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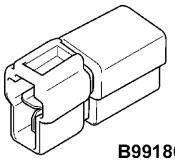
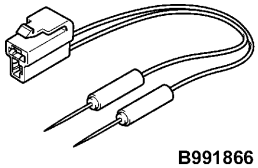
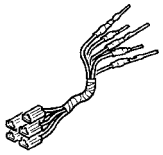
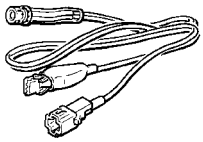
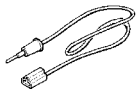
GENERAL

OUTLINE OF CHANGES

The following service procedures have been established due to the changes of the clock spring connector.

SPECIAL TOOLS

Tool	Number	Name	Use
 B991865	MB991865	Dummy resistor	Checking SRS air bag circuit
 B991866	MB991866	Resistor harness (for SRS air bag)	Checking SRS air bag circuit
A  B  C  D  C991223	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Check harness B: LED harness C: LED harness adapter D: Probe	Checking continuity and measuring voltage at SRS-ECU harness connector

TEST EQUIPMENT

Tool	Name	Use
 13R0746	Digital multi-meter	Checking SRS air bag circuit Use multi-meter for which the maximum test current is 2 mA or less at minimum range of resistance measurement

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TROUBLESHOOTING

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

INSPECTION CHART FOR DIAGNOSIS CODES

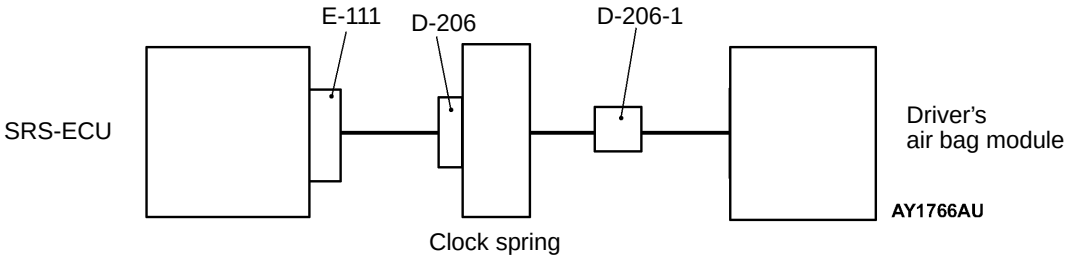
Code No.	Diagnosis item		Reference page
21*	Driver's air bag module (squib) system	Short circuit between terminals of the squib circuit	52B-3
22*	Driver's air bag module (squib) system	Open in the squib circuit	52B-5
61	Driver's air bag module (squib) system	Short-circuited to power supply	52B-6
62	Driver's air bag module (squib) system	Short-circuited to earth	

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.21 Driver's air bag module (squib) system	Possible cause
This code is output when short circuit occurs between terminals of the SRS-ECU driver's air bag module (squib) circuit. However, SRS warning lamp goes out when a normal operation is resumed (diagnosis code is not cleared.)	• Connector engagement faulty or short bar faulty* • Short circuit in the clock spring • Short circuit between terminals of the driver's air bag module (squib) circuit • Faulty connector • SRS-ECU inoperable

NOTE:
*: The connector of the squib circuit contains a short bar (short-circuiting the positive (+) cable and the negative (–) cable to avoid an erroneous deployment caused by static electricity when a connector is not connected). Thus, when a connector is connected, the short bar may not be released due to improper engagement of the connector or faulty connector as shown in the illustration below. Disconnect the connector as shown in the illustration below, then reconnect it. Check that a diagnosis code is output again after erasing the memory. If the diagnosis code is not output, the above-mentioned code is output due to improper engagement of the connector.



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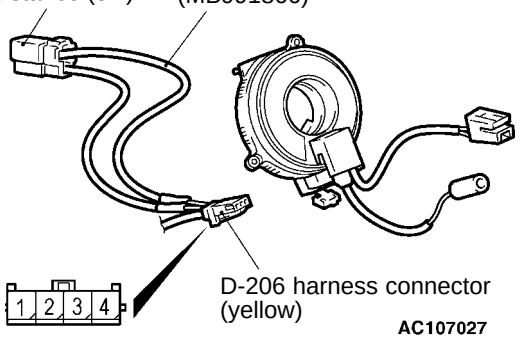


<Driver's air bag module(squib) and clock spring>

MUT-II self-diag code

- Disconnect the D-206 clock spring connector (4-pin, yellow).
- Connect the dummy resistor (MB991865) to the resistor harness (MB991866).
- Insert resistor harness (MB991866) to terminal No.3 and No.4 from the rear of D-206 harness connector.
  Caution
  Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.
- Connect the negative (–) terminal of the battery.
- Check the diagnosis code again after erasing the memory.

Is code No.21 output?

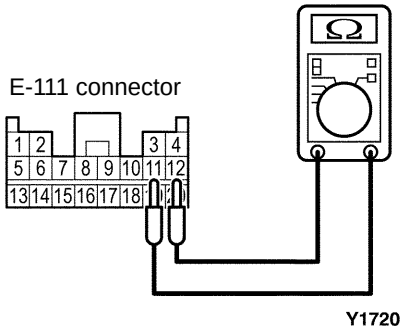
YES

<Check the circuit between the SRS-ECU and clock spring>

Measure at the E-111 SRS-ECU connector.

- Disconnect the E-111 SRS-ECU connector.
- Disconnect the D-206 clock spring connector.
  Caution
  Disconnect the connector and short-circuit the squib circuit before releasing the short bar of the SRS-ECU connector in the following operation.
- Insert a cable band (width: 3 mm, thickness: 0.5 mm) between terminals 11, 12 and the short bar between terminals 11 and 12 and the short bar, and release the short bar.
  (See Figure A.)
  Caution
  As the short bar may not be releasable if inserted insufficiently, insert more than 4 mm.
- Measure at the harness side.
- Continuity check between terminals 11 and 12
  Caution
  Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.

OK: No continuity



OK

Replace the SRS-ECU.

NO

Check the clock spring. (Refer to P.52B-11.)

OK

Replace the driver's air bag module (squib).

NG

Replace the clock spring.

NG

Check connector: E-111, D-206

OK

Check the trouble symptoms.

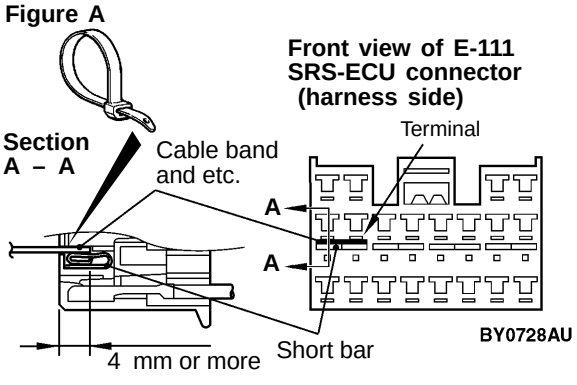
NG

Check the harness between the clock spring and the SRS-ECU, and repair if necessary.

NG

Repair

Figure A



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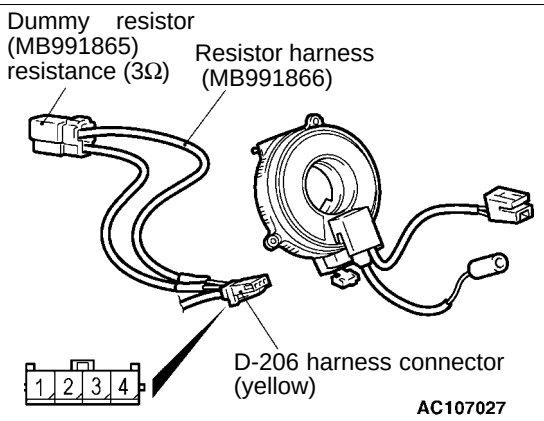
Code No.22 Driver's air bag module (squib) system	Possible cause
This code is output when open circuit occurs in the SRS-ECU driver's air bag module (squib) circuit. However, SRS warning lamp goes out when a normal operation is resumed (diagnosis code is not cleared.)	• Open in the clock spring • Half open in the circuit due to improper neutral positioning of the clock spring • Open in the driver's air bag module (squib) circuit • Driver's air bag module (squib) connector falling out • Connector improper contact • SRS-ECU inoperable



<Driver's air bag module (squib) and clock spring check>

MUT-II self-diag code

- Disconnect the D-206 clock spring connector (4-pin, yellow).
- Connect the dummy resistor (MB991865) to the resistor harness (MB991866).
- Insert resistor harness (MB991866) to terminal No.3 and No.4 from the rear of D-206 harness connector.
  Caution
  Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.
- Connect the negative (–) terminal of the battery.
- Check the diagnosis code again after erasing the memory.

Is code No.22 output?

YES

<Check the circuit between the SRS-ECU and clock spring>

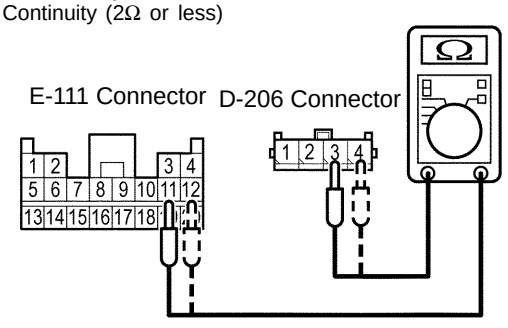
Measure at the E-111 SRS-ECU connector and the D-206 clock spring connector.

- Disconnect the E-111 SRS-ECU connector and the D-206 clock spring connector and measure at the harness side.
- Continuity check between the following terminals

E-111 connector		D-206 Connector
11	–	3
12	–	4

Caution
Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.

OK: Continuity (2Ω or less)



OK

Replace the SRS-ECU.

NO

Check the clock spring. (Refer to P.52B-11.)

OK

Replace the driver's air bag module (squib).

NG

Replace the clock spring.

NG

Check connector: E-111, D-206

OK

Check the trouble symptoms.

NG

Repair

NG

Check the harness between the clock spring and the SRS-ECU, and repair if necessary.

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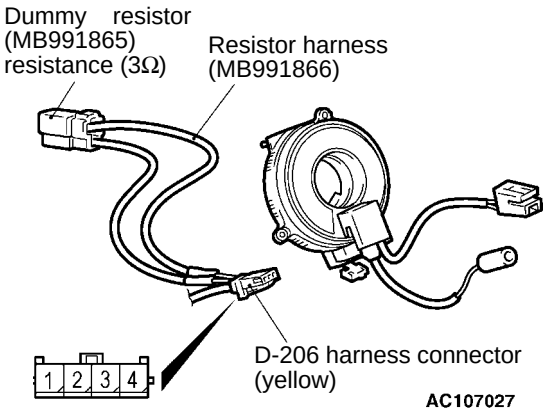
Code No.61 Driver's air bag module (squib) system (short-circuited to power supply) Code No.62 Driver's air bag module (squib) system (short-circuited to earth)	Possible cause
This code is output when the input terminal of the SRS-ECU driver's air bag module (squib) is short-circuited to power supply (code No.61) or short-circuited to earth (code No.62).	• Clock spring fault • Harness or connector fault • The harness of the driver's air bag module (squib) is short-circuited to power supply (code No.61) or short-circuited to earth (code No.62) • SRS-ECU inoperable



<Driver's air bag module (squib) and check the clock spring>
MUT-II self-diag code
- Disconnect the D-206 clock spring connector (4-pin, yellow).
- Connect the dummy resistor (MB991865) to the resistor harness (MB991866).
- Insert resistor harness (MB991866) to terminal No.3 and No.4 from the rear of D-206 harness connector.
  Caution
  Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.
- Connect the negative (–) terminal of the battery.
- Check the diagnosis code again after erasing the memory.

Is code No.61 or No.62 output?

YES (when No.61 is output)

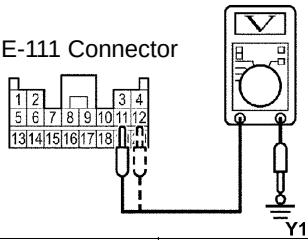
YES (when No.62 is output) → NO → Check the clock spring. (Refer to P.52B-11.)

Check the clock spring. (Refer to P.52B-11.) → OK → Replace the driver's air bag module (squib).

Check the clock spring. (Refer to P.52B-11.) → NG → Replace the clock spring.

<Check the circuit between the SRS-ECU and clock spring>
Measure at the E-111 SRS-ECU connector.
- Disconnect the E-111 SRS-ECU connector.
- Disconnect the the D-206 clock spring connector.
- Ignition switch: ON
- Measure at the harness side.
- Voltage between terminal 11 or 12 and body earth
  Caution
  Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.

OK: 0 V

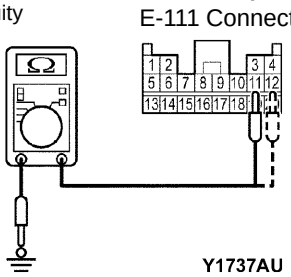


OK → Replace the SRS-ECU.

NG → **Check connector:** E-111, D-206

<Check the circuit between the SRS-ECU and clock spring>
Measure at the E-111 SRS-ECU connector.
- Disconnect the E-111 SRS-ECU connector.
- Disconnect the D-206 clock spring connector.
- Measure at the harness side.
- Continuity between terminal 11 or 12 and body earth
  Caution
  Do not directly insert a probe or other devices at the front of the connector to avoid a possible decrease in the contact pressure.

OK: No continuity



OK → Replace the SRS-ECU.

NG → **Check connector:** E-111, D-206

Check connector: E-111, D-206 → NG → **Repair**

Check connector: E-111, D-206 → OK → Check the trouble symptoms.

Check the trouble symptoms. → NG → Check the harness between the clock spring and the SRS-ECU, and repair if necessary.

Check the trouble symptoms. → OK → Replace the SRS-ECU.

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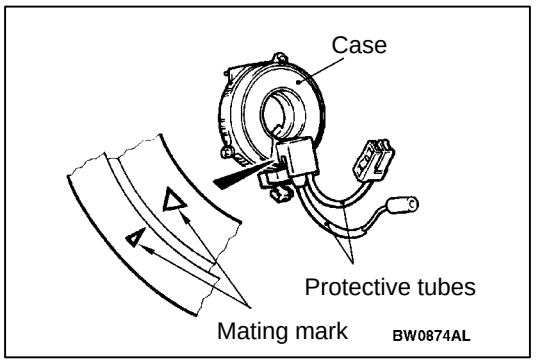
SRS MAINTENANCE

SRS COMPONENT VISUAL CHECK

CLOCK SPRING

1. Remove the clock spring. (Refer to P.52B-8.)
2. Check clock spring connectors and protective tube for damage, and terminals for deformation.
3. Visually check the clock spring case for damage.



4. 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 3/4 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.

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

   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.

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AIR BAG MODULES AND CLOCK SPRING

Caution

1. **Disconnect the negative (–) battery terminal and wait for 60 seconds or more before starting work. Also, the disconnected battery terminal should be insulated with tape.**
2. **Never attempt to disassemble or repair the air bag modules and clock spring.**
   If faulty, just replace with new one(s).
3. **Do not drop the air bag modules or clock spring or allow contact with water, grease or oil.**
   Replace if a dent, crack, deformation or rust are present.
4. **Store the air bag modules on a flat surface with the deployment surface facing up.**
   Do not place anything on top of them.
5. **Do not store the air bag modules in a place more than 93°C.**
6. **When the driver's and front passenger's air bags have been deployed, replace the driver's and passenger's air bag modules with new ones.**
7. **Put on gloves and safety glasses when handling deployed air bags.**
8. **When discarding the undeployed air bag module(s), be sure to deploy the air bag(s) in advance as specified in the service procedure.**
   (Refer to to P.52B-12.)

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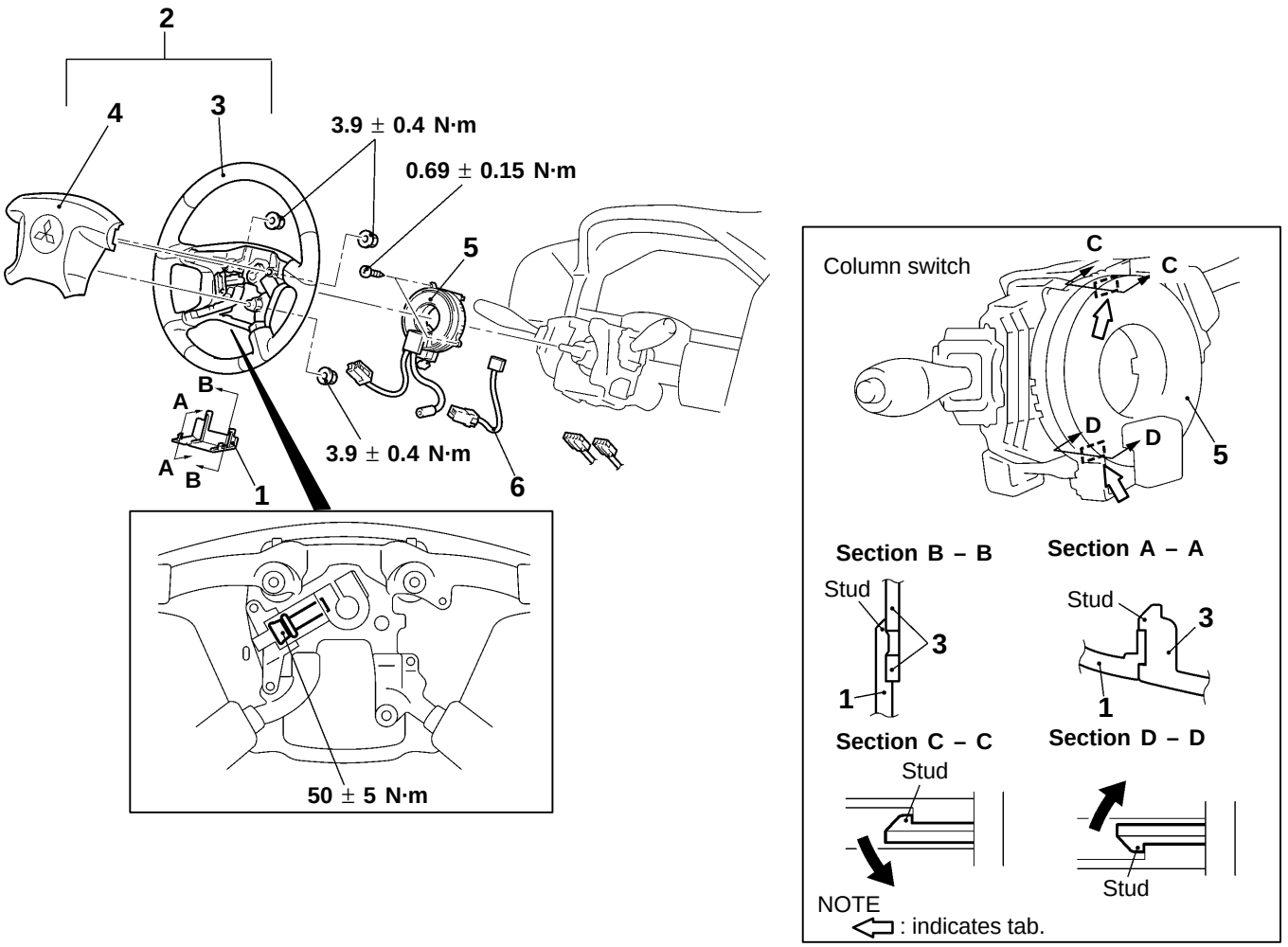
REMOVAL AND INSTALLATION

Pre-removal Operations
- After setting the steering wheel and the front wheels to the straight ahead position, remove the ignition key.
- Disconnect the negative battery (–) terminal.

<Driver's air bag module and clock spring>



AAC204150

Driver's air bag module removal steps

◀A▶ 1. Cover
◀B▶ 2. Steering wheel and air bag module assembly
3. Steering wheel
◀C▶ 4. Driver's air bag module

Driver's air bag module installation steps

▶A◀ ● Pre-installation inspection
4. Driver's air bag module
3. Steering wheel
▶C◀ 2. Steering wheel and air bag module assembly
1. Cover
● Connect the negative (–) battery terminal.
▶D◀ ● Post-installation inspection

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Clock spring removal steps

◀A▶ 1. Cover
◀B▶ 2. Steering wheel and air bag module assembly
- Lower column cover

◀D▶ 5. Clock spring
6. Clock spring sub harness

Clock spring installation steps

▶A◀
- Pre-installation inspection

6. Clock spring sub harness
▶B◀ 5. Clock spring
- Lower column cover

▶C◀ 2. Steering wheel and air bag module assembly
1. Cover
- Connect the negative (–) battery terminal.

▶D◀
- Post-installation inspection

<Passenger's air bag module>

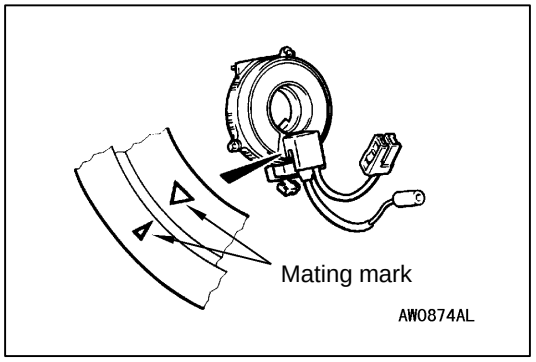
The removal and installation service procedures are the same as before.

<Front seatback assembly equipped with side air bag module>

The removal and installation service procedures are the same as before.

REMOVAL SERVICE POINTS

The removal service points are the same as before.



INSTALLATION SERVICE POINTS

The installation service points are the same as before except the followings.

▶B◀ CLOCK SPRING INSTALLATION

Align the mating marks on the clock spring as mentioned in the next step. Then, install the clock spring to the column switch.

CLOCK SPRING CENTERING

Fully turn the clock spring clockwise and then turn it back about 3 3/4 times counterclockwise to align the mating marks.

Caution

Unless the mating marks are properly aligned, the steering wheel gets stuck amid a turn or the flat cable in the clock spring is cut. These hinder the SRS air bag from proper operation, resulting in serious injury to the vehicle's driver.

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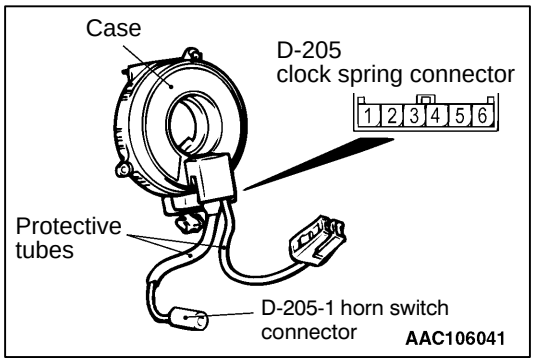
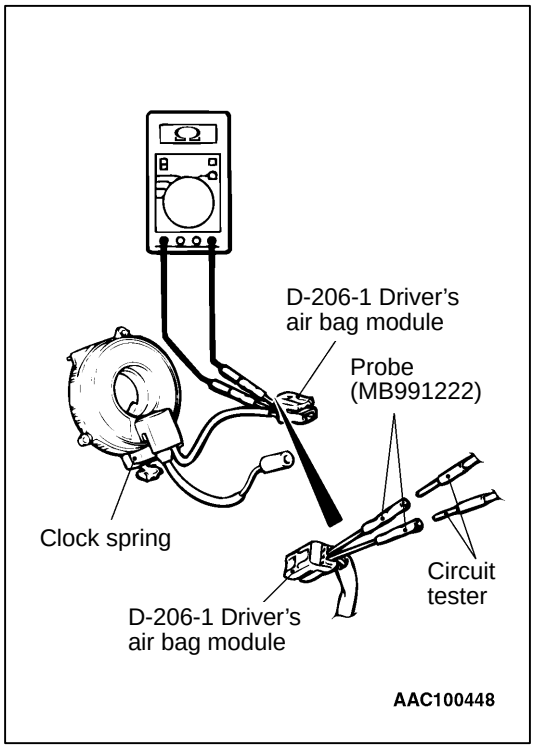


INSPECTION

Clock spring

If any malfunction is found in the following inspections, replace the clock spring with a new one.

1. Check the connectors and protective tubes for damage, and terminals for deformation.
2. Visually check the case for damage.
3. Check the continuity between clock spring 6-pin connector D-205 terminal No.1 and horn switch connector D-205-1 terminal.
   Caution
   Never insert the probe directly to the terminals from the front of the connector.



4. Insert the probes (MB991222) from the rear of the driver's air bag module connector D-61-1 as shown and connect a circuit tester to check that there is a continuity between terminals.

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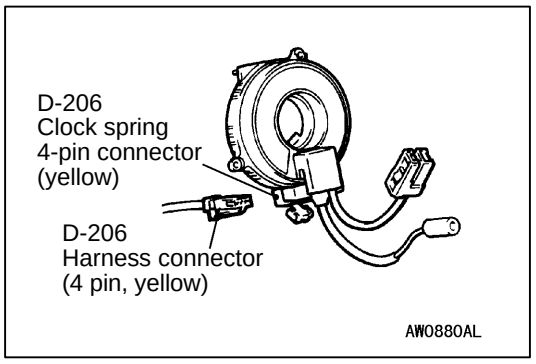
AIR BAG MODULE DISPOSAL PROCEDURES

The disposal procedures are the same as before except the followings.



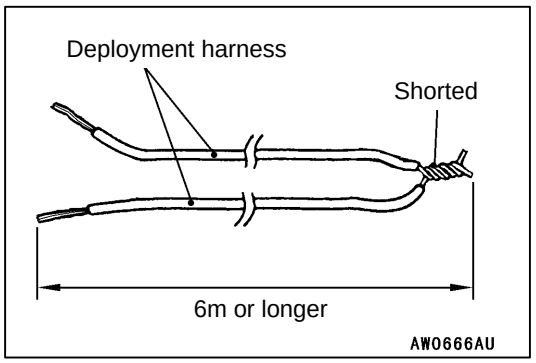
UNDEPLOYED AIR BAG MODULES

DEPLOYMENT INSIDE THE VEHICLE

Driver's air bag module

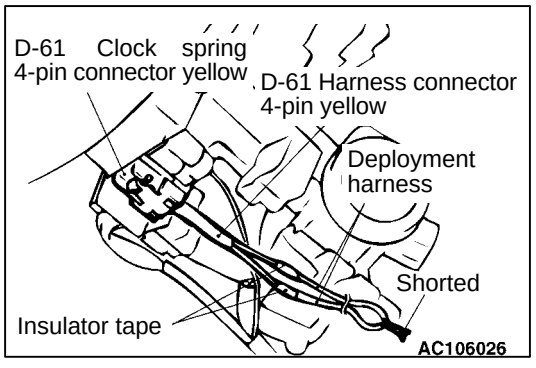
1. Remove the steering column cover, lower.
2. Disconnect the D-206 clock spring 4-pin connector (yellow) and D-206 harness connector (4-pin, yellow).

   NOTE
   Once disconnected from the instrument panel wiring harness, both electrodes of the clock spring connector short automatically. This prevents the driver's air bag from accidental deployment caused by static, etc.



3. Prepare two deployment harnesses longer than 6 m for deployment and connect the terminals in one end to short-circuit. This is to prevent accidental deployment caused by static etc.
4. Touch the vehicle's body with bare hands to discharge static in you.

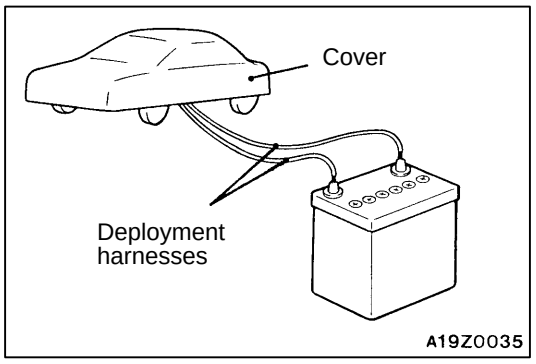
   Caution
   Never fail to do Step (3) in order to prevent accidental deployment caused by static.



5. Use a nipper or other tools to cut off the harness of the disconnected D-61 harness connector (4-pin, yellow).

   NOTE
   Carefully determine the cut off position in relation to the connection position of deployment harness so that enough space from the D-61 clock spring 4-pin connector (yellow). can be provided.

6. Connect deployment harnesses to each of two cut-off harnesses and insulate the connections with tape, then connect the deployment harness to the D-61 clock spring 4-pin connector in order to pull the deployment harness out of the vehicle.



7. 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.
8. Separate the deployment harnesses as far from the vehicle as possible and connect to the terminals of the battery removed from the vehicle. Then deploy.

   Caution
   (1) Before deploying the air bag, see that no one is in and near the vehicle. Also, put on safety glasses.
   (2) The deployment makes the inflator of the driver's air bag very hot. Before handling the inflator, wait more than 30 minutes for cooling.
   (3) If the driver's air bag module fails to deploy although the procedure is respected, do not go near the module. Contact your local distributor.
9. Discard the deployed air bag module according to Deployed Air Bag Module Disposal Procedures.