

Chapter 8 Air Bag System

Maintenance and use of air bag

Diagnose

Inspection of SRS diagnostic system

When the SRS is powered on, airbag SDM will turn on warning light and start a self-checking, during which the warning light will flash for 6 seconds with a frequency of 1Hz. Any fault detected by SDM will activate airbag warning light, and the fault will be stored to SDM memory. SDM will check SRS fault each time it is powered on. A fault will be marked by SDM if it is detected consecutively for five times. A fault diagnosis testing cycle lasts for 400 ms, therefore it takes SDM 2 seconds (400ms X 5 times) to confirm a fault. If a marked fault continues, the warning light will keep on, this is called a “current fault”. If a marked fault does not appear in the following 25 consecutive testing cycle (400ms X 25 = 10 seconds), it will be unmarked, this is called a “historical fault”.

Diagnose with Diagnostic tester

Diagnostic tester reads data in SDM memory for continuous data communication. A diagnostic tester is able to read fault code in memory and clear part of stored data after maintenance, but is unable to clear internal faults such as collision record and arithmetic data fault.

To properly operate the diagnostic tester, first turn off ignition switch, and connect diagnostic tester with OBDII connector, then turn on ignition switch. Next steps please refer to instruction manual of diagnostic tester.

Maintenance and Service of SRS System

Warning:

In case engine is stopped and fuse is taken off, the SDM will provides sufficient voltage for 1 minute to activate airbag. If airbag is still connected, do not start maintenance operation within one minute after power supply to SDM is switched off. If airbag is disconnected, the maintenance may be started right away without waiting for 1 minute to be discharged. Any failure in temporary disconnection of SRS during maintenance will result in mistrigger of airbag, personal injuries and critical SRS damages.

Malfunction code	Fault signature	Alarm lamp
01	Resistance of ignition circuit for driver air bag is too high	A
02	Resistance of ignition circuit for driver air bag is too low	A
03	Ignition circuit for driver air bag is short circuit with earth	A
04	Ignition circuit for driver air bag is short circuit with battery	A
05	Resistance of ignition circuit for passenger air bag is too high	A
06	Resistance of ignition circuit for passenger air bag is too low	A
07	Ignition circuit for passenger air bag is short circuit with earth	A
08	Ignition circuit for passenger air bag is short circuit with battery	A
17	The connection between air bag ignition circuit for driver and passenger	A
23	Voltage of ignition input circuit is too high	B
24	Voltage of ignition input circuit is too low	B
25	Warning alarm lamp has malfunction	A
31	Inside of SDM has malfunction	C
32	SDM has bump record	D

Disconnecting Airbag

1. Turn steering wheel to central position
2. Turn ignition switch to locked position and take out the key
3. Take out airbag fuse from fuse box and wait for at least 1 minute to discharge SDM capacitor



Connecting Airbag

1. Insert airbag fuse into fuse box
2. Turn ignition switch to on position, airbag indicator light will be turned on for 6 seconds and then goes out. If the indicator light does not work in accordance with the foregoing, please refer to “Check with SRS Diagnostic System” part of this manual.

Warning: Keep away from airbag when turning on ignition switch to avoid personal injuries.

Operation, Installation and Diagnosis

- Airbag shall not be placed in ambient temperatures higher than 65° C (149° F)
- After falling from a height of 0.9 meter (3 feet) or higher, the airbag and SDM shall not be used again.
- When replacing SDM, the arrow on SDM shall always point to forward direction of vehicle.
- SDM must be installed horizontally on the installing surface, and must be parallel to vehicle body coordinate axes.
- To avoid diagnostic fault code, do not supply power to airbag before all system components are properly connected. Or the airbag shall be powered in accordance with special requirements of diagnostic tester if any.
- Any SRS system diagnosis must be started with SRS diagnostic system. SRS diagnostic system inspection will check for correct indicating functions and select correct method to diagnose any SRS fault. Omission of this step may result in longer diagnostic hours or inaccurate part replacement.

Repair and Check after Accident

Warning: any repair of vehicle structure shall resume the original shape. For triggered airbag, SDM and airbag shall be replaced with measurement of steering post dimension.

- Any damaged SRS part or mount point must be replaced.
- Never use SRS parts from other vehicles (except new SRS parts from the vehicle of the same model).
- Do not try to repair hairspring, airbag and safety belts. Should any defect be found, these parts must be replaced.

Check replaced SRS part number or marks. Airbag gas generator with the same look may have a different internal structure.

Replacing Airbag Parts after Activation in Accident

All SRS parts must be replaced after airbag is activated in a collision accident. Powder-like residue may be found on airbag surface after activation, which may include cereal starch and products of chemical reaction (used to lubricate airbag when inflating).

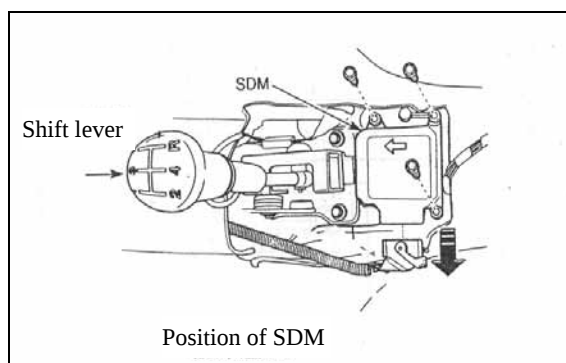
- SDM
- Air bag module
- SRS harness
- Hairspring

Checking Airbag Parts after Inactivation in Accident

The airbag must be checked after any collision accident, whether it is activated or not.

- Steering post must be measured for dimensions.
- Check dashboard and steering post cover for crack and other damages.
- Check dashboard support for deformation, bend, crack or other damages.
- Check safety belts and their fixing points.

Sensor and diagnostic module (SDM)



Warning: Operate SDM with care when maintaining. Never knock or shake SDM. Do not connect SRS circuit before SDM is fixed onto vehicle. All SDM mounting bolts must be tightened with care. Always make the arrow on SDM point toward forward direction of the vehicle to ensure normal working of SRS. SDM may still work if powered before installation onto vehicle body, but potential mistrigger of airbag and injuries may be caused.

Precautions: SDM and SDM connector may need replacement in case water enters vehicle body due to leakage, passing through deepwater, flood or other reasons. Turn off ignition switch and check all SDM areas including carpet. If notable new or previous water soakage is found, clear the water and soaked parts and replace SDM and SDM connector. SRS must be shut down before above operation. Please refer to “Disconnecting Airbag” Part in this manual.

Disassembling Procedure

1. Disconnect SRS. Please refer to “Disconnecting Airbag” part of this manual;
2. Demount the left and right decorating plates of dashboard central control panel;
3. Loosen fuse lock of SDM wire harness connector;
4. Disconnect SDM wire harness connector;
5. Remove SDM fastening bolts;
6. Take off SDM.

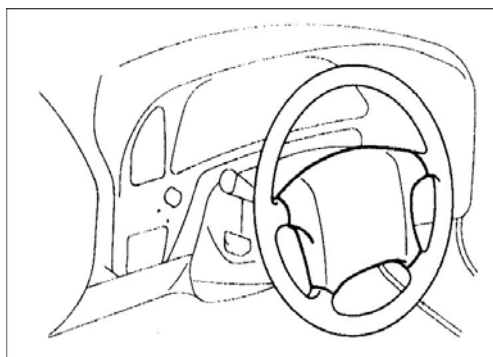
Assembling Procedure

1. Install SDM with arrow on SDM pointing forward direction of vehicle;
2. Fix SDM fastening bolts;

3. Tighten fastening bolts with torque of 8-12Nm.
4. Connect SDM wire harness connector;
5. Push connector fuse lock in position;
6. Fix the left and right decorating plates of dashboard central control panel;
7. Power on SRS. Please refer to “Connecting Airbag” part of this manual.

Warning: All SDM mounting bolts must be tightened with care. Always make the arrow on SDM point toward forward direction of the vehicle to ensure normal working of SRS. SDM may still work if powered before installation onto vehicle body, but potential mistrigger of airbag and injuries may be caused.

Air bag module of driver side



Disassembling Procedure

1. Disconnecting Battery Cathode (-)

Warning: In case engine is stopped and fuse is taken off, the SDM will provides sufficient voltage for 1 minute to activate airbag. If airbag is still connected, do not start maintenance operation within one minute after power supply to SDM is switched off. If airbag is disconnected, the maintenance may be started right away without waiting for 1 minute to be discharged. Any failure in temporary disconnection of SRS during maintenance will result in mistrigger of airbag, personal injuries and critical SRS damages.

2. Centering Steering Wheel

Warning: Keep the module with the right side up when operating airbag to ensure sufficient room for mistriggered airbag. The airbag may fly toward persons or objects in case of insufficient spreading room and cause personal injuries or vehicle damages.

3. Remove two airbag screws on steering wheel;
4. Disconnect airbag from horn and airbag wire harness connector;
5. Take off the airbag.

Assembling Procedure

Warning: Keep the module with the right side up when operating airbag to ensure sufficient room for mistriggered airbag. The airbag may fly toward persons or objects in

case of insufficient spreading room and cause personal injuries or vehicle damages.

1. Connect horn and airbag wire harness connector to airbag socket;
2. Install airbag module;
3. Fix airbag module screws
4. Tighten airbag screws with a tightening torque of 13-17Nm;
5. Connect battery cathode (-).

Hairspring

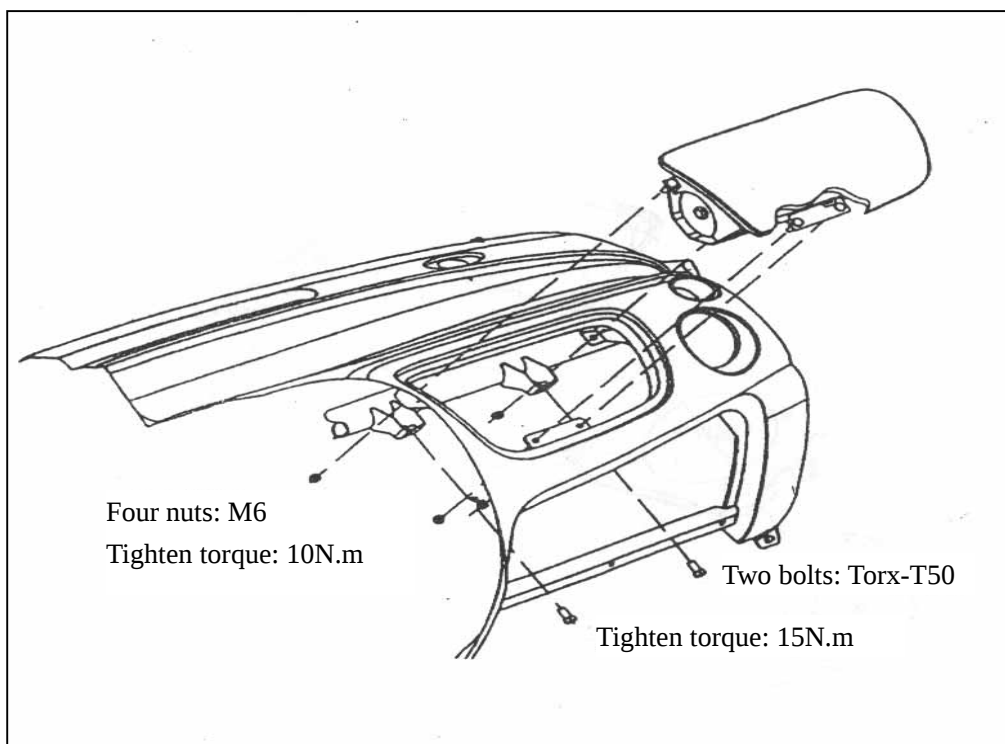


Assembling Procedure

Warning: if the hairspring does not locate exactly, steering wheel will can not rotate completely when turning. Restriction of turning ability may cause accident of vehicle, incorrect hairspring location also can restrain SRS to work, make air bag dose not work when a bump accident happened. The two instances above both can induce injury. Turning steering wheel clockwise or counterclockwise for more than 3 cycles will damage hairspring.

1. Adjust front wheel to just frontage
2. Install hairspring and spiral thread
3. Tighten the hairspring spiral thread by the tighten torque 3N.m
4. Rotate the hairspring overhang part clockwise to lock position
5. Rotate the hairspring overhang part three cycles counterclockwise to middle position, then the front wheel should at the just frontage position
6. Locate the mark on the hairspring correctly
7. Connect harness connector to the bottom of the steering column
8. Install steering wheel
9. Install driver side air bag module according to “driver side air bag module” part in the manual
10. Connect battery negative electrode (—)

Passenger side air bag module



Disassembling Procedure

Warning: In case engine is stopped and fuse is taken off, the SDM will provides sufficient voltage for 1 minute to activate airbag. If airbag is still connected, do not start maintenance operation within one minute after power supply to SDM is switched off. If airbag is disconnected, the maintenance may be started right away without waiting for 1 minute to be discharged. Any failure in temporary disconnection of SRS during maintenance will result in mistrigger of airbag, personal injuries and critical SRS damages.

1. **Disconnecting Battery Cathode (-)**
2. Remove glove box
3. Disconnect air bag yellow harness connector on passenger side
4. Remove the bolts on the instrument and on instrument panel inside cross member, then take out the air bag

Assembling Procedure

1. Install passenger side air bag module
2. Install tighten bolt of air bag module
3. Tighten the bolt on the instrument panel inside cross member by the tighten torque 18--26N.m, tighten the bolt on instrument panel by the tighten torque 5--11N.m
4. Connect air bag yellow harness connector on passenger side
5. Install glove box
6. Connect battery negative electrode (—)

Activating Airbag (inside vehicle)



Always activate an airbag before it is scrapped. If the whole vehicle is disposed of and disassembled, the airbag may be triggered inside the vehicle.

Disposal of Activated Airbag

Warning: Please take following precautions to avoid activation of airbag inside vehicle and consequential injuries.

- Remove all movable or loose parts within spreading coverage of airbag before activating airbag.
- Activate and spread the airbag with doors closed and side windows open.
- Spread the airbag only in the reserved spreading area. All necessary maintenance staff must stay at least 10 meters away from the vehicle in the front.
- Never apply voltage before all preparations are done.
- Cool the airbag down for at least 30 minutes before disposal of an activated airbag.
- Always wear gloves and eye shield during disposal.
- In case activation of airbag fails, disconnect power and wait for at least five minutes before approaching vehicle again.

Activating Procedure

Warning: In case engine is stopped and fuse is taken off, the SDM will provides sufficient voltage for 1 minute to activate airbag. If airbag is still connected, do not start maintenance operation within one minute after power supply to SDM is switched off. If airbag is disconnected, the maintenance may be started right away without waiting for 1 minute to be discharged. Any failure in temporary disconnection of SRS during maintenance will result in mistrigger of airbag, personal injuries and critical SRS damages.

1. Disconnect both poles of battery and take it 10 meters away from vehicle
2. Demount dashboard lower plate at the driver's side from steering post
3. Disconnect the two SRS wire harnesses with clock spring under steering post
4. Strip off 13mm of insulation sheath from the end of the wire harnesses connecting clock spring
5. Connect airbag with the battery activating airbag with two extra wire harnesses (10 meters each)
6. Strip off 13mm of insulation sheath from the end of the extra wire harnesses
7. Twist the exposed end of each extra wire harness together
8. Place the twisted end beside the activating battery without connection
9. Connect respectively the untwisted ends with wire harnesses of airbag
10. Wrap the joints with insulating tape
11. One end of each extra wire harness shall be connected with one of the two airbags wire harnesses, and the other ends of two extra wire harnesses shall be twisted together and laid beside the activating battery of airbag. Clear the site
12. Untwist the twisted ends beside the battery
13. Connect one end to battery cathode and the other to anode, the airbag will be activated.
14. Trigger air bag of passenger side by the same steps.
15. Dispose of the activated airbag in proper procedure with reference to “Disposal of



Activated Airbag”.

Activating Airbag (outside vehicle)

For vehicles within warranty period, before activating airbag, please contact regional maintenance manager for approval or other specifications.

Please activate the airbag under following circumstances:

- Vehicle is to be disassembled. Please refer to “Spreading Airbag” part of this manual;
- Airbag is damaged during transportation, storage or maintenance.

Warning: to avoid personal injuries, please take the following precautions when activating airbag outside vehicle.

- Spread the airbag only in the reserved spreading area. All necessary maintenance staff must stay at least 10 meters away from the vehicle in the front;
- Never apply voltage before all preparations are done;
- Cool the airbag down for at least 30 minutes before disposal of an activated airbag;
- Always wear gloves and eye shield during disposal;
- In case activation of airbag fails, disconnect power and wait for at least five minutes before approaching vehicle again;
 1. Lay the airbag on an open place at least 10 meters away from persons or barriers with the front side upward;
 2. Place a vehicle battery at a place 10 meters away from the airbag;
 3. Activate and spread airbag.
 4. In case of absence of spreading tools, please take following steps:
 5. Disconnect the yellow wire harness connecting to airbag;
 6. Strip off 13mm of insulation sheath from the end of the wire harness connecting to airbag;
 7. Connect airbag with the battery activating airbag with two extra wire harnesses (10 meters each);
 8. Strip off 13mm of insulation sheath from the end of the extra wire harnesses;
 9. Twist the exposed end of each extra wire harness together;
 10. Place the twisted end beside the activating battery without connection;
 11. Connect respectively the untwisted ends with wire harnesses of airbag;
 12. Wrap the joints with insulating tape;
 13. One end of each extra wire harness shall be connected with one of the two airbags wire harnesses, and the other ends of two extra wire harnesses shall be twisted together and laid beside the activating battery of airbag. Clear the site;
 14. Untwist the twisted ends beside the battery;
 15. Connect one end to battery cathode and the other to anode, the airbag will be activated;
 16. Dispose of the activated airbag in proper procedure with reference to “Disposal of Activated Airbag”.

Disposal of Activated Airbag

Warning: Please take following precautions to avoid activation of airbag inside vehicle and

consequential injuries.

Remove all movable or loose parts within spreading coverage of airbag before activating airbag.

Activate and spread the airbag with doors closed and side windows open.

Spread the airbag only in the reserved spreading area. All necessary maintenance staff must stay at least 10 meters away from the vehicle in the front.

Never apply voltage before all preparations are done.

Cool the airbag down for at least 30 minutes before disposal of an activated airbag.

Always wear gloves and eye shield during disposal.

In case activation of airbag fails, disconnect power and wait for at least five minutes before approaching vehicle again.

Activating Airbag before Disposal

This specification includes vehicles to be disposed of. For vehicles within warranty period, please contact regional maintenance manager for approval or other specifications before activation. Except for the following additional steps, activated airbags shall be disposed of with the same method with other disassembled parts.

1. Place the activated airbag in a firm plastic bag;
2. Make sure the plastic bag is sealed;
3. Carefully wash hands after disposal of activated airbag.

Maintenance of SRS Wire Harness

Maintenance of harness connector

Warning: SRS must be shut down before any maintenance. Please refer to “Disconnecting Airbag” part of this manual.

Plug inside SRS is made of special material to ensure the favorable conductivity of low energy circuit, and once damaged the whole airbag wire harness assembly must be replaced. Do not replace the connector plug with any other plugs.

Maintenance of harness

Don't try to maintain SRS system harness. Please use new harness to replace all the damaged harness.

Attached air bag system diagram:

