

9 Safety Protection Device

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9.1 Warnings and Notices

9.1.1 Warnings and Notices

Airbag System Warnings

Warning!

This vehicle is equipped with airbag system. Fail to follow the correct procedures will lead to the following conditions:

- Accidental airbag deployment
- Airbag inoperative when needed

Warning!

Strictly abide by the following criteria in order to avoid the above situation:

- Refer to the airbag system components view, determine whether you are repairing the airbag system components, surrounding components or the circuits.
- If you are servicing the airbag system components, surrounding components or the circuits, deactivate the airbag system. Refer to "Battery Disconnect Warning" in "Warnings and Notices".

SIR Deployed inflator Modules Are Hot Warning

Warning!

Warning: After deployment, the metal surfaces of the SIR component may be very hot. To help avoid a fire or personal injury:

- Allow sufficient time for cooling before touching any metal surface of the SIR component.
- Do not place the deployed SIR component near any flammable objects.

SIR inflator Module Coil Warning

Warning!

Warning: Improper routing of the wire harness assembly may damage the inflatable restraint steering wheel module coil. This may result in a malfunction of the coil, which may cause personal injury.

SIR inflator Module Disposal Warning

Warning!

Warning: In order to prevent accidental deployment and the risk of personal injury, do not dispose of an

undeployed inflator module as normal shop waste. Undeployed inflator modules contain substances that could cause severe illness or personal injury if their sealed containers are damaged during disposal. Use the following deployment procedures to safely dispose of an undeployed inflator module. Failure to observe the following disposal methods may be a violation of federal, state, or local laws

SIR Inflator Module Handling and Storage Warning

Warning!

Warning: When carrying an undeployed inflator module:

- Do not carry the inflator module by the wires or connector.
- Make sure the air bag opening points away from you and others.

Warning!

Warning: When storing an undeployed inflator module: make sure the airbag opening point away from the surface on which the inflator module rests. Do not point the the airbag opening to the ground. Do not place any items onto the airbag module. Provide free space for the airbag to expand in case of an accidental deployment.

Do not have the undeployed airbag module soaked in water or come into contact with other liquids.

Do not place the undeployed airbag module near the fire source or a high-temperature area. Prevent personal injury caused by accidental airbag deployment.

Airbag Collision Sensor Handling Warning

Warning!

Warning: Do not hit or shake airbag system collision sensors. Before supply power to the collision sensors, ensure the collision sensors firmly tightened. Failure to follow the correct procedures may cause airbag accidental deployment or inoperative, resulting in personal injury.

9.2 Airbag System

9.2.1 Specifications

9.2.1.1 Fastener Tightening Specifications

Applications	Model	Specifications	
		Metric (Nm)	US English (lb-ft)
Curtain Airbag Retaining Bolt	M6 × 16	7-10	5.2-7.4
Side Airbag Retaining Bolts	M6 × 16	4-4.5	3.0-3.2
Driver Front Airbag Bolts	M6 × 16	8.5-9.5	6.3-7.0
Passenger Front Airbag Bolts	M6 × 16	7-9	5.2-6.6
Side Collision Sensor Retaining Bolt	M6 × 20	7-9	5.2-6.6
Frontal Collision Sensor Bolts	M6 × 20	7-9	5.2-6.6
Airbag Electronic Control Unit Retaining Bolt	M6 × 20	7-9	5.2-6.6
Airbag Control Module Bracket Bolts	M6 × 20	7-9	5.2-6.6



9.2.2 Description and Operation

9.2.2.1 Description and Operation

Note

Airbag system is unable to replace the seat belt functions. If seat belts are not used, when the airbag is deployed, it may cause serious personal injury. Geely Automotive reminds you to wear and tighten your seat belts. Only when seat belts are tighten, during a collision system, airbag can provide supplementary protection for the occupants.

Airbag System Description

Airbag system consists of the following components:

- Airbag Warning Lamp
- Instrument Cluster
- Airbag Control Module Front Collision Sensor (Left / Right)
- Driver Side Collision Sensor
- Passenger Side Collision Sensor
- Passenger Recognition Sensor
- Driver Front Airbag
- (Passenger Side Airbag (مسئله سامانه)
- Driver Seat Belt Pretensioner
- Passenger Seat Belt Pretensioner
- Driver Side Airbag
- Passenger Side Airbag
- Driver Curtain Airbag
- Passenger Curtain Airbag
- Inflator Module Coil
- Airbag System Wiring Harness
- Steering Wheel and Steering Column

Beside seat belts, airbag system provides additional protection to passengers and it is a passive safety system. Airbag system includes multiple inflatable protection module, distributed in different locations of vehicles, including steering wheel, instrument units, front seat back, the roof rails. In addition to inflatable protection module, the vehicle can be equipped with seat belt pretensioner. When a collision occurs, it will fasten seat belts, inflatable the module, at the same time increase the

distance between passenger and airbag. Each inflatable module has a detonating circuit, controlled by the airbag control module. When the airbag control module detects the collision impact is large enough, it deploys the airbag. Airbag control module continuously monitors the airbag system electrical components. When a circuit failure is detected, the airbag control module will set a DTC code and turn on airbag warning lamps to inform the driver. The steering column has adopted energy-absorbing design. In the event of frontal impact, it will contract, reducing the risk of driver injury.

Airbag control module receives the sensor signals to determine the severity of the collision. When the signal value is greater than the memory settings, airbag ignition control module commands to start the corresponding inflatable airbag system modules. When confronted with a large enough collision, front airbags and seat belt pretensioners will be activated; When confronted with a large enough side collision, side airbags, curtain airbags and seat belt pretensioners will be activated.

When airbag control module confirms the collision signal, it will send "collision unlock doors and stop fuel supply" signal to the bus within 20 ms, a total of 30 cycles (100 ms a cycle, a total of 3 s) . When BCM and EMS receive more than three consecutive signals, respectively, unlocking doors and stopping fuel supply will be implemented.

9.2.3 System Working Principle

9.2.3.1 System Working Principle

Airbag Warning Lamp

Airbag warning lamp is located inside the instrument cluster assembly, used to notify the driver airbag system failures and examine whether the airbag control module is communicating with the instrument panel. Turn the ignition key to "ON" position, the airbag control module carry out system self-test. If the system is normal, warning lamps flash 7 s and off. If a malfunction is detected, airbag control module will store a diagnostic trouble code (DTC), and then through the CAN-Bus serial data bus, instruct the instrument cluster to light the airbag warning lamp. After the vehicle starts, airbag control module will continue to test each loop. If there is a malfunction, airbag control module will communicate with the instrument cluster through the CAN-Bus serial data bus, the airbag warning lamp will be lit in 5 s. If there is a fault, airbag may fail to deploy, or deploy when the crash does not reach the set collision severity. If the airbag warning lamp is lit, please repair the vehicle at the authorized service station as soon as possible. Before the repair is completed, the airbag warning lamp will not be off.

Airbag Control Module

Note

Airbag control module has a back up power supply, which can deploy the airbag, even if the battery voltage is lost during a collision. Disconnect the battery negative cable for at least 90s to empty the stored power supply, before carry out the airbag system repair.

Airbag control module is a microprocessor, which is the airbag system control center. When a collision happens, the airbag control module will compare the signal from the sensor with the value stored in the memory. When the generated signal exceeds the stored value, the airbag control module will command (electric current signal) to deploy airbags. When the airbags are deployed, the airbag control module will record the status of airbag systems, and light the airbag indicator on the instrument cluster. After the vehicle starts, airbag control module will continue to monitor the airbag system electrical components and circuits. If an airbag control module malfunction is detected, it will store a diagnostic trouble code, and light the airbag warning lamp to inform the driver that a malfunction exists.

Front Collision Sensor (Left / Right)

Front collision sensors are used to enhance the airbag system performance. Front collision sensor is an acceleration sensor, which sends the acceleration signal to the airbag control module. Front collision sensor can help determine the severity of a frontal collision. Airbag control module uses the measured acceleration values to calculate and compare these calculated values with values stored in the memory. When the calculated value exceeds the value stored, the airbag control module will issue a positive ignition command (electric current signal) to activate the front airbag and seat belt pretensioner.

Driver Side Collision Sensor, Passenger Side Collision Sensor

Each side collision sensor includes a sensing device for monitoring vehicle acceleration to send vehicle lateral acceleration signal to the airbag control module. Side collision sensors can determine the severity of the side collision. Airbag control module uses the measured acceleration values to calculate and compare these calculated values with values stored in the memory. When the calculated value exceeds the value stored, the airbag control module will send a positive ignition command (electric current signal) to activate the curtain airbags, side airbags and seatbelt pretensioners.

Passenger Recognition Sensor

Passenger recognition sensor is located inside the passenger seat cushion assembly and used to sense whether the passenger seat is occupied by a passenger. It is a variable resistance-type pressure sensor and senses the pressure through the resistance changes. When the passenger seat is occupied by a passenger, the seat belt warning lamp will be lit to inform the driver to remind the passenger to fasten the seat belt.

Driver Front Airbag, Passenger Front Airbag

Driver front airbag, passenger front airbag module includes a shell, inflatable airbag, a detonating device and gas generating agent. When the front collision impact force is large enough, the airbag control module will command the front airbags to deploy. Electric current flows through the ignition and activates the gas generating agent to rapidly produce large amounts of gas. The gas inflates the airbag. The airbag, once filled with the gas, will deflate through holes in the airbag. Airbag control module harness connector (driver front airbag, passenger front airbag deployment circuits) has a short film. When the connector is disconnected, the airbag deployment short circuit will prevent the airbag accidental deployment during the repair.

Driver Seat Belt Pretensioner, Passenger Seat Belt Pretensioner

Driver seat belt pretensioner, passenger seat belt pretensioner module includes a shell, a detonating device and gas generating agent. The ignition device is part of the seat belt pretensioner deployment circuit. When a vehicle front or side collision impact force is large enough, the airbag control module will command (electric current signal) the electric current flow through the ignition to detonate the gas generating agent and rapidly produce a large amount of gas. The reaction produced gas will make the seat belt pretensioner quickly tighten the seat belt. Airbag control module harness connector (airbag deployment circuit) has a short film. When the connector is disconnected, the airbag deployment short circuit will prevent the airbag accidental deployment during the repair.

Driver Side Airbag, Passenger Side Airbag

Driver side airbag and passenger side side airbag are located in the driver seat back and passenger seat back respectively. Side airbag modules include airbags, detonating devices and gas generating agent. The detonating device is part of the airbag modules deployment circuit. When a side impact force is large enough, the side collision sensor will detect the collision and send a signal to the airbag control module. Airbag control module will compare the signal from the side collision sensor with the value in the memory. When the signal exceeds the stored value, the airbag control module commands the side airbag to deploy. When the passenger side collision happens, it requires the driver side airbag, driver curtain airbag are not deployed, while the passenger side airbag, passenger curtain airbag deploy. Airbag control module continuously monitors whether the airbag deployment circuit is faulty. In the event of a fault, it will light the airbag indicator. Airbag control module harness connector (airbag deployment circuit) has a short film. When the connector is disconnected, the airbag deployment short circuit will prevent the airbag accidental deployment during the repair.

Driver Curtain Airbag, Passenger Curtain Airbag

Driver curtain airbag, passenger curtain airbag are located on the left and right roof rails, from the A-pillar extends to the C-pillar. Curtain airbag module includes airbags, a detonating device and gas generating agent. Detonating device is part of the curtain airbag deployment circuit. When a side impact force is large enough, side collision sensors will detect the collision and send a signal to the airbag control module. Airbag control module will compare the signal from the side collision sensor

with the value in the memory. When the signal exceeds the stored value, the airbag control module commands the curtain airbag to deploy. When the passenger side collision happens, it requires the driver side airbag, driver curtain airbag are not deployed, while the passenger side airbag, passenger curtain airbag deploy. Airbag control module continuously monitors whether the airbag deployment circuit is faulty. In the event of a fault, it will light the airbag indicator. Airbag control module harness connector (airbag deployment circuit) has a short film. When the connector is disconnected, the airbag deployment short circuit will prevent the airbag accidental deployment during the repair.

Clock Spring

Airbag clock spring is located in the steering column below the steering wheel. When the steering wheel rotates, the clock spring maintains continuous electrical contact between the airbag deployment circuit and the driver front airbag. The steering wheel clock spring connector is equipped with a short film which can short the driver front airbag deployment circuit, in order to prevent the airbag accidental deployment during the repair.

Airbag System Wiring Harness

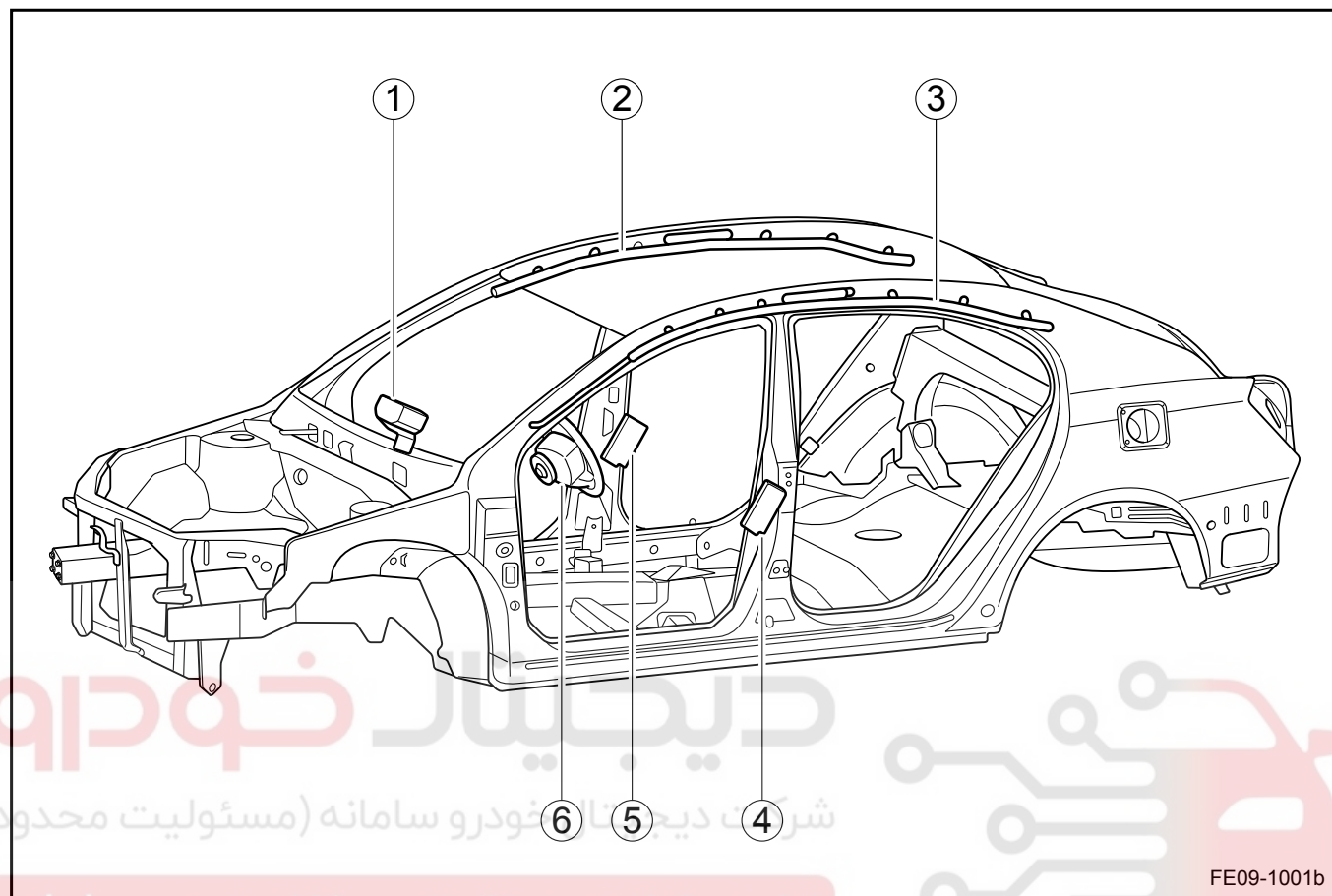
Airbag system connects sensors, the control unit, inflatable modules, airbag deployment circuits and CAN bus serial data circuits together through the waterproof harness. The airbag system deployment circuit connectors are yellow to facilitate identify them. For airbag system wiring harness repair, please refer to the appropriate testing and repair procedures in this manual.

Steering Wheel and Steering Column

The steering wheel and steering column have adopted energy-absorbing designs to absorb energy when the driver and the steering wheel come into contact. When a vehicle front collision happens, the driver may be contacted directly with the steering wheel, or the impact will be loaded into the steering wheel and steering column. The steering column will shrink down to absorb some of the collision energy, thereby help to reduce the driver personal injury. After a collision, you must check the steering wheel and steering column damage.

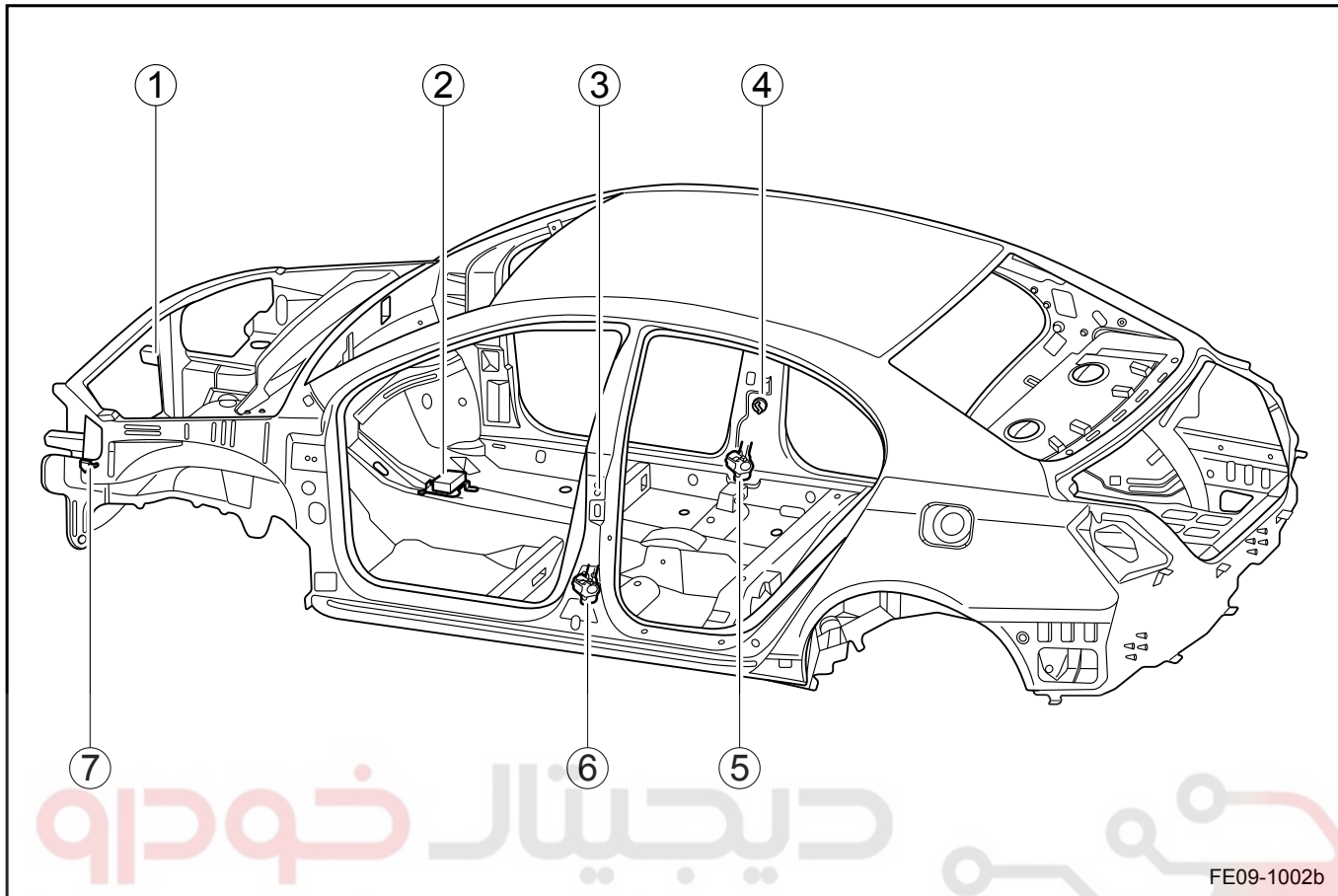
9.2.4 Component Locator

9.2.4.1 Component Locator



Legend

- | | |
|--|---|
| 1. Passenger Front Airbag | 5. Passenger Side Airbag (Located inside the seat back) |
| 2. Passenger Curtain Airbag | 6. Driver Side Airbag and Clock Spring |
| 3. Driver Curtain Airbag | |
| 4. Driver Side Airbag (Located inside the seat back) | |

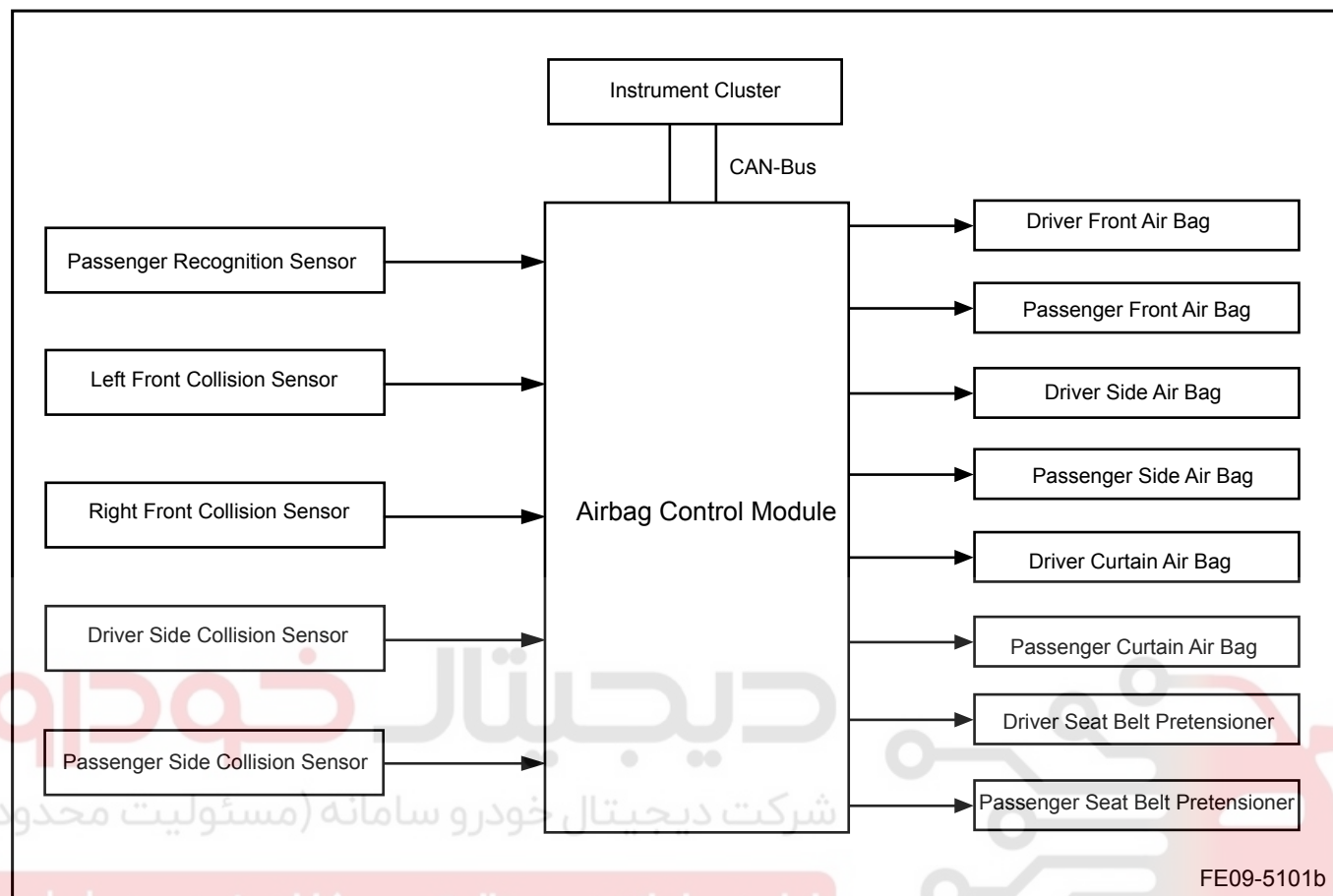


Legend

- | | |
|-------------------------------------|----------------------------------|
| 1. Front Collision Sensor (Right) | 6. Driver Seat Belt Pretensioner |
| 2. Airbag Control Module | 7. Front Collision Sensor (Left) |
| 3. Driver Side Collision Sensor | |
| 4. Passenger Side Collision Sensor | |
| 5. Passenger Seat Belt Pretensioner | |

9.2.5 Schematic

9.2.5.1 Schematic



9.2.6 Diagnostic Information and Procedures

9.2.6.1 Visual Inspection

— Confirm Fault Symptoms

During diagnostic, the most difficult situation is that there is not any symptom. In this case, the technician must thoroughly analyze the described fault, and then simulate the conditions and the environment when the fault occurs. Even for a very experienced technician, if the fault system has not been confirmed before the diagnostic, it is likely to ignore a number of important things, and misjudge a fault, which will lead to diagnostic failure.

— Check the easy to access system components to identify whether there is a significant damage or potential failure.

— Connectors and vibration pivot joints should be thoroughly examined. If it is a vibration caused fault, it is recommended to use vibration method.

1. With a finger to gently shake the possible faulty part and inspect for malfunction.
2. Shake the connector vertically and horizontally gently.
3. Shake the wiring harness vertically and horizontally gently.

9.2.6.2 Fault Diagnostic Code (DTC) Table

Airbag Control Module Status

DTC Code	Description
B1021	Driver Front Airbag Circuit Short To GND
B1026	Passenger Front Airbag Circuit Short To GND
B1031	Driver Seat Belt Circuit Short To GND
B1036	Passenger Seat Belt Circuit Short To GND
B1041	Driver Side Airbag Circuit Short To GND
B1046	Passenger Side Airbag Circuit Short To GND
B1051	Driver Curtain Airbag Circuit Short To GND
B1056	Passenger Curtain Airbag Circuit Short To GND
B1022	Driver Front Airbag Circuit Short To + B
B1027	Passenger Front Airbag Circuit Short To + B
B1032	Driver Seat Belt Circuit Short To + B
B1037	Passenger Seat Belt Circuit Short To + B
B1042	Driver Side Airbag Circuit Short To + B
B1047	Passenger Side Airbag Circuit Short To + B
B1052	Driver Curtain Airbag Circuit Short To + B
B1057	Passenger Curtain Airbag Circuit Short To + B
B1023	Driver Front Airbag Low Resistance
B1028	Passenger Front Airbag Low Resistance
B1033	Driver Seat Belt Low Resistance

DTC Code	Description
B1038	Passenger Seat Belt Low Resistance
B1043	Driver Side Airbag Low Resistance
B1048	Passenger Side Airbag Low Resistance
B1053	Driver Curtain Airbag Low Resistance
B1058	Passenger Curtain Airbag Low Resistance
B1024	Driver Front Airbag High Resistance
B1029	Passenger Front Airbag High Resistance
B1034	Driver Seat Belt High Resistance
B1039	Passenger Seat Belt High Resistance
B1044	Driver Side Airbag High Resistance
B1049	Passenger Side Airbag High Resistance
B1054	Driver Curtain Airbag High Resistance
B1059	Passenger Curtain Airbag High Resistance
B1025	Driver Front Airbag Configuration Error
B102A	Passenger Front Airbag Configuration Error
B1035	Driver Seat Belt Configuration Error
B103Ax	Driver Side Airbag Configuration Error
B1045	Driver Side Airbag Configuration Error
B104A	Passenger Side Airbag Configuration Error
B1055	Driver Curtain Airbag Configuration Error
B105A	Passenger Curtain Airbag Configuration Error
B1071	Left Front Collision Sensor Voltage Error
B1076	Right Front Collision Sensor Voltage Error
B1081	Driver Side Collision Sensor Voltage Error
B1086	Passenger Side Collision Sensor Voltage Error
B1072	Left Front Collision Sensor Circuit Open
B1077	Right Front Collision Sensor Circuit Open
B1082	Driver Side Collision Sensor Circuit Open
B1087	Passenger Side Collision Sensor Circuit Open
B1074	Left Front Collision Sensor Configuration Error
B1079	Right Front Collision Sensor Configuration Error
B1084	Driver Side Collision Sensor Configuration Error

DTC Code	Description
B1089	Passenger Side Collision Sensor Configuration Error
B1074	Left Front Collision Sensor Sampling Error
B1079	Right Front Collision Sensor Sampling Error
B1084	Driver Side Collision Sensor Sampling Error
B1089	Passenger Side Collision Sensor Sampling Error
B1012	Battery Voltage Too High
B1011	Battery Voltage Too Low
B1075	Left Front Collision Sensor Saturation Error
B107A	Right Front Collision Sensor Saturation Error
B1085	Driver Side Collision Sensor Saturation Error
B108A	Passenger Side Collision Sensor Saturation Error
B1075	Left Front Collision Sensor Error
B107A	Right Front Collision Sensor Error
B1085	Driver Side Collision Sensor Error
B108A	Passenger Side Collision Sensor Error
B1073	Left Front Collision Sensor Communication Error
B1078	Right Front Collision Sensor Communication Error
B1083	Driver Side Collision Sensor Communication Error
B1088	Passenger Side Collision Sensor Communication Error
B1002	Driver Front Airbag Deployment
B1003	Passenger Front Airbag Deployment
B1006	Driver Side Airbag Deployment
B1007	Passenger Side Airbag Deployment
B1004	Driver Seat Belt Deployment
B1005	Passenger Seat Belt Deployment
B1008	Driver Curtain Airbag Deployment
B1009	Passenger Curtain Airbag Deployment
U1603	CAN Bus Interrupted
U1100	CAN ABS Data Lost
U1130	CAN EMS Data Lost

9.2.6.3 Scan tool and the vehicle can not communicate

Connect scan tool to the datalink connector (DLC Data Link Connector) and turn the ignition switch to "ON" position. Operate scan tool, if the display shows the communication error message, then the vehicle or the scan tool is faulty.

- If the scan tool can communicate with another vehicle, then check the DLC Data Link Connector. Refer to relevant content in [2.2.7.2 Control System Check](#).
- If the scan tool can not communicate with other vehicles, then the scan tool may be faulty. Please refer to the scan tool manual or consult the manufacturer.

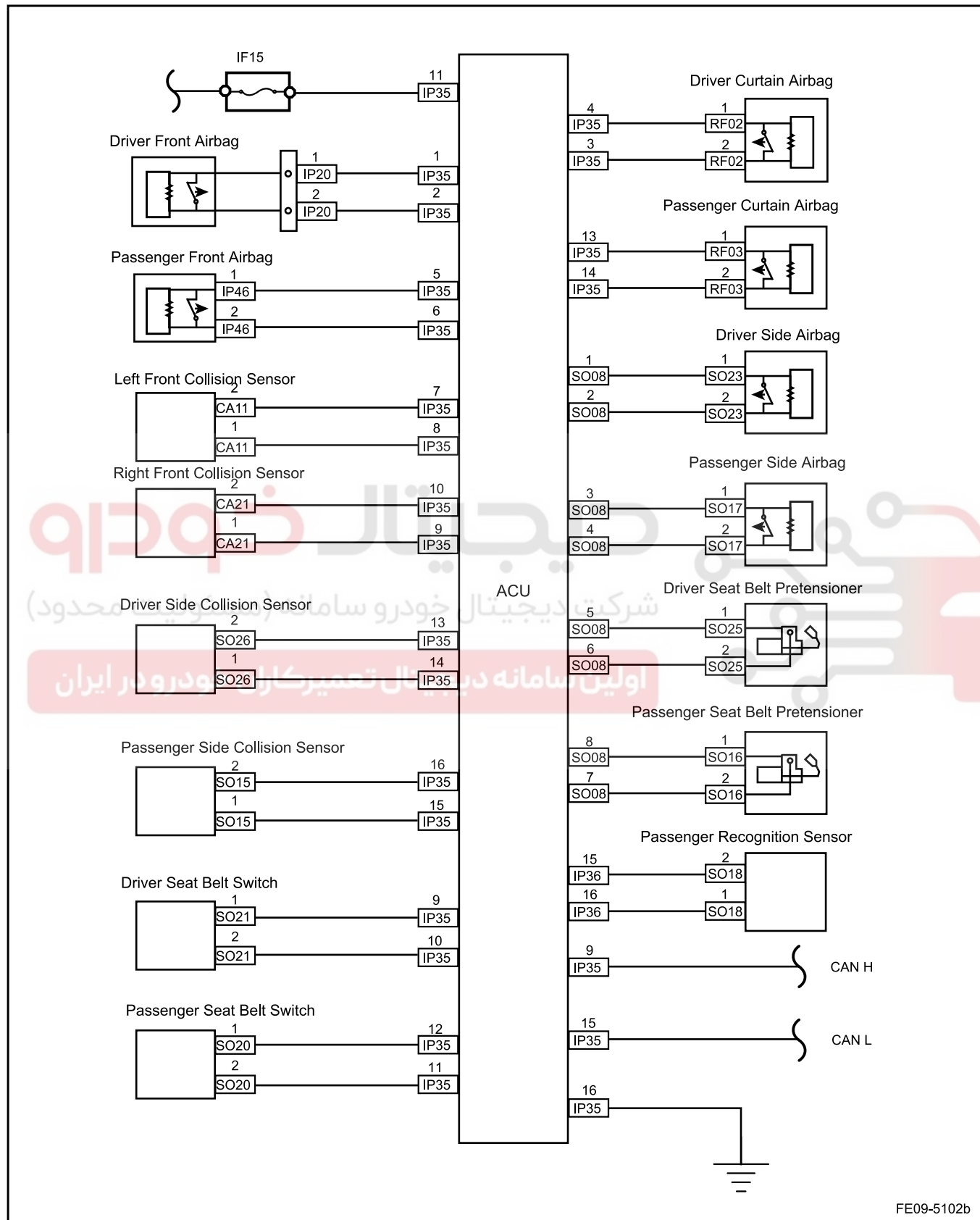
دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



9.2.6.4 Warning lamp Always On

Schematic:



Diagnostic Steps:

Step 1	Use scan tool to access airbag control module.
--------	--

(a) Check DTC.

Yes

Refer to [9.2.6.6 Relevant DTC Code Diagnostic](#)

No

Step 2	Check the battery.
--------	--------------------

- (a) Turn the ignition to "ON" position.
- (b) Measure battery voltage with a multimeter.
Standard Voltage: 11-14 V
- (c) Turn the ignition switch to "OFF" position.
- (d) Confirm whether the voltage is Standard Value:.

No

Check and replace the battery or the charging system. Go to step 8

Yes

Step 3	Check airbag control module and its wiring harness connector.
--------	---

- (a) Turn the ignition switch to "OFF" position.
- (b) Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- (c) Check whether the connector is properly connected to the airbag control module.

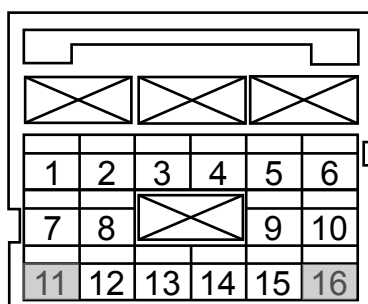
No

Correctly connect the connector. Go to step 8

Yes

Step 4	Check wiring harness (airbag control module power supply, ground).
--------	--

Airbag Control Module 1 Harness Connector IP35



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- (a) Disconnect airbag control module connector IP35.
- (b) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (c) Turn the ignition switch to "ON" position.
- (d) Measure voltage between connectors IP35 terminal No.11 and vehicle body ground with a multimeter.
Standard Voltage: 11-14 V
- (e) Turn the ignition switch to "OFF" position.
- (f) Measure voltage between connectors IP35 terminal No.16 and vehicle body ground with a multimeter.
Standard Resistance: Less than 1 Ω

Data normal?

No

Repair or replace the wiring harness. Go to step 8

Yes

Step 5 Check the wiring harness (instrument cluster power, ground).

Instrument Cluster Harness Connector IP03

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

FE09-5105b

- (a) Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- (b) Disconnect the instrument cluster connector IP03.
- (c) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (d) Turn the ignition switch to "ON" position.
- (e) Measure voltage between IP03 terminals No.24,32 and the body ground respectively with a multimeter.
Standard Voltage: 11-14 V
- (f) Turn the ignition switch to "OFF" position.
- (g) Measure resistance between IP03 terminals No.15,16 and the body ground respectively with a multimeter.
Standard Resistance: Less than 1 Ω

Data Normal?

No

Repair or replace the wiring harness. Go to step 8

Yes

Step 6 Replace the instrument cluster.

- (a) Replace the instrument cluster. Refer to [11.7.7.1 Instrument Cluster Replacement](#).
- (b) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (c) Turn the ignition switch to "ON" position.
- (d) Check the airbag warning lamp status.
Is the airbag warning lamp still on after the ignition is off?

No

System normal

Yes

Step 7 Replace the airbag control module.

- (a) Replace the airbag control module. Refer to [9.2.7.1 Airbag Control Module Replacement](#).

Next

Step 8 Confirm the repair has been completed.

- (a) Turn the ignition switch to "ON" position and observe the warning lamp status to confirm the system is normal.
- (b) Use scan tool to check whether there is a historical fault and clear the historical DTC code.

9.2.6.5 SRS warning lamp always off

Schematic:

Refer to [9.2.6.4 Warning lamp Always On](#) in the schematic.

Diagnostic Steps:

Step 1	Check the battery.
--------	--------------------

(a) Measure the battery voltage.

Standard Voltage: 11-14 V

Is the voltage specified value?

No

Check and replace the battery or the charging system. Go to step 5

Yes

Step 2	Check the instrument cluster connector.
--------	---

(a) Turn the ignition switch to "OFF" position.

(b) Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).

Are the connectors properly connected to the instrument cluster?

No

Properly connect the connector. Go to step 5

Yes

Step 3	Check the wiring harness (instrument cluster power and ground).
--------	---

Instrument Cluster Harness Connector IP03

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

FE09-5105b

(a) Turn the ignition switch to "OFF" position.

(b) Disconnect the instrument cluster connector IP03.

(c) Turn the ignition switch to "ON" position.

(d) Measure voltage between connector IP03 terminals No. 24,32 and the body ground respectively with a multimeter.
Standard Voltage: 11-14 V

(e) Turn the ignition switch to "OFF" position.

(f) Measure resistance between connector IP03 terminals No. 15,16 and the body ground respectively with a multimeter.
Standard Resistance: Less than 1 Ω

Are the voltage and resistance specified values?

No

Check the fuses, repair or replace the wiring harness. Go to step 5

Yes

Step 4	Replace the instrument cluster.
--------	---------------------------------

(a) Replace the instrument cluster. Refer to [11.7.7.1 Instrument Cluster Replacement](#).

Next

Step 5	Confirm the repair has been completed.
--------	--

- (a) Turn the ignition switch to "ON" position, observe the warning lamp status to confirm that the system is normal.
- (b) Use scan tool to check whether there is a historical failure and clear the historical DTC code.

9.2.6.6 Relevant DTC Code Diagnostic

Collision Sensor Malfunction

Note

This workshop manual only diagnoses the left front collision sensor, other sensors diagnostics are similar. Please refer to "Left Front Collision Sensor Diagnostic".

Left Front Collision Sensor

DTC Code	Description	Diagnostic
B1071	Left Front Collision Sensor Voltage Error	<ol style="list-style-type: none"> 1. Turn the ignition switch to OFF, disconnect the battery negative cable and wait for 90s and above, re-connect the battery negative cable. 2. Check whether there is a fault. If the fault still exists, replace the sensor. Refer to 9.2.7.6 Front Collision Sensor Replacement.
B1072	Left Front Collision Sensor Circuit Open	<ol style="list-style-type: none"> 1. Check whether the circuit between the airbag control module and the sensor wiring harness is open. Otherwise repair the fault part. 2. Check whether the wiring harness connector is connected properly. Otherwise properly connect the harness connector.
B1073	Left Front Collision Sensor Communication Error	Check whether the sensor signal pin and ground and the airbag control module definition pin is connected correctly. If the connection is not correct, replace the wiring harness.
B1074	Left Front Collision Sensor Configuration Error, Sampling Error	Replace the sensors. Refer to 9.2.7.6 Front Collision Sensor Replacement .
B1075	Left Front Collision Sensor Saturation Error, Left Front Collision Sensor Error	<ol style="list-style-type: none"> 1. Measure the ECU power supply voltage. If the voltage does not meet the requirements, check the charging system. Refer to 2.11.7 Diagnostic Information and Procedures. 2. If the voltage is normal, replace the sensor. Refer to 9.2.7.6 Front Collision Sensor Replacement.

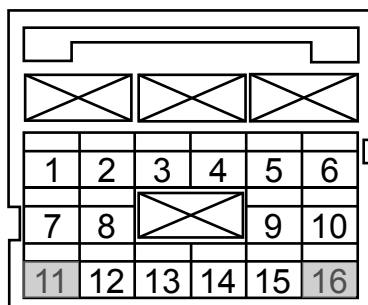
Schematic:

Refer to [9.2.6.4 Warning lamp Always On](#) in the schematic.

Diagnostic Steps:

Step 1	Check the wiring harness (airbag control module power supply, ground).
--------	--

Airbag Control Module 1 Harness Connector IP35



FE09-5104b

- (a) Turn the ignition switch to "OFF" position.
- (b) Disconnect the battery cable and wait for at least 90s.
- (c) Disconnect the airbag control module connector IP35.
- (d) Connect the battery cable and wait for at least 2s.
- (e) Turn the ignition switch to "ON" position.
- (f) Run all the electronic system components (defroster, wipers, headlamps, heater blower, etc.).
- (g) Measure voltage between connectors IP35 terminal No.11 and the body ground with a multimeter.
Standard Voltage: 11-14 V
- (h) Turn the ignition switch to "OFF" position.
- (i) Measure resistance between connectors IP35 terminal No. 16 and the body ground with a multimeter.
Standard Resistance: Less than 1 Ω

Are the voltage and resistance specified values?

No

Check the fuses, repair or replace the wiring harness

Yes

Step 2 Check the wiring harness connector.

- (a) Disconnect the airbag control module harness connector IP36.
- (b) Disconnect the left front collision sensor wiring harness connector CA11.

Are the two wiring harness connectors normal?

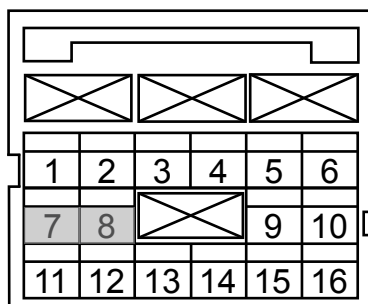
Yes

Replace the wiring harness connectors.

No

Step 3 Check the left front collision sensor wiring harness (open circuit).

Airbag Control Module 3 Harness Connector IP36



FE09-5109b

- (a) Measure resistance between IP36 terminal No.7 and CA11 terminal No.2 with a multimeter.
- (b) Measure resistance between IP36 terminal No.8 and CA11 terminal No.1 with a multimeter.

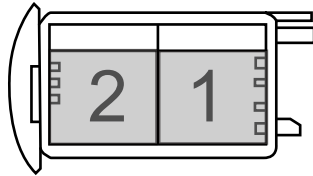
Standard Resistance: Less than 1 Ω

Is the resistance specified value?

No

Replace the left front collision sensor wiring harness.

Left Front Collision Sensor Harness
Connector CA11



FE09-5110b

Yes

Step 4 Check the left front collision sensor wiring harness (if short circuit between lines).

- (a) Measure resistance between connector CA11 terminals No. 1 and 2 with a multimeter.

Standard Resistance: 10 kΩ or higher

Is the resistance specified value?

No

Replace the harness

Yes

Step 5 Check the left front collision sensor wiring harness (whether the circuit is short to ground).

- (a) Measure resistance between CA11 terminal No.1 and the vehicle body ground with a multimeter.

- (b) Measure resistance between CA11 terminal No.2 and the vehicle body ground with a multimeter.

Standard Resistance: 10 kΩ or higher

Is the resistance specified value?

No

Replace the harness

Yes

Step 6 Check the left front collision sensor wiring harness (short to power supply).

- (a) Connect the battery negative cable and wait for at least 2s.

- (b) Turn the ignition switch to "ON".

- (c) Measure voltage between CA11 terminals No.1 and 2 respectively and the body ground with a multimeter.

Standard Voltage: Less than 1 V

Is the voltage specified value?

No

Replace the harness

Yes

Step 7	Replace the left front collision sensor.
--------	--

(a) Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).

(b) Replace the driver front collision sensor. Refer to [9.2.7.6 Front Collision Sensor Replacement](#).

Is the system working properly?

Yes

System normal

No

Step 8	Replace the airbag control module.
--------	------------------------------------

(a) Replace the airbag control module. Refer to [9.2.7.1 Airbag Control Module Replacement](#).

(b) Confirm the repair completed.

Next

Step 9	System normal.
--------	----------------

Actuator Malfunction

Note

The workshop manual only diagnoses the driver airbag and driver seat belt pretensioner, the rest actuators diagnostics are similar. Please refer to "Driver airbag and driver seat belt pretensioner Diagnostic".

Driver Airbag Malfunction

DTC Code	Description
B1021	Driver Front Airbag Short To GND
B1022	Driver Front Airbag Short To + B
B1023	Driver Front Airbag Low Resistance
B1024	Driver Front Airbag High Resistance
B1025	Driver Front Airbag Configuration Error

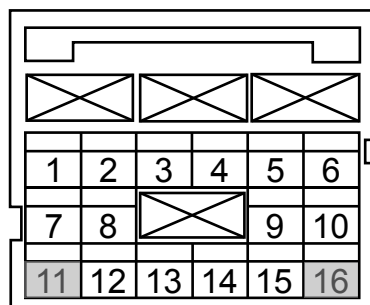
Schematic:

Refer to [9.2.6.4 Warning lamp Always On](#) in the schematic.

Diagnostic Steps:

Step 1	Check the wiring harness (Airbag Control Module - power, ground).
--------	---

Airbag Control Module 1 Harness Connector IP35



FE09-5104b

- Turn the ignition switch to "OFF" position.
- Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- Disconnect the airbag control module connector IP35.
- Connect the battery negative cable and wait for at least 2s.
- Turn the ignition switch to "ON" position.
- Run all the electronic system components (defroster, wipers, headlamps, heater blower, etc.).
- Measure voltage between connector IP35 terminal No.11 and the body ground with a multimeter.
Standard Voltage: 11-14 V
- Turn the ignition switch to "OFF" position.
- Measure resistance between connector IP35 terminal No.16 and the body ground with a multimeter.
Standard Resistance: Less than 1 Ω

Are the voltage and resistance specified values?

No

Check the fuses, repair or replace the wiring harness.

Yes

Step 2 Check the clock spring connector.

- Disconnect the battery negative cable and wait at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- Check whether the clock spring connector is damaged, whether the retaining buckle is damaged.

Yes

Replace the clock spring

No

Step 3 Check the circuit between the airbag control module and driver front airbag.

- Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- Disconnect the clock spring harness connector from the driver front airbag.
- Disconnect the airbag control module harness connector.

Note

Before removal, please measure the airbag control module harness connector IP35 Terminal No.1 and 2 short films. Please install the wiring harness connector short film before installing the connectors.

Note

Note: Do not use a multimeter to measure the driver airbag, otherwise it might set off airbag and cause serious injuries.

- Measure resistance between airbag control module IP35 Terminal No.1 and 2 and the body ground with a multimeter.
Standard Resistance: 10 k Ω or higher

- (e) Measure resistance between airbag control module IP35 Terminal No.1 and 2 and the airbag wiring harness connector with a multimeter.
Standard Resistance: Less than 1 Ω
- (f) Measure resistance between airbag control module IP35 terminal No.1 and terminal No.2 with a multimeter.
Standard Resistance: 10 k Ω or higher
- (g) Connect the battery negative cable and wait for at least 2s.
- (h) Turn the ignition switch to "ON".
- (i) Measure voltage between airbag control module IP35 terminal No.1,2 and the body ground with a multimeter.
Standard Voltage: Less than 1 V

Are measured values specified values?

Yes

Go to step 6

No

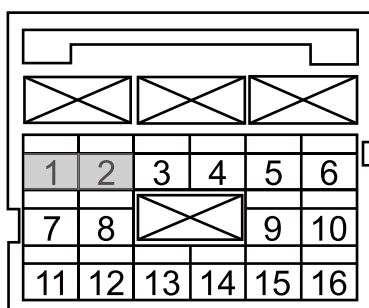
Step 4 Check the wiring harness between the clock spring and the airbag control module.

Clock Spring 2 Harness Connector IP20



FE09-5111b

Airbag Control Module 1 Harness Connector IP35



FE09-5112b

- (a) Disconnect the clock spring harness connector IP20.
- (b) Measure resistance between harness connector IP20 terminal No.1 and IP35 terminal No.2 with a multimeter. Measure resistance between harness connector IP20 terminal No.2 and IP35 terminal No.1 with a multimeter (Check for open circuit).
Standard Resistance: Less than 1 Ω
- (c) Measure resistance between harness connector IP20 terminal No.1 and No.2 with a multimeter (Check for short circuit).
Standard Resistance: 10 k Ω or higher
- (d) Measure resistance between harness connector IP20 terminal No.1,2 and the body ground with a multimeter (Check for short to ground).
Standard Resistance: 10 k Ω or higher
- (e) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (f) Turn the ignition switch to "ON".
- (g) Measure voltage between harness connector IP20 terminal No.1,2 and the body ground with a multimeter (Check for short to power supply).
Standard Voltage: Less than 1 V

Are measured values specified values?

No

Replace the IP20 wiring harness.

Yes

Step 5	Replace the clock spring.
--------	---------------------------

- (a) Replace the clock spring. Refer to [9.2.7.3 Clock Spring Replacement](#).
- (b) Connect various connectors.
- (c) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (d) Turn the ignition switch to "ON".
- (e) Connect scan tool to clear stored DTC.
- (f) Read the DTC.

DTC exist?

No

System normal

Yes

Step 6	Replace driver front airbag.
--------	------------------------------

- (a) Connect the clock spring and airbag control unit harness connector.
- (b) Replace driver front airbag.
- (c) Connect the battery negative cable and wait for at least 2s.
- (d) Turn the ignition switch to "ON".
- (e) Connect scan tool to clear stored DTC.

DTC exist?

No

System normal

Yes

Step 7	Replace the airbag control module.
--------	------------------------------------

- (a) Turn the ignition switch to "OFF" position.
- (b) Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- (c) Replace the airbag control module. Refer to [9.2.7.1 Airbag Control Module Replacement](#).
- (d) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (e) Turn the ignition switch to "ON".
- (f) Connect scan tool to clear the stored DTC.
- (g) Confirm the repair completed.

Next

Step 8	System normal.
--------	----------------

Left Front Seat Belt Retractor Malfunction

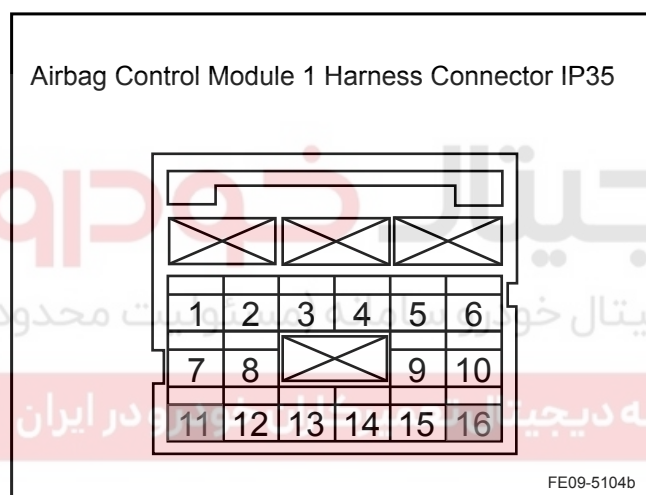
DTC Code	Description
B1031	Driver Seat Belt Short To GND
B1032	Driver Seat Belt Short To B
B1033	Driver Seat Belt Low Resistance
B1034	Driver Seat Belt High Resistance
B1035	Driver Seat Belt Configuration Error

Schematic:

Refer to 9.2.6.4 Warning lamp Always On in the schematic.

Diagnostic Steps:

Step 1	Check the wiring harness (Airbag Control Module - power, ground).
--------	---



- (a) Turn the ignition switch to "OFF" position.
- (b) Disconnect the battery negative cable and wait for at least 90 s. Refer to [2.11.8.1 Battery Disconnection](#).
- (c) Disconnect the airbag control module connector IP35.
- (d) Connect the battery negative cable and wait for at least 2 s. Refer to [2.11.8.1 Battery Disconnection](#).
- (e) Turn the ignition switch to "ON" position.
- (f) Run all the electronic system components (defroster, wipers, headlamps, heater blower, etc.).
- (g) Measure voltage between connectors IP35 terminal No.11 and the body ground with a multimeter.
Standard Voltage: 11-14 V
- (h) Turn the ignition switch to "OFF" position.
- (i) Measure resistance between connectors IP35 terminal No. 16 and the body ground with a multimeter.
Standard Resistance: Less than 1 Ω

Are voltage and resistance values specified values?

No

Check the fuses, repair or replace the wiring harness.

Yes

Step 2	Check the left front seat belt retractor harness connector.
--------	---

- (a) Check the left front seat belt retractor SO25 wiring harness connector is connected correctly.

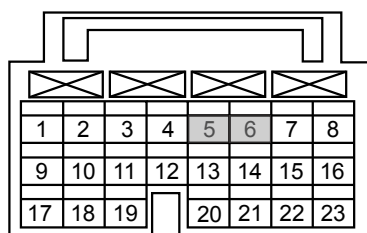
No

Connect the harness connector properly.

Yes

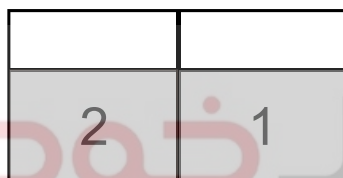
Step 3	Check the left front seat belt retractor circuit.
--------	---

Airbag Control Module 2 Harness Connector SO08



FE09-5113b

Driver Seat Belt Pretensioner Harness Connector SO25



E09-5114b

- (a) Disconnect the battery negative cable and wait for 90s and above. Refer to [2.11.8.1 Battery Disconnection](#).
- (b) Disconnect the airbag control module harness connector SO08.

Note

Before measure, please remove the airbag control module harness connector SO08 terminal No.5,6 short films. Before installing the wiring harness connector, install the short films first.

- (c) Disconnect the driver seat belt pretensioner wiring harness connector SO25.
- (d) Measure resistance between connector SO08 terminals No. 5 and connector SO25 terminal No.1 with a multimeter. Measure resistance between connector SO08 terminals No. 6 and connector SO25 terminal No.2 with a multimeter (Check for open circuit).

Standard Resistance: Less than 1 Ω

- (e) Measure resistance between connector SO08 terminal No.5 and terminal No.6 with a multimeter (Check for short circuit). Standard Resistance: 10 k Ω or higher
- (f) Measure resistance between connector SO08 terminal No.5 and and the body with a multimeter. Measure resistance between connector SO08 terminal No.6 and and the body with a multimeter (Check for short to body ground). Standard Value: 10 k Ω or higher

- (g) Connect the battery negative cable and wait for a moment.

- (h) Turn the ignition switch to "ON".

- (i) Measure voltage between connector SO08 terminal No.5 and and the body with a multimeter. Measure voltage between connector SO08 terminal No.6 and and the body with a multimeter (Check for short to power supply).

Standard Voltage: Less than 1 V

Are measured values specified values?

No

Replace the harness

Yes

Step 4 Replace the driver seat belt retractor.

- (a) Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
- (b) Replace the driver seat belt retractor. Refer to [9.3.7.3 Front Seat Belt Retractor Replacement](#).
- (c) Install short films and connect the wiring harness connector.
- (d) Connect the battery negative cable and wait for at least 2s. Refer to [2.11.8.1 Battery Disconnection](#).
- (e) Turn the ignition switch to "ON".
- (f) Connect scan tool to clear stored DTC.
- (g) Read the DTC,.

DTC exist?

No

System normal

Yes

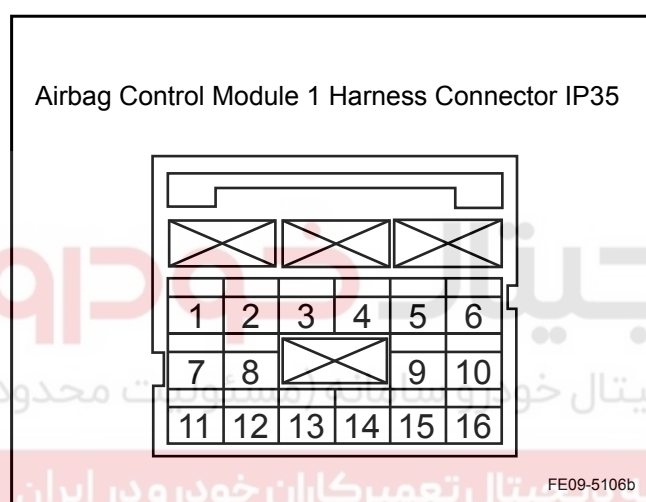
Step 5	Replace the airbag control module.
--------	------------------------------------

- Replace the airbag control module. Refer to [9.2.7.1 Airbag Control Module Replacement](#).
- Confirm the repair completed.

Next

Step 6	System normal.
--------	----------------

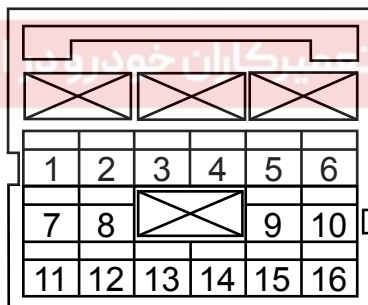
9.2.6.7 Airbag Control Module Terminal Table



Terminal ID	Name	Wiring	Terminal Descriptions	Status	Specified Conditions
1	Driver Front Airbag Positive	0.5 G/R	Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
2	Driver Front Airbag Negative	0.5 B/R			
3	Driver Curtain Airbag Negative	0.5 B/R	Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
4	Driver Curtain Airbag Positive	0.5 G/O			
5	Passenger Front Airbag Positive	0.5 G/W	Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
6	Passenger Airbag Negative	0.5 B/W			
7	--	--	--	--	--
8	--	--	--	--	--

Terminal ID	Name	Wiring	Terminal Descriptions	Status	Specified Conditions
9	CAN_H	0.5 L/B	Can Bus Communication High Voltage	Normal	Protocol KWP2000
10	--	--	--	--	--
11	IG2	0.5 G/O	Power Supply	Ignition Switch "ON"	Battery Voltage
12	--	--	--	--	--
13	Passenger Curtain Airbag Positive	0.5 G/L	Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
14	Passenger Curtain Airbag Negative	0.5 B/L			
15	CAN_L	0.5 Gr/O	Can Bus Communication, Low Voltage	Normal	Protocol KWP2000
16	Ground	0.5 B	Body Ground	Always	Ground

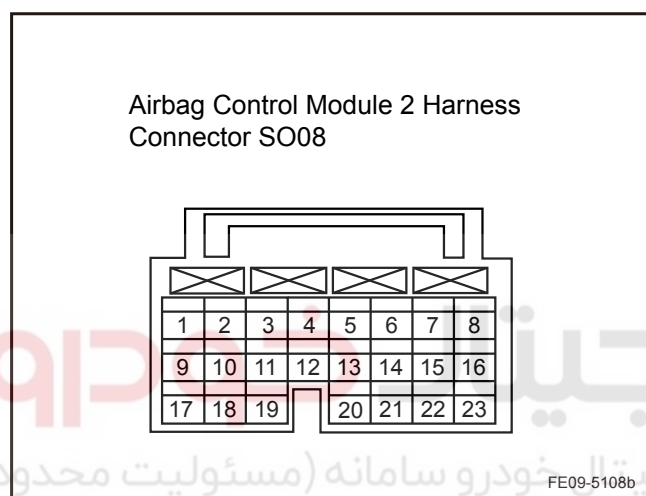
Airbag Control Module 3 Harness Connector IP36



FE09-5107b

Terminal ID	Name	Wiring	Terminal Descriptions	Status	Specified Conditions
1	--	--	--	--	--
2	--	--	--	--	--
3	--	--	--	--	--
4	--	--	--	--	--
5	--	--	--	--	--
6	--	--	--	--	--

Terminal ID	Name	Wiring	Terminal Descriptions	Status	Specified Conditions
7	Left Front Collision Sensor Positive	0.5 W	Real-Time Continuous Transfer Acceleration Value	Normal	Working Voltage 5.5-6.5 V
8	Left Front Collision Sensor Negative	0.5 BR			
9	Right Front Collision Sensor Negative	0.5 BR/W	Real-Time Continuous Transfer Acceleration Value	Normal	Working Voltage 5.5-6.5 V
10	Right Front Collision Sensor Positive	0.5 W/V			



Terminal ID	Name	Wiring	Terminal Descriptions	Status	Specified Conditions
1	Driver Front Airbag Positive	0.5 G/B	Normal Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
2	Driver Front Airbag Negative Side	0.5 B/G	Normal Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
3	Passenger Front Airbag Negative	0.5 B/W	Normal Loop Resistance 1.8-2.4 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
4	Passenger Front Airbag Positive	0.5 G/W			
5	Driver Seat Belt Pretensioner Positive	0.5 G/L	Normal Loop Resistance 1.8-2.3 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
6	Driver Seat Belt Pretensioner Negative	0.5 B/L			

9-30 Airbag System

Safety Protection Device

Terminal ID	Name	Wiring	Terminal Descriptions	Status	Specified Conditions
7	Passenger Seat Belt Pretensioner Negative	0.5 B/R	Normal Loop Resistance 1.8-2.3 Ω	Normal	Working Voltage 12 V, Initiation Point Current 1.2 A, Duration 2 ms
8	Passenger Seat Belt Pretensioner Positive	0.5 G/O			
9	Driver Seat Belt Buckle Positive	0.5 W	Normally Closed	-	-
10	Driver Seat Belt Buckle Negative	0.5 G		-	-
11	Passenger Seat Belt Buckle Negative	0.5 G/R	Normally Closed	-	-
12	Passenger Seat Belt Buckle Positive	0.5 W/B		-	-
13	Driver Side Collision Sensor Positive	0.5 W	Real-Time Continuous Transfer Acceleration Value	Normal	Working Voltage 5.5-6.5 V
14	Driver Side Collision Sensor Negative	0.5 BR			
15	Passenger Side Collision Sensor Negative	0.5 BR/W	Real-Time Continuous Transfer Acceleration Value	Normal	Working Voltage 5.5-6.5 V
16	Passenger Side Collision Sensor Positive	0.5 W/V			
17	--	--	--	--	--
18	--	--	--	--	--
19	--	--	--	--	--
20	--	--	--	--	--
21	--	--	--	--	--
22	--	--	--	--	--
23	--	--	--	--	--

9.2.7 Removal and Installation

9.2.7.1 Airbag Control Module Replacement

Removal Procedure

Warning!

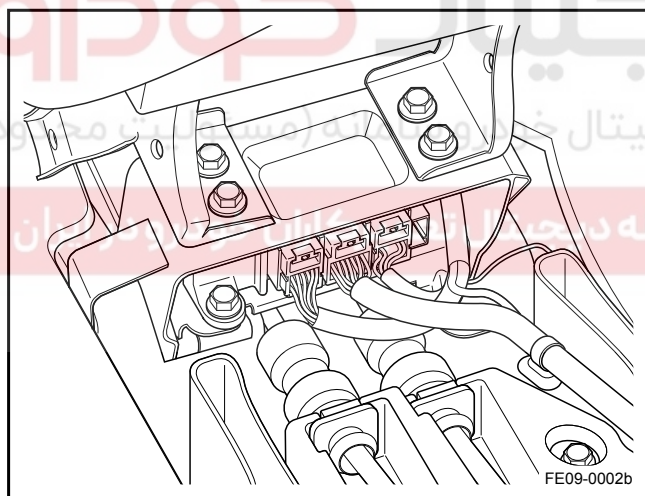
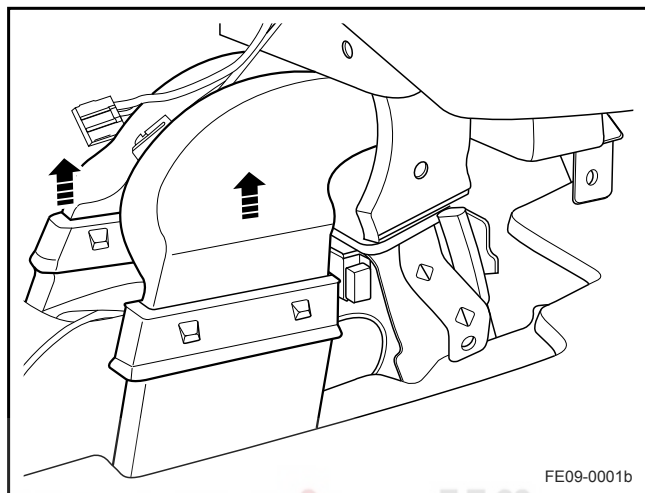
Refer to "Battery Disconnect Warning" in "Warnings and Notices".

1. Disconnect the battery negative cable. Refer to [2.11.8.1 Battery Disconnection](#).

Note

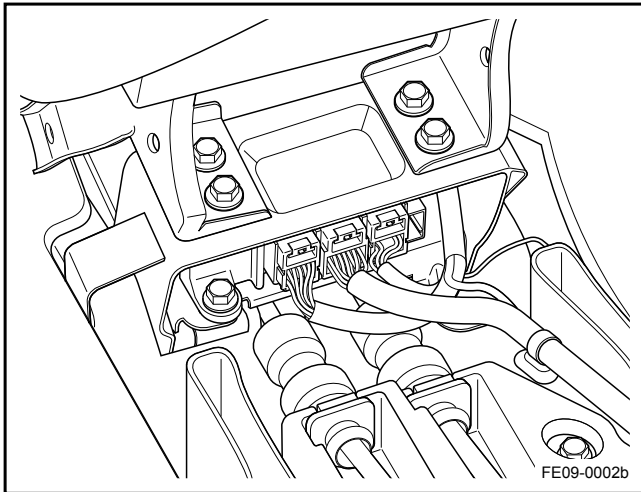
Start removal 90s after the battery negative is disconnected.

2. Remove the center console cup holder. Refer to [3.3.8.9 Shift Lever Replacement](#).
3. Remove the rear air duct.
4. Remove the airbag control module retaining bolts.
5. Disconnect the airbag control module wire harness connector and remove the airbag control module.

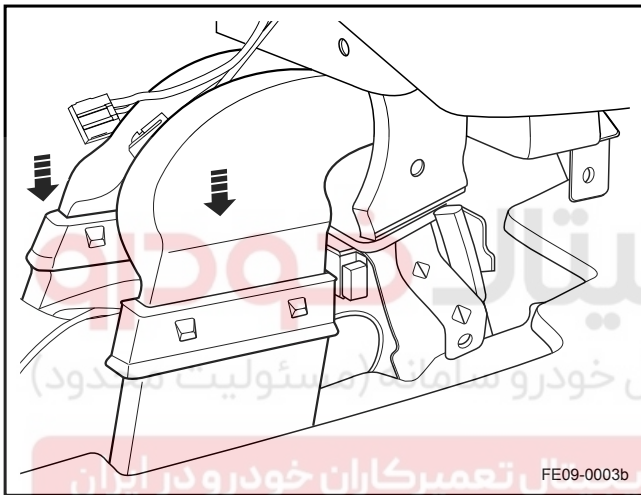


Installation Procedure:

1. Install the airbag control module retaining bolts.
Torque: 8 Nm (Metric) 5.9 lb-ft (US English)
2. Connect the airbag control module wiring harness connector.



3. Install the rear air duct.
4. Install the center console cup holder.
5. Connect the battery negative cable.

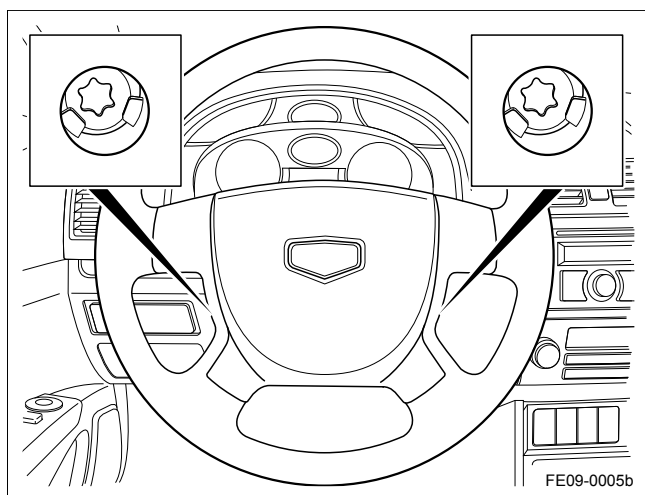


9.2.7.2 Driver Front Airbag Replacement

Removal Procedure

Warning!

Refer to "Battery Disconnect Warning" in "Warnings and Notices".



1. Disconnect the battery negative cable. Refer to [2.11.8.1 Battery Disconnection](#).

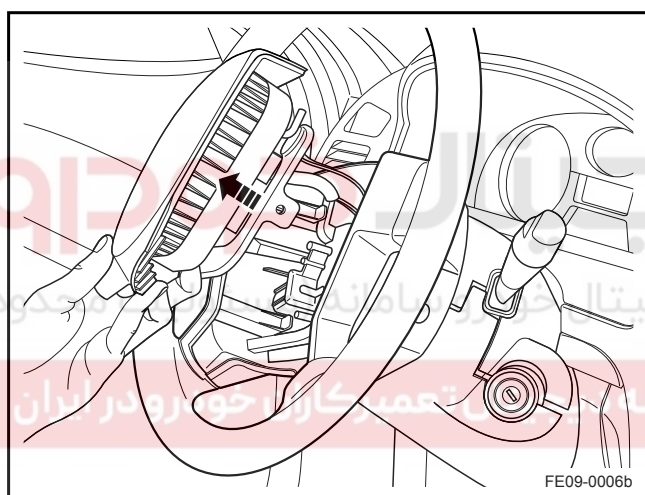
Note

Start removal 90s after the battery negative is disconnected.

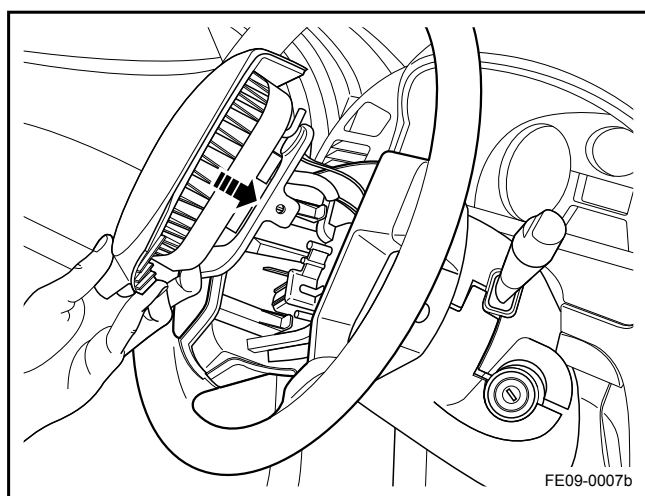
2. Remove the driver front airbag retaining screws on both sides.

Warning!

Refer to "Supplement Protection System Warning" in "Warnings and Notices".



3. Disconnect the clock spring and the driver front airbag wiring harness connector.
4. Disconnect the horn wiring harness connector and remove the driver front airbag.



Installation Procedure:

1. Connect the horn harness connector and the clock spring harness connector.
2. Tighten the driver front airbag retaining screws. Before tightening the retaining screws, preload the retaining screws first.
Torque: 9 Nm (Metric) 6.6 lb-ft (US English)
3. Connect the battery negative cable.

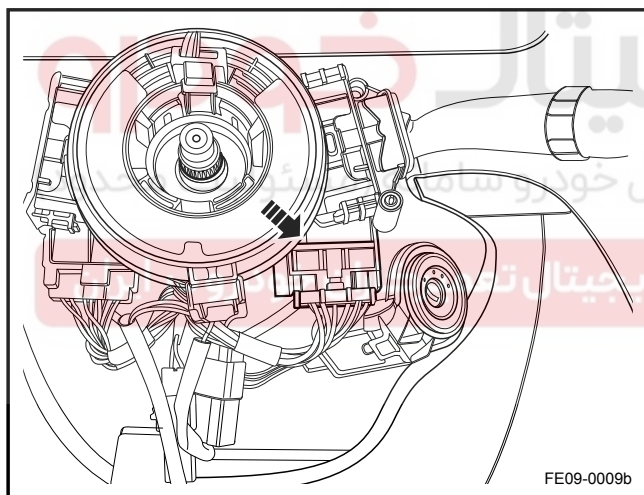
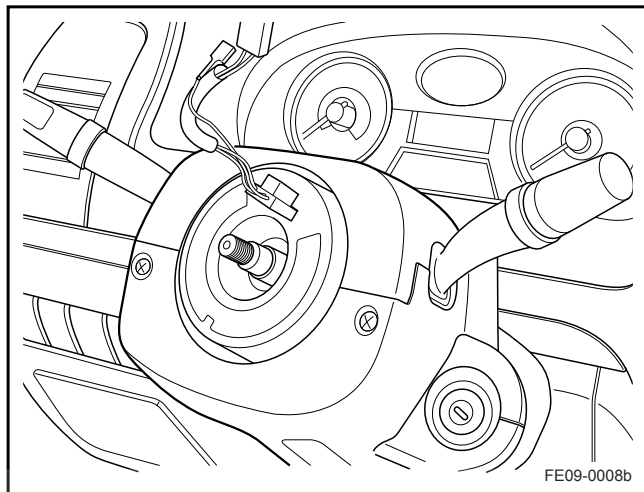
9.2.7.3 Clock Spring Replacement

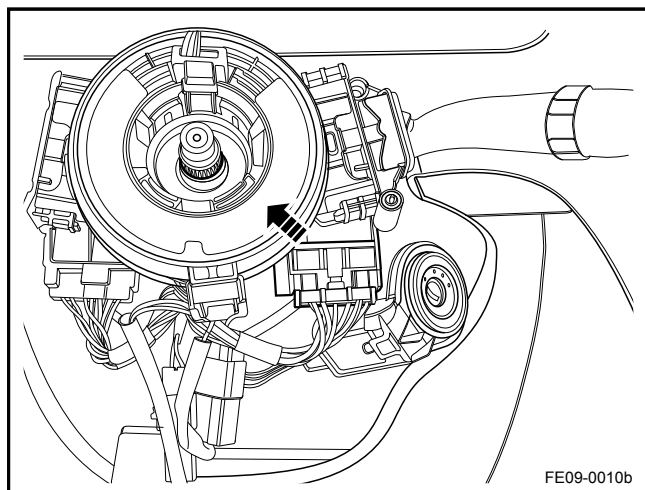
Removal Procedure

Warning!

Refer to "Battery Disconnect Warning" in "Warnings and Notices".

1. Disconnect the battery negative cable and wait for the 90s. Refer to [2.11.8.1 Battery Disconnection](#).
2. Adjust the steering wheel to a straight state and locked.
3. Remove the driver front airbag. Refer to [9.2.7.2 Driver Front Airbag Replacement](#).
4. Remove the steering wheel. Refer to [7.3.6.3 Steering Wheel Replacement](#).
5. Remove the steering column upper and lower shield panels. Refer to [11.4.8.1 Headlamp Switch Replacement](#).
6. Disconnect the clock spring harness connector and remove the clock spring.



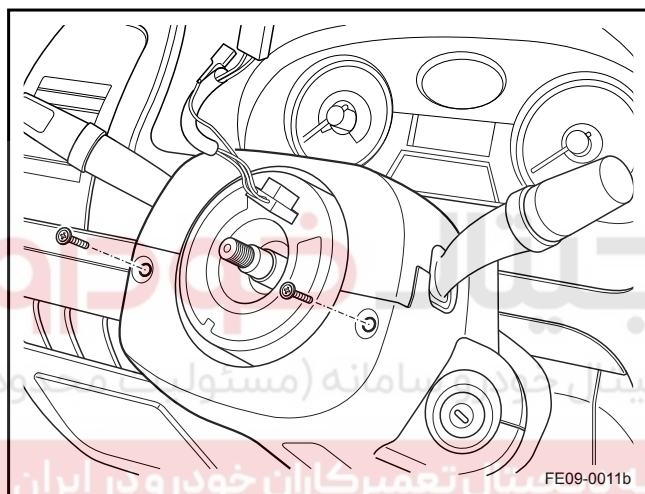


Installation Procedure:

1. Connect the clock spring harness connector and install the clock spring to the steering column.

Note

Do not unplug the clock spring locking pin.



2. Install the steering column upper and lower shield panels.
3. Install the clock spring
4. Unplug the clock spring locking pin.
5. Install the steering wheel.
6. Install the driver front airbag.
7. Connect the battery negative cable.

9.2.7.4 Passenger Front Airbag Replacement

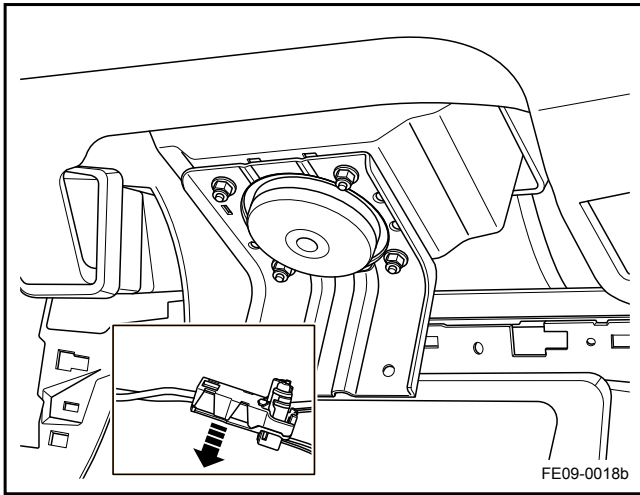
Removal Procedure

Warning!

Refer to "Battery Disconnect Warning" in "Warnings and Notices".

Warning!

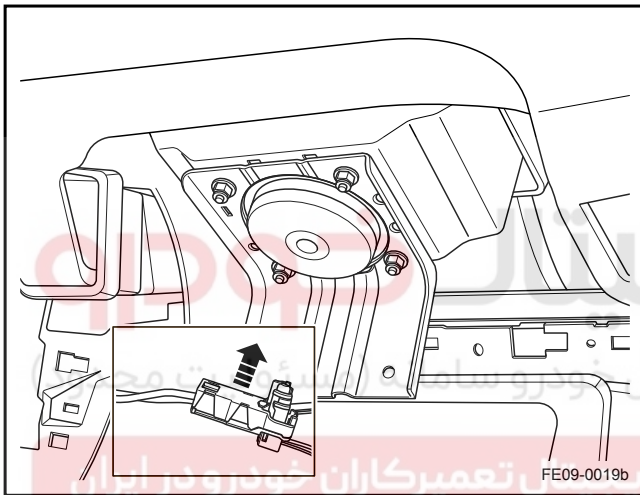
Refer to "Supplement Protection System Warning" in "Warnings and Notices".



1. Disconnect the battery negative cable. Refer to [2.11.8.1 Battery Disconnection](#).
2. Remove the glove box. Refer to [12.8.3.2 Glove Box Replacement](#).
3. Remove the instrument panel. Refer to [12.8.3.1 Instrument Panel Replacement](#).
4. Disconnect passenger front airbag wiring harness connector.
5. Remove the passenger front airbag.

Installation Procedure:

1. Install the passenger front airbag.
2. Connect the passenger front airbag wiring harness connector.
3. Install the instrument panel.
4. Install the glove box.
5. Connect the battery negative cable.

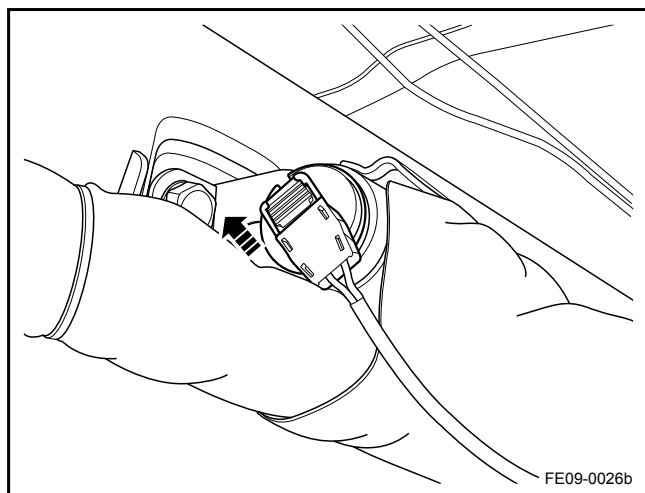


9.2.7.5 Curtain Airbag Replacement (If equipped)

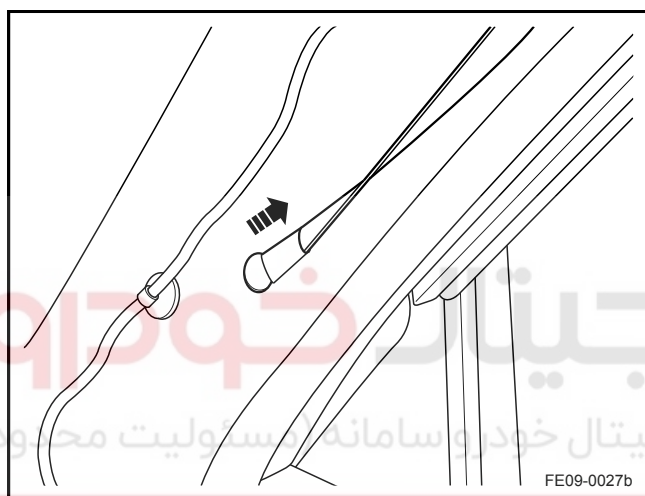
Removal Procedure

Warning!

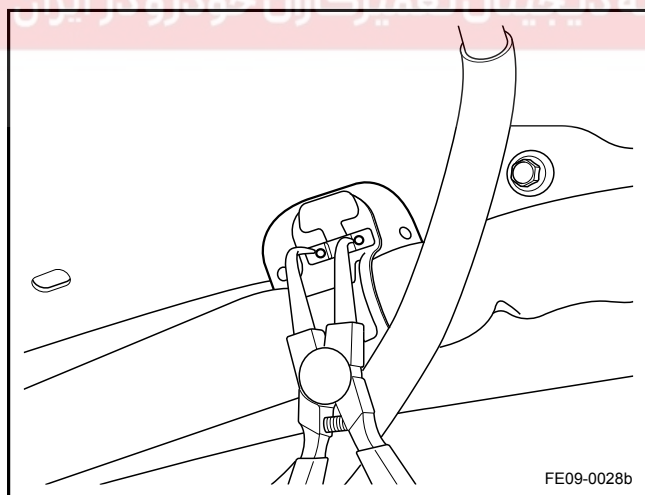
Refer to "Battery Disconnect Warning" in "Warnings and Notices".



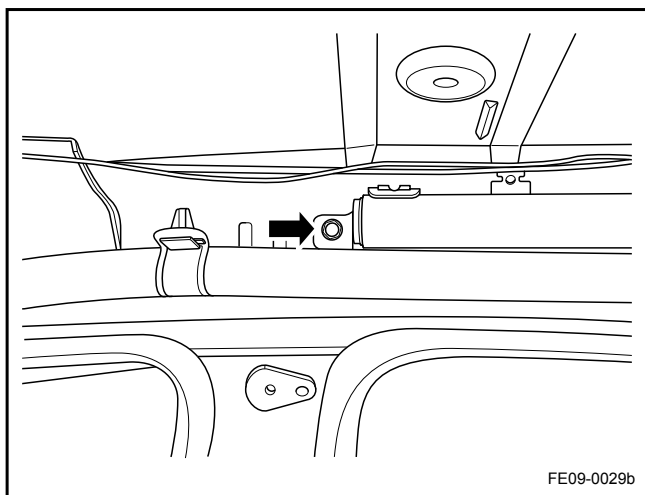
1. Disconnect the battery negative cable. Refer to [2.11.8.1 Battery Disconnection](#).
2. Remove the headliner. Refer to [12.9.1.1 Headliner Replacement](#).
3. Disconnect the curtain airbag harness connector.



4. Disconnect the curtain airbag front retaining cord.



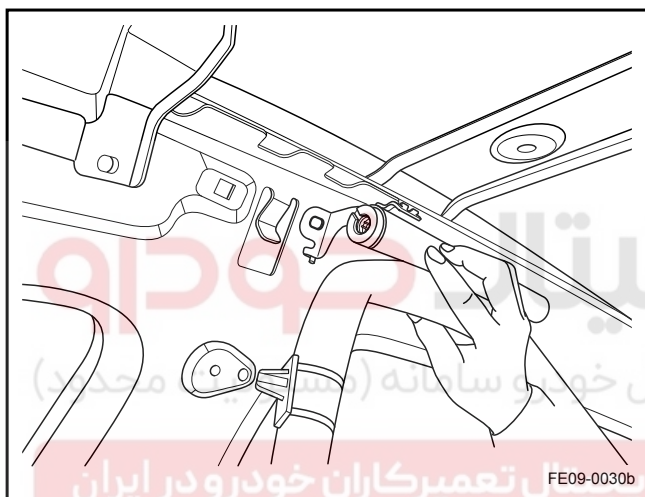
5. Remove the curtain airbag retaining clips with a plier.



6. Remove the curtain airbag retaining retaining bolts and remove the curtain airbag.

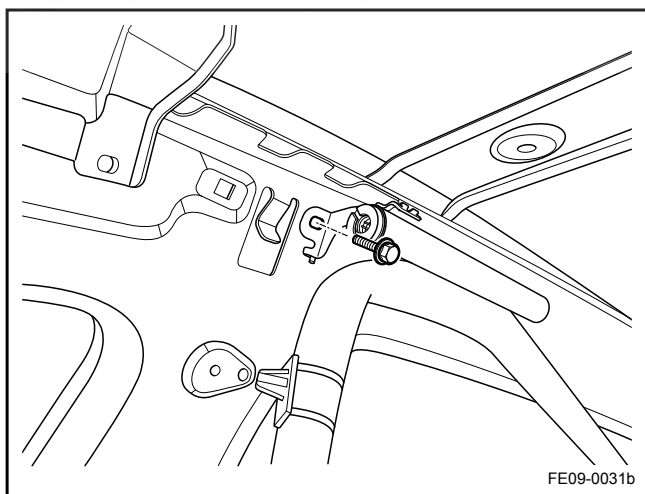
Installation Procedure:

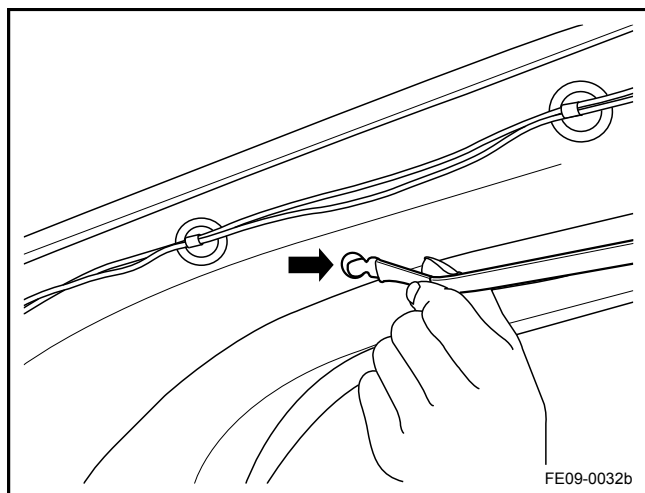
1. Install the curtain airbag.



2. Install and tighten the curtain airbag retaining bolts, preload the curtain airbag retaining nut first until the cord and retaining buckle installed, and then tighten the curtain airbag retaining bolts.

Torque: 10 Nm (Metric) 7.4 lb-ft (US English)

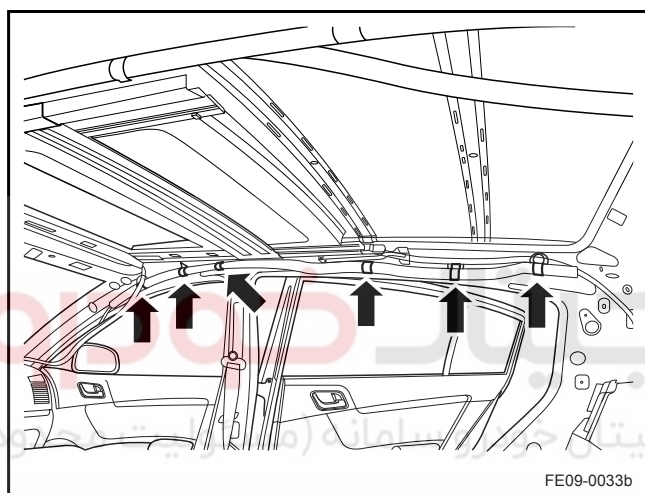




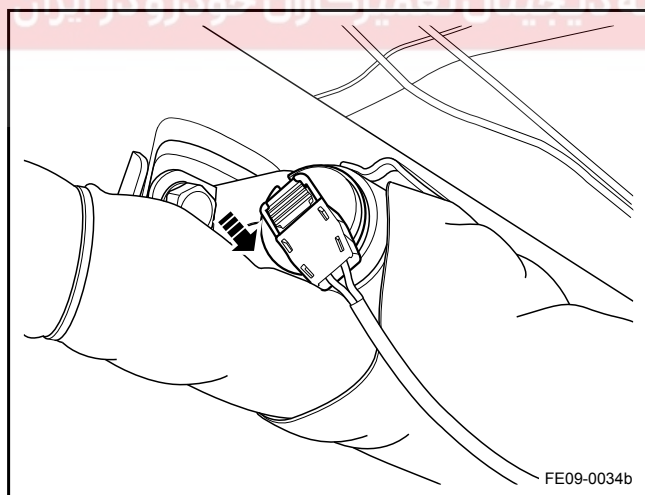
3. Fix the curtain airbag retaining Cord.

Note

Cord can not be distorted.



4. Install the curtain airbag retaining clips.



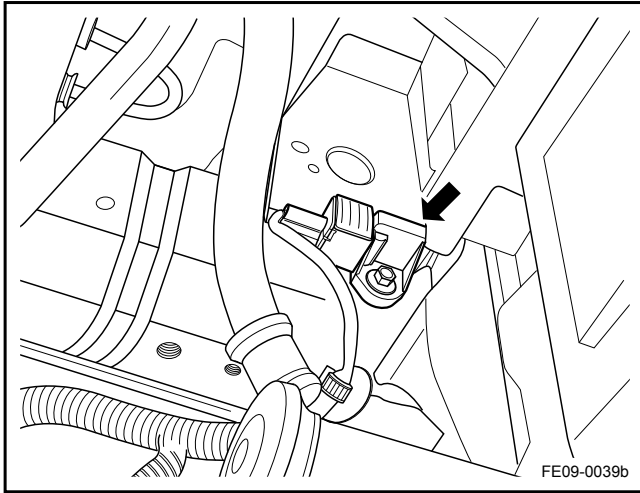
5. Connect the curtain airbag harness connector.
6. Install the headliner.
7. Connect the battery negative cable.

9.2.7.6 Front Collision Sensor Replacement

Removal Procedure

Warning!

Refer to "Battery Disconnect Warning" in "Warnings and Notices".



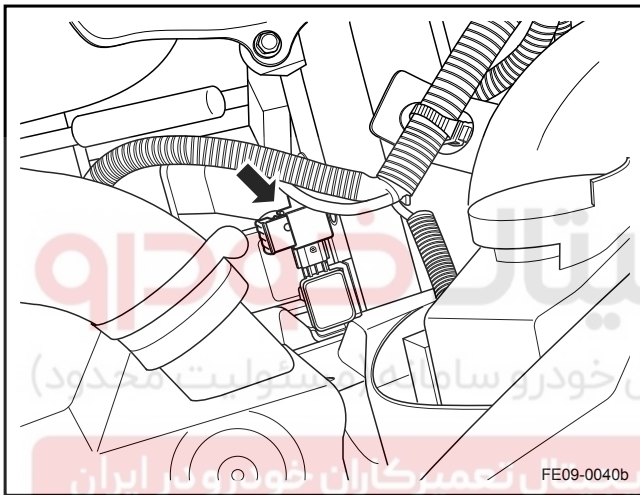
1. Disconnect the battery negative cable and wait for at least 90s. Refer to [2.11.8.1 Battery Disconnection](#).
2. Remove the battery and the battery bracket. Refer to [2.11.8.2 Battery Replacement](#).
3. Disconnect the left front collision sensor wiring harness connector.
4. Remove left front collision sensor retaining bolts and remove the left front collision sensor.

Installation Procedure:

1. Install and tighten the left front collision sensor retaining sensors retaining bolts.
Torque: 8 Nm (Metric) 5.9 lb-ft (US English)
2. Connect the left front collision sensor wiring harness connector.
3. Install the battery and the battery bracket.
4. Connect the battery negative cable.

Note

Right Front Collision Sensor Replacement is the same.

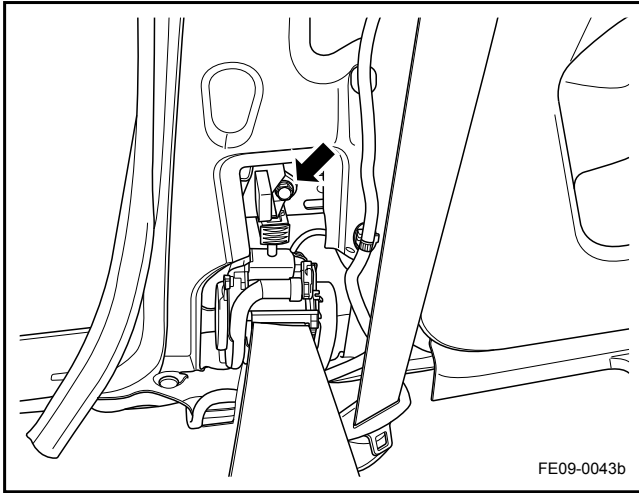


9.2.7.7 Side Collision Sensor Replacement (If equipped)

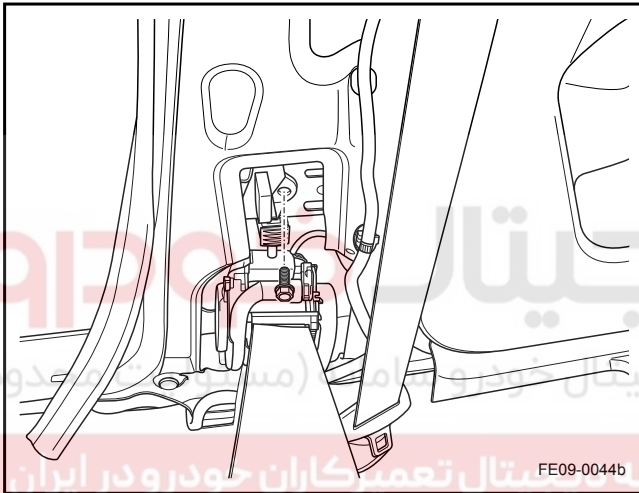
Removal Procedure

Warning!

Refer to "Battery Disconnect Warning" in "Warnings and Notices".



1. Disconnect the battery negative cable and wait for 90s. Refer to [2.11.8.1 Battery Disconnection](#).
2. Remove the center upper pillar trim panel. Refer to [12.9.1.4 Center Pillar Trim Panel Replacement](#).
3. Disconnect the side collision sensor harness connector.
4. Remove the side collision sensor retaining bolts and remove the sensor.



Installation Procedure:

1. Install the side collision sensor and tighten the retaining bolts.
Torque: 8 Nm (Metric) 5.9 lb-ft (US English)
2. Connect the side collision sensor harness connector.
3. Install the center upper pillar trim panel.
4. Connect the battery negative cable.

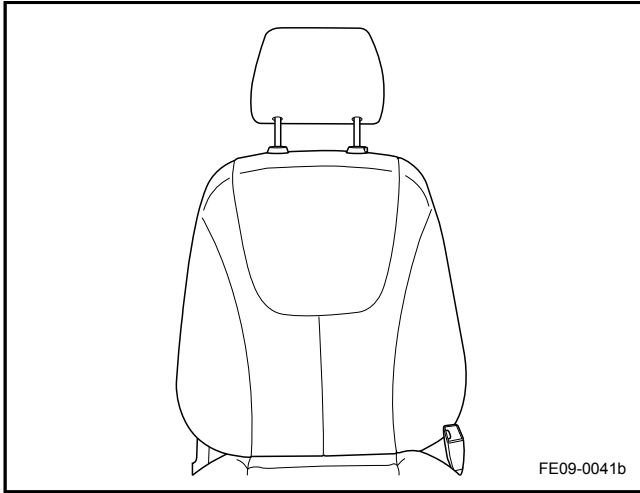
9.2.7.8 Passenger Recognition Sensor Replacement

Refer to [11.11.8.6 Electric Seat Cushion Replacement](#) removal procedure.

9.2.7.9 Side Airbag Replacement

Note

If the side airbag has been deployed, please replace the front seat back.



1. Refer to [11.11.8.4 Electric Seat Back Replacement](#) removal procedure.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



9.3 Pretension Seat Belt System

9.3.1 Specifications

9.3.1.1 Fastener Tightening Specifications

Applications	Model	Specifications	
		Metric (Nm)	US English (lb-ft)
Front Left / Right Seat Belt Retractor Assembly	US English 7 / 16 × 25	40-50	29.5-36.9
Front Left / Right Seat Belt Buckle Retaining Bolts	US English 7 / 16 × 32	40-50	29.5-36.9
Front Left / Right Seat Belt Retaining Bolts	US English 7 / 16 × 35	40-50	29.5-36.9
Front Height Adjuster Retaining Bolts	M10 × 26	30-40	22.1-29.5
Rear Seat Left / Right Seat Belt Retractor Retaining Bolts	US English 7 / 16 × 25	40-50	29.5-36.9
Front Left / Right Seat Belt Guide Ring Retaining Bolt	US English 7 / 16 × 37	40-50	29.5-36.9
Rear Seat Left / Right Seat Belt Retaining Bolts	US English 7 / 16 × 35	40-50	29.5-36.9
Rear Middle Seat Belt Retaining Bolts	US English 7 / 16 × 25	40-50	29.5-36.9
Rear Seat Left / Right Seat Belt Buckle Retaining Bolts	US English 7 / 16 × 25	40-50	29.5-36.9
Rear Seat Belt Mounting Bracket Retaining Bolts	M10 × 25	30-40	22.1-29.5

9.3.2 Description and Operation

9.3.2.1 Description and Operation

Seat Belt

Front seats and rear seats all have seat belts, which are the primary protection measure. In the following circumstances, the seat belts can be hold the passengers in seats, and reduce the impact force:

- Front Collision
- Rear Collision
- Side Collision
- Overturn Caused Collision

All vehicles are equipped with emergency locking retractor function. Seat belts have automatic locking feature. Locking feature is activated when the seat belt quickly pulled entirely from the retractor. Locking feature prevents seat belt pulled out by more than allowed retractor position. It is recommended to use self-locking function to retain the child seat. When completely roll back seat belt to the retractor, the feature is canceled. Canceling the locking feature, seat belts are unlocked. Canceling the locking feature, seat belts can be pulled from the retractor. The vehicle is also equipped with the airbag system. Refer to "Airbag System" in the [9.2.2.1 Description and Operation](#).

Seat Belt Warning Lamp

Driver seat belt and passenger seat belt warning lamps are located in instrument cluster and multi-instrument display to remind driver and passenger to tighten their seat belts.

Child Seat Protection System

Warning!

NEVER use a rear-facing child restraint in the front seat of this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer. For more information. Refer to the vehicle owners manual and the instruction that came with the child restraint.

The child seat may only be used in a forward facing seating location. The child seat should be installed and secured according to the manufacturer's directions. If the child seat has

a top strap, the seat will need to be anchored. Passengers should not be allowed to sit at locations where the seat belts are being used to secure the child seat.



9.3.3 System Working Principle

9.3.3.1 System Working Principle

Front Seat Belt System

Front seat belt system includes the driver and passenger seat belt pre-tensioner retractor, passenger recognition sensors, as well as two front seats safety switches.

Passenger recognition sensor is used to detect whether the passenger seat is occupied. If it is detected to be empty, the passenger seat belt warning lamp will go off. Two front seat belt switches are located in the seat locks for seat belt warning lamp and buzzer control.

1. Driver Seat Belt Warning Lamp

When the ignition switch is at ON, if the driver seat belt is not tightened, airbag control module detects the driver seat belt status and send signals to the instrument cluster through the CAN bus. Instrument cluster driver seat belt warning lamp flashes and buzzer sounded 4 s to remind driver to wear seatbelt.

2. Passenger Seat Belt Warning Lamp

When the ignition switch is at ON, the passenger recognition sensor detects whether the passenger seat is occupied and send signals to the airbag control module. Airbag control module tests seat belt status and send a signal to the instrument cluster, which sends a signal to request to light or turn off the passenger seat belt warning lamp.



Rear Seat Belt System

Rear seat belt system includes the following components:

- The center rear seat belt retractor is located under the rear shelf trim panel and is attached to the rear shelf body panel.
- The center rear seat belt buckle and the outer seat belt buckle are located in the center of the seat cushion and they are attached to the rear floor pan.

9.3.4 Component Locator

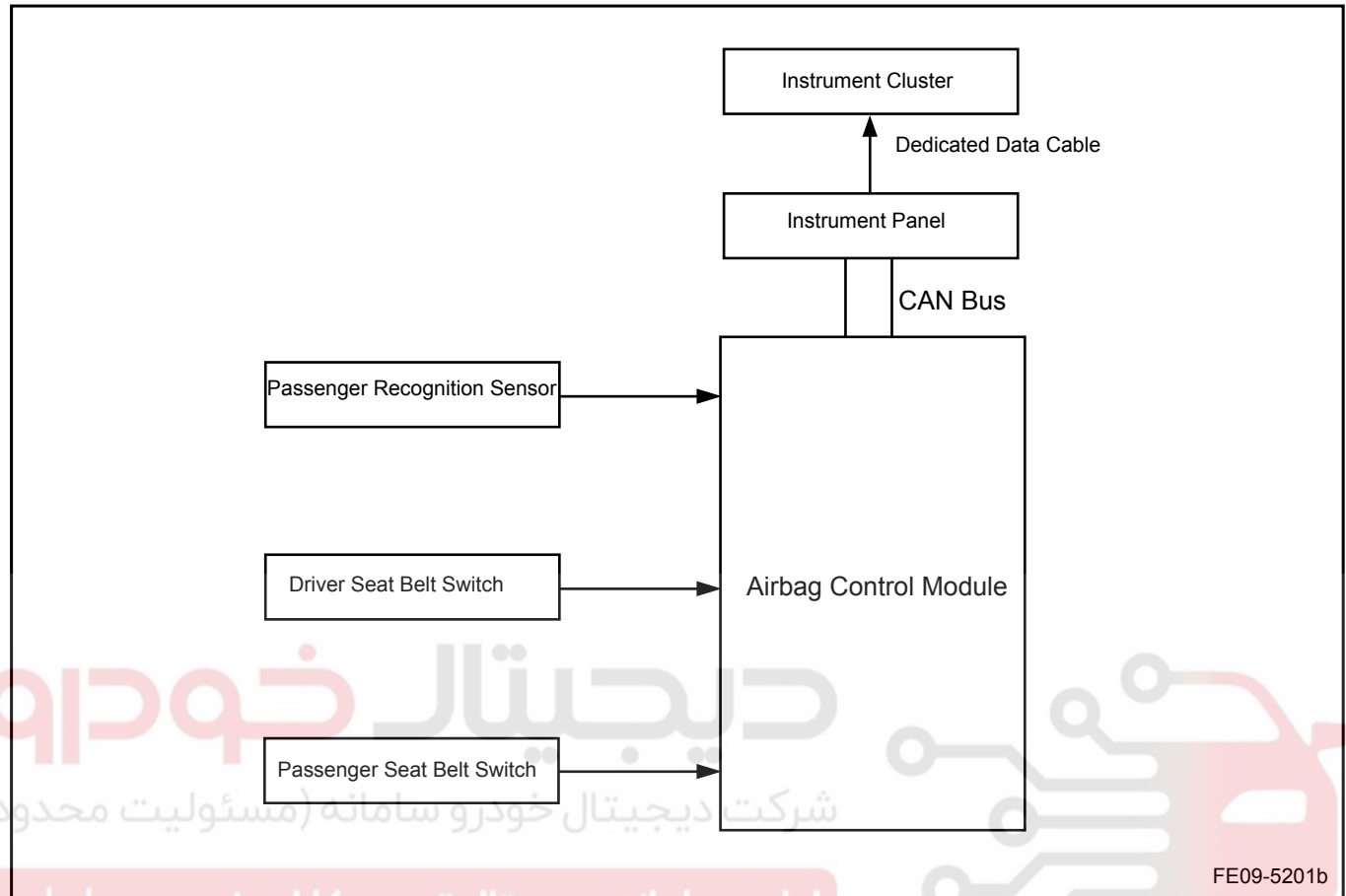
9.3.4.1 Component Locator

Passenger Recognition Sensor



9.3.5 Schematic

9.3.5.1 Schematic



9.3.6 Diagnostic Information and Procedures

9.3.6.1 Visual Inspection

— Confirm Fault Symptom

In diagnostic, the most difficult situation is that there is no symptom. In this case, technician must thoroughly analyze the described fault, and then simulate the fault occurring conditions and environment. Even for a very experienced technician, if carry out diagnostics without verifying the fault, it is likely to ignore a number of important things, and even make misjudgments. This will result in the diagnostic can not be continued.

— Check the easy to access system components to identify whether there is a significant damage or a potential malfunction.

— Connectors pivot and vibration support parts should be thoroughly examined. If possible, for vibration caused failure, it is recommended to use vibration method:

1. With a finger, gently shook the part that may be faulty and check for malfunction.
2. Gently shake the connector vertically and horizontally.
3. Gently shake the wiring harness vertically and horizontally.

— Vehicle Inspection

A. Check the driver seat belt warning lamp:

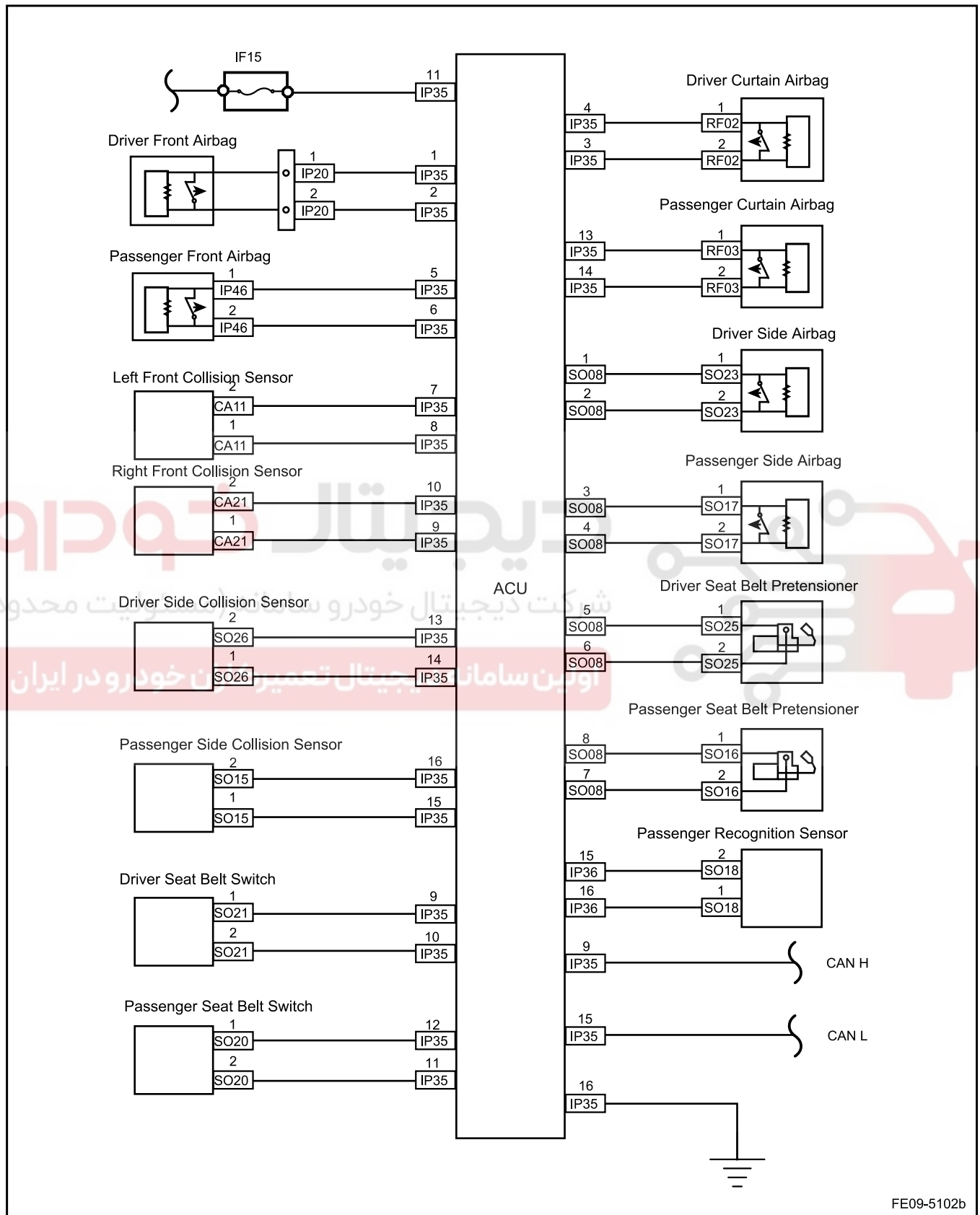
- a. Turn the ignition switch to "ON".
- b. When the driver seat belt is released, check whether the driver seat belt warning lamp is flashing.
- c. When the driver is seat belt fastened, check whether the driver seat belt warning lamp is off.

B. Check the passenger seat belt warning lamp:

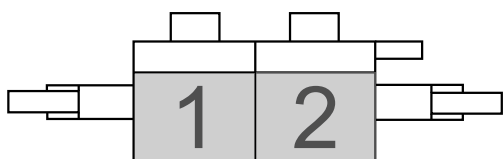
- a. Turn the ignition switch to "ON".
- b. When the passenger seat belt is released, check whether the passenger seat belt warning lamp is flashing.
- c. When the passenger is seat belt fastened, check whether the passenger seat belt warning lamp is off.

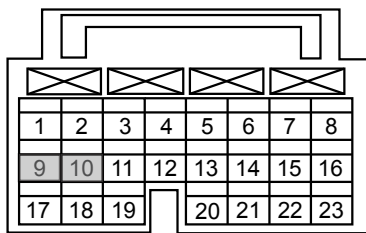
9.3.6.2 Driver Seat Belt Warning Lamp Inoperative

Schematic:



Diagnostic Steps:

Step 1	Use scan tool to access airbag control module.
(a) Check for DTC.	
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">Yes</div> <div style="border: 1px solid black; padding: 5px;">Repair according to the DTC.</div> </div>	
<div style="border: 1px solid black; padding: 2px 10px; width: fit-content; margin-bottom: 10px;">Yes</div>	
Step 2	Use scan tool to carry out active test.
(a) Use "active test" function to control the driver seat belt warning lamp, while observing whether the warning lamp status (ON / OFF) is changed.	
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">No</div> <div style="border: 1px solid black; padding: 5px;">Replace the instrument cluster assembly</div> </div>	
<div style="border: 1px solid black; padding: 2px 10px; width: fit-content; margin-bottom: 10px;">Yes</div>	
Step 3	Check the driver seat belt lock assembly.
(a) Disconnect the driver seat belt lock connector SO21.	
(b) Test whether the driver seat belt switch status meets the following requirements with a multimeter.	
(c) Release the seat belt, measure resistance between terminal 1 and 2. Standard Resistance: Less than 1 Ω	
(d) Fasten the seat belt, measure resistance between terminal 1 and 2. Standard Resistance: 10 k Ω or higher	
Data normal?	
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">No</div> <div style="border: 1px solid black; padding: 5px;">Replace the driver seat belt lock assembly</div> </div>	
<div style="border: 1px solid black; padding: 2px 10px; width: fit-content; margin-bottom: 10px;">Yes</div>	
Step 4	Check the wiring harness (driver seat belt lock to airbag control module).
<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;"> <p>Passenger Seat Belt Switch Harness Connector SO21</p>  <p style="text-align: right; font-size: small;">FE09-5202b</p> </div>	
(a) Disconnect the driver seat belt lock connector SO21 and the airbag control module connector SO08.	
(b) Measure resistance between the connector SO21 terminal 2 and the connector SO08 terminal 10 with a multimeter.	
(c) Measure resistance between the connector SO21 terminal 1 and the connector SO08 terminal 9 with a multimeter. Standard Resistance: Less than 1 Ω	
(d) Measure resistance between the connector SO21 terminal 2 and the body ground with a multimeter. Standard Resistance: 10 k Ω or higher	
Data normal?	
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px; margin-right: 10px;">No</div> <div style="border: 1px solid black; padding: 5px;">Repair or replace the wiring harness or connector.</div> </div>	

Airbag Control Module 2 Harness
Connector SO08

FE09-5203b

Yes

Step 5 Replace the airbag control module.

- (a) Replace the airbag control module. Refer to [9.2.7.1 Airbag Control Module Replacement](#).
- (b) Confirm the repair completed.

Next

Step 6 System normal.

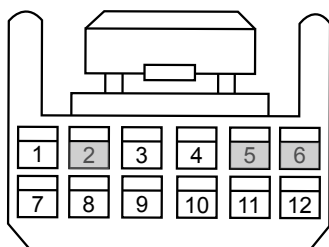
9.3.6.3 Front Passenger Seat Belt Warning Lamp Malfunction

Schematic:

Refer to [9.3.6.2 Driver Seat Belt Warning Lamp Inoperative](#) in the circuit diagram.

Diagnostic Steps:

Step 1 Check the instrument cluster wiring harness.

Instrument Cluster Harness
Connector IP01

FE09-5205b

- (a) Check the wiring harness connector IP01 to the instrument cluster harness and connectors.
- (b) With a multimeter, measure voltage according to the following table.

Instrument Cluster Terminal	Signal Name	Voltage	Current
2	Power Supply	12 V	1 A
5	Body Ground		1 A
6	Passenger Seat Belt	5 V	20 mA

Data normal?

No

Repair or replace the wiring harness or connector

Yes

Step 2 Check the instrument cluster.

(a) Adjust the clock display, and check whether it works properly.

No

Replace the instrument cluster.

Yes

Step 3 Check the passenger recognition sensor.

- (a) Disconnect the passenger recognition sensor connector SO18.
- (b) With a multimeter measure sensor resistance according to the following conditions.
- (c) Measure resistance value when the passenger seat is occupied with a multimeter.
Standard Resistance: Less than 100 Ω
- (d) Measure resistance value when the passenger seat is not occupied with a multimeter.
Standard Resistance: 10 k Ω or higher

Data normal?

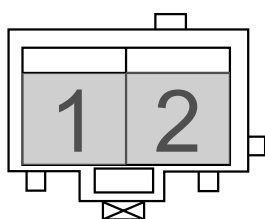
No

Replace the passenger recognition sensor

Yes

Step 4 Check the wiring harness (passenger recognition sensor to airbag control module).

Passenger Recognition Sensor SO18



FE09-5206b

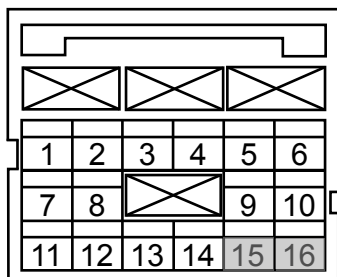
- (a) Disconnect the airbag control module connector IP36.
- (b) Measure resistance between the connector SO18 terminal 2 and the connector IP36 terminal 15 with a multimeter.
- (c) Measure resistance between the connector SO18 terminal 1 and the connector IP36 terminal 16 with a multimeter.
Standard Resistance: Less than 1 Ω
- (d) Measure resistance between the connector SO18 terminals 1,2 and the body ground with a multimeter.
Standard Value: 10 k Ω or higher

Data normal?

No

Repair or replace the wiring harness / connector

Airbag Control Module 3 Harness Connector IP36



FE09-5207b

Yes

Step 5 Check the wiring harness (airbag control module - the passenger seat belt lock).

Passenger Seat Belt Buckle Harness Connector SO20



FE09-5208b

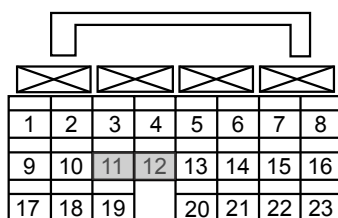
- Disconnect the passenger Seat Belt Lock connector SO20 and the airbag control module connector SO08.
- Measure resistance between the connector SO20 terminal 2 and connector SO08 terminal 11 with a multimeter.
- Measure resistance between the connector SO20 terminal 1 and connector SO08 terminal 12 with a multimeter.
Standard Resistance: Less than 1 Ω
- Measure resistance between the connector SO20 terminals 1,2 and the body grounds with a multimeter.
Standard Value: 10 k Ω or higher

Data normal?

No

Repair or replace the wiring harness or connector

Airbag Control Module 2 Harness Connector SO08



FE09-5209b

Yes

Step 6 Replace the passenger seat belt lock assembly.

- Replace the passenger seat belt lock assembly. Refer to [9.3.7.1 Front Seat Belt Buckle replacement](#).

Is the passenger seat belt warning lamp normal?

Yes

System normal

No

Step 7 Replace the instrument cluster.

(a) Replace the instrument cluster. Refer to [11.7.7.1 Instrument Cluster Replacement](#).

Is the passenger seat belt warning lamp normal?

Yes

System normal

No

Step 8 Replace the airbag control module.

(a) Replace the airbag control module. Refer to [9.2.7.1 Airbag Control Module Replacement](#).

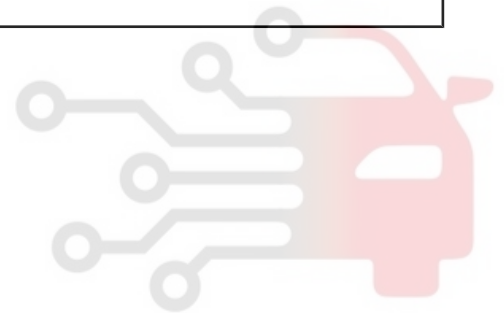
(b) Confirm the repair completed.

Next

Step 9 System normal.

دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

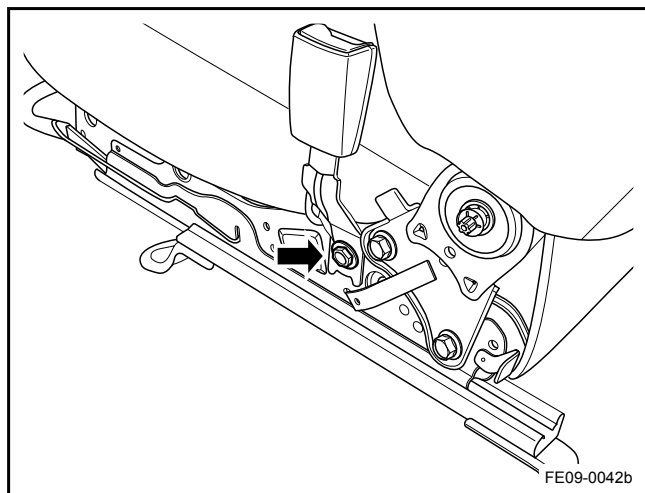


9.3.7 Removal and Installation

9.3.7.1 Front Seat Belt Buckle replacement

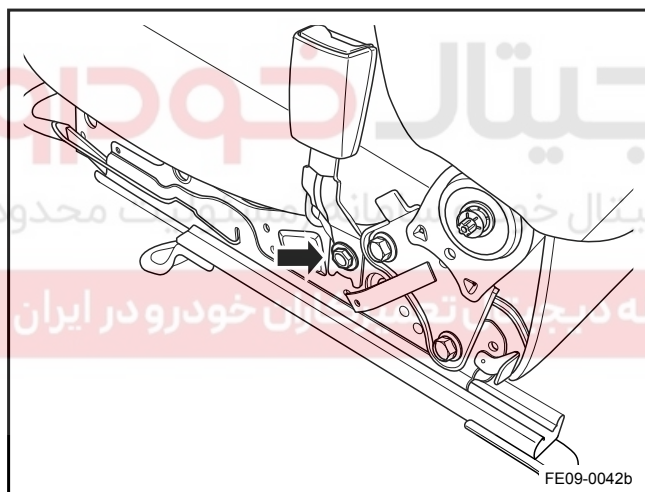
Removal Procedure

1. Remove the front seat. Refer to [11.11.8.1 Front Electric Seat Replacement](#).
2. Remove the front seat side trim. Refer to [11.11.8.2 Seat Side Trim Panel Replacement](#).
3. Remove the front seat belt buckle retaining bolts.



Installation Procedure:

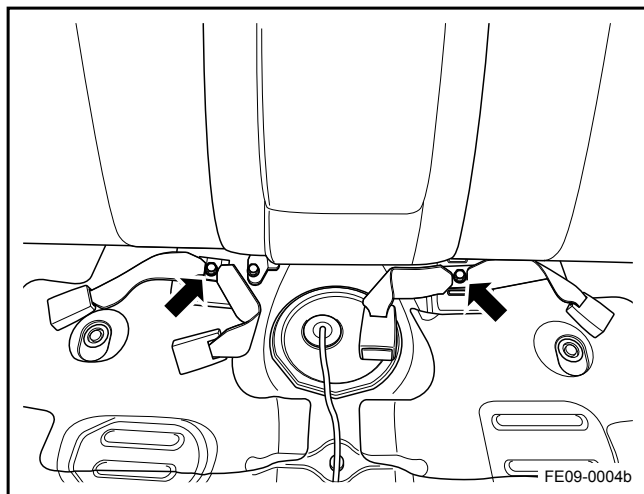
1. Install and tighten the front seat belt buckle retaining bolts.
Torque: 45 Nm (Metric) 33 lb-ft (US English)
2. Install the front seat side trim.
3. Install the front seat.



9.3.7.2 Rear Seat Belt Buckle Replacement

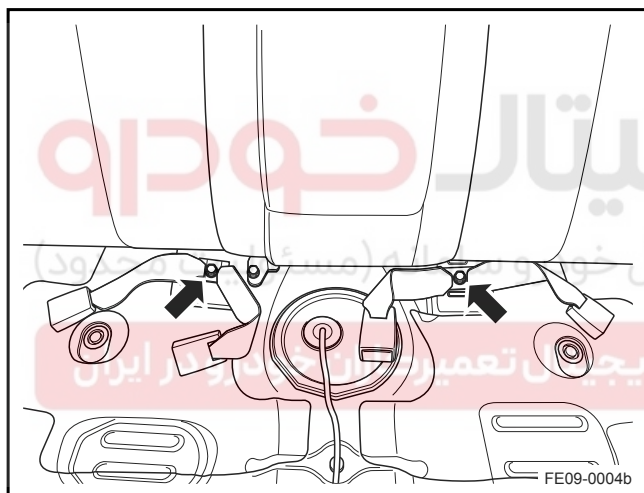
Removal Procedure

1. Remove the rear seat. Refer to [12.7.3.4 Rear Seat Cushion Replacement](#).
2. Remove the rear seat belt buckle retaining bolts.



Installation Procedure:

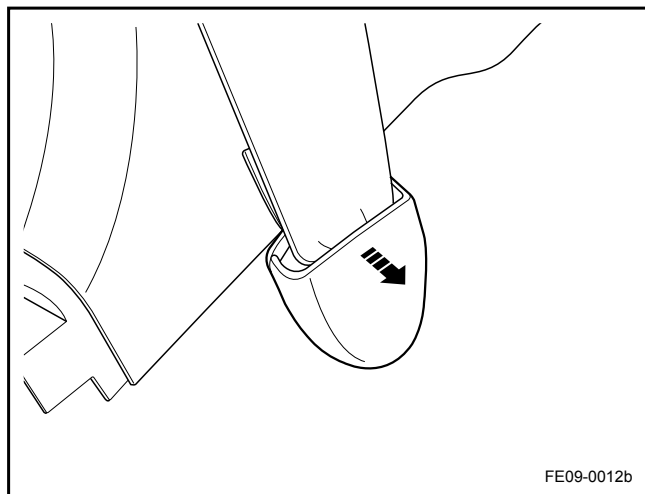
1. Install and tighten the rear seat belt buckle retaining bolts.
Torque: 45 Nm (Metric) 33 lb-ft(US English)
2. Install the rear seat.



9.3.7.3 Front Seat Belt Retractor Replacement

Removal Procedure

1. Remove the front seat belt to the center pillar lower retaining bolt cover.

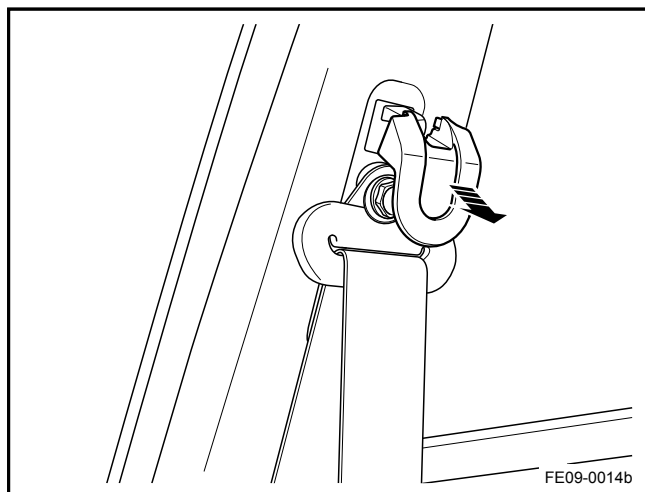


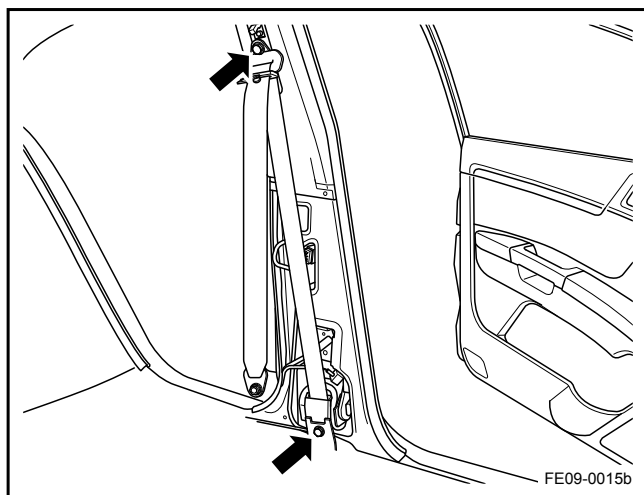
2. Remove the front seat belt to the center pillar lower retaining bolt.



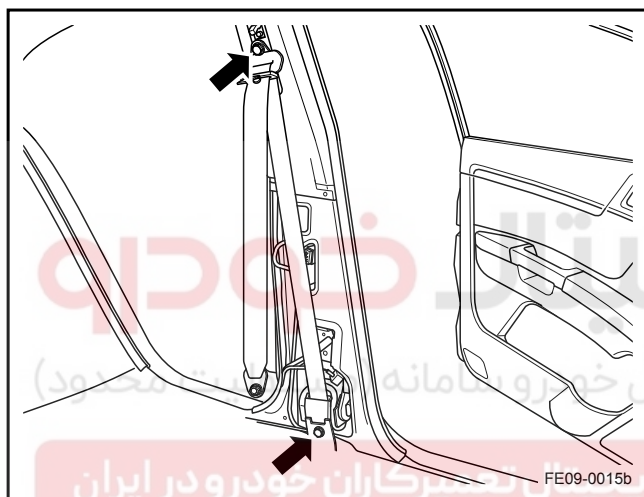
3. Remove the center pillar lower panel. Refer to [12.9.1.4 Center Pillar Trim Panel Replacement](#).

4. Remove the front seat belt to the center pillar upper retaining bolt cover.



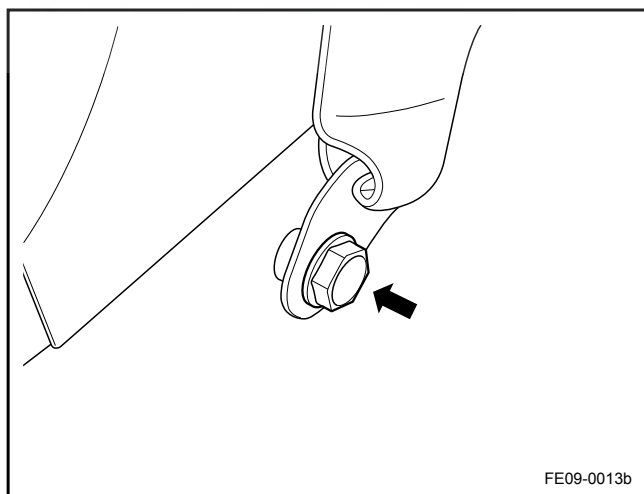


5. Remove the front seat belt to the center pillar upper retaining bolt.
6. Remove the front seat belt pretensioner retaining bolt.

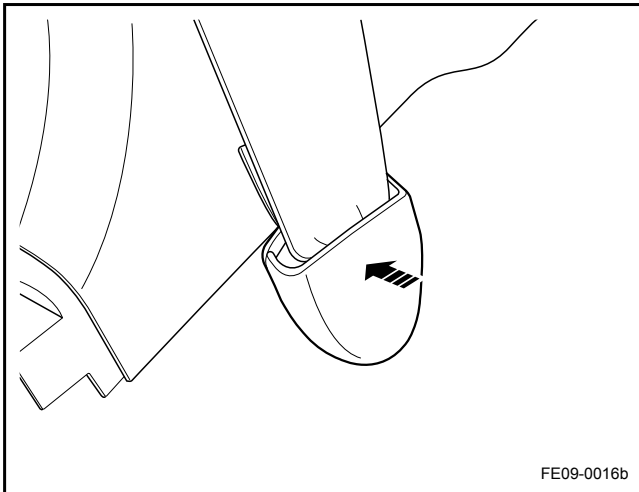


Installation Procedure:

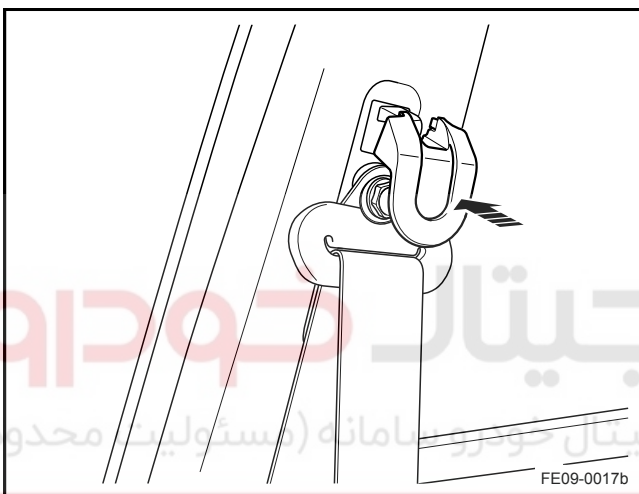
1. Install the front seat belt pretensioner and tighten the retaining bolt.
Torque: 45 Nm (Metric) 33 lb-ft (US English)
2. Install the front seat belt to the center pillar upper retaining bolt.
Torque: 45 Nm (Metric) 33 lb-ft (US English)



3. Install the center pillar lower panel.
4. Install the front seat belt to the center pillar lower retaining bolt.
Torque: 45 Nm (Metric) 33 lb-ft (US English)



5. Install the front seat belt to the center pillar lower retaining bolt cover.

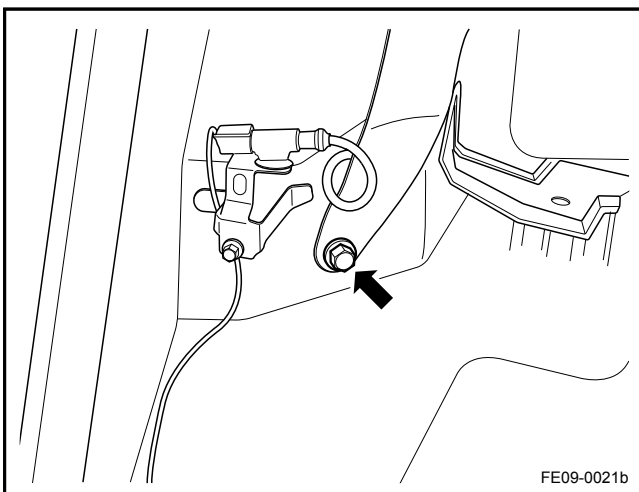


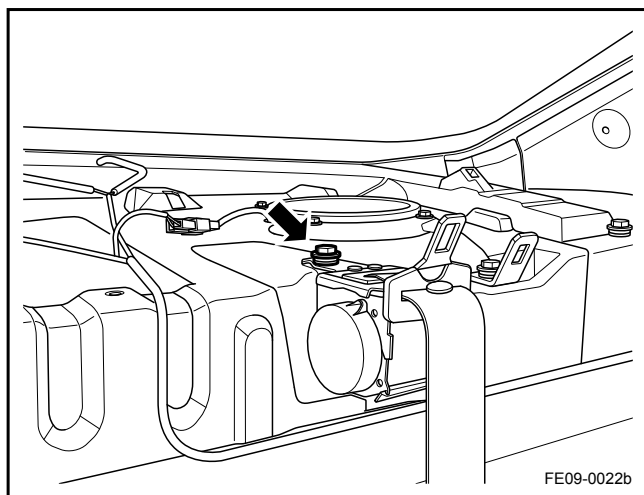
6. Install the front seat belt to the center pillar upper retaining bolt cover.

9.3.7.4 Rear Seat Belt Retractor Replacement

Removal Procedure

1. Remove the rear seat cushion. Refer to [12.7.3.4 Rear Seat Cushion Replacement](#).
2. Remove the rear right side armrest. Refer to [12.7.3.6 Rear Seat Armrest Assembly Replacement](#).
3. Remove the rear parcel shelf. Refer to [12.9.1.7 Rear Parcel Shelf Replacement \(Sedan\)](#).
4. Remove rear seat belt bolt lower panel retaining bolt.



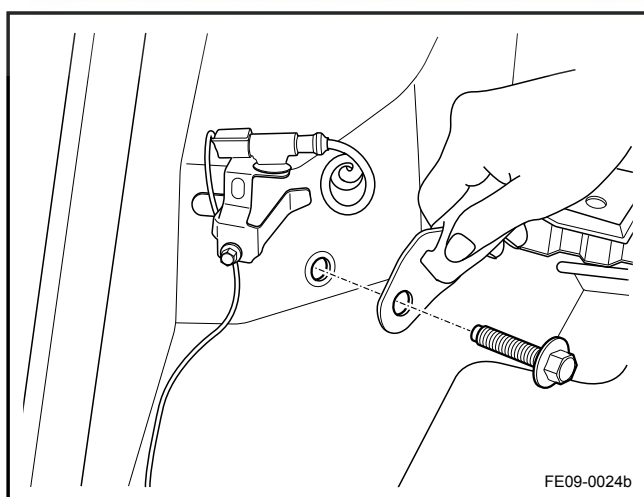
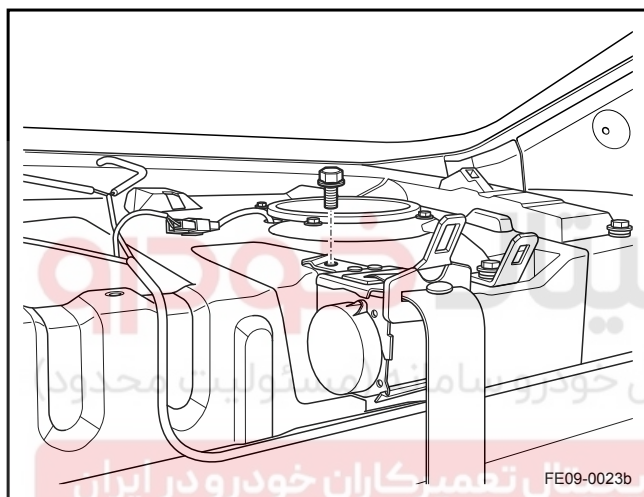


5. Fold down the rear seat back.
6. Remove the rear seat belt retractor retaining bolts.

Installation Procedure:

1. Install and tighten the rear seat belt retractor retaining bolts.

Torque: 45 Nm (Metric) 33 lb-ft (US English)



2. Install the rear parcel shelf.
3. Install and tighten the rear seat lower panel retaining bolts.
Torque: 45 Nm (Metric) 33 lb-ft (US English)
4. Lift the rear seat back.
5. Install the right rear seat back.
6. Install the rear seat.

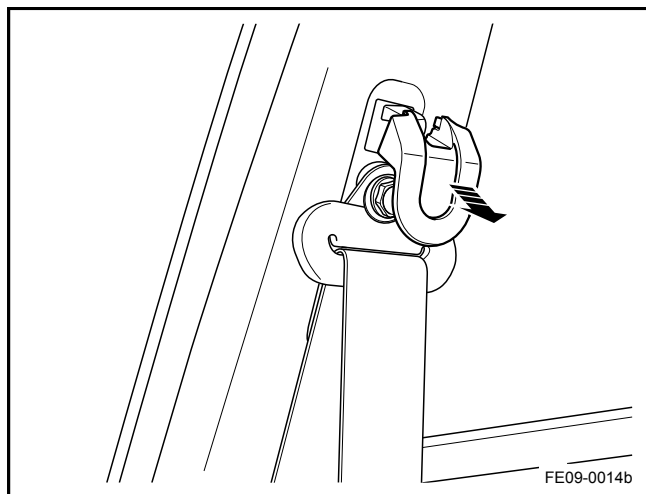
Note

To replace the rear middle seat belt and the rear left seat belt. Refer to the above procedure.

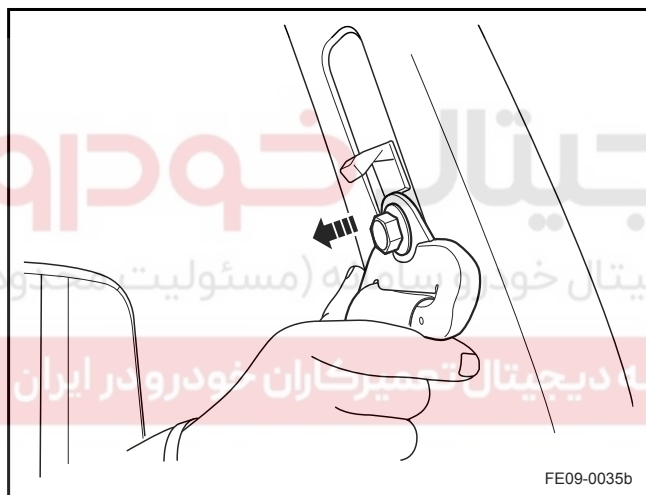
9.3.7.5 Front Seat Belt Height Adjuster Replacement

Removal Procedure

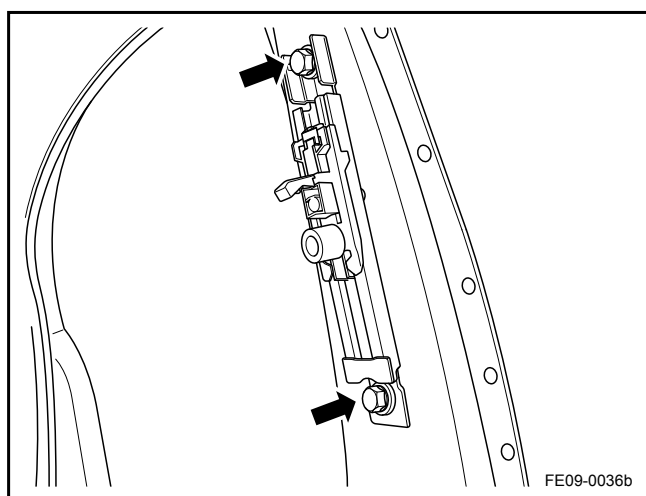
1. Remove the center pillar seat belt retaining panel retaining bolt cover.



2. Remove the center pillar seat belt retaining panel retaining bolt.



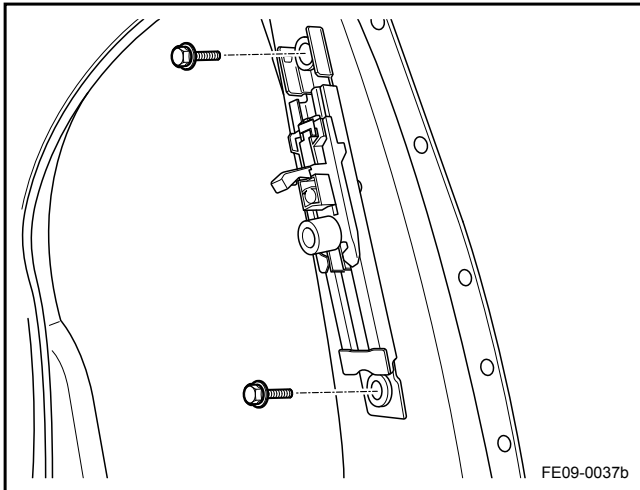
3. Remove the center pillar upper and lower panel. Refer to [12.9.1.4 Center Pillar Trim Panel Replacement](#).
4. Remove the front seat belt height adjuster retaining bolt, and remove the height adjuster.



Installation Procedure:

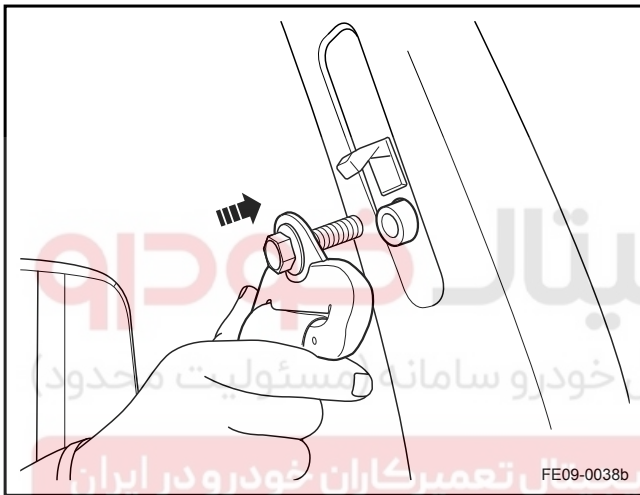
1. Install the front seat belt height adjuster, and tighten the retaining bolt.

Torque: 35 Nm (Metric) 25.8 lb-ft (US English)



2. Install the center pillar upper and lower panel.
3. Install the center pillar seat belt retaining panel retaining bolt.

Torque: 45 Nm (Metric) 33 lb-ft (US English)



4. Install the center pillar seat belt retaining panel retaining bolt cover.

