

AIR BAG

7430-01/8530-08/8810-01/8810-03/8810-06/8810-11/
8810-16/8810-18/

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دیجیتال خودرو

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AIR BAG**8810-00****GENERAL INFORMATION****1. SPECIFICATIONS**

Item	Item	Specification
Air bag unit (SDM)	Voltage range	8.0 V to 16.0 V
	Voltage for system diagnosis and SDM self diagnosis	8.0 V to 16.0 V
	Voltage for communication between front and side impact sensors	7.0 V to 16.0 V
	Storage temperature	-40°C to +90°C
	Operating temperature	-40°C to +85°C
Air bag module and seat belt pretensioner	Resistance at -30 to +85°C	2.0 ± 0.3 Ω
	Non-ignition current at +85°C	0.4 A for 10 seconds
	All-ignition current at -35°C	1.2 A for 2 ms
Front and side impact sensors	Operating temperature	-40°C to +125°C
	Power voltage	5.0 to 11.0 V
	Measurement range	5.0 to 11.0 V
Contact Coil	Rated voltage	12.0 V
	Voltage range	9.0 V to 16.0 V
	Air bag circuit resistance	0.23 to 1.0 Ω
	Current capacity	5.0 A
	Rotation	2.1 rotations for each (LH/RH) direction
Replacement interval		Change at every 10 years



Modification basis	
Application basis	
Affected VIN	

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2. MAJOR CHANGES



► Air bag unit (SDM)



Air bag unit (SDM)	
<div>Old</div> 	<div>New</div> 
<ul style="list-style-type: none"> - The appearance and connector (1 EA → 2 EA) of SDM have been changed - The logic for the air bag warning lamp operation has been changed. - Event data recorder (EDR) function has been added. 	

► Passenger air bag module

Passenger air bag module	
<div>Old</div> 	<div>New</div> 
The air bag module type has been changed to "Invisible".	

► Impact sensor

Front impact sensor	
Old 	New 
The appearance of the front impact sensor has been changed.	

Side impact sensor	
Old 	New 
The appearance of the side impact sensor has been changed.	

Modification basis	
Application basis	
Affected VIN	

3. CAUTIONS FOR AIR BAG SYSTEM

► Cautions for air bag maintenance

1. Whenever installing or removing the devices related to the air bag system, disconnect the negative battery cable and wait for at least 30 seconds.
2. Do not connect a tester probe to the inflator to measure the resistance of the component of the air bag system. The detonator of the inflator may explode due to a sudden extra power supplied by the tester.
3. Note that the used components related to the air bag system, especially the air bag unit, should be packed in an air tight container and prevent it from any impact or damage.
4. When there is any deployed air bag (including curtain air bag and seat belt pretensioner), the entire system including the air bag unit should be replaced. The deployed air bag unit should not be reused since it has status data when it is deployed, and the data cannot be cleared with a diagnostic device. The air bag and seat belt pretensioner systems contain explosive charges, so handle carefully when disposing or replacing them.

► Cautions for air bag maintenance

1. Do not modify, change or apply impact on any air bag component. The air bag may be deployed abruptly, causing serious injuries.
2. Children and infants should ride in a rear seat. Seating in the passenger seat with carrying a child or infant is strictly prohibited. An infant or a child could be severely injured by the air bag deployment.
3. A child restraint system must not be installed on the front seat. An infant or a child could be severely injured by the air bag deployment when it is fitted to the passenger seat.
4. Do not place any objects on the air bag inflation location. You may get injured by those objects during deployment.
5. Never put your arms around the front seat from behind, lean on the front seatback, or put your arms out of the window. You can severely injured when the side air bag deploys.
6. Never lean on the door since it becomes very dangerous when the side air bag deploys.
The side air bag deploys when there is a severe side collision.
7. Do not slam the front door to close it. The side air bag may deploy unexpectedly.
8. When an occupant fastens the seat belt in an unstable or inclined posture, the air bag system cannot protect the occupant properly. Moreover, the occupant can be injured by the air bag.
9. Do not move your seat too close to the steering wheel or dashboard. Being too close to the steering wheel or instrument panel during the air bag deployment could cause serious injury, including death
10. Hold only the outer rim of the steering so that the air bag can inflate without any hindrance.
11. Do not incline toward the steering wheel. Never allow the passenger to put hands or feet on the dashboard. The air bag cannot work properly Do not hold and operate the steering wheel by crossing your arms You could get seriously injured when the air bag deploys.

Modification basis	
Application basis	
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12. A large quantity of non-toxic gas (nitrogen gas) is generated with a loud noise when the air bag or seat belt pretensioner deploys. If these airborne particles irritate your skin, eyes, nose, or throat, rinse the area with cool water. If the irritation continues, see your doctor.
13. The windshield glass may be broken when the passenger air bag deploys.
14. The air bag is a unit to save an occupant's life from a sudden accident and it inflates at a very fast speed by gas with high temperature, which might cause injury, such as an abrasion, bruise and burn depending on the accident conditions.
15. The air bag components will be very hot after deployment. Do not touch them.
16. The deployed air bag/seat belt pretensioner cannot deploy again. It will work when an additional impact is applied. Once the air bag system is triggered, the triggered air bag assembly should be removed from the vehicle and replaced with a new one.
17. The air bag warning lamp is illuminated for 3 to 7 seconds after the engine is started to check the system. If this warning lamp remains ON, then the system may be defective. Have the air bag system checked immediately by Ssangyong Dealer or Ssangyong Authorized Service Operation.
18. Incorrect inspection can result in serious injuries or malfunctions in the air bag and seat belt pretensioner system.

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Application basis	
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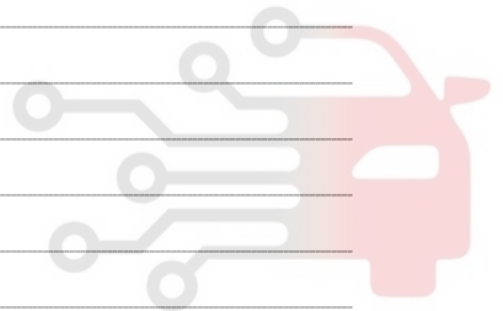
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Memo

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OVERVIEW AND OPERATING PROCESS

1. AIR BAG SYSTEM OVERVIEW

The air bag system is divided into front air bag system and side air bag system. The system protects the occupant's body by deploying the air bags in the event of a collision. The system consists of 8 inflators including the inflators of the seat belt pretensioners, air bag unit (SDM), and 4 impact sensors on the front side and both sides of the vehicle. The air bag unit (SDM) determines the operation of each air bag module and seat belt pretensioners using the crash signals from the front and side impact sensors in the event of a collision. The front and side air bag systems are operated independently, and the body control module (BCM) activates the auto door unlock function and various lamps including hazard warning lamp and room lamps, when the crash signal from the SDM is received to notify others of emergency situation and let the occupant escape easily. The SDM is equipped with self diagnosis function, and it performs the diagnosis on the internal/external devices of the air bag system for a certain period of time after IGN ON. And it monitors the air bag system regularly and turns on the air bag warning lamp on the instrument cluster when a fault is found in the system, to notify the driver. The SDM has event data recorder (EDR) function that stores the driving information data transmitted through CAN communication from various units (vehicle speeds, engine rpm, brake application, etc.) in a crash or near crash event, when the acceleration sensor in the air bag unit detects a sharp acceleration change, regardless of the air bag deployment

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2. AIR BAG SYSTEM LAYOUT

A Driver air bag



The air bag is installed at the center of the steering wheel. The inflator of this air bag is ignited momentarily in the event of a collision and deploys the air bag cushion.

B Passenger air bag



This air bag is installed in the upper side of the instrument panel on the passenger side. It activates in the same way of the driver air bag.

D Front impact sensor



The front impact sensors are fitted at the bottom of both LH and RH headlamp inside the front bumper, and output signals that activates the front air bag system.

E Air bag unit (SDM)



The air bag unit is installed in the front side of the front console, and it monitors the air bag system and determines the air bag deployment in the event of a collision.




K Passenger Air Bag ON/OFF Switch



The front passenger air bag is disabled (not inflatable) when placing the passenger air bag ON/OFF switch to "OFF" position. This switch is located on the right side of the instrument panel, and you can see it when opening the front passenger door. Press and turn this switch to operate.
 "OFF" position: disabled (not inflatable)
 "ON" position: enabled (inflatable)

C Air bag warning lamp



This lamp notifies the driver about the result of the diagnosis and faults.

F**Seat belt pretensioner**

The seat belt pretensioners of all seats are operated at the same time, in the event of a collision. They pull the seat belt and holds the occupants in the seat to minimize the impact.

G**BCM (Crash signal)**

The BCM activates the auto door UNLOCK, hazard warning lamp, and room lamps when a crash signal of the air bag unit (SDM) is input.

**H****Side air bag**

The side air bags are installed in the outer sides of the driver (LH) and passenger (RH) seats to minimize occupants' side injuries in case of a side impact. This air bag is operated based on the collision signal from the side impact sensor.

I**Curtain air bag**

The curtain air bags are installed to the upper end of both doors. The air bag provides head protection for the front and rear outboard occupants in a side collision.

J**Side impact sensor**

The side impact sensors are fitted at the bottom of both LH and RH B-pillars, and output signals that activates the side air bag system.

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3. AIR BAG SYSTEM OPERATING PROCESS

1) Air Bag System Input/Output

The air bag unit (SDM) performs the internal/external diagnosis on the air bag system for about 6 seconds after IGN ON. The air bag unit is ready to deploy air bag after this diagnosis, and when a certain level of collision occurs, it determines the deployment of the air bag using the signals from the impact sensors, deploys the corresponding air bag, and stores the collision data and EDR data. The body control module (BCM) activates the auto door unlock function and various lamps including hazard warning lamp and room lamps, when the crash signal from the SDM is received to notify others of emergency situation and let the occupant escape easily.



NOTE

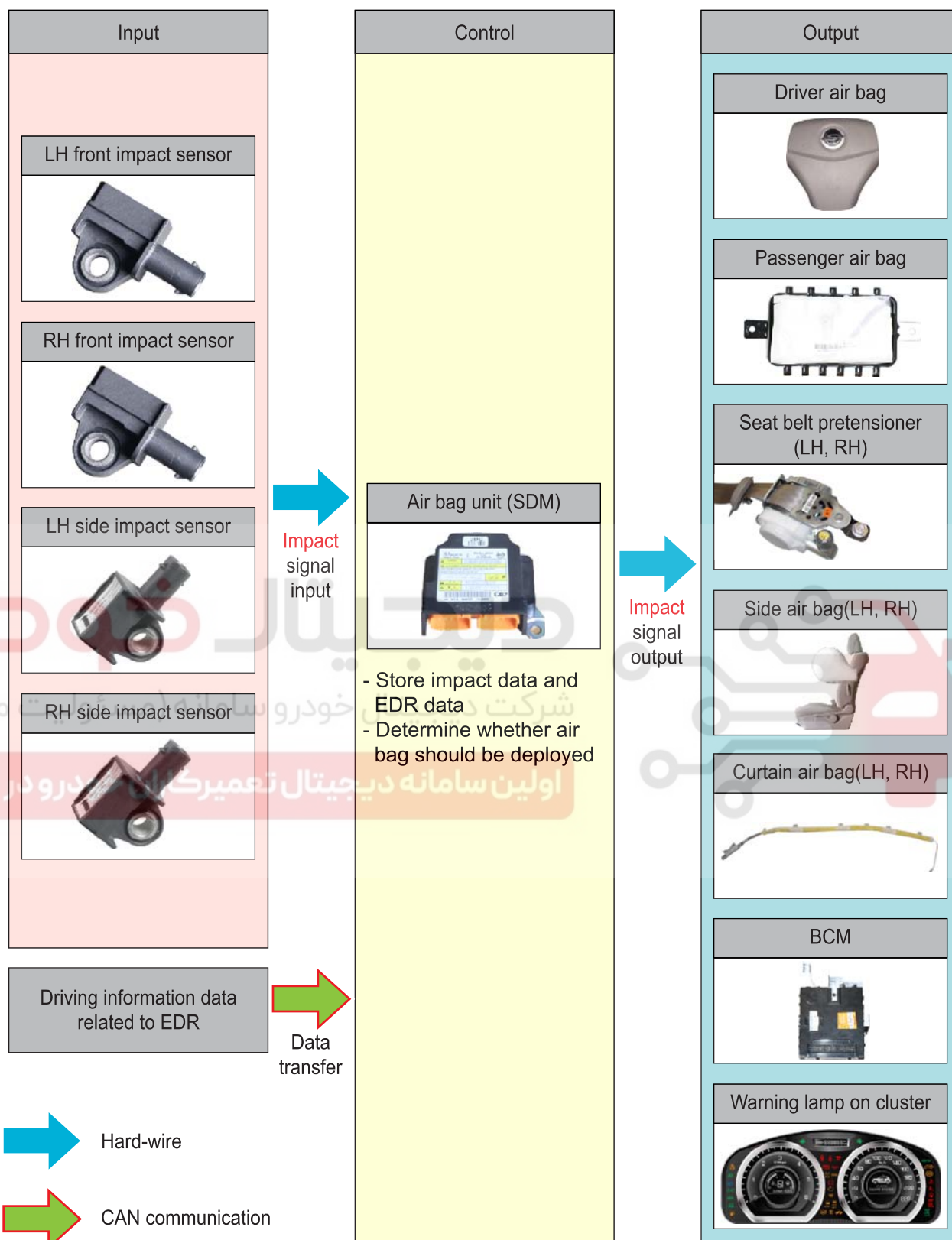
Major functions

- Detects frontal and side collision (Rear-end collision only with EDR trigger)
- Activates the front air bag, side air bag, curtain air bag and belt pretensioners
- Indicates system readiness and faults to the driver by means of a fault warning lamp
- Facilitates servicing capability via a serial diagnostic communication interfaces
- Records crash data and DTCs
- Keeps power for deployment of air bag even when the power to the air bag unit is cut off due to the collision
- Event data recorder (EDR)

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**CAUTION**

The front air bags and side air bags are activated independently according to the area and amount of an impact.

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2) Front Air Bag System Operating Process

(1) Front air bag system deployment conditions

► The air bag will be deployed when:

- the impact or type of a frontal collision is too much for the seat belt to protect the occupant.

► The air bag can be deployed when:

- there is underbody impact from the road surface, impact against the curb at a very high speed, or dropping impact onto the road surface with a large angle.

► The air bag will not be deployed when:

- the vehicle rolls over or tips over sideward, or a side/rear collision occurs.
- the impact of the collision is low enough for the seat belt to protect the occupant properly.

► The air bag will be hardly deployed when:

- a collision to diagonal direction (not a frontal collision) occurs or the vehicle tips over.
- a minor collision which the air bag sensor cannot detect occurs (impact is lower than that of operating condition).
- a collision against narrow objects, such as a telegraph pole or a tree, occurs.
- the vehicle goes into a drainage or a puddle.
- the vehicle wedges under a truck or a trailer or collides with the underbody of a heavy-duty vehicle.
- the hood is hit by falling stones.
- the air bag warning lamp is on.

(2) Front air bag system deployment

When a collision occurs the air bag unit receives the signal from the front impact sensor and ignites the front air bag to deploy the driver and passenger air bags and seat belt pretensioner.

Item	Impact to (front)
Driver air bag	Ignite
Passenger air bag	Ignite
Seat belt pretensioner - Driver side	Ignite
Seat belt pretensioner - Passenger side	Ignite

(3) Component change after deployment

Air bag unit and its wirings (including connectors), seat belt pretensioner and its wirings (including connectors), all front air bags, instrument panel, front impact sensor and other damaged components

3) Side Air bag System Operating Process

(1) Side air bag system deployment conditions

► **The air bag will be deployed when:**

- a severe oblique collision occurs with a specific severity, angle, speed, and position.

► **The air bag can be deployed when:**

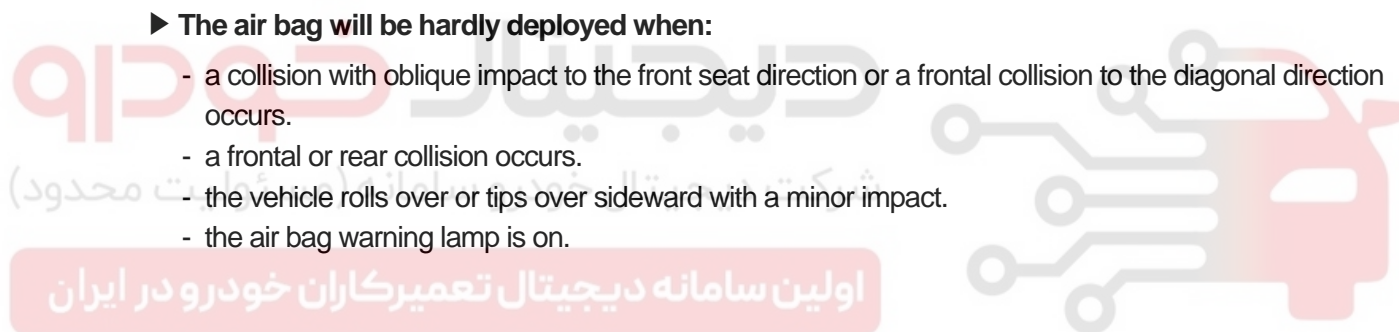
- the vehicle rolls over or tips over sideward with a severe impact.
- the vehicle is stationary or a frontal collision occurs at low speed.
- a rear collision occurs.
- the impact of the collision is low enough for the seat belt to protect the occupant properly.

► **The air bag will not be deployed when:**

- the vehicle is stationary or a frontal collision occurs at low speed.
- a rear collision occurs.
- the impact of the collision is low enough for the seat belt to protect the occupant properly.

► **The air bag will be hardly deployed when:**

- a collision with oblique impact to the front seat direction or a frontal collision to the diagonal direction occurs.
- a frontal or rear collision occurs.
- the vehicle rolls over or tips over sideward with a minor impact.
- the air bag warning lamp is on.



Modification basis	
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(2) Side air bag system deployment

The side air bag system is activated in the event of a left side or right side collision. The seat side air bags are installed to the driver and passenger seat (one on each seat) and the curtain air bags are installed in the end of the roof located on the upper sides of both doors. The side air bags and the curtain air bags are operated by the same signal. The air bags of the driver seat and passenger seat are operated separately according to the impact position (left side, right side).

Item	Impact to (side)	
	LH	RH
Side air bag - Driver side	Ignite	Not ignite
Side air bag - Passenger side	Not ignite	Ignite
Curtain air bag - Driver side	Ignite	Not ignite
Curtain air bag - Passenger side	Not ignite	Ignite
Seat belt pretensioner - Driver side	Not ignite	Not ignite
Seat belt pretensioner - Passenger side	Not ignite	Not ignite

(3) Component change after deployment

► Side air bag deployed

Deployed side air bag, air bag unit and its wirings (including connectors), side impact sensor, other damaged trim, seat components

► Curtain air bag deployed

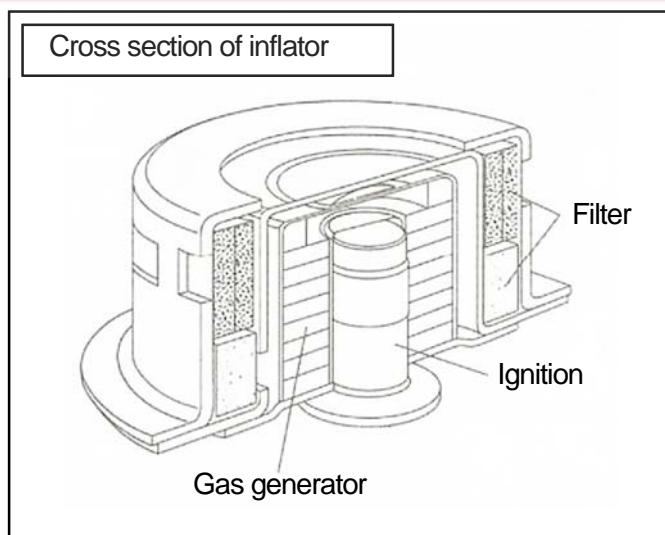
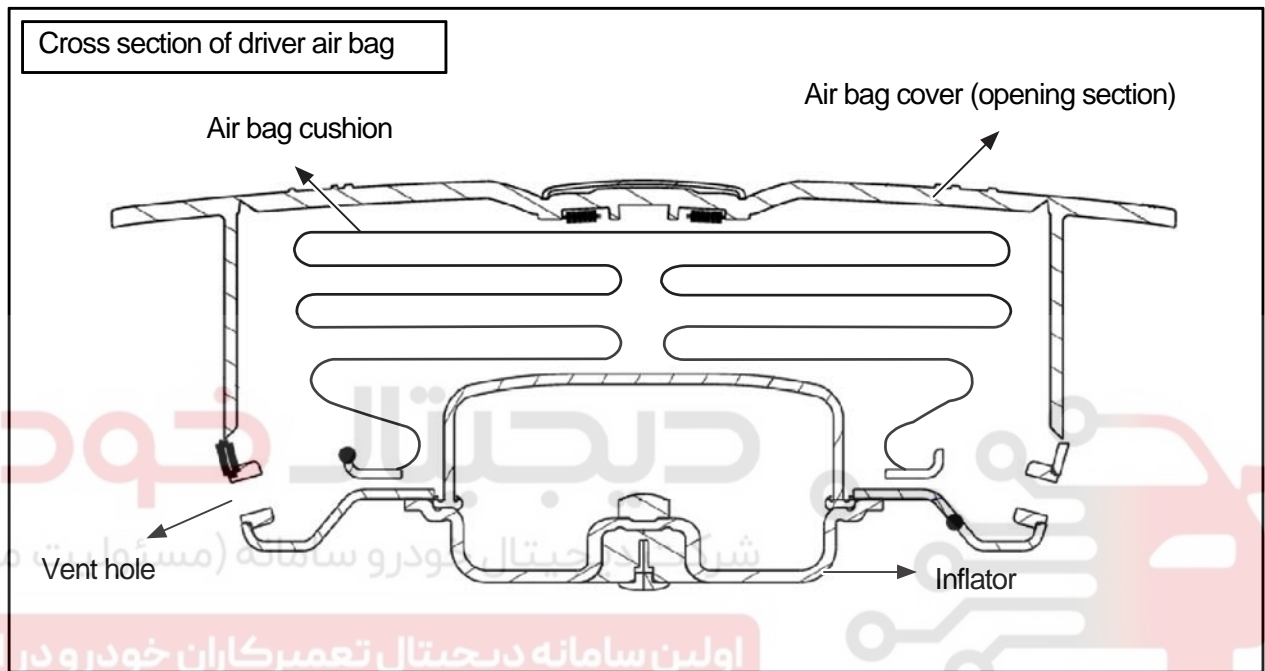
Deployed curtain air bag, air bag unit and its wirings (including connectors), side impact sensor, damaged trim, seat and roof headlining

3) Deployment Procedure

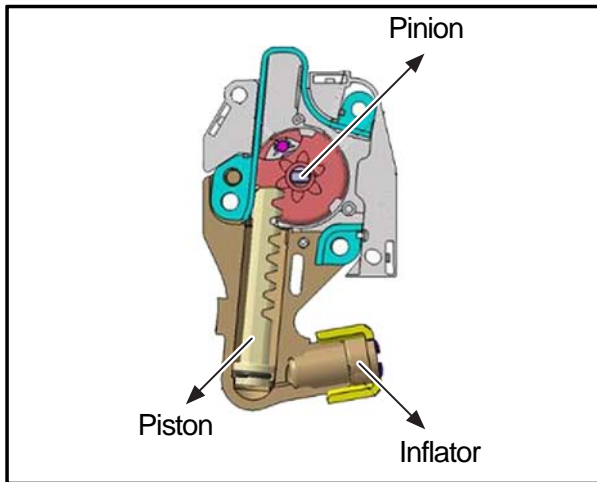
► General deployment of air bag

In general, the air bag unit transmits the ignition current to the ignition device of the corresponding air bag inflator when a collision signal from the impact sensor is sent to the air bag unit

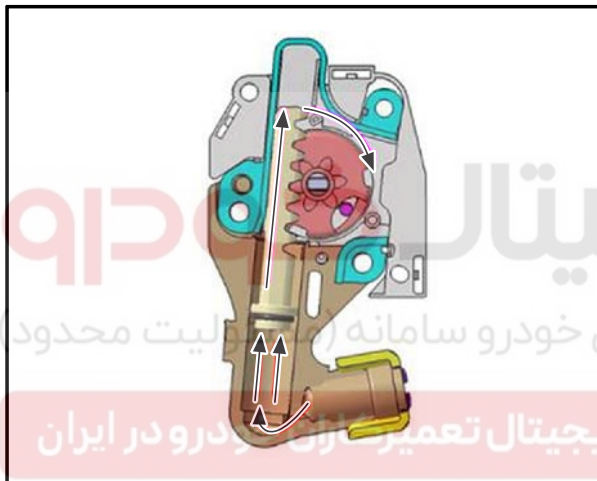
When the ignition device of the inflator is ignited, the gas generator generates nitrogen gas by being burned, and this gas inflates the air bag cushion through the filter. The nitrogen gas used to inflate the air bag exhausts through the vent hole immediately.



Modification basis	
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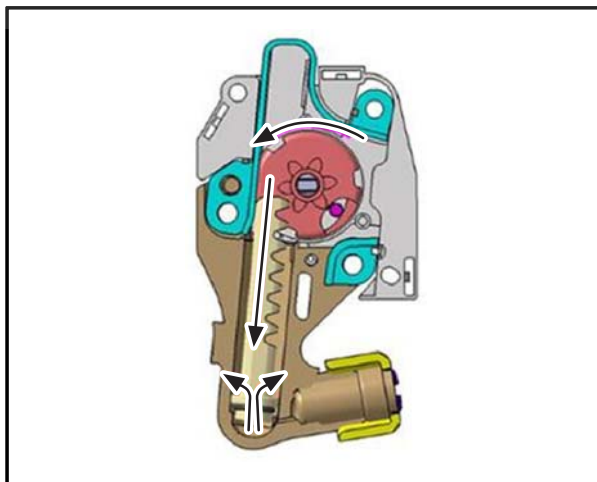
► **Seat belt pretensioner deployment****1. Original status**

The piston and pinion in the seat belt pretensioner are disengaged and the tension of the return spring in it holds the occupant.

**2. Pretensioner operating**

When the ignition current is transmitted from the air bag unit to the ignition device of the seat belt pretensioner, gas is generated from the inflator and this pushes up the piston.

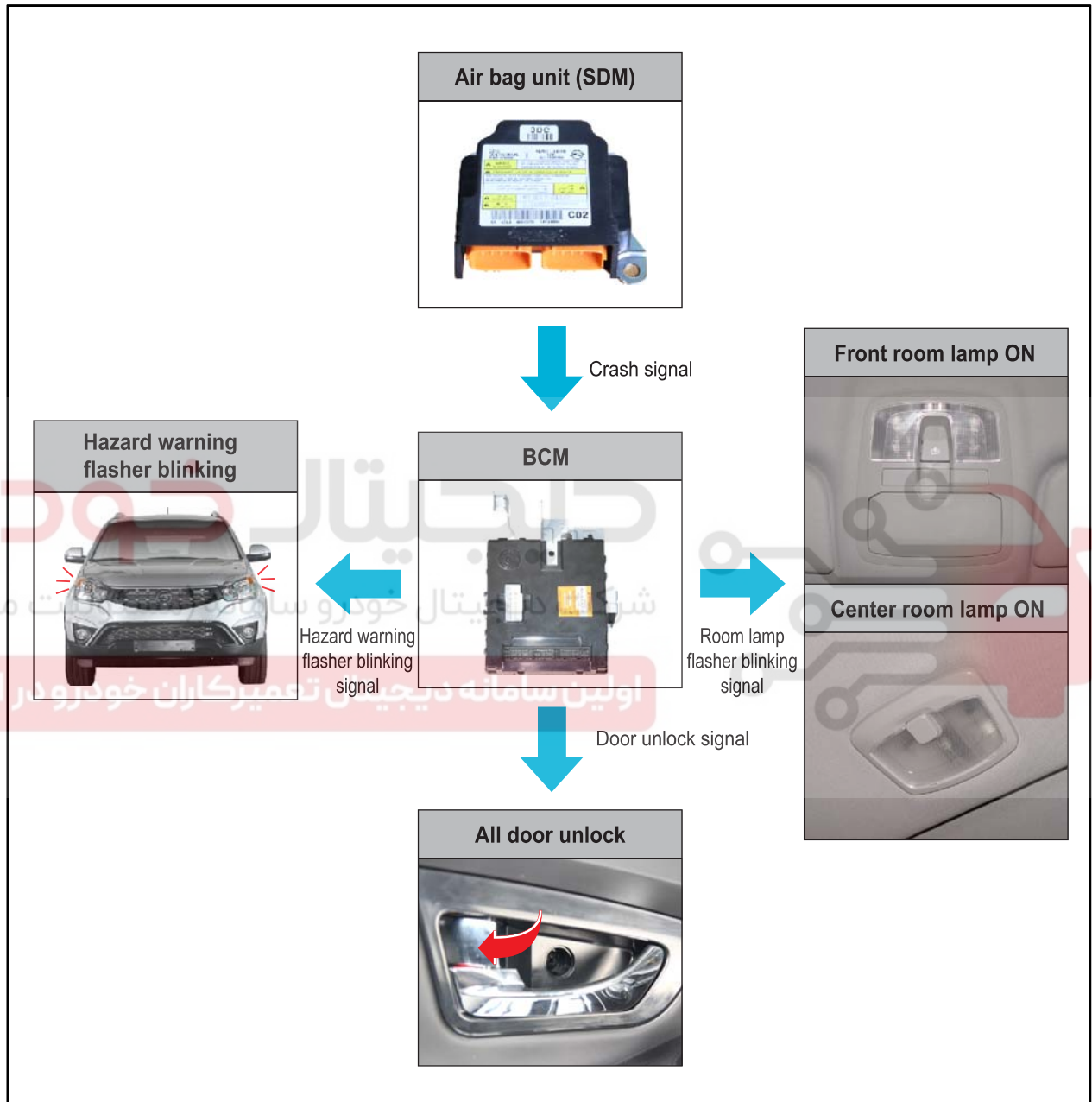
When the piston gear engages with the pinion gear, the clutch is integrated and winds the seat belt.

**3. Load limiter operating**

When the load on the seat belt increases and the inner device starts being deformed, the pinion rotates in reverse direction and the piston moves downward. The residual pressure is released through the vent hole of the piston when the piston moves down. The gears of pinion and piston are disengaged when the piston is located at the lowest position.

4) Air Bag Deployment Signal to BCM

The air bag deployment signal from the air bag unit is sent to the BCM. This signal triggers the flash of the hazard warning lamp to notify others of emergency situation, and is used as a signal that turns on the room lamps and activates auto door unlock function for the occupants.



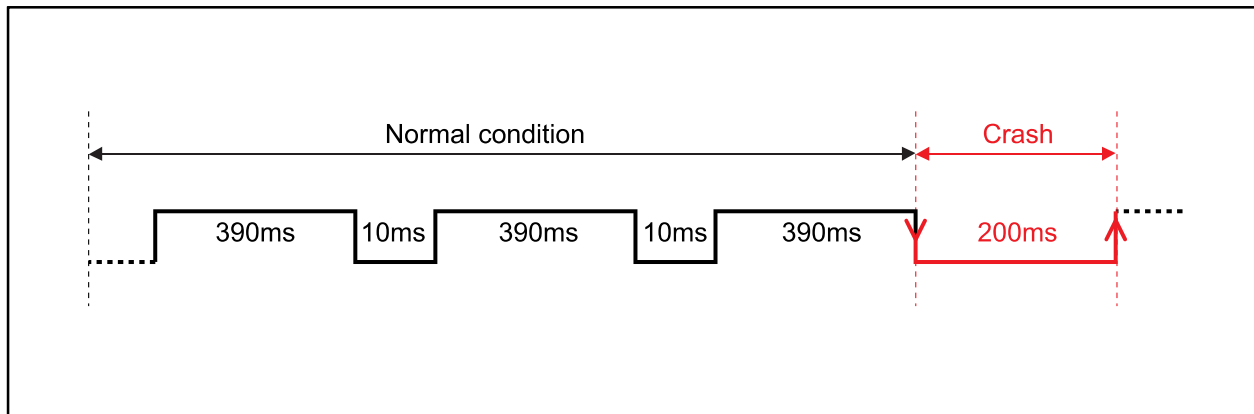
NOTE

The air bag unit of a vehicle without side air bag system can also send the crash signal to the BCM according to the value of the acceleration sensor to activate the auto door unlock and various lamps including hazard warning lamp and room lamps.

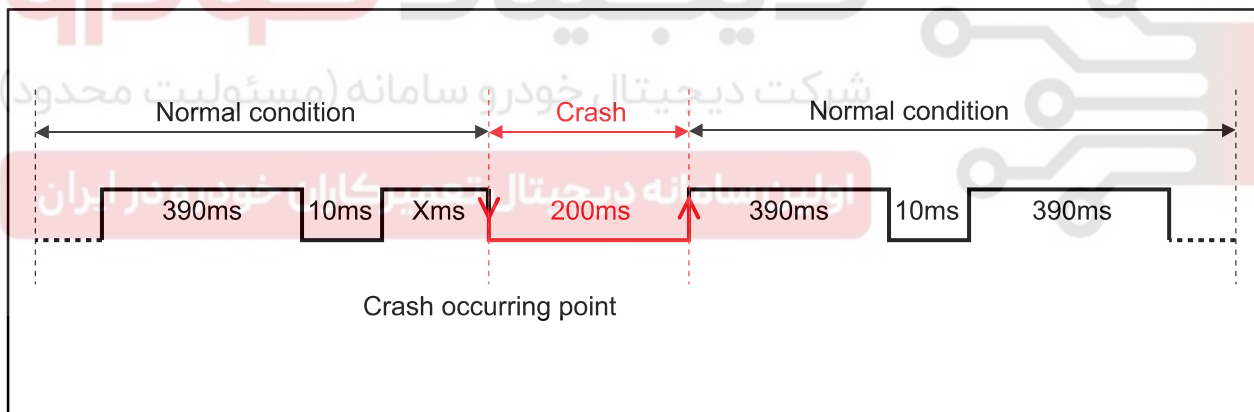
Modification basis	
Application basis	
Affected VIN	

(1) Air bag deployment signal output (crash out)

When a situation which requires an air bag deployment occurs, the system outputs the air bag deployment signal (crash out). If another air bag-required situation occurs while the deployment signal is sent, the second crash out will be delayed until the current 200 ms crash out is completed. (The tolerance at the time of signaling is $\pm 5\%$)



The signal repeats increasing for 390 msec. and decreasing for 10 msec. before crash. At the time of crash, the air bag deployment signal is output to the BCM for 200 ms immediately.



(2) BCM control when air bag deployment signal is input

Operation 1.

A. Air bag deployment signal is not input for initial 7 seconds (T4) after IGN ON

Operation 2.

B. When air bag deployment signal (OFF→ON) is input 7 seconds (T4) after IGN ON

C. Signal from unlock relay is output for 5 seconds (T3) after 40 ms (T2)

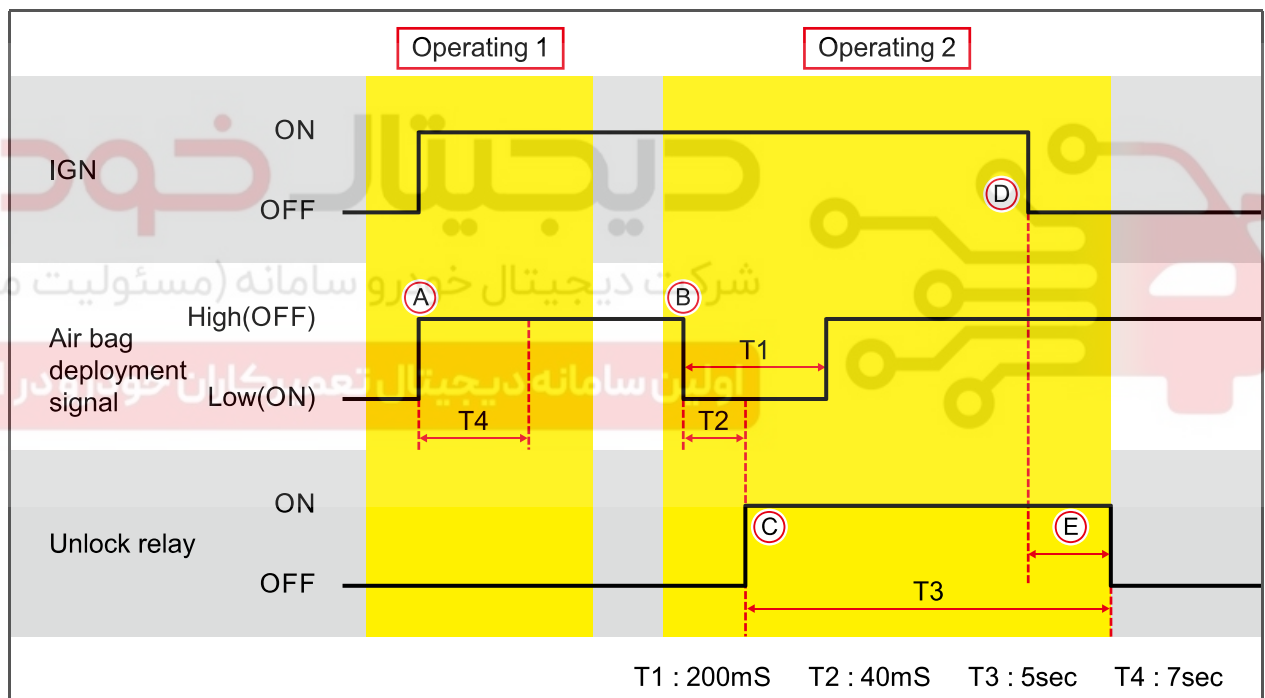
D. When turning IGN OFF during 5 seconds (T3) of unlock relay signal output

E. Signal from unlock relay is input for the rest of the time



NOTE

- The room lamp comes on when the air bag deployment signal is input except when the room lamp switch is turned off.
- The hazard warning lamp flashes when the air bag deployment signal is input.
- Resetting the auto door unlock function turns off the battery (cutting off BCM power).



CAUTION

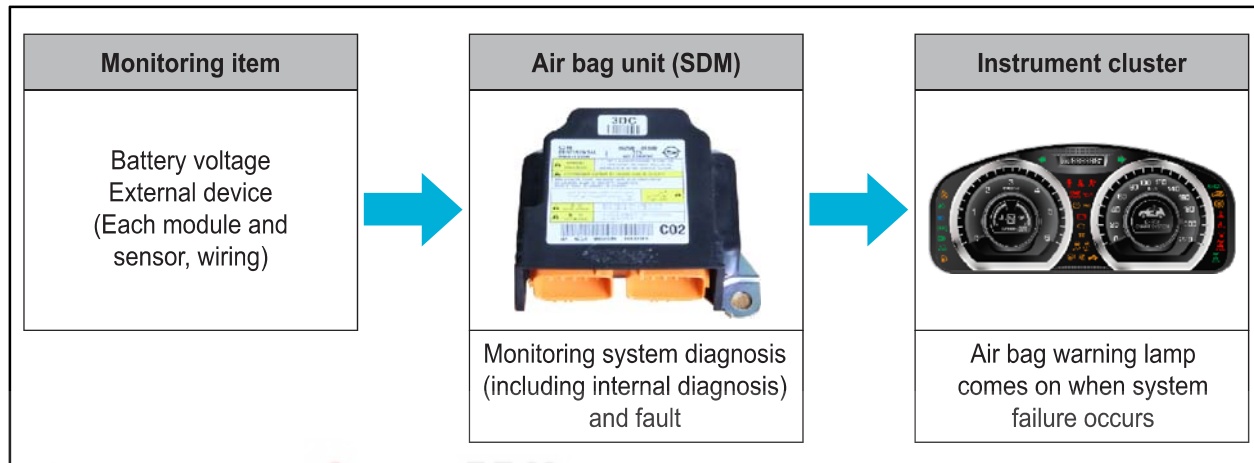
1. The UNLOCK by the air bag deployment signal takes priority over the LOCK/UNLOCK control from other functions.
2. The LOCK/UNLOCK requests from other functions during or after the UNLOCK output by the air bag signal are ignored. However, the LOCK control is carried out when the ignition switch is turned to the "OFF" position.
3. The same request during the LOCK/UNLOCK output is ignored. However, the UNLOCK by the air bag deployment signal or operation by the smart key is carried out.
4. When LOCK and UNLOCK outputs occur at the same time, the LOCK output is carried out and UNLOCK is ignored.

Modification basis	
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4. AIR BAG SYSTEM SELF DIAGNOSIS

1) Air Bag Unit (SDM) Self Diagnosis

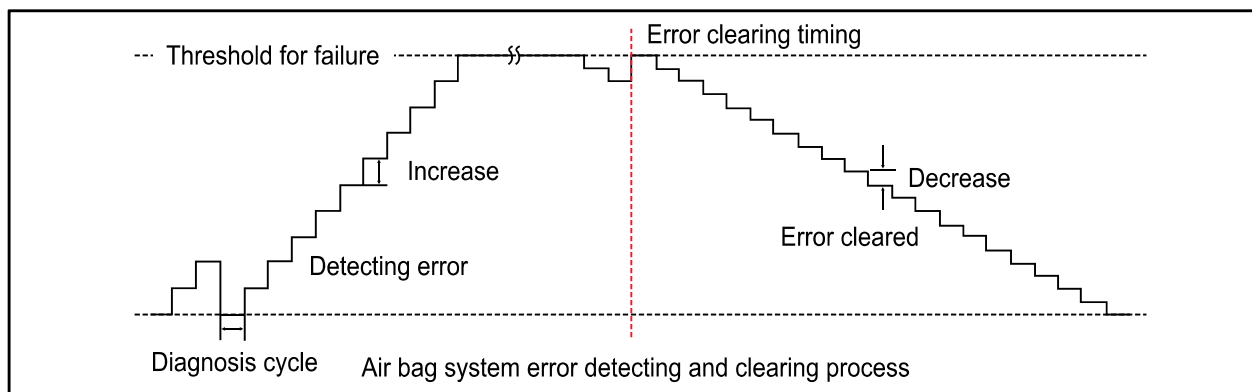
The air bag unit monitors the internal/external devices of the air bag system including battery voltage, limits certain functions of the air bag, and turns on the air bag warning lamp on the instrument cluster according to the conditions.



► Conditions for detecting and clearing faults

The time for detecting errors and clearing the errors is as follows:


Monitoring system	Diagnosis cycle	Time for detecting	Time for clearing	Clearing fault
Inflator circuit	400 ms	4 seconds	8 seconds	with a diagnostic device
warning lamp circuit	100 ms	4 seconds	8 seconds	with a diagnostic device
Battery voltage	10 ms	4 seconds	4 seconds	with a diagnostic device
Impact sensor	IGN ON	1 seconds	2 to 4 seconds (next Ign)	with a diagnostic device
Impact record (air bag deployed)	-	Immediately	-	by replacing SDM (cannot be cleared with a diagnostic device)
SDM internal fault	-		-	by replacing SDM (cannot be cleared with a diagnostic device)



2) Air Bag Warning Lamp

The air bag unit turns on the air bag warning lamp on the instrument cluster for 6 seconds after IGN ON while performing self diagnosis for the air bag system. If no fault is found in the system, it turns off the warning lamp. After this, the unit monitors the system regularly, and notifies the driver by turning on the air bag warning lamp when a fault is found in the system.

Air bag warning lamp



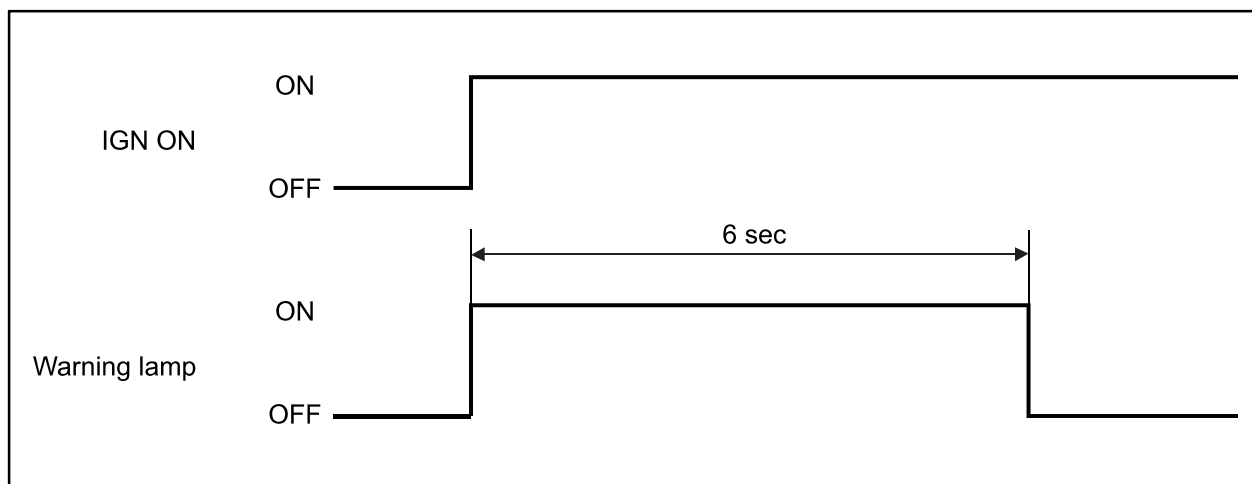
* The air bag warning lamp comes on when:

- diagnosis is performed for the inside/external devices of the system when the ignition is turned on
- the air bag system is malfunctioning
- the air bag unit and a diagnostic equipment communicate each other

(1) Air bag warning lamp ON at initial IGN ON

► System normal

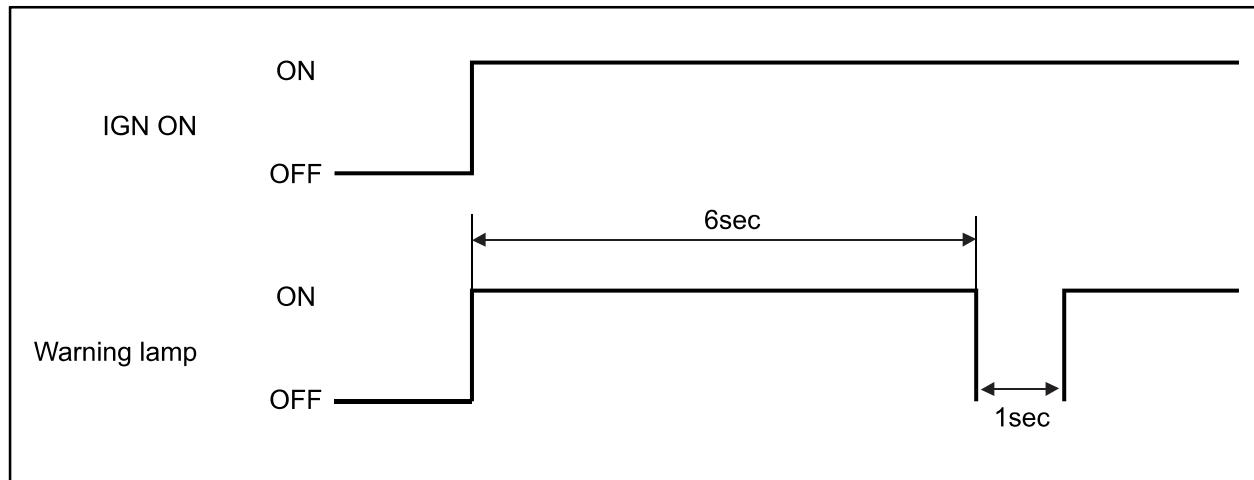
Comes on for 6 seconds after IGN ON and then goes out.



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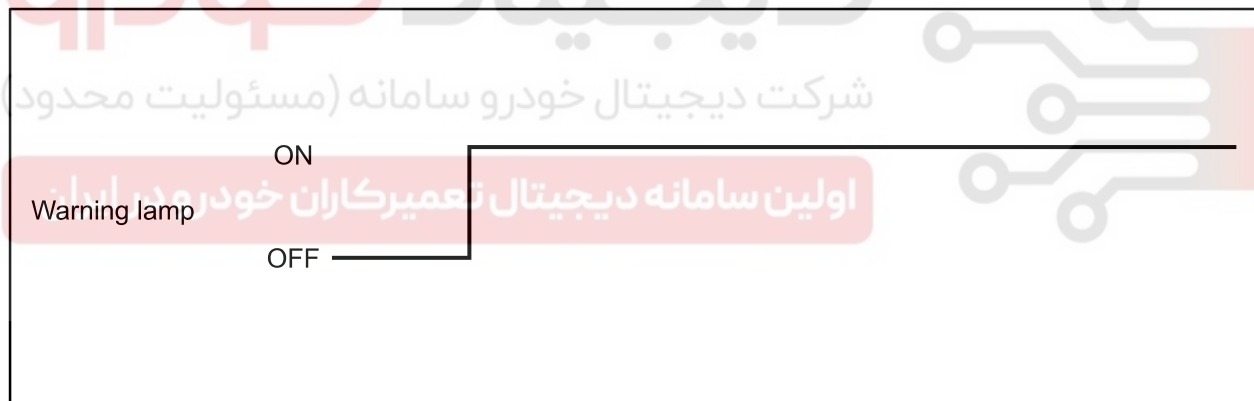
► System malfunctioning

Comes on for 6 seconds after IGN ON and goes out for 1 second, and then remains on.



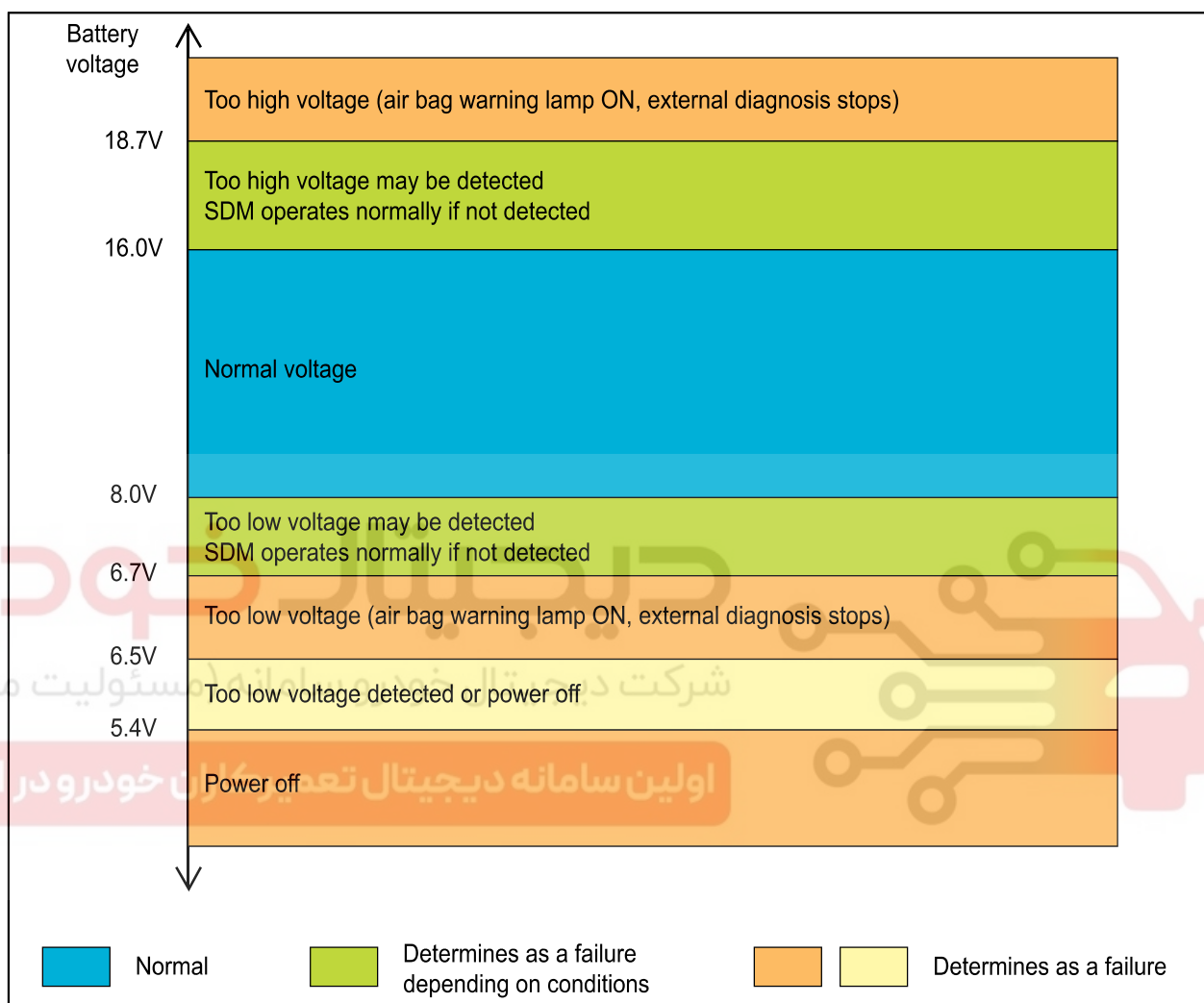
(2) Air bag warning lamp operation during driving

The air bag warning lamp comes on when the air bag unit (SDM) detects a system malfunction. The warning lamp goes out when the malfunction disappears.



3) Supply Voltage Monitoring

The air bag unit monitors the battery voltage continuously while the ignition is turned on.. It limits certain functions of the air bag system and outputs DTC and air bag warning lamp signal according to the result of the monitoring.



CAUTION

Abnormal voltage of the air bag unit (too high/too low) is determined to be fault only when the signal is detected for continuous 4 seconds.



NOTE

Emergency power function

The SDM has an emergency power function that ensures the internal operation of the central unit and buffering firing circuits for a minimum of 150 ms after loss of battery power. Full emergency power capability is available after the minimum specified operating voltage has been applied to the SDM power line for 10 seconds, and from this point, air bag deployment and EDR are enabled.

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4) Internal monitoring

The air bag unit checks the status of the air bag system and monitors the system for internal errors. If an error is detected by self diagnosis, this unit disables part of the air bag system functions and outputs a diagnostic trouble code (DTC) and air bag warning lamp signal.

- Watchdog

The micro controller is monitored periodically. And if a fault is found, micro controller is reset, inflator ignition function is limited, and the air bag warning lamp comes on.

- Internal acceleration sensor test

The air bag unit checks internal acceleration sensor when the ignition is turned on. The air bag unit determines the deployment of the air bag for the collision signal input after the diagnosis.

- Non-volatile memory (NVM) test

The air bag unit checks the values stored in the memory. If the values are not correct, the air bag unit sets a diagnostic trouble code (DTC) and turns on the air bag warning lamp.

► Air bag operations for errors

Internal errors	Air bag operation	
	Front air bag system	Side air bag system
X-axis acceleration sensor error	Disabled	Disabled
Y-axis acceleration sensor error		Disabled
Z-axis acceleration sensor error		available
ROM checksum error		Disabled
RAM checksum error		Disabled
NVM checksum error		Disabled

5) External monitoring

The air bag unit supplies a certain level of test current and monitors the resistance of the inflator circuit within a specified range to deploy the air bag. It limits certain functions of the air bag, sets a DTC and turns on the air bag warning lamp according to the conditions.

Item \ Unit	Driver/passenger air bag	Side air bag	Curtain air bag	Seat belt pretensioner
Resistance at -30 to +85°C	2.0 ± 0.3 Ω			
Non-ignition current at +85°C	0.4 A for 10 seconds			
All-ignition current at -35°C	1.2 A for 2 ms			
Periodical test current	160 mA	100 mA	100 mA	40 mA

► Inflator circuit resistance monitoring

Item \ Unit	Driver/passenger air bag	Side air bag	Curtain air bag	Seat belt pretensioner
Below 1.0 Ω	Low resistance detected			
1.0 Ω ~ 1.5 Ω	Not clearly detected low resistance			
1.5 Ω ~ 6.0 Ω	Normal resistance			
6.0 Ω ~ 7.0 Ω	Not clearly detected high resistance			
7.0 Ω or above	Not clearly detected high resistance			

Normal
 Determines as a failure depending on conditions
 Determines as a failure

Modification basis	
Application basis	
Affected VIN	

► Impact sensor monitoring

The air bag unit supplies a certain level of test current to monitor the front and side impact sensors. If the wiring is open/short circuited or no signal is input, or communication is malfunctioning, it sets a DTC and turns on the air bag warning lamp.

Faults	Detection		Time for clearing
	Fault condition	Time for detecting	
Normal errors	Incorrect ID after IGN ON	Approx. 1 seconds.	Approx. 2 seconds. (next Ign)
	Faulty sensor after IGN ON		
	Communication error		
Incorrect ID	Inconsistent ID after IGN ON		Approx. 2 seconds.
Communication error	Communication data error		
	Open/Short circuit (B+)		approx. 2 to 4 seconds
Short Circuit to Ground	Short Circuit to Ground		

6) DTC and Air Bag Deployment Data Storing

► DTC storing

All DTCs of air bag system are stored in the air bag unit. Maximum number of DTCs that can be stored is 16. If a new DTC is set after 16 DTCs are stored, the oldest stored code is erased first.

► Airbag deployment data storing

The air bag deployment data is stored in the air bat unit. Maximum number of data that can be stored is 7.

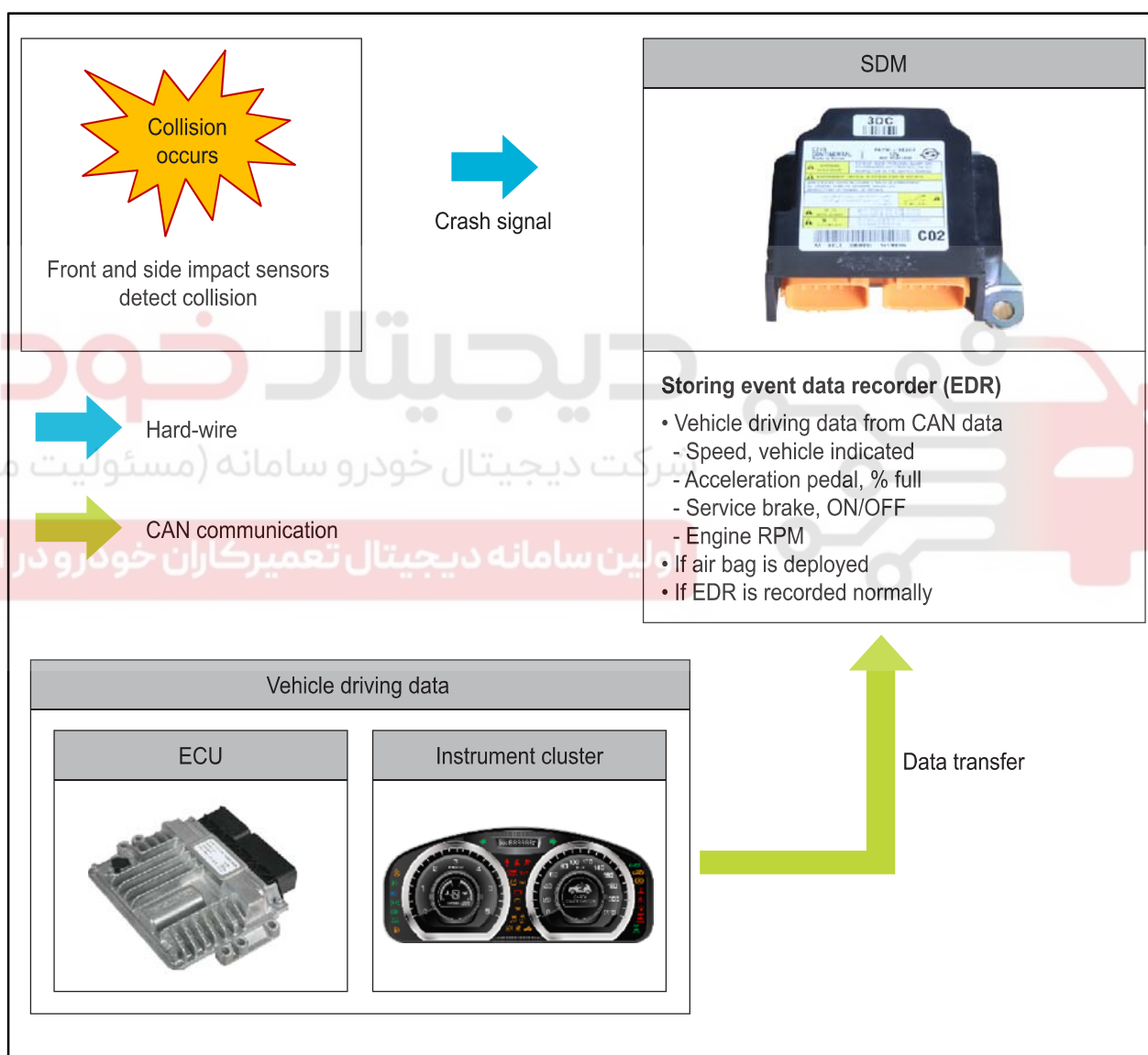


NOTE

- The DTCs realated to "low battery voltage" are not accumulated.
- The air bag deployment data due to a collision cannot be cleared. The air bag unit should be replaced.

5. EVENT DATA RECORDER (EDR)

The event data recorder (EDR) stores the driving information data in a crash or near crash event, when the acceleration sensor in the air bag unit detects a sharp acceleration change which meets the EDR operating conditions, regardless of the air bag deployment. The air bag unit always stores the driving information data and updates the data with new one periodically. If a collision is detected by front and side impact sensors, the acceleration sensor in the SDM detects the change in acceleration. The air bag unit stores the information on internal acceleration sensor, driving status and air bag deployment at this time.

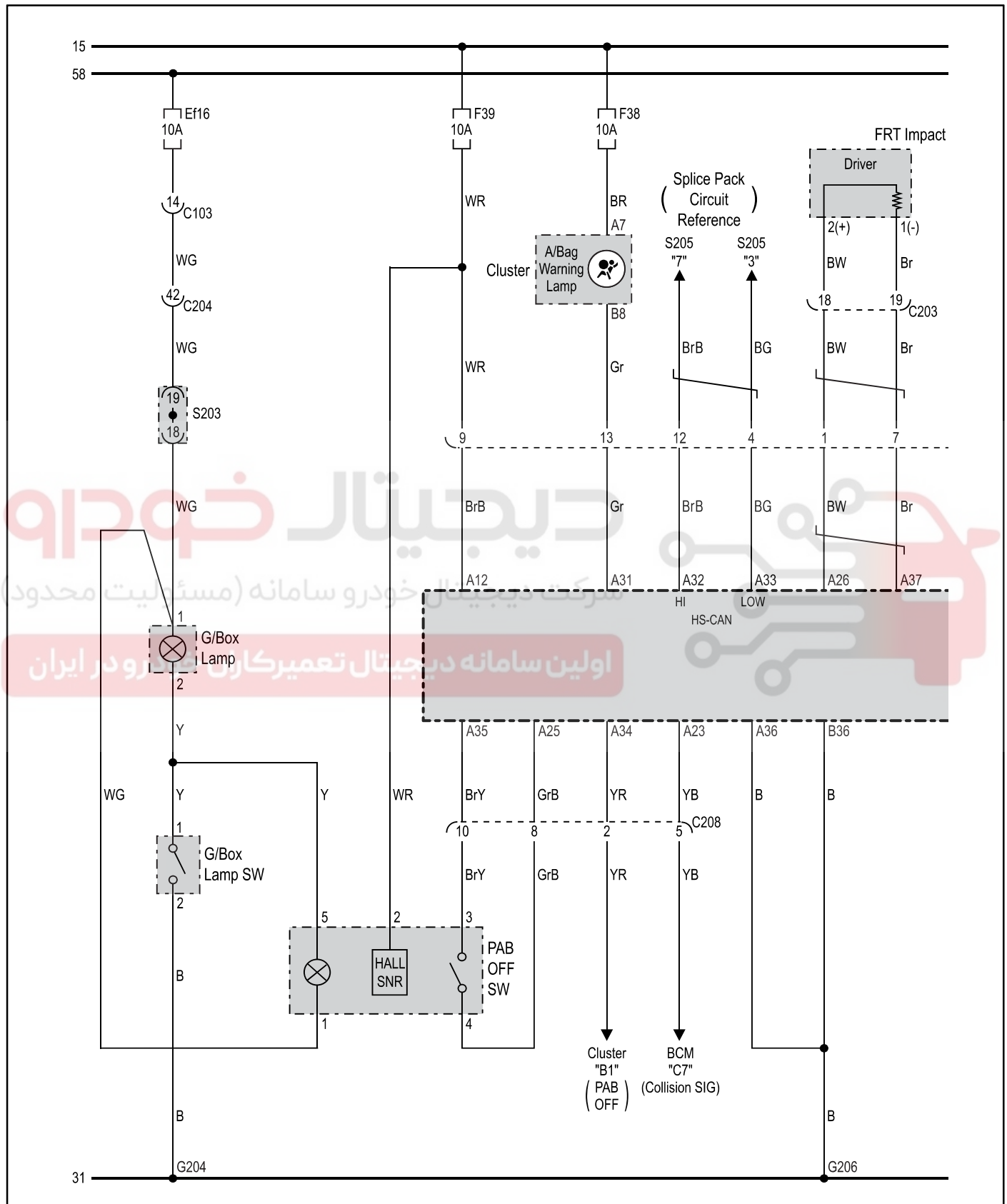


NOTE

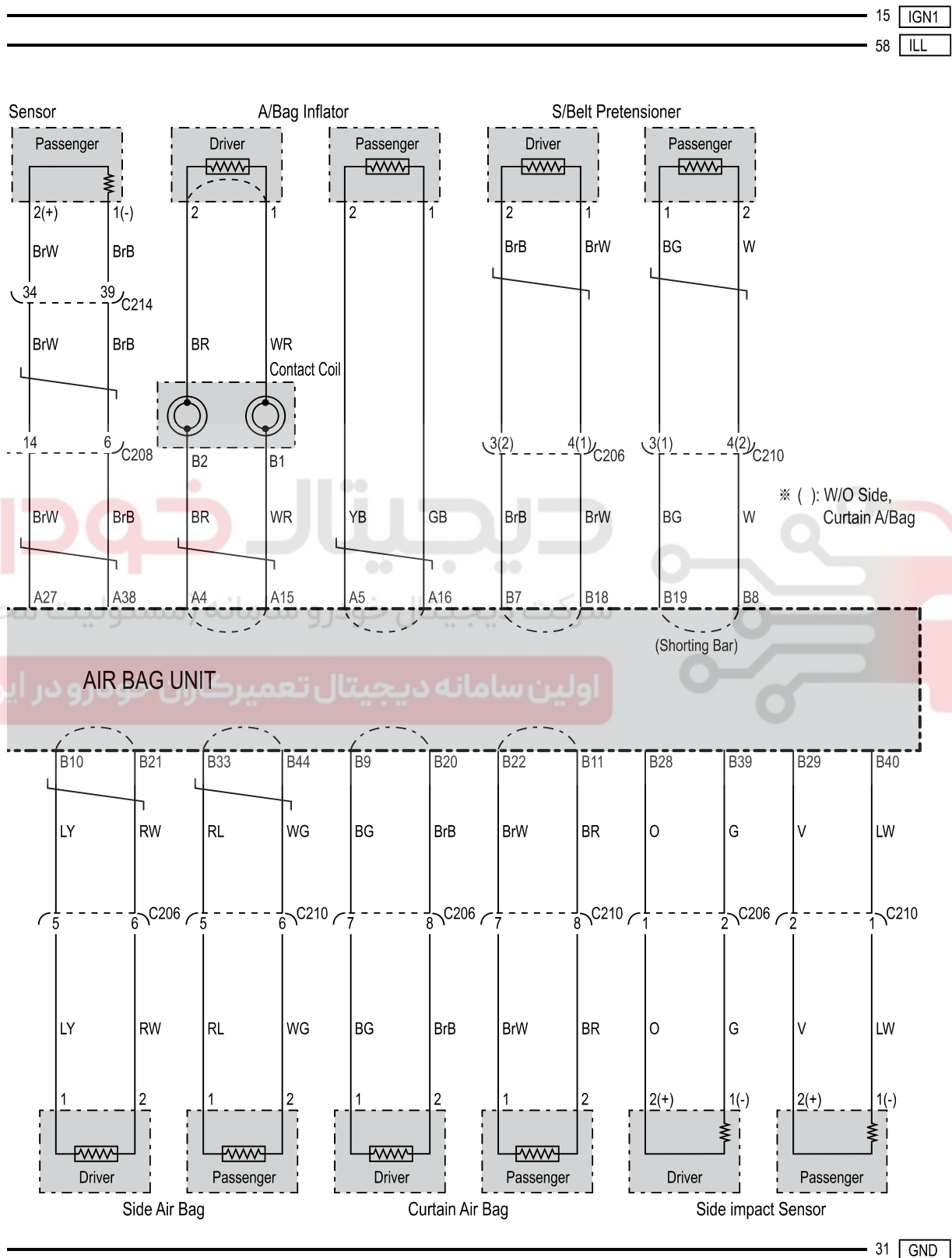
The EDR stores the driving information also when the acceleration sensor in the air bag unit detects a sharp acceleration change in the event of a rear-end collision or side collision for a vehicle without an air bag.

Modification basis	
Application basis	
Affected VIN	

6. CIRCUIT DIAGRAM



Modification basis	
Application basis	
Affected VIN	



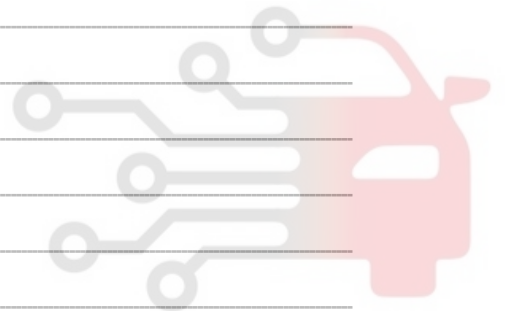
Modification basis	
Application basis	
Affected VIN	

Memo

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



CONFIGURATION AND FUNCTIONS

8810-01 AIR BAG UNIT (SDM)

1) Mounting Location and Components

The air bag unit assembly is mounted in the front of the TGS lever under the front console assembly.



Air bag unit (SDM)

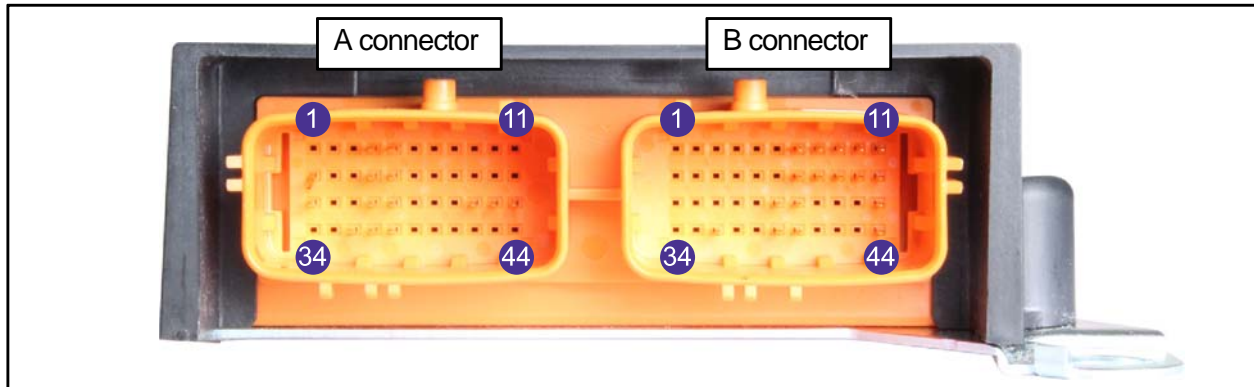
Air bag unit (SDM)	
Mounted	Component
	

Modification basis	
Application basis	
Affected VIN	

AIR BAG

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2) Connector Pin Description



► A connector

Pin No.	Function	Pin No.	Function
1	-	23	Crash signal
2	-	24	-
3	-	25	-
4	Driver air bag -	26	Driver front impact sensor +
5	Passenger air bag -	27	Passenger front impact sensor +
6	-	28	-
7	-	29	-
8	-	30	-
9	-	31	Air bag warning lamp
10	-	32	CAN HI
11	-	33	CAN LO
12	IGN +	34	-
13	-	35	-
14	-	36	Ground -
15	Driver air bag +	37	Driver front impact sensor -
16	Passenger air bag +	38	Passenger front impact sensor -
17	-	39	-
18	-	40	-
19	-	41	-
20	-	42	-
21	-	43	-
22	-	44	-

► B connector

Pin No.	Function	Pin No.	Function
1	-	23	-
2	-	24	-
3	-	25	-
4	-	26	-
5	-	27	-
6	-	28	-
7	Driver seat belt pretensioner -	29	-
8	Passenger seat belt pretensioner -	30	-
9	Driver curtain air bag -	31	-
10	Driver side air bag -	32	-
11	Passenger curtain air bag -	33	Passenger side air bag +
12	-	34	-
13	-	35	-
14	-	36	Ground -
15	-	37	-
16	-	38	-
17	-	39	-
18	Driver seat belt pretensioner +	40	-
19	Passenger seat belt pretensioner +	41	-
20	Driver curtain air bag +	42	-
21	Driver side air bag +	43	-
22	Passenger curtain air bag +	44	Passenger side air bag -

Modification basis	
Application basis	
Affected VIN	

AIR BAG

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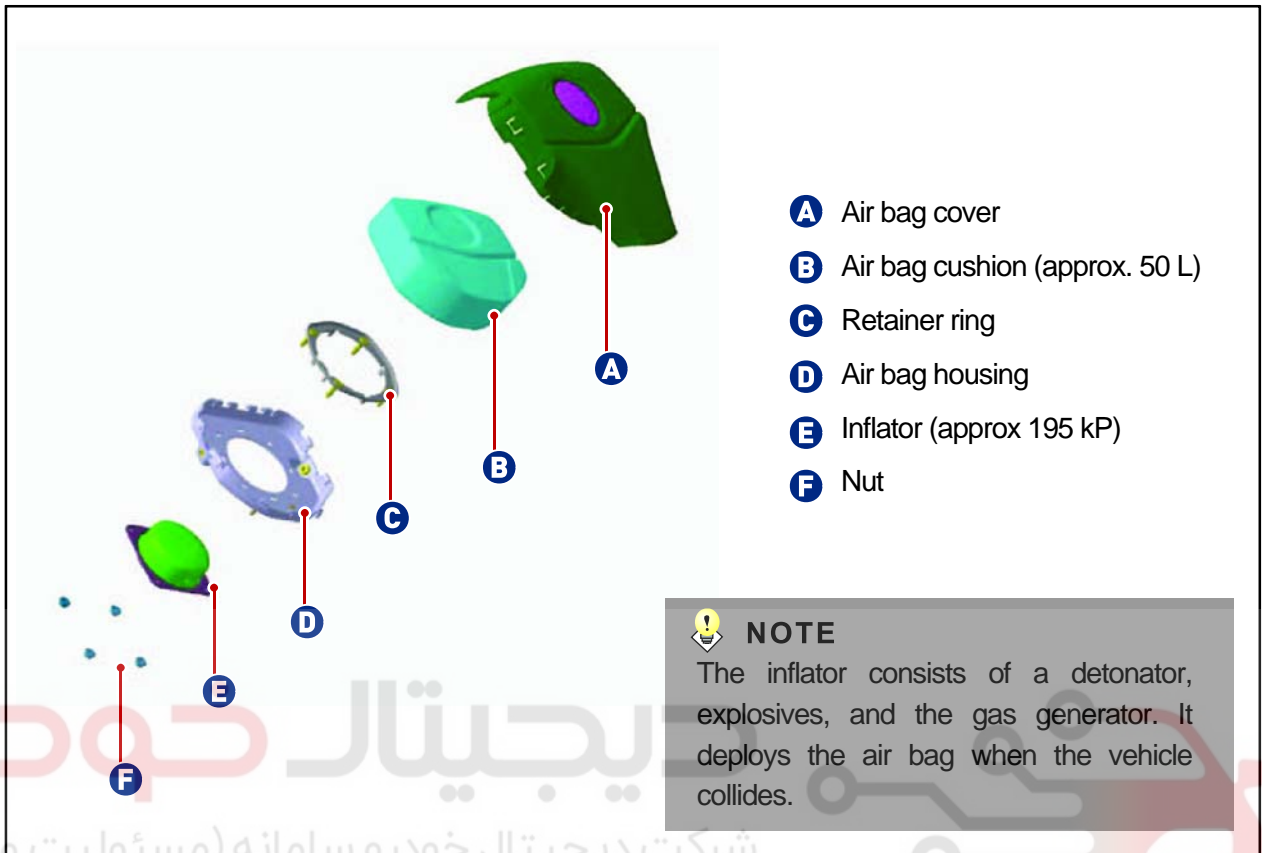
S.G.N.

8810-03 DRIVER AIR BAG**1) Mounting Location and Components**

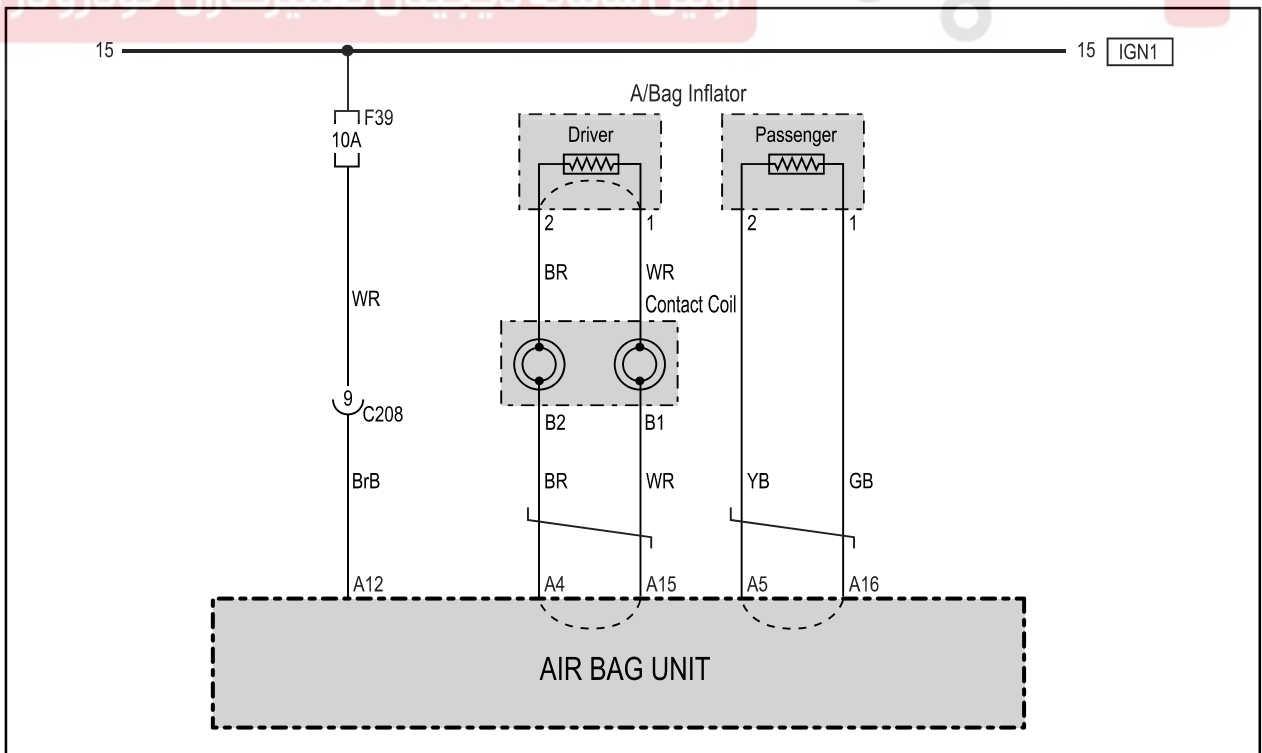
The driver air bag is located at the center of the steering wheel.

**Driver air bag****Front view****Rear view**

2) Driver Air Bag Components



3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

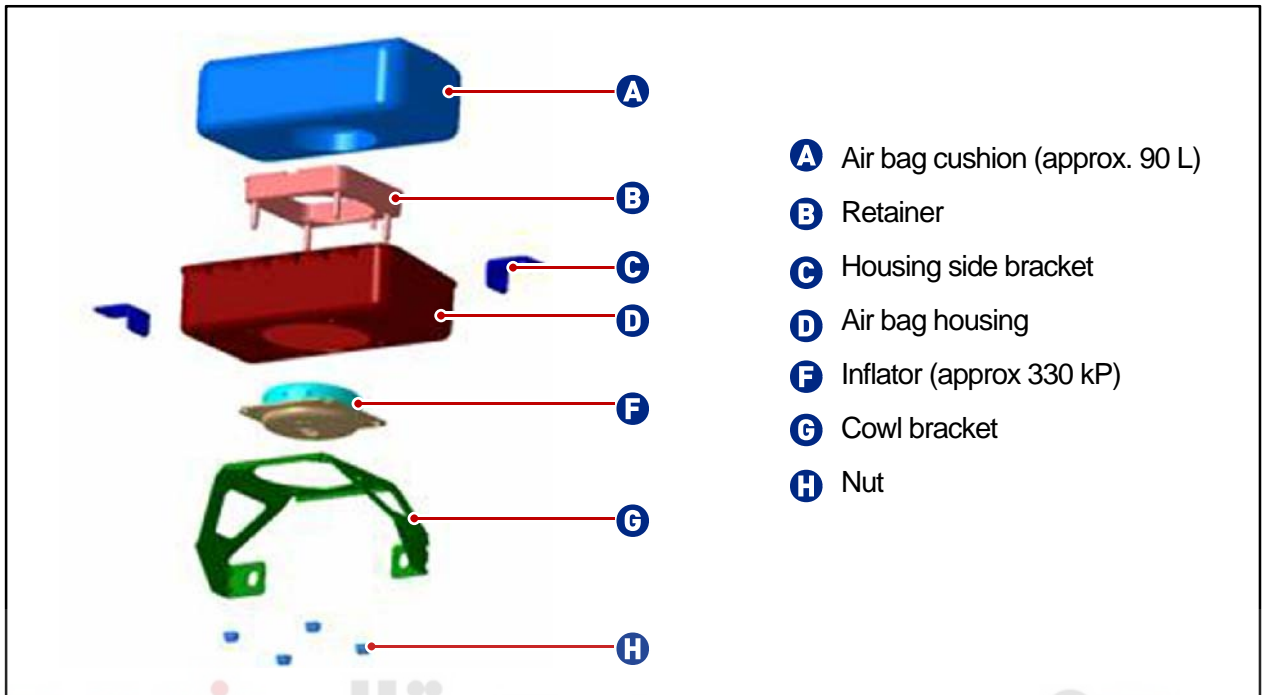
S.G.N.

8810-06 PASSENGER AIR BAG**1) Mounting Location and Components**

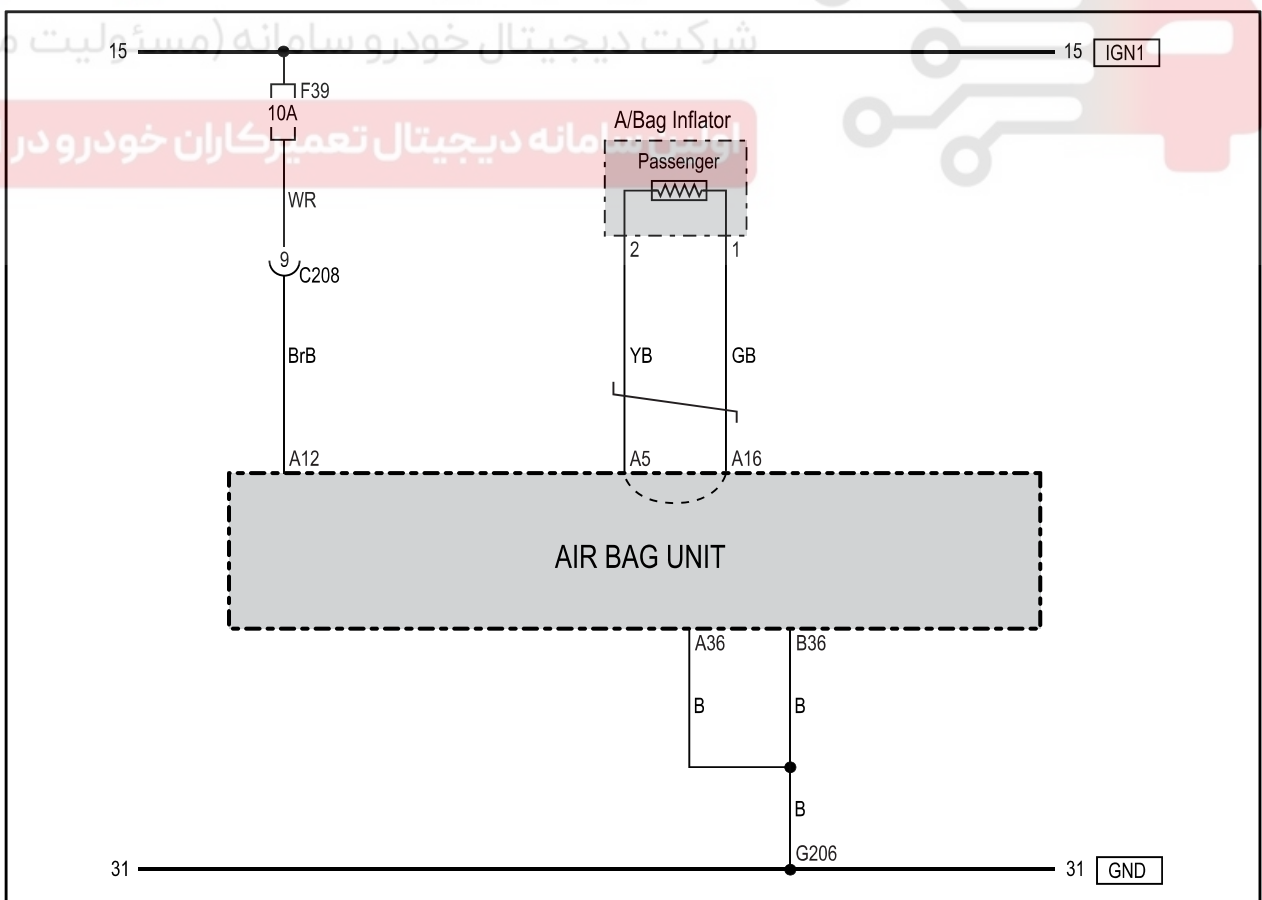
The passenger air bag module is installed in the instrument panel, over the glove box. This air bag is an invisible type that is not visible from the outside of the panel.

**Passenger air bag****Front view****Rear view**

2) Passenger Air Bag Components



3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

S.G.N.

8810-01

PASSENGER AIR BAG OFF SWITCH

1) Mounting Location



شرکت دیجیتال خودرو (مسئولیت محدود)

2) Specifications

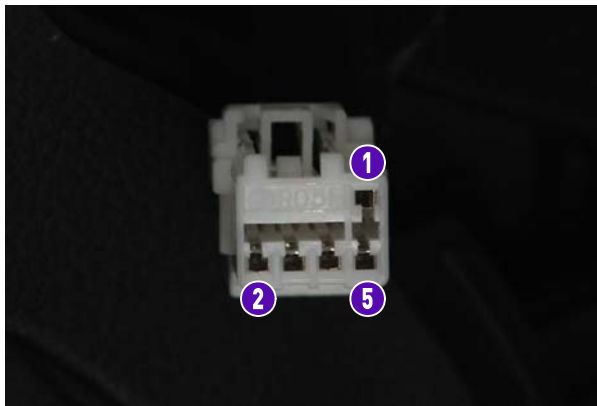
Item	Specification
Rated voltage	DC 12V
Rated load	0.1A
Operating temperature	-30°C ~ +80°C
Storage temperature	-40°C ~ +85°C
Rated load	Wiper motor: 3.2A
Insulation resistance	DC 500V MEGGER 1MΩ

AIR BAG

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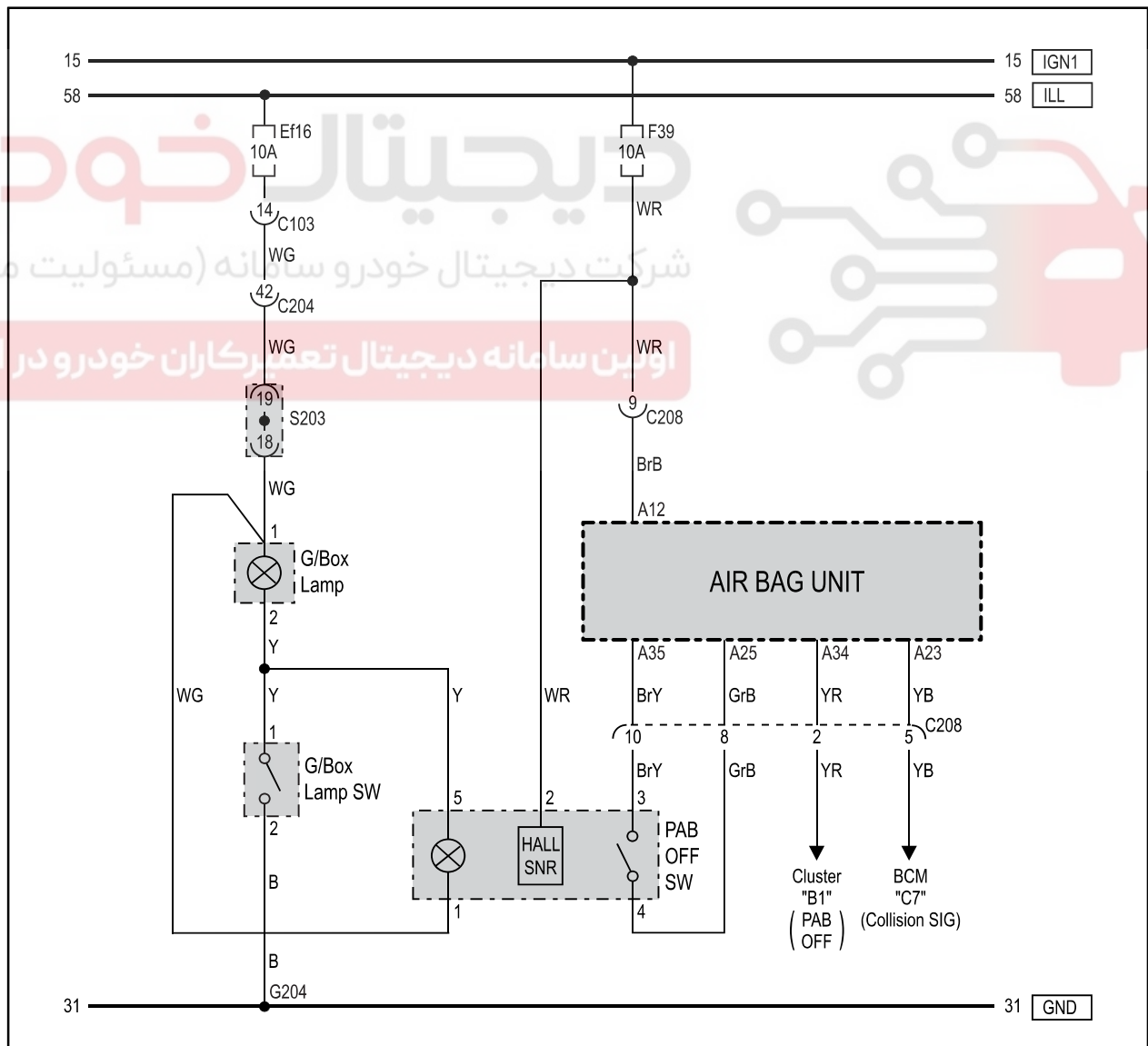
Modification basis	
Application basis	
Affected VIN	

3) Connector Functions



Pin No.	Function
1	BCM_B+
2	GND
3	ACU_GND
4	ACU
5	IGN

4) Circuit Diagram

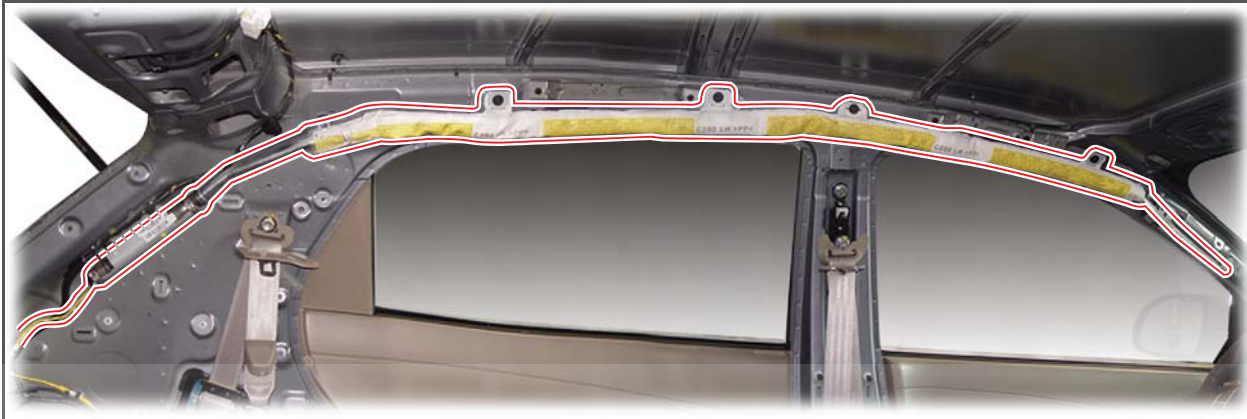


Modification basis	
Application basis	
Affected VIN	

S.G.N.

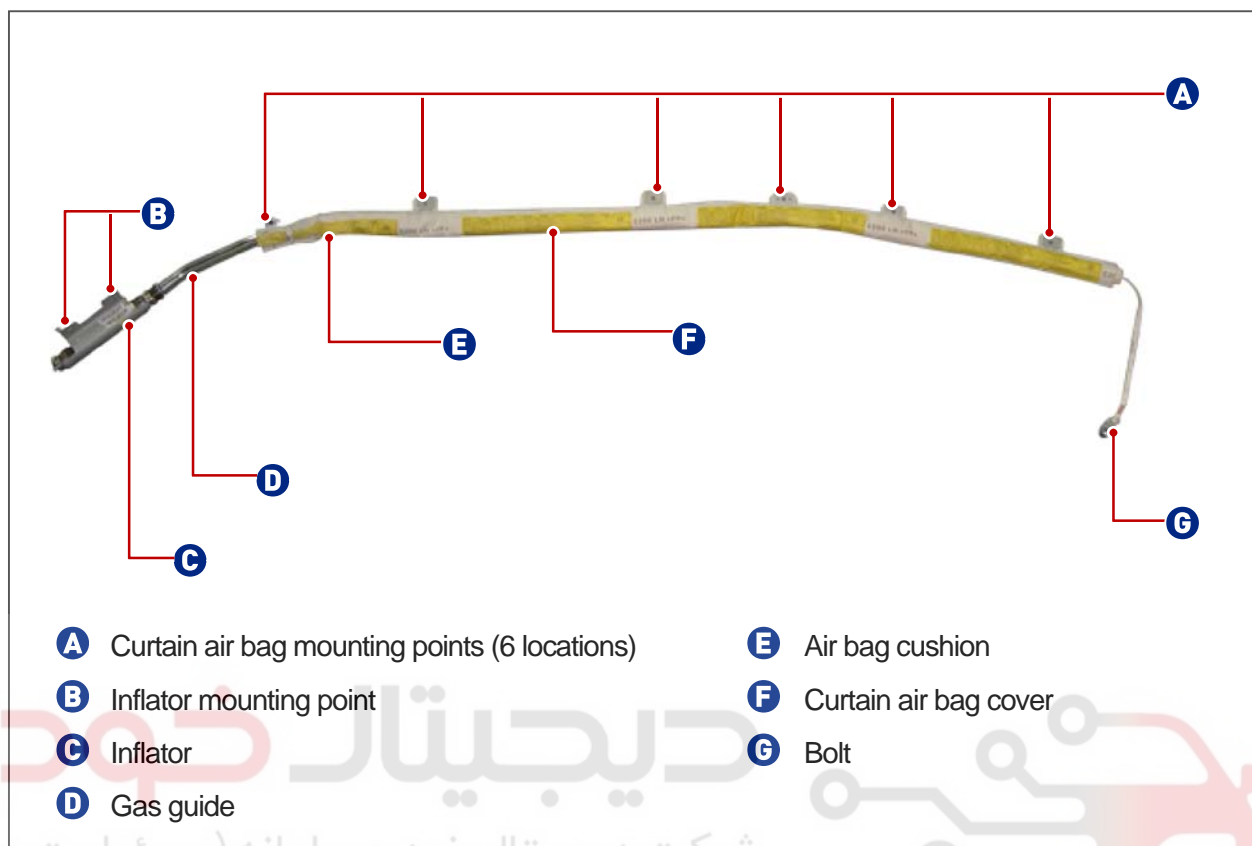
8810-11 CURTAIN AIR BAG**1) Mounting Location and Components**

The curtain air bag is one of the side air bag system and mounted on the roof rail, inside of the headlining side, one on each side.

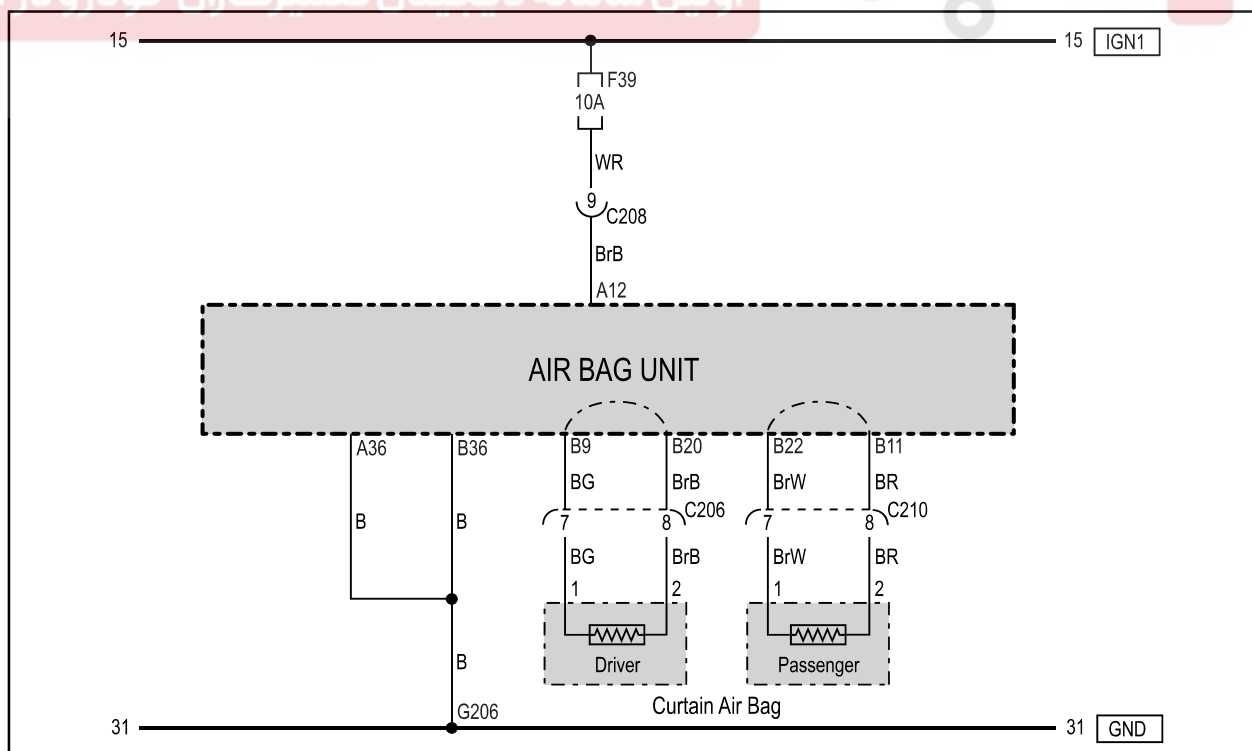
Installed curtain air bag**Deployed curtain air bag**

Modification basis	
Application basis	
Affected VIN	

2) Curtain Air Bag Components



3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

AIR BAG
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02-44

8810-16

KORANDO

S.G.N.

8810-16 SIDE AIR BAG**1) Mounting Location and Components**

The side air bags are installed on the sides of both the driver and passenger seats.

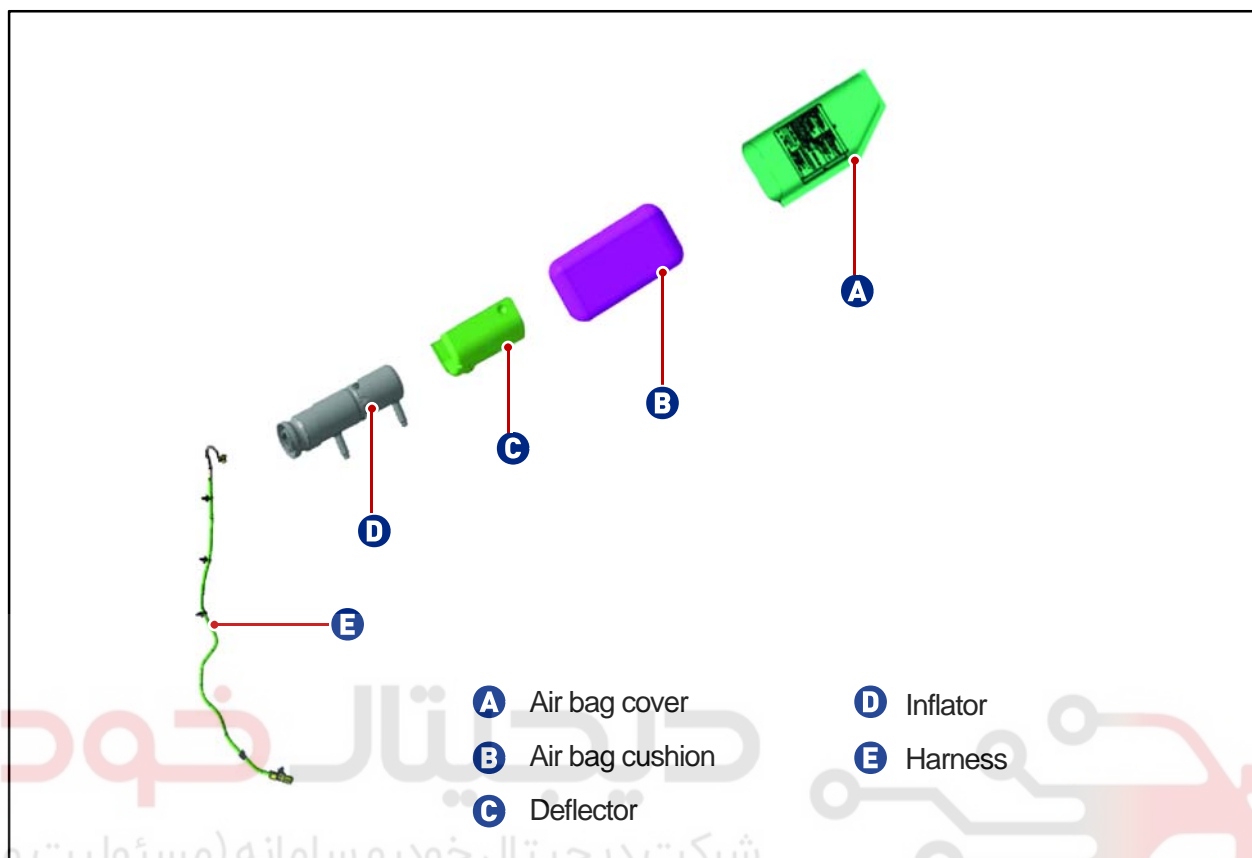


AIR BAG

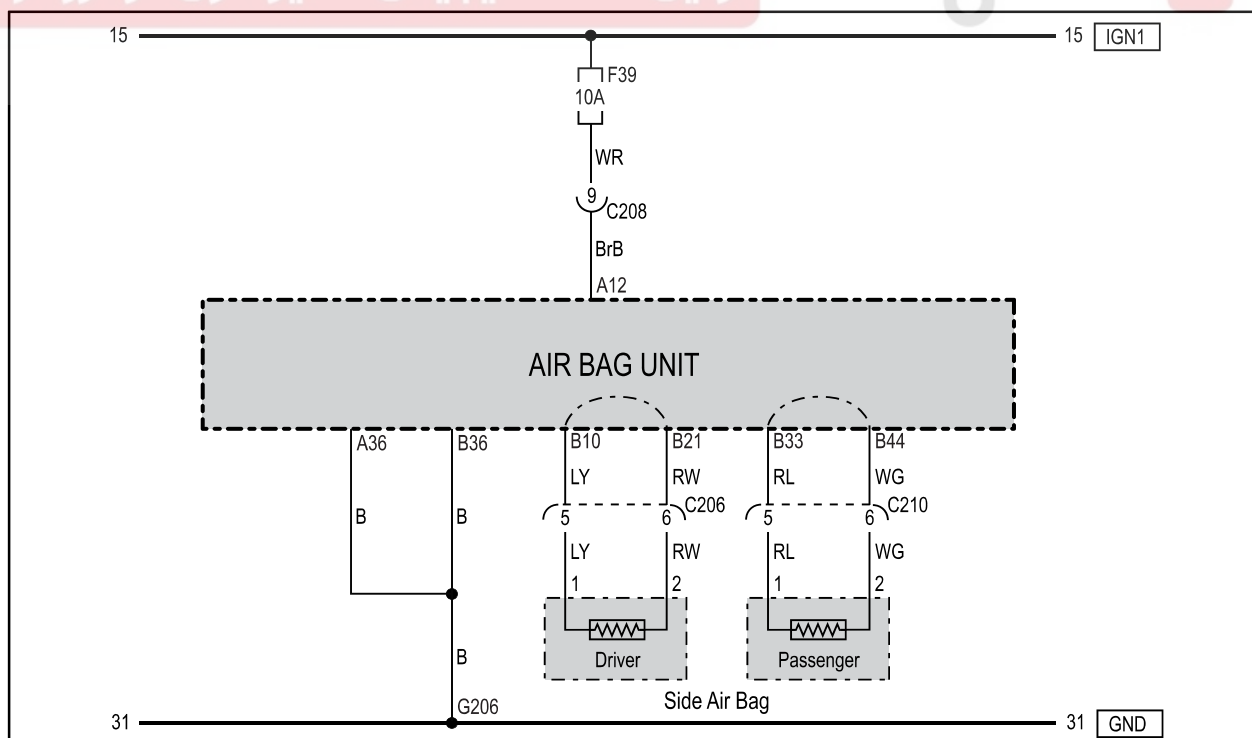
KORANDO 2013.08

Modification basis	
Application basis	
Affected VIN	

2) Side Air bag Components



3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

S.G.N.

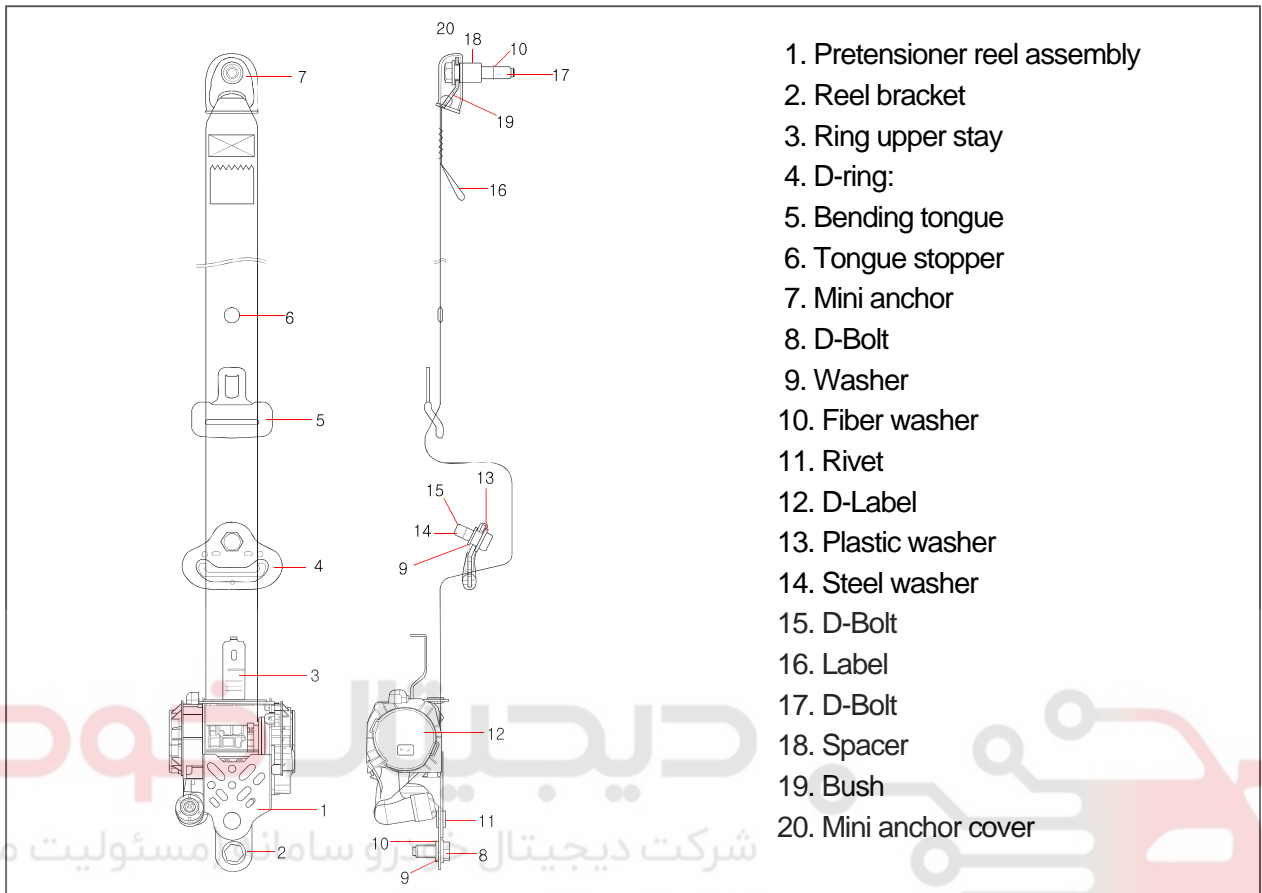
7430-01 SEAT BELT PRETENSIONER**1) Mounting Location and Components**

The seat belt pretensioners are installed at the bottom of the B-pillar trims on both the driver and passenger sides.

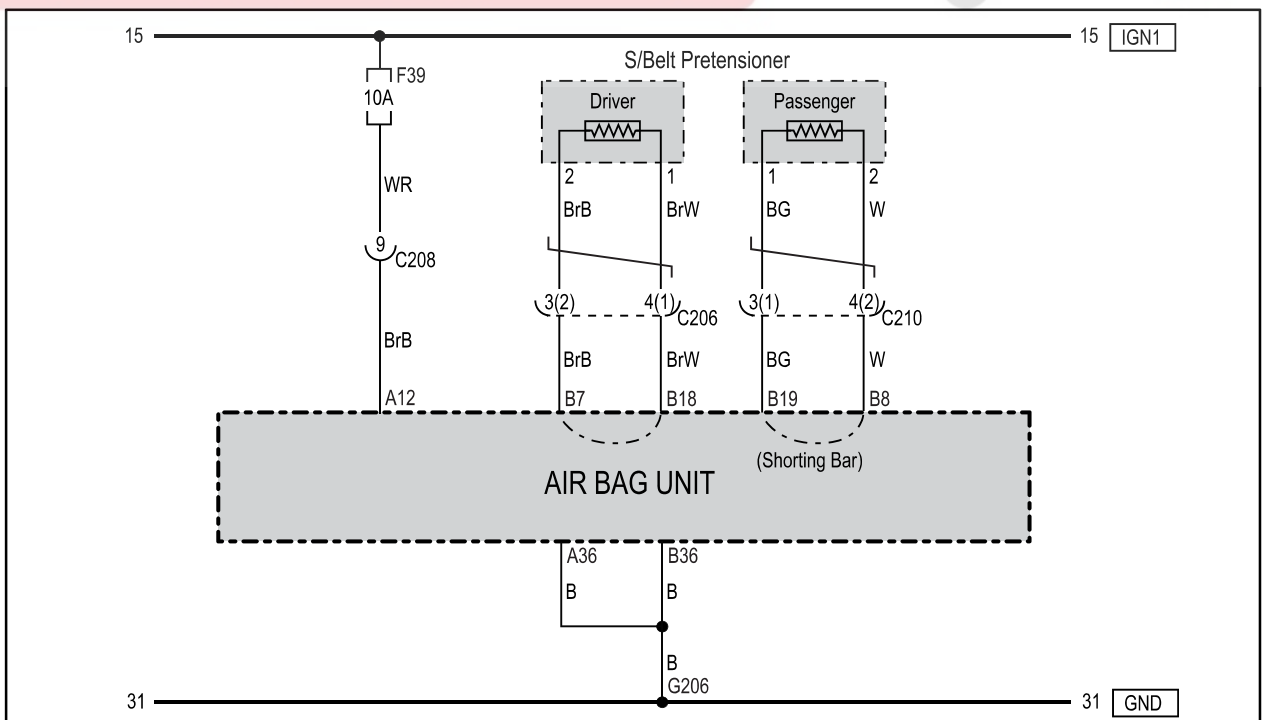


Modification basis	
Application basis	
Affected VIN	

2) Seat Belt Pretensioner Components



3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

S.G.N.

8810-18 FRONT IMPACT SENSOR**1) Mounting Location and Components**

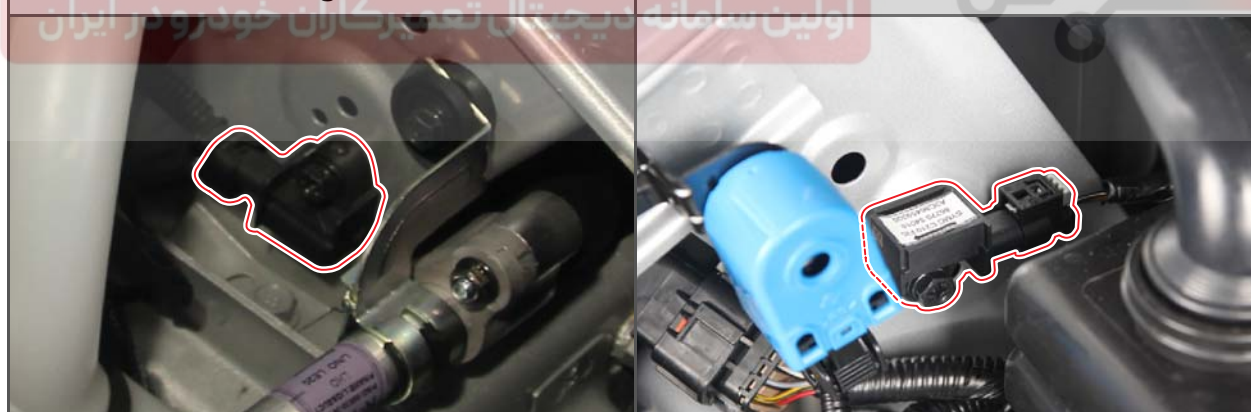
The front impact sensor is located on the frame under the headlamp.



Front impact sensor

Passenger side

Driver side

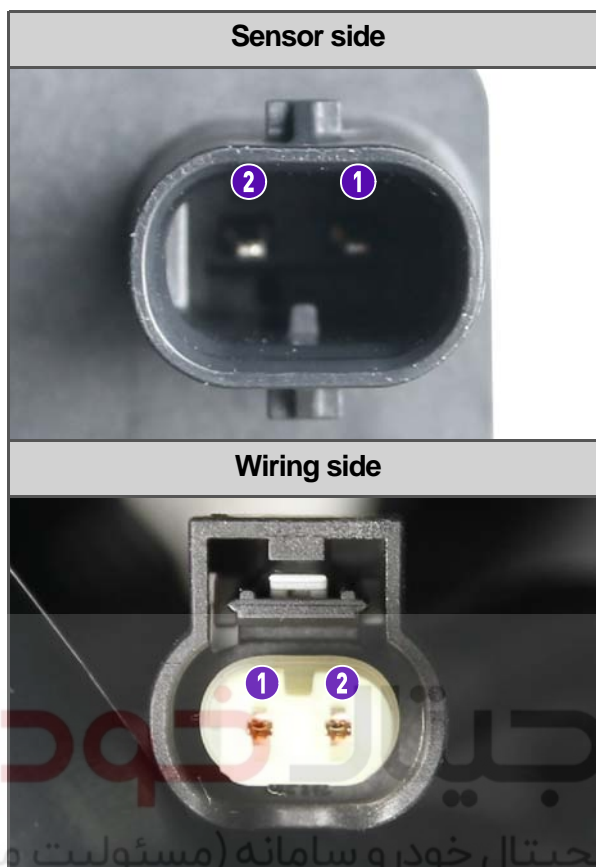


AIR BAG

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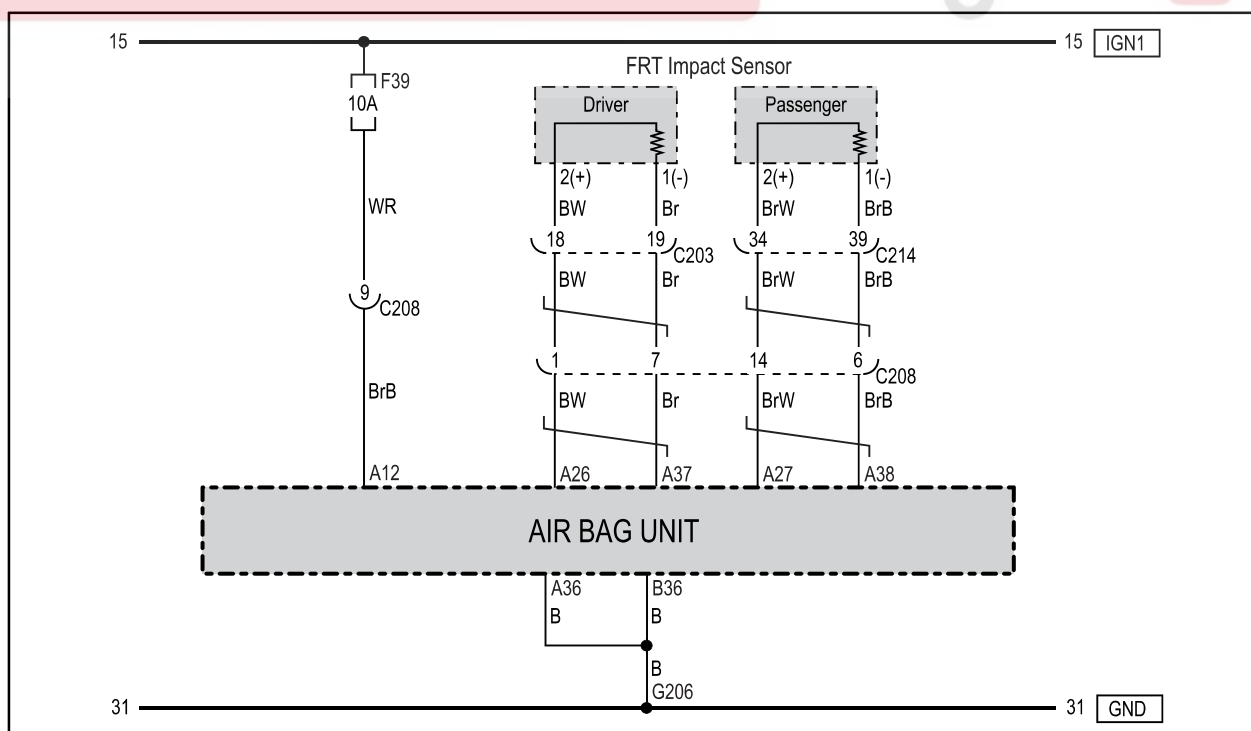
Modification basis	
Application basis	
Affected VIN	

2) Connector Pin Description



Pin No.	Function
1	Signal
2	Ground -

3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

S.G.N.

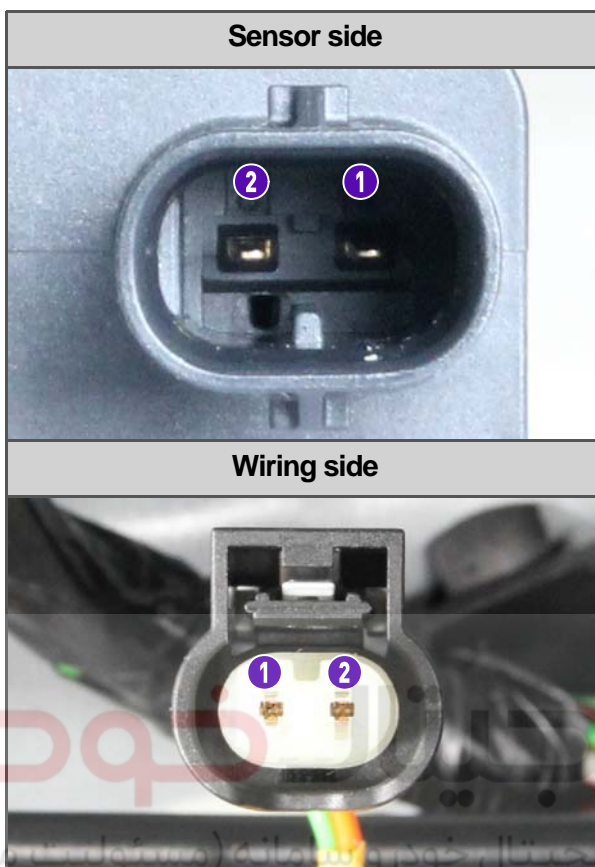
8810-16 SIDE IMPACT SENSOR**1) Mounting Location and Components**

The side impact sensors are installed at the bottom of the B-pillar trims on both the driver and passenger sides.



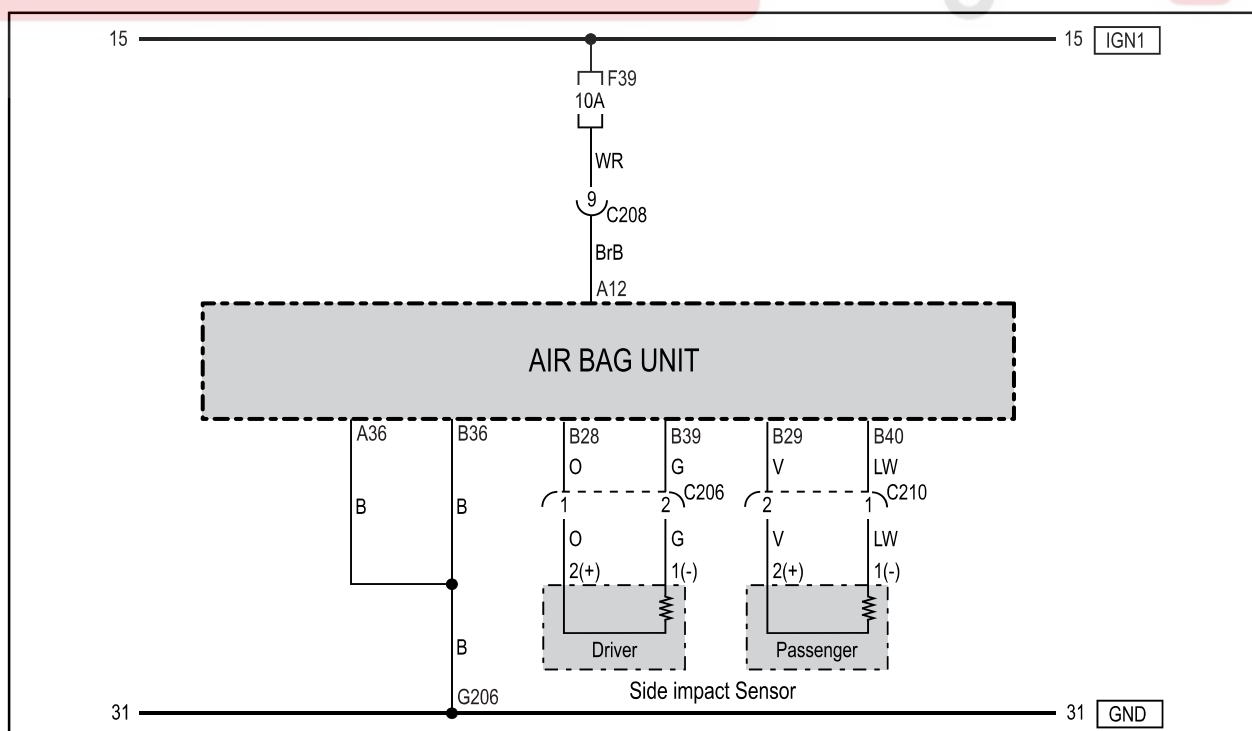
Modification basis	
Application basis	
Affected VIN	

2) Connector Pin Description



Pin No.	Function
1	Signal
2	Ground -

3) Circuit Diagram



Modification basis	
Application basis	
Affected VIN	

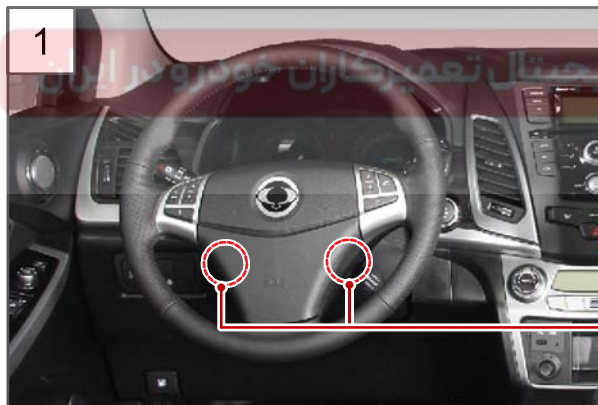
AIR BAG

KORANDO 2013.08

REMOVAL AND INSTALLATION

8810-03 DRIVER AIR BAG

Preceding work - After disconnecting the negative battery cable and wait for at least 30 seconds.



1. Unscrew the 2 air bag mounting bolts (T40) on the left/right sides of the steering wheel.

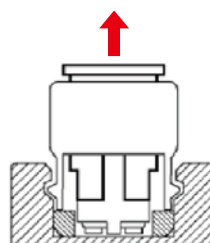


2. Lift up the driver air bag and remove the inflator connector by using a small flat-blade screwdriver as follows:

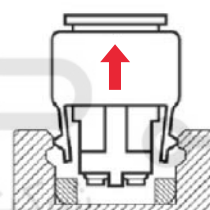
Modification basis	
Application basis	
Affected VIN	



a. Push up the yellow part of the connector in the direction of the arrow (A) using a screwdriver.



b. Insert the tip of the screwdriver between the connector and base and then push up the connector to remove it.



3. Remove the driver air bag.



4. Install in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	

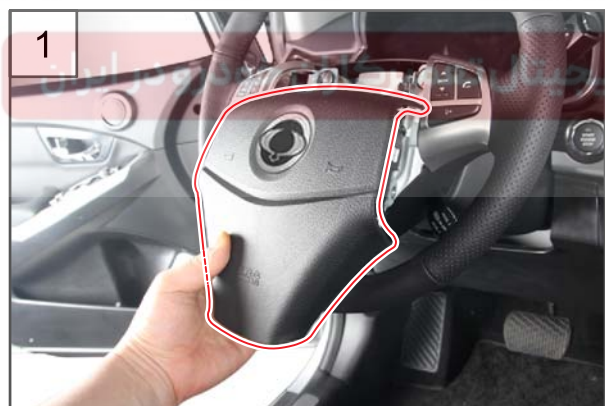
S.G.N.

8530-08

CONTACT COIL

Preceding work

- After disconnecting the negative battery cable and wait for at least 30 seconds.

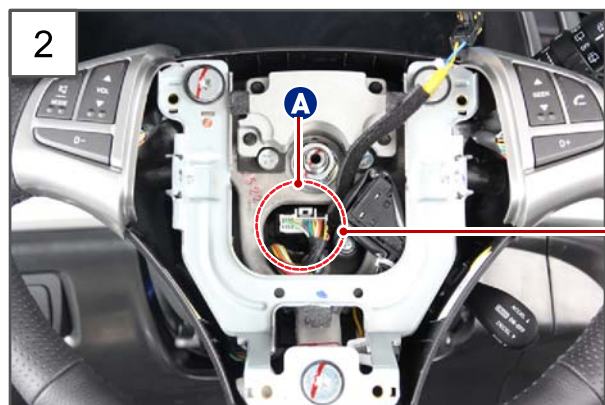


1. Remove the driver air bag.

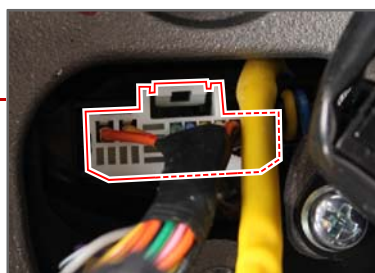


NOTE

Refer to "Removal and installation, Driver air bag" section of "AIR BAG SYSTEM".



2. Disconnect the connector (A) connected to the steering wheel.



AIR BAG

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Modification basis	
Application basis	
Affected VIN	



3. Remove the steering wheel mounting nut (22 mm).

Tightening torque 39.2 to 58.8 Nm



NOTE

Paint marks on the steering wheel so that the center is aligned when installing the steering wheel.



4. Remove the steering wheel.



5. Unscrew the 3 shroud lower panel mounting screws.

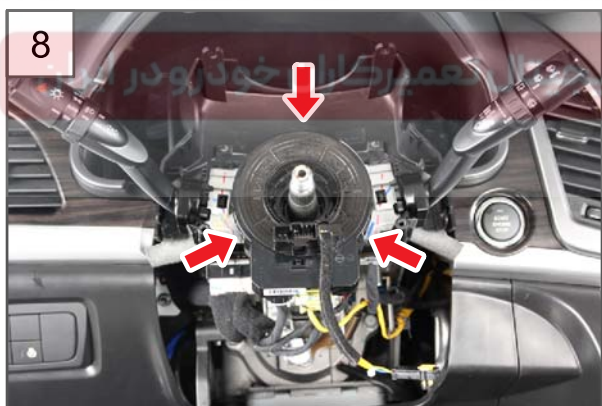
Modification basis	
Application basis	
Affected VIN	



6. Separate the shroud upper panel from the lower panel with a hand remover.



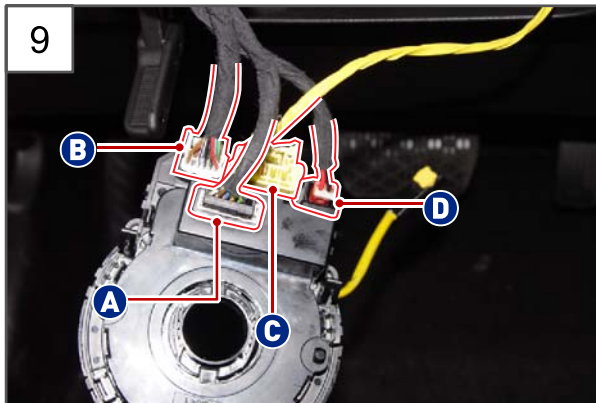
7. Remove the shroud lower panel.



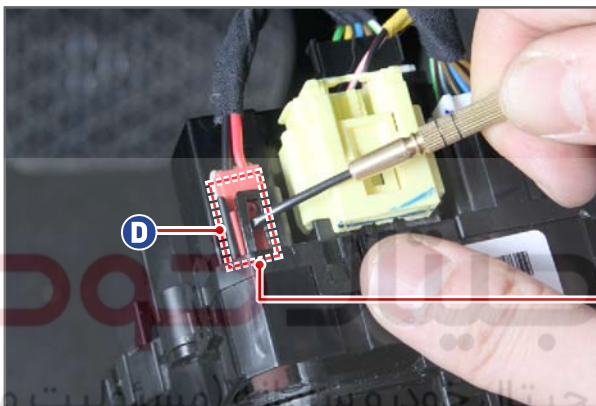
8. Disengage the mountings (3 points) and remove the contact coil assembly from the column shaft.



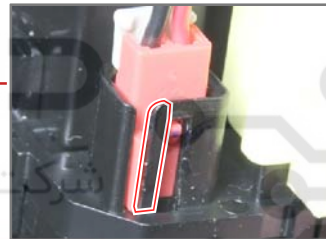
Modification basis	
Application basis	
Affected VIN	



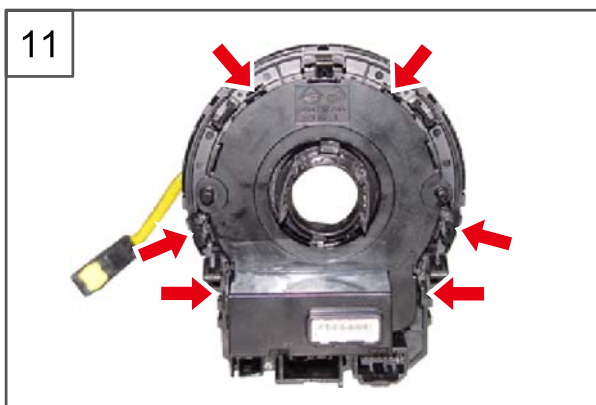
9. Disconnect the connectors (A), (B), (C), and (D) connected to the contact coil assembly.

**NOTE**

Carefully remove the connector (D) with a screw driver inserted between the grooves making sure not to damage it.



10. Remove the contact coil assembly.

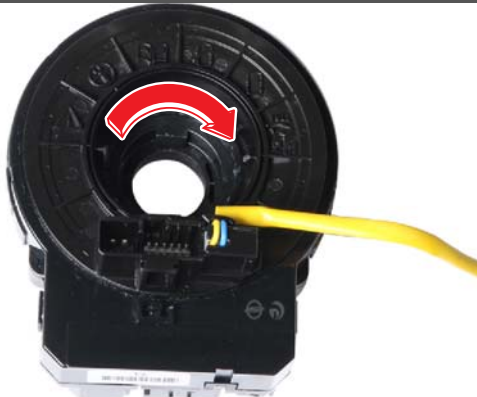


11. Remove the steering wheel angle sensor from the removed contact coil assembly by disengaging the 6 mountings of the sensor.

12. Install in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	

Precautions on contact coil installation



1. Turn the contact coil clockwise until it stops moving.



2. Turn it counterclockwise 2.1 turns.

**NOTE**

About 5 turns counterclockwise



3. Install the contact coil by aligning the marks (▶◀)

**CAUTION**

If the contact coil is not aligned correctly, the steering wheel may not be able to rotate properly during turning. This kind of restricted turning ability may cause the vehicle to crash or damage the contact coil and prevent the air bags from deploying in a crash event.

S.G.N.

8810-06 PASSENGER AIR BAG

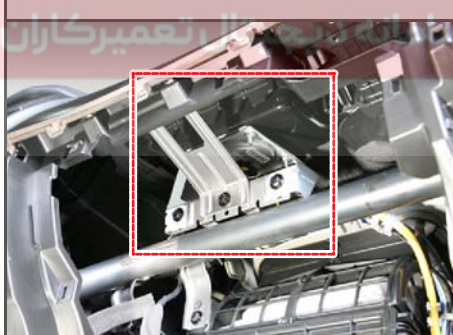
Preceding work

- After disconnecting the negative battery cable and wait for at least 30 seconds.



Passenger air bag

Mounted



Component



1. Remove the glove box housing.

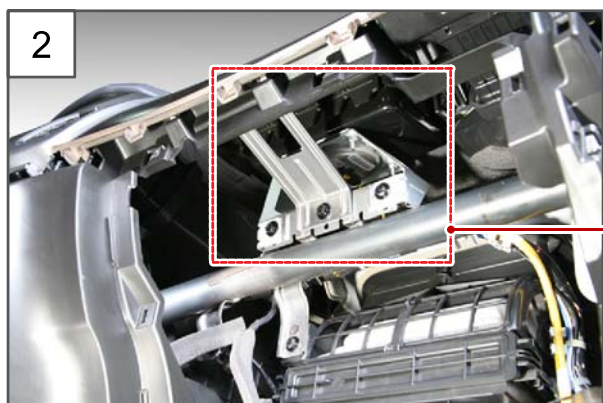
**NOTE**

Refer to "Removal and installation, Glove box housing" section of "Body Interior".

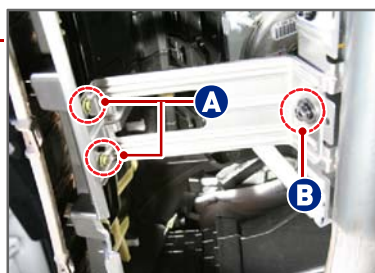
Modification basis	
Application basis	
Affected VIN	

AIR BAG

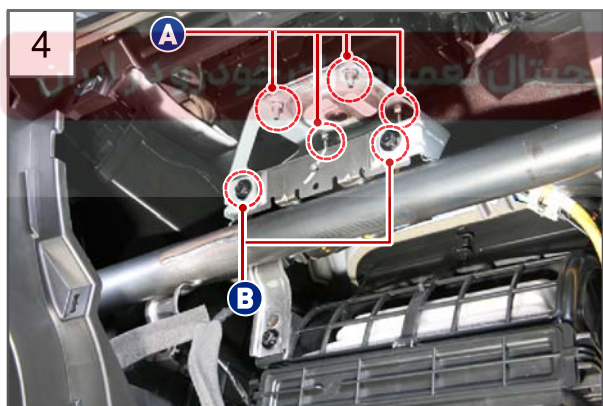
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2. Unscrew the 2 mounting screws (A) for the RH crash pad bracket and the mounting bolt (B, 10 mm) on the upper part of the blower assembly.



3. Remove the RH crash pad bracket.



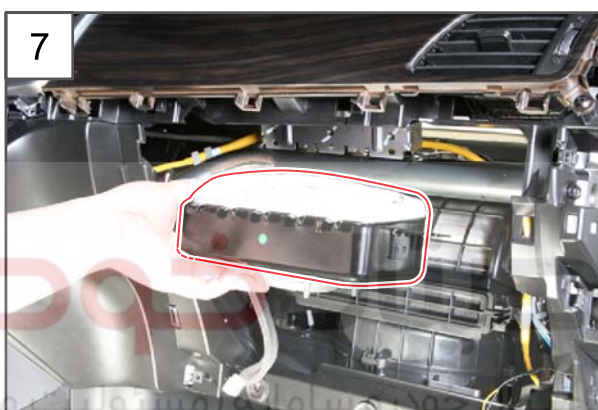
4. Unscrew the 2 cowl bracket mounting bolts (A, 10 mm) and 4 mounting nuts (B, 10 mm).



5. Remove the cowl bracket.



6. Remove the passenger air bag from the air bag cover mounted to the instrument panel with a hand remover.



7. Remove the passenger air bag.

8. Install in the reverse order of removal.

Front view



Rear view



Modification basis	
Application basis	
Affected VIN	

AIR BAG
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S.G.N.

8810-01 PASSENGER AIR BAG SWITCH



Passenger air bag switch



1. Remove the front door body side weatherstrip.



2. Lift off the RH crash pad side cover.

AIR BAG

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Modification basis	
Application basis	
Affected VIN	



3. Disconnect the passenger air bag switch connector A and remove the RH crash pad side cover.



4. Remove the passenger air bag switch from the RH crash pad side cover while pressing the A part.



5. Install in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	

S.G.N.

8810-11

CURTAIN AIR BAG

Preceding work

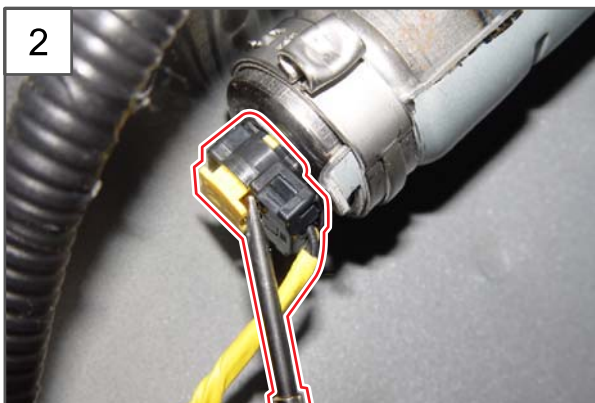
- After disconnecting the negative battery cable and wait for at least 30 seconds.



1. Remove the headlining assembly.

**NOTE**

Refer to "Removal and installation, Headlining assembly" section of "Body Interior".



2. Disconnect the curtain air bag connector.

Modification basis	
Application basis	
Affected VIN	



3. Unscrew the 2 mounting bolts (10 mm) and remove the front assist grip bracket.



4. Unscrew the mounting bolt (A, 10 mm) for the retainer ring in the front of the curtain air bag.

* When mounting the curtain air bag, the strip of the retainer ring on the front side should be fitted under the bracket.

5. Unscrew the 6 mounting bolts (10 mm) to remove the curtain air bag.



Tightening torque 8 to 10 Nm

6. Install in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	

S.G.N.

8810-18

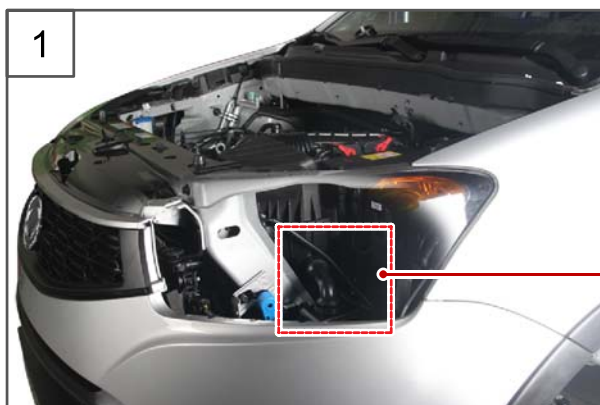
FRONT IMPACT SENSOR

Preceding work

- After disconnecting the negative battery cable and wait for at least 30 seconds.



1) Front Impact Sensor - Driver Side



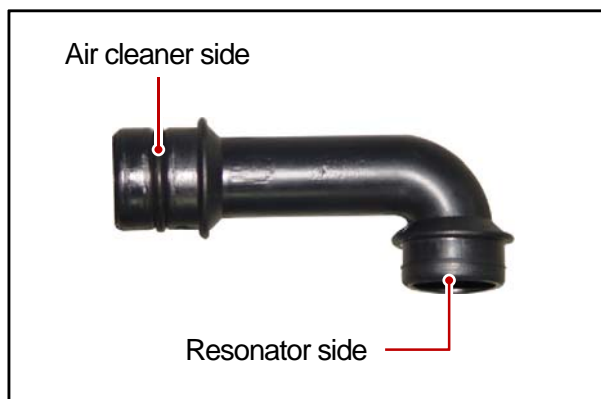
1. Remove the resonance duct from the back side of the headlamp.



AIR BAG

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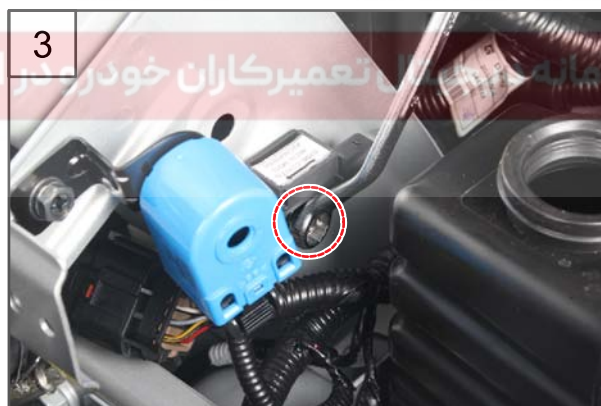
Modification basis	
Application basis	
Affected VIN	

**NOTE**

When installing the resonance duct, apply small amount of lubricant at the connections to the air cleaner and resonator.



2. Disconnect the front impact sensor connector.



3. Unscrew the mounting bolt (10 mm) for the front impact sensor.

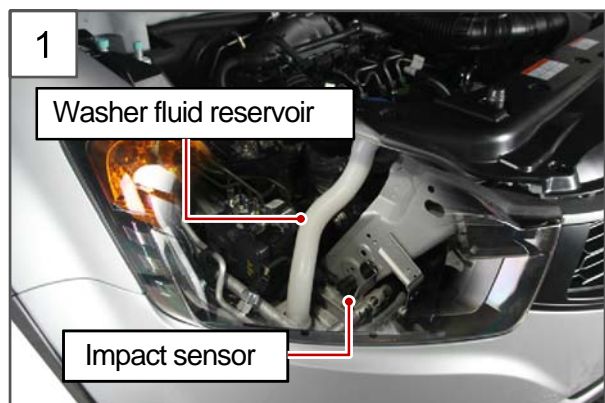


4. Remove the front impact sensor.

5. Install in the reverse order of removal.

Modification basis	
Application basis	
Affected VIN	

2) Front Impact Sensor - Passenger Side



1. Remove the mounting bolt (A, 10 mm) to remove the washer fluid reservoir guide.



2. Unscrew the mounting bolt (10 mm) for the front impact sensor.



3. Disconnect the connector and remove the front impact sensor.

4. Install in the reverse order of removal.

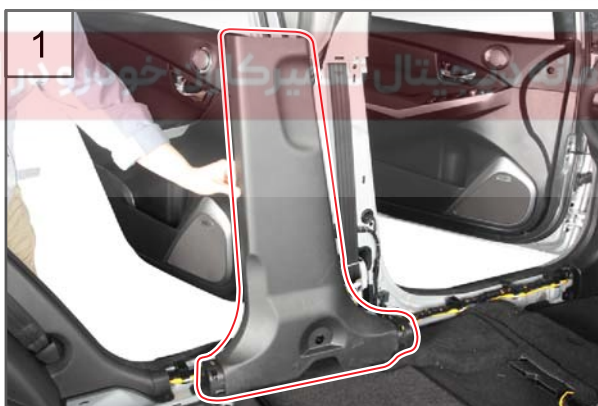
Modification basis	
Application basis	
Affected VIN	

S.G.N.

8810-16 SIDE IMPACT SENSOR

Preceding work

- After disconnecting the negative battery cable and wait for at least 30 seconds.



1. Remove the B-pillar lower trim.

**NOTE**

Refer to "Removal and installation, B-pillar trim" section of "Body Interior".



2. Disconnect the side impact sensor connector.

Modification basis	
Application basis	
Affected VIN	

AIR BAG

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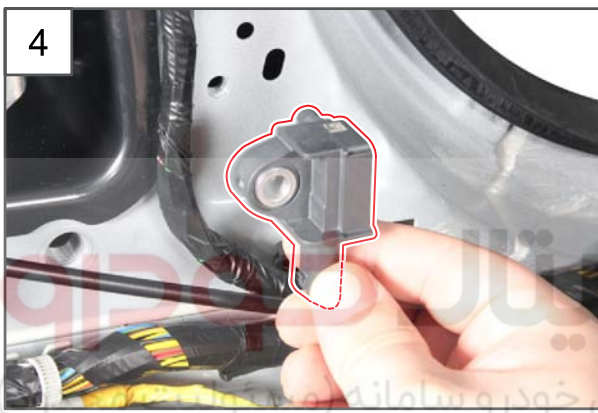
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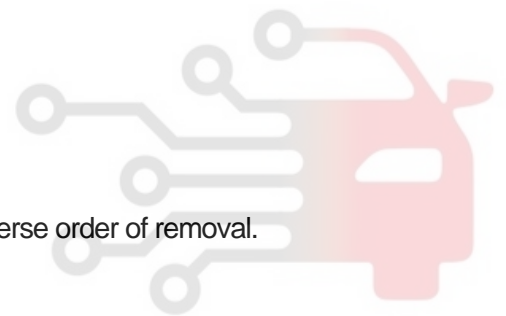
3. Unscrew the mounting bolt (10 mm) for the side impact sensor.



4. Remove the side impact sensor.

5. Install in the reverse order of removal.

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Modification basis	
Application basis	
Affected VIN	