

## GENERAL

### OUTLINE OF CHANGES

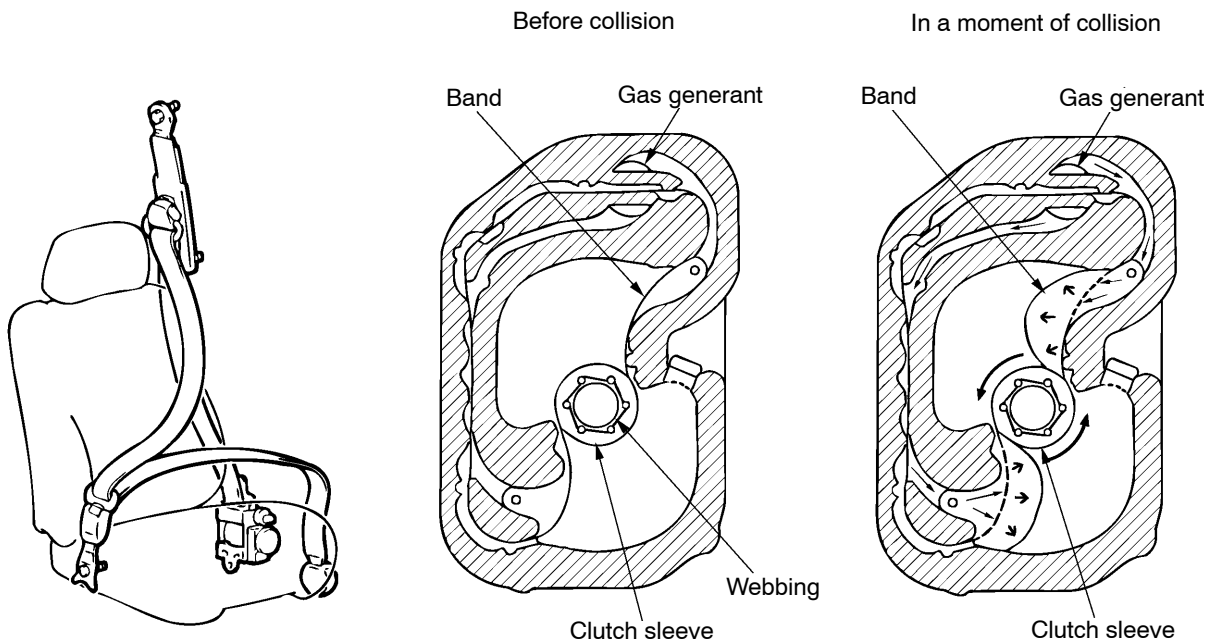
- A service procedure has been established as seat belts with pre-tensioner have been added.
- The side impact sensor circuit has been changed. The sensor service procedure is the same as before.

### SEAT BELT WITH PRE-TENSIONER

**Caution – Never disassemble the seat belt with pre-tensioner.**

The driver's and passenger's seat belt pre-tensioners take up seat belt slack immediately when a collision takes place, thus restraining the pre-tensioners on the seats simultaneously with the SRS air bags. this improves the passive safety. when the G sensor in the SRS-ECU detects impact above a certain level during a collision, the pre-tensioner operates as follows:

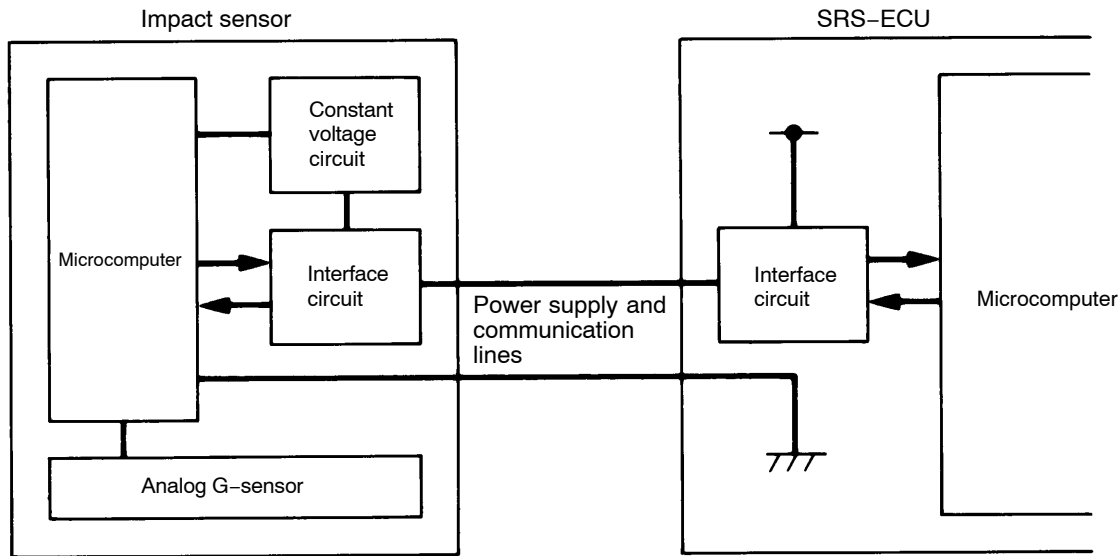
1. The igniting heater heats up according to the signal from the SRS-ECU.
2. this ignites the gas generant and explosive gas will be generated.
3. The strip is pushed outwards by the gas pressure. As the strip wound around the clutch sleeve is pulled out, the clutch sleeve rotates at high speed.
4. The clutch sleeve rotates to wind the webbing.



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## IMPACT SENSOR

The power supply circuit to the impact sensor and the communication line have been unified. This contributes to simplifying wiring harnesses and improving reliability.



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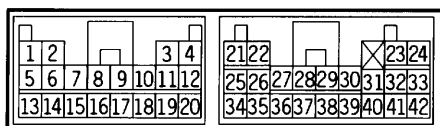
## SRS SERVICE PRECAUTIONS

1. In order to avoid injury to yourself or others from accidental deployment of the air bag and accidental operation of the seat belt with pre-tensioner 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
  - Driver's and front passenger's air bag modules
  - Side air bag modules
  - Front impact sensors
  - Side impact sensors
  - Seat belt with Pre-tensioner

### NOTE

If any of these components are diagnosed as faulty, they should only be replaced, in accordance with the INDIVIDUAL COMPONENTS SERVICE procedures in this manual, starting at page P.52B-10.

SRS-ECU connector



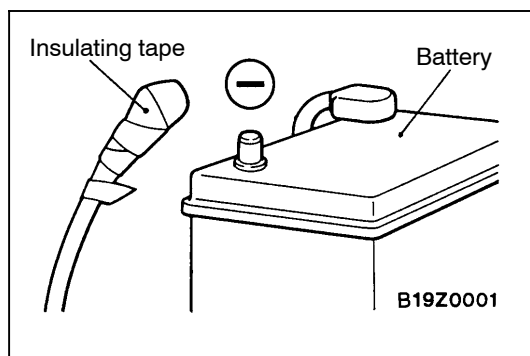
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4. Do not attempt to repair the wiring harness connectors of the SRS. If a defective wiring harness is found, repair or replace it by referring to the table follows.

## NOTE

The table below shows the pre-tensioner related terminals only. The other terminals are the same as before.

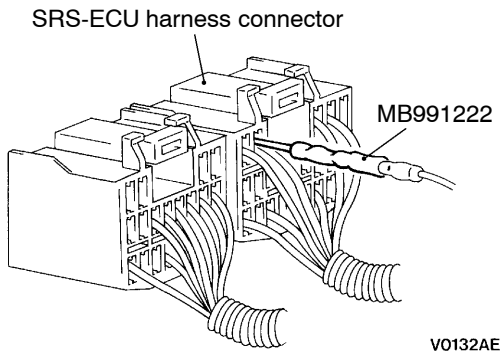
SRS-ECU Terminal No.	Destination of harness	Corrective action
27, 28	Floor wiring harness → Seat belt with pre-tensioner (Front passenger's side)	Correct or replace each wiring harness.
29, 30	Floor wiring harness → Seat belt with pre-tensioner (Driver's side)	



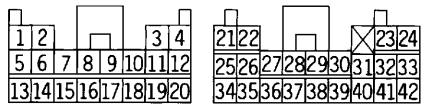
5. After disconnecting the negative (–) battery cable, wait 60 seconds at least before any service and insulate the disconnected cable with tape. The SRS retain enough voltage to deploy the air bags for a short time even after the disconnection of the battery. So, serious injury may result by accidental air bag deployment if a work is done on the SRS just after the disconnection of the battery.

6. SRS components and seat belt with pre-tensioner should not be subjected to heat, so remove the SRS-ECU, air bag module (driver's side and front passenger's side), clock spring, side impact sensor, front seat assembly (side air bag module), and seat belt with pre-tensioner before drying or baking the vehicle after painting.
- SRS-ECU, air bag module, clock spring, side impact sensor: 93°C or more
  - Seat belt with pre-tensioner: 90°C or more
7. Whenever you finish servicing the SRS, check warning lamp operation to make sure that the system functions properly.

- 8 If checks are carried out by using the SRS-ECU harness connector, observe the following procedures:  
Insert the special tool (probe in the harness set) into connector from harness side (rear side), and connect the tester to this probe. If any tool than special tool is used, damage to the harness and other components will result. Never insert the probe directly to the terminals from the front of the connector. The terminals are plated to increase their conductivity, so that if they are touched directly by the probe, the plating may break, which will cause drops in reliability.



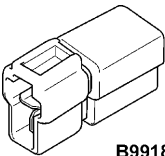
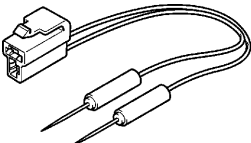
SRS-ECU harness connector (rear side)



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SPECIAL TOOLS

The items other than below are the same as before.

Tools	No.	Name	Application
 B991865	MB991865	Dummy resistor	SRS air bag circuit check
 B991866	MB991866	Resistor harness	

## TROUBLESHOOTING

The following items have been changed. The other items are the same as before.

### INSPECTION CHART FOR DIAGNOSIS CODES

Code No.	Diagnosis item	Reference page
26*, 27*, 66, 67	Driver's side pre-tensioner (squib) system	52B-6
28*, 29*, 68, 69	Front passenger's side pre-tensioner (squib) system	52B-8
56, 57	Driver's side pre-tensioner (squib ignition drive circuit) system	52B-9
58, 59	Front passenger's side pre-tensioner (squib ignition drive circuit) system	52B-9

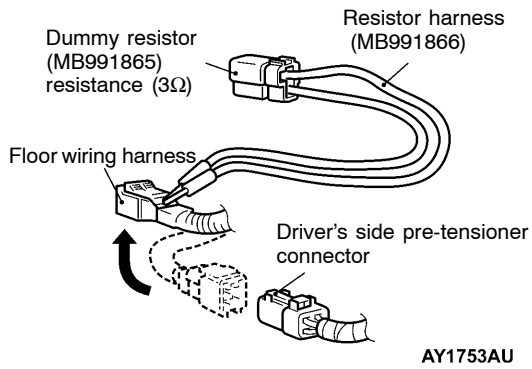
#### NOTE

\*: If the system returns to normal, the SRS warning lamp will go out, but the relevant diagnosis code will be retained in memory.

### INSPECTION PROCEDURE CLASSIFIED BY DIAGNOSIS CODE

Code No.26, 27, 66 or 67 Driver's side pre-tensioner (squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the driver's side pre-tensioner (squib). The trouble causes for each diagnosis code No. are as follows.	<ul style="list-style-type: none"> <li>• Malfunction of wiring harnesses or connectors</li> <li>• Malfunction of driver's side pre-tensioner (squib)</li> <li>• Malfunction of SRS-ECU</li> </ul>

Code No.	Trouble causes
26	<ul style="list-style-type: none"> <li>• Short in driver's side pre-tensioner (squib) or harness short</li> </ul>
27	<ul style="list-style-type: none"> <li>• Open circuit in driver's side pre-tensioner (squib) or open harness</li> <li>• Malfunction of connector contact</li> </ul>
66	<ul style="list-style-type: none"> <li>• Short in driver's side pre-tensioner (squib) harness leading to the power supply</li> </ul>
67	<ul style="list-style-type: none"> <li>• Short in driver's side pre-tensioner (squib) harness leading to the earth</li> </ul>

**MUT-II Self-diag code**

- Connect the dummy resistor (MB991865) to the resistor harness (MB991866).
- Disconnect driver's side pre-tensioner connector F-36, and insert probe of resistor harness MB991866 to the connector by backprobing.

**Caution**

**Never insert the probe directly to the terminals from the front of the connector.**

- Connect the negative (–) battery terminal.
  - Erase diagnosis code memory.
- Is code No.26, 27, 66 or 67 displayed?

YES

**Check the following connectors:** E-110, E-21, F-36

OK

Check trouble symptoms.

NG

Check wiring harness between the driver's side pre-tensioner and SRS-ECU.

OK

Replace SRS-ECU.

NG

**Repair**

NG

**Repair**

NO

Replace the driver's side seat belt with pre-tensioner.

Code No.28, 29, 68 or 69 Front passenger's side pre-tensioner (squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the front passenger's side pre-tensioner (squib). The trouble causes for each diagnosis code No. are as follows.	<ul style="list-style-type: none"> <li>• Malfunction of wiring harnesses or connectors</li> <li>• Malfunction of front passenger's side pre-tensioner (squib)</li> <li>• Malfunction of SRS-ECU</li> </ul>

Code No.	Trouble causes
28	<ul style="list-style-type: none"> <li>• Short in front passenger's side pre-tensioner (squib) or harness short</li> </ul>
29	<ul style="list-style-type: none"> <li>• Open circuit in front passenger's side pre-tensioner (squib) or open harness</li> <li>• Malfunction of connector contact</li> </ul>
68	<ul style="list-style-type: none"> <li>• Short in front passenger's side pre-tensioner (squib) harness leading to the power supply</li> </ul>
69	<ul style="list-style-type: none"> <li>• Short in front passenger's side pre-tensioner (squib) harness leading to the earth</li> </ul>

Dummy resistor (MB991865) resistance (3Ω)

Resistor harness (MB991866)

Floor wiring harness

Front passenger's side pre-tensioner connector

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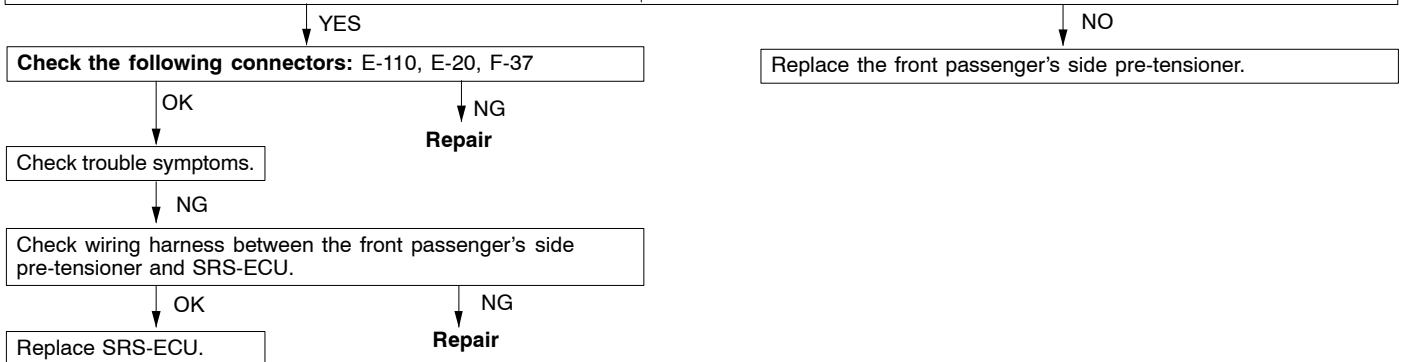
**MUT-II Self-diag code**

- Connect the dummy resistor (MB991865) to the resistor harness (MB991866).
- Disconnect front passenger's side pre-tensioner connector F-37 and insert probe of resistor harness MB991866 to the connector by backprobing.

**Caution**  
Never insert the probe directly to the terminals from the front of the connector.

- Connect the negative (-) battery terminal.
- Erase diagnosis code memory.

Is code No.28, 29, 68 or 69 displayed?



Code No.56, 57, 58, 59 System inside SRS-ECU	Probable cause
These diagnostic trouble codes are output when a fault is detected in the SRS-ECU. The defective parts and trouble causes for each diagnosis code No. are as follows.	<ul style="list-style-type: none"> <li>• Malfunction of SRS-ECU</li> </ul>

Code No.	Defective parts	Trouble causes
56	Driver's side pre-tensioner (squib ignition drive circuit)	<ul style="list-style-type: none"> <li>• Short circuit in the squib ignition drive circuit</li> </ul>
57		<ul style="list-style-type: none"> <li>• Open circuit in the squib ignition drive circuit</li> </ul>
58	Front passenger's side pre-tensioner (squib ignition drive circuit)	<ul style="list-style-type: none"> <li>• Short circuit in the squib ignition drive circuit</li> </ul>
59		<ul style="list-style-type: none"> <li>• Open circuit in the squib ignition drive circuit</li> </ul>

If the diagnosis code(s) above is set, replace the SRS-ECU.

## POST-COLLISION DIAGNOSIS

Check and service the vehicle after collision as follows regardless of the operation of the pre-tensioner:

### SRS-ECU MEMORY CHECK

The check procedure is the same as before.

### REPAIR PROCEDURE

#### WHEN PRE-TENSIONER OPERATES IN A COLLISION.

1. Replace the following parts with new ones.
  - SRS-ECU
  - Front impact sensor
  - Seat belt with pre-tensioner (Refer to P.52B-11.)
2. Check harnesses for binding, connectors for damage, poor connections, and terminals for deformation.

### UNDEPLOYED AIR BAGS IN LOW-SPEED COLLISION

Check the SRS-ECU and Front impact sensor and Seat belt with pre-tensioner. If visible damage such as dents, cracks, or deformation are found on the the SRS-ECU and Front impact sensor and Seat belt with pre-tensioner, replace them with new ones. Concerning parts removed for inspection, replacement with new parts and cautions in working, refer to INDIVIDUAL COMPONENT SERVICE.

#### SRS-ECU

The check procedure is the same as before.



**Front impact sensor**

The check procedure is the same as before.

**Seat belt with pre-tensioner**

1. Check the seat belt for damage or deformation.
2. Check the pre-tensioner for cracks or deformation.
3. Check that the unit is installed correctly to the vehicle body.

## INDIVIDUAL COMPONENT SERVICE

If the seat belt with pre-tensioner are to be removed or replaced as a result of maintenance, troubleshooting, etc., follow each procedure (P.52B-10 – P.52B-12.)

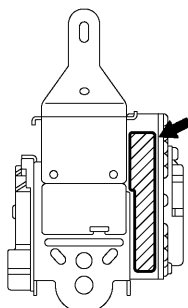
**Caution**

1. The seat belt with pre-tensioner should not be subjected to temperature 90°C, so remove the seat belts with pre-tensioner before drying or baking the vehicle after painting.
2. If the seat belt with pre-tensioner 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 LABEL

Caution labels on the seat belt with pre-tensioner are attached in the vehicle as shown. Follow label instructions when servicing the seat belt with

pre-tensioner. If the labels are dirty or damaged, replace with new ones.

**Seat belt with pre-tensioner**

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## SEAT BELT WITH PRE-TENSIONER

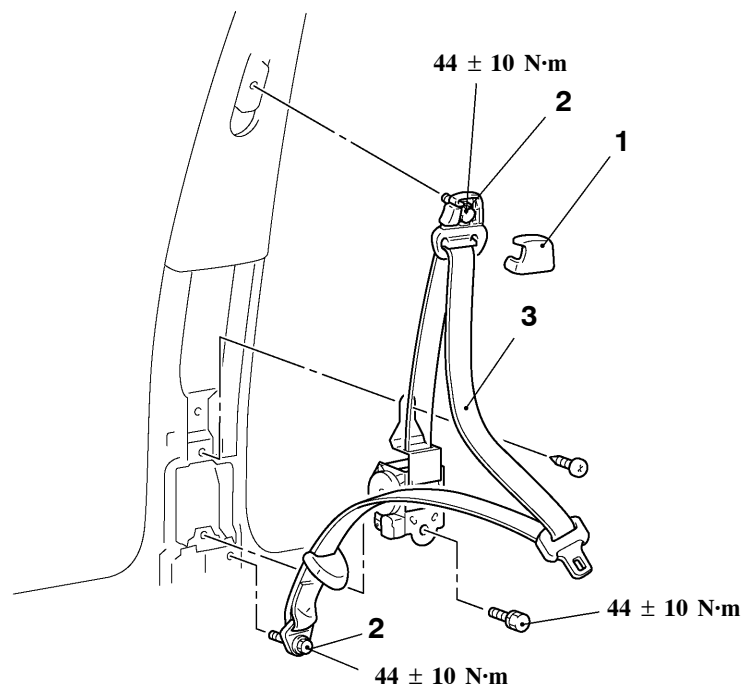
### Caution

1. Never attempt to disassemble or repair the with pre-tensioner. If faulty, replace it.
2. Be extremely careful when handling the seat belt with pre-tensioner. Do not subject it to shocks, drop it, bring it close to strong magnets or allow contact with water, grease or oil. Always replace it with a new part if any dents, cracks or deformation is found.
3. Do not place anything on top of the pre-tensioner.
4. Do not expose the seat belt with pre-tensioner to temperatures over 90°C.
5. After operating the pre-tensioner, replace the seat belt pre-tensioner with a new part.
6. Gloves and protective goggles should be worn when handling a pre-tensioner once it has been used.
7. If disposing of a seat belt with pre-tensioner which has not yet been used, its pre-tensioner should be operated first before disposal. (Refer to P.52B-13.)

## REMOVAL AND INSTALLATION

### Pre-removal and Post-installation Operation

- Turn Ignition Key to LOCK (OFF) Position
- Disconnect the Negative (-) Battery Terminal.



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### Removal steps

1. Sash guide cover
2. Outer seat belt connection
  - Center pillar trim, lower
3. Seat belt with pre-tensioner

### Installation steps

- A◀
- Post-installation inspection
  - 3. Seat belt with pre-tensioner
    - Center pillar trim, lower
  - 2. Outer seat belt connection
  - 1. Sash guide cover
    - Negative (-) battery cable connection
- B◀
- Pre-installation inspection

### NOTE

The figure shows the seat belt with pre-tensioner (RH)

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

1. Even new seat belt with pre-tensioner require inspection before installation.

**Caution**

**When discarding the seat belt with pre-tensioner, operate the pre-tensioner as specified in the service procedure. (Refer to P.52B-13.)**

2. Connect the negative (-) battery terminal.
3. Connect the MUT-II to the diagnosis connector (16 pin).

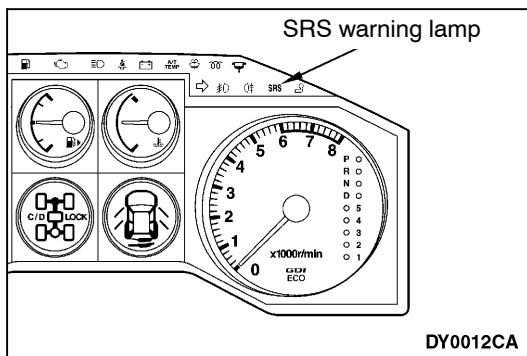
**Caution**

**Turn the ignition switch to the LOCK (OFF) position when connecting and disconnecting the MUT-II.**

4. Turn the ignition key to the ON position.
5. Read a diagnosis code to refer to that the SRS is operating properly except an open in the pre-tensioner circuit.
6. Turn the ignition switch to LOCK(OFF) position.
7. Disconnect the negative (-) battery cable and insulate with tape.

**Caution**

**Wait at least 60 seconds after the disconnection of the battery cable before any further job.  
(Refer to P.52B-4, item 5 of the SRS Service Precautions)**

**►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 after turning OFF?
4. If no, refer to troubleshooting.  
(Refer to P.52B-6)

**INSPECTION****SEAT BELT WITH PRE-TENSIONER CHECK**

If any part is found to be faulty during the inspection, it must be replaced with a new one.

Dispose of the old one according to the specified procedure.  
(Refer to P.52B-13.)

- Check pre-tensioner for dents, cracks or deformation.

## SEAT BELT PRE-TENSIONER DISPOSAL PROCEDURES

Before disposing of a vehicle which is equipped with seat belts with pre-tensioner, or when disposing of the seat belts with pre-tensioner themselves, the

following procedures must be used to deploy the pre-tensioners before disposal.

### UNDEPLOYED SEAT BELT PRE-TENSIONER DISPOSAL

#### Caution

1. If the vehicle is to be scrapped or otherwise disposed of, operate the pre-tensioners inside the vehicle. If the vehicle is still to be used and only the seat belt pre-tensioner are to be disposed of, operate the pre-tensioners outside the vehicle.
2. Since a large amount of smoke is produced when the pre-tensioner is operated, avoid residential areas whenever possible.
3. Since there is a loud noise when the pre-tensioners are operated, 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

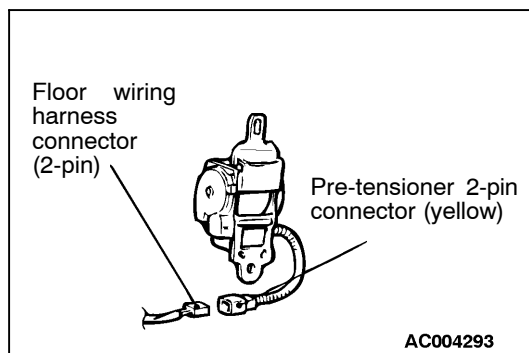
1. Move the vehicle to an isolated spot.
2. Disconnect the negative (–) and positive (+) battery cables from the battery terminals, and then remove the battery from the vehicle.

#### Caution

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

3. Operate the pre-tensioner as specified in the service procedures that follows.
  - (1) Remove the center pillar trim, lower.

- (2) Remove the connection between the pre-tensioner 2-pin connector (red) and the floor wiring harness connector (2-pin).

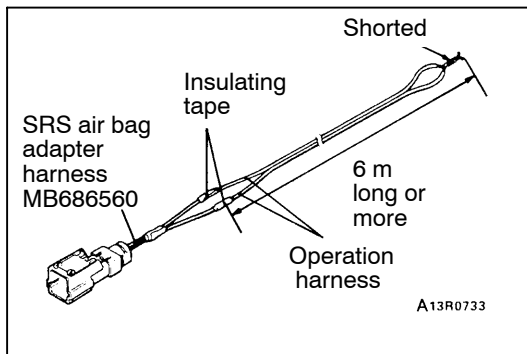


**Caution**

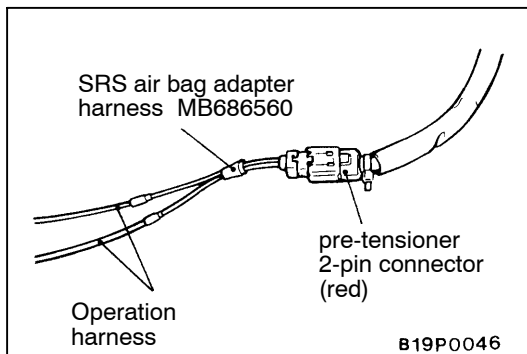
The pre-tensioner both in the driver's and passenger's sides should be operated.

**NOTE**

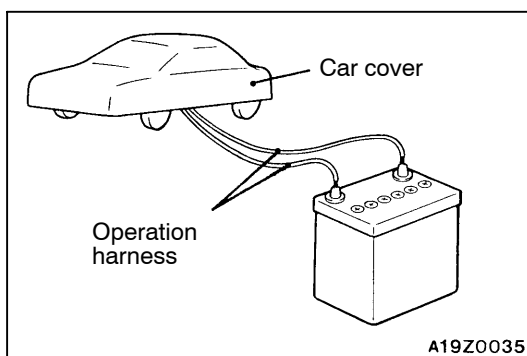
Once disconnected from the floor wiring harness, both electrode of the pre-tensioner connector short automatically. This prevents the pre-tensioner from accidental operation caused by static etc.



- (2) Connect operation harness longer than 6 m to each SRS air bag adapter harness and insulate the connections with plastic tape. Also, connect the operation harness in the other ends to short, thereby preventing the pre-tensioner from accidental operation caused by static etc.



- (3) Connect the SRS air bag adapter harness to the pre-tensioner 2-pin connector (red) and route the operation harness out of the vehicle.



- (4) Close all the doors with the windows fully closed and put a cover over the vehicle to minimize report.

**Caution**

The cover is required as the glass, if already damaged, may break.

- (5) Separate the operation harness as far from the vehicle as possible and connect to the terminals of the battery removed from the vehicle. Then operate the pre-tensioner.

**Caution**

- 1) Before operating the pre-tensioner, see that no one is in and near the vehicle.
  - 2) The operation of the pre-tensioner makes the inflator very hot. Before handling the inflator, wait more than 30 minutes for cooling.
  - 3) If the pre-tensioner fails to operate when the procedures above are followed, do not go near the pre-tensioner. Contact your local distributor.
- (6) After operation of the pre-tensioner, discard as specified in the procedure. (Refer to P.52B-16.)

**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 operate outside if wind is high. Even in a soft wind, ignite to windward of the pre-tensioner.
1. Disconnect the negative (–) and positive (+) battery cables from the battery terminals, and then remove the battery from the vehicle.

**Caution**

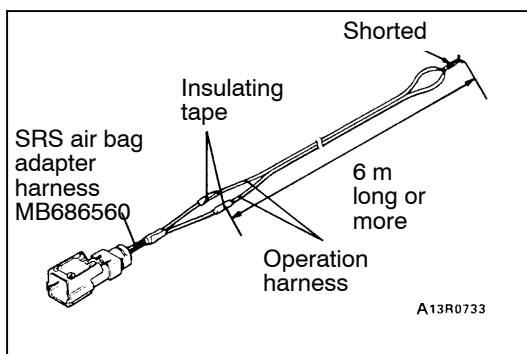
Wait at least 60 seconds after disconnecting the battery cables before doing any further work. (Refer to P.52B-4.)

2. Operate pre-tensioner as specified in the service procedures that follows.

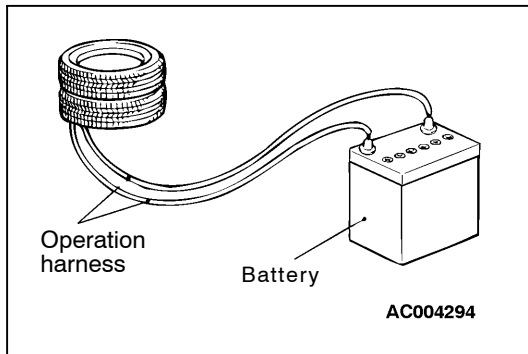
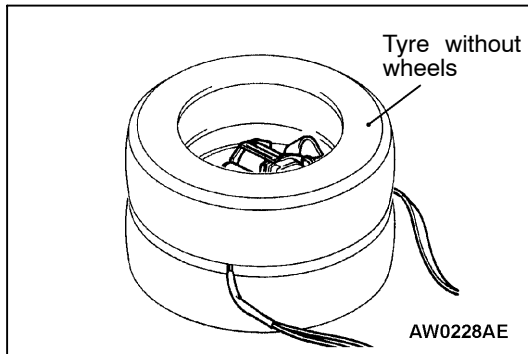
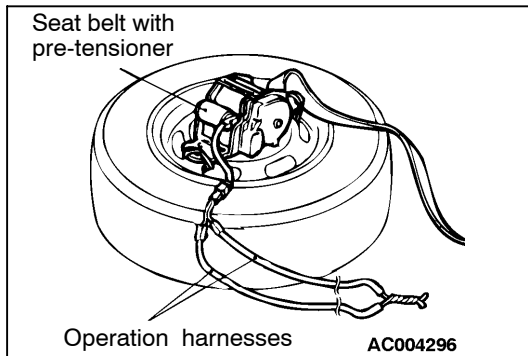
- (1) Remove the seat belt pre-tensioner from the vehicle. (Refer to P.52B-11.)

**Caution**

The pre-tensioner should be stored on a flat surface and placed so that the pre-tensioner operation surfaces are facing upward. Do not place anything on top of them.



- (2) Connect operation harness longer than 6 m to each SRS air bag adapter harness and insulate the connections with plastic tape. Also, connect the operation harness in the other ends to short, thereby preventing the pre-tensioner from accidental operation caused by static etc.



- (3) Feed a thick wire through the bracket of the seat belt with pre-tensioner, and connect it to a old tyre with a wheel.
- (4) Connect the operation harness to the pre-tensioner.
- (5) Pull out the seat belt outside the tyre.

- (6) Place an old tyre (without a wheel) on the tyre, which the seat belt with pre-tensioner is secured on.

**Caution**

**Be careful not to trap the SRS air bag adapter harness connector between tyres.**

- (7) Untie the operation harness ends at the place as far as possible from the seat belt with pre-tensioner, and connect the harness wires to the vehicle battery to activate the pre-tensioner.

**Caution**

- 1) **Before the operation, be sure that no one is near the pre-tensioner.**
- 2) **The operation of the pre-tensioner makes itself very hot. Before handling the pre-tensioner, wait more than 30 minutes for cooling.**
- 3) **If the pre-tensioner fails to operate when the procedures above are followed, do not go near the pre-tensioner. Contact your local distributor.**

- (8) After operation of the pre-tensioner, discard as specified in the procedure.

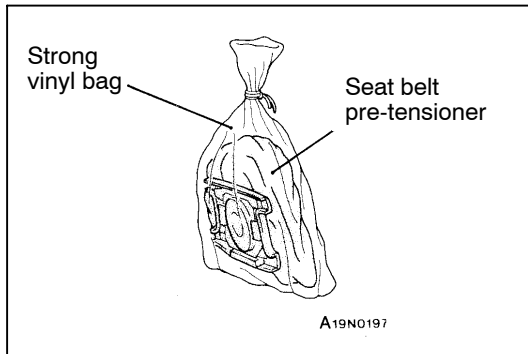
## OPERATED PRE-TENSIONER DISPOSAL PROCEDURES

After operation, the pre-tensioner 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 operation, so wait at least 30 minutes to allow it cool before attempting to handle it.
2. Do not put water or oil on the pre-tensioner after operation.
3. There may be, adhered to the operated pre-tensioner, material that could irritate the eye and/or skin, so wear gloves and safety glasses when handling a operated pre-tensioner.

**Caution**

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 pre-tensioner in a strong vinyl bag for disposal.
5. Be sure to always wash your hands after completing this operation.