



Restraint

General Information



DESCRIPTION AND OPERATION

CUSTOMER CAUTIONS

1. Be sure to proceed airbag related service after approx. 30 seconds or longer from the time the ignition switch is turned to the LOCK position and the negative (-) terminal cable is disconnected from the battery. The airbag system is equipped with a back-up power source to assure the deployment of airbag when the battery cable is disconnected by an accident. The back-up power is available for approx. 150ms.
2. When the negative(-) terminal cable is disconnected from the battery, memory of the clock and audio systems will be canceled. So before starting work, make a record of the contents memorized by the audio memory system. When the work is finished, reset the audio system and adjust the clock.
3. Malfunction symptoms of the airbag system are difficult to confirm, so the diagnostic codes become the most important source of information when troubleshooting.
4. When troubleshooting the airbag system, always inspect the diagnostic codes before disconnecting the battery.
5. Never use airbag parts from another vehicle. When replacing parts, replace them with new parts.
6. Never attempt to disassemble and repair the airbag modules (DAB,PAB, BPT), clock spring and wiring in order to reuse them.
7. If any component of SRS has been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.
8. After work on the airbag system is completed, perform the SRS SRI check
The airbag indicator lamp can be interrupted by other circuit fault in some cases. Therefore if the airbag indicator lamp goes on, be sure to erase the DTC codes using Hi-scan just after repairing or replacing the troubled parts including fuse.
9. Especially in case of welding the body, never fail to disconnect the battery negative (-) terminal.

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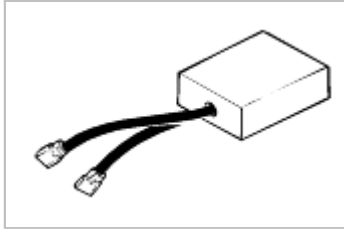


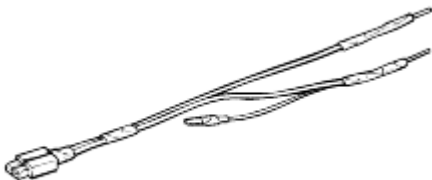

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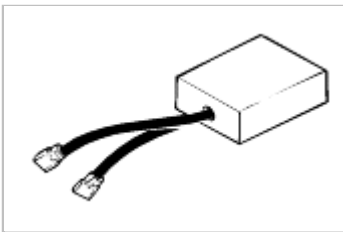


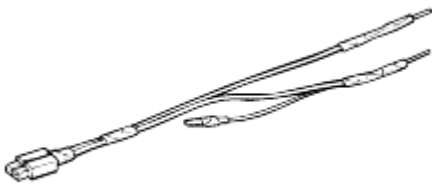

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SPECIAL SERVICE TOOLS

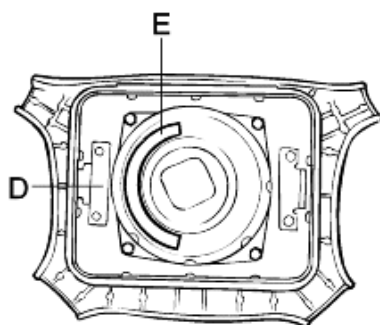
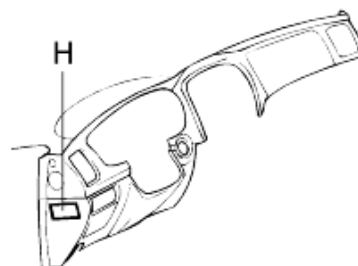
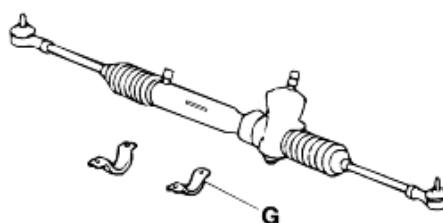
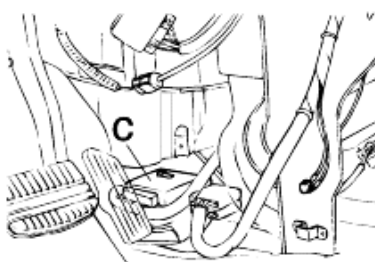
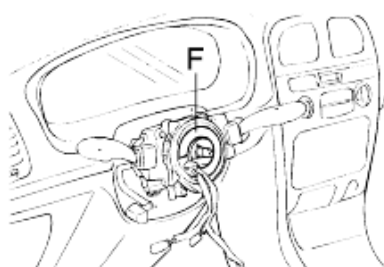
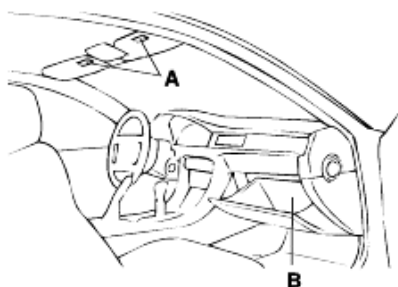
Tool (Number and name)	Illustration	Use
0957A-38200 Dummy		Simulator to check the resistance of each wiring harness (Use with 0957A-38000, 0957A-38300, 0957A-38400)
0957A-38300 Dummy adapter		Adapter to connect DAB, PAB
0957A-38400 Dummy adapter		Adapter to connect BPT
0957A-38000 Diagnosis checker		Wiring harness checker of each module (use with 0957A-38200, 0957A-38300, 0957A-38400)
0957A-38100 Deployment adapter		Deployment adapter (Use with 0957A-34100A)

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0957A-38400 Dummy adapter		Adapter to connect BPT
0957A-38000 Diagnosis checker		Wiring harness checker of each module (use with 0957A-38200, 0957A-38300, 0957A-38400)
0957A-38100 Deployment adapter		Deployment adapter (Use with 0957A-34100A)



WARNING/CAUTION LABELS

**A. DAB + PAB**

Caution

TO AVOID SERIOUS INJURY:

- For maximum safety protection in all types of crashes, you must always wear your safety belt.
- Do not install rearward-facing child seats in any front passenger seat position.

B. Supplemental restraint system (airbag) information

The airbag is a supplemental restraint system (SRS).

You must always wear the seat belts. The airbag system condition is normal if "SRS" lamp in cluster flashes approximately 6 times after ignition key is turned on and then goes out.

If any of the following conditions occur, the system must be serviced:

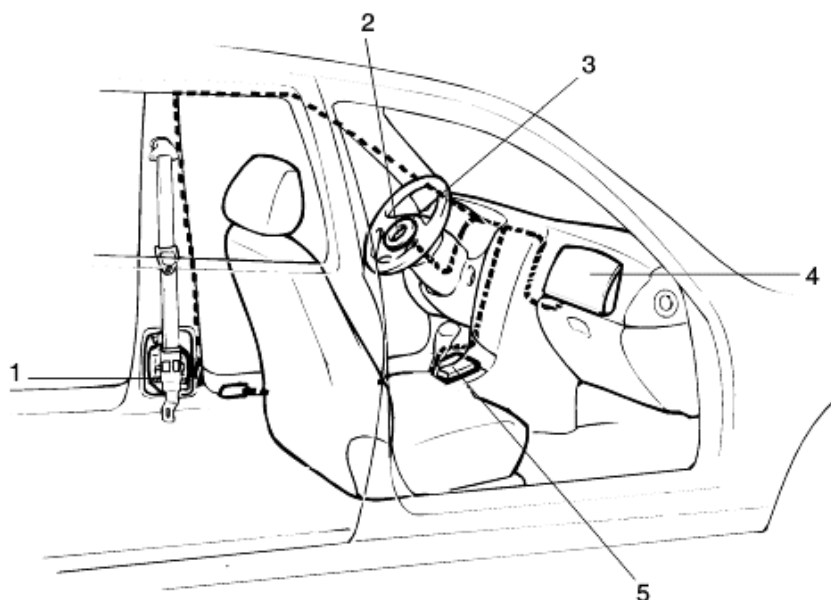
<ul style="list-style-type: none"> • Do not sit or lean unnecessarily close to the airbag. • Do not place any objects over the airbag or between the airbag and yourself. • See the owner's manual for further information and explanation. 	<ol style="list-style-type: none"> 1. "SRS"lamp does not light when key is turned on. 2. "SRS"lamp stays lit or flashes continuously. 3. The airbag has inflated. <p>The airbag system must be inspected by an authorized dealer ten years after vehicle manufacture date shown on certification label located on left front door opening area.</p>
C. Caution : airbag control unit Detach connector before removing. Assemble strictly according to manual instructions.	D. Caution : supplemental restraint system module To help avoid personal injury due to unwanted inflation do not service or dispose of this unit without following instructions in the service manual.
E. Warning Contents are poisonous and extremely flammable. Do not probe with electrical devices or otherwise tamper with in any way. Servicing of this unit must be performed only by authorized personnel.	F. Caution : SRS clock spring This is not a repairable part. Do not disassemble or tamper. If defective replace entire unit per service manual instructions. To re-center rotate clockwise until tight. Then rotate in opposite direction approximately 3 turns and align ><. Failure to follow to instructions may render SRS system inoperative risking serious driver injury.
G. Caution : SRS Before removal of steering gearbox, read service manual, center front wheels and remove ignition key. Failure to do so may damage SRS clock spring and render SRS system inoperative, risking serious driver injury.	H. Warning This car is equipped with a side airbag in each front seat. <ul style="list-style-type: none"> • Do not use any accessory seat covers. • Use of other seat covers could reduce the effect of the system. • Do not install any accessories on the side or near the side airbag. • Do not use excessive force on the side of the seat. • For further information, see owner's manual.
I. Attention Do not open, remove or put into another vehicle.	

ELECTRICAL SYSTEM

1. SRSCM (Supplemental Restraint System Control Module).
2. SRSCM determines to deploy the airbag module by sensing the frontal and side impact sensed by the sensor built in SRSCM.
 - A. DC/DC convertor : The power supply DC/DC converters include a step-up and step-down converter, which provides the firing voltage for two firing circuits and the internal operating voltage. If the internal operating voltage falls below a defined threshold, a reset is executed.
 - B. Arming sensor/safing sensor : The arming/safing sensor built in the airbag firing circuit has the function of arming the airbag circuit under all required deployment conditions and maintaining the airbag firing circuits unarmed under normal driving conditions. The safing sensor is a dual-contact electromechanical switch which closes if it experiences a deceleration exceeding a specified threshold.
 - C. Back-up power : The SRSCM reserves the energy supply to provide deployment energy for a short second when the vehicle voltage is low or if lost in a vehicle frontal crash.
 - D. Malfunction detection : The SRSCM continuously monitors the current SRS operation status while the ignition key is turned on and detects the malfunction of the system. The malfunction can be displayed in the form of diagnostic trouble code using scan tool (Hi-scan).
 - E. MIL (Malfunction Indication Lamp) notification : If any fault is detected, the SRSCM sends signal to the indicator lamp on the cluster to warn the vehicle driver. The MIL indicator is the key to driver notification of SRS faults. Verify lamp and SRSCM operation by flashing 6 times when the ignition switch is first turned on.
 - F. Malfunction recording : Once a fault occurred in the system SRSCM records the fault in the memory in the form of DTC and the DTC can only be erased with the scan tool.
 - G. Data link connector : The SRSCM memory stored data is accessed through the OBD-II Data Link Connector (DLC) using a scan tool. The DLC is located underneath the driver side crash pad.
 - H. After firing the airbags once, the SRSCM cannot be used again and must be replaced.
 - I. Crash output
 The crash output is used to control an external device such as door control module in case of a crash event.

The crash output is specified as follows : The crash output is open-collector type switch logic output with 500mA of sine current and its output impedance is 100Ω. The crash output is switched to ground for 200ms after the crash detected.

INFLATOR MODULE (DAB, PAB)



1. BPT
2. DAB
3. Clock spring
4. PAB
5. SRSCM

1. When removing the airbag module or handling a new airbag module, it should be placed with the pad top surface facing up. In this case, the twin-lock type connector lock lever should be in the lock state and care should be taken to place it so the connector will not be damaged. Do not store a steering wheel pad on top of another one. (Storing the pad with its metallic surface up may lead to a serious accident if the airbag should inflate for some reasons.)
2. Never measure the resistance of the airbag squib. (This may cause the airbag to deploy, which is very dangerous.)
3. Store the airbag module where the ambient temperature remains below 93°C (200°F), without high humidity and away from electrical noise
4. When using electric welding, disconnect the airbag connectors under the steering column near the MULTI-FUNCTION SWITCH connector before starting work.

SRS HARNESS






The SRS harness is wrapped in a yellow split-wrap tube so that it can be easily identified from the other vehicle harness. A shorting bar is included inside the wiring connectors of DAB, PAB and BPT inflator side. The shorting bar shorts the current flow DAB, PAB and BPT module circuit when the connectors are disconnected. The circuits to the inflator module are shorted in this way to help prevent unwanted deployment of the airbag when servicing the airbag module.

SRSCM INDEPENDENT LAMP ACTIVATION

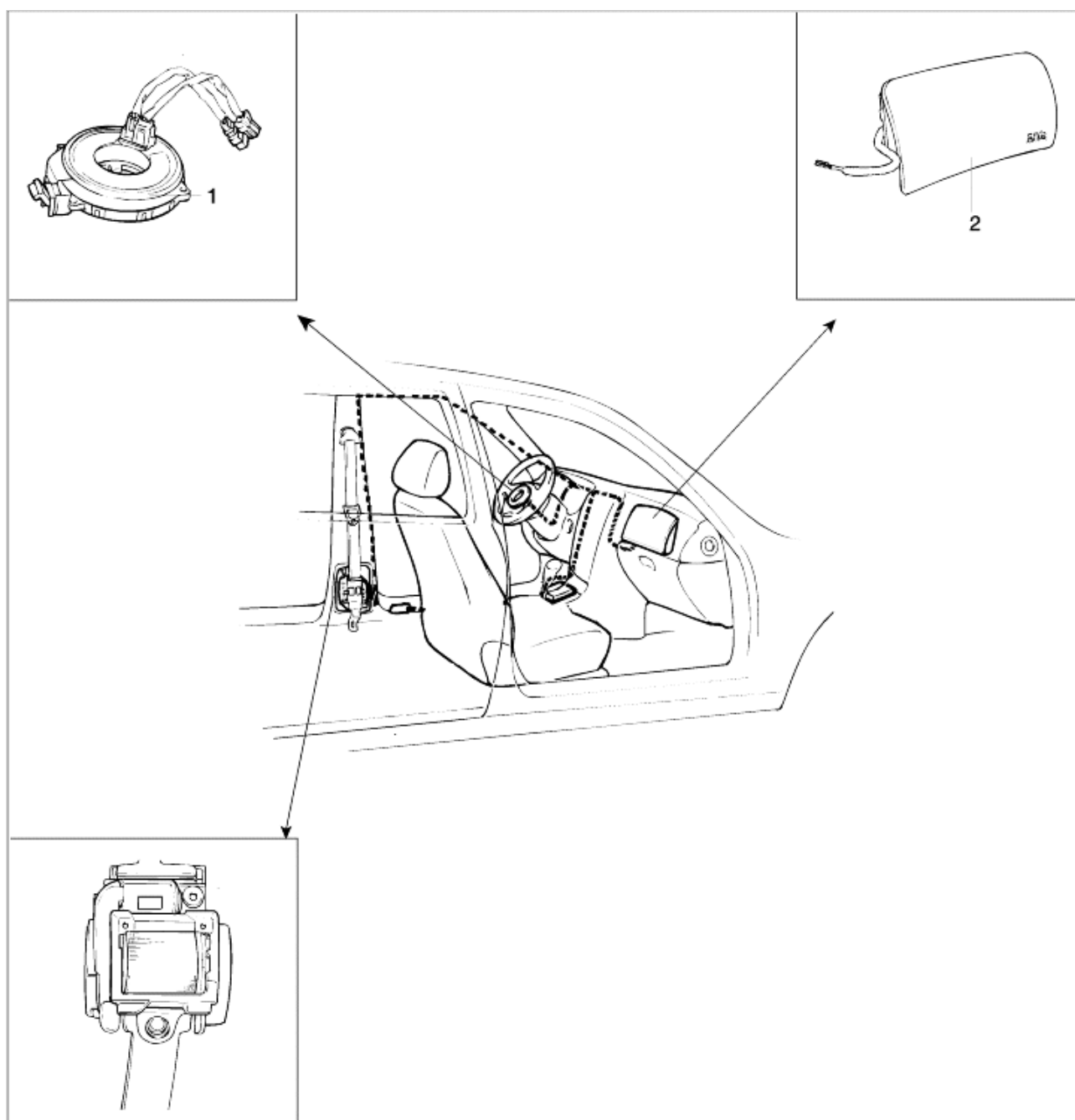
1. Loss of ignition voltage supply to the SRSCM : lamp turned on continuously.

2. Loss of internal operating voltage : lamp turned on continuously.
3. RSCM not connected : lamp turned on through shorting bar in wiring harness connector.

MIL OPERATING METHOD

	Operating situation	Operating method
R U N N I N G	<ul style="list-style-type: none"> Return to normal from temporary fault 	 <p>ON →OFF</p>
	<ul style="list-style-type: none"> ΣFaults frequency ≥ 5 Active fault 	 <p>Turn it on continuously</p>
S T A R T I N G	<ul style="list-style-type: none"> Normal 	 <p>Blink 6 times</p>
	<ul style="list-style-type: none"> ΣFaults frequency ≤ 4 	 <p>On to off after 6 seconds</p>
	<ul style="list-style-type: none"> ΣFaults frequency ≥ 5 Active fault 	 <p>Turn's on continuously</p>

SYSTEM COMPONENT AND LAYOUT



1. Clock spring
2. PAB



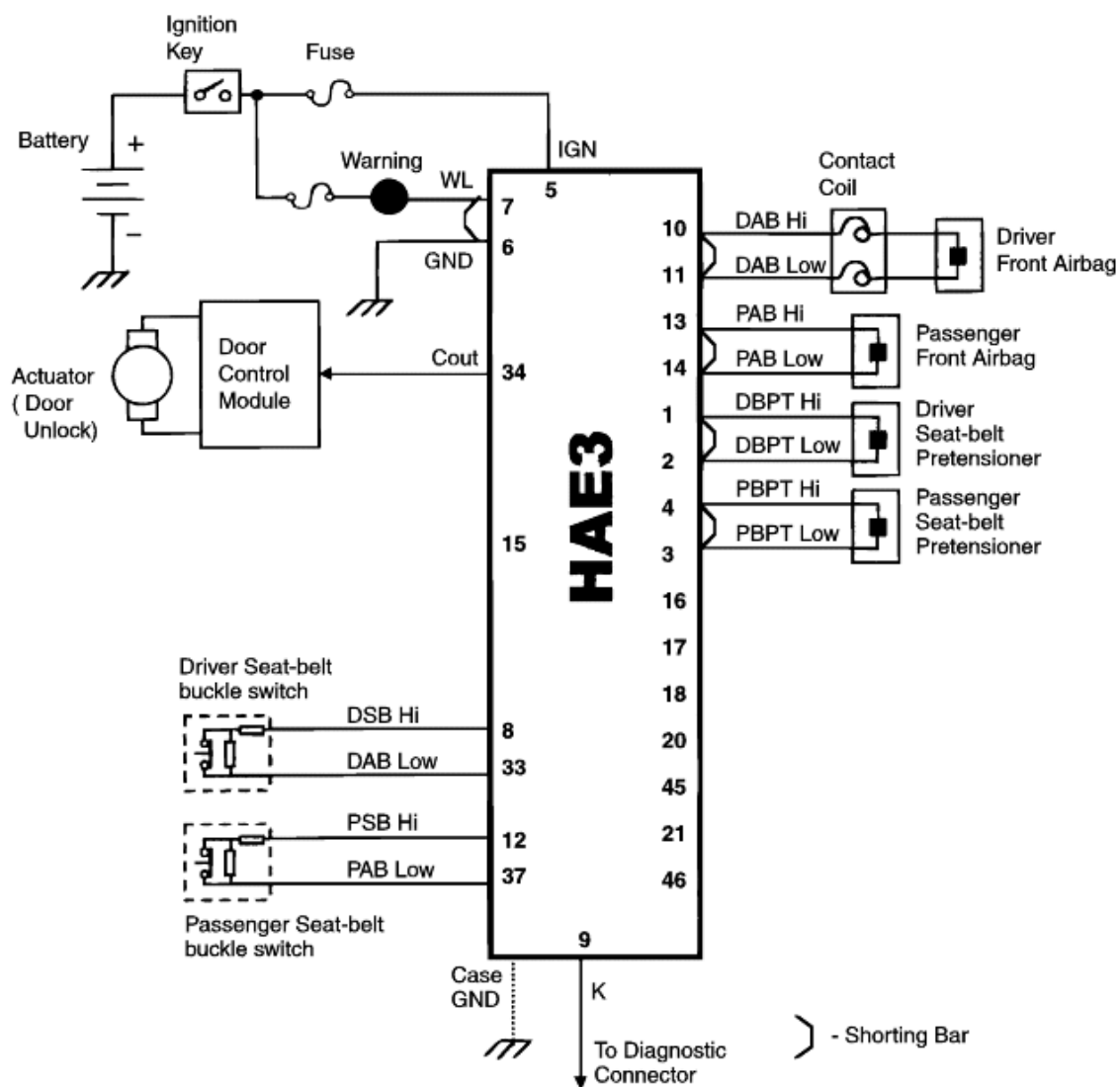
Restraint

Supplemental Restraint System Control
Module



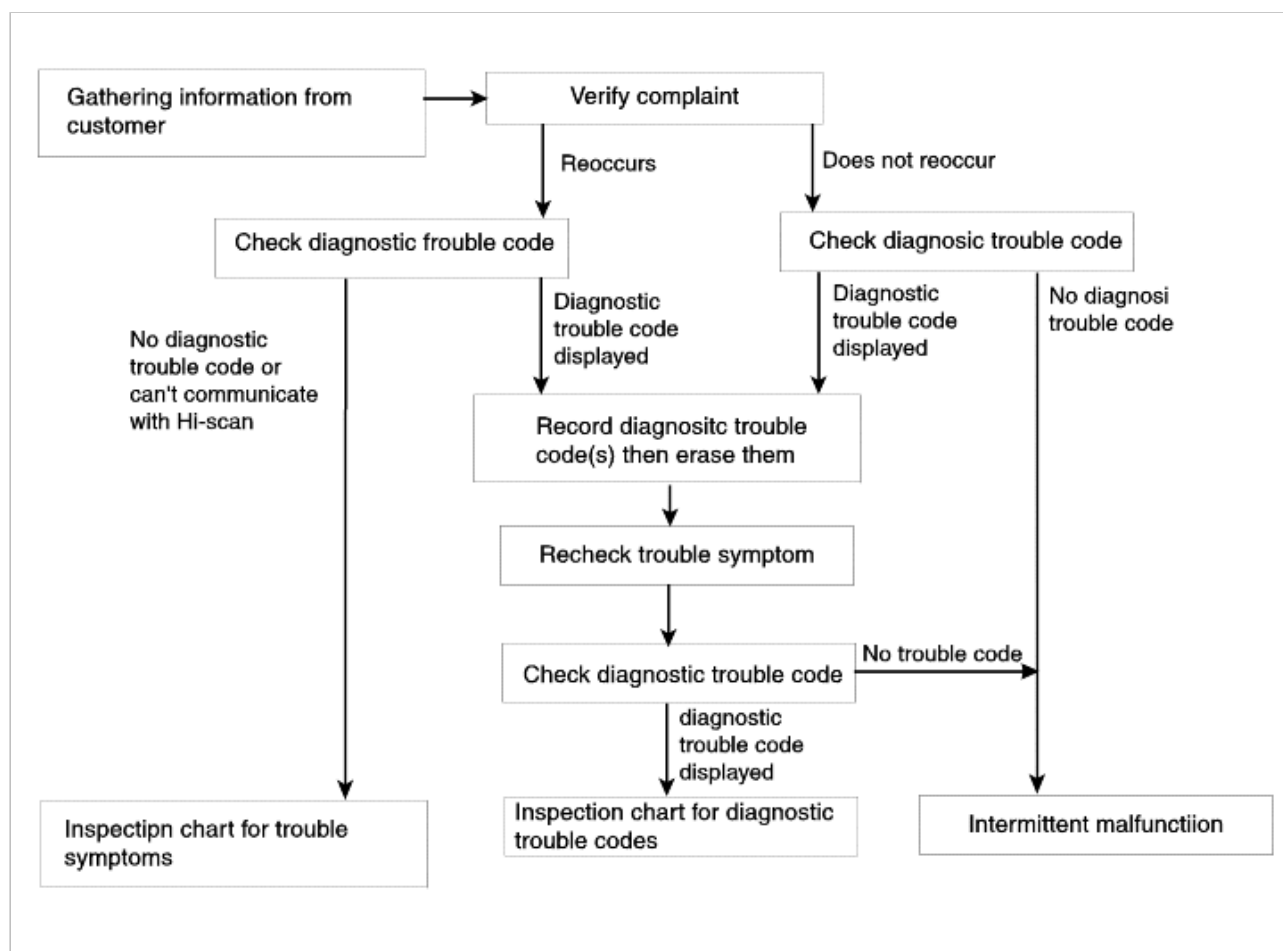
CIRCUIT DIAGRAM

HAE-3





DIAGNOSTIC TROUBLESHOOTING FLOW



SPECIFICATION

Items \ Squibs	DAB	PAB	BPT
Resistance	$2\ \Omega \pm 0.3\ \Omega$		$2.15\ \Omega \pm 0.35\ \Omega$
No-fire current	0.36 A for 10 sec	0.25 A for 10 sec	200mA for 10 sec
All-fire current	1.2 A for 3 msec	1.2A for 2 msec	800mA for 2 ms
Cyclic test current	100mA continous		40mA continous

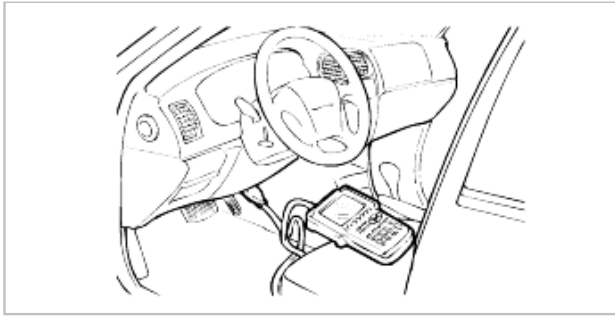
WARNING

- Never attempt to measure the circuit resistance of the airbag module (squib) even if you are using the specified tester. If the circuit resistance is measured with a tester, accidental airbag deployment will result in serious personal injury.

DIAGNOSIS WITH HI-SCAN

CHECK PROCEDURES

1. Connect the Hi-scan DLC to the vehicle data link connector located underneath the dash panel.



2. Turn the ignition key to "ON" position and turn on Hi-scan.
3. Perform the SRS diagnosis according to the vehicle model configuration.
4. If a fault code is retrieved, then replace the component. Never attempt to repair the component.
5. If the Hi-scan finds that a component of the system is faulty, there is a possibility that the fault is not in the components but in SRS wiring or connector.



INSPECTION CHART FOR DIAGNOSTIC TROUBLE CODE

DTC No.	Fault description
B1111	Battery voltage too high
B1112	Battery voltage too low
B1346	DAB resistance too high or open
B1347	DAB resistance too low or short
B1348	DAB short to GND
B1349	DAB short to battery
B1352	PAB resistance too high or open
B1353	PAB resistance too low or short
B1354	PAB short to GND
B1355	PAB short to battery
B1361	Driver seat belt pretensioner resistance too high or open
B1362	Driver seat belt pretensioner resistance too low or short
B1363	Driver seat belt pretensioner short to GND
B1364	Driver seat belt pretensioner short to battery
B1367	Passenger seat belt pretensioner resistance too high or open
B1368	Passenger seat belt pretensioner resistance too low or short
B1369	Passenger seat belt pretensioner short to GND
B1370	Passenger seat belt pretensioner short to battery
B1661	ECU mismatching
B1511	Driver seat belt buckle switch short to battery or open
B1512	Driver seat belt buckle switch short to GND or short
B1513	Passenger seat belt buckle switch short to battery or open
B1514	Passenger seat belt buckle switch short to GND or short
B1650	Crash recorded front airbag
B1655	Crash recorded side airbag
B1657	Ignition recorded belt pretensioner
B2500	Warning lamp failure
B1620	Internal fault



SRSCM CONNECTOR (SRE-HMC)

CONNECTOR PINOUT

25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
											•	•	•	•	•	•	•	•	•	•	•	•	•	•
50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26

 : Shorting bar

PIN DESCRIPTION

Pin #	Description	In/Out
1	Belt pretensioner high (Driver side)	O
2	Belt pretensioner low (Driver side)	O
3	Belt pretensioner low (Passenger side)	O
4	Belt pretensioner high (Passenger side)	O
5	Battery supply	I
6	GND	I
7	Warning lamp	O
8	Seat-belt buckle switch high (Driver side)	O
9	K-diagnostic line	I,O
10	Front airbag high (Driver side)	O
11	Front airbag low (Driver side)	O
12	Seat-belt buckle switch high (Passenger side)	O
13	Front airbag high (Passenger side)	O
14	Front airbag low (Passenger side)	O
16	Not used	-
17	Not used	-
18	Not used	-
19	Not used	-
20	Not used	-
21	Not used	-
22-25	Not used	-
26-29	Shorting bar	-
30	Battery voltage output for seat-belt buckle switch	O
31-32	Shorting bar	-
33	Seat-belt buckle switch low (Driver side)	I
34	Crash output	O

35-36	Shorting bar	-
37	Seat-belt buckle switch low (Passenger side)	I
38-39	Shorting bar	-
40	Not used	-
41-44	Shorting bar	-
45	Not used	-
46	Not used	-
47-50	Not used	-



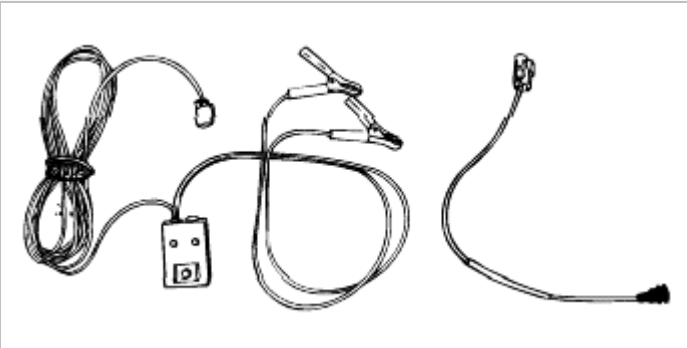
FIELD DEPLOYMENT PROCEDURES

CAUTION

When handling the deployed airbag, be careful not to let the by-product dust enter to eye and always wear gloves to avoid direct contact the by-product material.

Airbag module disposal procedures

Airbag remote deployment devices

Tool, Number, Name	Use
Deployment tool (0957A-34100-A) SRS DEPLOYMENT ADAPTER HARNESS DAB : 0957A-38000 PAB : 0957A-34200	o Deployment inside the vehicle (when vehicle will not longer be driven)
	

DISPOSAL PLAN

Case		Disposal plan
Abnormal problems in airbag module		Return to KMC
Car scrapping	DAB, PAB, BPT	Deploy the airbag module in the scrapper yard with SST
Crash (Deployed)		Service station disposes the airbag module

UNDEPLOYED AIRBAG MODULE DISPOSAL

CAUTION

- If the vehicle is to be scrapped, junked, or otherwise disposed of, deploy the airbag inside the vehicle.
- Since there is a loud noise when the airbag is deployed, avoid residential areas whenever possible. If anyone is nearby, give warning of the impending noise.
- Since a large amount of smoke is produced when the airbag is deployed, select a well-ventilated site. Moreover, never attempt the test near a fire or smoke sensor.

DEPLOYMENT INSIDE THE VEHICLE

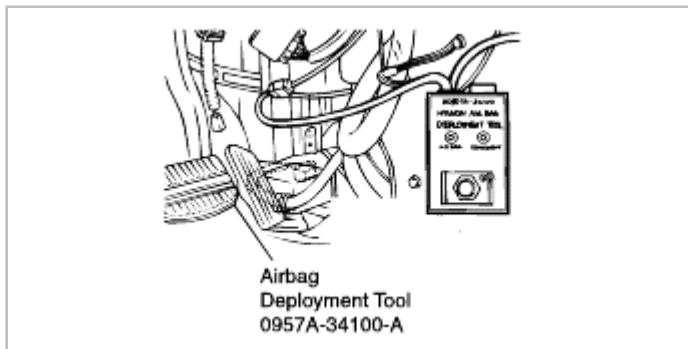
WHEN VEHICLE WILL NO LONGER BE DIRVEN

1. Open all windows and doors of the vehicle. Move the vehicle to an isolated spot.

2. Disconnect the negative (-) and positive (+) battery cables from the battery terminals, and then remove the battery from the vehicle.

CAUTION

Wait at least 30 seconds after disconnecting the battery cable before doing any further work.



3. Remove the center crash pad side cover.
4. Disconnect airbag SRSCM connector.
5. Connect deployment tool to the connector of each module.
6. At location as far away from the vehicle as possible, press the push button (removed from the vehicle) to deploy the airbag.

WARNING

- Before deploying the airbag in this manner, first check to be sure that there is no one in or near the vehicle. Wear safety glasses.
- The inflator will be quite hot immediately following the deployment, so wait at least 30 minutes to allow it to cool before attempting to handle it.
Although not poisonous, do not inhale gas from airbag deployment.
See Deployed Airbag Module Disposal Procedures for post-deployment handling instructions.
- If the airbag fails to deploy when the procedures above are followed, do not go near the module. Contact your local distributor.

ALL VISUAL IDENTIFICATION

WARNING

- Failure to follow all warnings, cautions, notices and procedures could result in personal injury or death.
- Surface of a deployed airbag may contain small amounts of sodium hydroxide(NaOH). Prevent contact of airbag module with liquids, combustibles, and flammable materials. Immediately wash hands and exposed skin areas with mild soap and water. Flush eyes with water if exposed to by products. Failure to following these instructions could result in chemical burns and personal injury.
- A live(undeployed) airbag module may accidentally deploy during handling. When carrying a live airbag module, point trim cover away from your body to lessen chance of injury in case of accidental deployment. Never carry module by its wiring or connectors.
- Always place live airbag modules face up to lessen motion of module in case of accidental deployment. Keep area clear of parts, tools, and debris.
- Never place items on or above trim cover of a live airbag module. In case of accidental deployment, such items may cause serious injury or death.
- Damaged airbag modules should be stored away from all acids, halogens, heavy metals, and metal salts. Damaged units may produce hydrozoic acid if exposed to liquids. If an undeployed airbag

module or inflator is ruptured or tampered with, refer to particular module's msds(Material Safety Data Sheet) for important information concerning constituents of undeployed modules. Exposure to high concentrations of airbag propellant mixture can cause headaches, nausea, blurred vision, faintness, cyanosis, lowering of blood pressure or tachycardia. Failure to comply with this warning can result in fire, noxious fumes, severe personal injury, or death.

- Air bag module components are very hot after deployment. Units should be deployed outdoors or in an open area to prevent fires. Allow components at least twenty minutes to thoroughly cool. Cooling modules should be continuously monitored to ensure hot components do not create fires with spilled liquids or other debris. Failure to allow unit to cool could result in burns, fires or personal injury.
- Always wear rubber gloves and safety glasses when handling a deployed airbag module.

CAUTION

Storage, transportation, disposal and recycling of airbag module and components must be performed in accordance with all applicable state and local regulations including, but not limited to, environmental protection, occupational health and safety, and transportation.

Failure to follow the following procedures could result in personal injury or death.

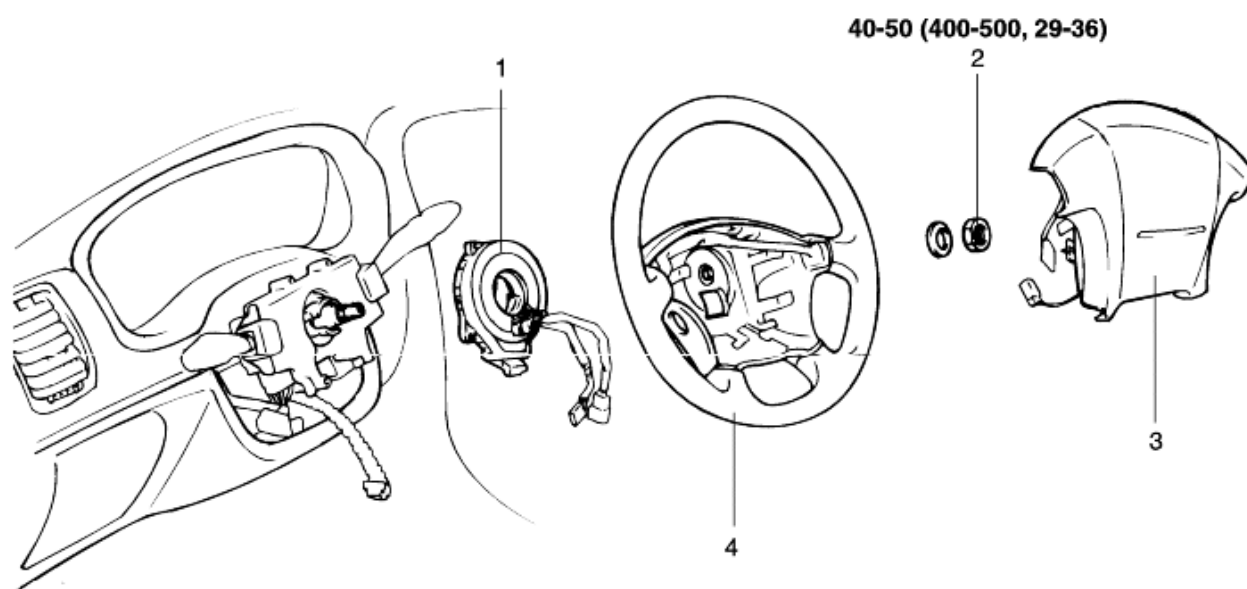


Restraint

Airbag Module - Driver Airbag (DAB) Module
and Clock Spring



CLOCK SPRING

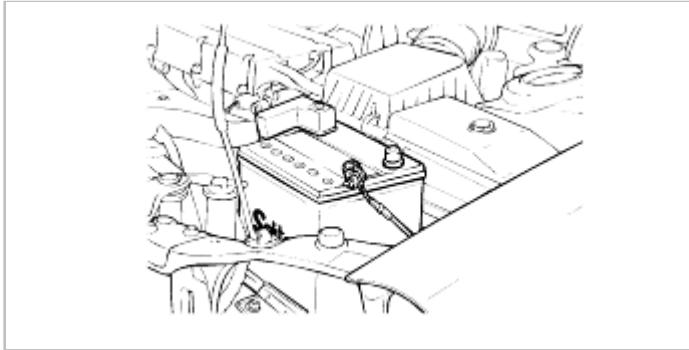
COMPONENTS**TORQUE : N·m (kg·cm, lb·ft)**

1. Clock spring
2. Steering wheel lock nut
3. DAB module
4. Steering wheel



Removal

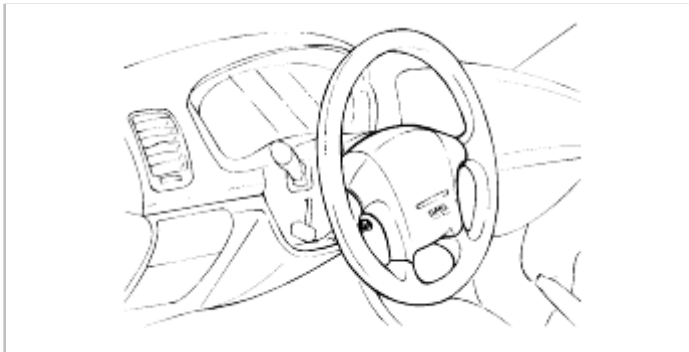
1. Disconnect the negative battery cable and keep it secured away from the battery.



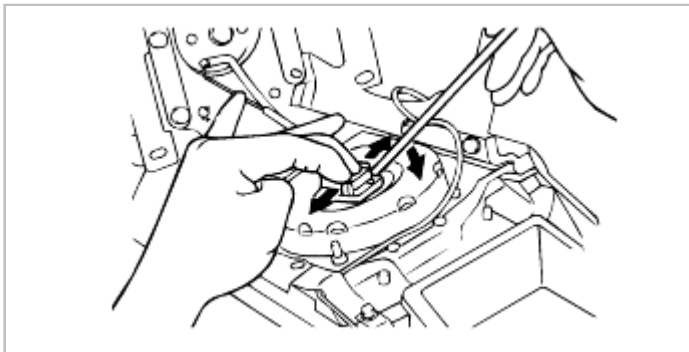
WARNING

Wait at least 30 seconds after disconnecting the battery cable before doing any further work to prevent inadvertent deployment of the airbags.

2. When disconnecting the clock spring connector from the airbag module, pull the locking device on the connector outward and spread it open.



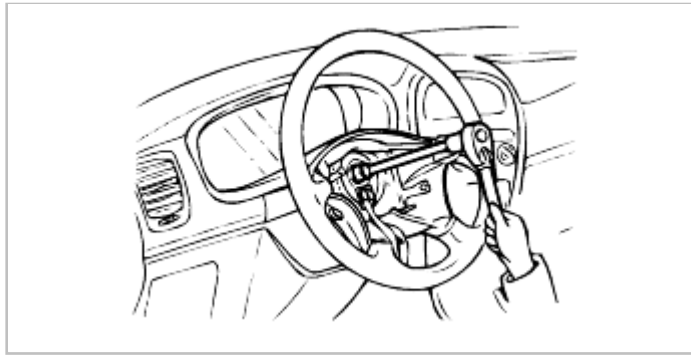
3. When disconnecting the connector of the clock spring from the airbag module, pull the airbag's lock toward the outer side to spread it open.



CAUTION

- When disconnecting the airbag module-clock spring connector, take care not to apply excessive force to it.
- The removed airbag module should be stored in a clean, dry place with the pad cover face up.

4. Remove the steering wheel.



WARNING

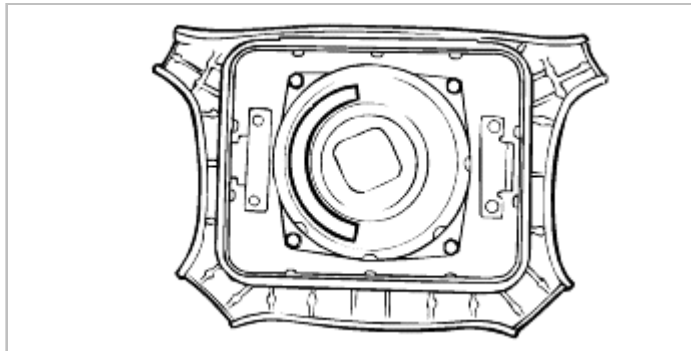
Do not hammer on the steering wheel. Doing so may damage the collapsible column mechanism, thus reducing the protection to the driver in a frontal crash.

INSPECTION(AIRBAG MODULE)

WARNING

Never attempt to measure the circuit resistance of the airbag module (squib) even if you are using the specified tester. If the circuit resistance is measured with a tester, accidental airbag deployment will result in serious personal injury.

1. Check pad cover for dents, cracks or deformities.
2. Check the airbag module for denting, cracking or deformation.
3. Check hooks and connectors for damage, terminals for deformities, and harness for binds.
4. Check airbag inflator case for dents, cracks or deformities.

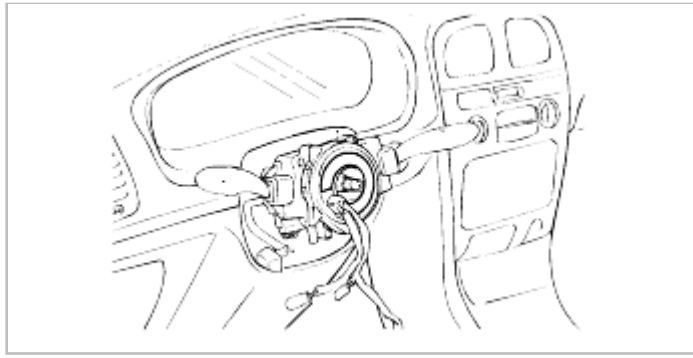


5. Install the airbag module to steering wheel to check fit or align with the wheel.



INSPECTION(CLOCK SPRING)

1. Check connectors and yellow protective tube for damage, and terminals for deformities.





Restraint

Airbag Module - Passenger Airbag (PAB)
Module



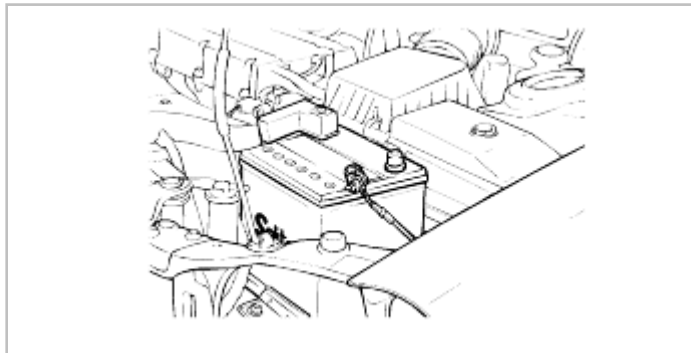
REASSEMBLY

REMOVAL

WARNING

- Never attempt to disassemble or repair the airbag module.
- Do not drop the airbag module or allow contact with water, grease or oil. Replace it if a dent, crack, deformation or rust are detected.
- The airbag module should be stored on a flat surface and placed so that the pad surface is facing upward. Do not place anything on top of it.
- Do not expose the airbag module to temperature over 93°C (200°F)
- An undeployed airbag module should only be disposed of in accordance with the procedures contained in this manual.
- Never attempt to measure the circuit resistance of the airbag module (squib) even if you are using the specified tester. If the circuit resistance is measured with a tester, accidental airbag deployment will result in serious personal injury.
- Whenever the PAB is deployed, it should be replaced with a new PAB assembled with an extension wire. When the PAB deploys, the squib melts making the extension wire on the deployed airbag module useless.

1. Disconnect the battery negative (-) terminal cable.



WARNING

Wait at least 30 seconds in order to prevent inadvertent airbag deployment.

2. Remove the glove box.
3. Disconnect the PAB module connector.
4. Remove the crash pad assy and then do the PAB module.