
GROUP 52B

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

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GENERAL INFORMATION

M2521000100615

- The driver's and passenger's (front) air bags and seat belts with pre-tensioner have been installed as standard equipment. Side-airbags and curtain air bags are available as an option.
- An inflator that does not contain sodium azide has been adopted for all types of the air bag modules.

SRS FRONT AIR BAG

The SRS is designed to supplement the front seat belts. It eliminates or reduces injury to the front passenger(s) by deploying air bag(s) in case of a head-on collision.

SRS SIDE-AIRBAG

Side-airbag systems in the front seats are activated when sideward impacts applied to the vehicle exceed a threshold to protect the occupants' upper bodies.

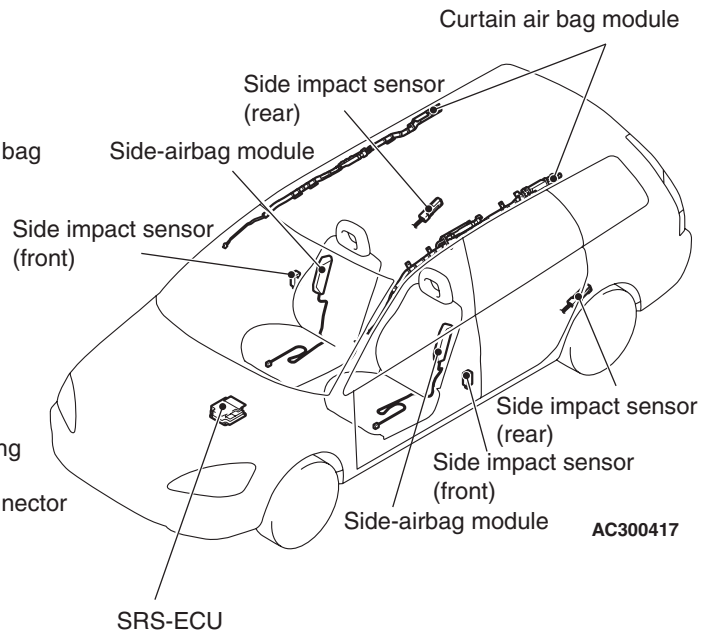
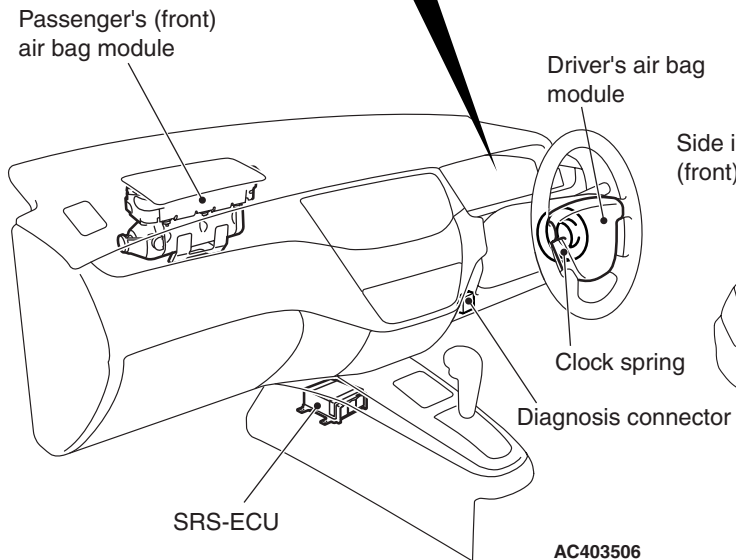
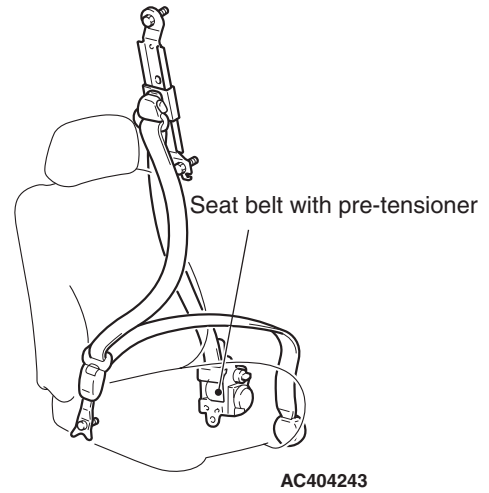
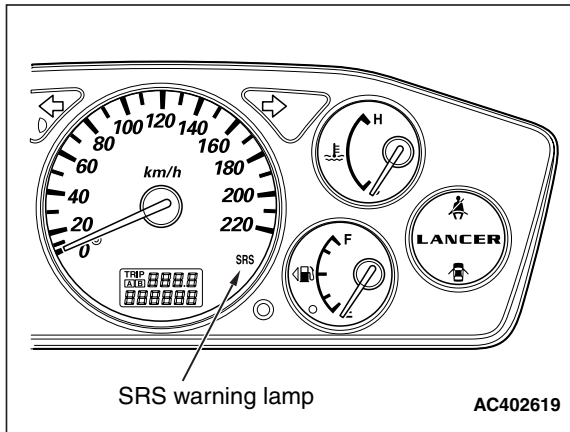
SRS CURTAIN AIR BAG

The curtain air bag systems are activated when sideward impacts applied to the vehicle exceed a threshold, to protect the heads of the occupants in the front and rear seats.

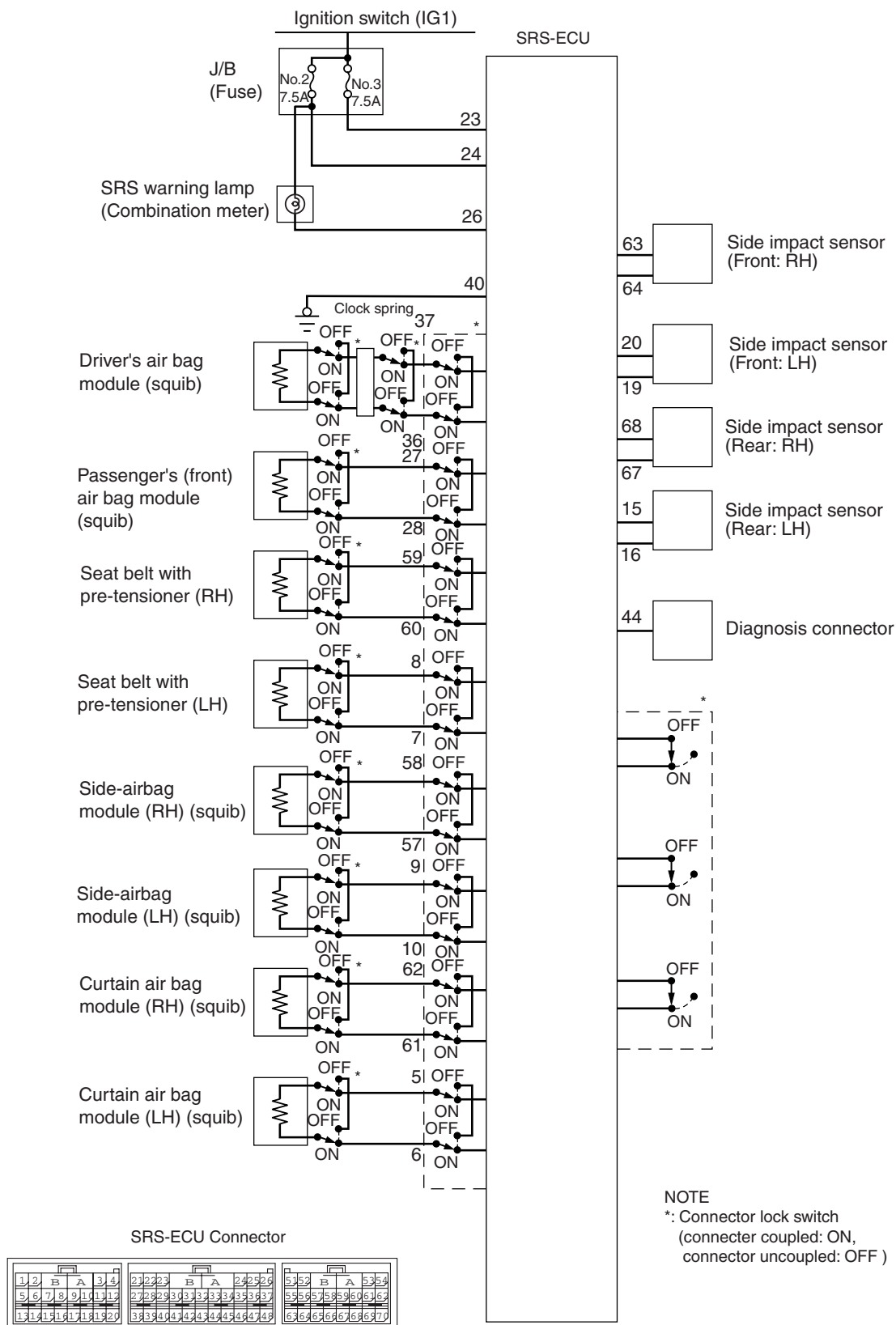
SEAT BELT WITH PRE-TENSIONER

The seat belts with pre-tensioner work simultaneously with the SRS. The pre-tensioner takes up seat belt slack immediately when a collision takes place, restraining the front passengers sooner than the SRS. This prevents the passengers from moving forward.

CONSTRUCTION DIAGRAM



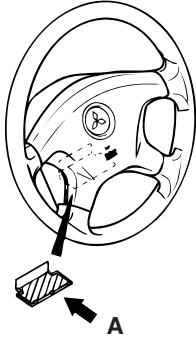
SRS SYSTEM CIRCUIT DIAGRAM



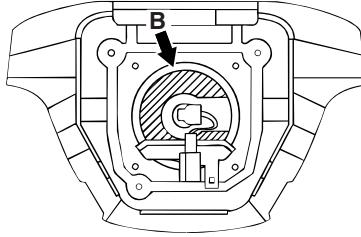
CAUTION LABELS

Labels to indicate cautions regarding the handling and the services of SRS air bag are attached on the position shown in the following illustration.

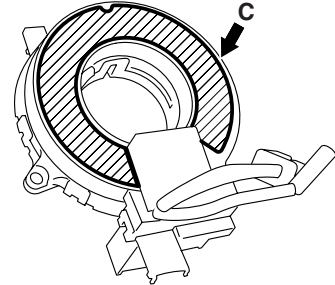
Steering wheel



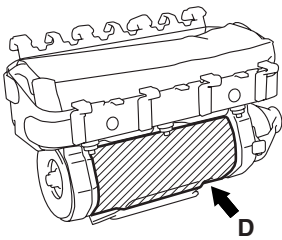
Driver's air bag module



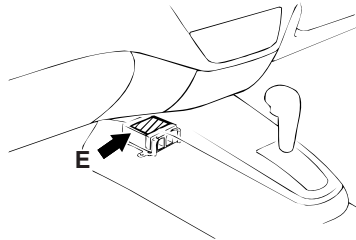
Clock spring



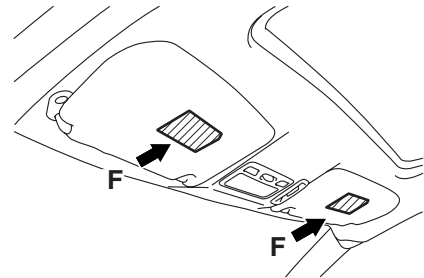
**Passenger's (front)
air bag module**



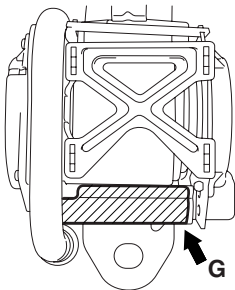
SRS-ECU



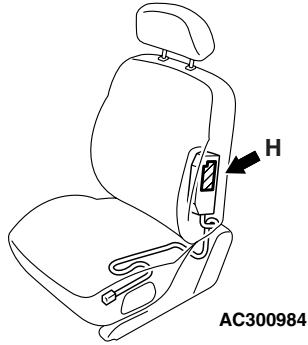
Sun visor



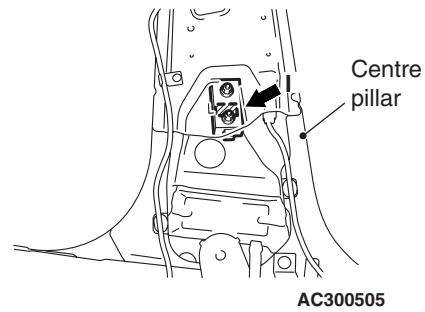
**Seat belt with pre-tensioner
(driver's and passenger's seat)**



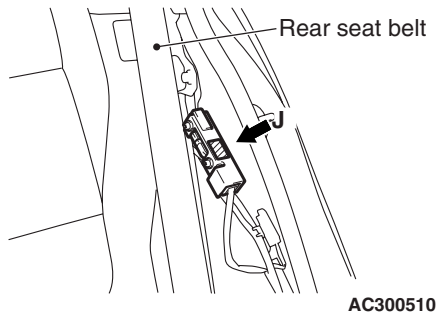
Side-airbag modules
(driver's and
front passenger's seat)



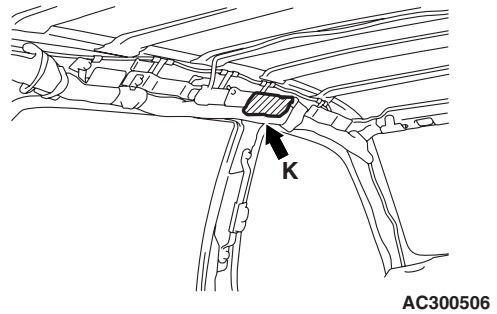
Side impact sensors (front)
(left and right)



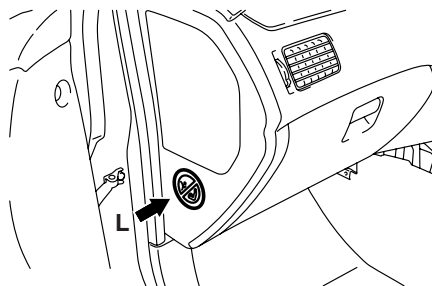
Side impact sensor (rear)
(left and right)





Curtain air bag modules
(left and right)



Instrument panel



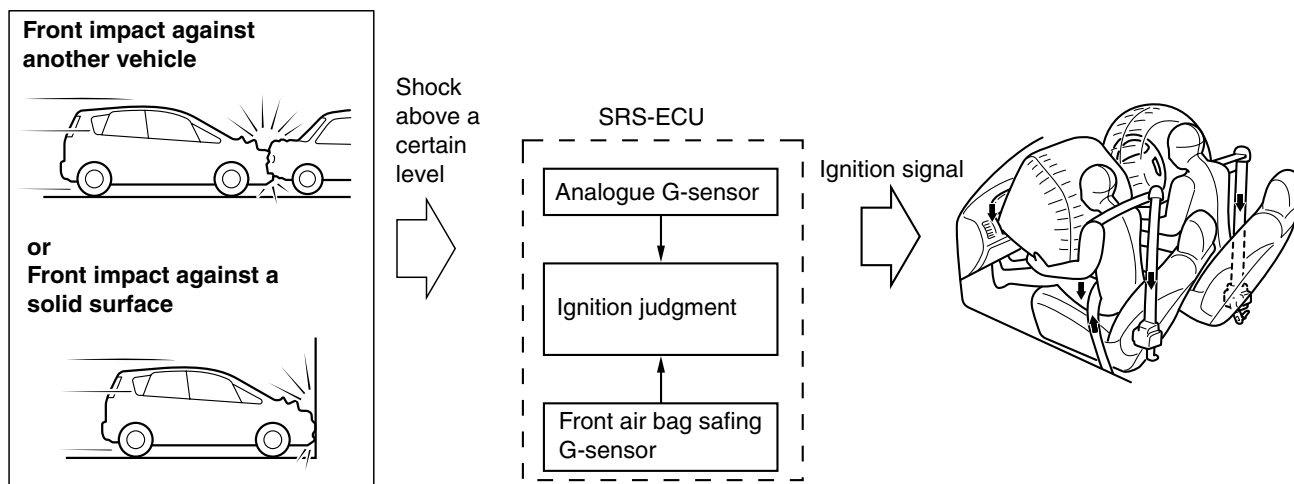
Label contents	
A	<p>WARNING: SRS BEFORE REPLACING STEERING WHEEL, READ SERVICE MANUAL. THIS AIR BAG MODULE CANNOT BE REPAIRED. DO NOT DISASSEMBLE OR TAMPER.</p>
B	<p>DANGER FLAMMABLE MATERIAL TO PREVENT PERSONAL INJURY, DO NOT DISMANTLE, INCINERATE OR BRING INTO CONTACT WITH ELECTRICITY. STORE BELOW 200 ° F (93 ° C). READ SERVICE MANUAL FOR DETAILS.</p>
C	<p>CAUTION: SRS CLOCKSPRING PLEASE DO NOT TURN EXCEPT WHEN REQUIRED. THIS IS NOT A REPAIRABLE PART. IF DEFECTIVE, PLEASE REPLACE ENTIRE UNIT ACCORDING TO THE SERVICE MANUAL INSTRUCTIONS. ALIGNMENT OF MODULES IS NECESSALY WHEN THEY ARE ADJUSTED AND/OR INSTALLED FOR THE ALIGNMENT PROCEDURES, FOLLOW THE SERVICE MANUAL INSTRUCTIONS.</p>
D, H	<p>WARNING FLAMMABLE/EXPLOSIVE SRS AIR BAG MODULE TO AVOID SERIOUS INJURY:</p> <ul style="list-style-type: none"> • DO NOT REPAIR, DISASSEMBLE OR TAMPER. • AVOID CONTACT WITH FLAME OR ELECTRICITY. • DO NO DIAGNOSIS/USE NO TEST EQPT OR PROBES. • STORE BELOW 200°F (93° C). • BEFORE DOING ANY WORK INVOLVING MODULE, READ SERVICE MANUAL FOR IMPORTANT FURTHER DATA.
E	<p>CAUTION: DO NOT DISASSEMBLE OR DROP. IF DEFECT REFER TO SERVICE MANUAL.</p>
F	<div>  <p>AC300151</p> </div> <p>WARNING TO AVOID DEATH OR SERIOUS INJURY</p> <ul style="list-style-type: none"> • DO NOT INSTALL REAR-FACING CHILD RESTRAINTS IN THE FRONT PASSENGER SEAT. • CHILDREN ARE SAFER IN THE REAR SEAT. • SEE THE OWNER'S MANUAL FOR FURTHER INFORMATION AND EXPLANATIONS.
G	<p>DANGER SEAT BELT PRETENSIONER CAUTION THIS ASSEMBLY CONTAINS AN EXPLOSIVE INITIATOR FLAMMABLE MATERIAL TO PREVENT PERSONAL INJURY</p> <ul style="list-style-type: none"> • DO NOT IMPACT, DISMANTLE OR INSTALL IT INTO ANOTHER VEHICLE. • SERVICE OR DISPOSE OF IT AS DIRECTED IN THE REPAIR MANUAL.
I	<p>CAUTION: DO NOT DISASSEMBLE OR DROP. IF DEFECT REFER TO SERVICE MANUAL.</p>

Label contents	
J	CAUTION: DO NOT DISASSEMBLE OR DROP.
K	WARNING FLAMMABLE/EXPLOSIVE TO AVOID SERIOUS INJURY: DO NOT REPAIR, DISASSEMBLE OR TAMPER. AVOID CONTACT WITH FLAME OR ELECTRICITY. DO NO DIAGNOSIS/USE NO TEST EQPT OR PROBES. STORE BELOW 200° F (93° C). BEFORE DOING ANY WORK INVOLVING MODULE. READ SERVICE MANUAL FOR IMPORTANT FURTHER DATA.
L	

SYSTEM OPERATION

FRONT AIR BAG AND SEAT BELT WITH PRE-TENSIONER

M2521000700071

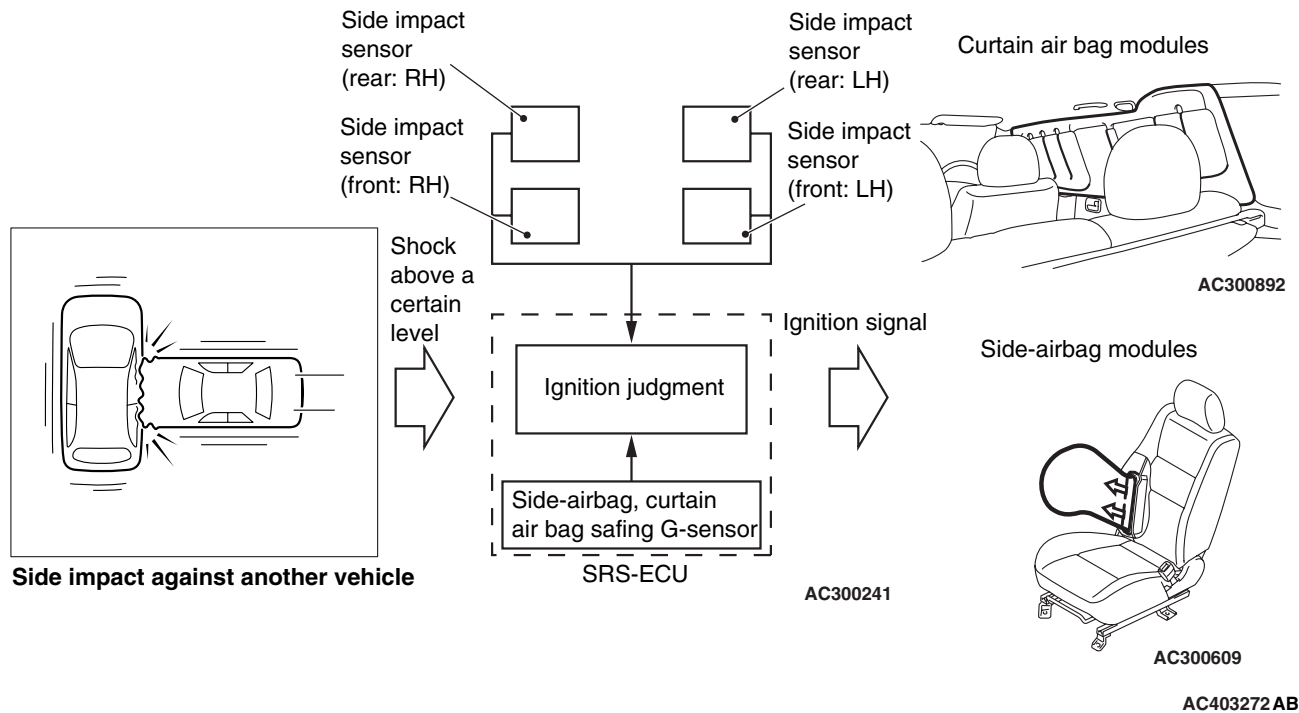


AC403271AB

In case of a frontal collision, if the analogue G-sensor in the SRS-ECU and the front air bag safing G-sensor simultaneously detect an impact that exceed a certain threshold (turn ON), the SRS-ECU sends an ignition signal to the air bag modules (squibs) and seat belt pre-tensioners (squibs) on the driver and passenger sides, thus inflating the air bags and operating the seat belt pre-tensioners.

SIDE AND CURTAIN AIR BAGS

M2521000800056



In case of a side collision, if an impact that exceeds a certain threshold is simultaneously detected by the front and rear side impact sensors installed in a centre pillar and an inner quarter panel respectively and by the side-airbag safing G-sensor (the sensors turn ON), the SRS-ECU sends an ignition signal to the

side-airbag module and curtain air bag module on the relevant side to inflate them. However, if the rear side-impact sensor and SRS-ECU detect the impact but the front side-impact sensor does not, only the curtain air bag inflates.

SYSTEM CONSTRUCTION

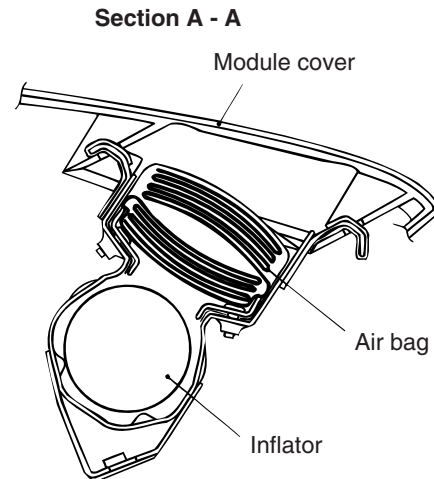
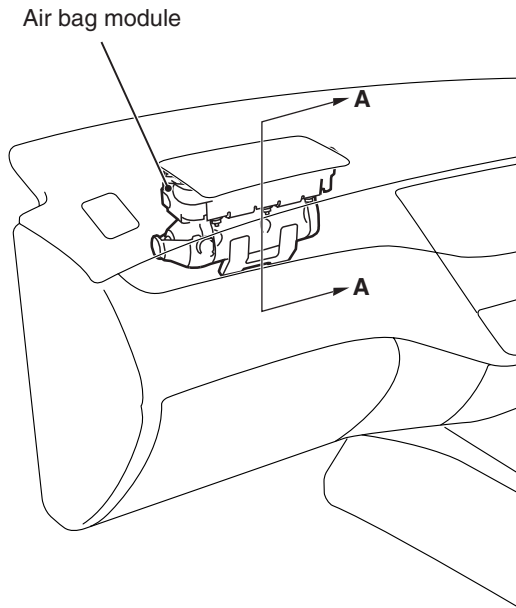
DRIVER'S AIR BAG MODULE

M2521002000294

Refer to GROUP 37, Steering wheel P.37-3.

PASSENGER'S (FRONT) AIR BAG MODULE

M2521003000264



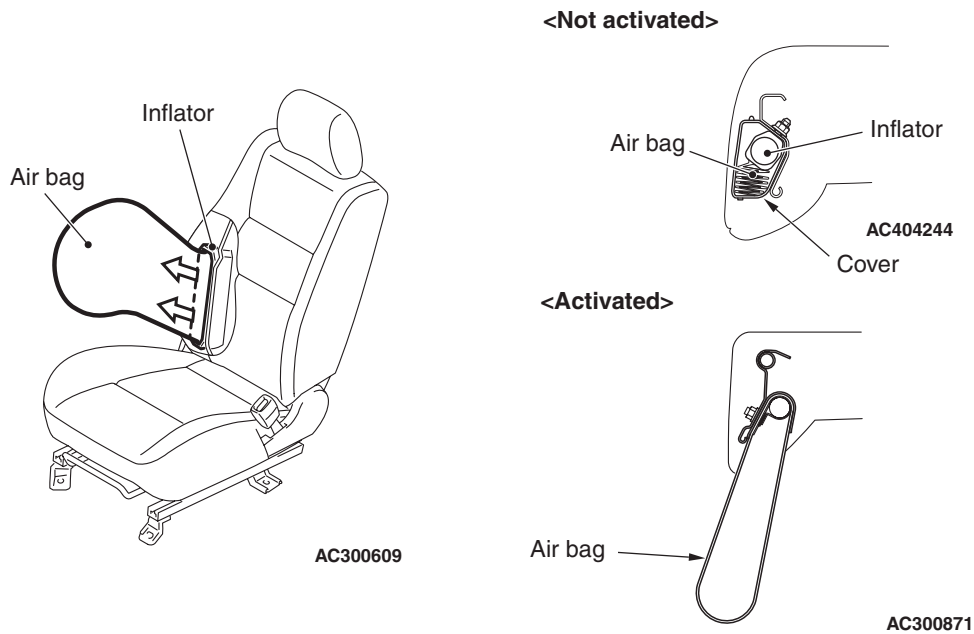
AC403273AB

The passenger's (front) air bag module consists of air bag, inflator, module cover (incorporating the instrument panel pad), and the fixing gear related to those parts.

NOTE: Its structure and operation are the same as 1999 PAJERO io.

SIDE-AIRBAG MODULE

M2521004000137



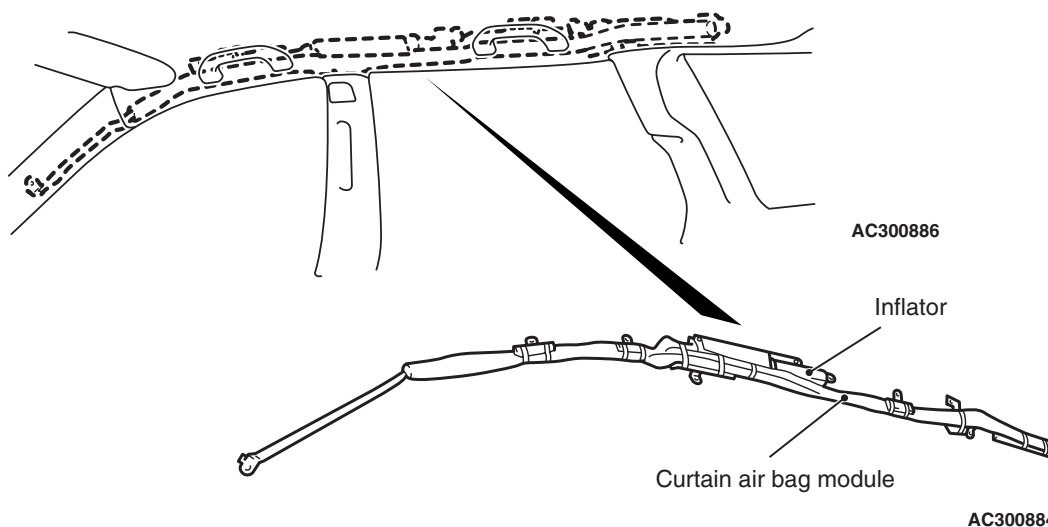
AC404458 AB

The side-airbag module consist of an air bag, an inflator, and the fixing gear relating to those parts, and is installed in the side supports outside the body on both the driver and passenger sides. Installation of an air bag in a seatback provides a stable protection capability regardless of the seat position and reclining angle.

NOTE: Its structure and operation are the same as 2005 LANCER.

CURTAIN AIR BAG MODULE

M2521000500099



AC300884

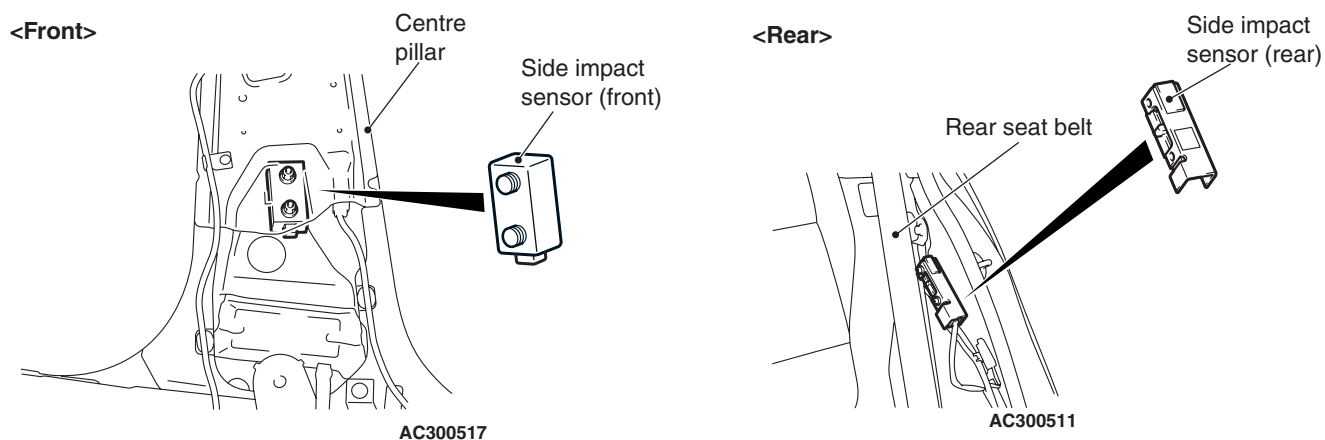
AC403274 AB

The curtain air bag module consists of an air bag, an inflator, and the fixing gear relating to those parts, and is installed in the roof side sections (from the driver's and the passenger's front pillars to the rear pillars).

NOTE: Its structure and operation are the same as 2004 COLT.

SIDE IMPACT SENSOR

M2521006000241



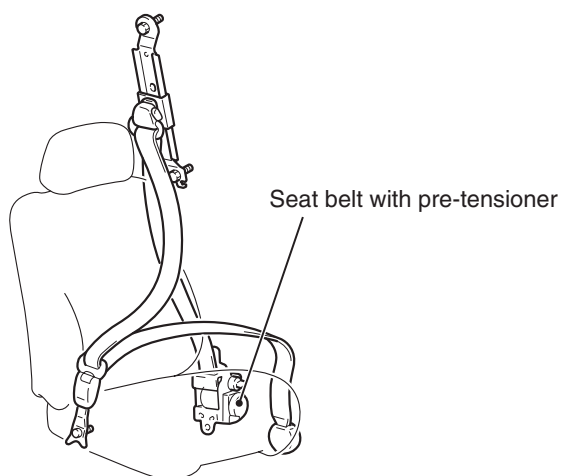
AC403275AB

The side impact sensor is installed in the lower parts of the centre pillars and the inner rear quarter panels, and contains an analogue G-sensor and a micro-computer.

NOTE: Its structure and operation are the same as 2004 COLT.

SEAT BELT WITH PRE-TENSIONER

M2521008000247



AC404243AB

The seat belt incorporating the pre-tensioner automatically winds the seat belt upon front impact to reduce forward shifting of the passenger.

The seat belt pre-tensioner is built into the driver's and passenger's front seat belt retractor.

NOTE: Its structure and operation are the same as 2005 LANCER.

SRS-ECU

M2521007000415

The SRS-ECU incorporates an analogue G-sensor and safing G-sensor for frontal collisions and a safing G-sensor for side collisions.

In frontal collisions, the driver's and passenger's (front) air bags deploy only when both the analogue and safing G-sensors detect simultaneously a collision-induced G of a level exceeding the threshold as in the case with the conventional system.

In side collisions, the side and curtain air bags on the side subjected to an impact deploys if the side impact sensors (front and rear) and the SRS-ECU safing G-sensor detect simultaneously lateral G forces above the predetermined level.

The SRS-ECU incorporates the crash detection door unlock signal process circuit.

The SRS-ECU is provided with the following capabilities:

- Backup power supply in case of power failure in collisions: Backup capacitor
- Boosting function in case of battery voltage drop: DC-DC converter
- Self-diagnosis function to avoid system's operation errors and improve its reliability

CAUTION

Never disassemble the SRS-ECU.

DIAGNOSIS FUNCTION

The SRS-ECU has the following functions to make system check using M.U.T.-II/III easy.

- Diagnosis code set
- Service data output

DIAGNOSIS CODE SET

The SRS-ECU diagnoses the following items and stores a diagnosis code in the non-volatile memory (EEPROM*1) when a problem is detected. Therefore, the memory is not deleted after a battery terminal is disconnected. (The diagnosis code memory can be deleted by the M.U.T.-II/III).

Code No.	Major Contents of Diagnostics
3A* ³ , * ⁴	Curtain air bag squib (RH) short-circuited
3B* ³ , * ⁴	Curtain air bag squib (RH) open-circuited
3C* ⁴	Curtain air bag squib (RH) activating circuit short-circuited
3D* ⁴	Curtain air bag squib (RH) activating circuit open-circuited
3E* ⁴	Curtain air bag squib (RH) drive circuit (power supply side) short-circuited
3F* ⁴	Curtain air bag squib (RH) drive circuit (earth side) short-circuited
4A* ³ , * ⁴	Curtain air bag squib (LH) short-circuited
4B* ³ , * ⁴	Curtain air bag squib (LH) open-circuited
4C* ⁴	Curtain air bag squib (LH) activating circuit short-circuited
4D* ⁴	Curtain air bag squib (LH) activating circuit open-circuited
4E* ⁴	Curtain air bag squib (LH) drive circuit (power supply side) short-circuited
4F* ⁴	Curtain air bag squib (LH) drive circuit (earth side) short-circuited
5A* ² , * ⁴	Rear side impact sensor (LH) voltage error
5B* ⁴	G-sensor of rear side impact sensor (LH) failure
5C* ⁴	Rear side impact sensor (LH) communication error
5D* ⁴	Rear side impact sensor (LH) communication impossible
6A* ² , * ⁴	Rear side impact sensor (RH) voltage error
6B* ⁴	G-sensor of rear side impact sensor (RH) failure

Code No.	Major Contents of Diagnostics
6C*4	Rear side impact sensor (RH) communication error
6D*4	Rear side impact sensor (RH) communication impossible
14	Analogue G-sensor malfunction
15	Safing G-sensor short-circuited (for frontal collision)
16	Safing G-sensor open-circuited (for frontal collision)
17*4	Safing G-sensor malfunction (for side collision)
21*3	Driver's air bag squib short-circuited
22*3	Driver's air bag squib open-circuited
24*3	Passenger's (front) air bag squib short-circuited
25*3	Passenger's (front) air bag squib open-circuited
26*3	Driver's pre-tensioner squib short-circuited
27*3	Driver's pre-tensioner squib open-circuited
28*3	Passenger's (front) pre-tensioner squib short-circuited
29*3	Passenger's (front) pre-tensioner squib open-circuited
31	SRS-ECU capacitor circuit voltage too high
32	SRS-ECU capacitor circuit voltage too low
34*2	SRS-ECU connector lock out of order
35	Ignition of the air bag completed
39	Air bags deployed simultaneously
41*2	Power supply voltage (IG1 (A) voltage) drops abnormally.
42*2	Power supply voltage (IG1 (B) voltage) drops abnormally.
43	SRS warning lamp circuit open-circuited
44	SRS warning lamp circuit malfunction
45	SRS-ECU non-volatile memory (EEPROM) and A/D converter system
46*2	Incorrect installation of SRS-ECU
51	Driver's air bag squib activating circuit short-circuited
52	Driver's air bag squib activating circuit open-circuited
54	Passenger's (front) air bag squib activating circuit short-circuited
55	Passenger's (front) air bag squib activating circuit open-circuited
56	Driver's seat belt pre-tensioner squib activating circuit short-circuited
57	Driver's seat belt pre-tensioner squib activating circuit open-circuited
58	Passenger's seat belt pre-tensioner squib activating circuit short-circuited
59	Passenger's seat belt pre-tensioner squib activating circuit open-circuited
61	Driver's air bag squib drive circuit (power supply side) short-circuited
62	Driver's air bag squib drive circuit (earth side) short-circuited
64	Passenger's (front) air bag squib drive circuit (power supply side) short-circuited
65	Passenger's (front) air bag squib drive circuit (earth side) short-circuited
66	Driver's pre-tensioner squib (power supply side) short-circuited

Code No.	Major Contents of Diagnostics
67	Driver's pre-tensioner squib (earth side) short-circuited
68	Passenger's (front) pre-tensioner squib drive circuit (power supply side) short-circuited
69	Passenger's (front) pre-tensioner squib drive circuit (earth side) short-circuited
71 ^{*3, *4}	Side-airbag squib (RH) short-circuited
72 ^{*3, *4}	Side-airbag squib (RH) open-circuited
73 ^{*4}	Side-airbag squib (RH) drive circuit shorted
74 ^{*4}	Side-airbag squib (RH) drive circuit open
75 ^{*4}	Side-airbag squib (RH) drive circuit (power supply side) shorted
76 ^{*4}	Side-airbag squib (RH) drive circuit (earth side) shorted
79 ^{*4}	Front side impact sensor (LH) communication error
81 ^{*3, *4}	Side-airbag squib (LH) short-circuited
82 ^{*3, *4}	Side-airbag squib (LH) open-circuited
83 ^{*4}	Side-airbag squib (LH) drive circuit shorted
84 ^{*4}	Side-airbag squib (LH) drive circuit open
85 ^{*4}	Side-airbag squib (LH) drive circuit (power supply side) shorted
86 ^{*4}	Side-airbag squib (LH) drive circuit (earth side) shorted
89 ^{*4}	Front side impact sensor (RH) communication error
91 ^{*2, *4}	Front side impact sensor (LH) voltage error
92 ^{*4}	G-sensor of front side impact sensor (LH) failure
93 ^{*4}	Front side impact sensor (LH) communication impossible
94 ^{*2, *4}	Front side impact sensor (RH) voltage error
95 ^{*4}	G-sensor of front side impact sensor (RH) failure
96 ^{*4}	Front side impact sensor (RH) communication impossible

NOTE:

**1: Electrically Erasable Programmable ROM*

**2: This diagnosis code memory will be automatically cleared from the memory and the SRS warning lamp will be switched off when the system returns to normal condition.*

**3: The diagnosis codes will remain in memory and the SRS warning lamp will be switched off if the system returns to normal condition.*

**4: Vehicles with side-airbag.*

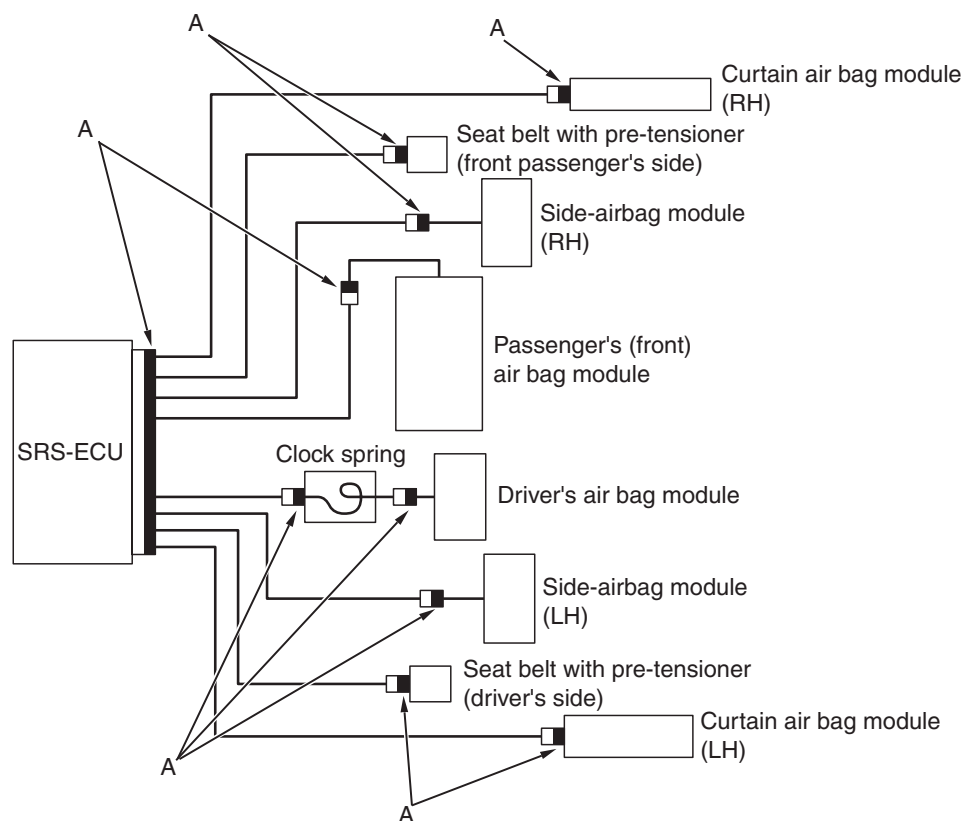
SERVICE DATA OUTPUT

When the SRS-ECU detects a problem, it stores a diagnosis code and the duration that the problem has lasted in the non-volatile memory. In addition, how often a diagnosis code and duration are cleared by the M.U.T.-II/III are stored in the non-volatile memory as a reference for service work. This data can be read by the M.U.T.-II/III.

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

SRS AIR BAG SPECIAL CONNECTOR

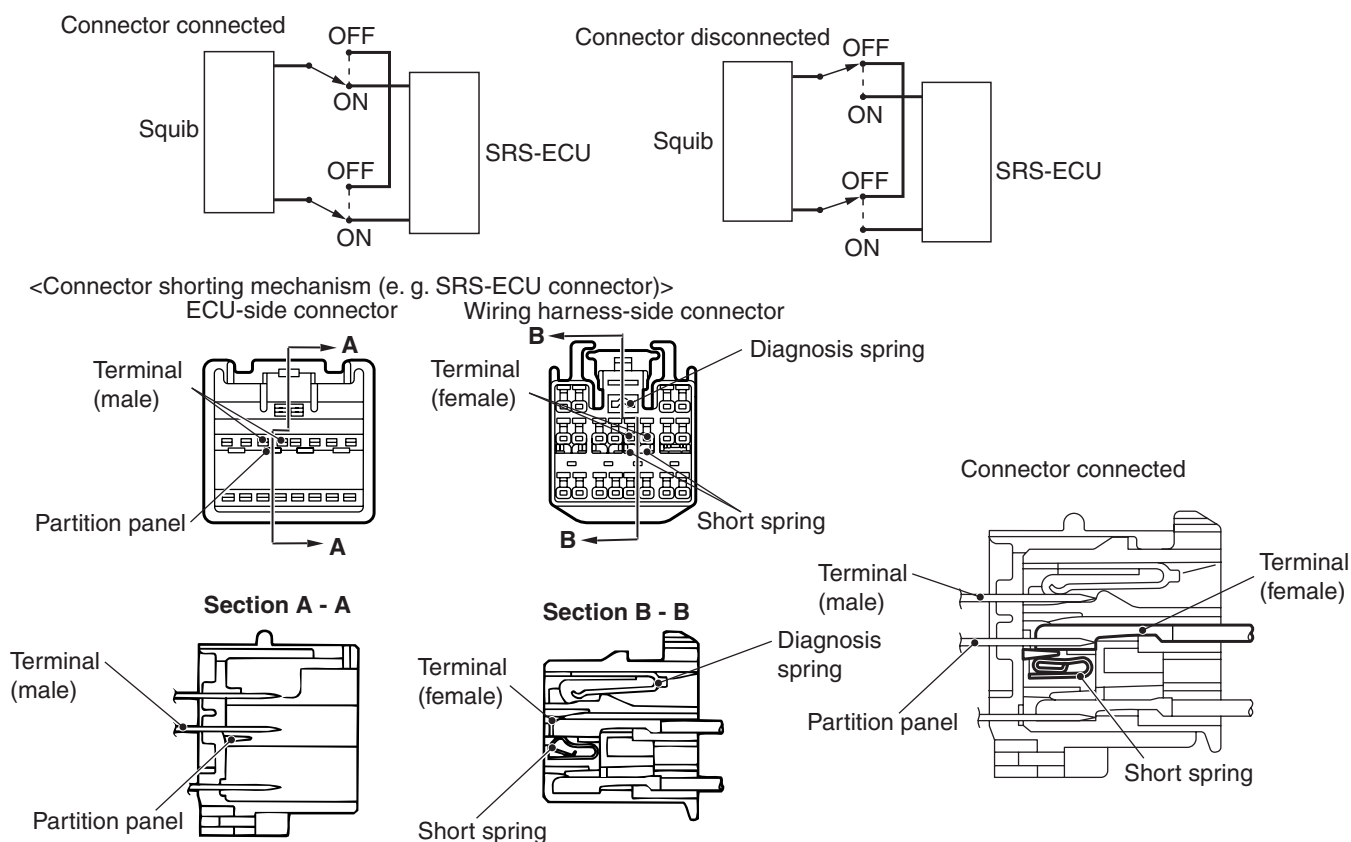
M2521009000303



AC304767AF

To enhance the system reliability, the connector engagement check mechanism is used. And a connector lock switch is integrated in the SRS-ECU connector, the air bag module connectors, the clock spring connector, the seat belt pre-tensioner connectors (black connector "A" shown in the illustration above).

SQUIB CIRCUIT CONNECTOR LOCK SWITCH



AC300257 AC

CAUTION

When the connector is disconnected, it is normal for short-circuiting to occur between the connector terminals.

- The diagnosis spring is assembled on the SRS-ECU wiring harness-side connector. When the ECU-side connector is connected to the SRS-ECU wiring harness-side connector, the diagnosis spring is disengaged from the terminal to short the circuit between the ECU-side connector terminals. The connector engagement is detected electrically by flowing the monitor current to this circuit.

- This mechanism automatically short-circuits the power supply side terminal and earth side terminal of the air bag when the connector is disconnected. A short spring is incorporated in the connector to short-circuit the power supply side terminal and earth side terminal of the air bag (no potential difference between the two terminals) and prevent flow of current by static electricity to the squib.

NOTES