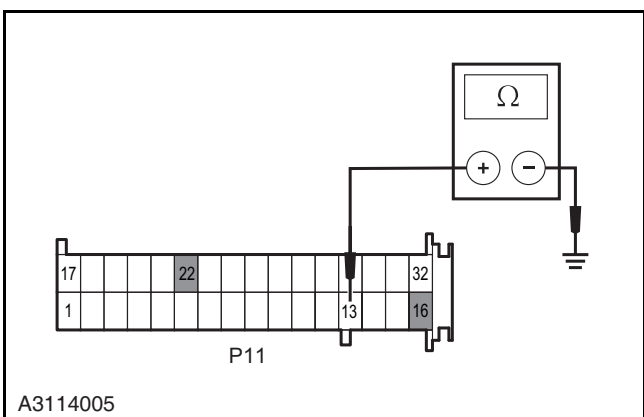
## Symptom Chart

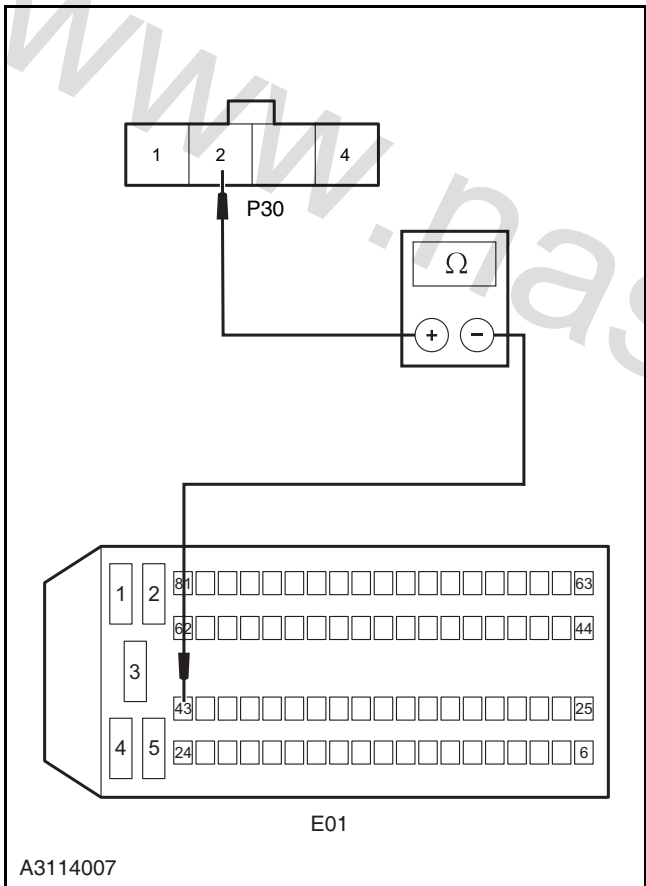
If the fault occurs, but there is no DTC stored in the ECM for this fault, and can not confirm the cause, then follow the procedure to diagnose the fault and eliminate it.

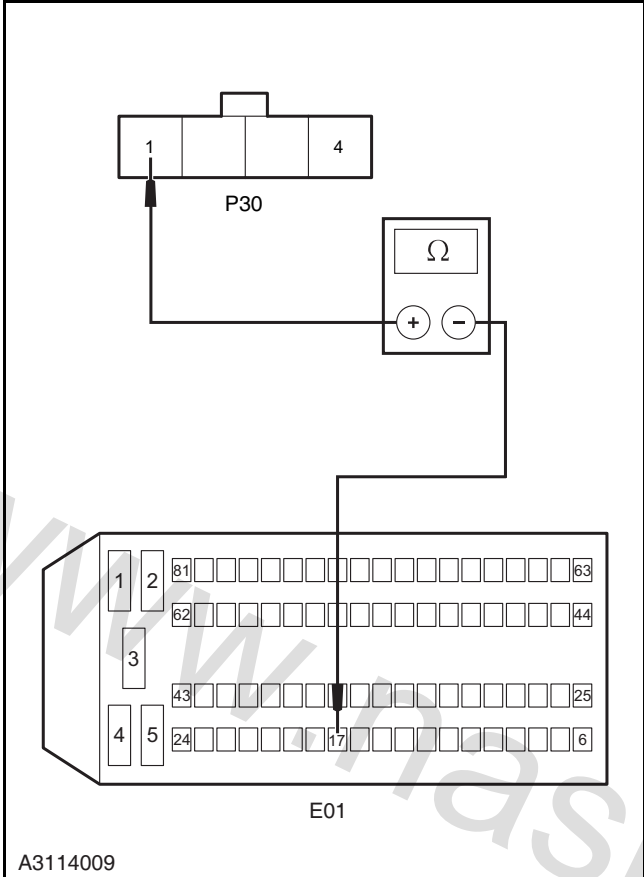
Symptom	Possible Sources	Action
Cruise indicator not work	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Cruise control switch.</li> <li>• Instrument cluster</li> <li>• ECM</li> </ul>	Refer to: <a href="#">Cruise Indicator Not Working Diagnosis (3.1.14 Cruise Control System, Symptom Diagnosis and Testing)</a> .
Cruise function failure / malfunction	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Cruise control switch</li> <li>• Cruise set switch</li> <li>• Brake switch</li> <li>• ECM</li> </ul>	Refer to: <a href="#">Cruise Function Failure / Diagnosis (3.1.14 Cruise Control System, Symptom Diagnosis and Testing)</a> .
Normal cruise function, but indicator not working	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect and repair the circuit</li> <li>• Inspect and replace the instrument cluster</li> </ul>
The cruise indicator always on	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Instrument cluster</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect and repair the circuit</li> <li>• Inspect and replace the instrument cluster</li> </ul>

### Cruise Indicator Not Working Diagnosis

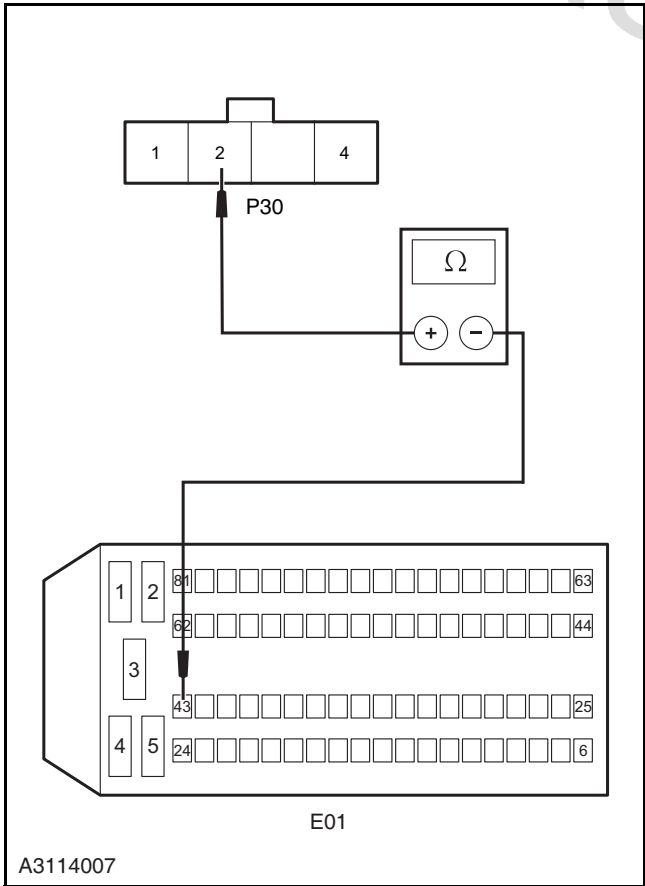
Test conditions	Details/Results/Actions
<p>1. General inspection</p>	<p>A. Inspect the cruise control switch, instrument cluster and ECM wiring harness connectors for damage, poor contact, aging and loose.</p> <p>Is it normal?</p> <p><b>Y</b></p> <p>Go to step 2.</p> <p><b>N</b></p> <p>Repair the fault, test the system for normal operation.</p>
<p>2. Inspect the fuse</p>	<p>A. Inspect the instrument cluster fuse IF106 and IF25.</p> <p>Is the fuse normal?</p> <p><b>Y</b></p> <p>Go to step 3.</p> <p><b>N</b></p> <p>Repair the circuit, and replace the fuse with rated capacity.</p>
<p>3. Inspect the ECM power supply circuit</p> <div data-bbox="98 1115 743 1532" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">E01</p> <p>A3113031</p> </div>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Measure from the back of ECM wiring harness connector E01.</p> <p>C. Turn the ignition switch to "ON" position and use a multimeter to measure the voltage between the terminals 12, 13, 44, 45 and 63 of the ECM wiring harness connector E01 and the power supply.</p> <p><b>Standard Voltage Value: 11 ~ 14 V</b></p> <p>Is the voltage normal?</p> <p><b>Y</b></p> <p>Go to step 4.</p> <p><b>N</b></p> <p>Repair and inspect the ECM power supply circuit.</p>

Test conditions	Details/Results/Actions
<p>4. Inspect the ECM ground circuit</p>  <p>A3113032</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Measure from the back of ECM wiring harness connector E01.</p> <p>C. Measure with a multimeter the resistance between the terminal 3, 51, 53, 61 and 80 of ECM wiring harness connector E01 and the reliable grounding.</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the resistance value normal?</p> <p><b>Y</b></p> <p>Go to step 5.</p> <p><b>N</b></p> <p>Inspect and repair the ECM ground circuit.</p>
<p>5. Inspect the instrument cluster circuit</p>  <p>A3114004</p>  <p>A3114005</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Disconnect the instrument cluster wiring harness connector P11.</p> <p>C. Turn ignition switch to "ON" position, use a multimeter to inspect terminal 4 and 15 of the power supply circuit of the instrument cluster harness connector P11.</p> <p><b>Standard Voltage Value: 11 ~ 14 V</b></p> <p>D. Turn the ignition switch to the LOCK and inspect the ground circuit of the terminal 13, 16 and 22 of the instrument cluster wiring harness connector P11.</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the circuit normal?</p> <p><b>Y</b></p> <p>Go to step 6.</p> <p><b>N</b></p> <p>Repair the circuit of the instrument cluster.</p>

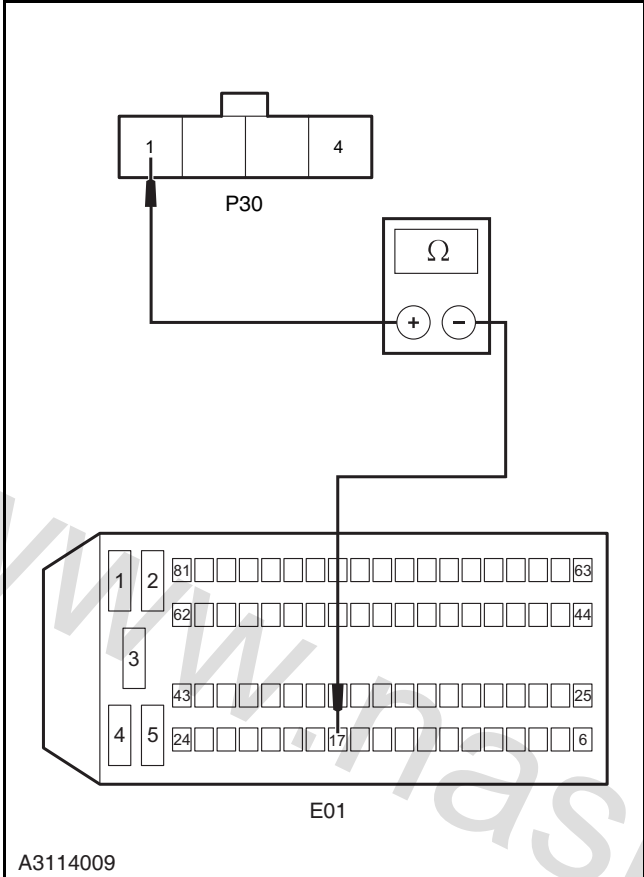
Test conditions	Details/Results/Actions
6. Inspect the cruise indicator of the instrument cluster	
	<p>A. Turn the ignition switch to the "ON" position, and observe the cruise indicator self-test on the instrument cluster.</p> <p>Does the cruise indicator work normally?</p> <p><b>Y</b></p> <p>Go to step 7.</p> <p><b>N</b></p> <p>Replace the instrument cluster and verify the system is normal.</p> <p><b>Refer to: Instrument (4.3.2 Instrument, Removal and Installation).</b></p>
7. Inspect the cruise control switch signal circuit	
 <p>A3114007</p> <p>E01</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Disconnect the battery negative cable.</p> <p>C. Disconnect the cruise control switch wiring harness connector P30 and the ECM wiring harness connector E01.</p> <p>D. Measure the resistance between the terminal 2 of the cruise control switch wiring harness connector P30 and the terminal 43 of the ECM wiring harness connector E01 with multimeter.</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the resistance value normal?</p> <p><b>Y</b></p> <p>Go to step 8.</p> <p><b>N</b></p> <p>Measure the circuit between terminal 2 of cruise control switch wiring harness connector P30 and terminal 43 of the ECM wiring harness connector E01.</p>

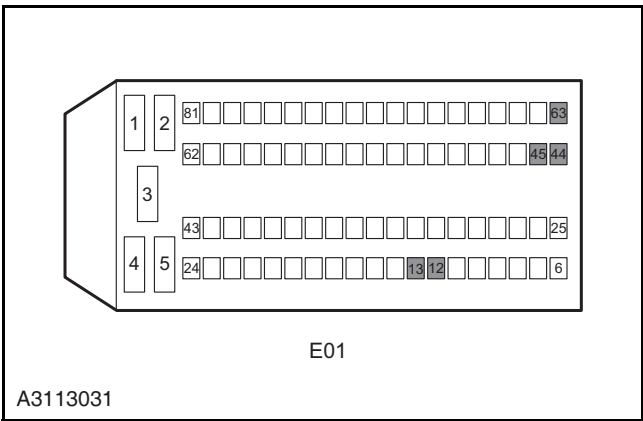
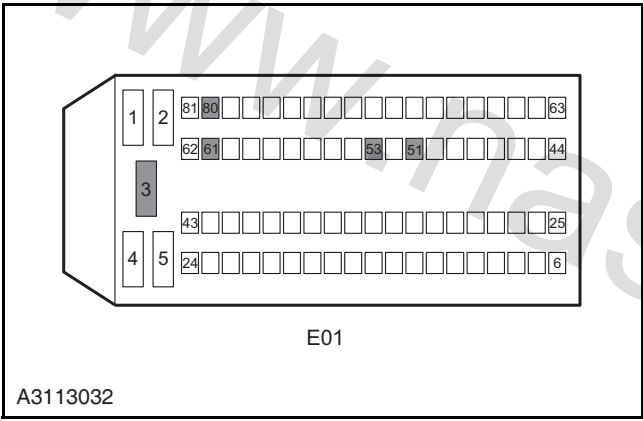
Test conditions	Details/Results/Actions
<p>8. Inspect the cruise control switch output circuit</p>  <p>A3114009</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Disconnect the battery negative cable.</p> <p>C. Disconnect the cruise control switch wiring harness connector P30 and the ECM wiring harness connector E01.</p> <p>D. Measure the resistance between the terminal 1 of the cruise control switch wiring harness P30 and the terminal 17 of the ECM wiring harness connector E01 with multimeter.</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the resistance value normal?</p> <p><b>Y</b></p> <p>Go to step 9.</p> <p><b>N</b></p> <p>Repair the open circuit between the terminal 1 of the cruise control switch wiring harness P30 and terminal 17 of the ECM wiring harness connector E01 .</p>
<p>9. Inspect the cruise control switch</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Replace with a good cruise control switch.</p> <p>Does the cruise indicator work normally?</p> <p><b>Y</b></p> <p>Replace the cruise control switch and verify the system for normal operation.</p> <p><b>N</b></p> <p>Go to step 10.</p>
<p>10. Replace the ECM</p>	<p>A. Turn the ignition switch to position "LOCK", and disconnect the battery negative cable.</p> <p>B. Replace the ECM.</p> <p><b>Refer to: Engine Control Module (3.1.13 Electronic Control System - ME7, Removal and Installation).</b></p> <p>Confirm the maintenance is finished.</p>

### Cruise Function Failure / Malfunction Diagnosis

Test conditions	Details/Results/Actions
<p>1. General inspection</p>	<p>A. Inspect the cruise control switch, brake lamp switch, ECM wiring harness connector for signs of damage, poor contact, aging or loose.</p> <p>Is it normal?</p> <p><b>Y</b></p> <p>Go to step 2.</p> <p><b>N</b></p> <p>Repair the fault, test the system for normal operation.</p>
<p>2. Inspect the fuse</p>	<p>A. Inspect the brake lamp fuse IF05, IF21.</p> <p>Is the fuse normal?</p> <p><b>Y</b></p> <p>Go to step 3.</p> <p><b>N</b></p> <p>Repair the circuit, and replace the fuse with rated capacity.</p>
<p>3. Inspect the cruise control switch signal circuit</p>  <p>A3114007</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Disconnect the battery negative cable.</p> <p>C. Disconnect the cruise control switch wiring harness connector P30 and the ECM wiring harness connector E01.</p> <p>D. Measure the resistance between the terminal 2 of the cruise control switch wiring harness connector P30 and the terminal 43 of the ECM wiring harness connector E01 with multimeter .</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the resistance value normal?</p> <p><b>Y</b></p> <p>Go to step 8.</p> <p><b>N</b></p> <p>Repair and inspect the circuit between the terminal 2 of cruise control switch switch wiring harness connector P30 and the terminal 43 of ECM wiring harness connector E01.</p>



Test conditions	Details/Results/Actions
4. Inspect the cruise control switch output circuit	
 <p>A3114009</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Disconnect the battery negative cable.</p> <p>C. Disconnect the cruise control switch wiring harness connector P30 and the ECM wiring harness connector E01.</p> <p>D. Measure the resistance between the terminal 1 of the cruise control switch wiring harness connector P30 and the terminal 17 of the ECM wiring harness connector E01 with multimeter.</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the resistance value normal?</p> <p><b>Y</b></p> <p>Go to step 5.</p> <p><b>N</b></p> <p>Repair the open circuit between the terminal 1 of the cruise control switch wiring harness connector P30 and the ECM wiring harness connector E01 terminal 17.</p>
5. Inspect the cruise control switch	
	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Replace with a good cruise control switch.</p> <p>Does the cruise indicator work normally?</p> <p><b>Y</b></p> <p>Replace the cruise control switch and verify the system for normal operation.</p> <p><b>N</b></p> <p>Go to step 6.</p>

Test conditions	Details/Results/Actions
<p>6. Inspect the ECM power supply circuit</p>  <p>A3113031</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Measure from the back of ECM wiring harness connector E01.</p> <p>C. Turn the ignition switch to "ON" position and use a multimeter to measure the voltage between the terminals 12, 13, 44, 45 and 63 of the ECM wiring harness connector E01 and the power supply.</p> <p><b>Standard Voltage Value: 11 ~ 14 V</b></p> <p>Is the voltage normal?</p> <p><b>Y</b></p> <p>Go to step 7.</p> <p><b>N</b></p> <p>Repair and inspect the ECM power supply circuit.</p>
<p>7. Inspect the ECM ground circuit</p>  <p>A3113032</p>	<p>A. Turn the ignition switch to position "LOCK".</p> <p>B. Measure from the back of ECM wiring harness connector E01.</p> <p>C. Measure with a multimeter the resistance between the ECM wiring harness connector E01 terminal 3, 51, 53, 61 and 80 and the reliable grounding.</p> <p><b>Standard Resistance Value: less than 5 Ω</b></p> <p>Is the resistance value normal?</p> <p><b>Y</b></p> <p>Go to step 8.</p> <p><b>N</b></p> <p>Inspect and repair the ECM ground circuit.</p>
<p>8. Inspect the brake lamp switch circuit</p>	<p>A. Inspect the brake lamp switch circuit.</p> <p><b>Refer to: Brake Lamp Failure (4.3.6 Lighting System, Symptom Diagnosis and Testing).</b></p> <p>Is the cruise function normal?</p> <p><b>Y</b></p> <p>Confirm the system working normally</p> <p><b>N</b></p> <p>Go to step 9.</p>

Test conditions	Details/Results/Actions
9. Replace the ECM	
	<p>A. Turn the ignition switch to position "LOCK", and disconnect the battery negative.</p> <p>B. Replace the ECM.</p> <p><b>Refer to: Engine Control Module (3.1.13 Electronic Control System - ME7, Removal and installation).</b></p> <p>Confirm the maintenance is finished.</p>

www.nasicoelec.ir

[www.nasicoelec.ir](http://www.nasicoelec.ir)

