

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

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CAUTION

- Carefully read and observe the information in the SERVICE PRECAUTIONS (P.52B-3.) prior to any service.
- For information concerning troubleshooting or maintenance, always observe the procedures in the Troubleshooting (P.52B-6.) section.
- If any SRS components are removed or replaced in connection with any service procedures, be sure to follow the procedures in the INDIVIDUAL COMPONENT SERVICE section (P.52B-22.) for the components involved.
- If you have any questions about the SRS, please contact your local distributor.

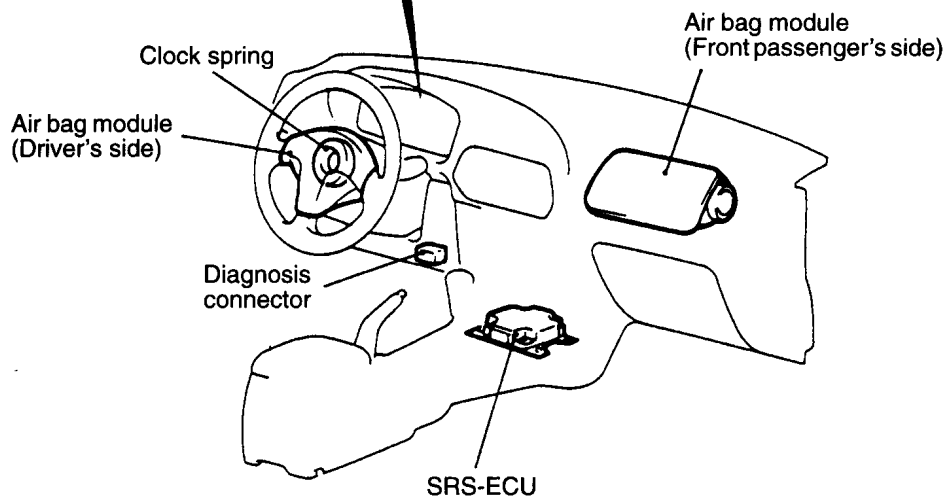
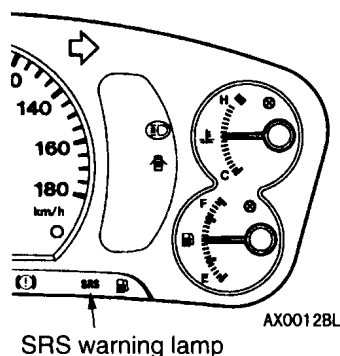
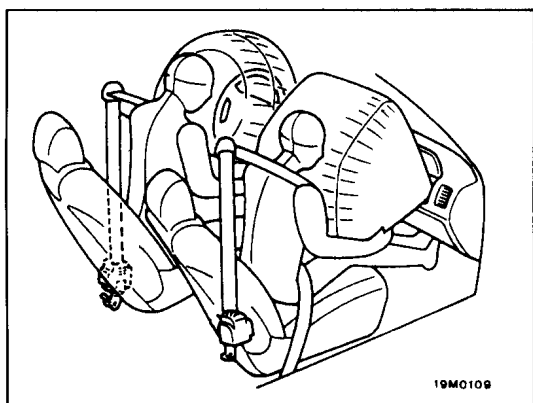
GENERAL INFORMATION

To improve safety, the SRS is available as optional part.

The SRS consists of two air bag modules, SRS air bag control unit (SRS-ECU), SRS warning lamp and clock spring. One air bag is located in the centre of the steering wheel and another above the glove box. Each air bag has a folded air bag and an inflator unit. The control unit under the floor console monitors the system and has a safing G sensor and an analog G sensor. The warning lamp on the instrument panel indicates the operational

status of the SRS. The clock spring is installed in the steering column.

Only authorized service personnel should do work on or around the SRS components. Those service personnel should read this manual carefully before starting any such work. Extreme care must be used when servicing the SRS to avoid injury to the service personnel (by inadvertent deployment of the air bags) or the driver (by rendering the SRS inoperative).

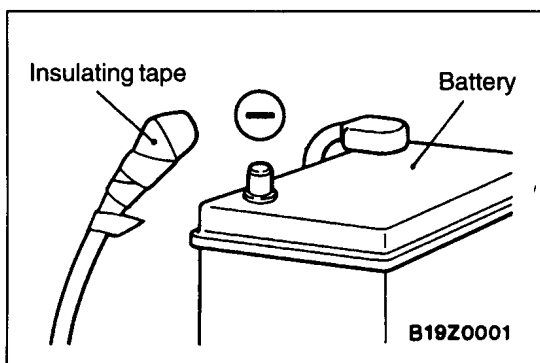


SRS SERVICE PRECAUTIONS

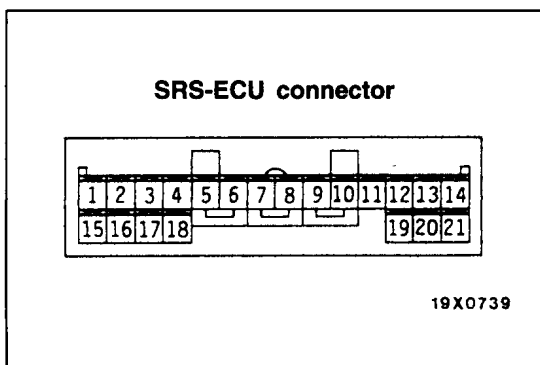
1. In order to avoid injury to yourself or others from accidental deployment of the air bag during servicing, read and carefully follow all the precautions and procedures described in this manual.
2. Do not use any electrical test equipment on or near SRS components, except those specified on P.52B-5.
3. **Never Attempt to Repair the Following Components:**
 - SRS air bag control unit (SRS-ECU)
 - Clock Spring
 - Air Bag Module
(Driver's side or front passenger's side*)

NOTE

*: Vehicles with front passenger's air bag
If any of these components are diagnosed as faulty, they should only be replaced, in accordance with the INDIVIDUAL COMPONENT SERVICE procedures in this manual, starting at page 52B-22.



4. After disconnecting the battery cable, wait 60 seconds or more before proceeding with the following work. The SRS system is designed to retain enough voltage to deploy the air bag for a short time even after the battery has been disconnected, so serious injury may result from unintended air bag deployment if work is done on the SRS system immediately after the battery cables are disconnected.



5. Do not attempt to repair the wiring harness connectors of the SRS. If any of the connectors are diagnosed as faulty, replace the wiring harness. If the wires are diagnosed as faulty, replace or repair the wiring harness according to the following table.

SRS-ECU terminal No.	Harness connector (No. of terminals, colour)	Destination of harness	Corrective action
1 to 4	21 pins, yellow	–	–
5		Body wiring harness → Clock spring → Air bag module (Driver's side)	Correct or replace each wiring harness. Replace clock spring.
6			
7*		Body wiring harness → Air bag module (Front passenger's side)	Correct or replace each wiring harness.
8*			
9,10		–	–
11		Body wiring harness → Diagnosis connector	Correct or replace each wiring harness.
12		–	–
13		Body wiring harness → Junction block (fuse No.2)	Correct or replace each wiring harness.
14		Body wiring harness → Junction block (fuse No.4)	
15		Body wiring harness → SRS warning lamp	
16 to 19		–	–
20		Body wiring harness → Earth	Correct or replace each wiring harness.
21		–	–

NOTE

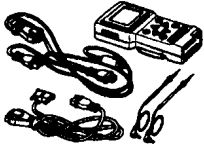
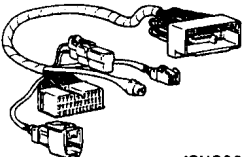
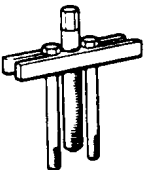
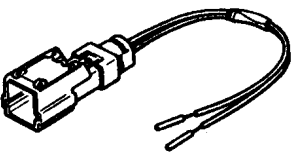
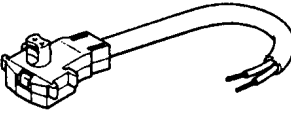
*: Vehicles with front passenger's air bag

- SRS components should not be subjected to heat over 93°C, so remove the SRS-ECU, air bag module and clock spring before drying or baking the vehicle after painting.
- Whenever you finish servicing the SRS, check warning lamp operation to make sure that the system functions properly. (Refer to P.52B-14.)
- Make certain that the ignition switch is LOCK (OFF) position when the MUT-II is connected or disconnected.
- If you have any questions about the SRS, please contact your local distributor.

NOTE

SERIOUS INJURY CAN RESULT FROM UNINTENDED AIR BAG DEPLOYMENT, SO USE ONLY THE PROCEDURES AND EQUIPMENT SPECIFIED IN THIS MANUAL.

SPECIAL TOOLS

Tool	Number	Name	Use
	MB991502	MUT-II sub assembly	• Reading diagnosis codes • Erasing diagnosis code • Reading trouble period • Reading erase times
 19U0039	MB991613	SRS check harness	Checking the SRS electrical circuitry
	MB990803	Steering wheel puller	Steering wheel removal
	MB686560	SRS air bag adapter harness A	• Deployment of air bag modules and seat belt with pre-tensioner inside the vehicle • Deployment of air bag module (front passenger's side) outside the vehicle
	MR203491 or MB628919	SRS air bag adapter harness B	Deployment of air bag module (driver's side) outside the vehicle

TEST EQUIPMENT

Tool	Name	Use
 13R0748	Digital multi-meter	Checking the SRS electrical circuitry Use a multi-meter for which the maximum test current is 2 mA or less at the minimum range of resistance measurement

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

DIAGNOSIS CODES CHECK

Connect the MUT-II to the diagnosis connector (16-pin) under the instrument under cover, then check diagnosis codes.

(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

INSPECTION CHART FOR DIAGNOSIS CODES

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis item	Reference page
14	Analog G-sensor system in the SRS-ECU	52B-7
15,16	Safing G-sensor system in the SRS-ECU	52B-7
21, 22, 61, 62	Driver's side air bag module (squib) system	52B-8
24, 25, 64, 65	Front passenger's side air bag module (squib) system	52B-9
31, 32	SRS-ECU capacitor system	52B-9
34*	Connector lock system	52B-10
35	SRS-ECU (deployed air bag) system	52B-10
41*	IG ₁ (A) power circuit system	52B-10
42*	IG ₁ (B) power circuit system	52B-11
43	SRS warning lamp drive circuit system	Lamp does not illuminate.*
		Lamp does not switch off.
44	SRS warning lamp drive circuit system	52B-12
45	SRS-ECU non-volatile memory (EEPROM) and A/D converter system	52B-13
51, 52	Driver's side air bag module (squib ignition drive circuit) system	52B-13
54, 55	Front passenger's side air bag module (squib ignition drive circuit) system	52B-13

NOTE

- (1) *: If the vehicle condition returns to normal, the diagnosis code will be automatically erased, and the SRS warning lamp will return to normal.
- (2) If the vehicle has a discharged battery it will store the fault codes 41 or 42. When these diagnosis codes are displayed, check the battery.

INSPECTION PROCEDURE CLASSIFIED BY DIAGNOSIS CODE

Code No.14 Analog G-sensor system in the SRS-ECU	Probable cause
The SRS-ECU monitors the output of the analog G-sensor inside the SRS-ECU. It outputs this code when any of the following are detected. • When the analog G-sensor is not operating • When the characteristics of the analog G-sensor are abnormal • When the output from the analog G-sensor is abnormal	• Malfunction of SRS-ECU

Replace the SRS-ECU.

Code No.15, 16 Safing G-sensor system in the SRS-ECU	Probable cause
This code is output if there is a short or open circuit between the terminals of the safing G-sensor inside the SRS-ECU. The trouble causes for each diagnosis code No. are as follows.	• Malfunction of SRS-ECU

Code No.	Trouble symptom
15	Short circuit in the safing G-sensor
16	Open circuit in the safing G-sensor

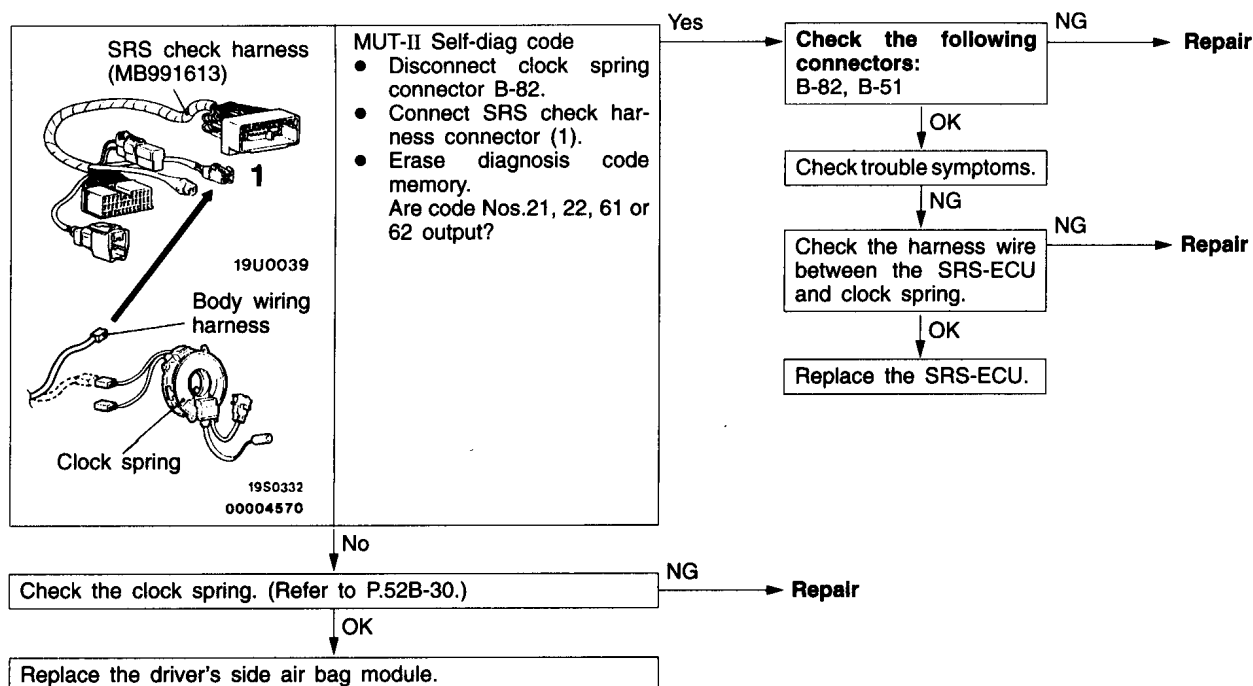
Replace the SRS-ECU.

Code No.21, 22, 61 or 62 Driver's side air bag module (squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the driver's side air bag module (squib). The trouble causes for each diagnosis code No. are as follows.	• Malfunction of clock spring • Partial disconnection due to incorrect clock spring neutral position • Malfunction of wiring harnesses or connectors • Malfunction of driver's side air bag module (squib) • Malfunction of SRS-ECU

Code No.	Trouble symptom
21	• Short in driver's side air bag module (squib) or harness short • Short in clock spring • Malfunction of connector*
22	• Open circuit in driver's side air bag module (squib) or open harness • Open circuit in clock spring • Malfunction of connector contact
61	• Short in driver's side air bag module (squib) harness leading to the power supply
62	• Short in driver's side air bag module (squib) harness leading to the earth

NOTE

*: The connector in the squib circuit has a built-in short bar which short-circuits between plus (+) lead and minus (-) lead of the squib circuit when the connector is not being connected to prevent an accidental air bag deployment possibly caused by static electricity, etc. Therefore, malfunction of the connector can also be caused by this short bar which fails to be released even when the connector is reconnected if it is damaged.

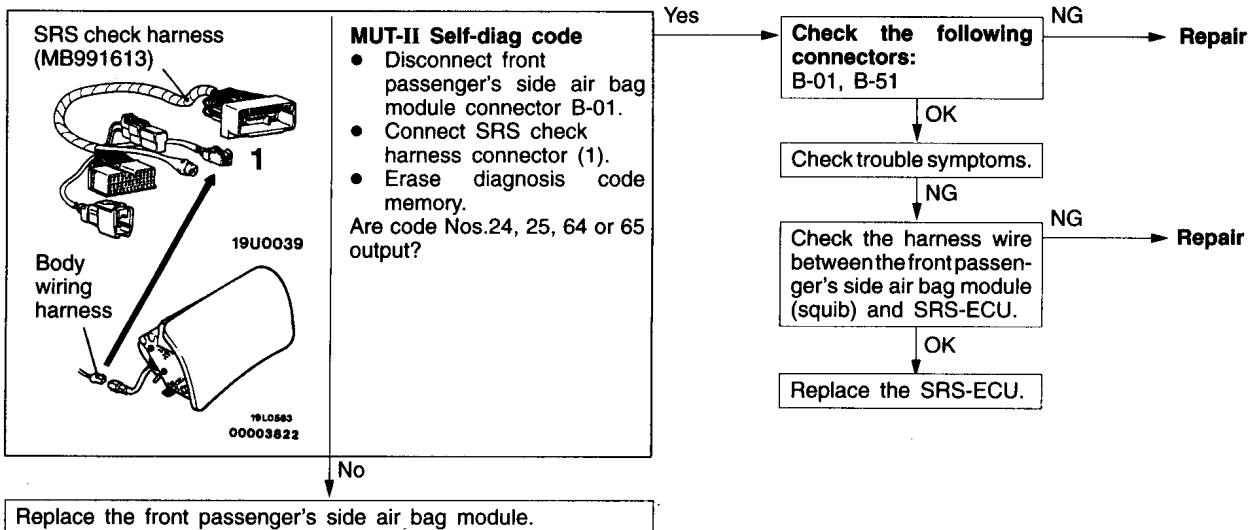


Code No.24, 25, 64 or 65 Front passenger's side air bag module (squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the driver's side air bag module (squib). The trouble causes for each diagnosis code No. are as follows.	• Malfunction of wiring harnesses or connectors • Malfunction of front passenger's side air bag module (squib) • Malfunction of SRS-ECU

Code No.	Trouble symptom
24	• Short in front passenger's side air bag module (squib) or harness short • Malfunction of connector*
25	• Open circuit in front passenger's side air bag module (squib) or open harness • Malfunction of connector contact
64	• Short in front passenger's side air bag module (squib) harness leading to the power supply
65	• Short in front passenger's side air bag module (squib) harness leading to the earth

NOTE

*: The connector in the squib circuit has a built-in short bar which short-circuits between plus (+) lead and minus (-) lead of the squib circuit when the connector is not being connected to prevent an accidental air bag deployment possibly caused by static electricity, etc. Therefore, malfunction of the connector can also be caused by this short bar which fails to be released even when the connector is reconnected if it is damaged.

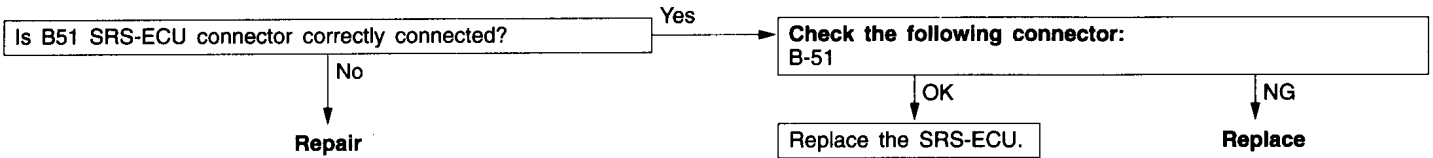


Code No.31 or 32 SRS-ECU capacitor system	Probable cause
Probable cause These diagnosis codes are output if there is abnormal resistance between the input terminals of the driver's side air bag module (squib).	• Malfunction of SRS-ECU

Code No.	Trouble symptom
31	• Voltage at the capacitor terminal is higher than the specified value for five seconds or more
32	• Voltage at the capacitor terminal is lower than the specified value for five seconds or more (this is not detected if diagnosis code No.41 or 42 indicating system voltage drop has been output.)

Replace the SRS-ECU.

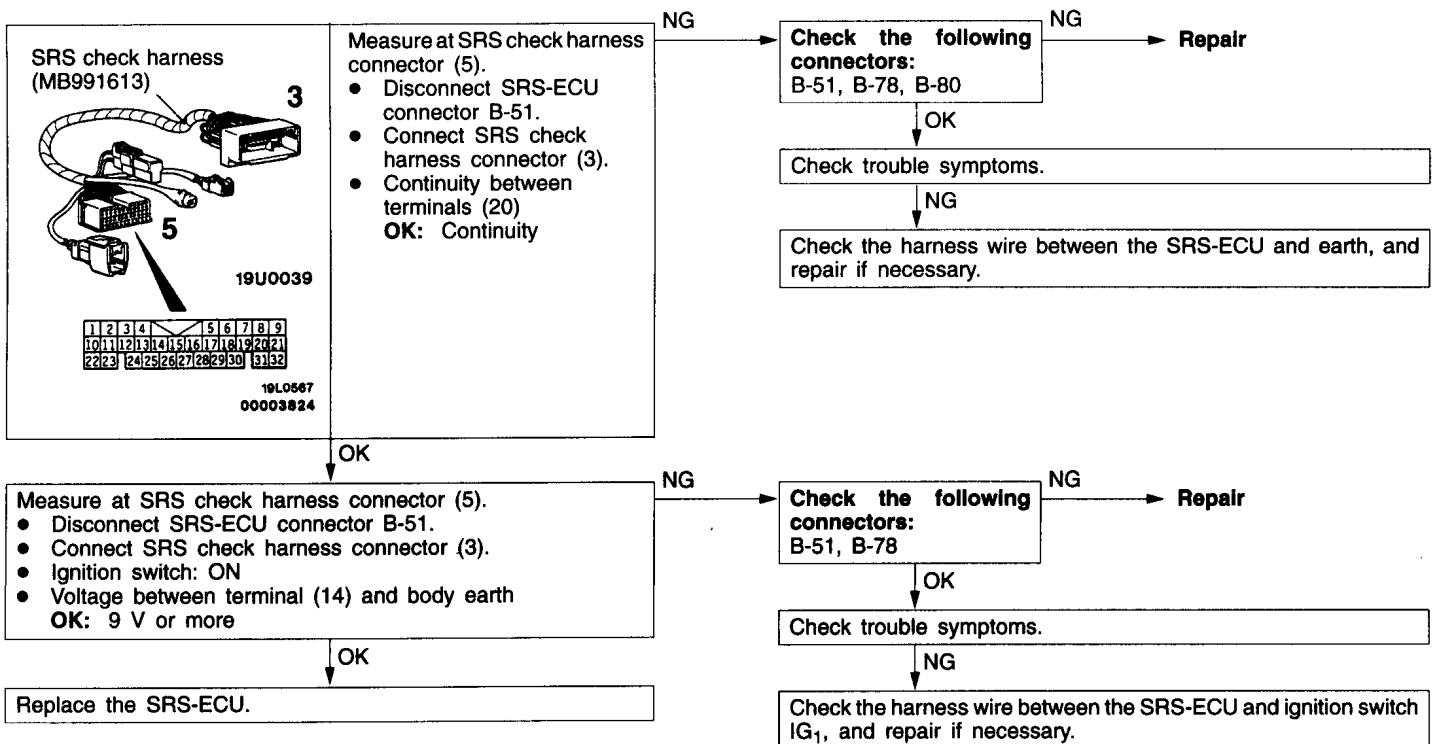
Code No.34 Connector lock system	Probable cause
This diagnosis code is output if a poor connection of the SRS-ECU is detected. However, if the vehicle condition returns to normal, diagnosis code No.34 will be automatically erased, and the SRS warning lamp will switch off.	• Malfunction of connectors • Malfunction of SRS-ECU



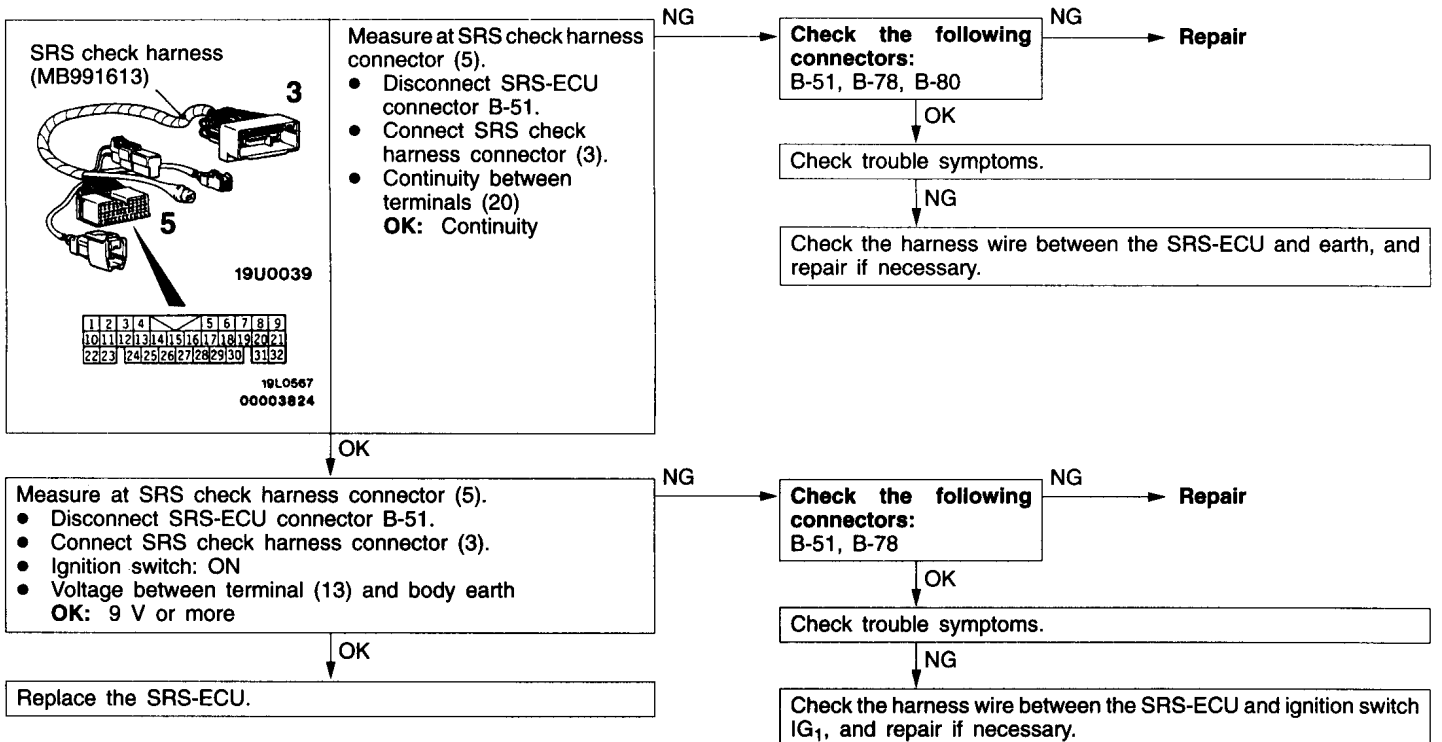
Code No.35 SRS-ECU (deployed air bag) system	Probable cause
This diagnosis code is output after the air bag deploys. If this code is output before the air bag has deployed, the cause is probably a malfunction inside the SRS-ECU.	• Malfunction of SRS-ECU

Replace the SRS-ECU.

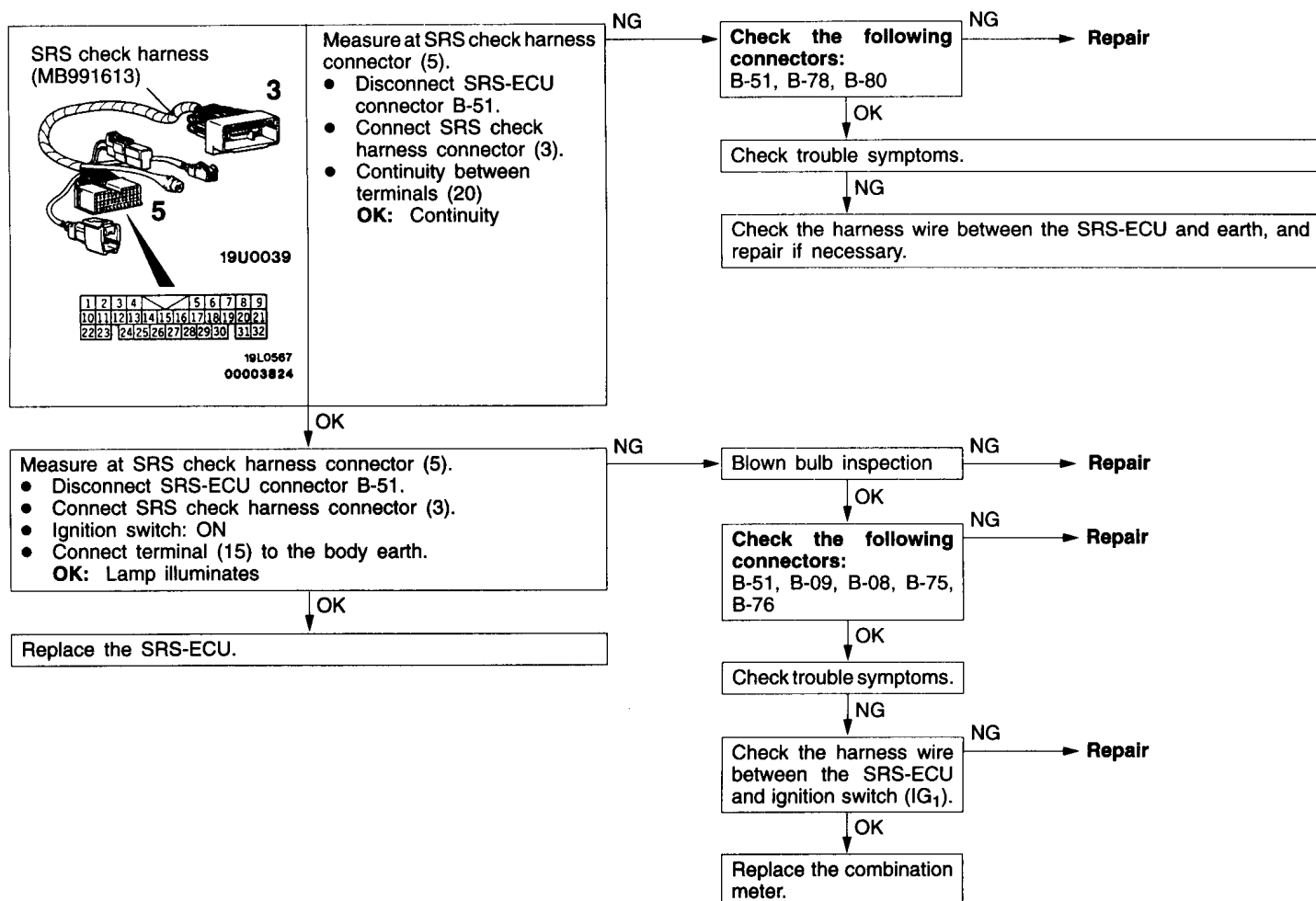
Code No.41 IG ₁ (A) power circuit system	Probable cause
This diagnosis code is output if the voltage between the IG ₁ (A) terminal and the earth is lower than the specified value for a continuous period of 5 seconds or more. However, if the vehicle condition returns to normal, diagnosis code No.41 will be automatically erased, and the SRS warning lamp will switch off.	• Malfunction of wiring harnesses or connectors • Malfunction of SRS-ECU



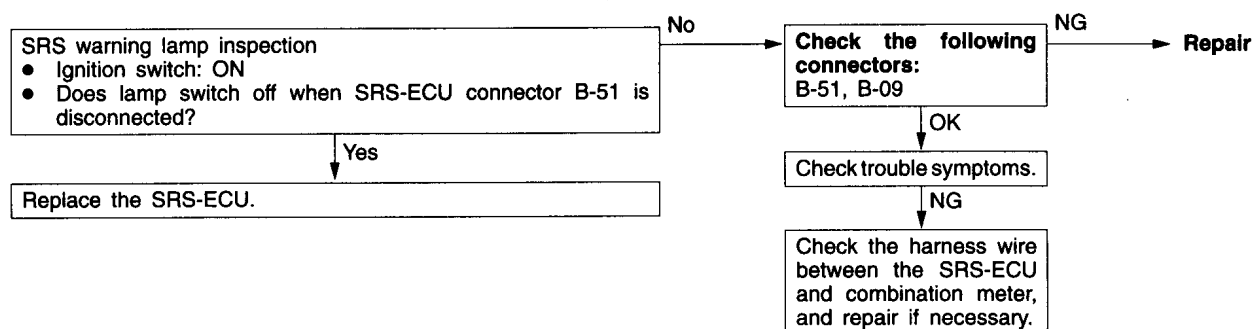
Code No.42 IG ₁ (B) power circuit system	Probable cause
This diagnosis code is output if the voltage between the IG ₁ (B) terminal and the earth is lower than the specified value for a continuous period of 5 seconds or more. However, if the vehicle condition returns to normal, diagnosis code No.42 will be automatically erased, and the SRS warning lamp will switch off.	Malfunction of wiring harnesses or connectors



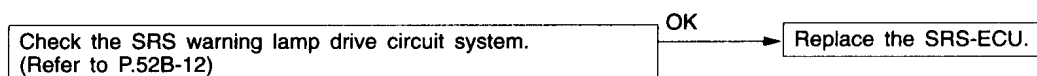
Code No.43 SRS warning lamp drive circuit system (Lamp does not illuminate.)	Probable cause
This diagnosis code is output when an open circuit occurs for a continuous period of 5 seconds while the SRS-ECU is monitoring the SRS warning lamp and the lamp is OFF (transistor OFF). However, if this code is output due to an open circuit, if the vehicle condition returns to normal, this diagnosis code No.43 will be automatically erased, and the SRS warning lamp will return to normal.	• Malfunction of wiring harnesses or connectors • Blown bulb • Malfunction of SRS-ECU • Malfunction of combination meter



Code No.43 SRS warning lamp drive circuit system (Lamp does not switch off.)	Probable cause
This diagnosis code is output when a short to earth occurs in the harness between the lamp and the SRS-ECU while SRS-ECU is monitoring the SRS warning lamp and the lamp is ON.	• Malfunction of wiring harnesses or connectors • Malfunction of SRS-ECU • Malfunction of combination meter



Code No.44 SRS warning lamp drive circuit system	Probable cause
This diagnosis code is output when a short occurs in the lamp drive circuit or a malfunction of the output transistor inside the SRS-ECU is detected while the SRS-ECU is monitoring the SRS warning lamp drive circuit.	• Malfunction of wiring harnesses or connectors • Malfunction of SRS-ECU



Code No.45 SRS-ECU non-volatile memory (EEPROM) and A/D converter system	Probable cause
This diagnosis code is output if there is a malfunction in the SRS-ECU non-volatile memory (EEPROM) and A/D converter.	• Malfunction of SRS-ECU

Code No.	Trouble symptom	
45	Non-volatile memory (EEPROM)	• Non-volatile memory (EEPROM) is abnormal.

Replace the SRS-ECU.

Code No.51 or 52 Driver's side air bag module (squib ignition drive circuit) system	Probable cause
This diagnosis code is output if a short (No.51) or an open circuit (No.52) is detected in the circuit for the driver's seat.	• Malfunction of SRS-ECU

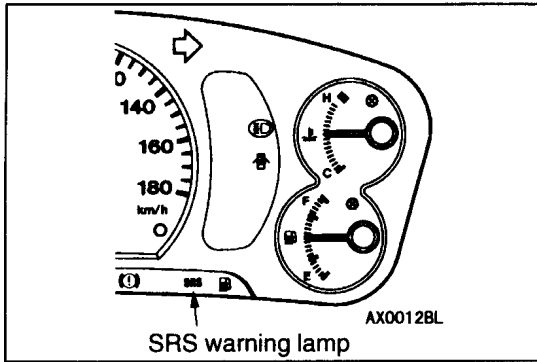
Code No.	Trouble symptom	
51	Driver's side air bag module (squib ignition drive circuit)	• Short circuit in the squib ignition drive circuit
52		• Open circuit in the squib ignition drive circuit

Replace the SRS-ECU.

Code No.54 or 55 Front passenger's side air bag module (squib ignition drive circuit) system	Probable cause
This diagnosis code is output if a short (No.54) or an open circuit (No.55) is detected in the circuit for the passenger's seat.	• Malfunction of SRS-ECU

Code No.	Trouble symptom	
54	Front passenger's side air bag module (squib ignition drive circuit)	• Short circuit in the squib ignition drive circuit
55		• Open circuit in the squib ignition drive circuit

Replace the SRS-ECU.



SRS WARNING LAMP INSPECTION

1. Check to be sure that the SRS warning lamp illuminates when the ignition switch is in the ON position.
2. Check to be sure that it illuminates for approximately 7 seconds and then switches off.
3. If the above is not the cause, inspect the diagnosis codes.

INSPECTION CHART FOR TROUBLE SYMPTOMS

Get an understanding of the trouble symptoms and check according to the inspection procedure chart.

Trouble symptom		Inspection procedure No.	Reference page
Communication with MUT-II is not possible.	Communication with all systems is not possible.	1	52B-14
	Communication is not possible with SRS only.	2	52B-15
When the ignition key is turned to "ON" (engine stopped), the SRS warning lamp does not illuminate.		Refer to diagnosis code No.43.	52B-12
After the ignition switch is turned to ON, the SRS warning lamp is still on after approximately 7 seconds have passed.		Refer to diagnosis code No.43.	52B-12

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

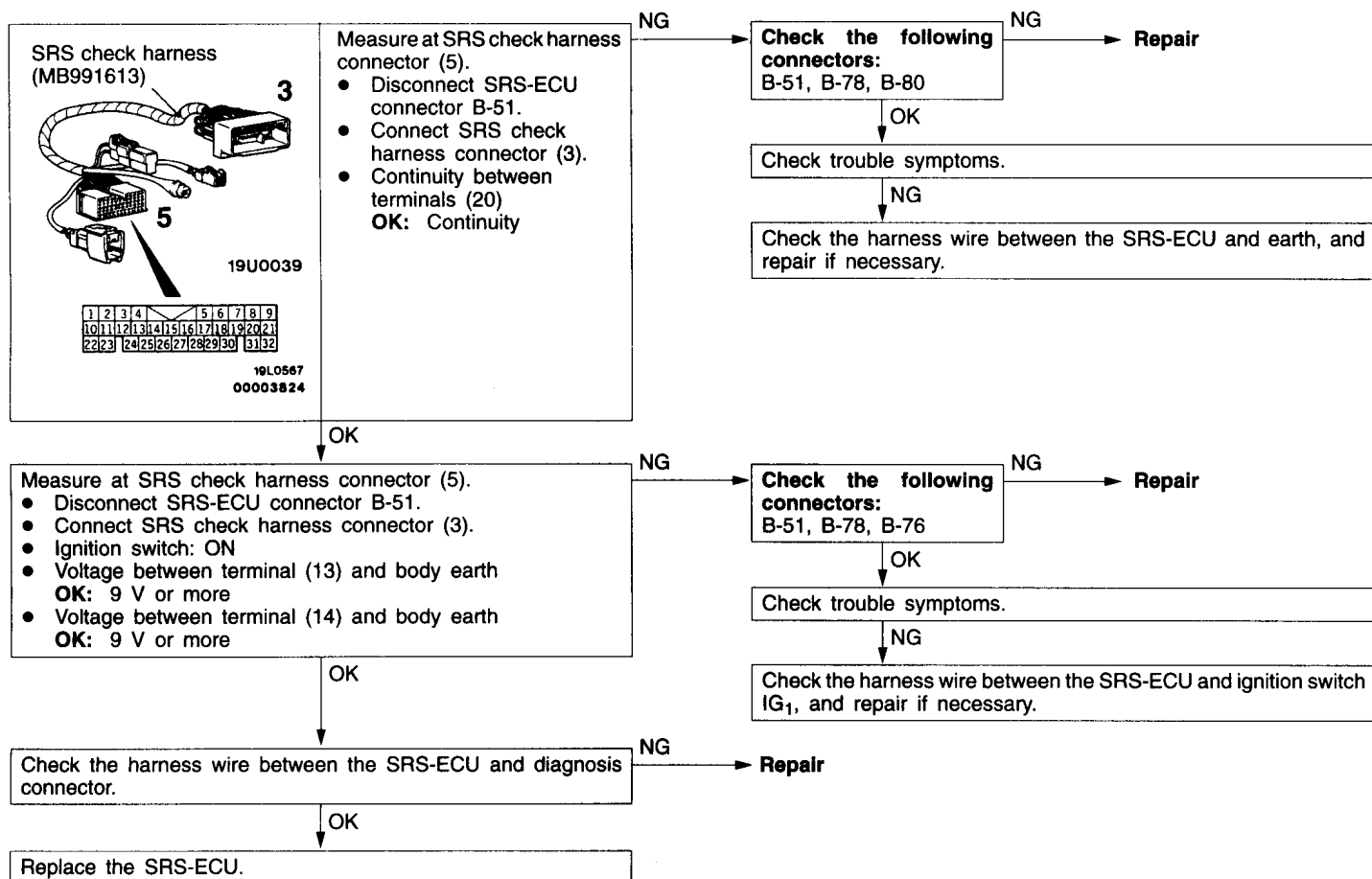
Inspection Procedure 1

Communication with MUT-II is not possible. (Communication with all systems is not possible.)	Probable cause
The cause is probably a power supply system (including earth circuit) of the diagnosis line.	• Malfunction of connectors • Malfunction of wiring harness

Refer to GROUP 13A – Troubleshooting.

Inspection Procedure 2

Communication with MUT-II is not possible. (Communication is not possible with SRS only.)	Probable cause
If communication is not possible with the SRS only, the cause is probably an open circuit in the diagnosis output circuit of the SRS or in the power circuit (including earth circuit).	• Malfunction of wiring harnesses or connectors • Malfunction of SRS-ECU

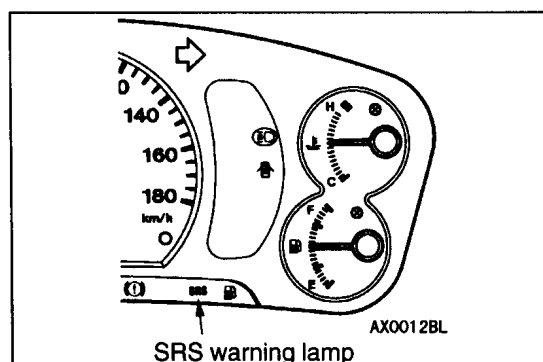


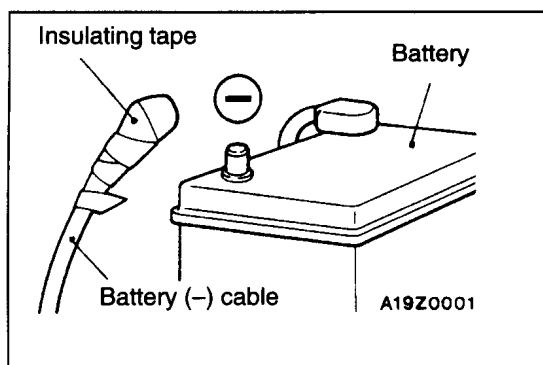
SRS MAINTENANCE

The SRS must be inspected by an authorized dealer 10 years after the date of vehicle registration.

SRS WARNING LAMP CHECK

Turn the ignition key to the "ON" position. Does the SRS warning lamp illuminate for about 7 seconds, turn off and then remain extinguished for at least 5 seconds? If yes, SRS system is functioning properly. If no, consult page 52B-6.



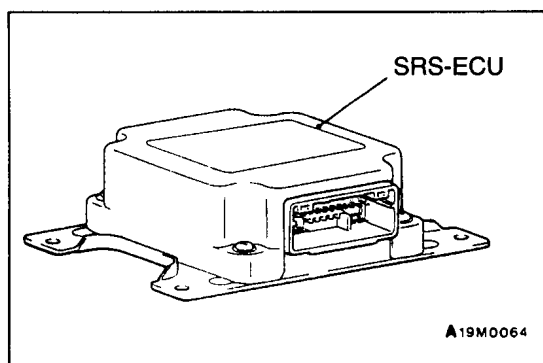


SRS COMPONENT VISUAL CHECK

Turn the ignition key to the LOCK (OFF) position, disconnect the negative battery cable and tape the terminal.

Caution

Wait at least 60 seconds after disconnecting the battery cable before doing any further work. (Refer to P.52B-3.)



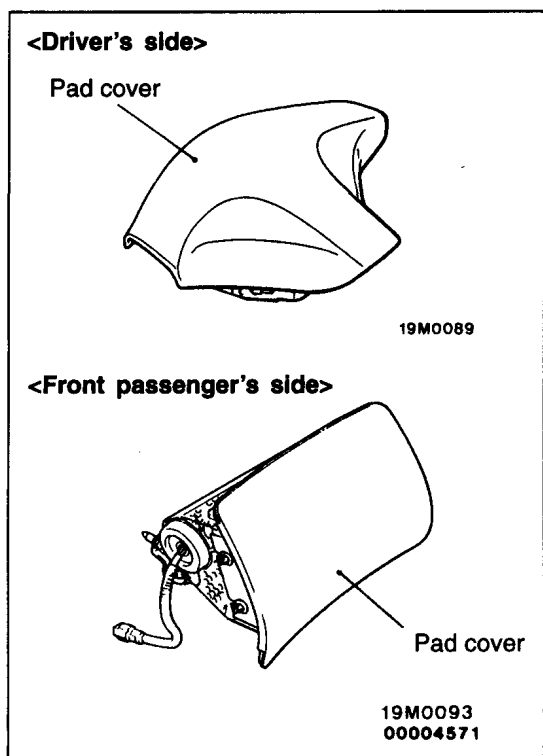
SRS CONTROL UNIT (SRS-ECU)

1. Check SRS-ECU case and brackets for dents, cracks, deformation or rust.

Caution

The SRS may not activate if the SRS-ECU is not installed properly, which could result in serious injury or death to the vehicle's driver or front passenger.

2. Check connector for damage, and terminals for deformation or rust.
Replace SRS-ECU if it fails visual check.
(Refer to P.52B-24.)



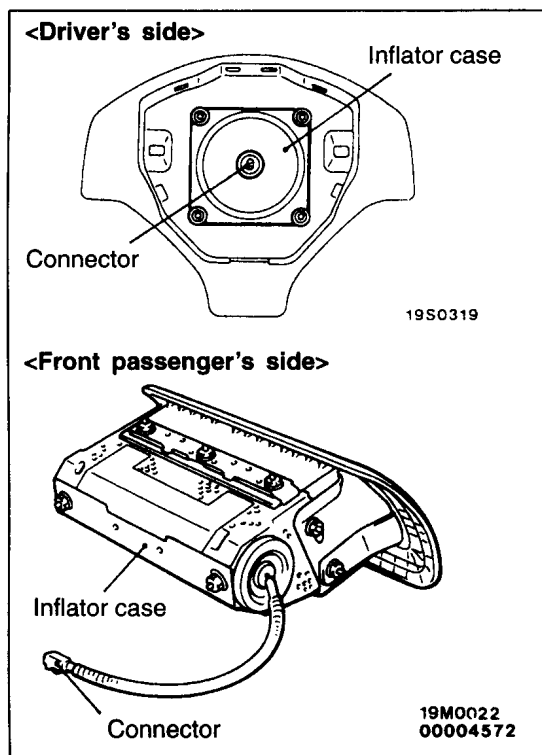
AIR BAG MODULES, STEERING WHEEL AND CLOCK SPRING

1. Remove the air bag modules, steering wheel and clock spring. (Refer to P.52B-25.)

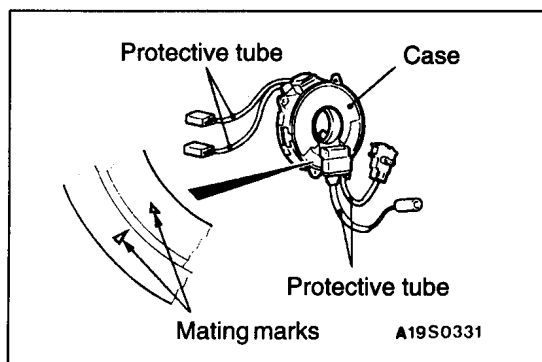
Caution

The removed air bag modules should be stored in a clean, dry place with the pad cover face up.

2. Check pad cover for dents, cracks or deformation.



3. Check connector for damage, terminals deformities, and harness for binds.
4. Check air bag inflator case for dents, cracks or deformities.
5. Check harness and connectors for damage, and terminals for deformation.



6. Check clock spring connectors and protective tube for damage, and terminals for deformation.
7. Visually check the clock spring case for damage.
8. Align the mating marks of the clock spring and, after turning the vehicle's front wheels to straight-ahead position, install the clock spring to the column switch.

Mating Mark Alignment

Turn the clock spring clockwise fully, and then turn back it approx. 3 4/5 turns counterclockwise to align the mating marks.

Caution

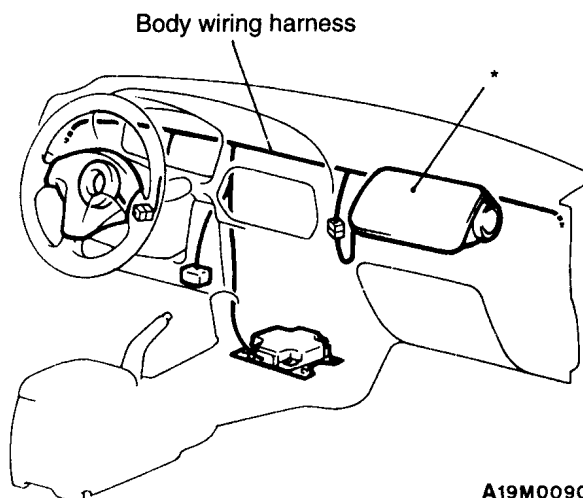
If the clock spring's mating mark is not properly aligned, the steering wheel may not be completely rotational during a turn, or the flat cable within the clock spring may be severed, obstructing normal operation of the SRS and possibly leading to serious injury to the vehicle's driver or front passenger.

9. Install the steering column covers, steering wheel and the air bag module.
 10. Check steering wheel for noise, binds or difficult operation.
 11. Check steering wheel for excessive free play.
- REPLACE ANY VISUALLY INSPECTED PART IF IT FAILS THAT INSPECTION. (Refer to P.52B-25.)

Caution

The SRS may not activate if any of the above components is not installed properly, which could result in serious injury or death to the vehicle's driver or front passenger.

BODY WIRING HARNESS



A19M0090

NOTE

*: Vehicles with front passenger's air bag

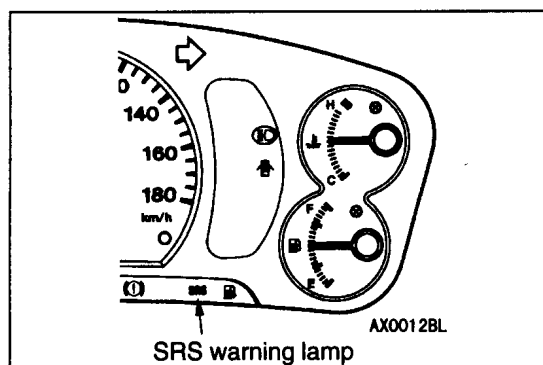
1. Check connector for poor connection.
2. Check harnesses for binds, connectors for damage, and terminals for deformation.
REPLACE ANY CONNECTORS OR HARNESS THAT FAIL THE VISUAL INSPECTION. (Refer to P.52B-3.)

Caution

The SRS may not activate if SRS harnesses or connectors are damaged or improperly connected, which could result in serious injury or death to the vehicle's driver or front passenger.

POST-INSTALLATION INSPECTION

Reconnect the negative battery terminal. Turn the ignition key to the "ON" position. Does the SRS warning lamp illuminate for about 7 seconds, turn off and then remain extinguished for at least 5 seconds? If yes, SRS system is functioning properly. If no, consult page 52B-6.



POST-COLLISION DIAGNOSIS

To inspect and service the SRS after a collision (whether or not the air bags have deployed), perform the following steps.

SRS-ECU MEMORY CHECK

1. Connect the MUT-II to the diagnosis connector (16-pin).

Caution

Make certain that the ignition switch is OFF when the MUT-II is connected or disconnected.

2. Read (and write down) all displayed diagnosis codes. (Refer to P.52B-6.)

NOTE

If the battery power supply has been disconnected or disrupted by the collision, the MUT-II cannot communicate with the SRS-ECU. Inspect and, if necessary, repair the body wiring harness before proceeding further.

3. Read the data list (fault duration and how many times memories are erased) using the MUT-II.

Data list

No	Service Data Item	Applicability
92	Number indicating how often the memory is cleared	Maximum time to be stored: 250
93	How long a problem has lasted (How long it takes from the occurrence of the problem till the first igniting signal)	Maximum time to be stored: 9,999 minutes (approximately 7 days)
94	How long a problem has lasted (How long it takes from the first igniting signal till now)	

4. Erase the diagnosis codes and after waiting 5 seconds or more read (and write down) all displayed diagnosis codes. (Refer to P.52B-6.)

REPAIR PROCEDURE**WHEN AIR BAG DEPLOYS IN A COLLISION.**

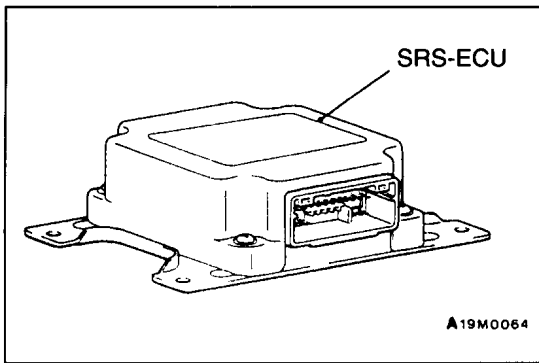
1. Replace the following parts with new ones.
 - SRS-ECU (Refer to P.52B-24.)
 - Air bag module (Refer to P.52B-25.)

2. Check the following parts and replace if there are any malfunctions.
 - Clock spring (Refer to P.52B-25.)
 - Steering wheel, steering column and intermediate joint
 - (1) Check wiring harness (built into steering wheel) and connectors for damage, and terminals for deformation.
 - (2) Install air bag module to check fit or alignment with steering wheel.
 - (3) Check steering wheel for noise, binds or difficult operation and excessive free play.

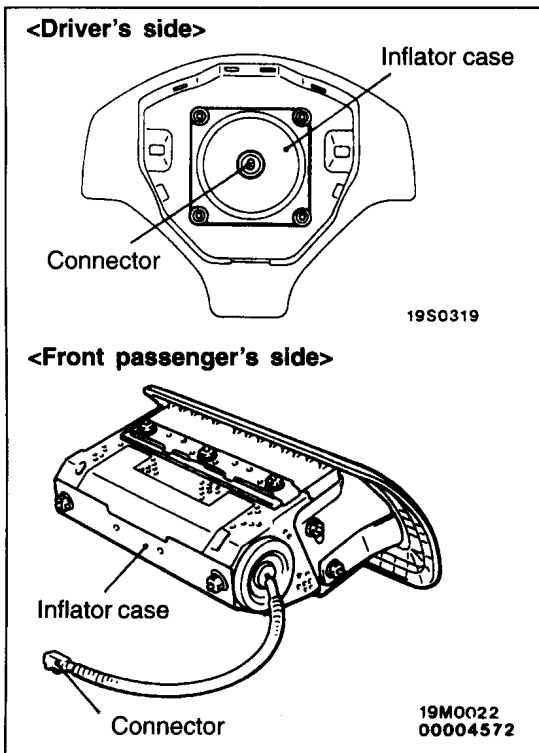
3. Check harnesses for binding, connectors for damage, poor connections, and terminals for deformation. (Refer to P.52B-18.)

WHEN AIR BAG DOES NOT DEPLOY IN LOW-SPEED COLLISION.

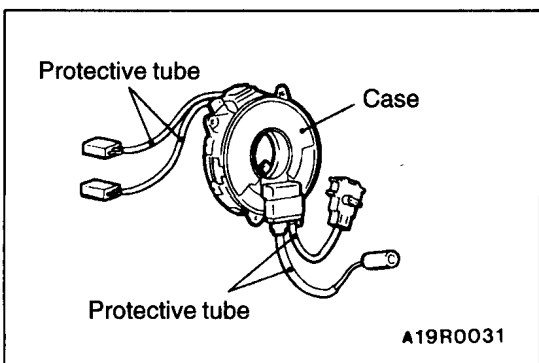
Check the SRS components. If the SRS components are showing any visible damage such as dents, cracks, or deformation, replace them with new ones. Concerning parts removed for inspection, replacement with new parts and cautionary points for working, refer to appropriate INDIVIDUAL COMPONENT SERVICE, P.52B-22.

**SRS-ECU**

1. Check SRS-ECU case and brackets for dents, cracks or deformation.
2. Check connector for damage, and terminals for deformation.

**Air bag modules**

1. Check pad cover for dents, cracks or deformation.
2. Check connector for damage, terminals deformities, and harness for binds.
3. Check air bag inflator case for dents, cracks or deformities.
4. Install air bag module to steering wheel to check fit or alignment with the wheel.

**Clock spring**

1. Check clock spring connectors and protective tube for damage, and terminals for deformation.
2. Visually check the case for damage.

Steering wheel, steering column and intermediate joint

1. Check wiring harness (built into steering wheel) and connectors for damage, and terminals for deformation.
2. Install air bag module to check fit or alignment with steering wheel.
3. Check steering wheel for noise, binds or difficult operation and excessive free play.

Harness connector (body wiring harness)

Check harnesses for binding, connectors for damage, poor connection, and terminals for deformation. (Refer to P.52B-18.)

INDIVIDUAL COMPONENT SERVICE

If the SRS components are to be removed or replaced as a result of maintenance, troubleshooting, etc., follow each procedure (P.52B-24 – P.52B-31)

Caution

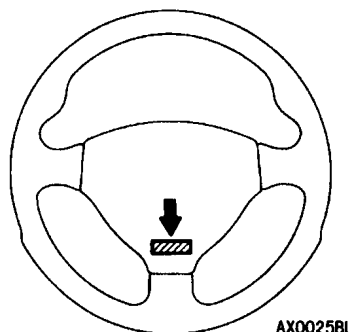
1. **SRS components should not be subjected to heat over 93°C, so remove the SRS-ECU, air bag module and clock spring before drying or baking the vehicle after painting. Recheck SRS system operability after re-installing them.**
2. **If the SRS components are removed for the purpose of check, sheet metal repair, painting, etc., they should be stored in a clean, dry place until they are reinstalled.**

WARNING/CAUTION LABELS

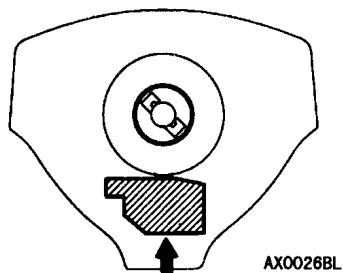
A number of caution labels related to the SRS are found in the vehicle, as shown in the following

illustration. Follow label instructions when servicing SRS. If labels are dirty or damaged, replace them.

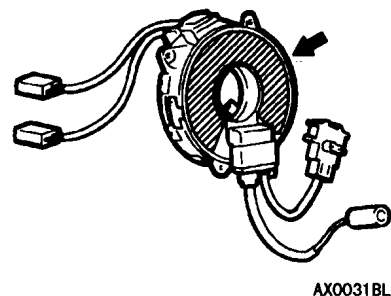
Steering wheel



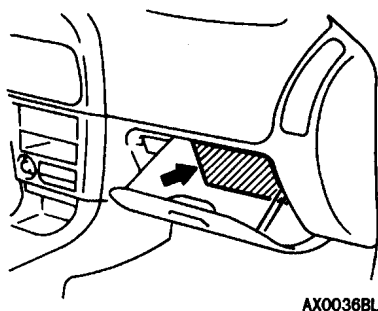
Air bag module (driver's side)



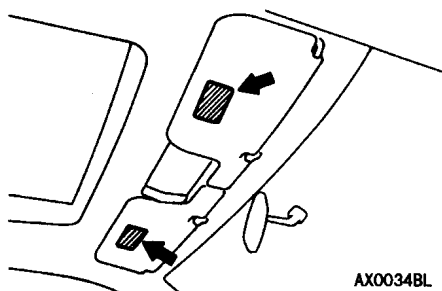
Clock spring



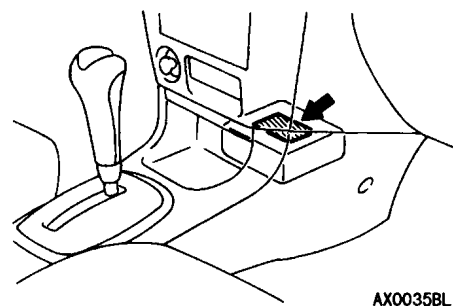
Glove box



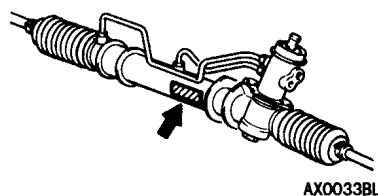
Sun visor



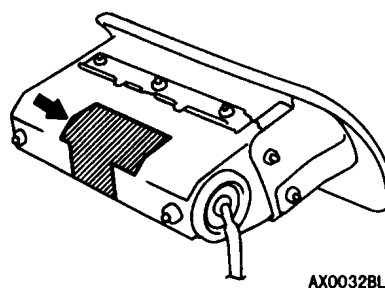
SRS-ECU



Steering gear and linkage



**Air bag module
(front passenger's side)**



SRS AIR BAG CONTROL UNIT (SRS-ECU)

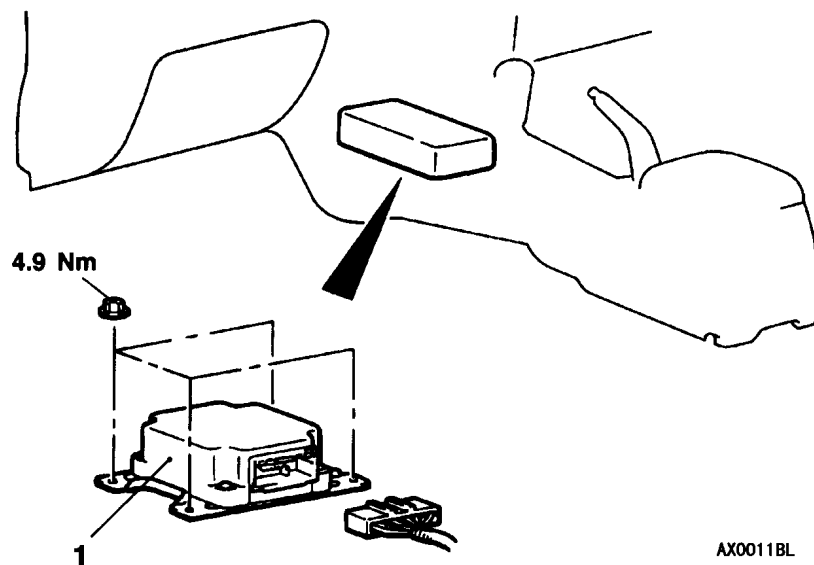
Caution

1. Disconnect the battery (–) terminal and wait for 60 seconds or more before starting work. Furthermore, the disconnected battery terminal should be covered with tape to insulate it. (Refer to P.52B-3.)
2. Never attempt to disassemble or repair the SRS-ECU. If faulty, replace it.
3. Do not drop or subject the SRS-ECU to impact or vibration. If denting, cracking, deformation, or rust are discovered in the SRS-ECU, replace it with a new SRS-ECU. Discard the old one.
4. After deployment of an air bag, replace the SRS-ECU with a new one.

REMOVAL AND INSTALLATION

Pre-removal Operation

- Turn the ignition key to the LOCK (OFF) position.
- Negative (–) battery cable connection



Removal steps

- Floor console
1. SRS-ECU

Installation steps

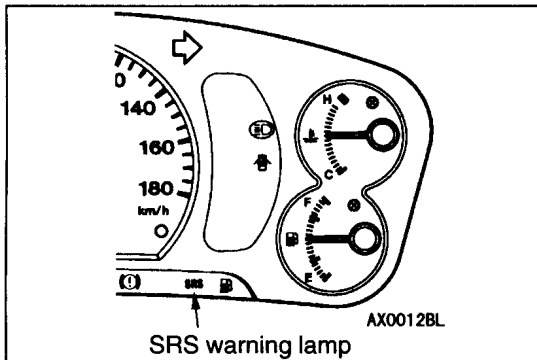
- Post-installation inspection
 - Negative (–) battery cable connection
1. SRS-ECU
 - Floor console

INSTALLATION SERVICE POINTS**►A◄ SRS-ECU INSTALLATION****Caution**

The SRS may not activate if SRS-ECU is not installed properly, which could result in serious injury or death to the vehicle's driver or front passenger.

►B◄ POST-INSTALLATION INSPECTION

1. Reconnect the negative battery terminal.
2. Turn the ignition key to the "ON" position.
3. Does the "SRS" warning lamp illuminate for about 7 seconds, and then remain extinguished for at least 5 seconds after turning OFF?
4. If yes, SRS system is functioning properly.
If no, consult page 52B-6.

**INSPECTION**

- Check the SRS-ECU and brackets for dents, cracks or deformation.
- Check connector for damage, and terminals for deformation.

Caution

If a dent, crack, deformation or rust is discovered, replace the SRS-ECU with a new one.

NOTE

For checking of the SRS-ECU other than described above, refer to the section concerning troubleshooting. (Refer to P.52B-6.)

AIR BAG MODULES AND CLOCK SPRING**Caution**

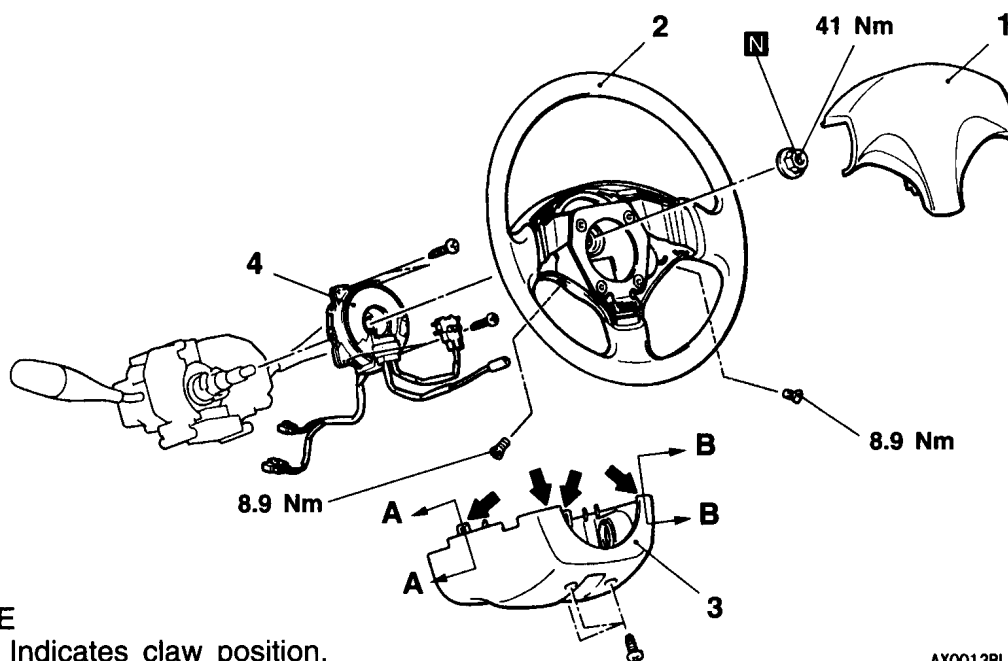
1. Disconnect the battery (–) terminal and wait for 60 seconds or more before starting work. Furthermore, the disconnected battery terminal should be covered with tape to insulate it. (Refer to P.52B-3.)
2. Never attempt to disassemble or repair the air bag modules or clock spring. If faulty, replace it.
3. Do not drop the air bag modules or clock spring or allow contact with water, grease or oil.
Replace it if a dent, crack, deformation or rust is detected.
4. The air bag modules 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.
5. Do not expose the air bag modules to temperatures over 93°C.
6. Both driver's side and front passenger's side air bag modules should be replaced with new ones once the respective air bags were deployed. The clock springs should also be checked and replaced with new ones if considered abnormal.
7. Wear gloves and safety glasses when handling air bags that have already deployed.
8. An undeployed air bag module should only be disposed of in accordance with the procedures (Refer to P.52B-32.)

REMOVAL AND INSTALLATION

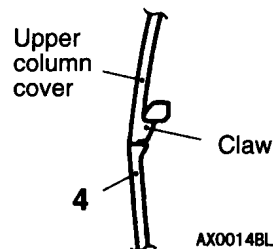
<Air bag module (driver's side), clock spring>

Pre-removal Operation

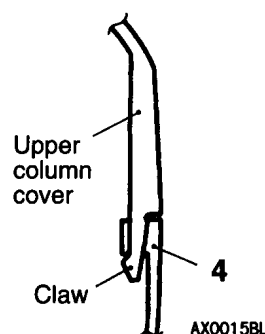
- After setting the steering wheel and the front wheels to the straight ahead position, remove the ignition key.
- Battery negative (-) terminal disconnection



AX0013BL

Section A – A

AX0014BL

Section B – B

AX0015BL

Driver's side air bag module removal steps

◀A▶

1. Driver's side air bag module

Clock spring removal steps

◀A▶

◀B▶

1. Driver's side air bag module
2. Steering wheel
3. Lower column cover
4. Clock spring

◀C▶

Driver's side air bag module installation steps

▶A◀

- Pre-installation inspection
- 1. Driver's side air bag module
- Negative (-) battery cable connection
- Post-installation inspection

▶D◀

Clock spring installation steps

▶A◀

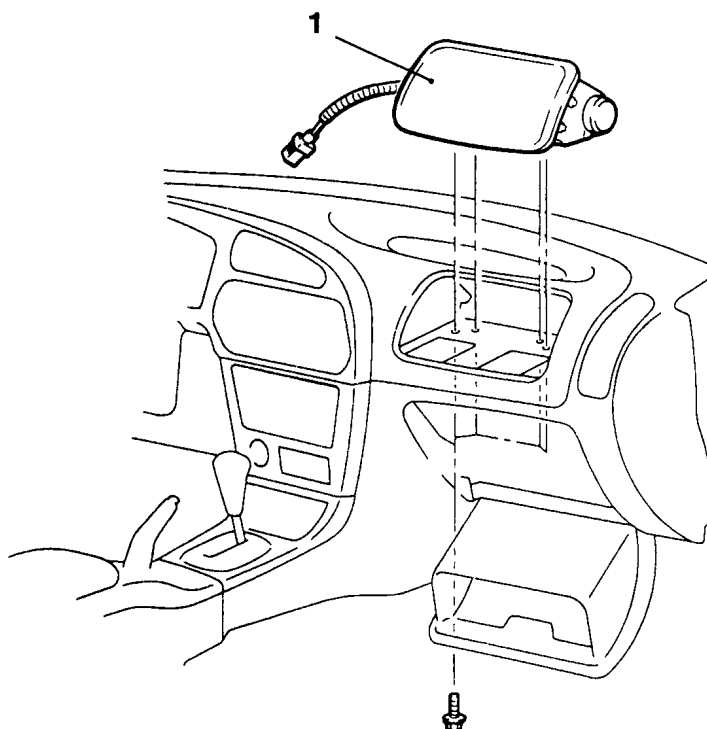
▶B◀

▶C◀

▶D◀

- Pre-installation inspection
- 4. Clock spring
- 3. Lower column cover
- 2. Steering wheel
- 1. Driver's side air bag module
- Negative (-) battery cable connection
- Post-installation inspection

<Air bag module (front passenger's side)>



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Front passenger's side air bag module removal steps

1. Front passenger's side air bag module

Front passenger's side air bag module installation steps

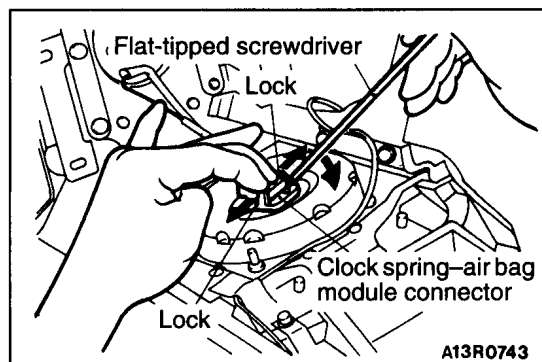
- Pre-installation inspection
- 1. Front passenger's side air bag module
- Negative (–) battery cable connection
- Post-installation inspection

**REMOVAL SERVICE POINTS****◀A▶ AIR BAG MODULE REMOVAL (DRIVER'S SIDE)**

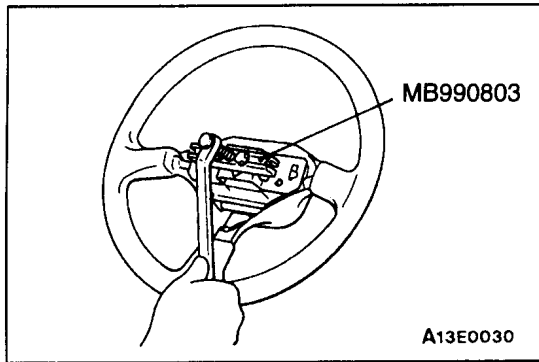
When disconnecting the connector of the clock spring from the air bag module, press the air bag's lock towards the outer side to spread it open. Use a flat-tipped screwdriver, as shown in the figure at the left, to pry so as to remove the connector gently.

Caution

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



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**◀B▶ STEERING WHEEL REMOVAL****◀C▶ CLOCK SPRING REMOVAL****Caution**

The removed clock spring should be stored in a clean, dry place.

**◀D▶ AIR BAG MODULE REMOVAL
(FRONT PASSENGER'S SIDE)****Caution**

The removed air bag module should be stored in a clean, dry place with the pad cover face up.

INSTALLATION SERVICE POINTS**▶A◀ PRE-INSTALLATION INSPECTION**

1. When installing the new air bag modules and clock spring, refer to "INSPECTION".

Caution

Dispose of air bag modules only according to the specified procedure. (Refer to P.52B-32.)

2. Connect the battery (–) terminal.
3. Connect the MUT-II to the diagnosis connector.

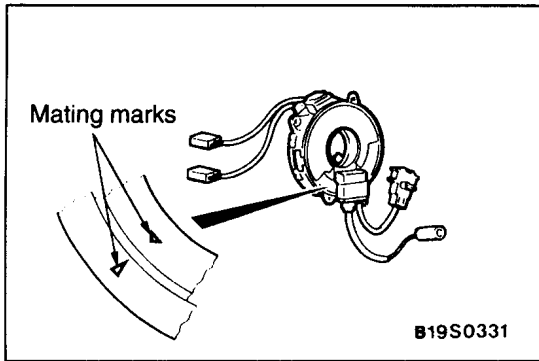
Caution

Make certain that the ignition switch is LOCK (OFF) when the MUT-II is connected or disconnected.

4. Turn the ignition key to the "ON" position.
5. Conduct self-diagnosis using the MUT-II to ensure entire SRS operates properly, except open circuit of air bag modules.
6. Turn the ignition key to the LOCK (OFF) position, disconnect the negative battery cable and tape the terminal.

Caution

Wait at least 60 seconds after disconnecting the battery cable before doing any further work. (Refer to P.52B-3.)



►B◄CLOCK SPRING INSTALLATION

Align the mating marks of the clock spring and, after turning the front wheels to the straight-ahead position, install the clock spring to the column switch.

Mating Mark Alignment

Turn the clock spring clockwise fully, and then turn back it approx. 3 4/5 turns counterclockwise to align the mating marks.

Caution

If the clock spring's mating marks are not properly aligned, the steering wheel may not be completely rotational during a turn, or the flat cable within the clock spring may be severed, obstructing normal operation of the SRS and possibly leading to serious injury to the vehicle's driver.

►C◄STEERING WHEEL INSTALLATION

1. Before installation the steering wheel, be sure to first turn the vehicle's front wheels to the straight-ahead position and align the mating marks of the clock spring.

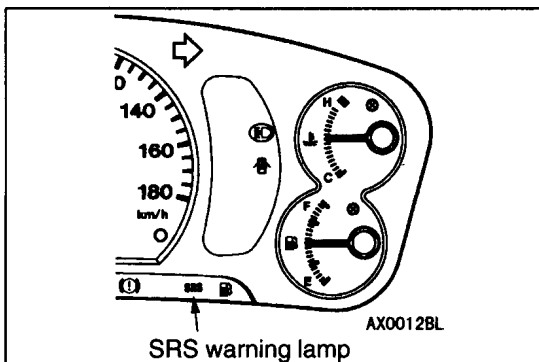
Caution

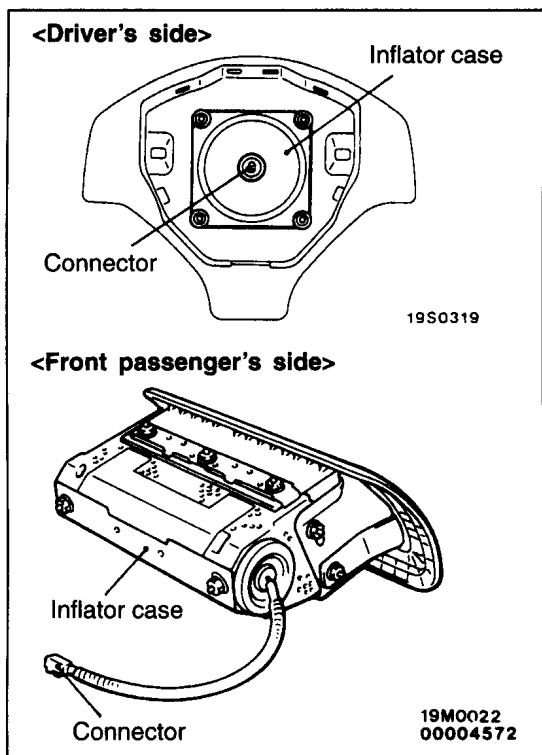
Be sure when installing the steering wheel, that the harness of the clock spring does not become caught or tangled.

2. After clamping, turn the steering wheel all the way in both directions to confirm that steering is normal.

►D◄POST-INSTALLATION INSPECTION

1. Turn the steering wheel lightly to the left and right to check if it can be operated properly without any abnormality.
2. Reconnect the negative battery terminal.
3. Turn the ignition key to the "ON" position.
4. Does the "SRS" warning lamp illuminate for about 7 seconds, and then remain extinguished for at least 5 seconds after turning OFF?
5. If yes, SRS system is functioning properly.
If no, consult page 52B-6.





INSPECTION

AIR BAG MODULE CHECK

If any improper part is found during the following inspection, replace the air bag modules with a new one. Dispose the old one according to the specified procedure. (Refer to P.52B-32.)

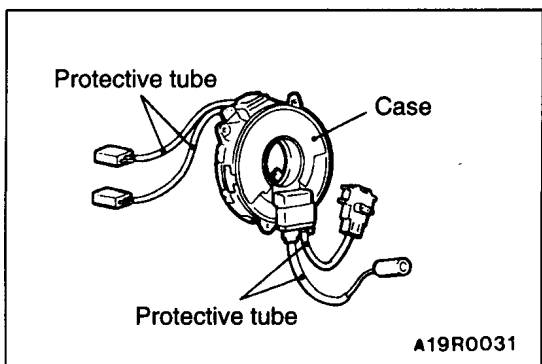
Caution

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

1. Check pad cover for dents, cracks or deformation.
2. Check connectors for damage, terminals for deformation, and harness for binds.
3. Check air bag inflator case for dents, cracks or deformation.
4. Install the air bag module to steering wheel to check fit or alignment with the wheel.

Caution

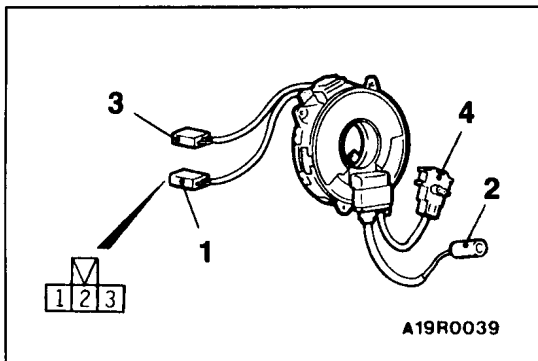
If dents, cracks, deformation, or rust are discovered in the air bag module, replace it with a new one. Dispose of the old one according to the specified procedure. (Refer to P.52B-32.)



CLOCK SPRING CHECK

If, as result of following checks, even one abnormal point is discovered, replace the clock spring with a new one.

1. Check connectors and protective tube for damage, and terminals for deformation.
2. Visually check the case for damage.



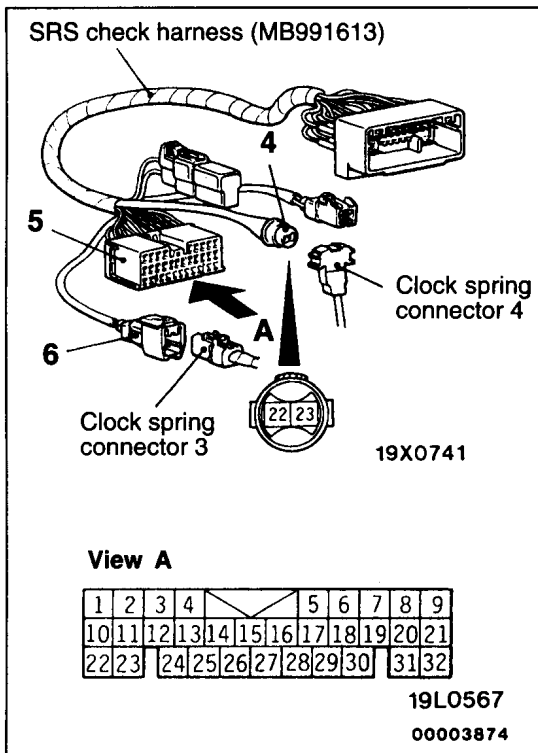
3. Check that there is continuity between terminal (3) of the clock spring No.1 connector and the No. 2 connector.

4. Joint the No.3 connector and No.4 connector of the clock spring to connector No.6 and connector No.4 respectively, of the SRS check harness.

NOTE

When joining SRS check harness connector No.4 align its white paint with the hollow portion of the No.4 connector of the clock spring.

5. Check for continuity between terminal 22 and terminal 25, and terminal 23 and terminal 24, of SRS Check Harness connector No. 5 using a digital multi-meter.



AIR BAG MODULE DISPOSAL PROCEDURES

Before disposing of an air bag or a vehicle which is equipped with it, the procedures below are to be followed to deploy them.

UNDEPLOYED AIR BAG MODULE DISPOSAL PROCEDURES

Caution

1. If the vehicle is to be scrapped or otherwise disposed of, deploy the air bags inside the vehicle. If the vehicle will continue to be used and only the air bag modules are to be disposed of, deploy the air bags outside the vehicle.
2. Since a large amount of smoke is produced when the air bag is deployed, avoid residential areas whenever possible.
3. Since there is loud noise when the air bags are deployed, avoid residential areas whenever possible. If anyone is nearby, give warning of the impending noise.
4. Suitable ear protection should be worn by personnel performing these procedures or by people in the immediate area.

DEPLOYMENT INSIDE THE VEHICLE

(when disposing of a vehicle)

1. 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 60 seconds after disconnecting the battery cables before doing any further work.
(Refer to P.52B-3.)

3. Perform the following procedure to deploy each air bag module.

<Air bag module (driver's side)>

- (1) Remove the steering column cover lower.
- (2) Remove the connection between the clock spring 2-pin connector (red) and the body wiring harness connector.

NOTE

If the clock spring connector is disconnected from the body wiring harness, both electrodes of the clock spring connector will be automatically shorted to prevent unintended deployment of the air bag due to static electricity, etc.

- (3) Connect two wires, each six meters or longer, to the two leads of SRS air bag adapter harness A and cover the connections with insulation tape. The other ends of the two wires should be connected to each other (short-circuited), to prevent sudden unexpected deployment of the air bag.

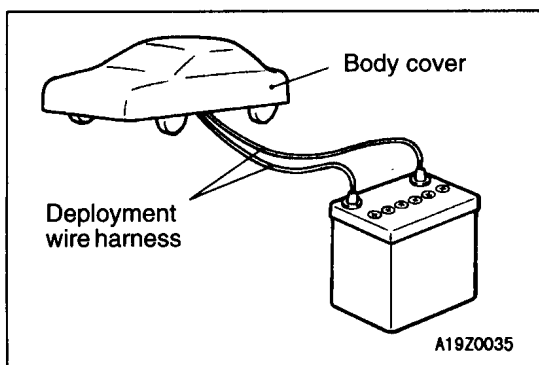
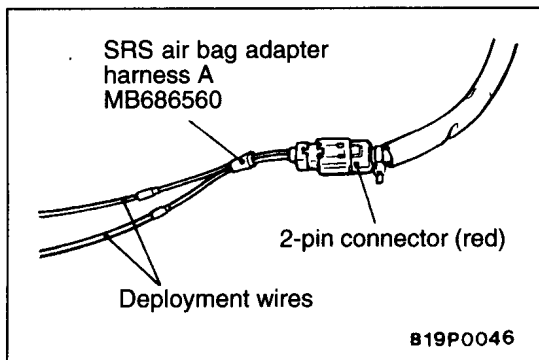
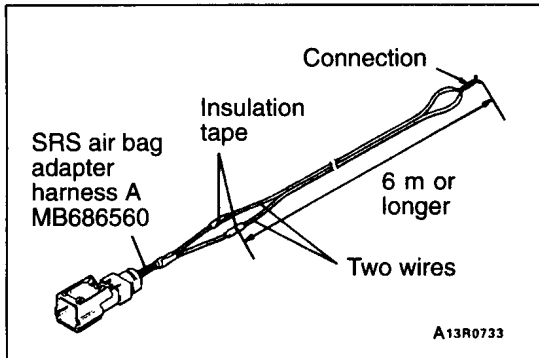
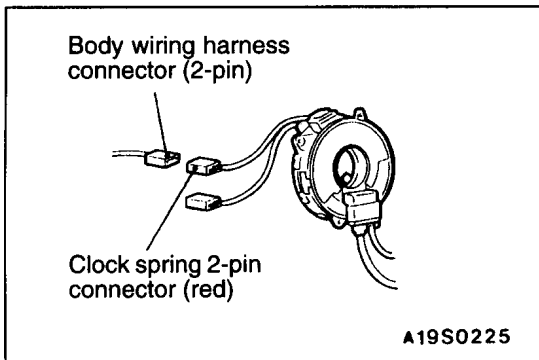
- (4) Connect the clock spring or air bag module (front passenger's side) 2-pin connector (red) to SRS air bag adapter harness A and pass the deployment wires out of the vehicle.

- (5) Shut all the doors with their window glasses closed and cover the vehicle with a body cover to suppress explosion noise leaks as much as possible.

Caution

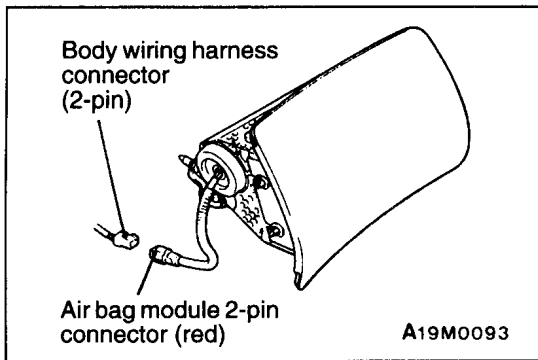
Be sure to wrap the vehicle entirely in a body cover, otherwise damaged glass panes could break into fragments, bringing about a very dangerous situation.

- (6) At a location as far away from the vehicle as possible, disconnect the two connected wires from each other, and connect them to the two terminals of the battery (which has been removed from the vehicle) to deploy the air bag.



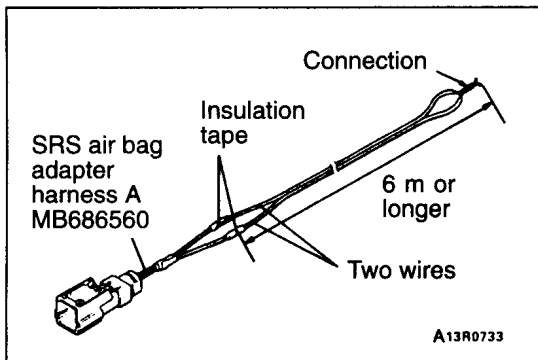
Caution

- 1) Before deploying the air bag in this manner, first check to be sure that there is no one in or near the vehicle.
 - 2) 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 air bag deployment. See Deployed Air Bag Module Disposal Procedures (P.52B-40) for post-deployment handling instructions.
 - 3) If the air bag module fails to deploy when the procedures above are followed, do not go near the module. Contact your local distributor.
- (7) After deployment, dispose of the air bag module according to the Deployed Air Bag Module Disposal Procedures. (Refer to P.52B-40.)

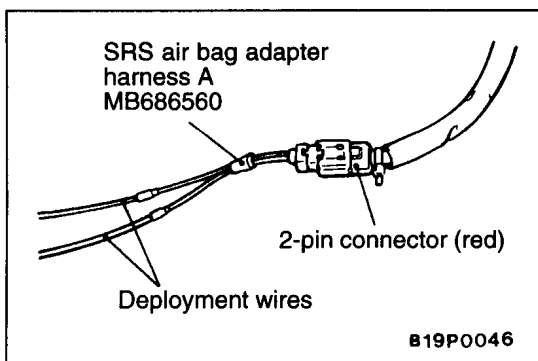


<Air bag module (front passenger's side)>

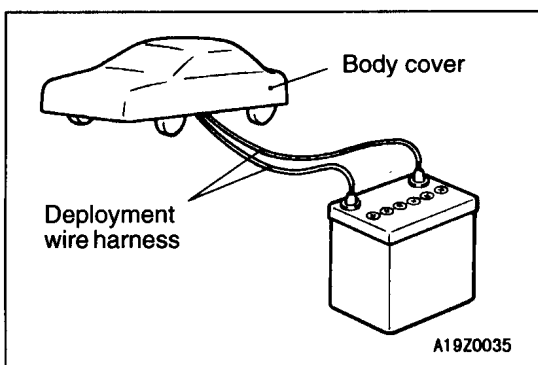
- (1) Remove the glove box. (Refer to P.52B-27.)
- (2) Remove the connection between the air bag module (front passenger's side) connector (red 2-pin) and the body wiring harness connector.



- (3) Connect two wires, each six meters or longer, to the two leads of SRS air bag adapter harness A and cover the connections with insulation tape. The other ends of the two wires should be connected to each other (short-circuited), to prevent sudden unexpected deployment of the air bag.



- (4) Connect the clock spring or air bag module (front passenger's side) 2-pin connector (red) to SRS air bag adapter harness A and pass the deployment wires out of the vehicle.



- (5) Shut all the doors with their window glasses closed and cover the vehicle with a body cover to suppress explosion noise leaks as much as possible.

Caution

Be sure to wrap the vehicle entirely in a body cover, otherwise damaged glass panes could break into fragments, bringing about a very dangerous situation.

- (6) At a location as far away from the vehicle as possible, disconnect the two connected wires from each other, and connect them to the two terminals of the battery (which has been removed from the vehicle) to deploy the air bag.

Caution

- 1) Before deploying the air bag in this manner, first check to be sure that there is no one in or near the vehicle.
 - 2) 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 air bag deployment. See Deployed Air Bag Module Disposal Procedures (P.52B-40) for post-deployment handling instructions.
 - 3) If the air bag module fails to deploy when the procedures above are followed, do not go near the module. Contact your local distributor.
- (7) After deployment, dispose of the air bag module according to the Deployed Air Bag Module Disposal Procedures. (Refer to P.52B-40.)

DEPLOYMENT OUTSIDE THE VEHICLE**Caution**

1. This should be carried out in a wide, flat area at least 6 m away from obstacles and other people.
 2. Do not perform deployment outside, if a strong wind is blowing, and if there is even a slight breeze, the air bag module should be placed and deployed downwind from the battery.
1. Disconnect the negative (–) and positive (+) battery cables from the battery terminals, and then remove the battery from the vehicle.

Caution

Wait at least 60 seconds after disconnecting the battery cables before doing any further work. (Refer to P.52B-4.).

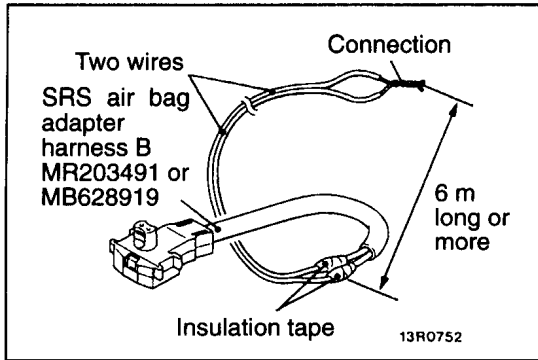
2. Perform the following procedure to deploy each air bag module.

<Air bag module (driver's side)>

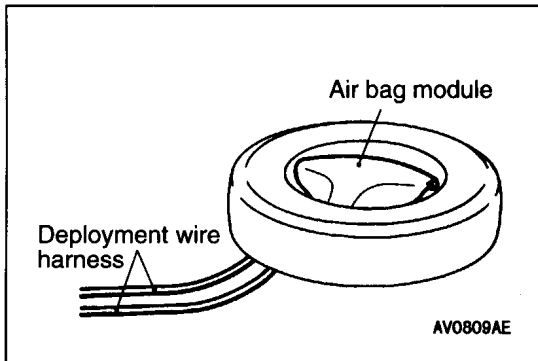
- (1) Remove the air bag module from the vehicle.
(Refer to P.52B-26.)

Caution

The connector of the driver's side air bag module is so constructed that the positive and negative terminals are automatically short-circuited when it is disconnected to prevent an accidental deployment of the air bag resulting from static electricity generation. Nevertheless, to eliminate the slightest possibility of an accidental deployment, always bear the following in mind; the air bag module should be stored on a flat surface and placed so that the pad cover face up. Anything should not be placed on top of it.



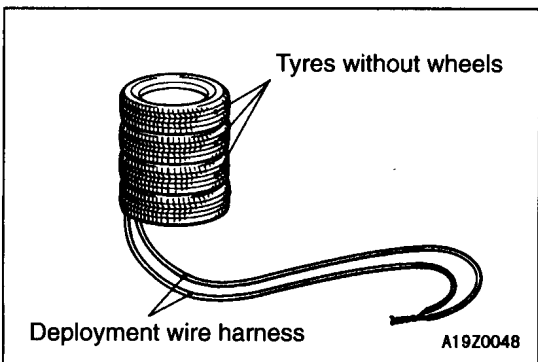
- (2) Connect two wires, each six meters or longer, to the two leads of SRS air bag adapter harness B <driver's side>, and cover the connections with insulation tape. The other ends of the two wires should be connected to each other (short-circuited), to prevent sudden unexpected deployment of the air bag module.



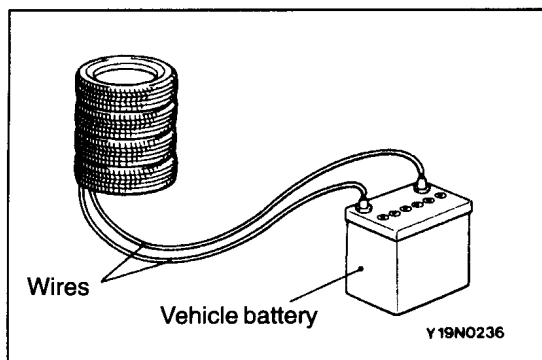
- (3) Take the SRS air bag adapter harness B that is connected to the wires, pass it beneath the old tyre wheel assembly, and connect it to the air bag module.
(4) Pass the thick wire through the air bag module mounting hole, and then secure the air bag module to an old tyre with a wheel in it so that the pad on the module is facing upwards.

Caution

Leave some space below the wheel for the adaptor harness. If there is no space, the reaction when the air bag deploys could damage the adaptor harness.



- (5) Place three old tyres with no wheels on top of the tyre secured to the air bag module.



- (6) At a location as far away from the air bag module as possible, and from a shielded position, disconnect the two connected wires from each other, and connect them to the two terminals of the battery (which has been removed from the vehicle) to deploy the air bag.

Caution

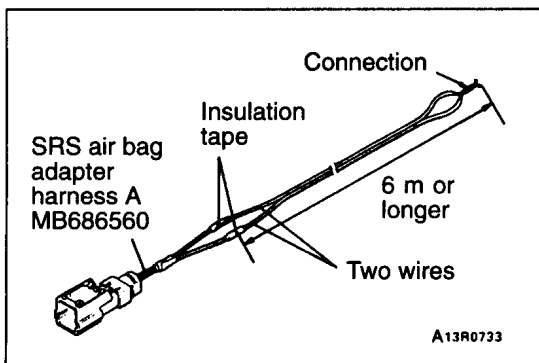
- 1) Before deployment, check carefully to be sure that no one is nearby.
 - 2) The inflator will be quite hot immediately following the deployment, so wait at least 30 minutes to allow it to cool before attempting to handle it. Although not poisonous, do not inhale gas from air bag deployment. See Deployed Air Bag Module Disposal Procedures (P.52B-40) for post-deployment handling instructions.
 - 3) If the air bag fails to deploy when the procedures above are followed, do not go near the module. Contact your local distributor.
- (7) After deployment, dispose of the air bag module according to the Deployed Air Bag Module Disposal Procedures. (Refer to P.52B-40.)

<Air bag module (front passenger's side)>

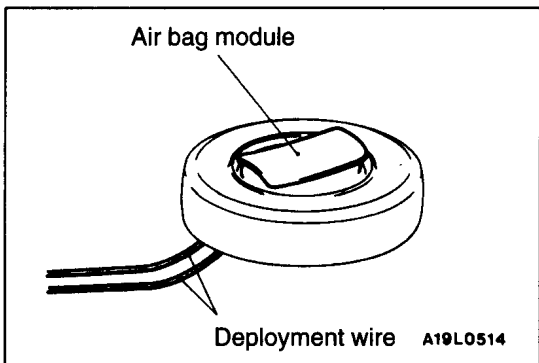
- (1) Remove the air bag module from the vehicle.
(Refer to P.52B-27.)

Caution

The connector of the front passenger's side air bag module is so constructed that the positive and negative terminals are automatically short-circuited when it is disconnected to prevent an accidental deployment of the air bag resulting from static electricity generation. Nevertheless, to eliminate the slightest possibility of an accidental deployment, always bear the following in mind; the air bag module should be stored on a flat surface and placed so that the pad cover face up. Anything should not be placed on top of it.



- (2) Connect two wires, each six meters or longer, to the two leads of SRS air bag adapter harness A and cover the connections with insulation tape. The other ends of the two wires should be connected to each other (short-circuited), to prevent sudden unexpected deployment of the air bag module.



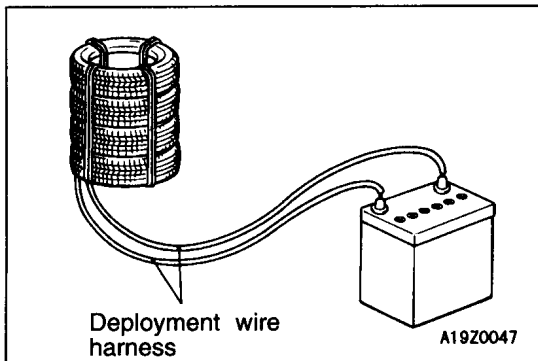
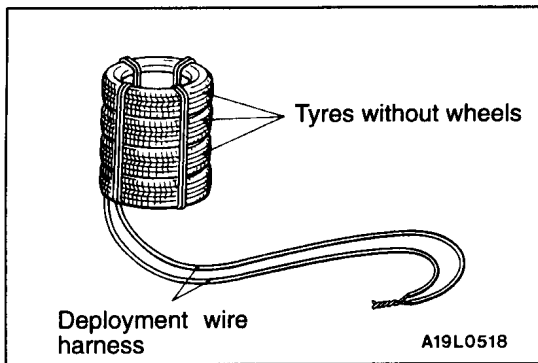
- (3) Connect the deployment wires to the SRS air bag adaptor harness A, pass it beneath the tyre, and wheel assembly, and connect it to the air bag module.
- (4) Pass the thick wires into the hole of the air bag module bracket, and secure it to the wheel of the old tyre with wheel (4 locations), with the air bag facing upwards.

Caution

- 1) Leave some space below the wheel for the deployment wires.

If there is no space, the reaction of the air bag deployment could result in damage of the adaptor harness.

- 2) While deployment takes place, do not have the connector of the SRS air bag adaptor harness A inserted between the tyres.



- (5) Place three old tyres, without wheels, on top of the tyre secured to the air bag module, and secure all tyres with ropes (4 locations).

NOTE

The front passenger's side air bag is larger in capacity than the driver's side air bag when deployed. For this reason, it is necessary to tie up all tyres together with rope.

- (6) At a location as far away from the air bag module as possible, and from a shielded position, disconnect the two connected wires from each other, and connect them to the two terminals of the battery (which has been removed from the vehicle) to deploy the air bag.

Caution

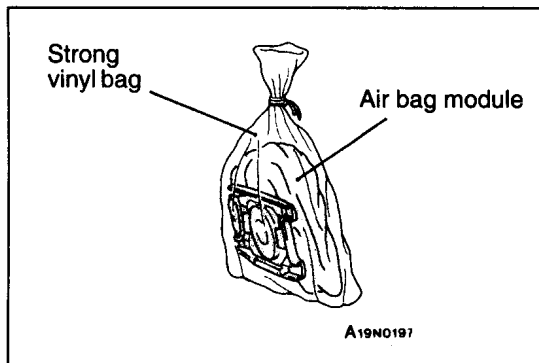
- 1) Before deployment, check carefully to be sure that no one is nearby.
 - 2) The inflator will be quite hot immediately following the deployment, so wait at least 30 minutes to allow it to cool before attempting to handle it. Although not poisonous, do not inhale gas from air bag deployment. See Deployed Air Bag Module Disposal Procedures (P.52B-40) for post-deployment handling instructions.
 - 3) If the air bag fails to deploy when the procedures above are followed, do not go near the module. Contact your local distributor.
- (7) After deployment, dispose of the air bag module according to the Deployed Air Bag Module Disposal Procedures.

DEPLOYED AIR BAG MODULE DISPOSAL PROCEDURES

After deployment, the air bag module should be disposed of in the same manner as any other scrap parts, adhering to local laws and/or legislation that may be in force except that the following points should be carefully noted during disposal.

1. The inflator will be quite hot immediately following deployment, so wait at least 30 minutes to allow it cool before attempting to handle it.
2. Do not put water or oil on the air bag after deployment.

3. There may be, adhered to the deployed air bag module, material that could irritate the eye and/or skin, so wear gloves and safety glasses when handling a deployed air bag module. IF AFTER FOLLOWING THESE PRECAUTIONS, ANY MATERIAL DOES GET INTO THE EYES OR ON THE SKIN, IMMEDIATELY RINSE THE AFFECTED AREA WITH A LARGE AMOUNT OF CLEAN WATER.
IF ANY IRRITATION DEVELOPS, SEEK MEDICAL ATTENTION.



4. Tightly seal the air bag module in a strong vinyl bag for disposal.
5. Be sure to always wash your hands after completing this operation.