

SUPPLEMENTAL RESTRAINT SYSTEM

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GENERAL INFORMATION

Description

The vehicle adopts the occupant restraint system, which includes active and supplemental types. The active restraint system requires the occupants to take some actions, such as fastening the seat belt; while the supplemental restraint system requires no action from the occupants.

Active Restraint System:

- Driver seat belt and front passenger seat belt
- Rear seat belt

Supplemental Restraint System:

- Driver airbag

The driver airbag is installed in the steering wheel, which will inflate to protect the driver in the event of a severe collision.

- Front passenger airbag

The front passenger airbag is installed in the upper right side of instrument panel, which will inflate to protect the front passenger in the event of a severe collision.

- SRS control module assembly

The SRS control module assembly has a built-in collision sensor which is installed on the body floor of auxiliary fascia console body assembly. It controls the inflation of airbag so as to protect the driver and the front passenger in the event of a severe collision.

- Spiral cable

It is used to connect the driver airbag, as well as ensure that the steering wheel has enough steering angle.

- Airbag malfunction indicator

After the ignition switch is turned to ON, if the malfunction indicator goes off after coming on for approximately 4 seconds, it means that the supplemental restraint system operates normally. If the malfunction indicator does not come on, remains on or flashes, it means that the supplemental restraint system has a problem and it is necessary to perform testing and repairing.

- Wire harness

Generally, it is yellow and used to connect the elements of supplemental restraint system. The connector has a safety mechanism.

Supplemental Restraint System Function:

- The airbag must work together with the seat belt, and it cannot substitute for the seat belt. The driver and passengers should always fasten the seat belts during driving, and adjust the belts to the proper position according to their sizes.
- Minor collision will not activate the airbag system. The airbags will quickly inflate to protect the driver and front passenger only when severe frontal collision occurs.

Operation

The supplemental restraint system can improve the occupants safety only when used in combination with the seat belts. The occupants must fasten the seat belts in order to gain full protection from the supplemental restraint system.

The supplemental restraint system circuit is continuously monitored and controlled by SRS control module assembly. The airbag indicator on the instrument cluster illuminates for approximately 4 seconds for a test each time when the ignition switch is turned to ON. The airbag indicator goes off after the test is completed. If the indicator comes on at any time other than the test time, it indicates that there is a problem in the supplemental restraint system circuit.

Whether the airbag deploys or not depends on the angle and severity of the impact. When the vehicle is subjected to severe collision, the microprocessor in the supplemental restraint system sends signals to the corresponding inflator units of airbag to deploy the airbags quickly and protect the occupants.

⚠ WARNING

- Never expose the airbag components directly to hot air or open flames.
- Never attempt to disassemble or repair the airbag components.
- The removed airbag should be kept properly. Never put other objects on it. If the airbag is triggered accidentally, it may cause personal injury.
- As a disposable component, the airbag must be replaced after deployment and avoid reusing it.
- Always dispose of the vehicle together with airbag, or the airbag may be triggered accidentally to cause personal injury.

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👁 CAUTION

- Before removing the airbag system components, disconnect the negative battery cable at least 90 seconds. Before servicing the steering system, remove the driver airbag and spiral cable for safekeeping.
- If the vehicle has been involved in a minor collision but the airbags do not deploy, always inspect the airbag components.
- If the airbag may be touched during servicing, remove the airbag as necessary for safekeeping before servicing.
- Never use the airbag components from another vehicle. When replacing the airbag components, replace them with new ones.
- If an airbag component is dropped or if there are any cracks, dents or other defects in the case, bracket or connector, replace the airbag component with a new one.
- Information labels are attached to the periphery of airbag components. Always follow the cautions and instructions on the labels.

Specifications

Torque Specifications

Description	Torque (N·m)
Driver Airbag Fixing Bolt	10 ± 1.5
Spiral Cable Fixing Screw	1.5 ± 0.5
Coupling Bolt Between Front Passenger Airbag and Instrument Panel Crossmember Assembly	10 ± 1.5
Coupling Bolt Between SRS Control Module Assembly and Body	10 ± 1.5

Tools

Special Tool

X-431 3G Diagnostic Tester

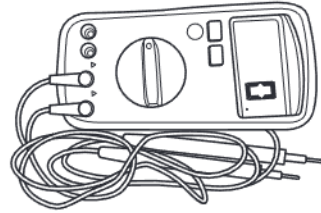


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General Tool

Digital Multimeter

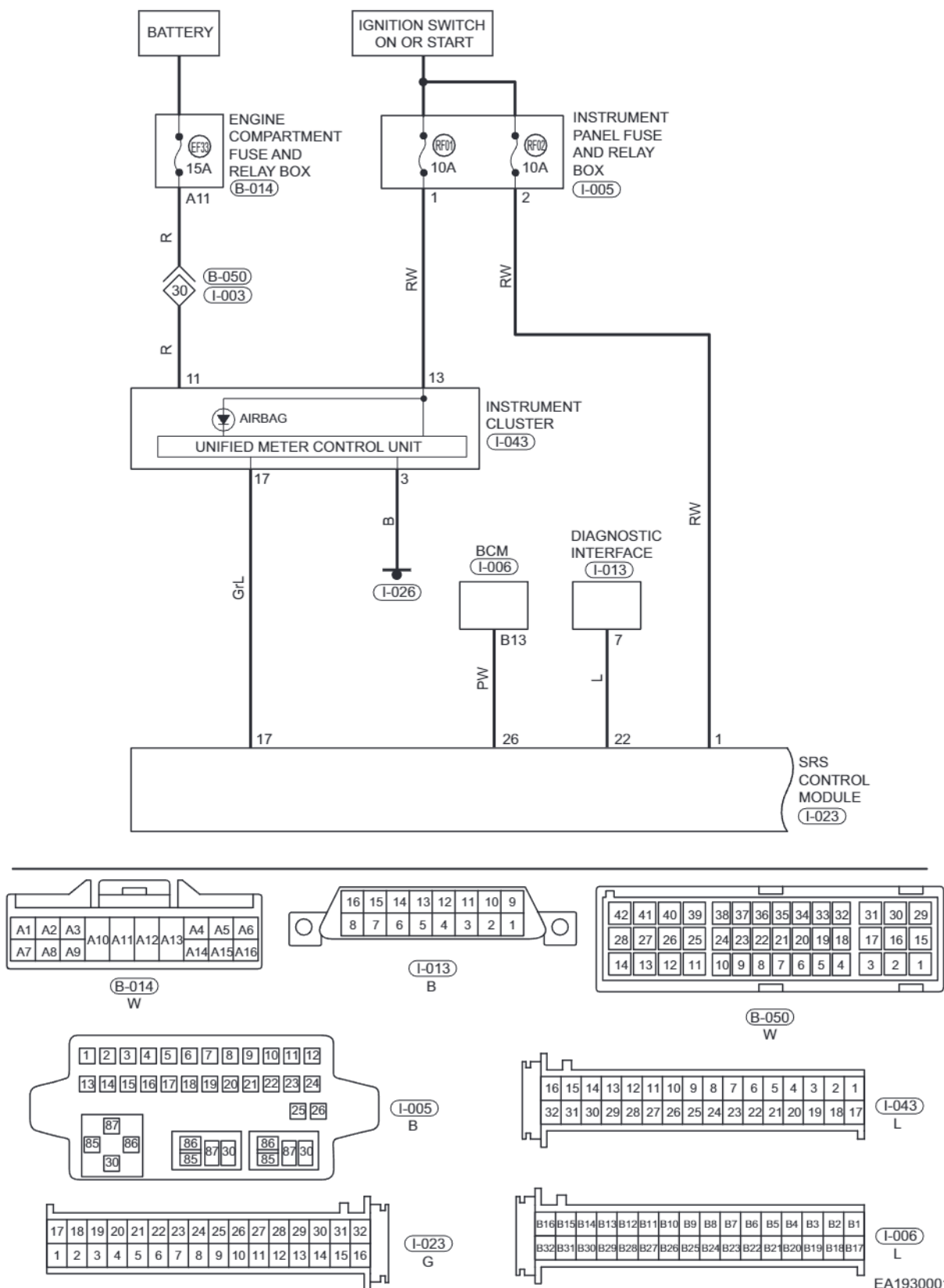


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Circuit Diagram

Supplemental Restraint System (Page 1 of 2)

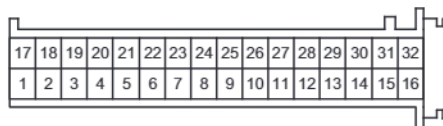
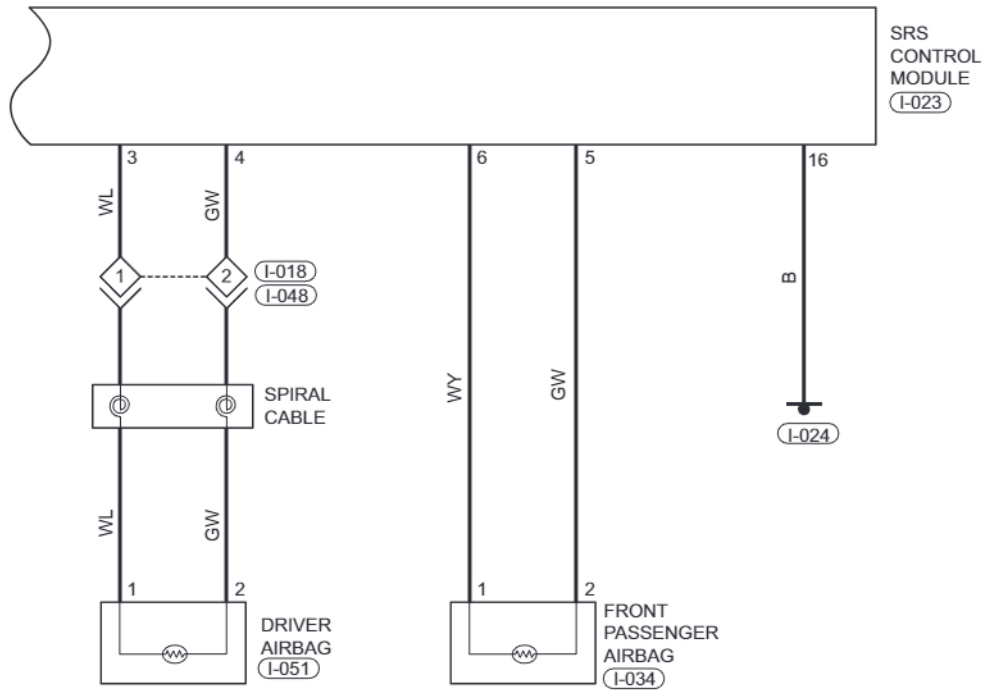
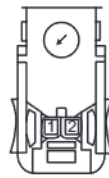
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Supplemental Restraint System (Page 2 of 2)

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I-023
GI-034
GI-018
YI-051
Y

EA19300020

DIAGNOSIS & TESTING

SRS Control Module Assembly Terminal List

Terminal No.	Terminal Name	Terminal Definition	Terminal No.	Terminal Name	Terminal Definition
1	Vbat	Power Supply	17	Sys WL	System Warning Light
2	NC	-	18	NC	-
3	ABFD+	Driver Airbag Positive	19	NC	-
4	ABFD-	Driver Airbag Negative	20	NC	-
5	ABFP-	Front Passenger Airbag Negative	21	NC	-
6	ABFP+	Front Passenger Airbag Positive	22	K-Line	K-Line
7	NC	-	23	NC	-
8	NC	-	24	NC	-
9	NC	-	25	NC	-
10	NC	-	26	CRO	Crash Output
11	NC	-	27	NC	-
12	NC	-	28	NC	-
13	NC	-	29	NC	-
14	NC	-	30	NC	-
15	NC	-	31	NC	-
16	GND	Ground	32	NC	-

DTC Confirmation Procedure

Confirm that the battery voltage is over 12 V before performing the following procedures.

- Turn the ignition switch to LOCK.
- Connect the X-431 3G diagnostic tester (the latest software) to the Data Link Connector (DLC).
- Turn the ignition switch to ON.
- Use the X-431 3G diagnostic tester to record and clear the DTCs stored in the supplemental restraint system.
- Turn the ignition switch to LOCK and wait for a few seconds.
- Turn the ignition switch to ON and then select Read Code.
- If the DTC is detected, the malfunction indicated by the DTC is current.
Go to the diagnosis procedure - Step 1.
- If the DTC is not detected, the malfunction indicated by the DTC is intermittent.

Intermittent DTC Troubleshooting

If the malfunction is intermittent, perform the followings:

- Check if the connectors are loose.
- Check if the wire harnesses are worn, pierced, pinched or partially broken.
- Monitor the X-431 3G diagnostic tester (the latest software) data that is related to this circuit.
- Wiggle the related wire harness and connector and observe if the signal is interrupt in the related circuit.
- If possible, try to duplicate the conditions under which the DTC was set.
- Look for the data that has changed or the DTC to reset during the wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Inspect the airbag components and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Check and clean all the wire harness connectors and grounds related to the current DTC.
- Remove the SRS control module assembly from the malfunctioning vehicle and install it to a new vehicle and perform a test. If the DTC cannot be cleared, the SRS control module assembly is malfunctioning. If the DTC can be cleared, reinstall the SRS control module assembly to the original vehicle.
- If multiple trouble codes were set, refer to the circuit diagrams to look for any common ground circuit or power supply circuit applied to the DTC.
- Refer to the Technical Bulletin that is applied to the malfunction.

Ground Inspection

Ground points are very important to the proper operation of electrical equipment and circuits. Ground points are often exposed to moisture, dirt and corrosive elements. Corrosion (rust) can increase resistance which will change the way in which a circuit works.

Electronically controlled circuits are very sensitive to proper grounding. A loose or corroded ground can affect the electronically controlled circuit. Perform the following operations when checking the ground points:

1. Remove the ground nut.
2. Check all the matching surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that the contacting is in a good condition.
4. Reinstall the ground nut securely.
5. Check if the add-on accessories interfere with the ground circuit.
6. If several wire harnesses are crimped into one ground eyelet terminal, check if the wire harnesses are installed correctly. Make sure all the wire harnesses are clean, securely fastened and providing a good ground path.

Diagnosis Procedure

HINT:

Use the following procedures to troubleshoot the supplemental restraint system (SRS).

1 Vehicle brought to workshop

NEXT

2 Check battery voltage

Standard voltage: 11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT

3 Check SRS warning light

NEXT

4 Check for DTCs (current DTC and history DTC)

DTC
occurs

For current DTC, go to step 5

No
DTC

For history DTC, go to step 6

5 Diagnostic Trouble Code (DTC) chart

NEXT

6 Circuit inspection

HINT:

- An activation prevention mechanism is built in the airbag system connector. When the connector is disconnected, this mechanism cuts off the circuit by bringing the short spring plate into contact with the terminals, thus insulating the circuit from external power sources to prevent accidental airbag activation.
- To release the activation prevention mechanism, insert a piece of paper with the same thickness as the male terminal between the terminals and the short spring plate to disconnect the connection.

⚠ WARNING

- DO NOT release the activation prevention mechanism unless specially directed by the troubleshooting procedure.

During circuit troubleshooting for the airbag system, make sure to cut off the battery power source, and wait for at least 90 seconds to discharge the system condenser.

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

NEXT

7 Repair

NEXT

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8 Clear DTCs (current DTC and history DTC)

NEXT

9 Check for DTCs (current DTC and history DTC)

DTC
output

Go to step 5

NO DTC
output

Go to next step

NEXT

10 Confirmation test

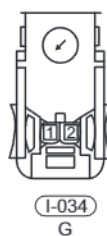
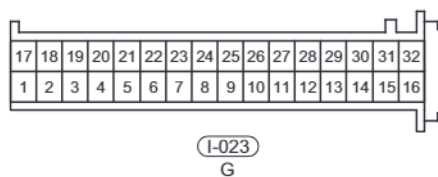
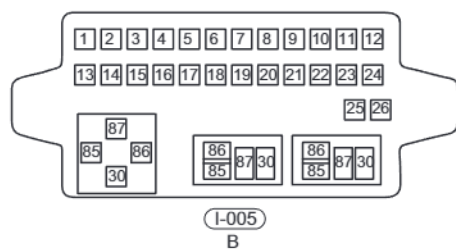
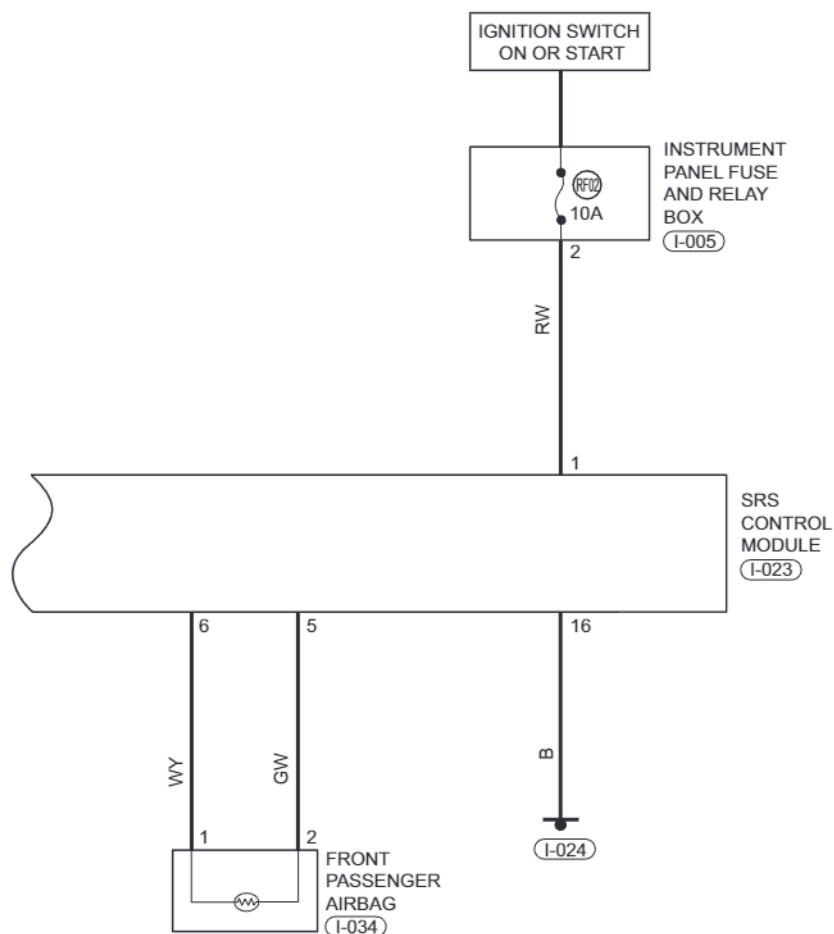
NEXT

11 End

SRS Control Module Assembly DTC List

DTC Code	DTC Definition
B0026	Driver Frontal Deployment Loop Open
B0022	Driver Frontal Deployment Loop Resistance Low
B0024	Driver Frontal Deployment Loop Short to GND or Cross Coupling
B0025	Driver Frontal Deployment Loop Short to Battery
B0017	Passenger Frontal Deployment Loop Open
B0016	Passenger Frontal Deployment Loop Resistance Low
B0018	Passenger Frontal Deployment Loop Short to GND or Cross Coupling
B0019	Passenger Frontal Deployment Loop Short to Battery
B0049	Crash Output Short to Battery
B0048	Crash Output Short to GND or open
B0051	Front Airbag Deployment Commanded
B0052	Airbag ECU Reaches the Maximum Usage, and It Cannot Be Reusable
B0090	Passenger Deactivation Switch Performance Fault
B0091	Passenger Deactivation Switch Undefined
B0671	System Warning Lamp Short to GND or Open
B0673	System Warning Lamp Short to Battery
B0681	Passenger Airbag Disabled Indicator Short to GND or Open
B0683	Passenger Airbag Disabled Indicator Short to Battery
B1000	Electronic Control Unit (ECU) Internal Fault
B1001	Option Configuration Error
B1328	Power Supply Voltage is Too High
B1327	Power Supply Voltage is Too Low

DTC	B0026	Driver Frontal Deployment Loop Open
DTC	B0022	Driver Frontal Deployment Loop Resistance Low
DTC	B0024	Driver Frontal Deployment Loop Short to GND or Cross Coupling
DTC	B0025	Driver Frontal Deployment Loop Short to Battery



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Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B0026	Driver Frontal Deployment Loop Open	Ignition switch ON	ON	• Driver airbag • Spiral cable • Wire harness and connector • SRS control module assembly
B0022	Driver Frontal Deployment Loop Resistance Low			
B0024	Driver Frontal Deployment Loop Short to GND or Cross Coupling			
B0025	Driver Frontal Deployment Loop Short to Battery			

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure

1 Check driver airbag

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the driver airbag connector, and connect the new driver airbag to the connector I-051.

⚠ WARNING

- Never measure the driver airbag directly; otherwise, it may cause serious personal injury due to accidental deployment of the airbag.

- Reconnect the negative battery cable and wait for a few seconds.
- Turn the ignition switch to ON and wait for at least 90 seconds.
- Use the X-431 3G diagnostic tester to clear the DTCs.
- Turn the ignition switch to LOCK.
- Turn the ignition switch to ON and wait for at least 90 seconds.
- Use the X-431 3G diagnostic tester to check if the DTCs are still output.

NO

Replace driver airbag

YES

2 Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the driver airbag connector I-051 and the SRS control module assembly connector I-023.



- Disconnect the spiral cable wire harness connector I-048 and the instrument panel wire harness connector I-018.
- Check if the wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if the related connector terminal contact pins are in good condition.

NG

Repair or replace instrument panel/spiral cable wire harnesses and connector

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OK

3 Check driver airbag control circuit

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023.
- Disconnect the driver airbag connector I-051.
- Connect the negative battery cable and wait for a few seconds.
- Turn the ignition switch to ON.
- Using a digital multimeter, measure the voltage between driver airbag connector I-051 and body ground to check for a short circuit to the power supply according to the table below.

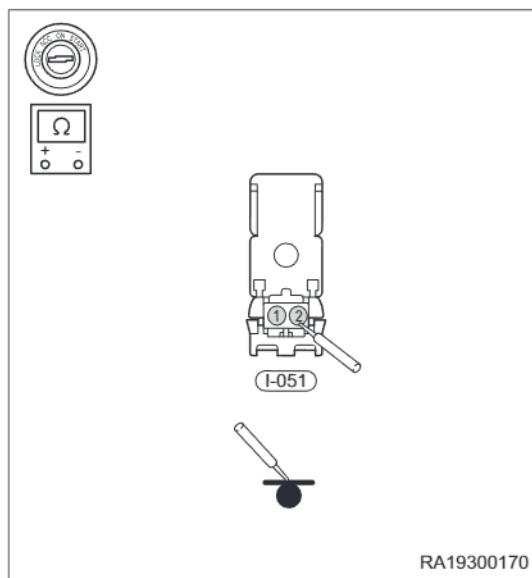
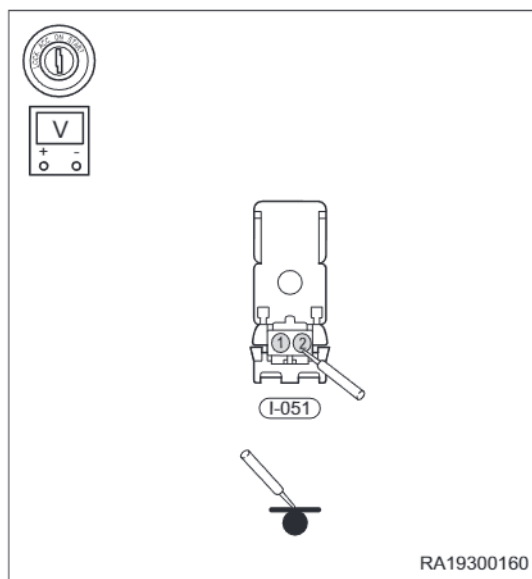
Standard Voltage

Multimeter Connection	Condition	Specified Condition
I-051-1 - Body ground	Ignition switch ON	Below 1 V
I-051-2 - Body ground	Ignition switch ON	Below 1 V

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Using a digital multimeter, check for continuity between driver airbag connector I-051 and body ground to check for a short circuit to the body ground according to the table below.

Standard Condition

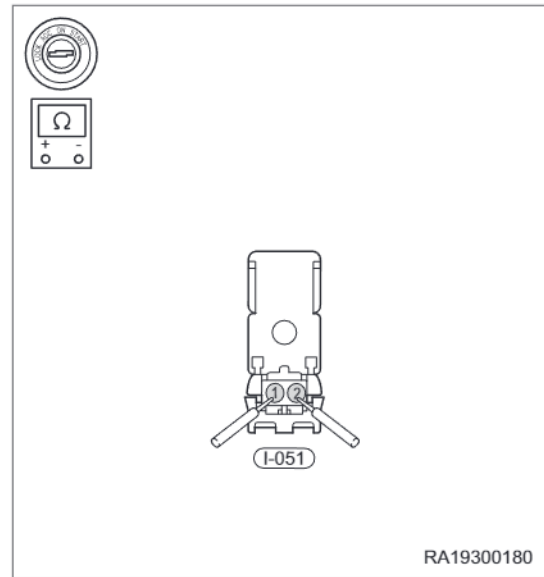
Multimeter Connection	Condition	Specified Condition
I-051-1 - I-051-2	Always	Continuity
I-051-1 - Body ground	Always	No continuity
I-051-2 - Body ground	Always	No continuity



- i. Release the activation prevention mechanism built into the SRS control module assembly connector I-023.
- j. Using a digital multimeter, check for continuity between the terminals of driver airbag connector I-051 according to the table below.

Standard Condition

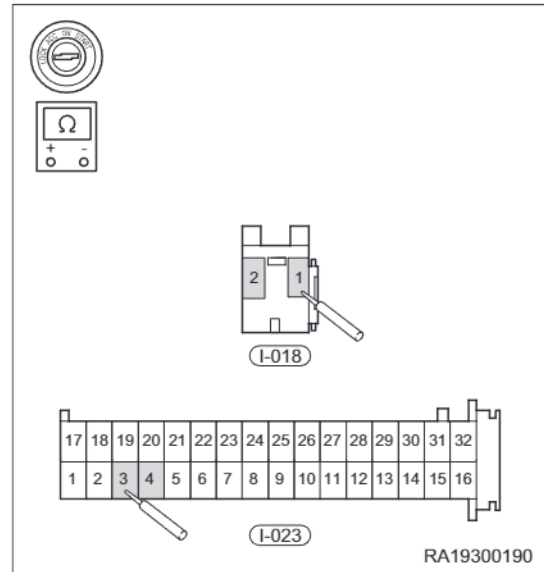
Multimeter Connection	Condition	Specified Condition
I-051-1 - I-051-2	Always	No continuity

OK**Replace SRS control module assembly****NG****4****Check airbag wire harness and connector (SRS control module assembly - spiral cable connector)**

- a. Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- b. Disconnect the instrument panel wire harness connector I-018 and the SRS control module assembly connector I-023.
- c. Using a digital multimeter, check for continuity between the terminals of connector I-018 and connector I-023 according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-018-1 - I-023-3	Always	Continuity
I-018-2 - I-023-4	Always	Continuity
I-018-2 - I-023-3	Always	Continuity
I-018-1 - I-023-4	Always	Continuity
I-018-1 - I-018-2	Always	Continuity
I-023-3 - I-023-4	Always	Continuity



- d. Release the activation prevention mechanism built into the SRS control module assembly connector I-023.
- e. Using a digital multimeter, check for continuity between the terminals of connector I-018 and connector I-023 according to the table below.

Standard Condition

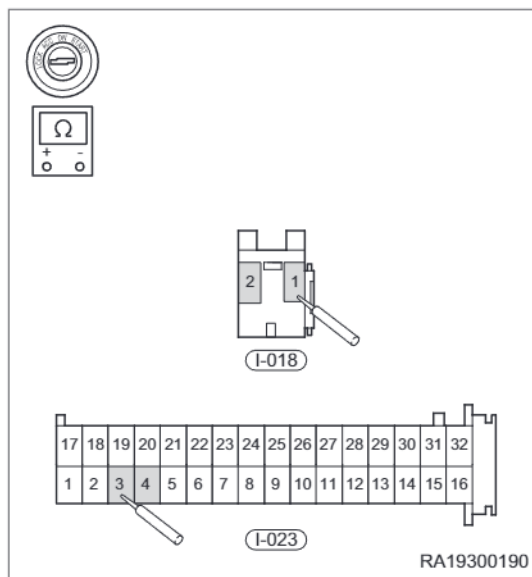
Multimeter Connection	Condition	Specified Condition
I-018-1 - I-023-3	Always	Continuity
I-018-2 - I-023-4	Always	Continuity
I-018-2 - I-023-3	Always	No continuity
I-018-1 - I-023-4	Always	No continuity
I-018-1 - I-018-2	Always	No continuity
I-023-3 - I-023-4	Always	No continuity

30**NG**

Replace instrument panel wire harness and connector

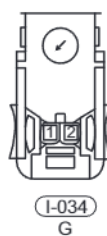
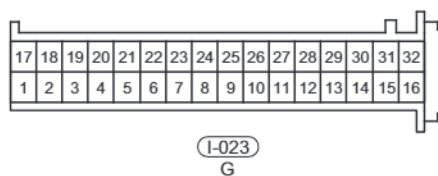
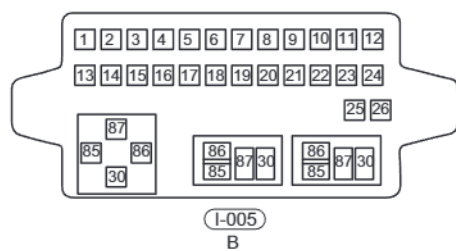
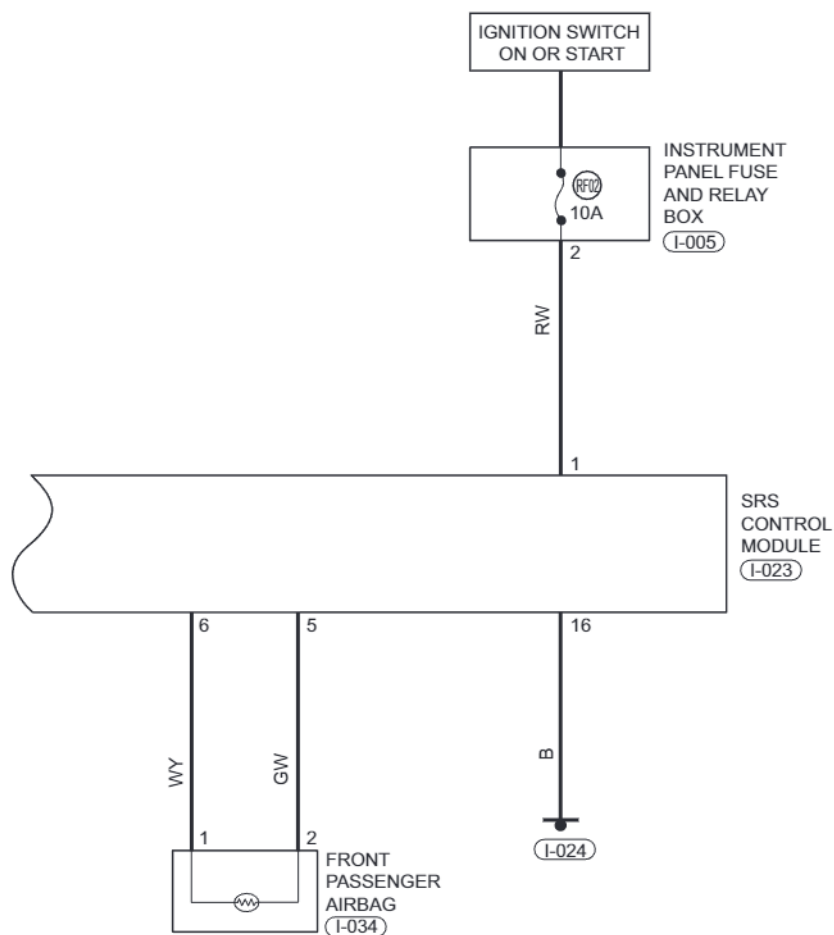
OK

Replace spiral cable



DTC	B0017	Passenger Frontal Deployment Loop Open
DTC	B0016	Passenger Frontal Deployment Loop Resistance Low
DTC	B0018	Passenger Frontal Deployment Loop Short to GND or Cross Coupling
DTC	B0019	Passenger Frontal Deployment Loop Short to Battery

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Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B0017	Passenger Frontal Deployment Loop Open	Ignition switch ON	ON	• Front passenger airbag • Wire harness and connector • SRS control module assembly
B0016	Passenger Frontal Deployment Loop Resistance Low			
B0018	Passenger Frontal Deployment Loop Short to GND or Cross Coupling			
B0019	Passenger Frontal Deployment Loop Short to Battery			

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure

1 Check front passenger airbag

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the front passenger airbag connector, and connect the new front passenger airbag to the connector I-034.

⚠ WARNING

- Never measure the front passenger airbag directly; otherwise, it may cause serious personal injury due to accidental deployment of the airbag.

- Reconnect the negative battery cable and wait for a few seconds.
- Turn the ignition switch to ON and wait for at least 90 seconds.
- Use the X-431 3G diagnostic tester to clear the DTCs.
- Turn the ignition switch to LOCK.
- Turn the ignition switch to ON and wait for at least 90 seconds.
- Use the X-431 3G diagnostic tester to check if the DTCs are still output.

NO

Replace front passenger airbag

YES**2** Check wire harness and connector

Use the circuit diagram as a guide to perform the following procedures:

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.

- Disconnect the front passenger airbag connector I-034 and the SRS control module assembly connector I-023.
- Check if the wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if the related connector terminal contact pins are in good condition.

NG

Repair or replace instrument panel wire harness and connector

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OK

3 Check front passenger airbag control circuit

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023.
- Disconnect the front passenger airbag connector I-034.
- Connect the negative battery cable and wait for a few seconds.
- Turn the ignition switch to ON.
- Using a digital multimeter, measure the voltage between front passenger airbag connector I-034 and body ground to check for a short circuit to the power supply according to the table below.

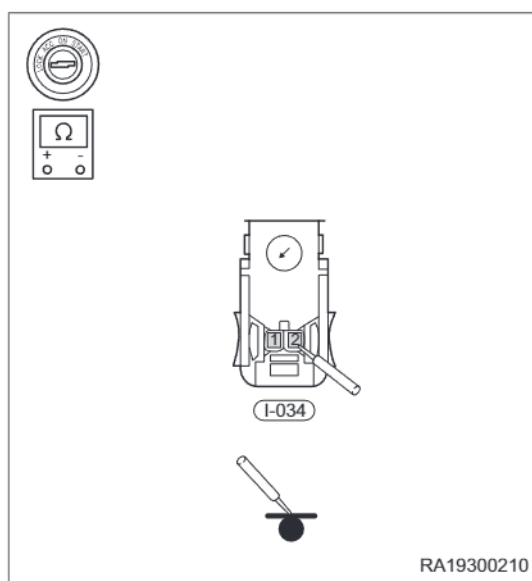
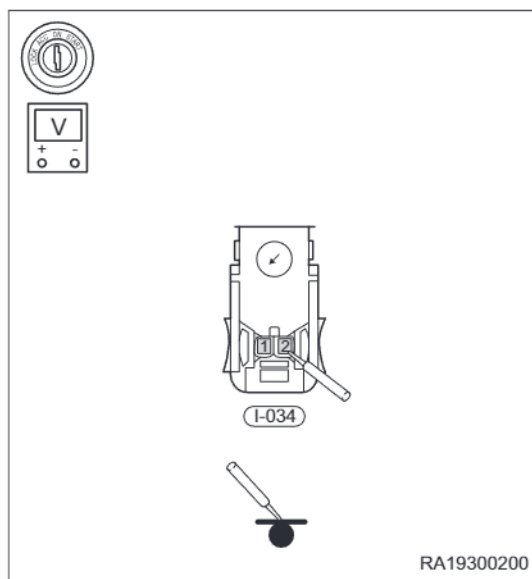
Standard Voltage

Multimeter Connection	Condition	Specified Condition
I-034-1 - Body ground	Ignition switch ON	Below 1 V
I-034-2 - Body ground	Ignition switch ON	Below 1 V

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Using a digital multimeter, check for continuity between front passenger airbag connector I-034 and body ground to check for a short circuit to the body ground according to the table below.

Standard Condition

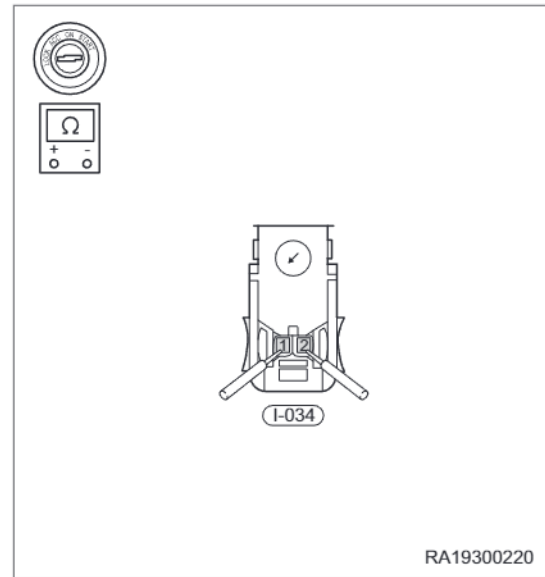
Multimeter Connection	Condition	Specified Condition
I-034-1 - I-034-2	Always	Continuity
I-034-1 - Body ground	Always	No continuity
I-034-2 - Body ground	Always	No continuity



- i. Release the activation prevention mechanism built into the SRS control module assembly connector I-023.
- j. Using a digital multimeter, check for continuity between the terminals of front passenger airbag connector I-034 according to the table below.

Standard Condition

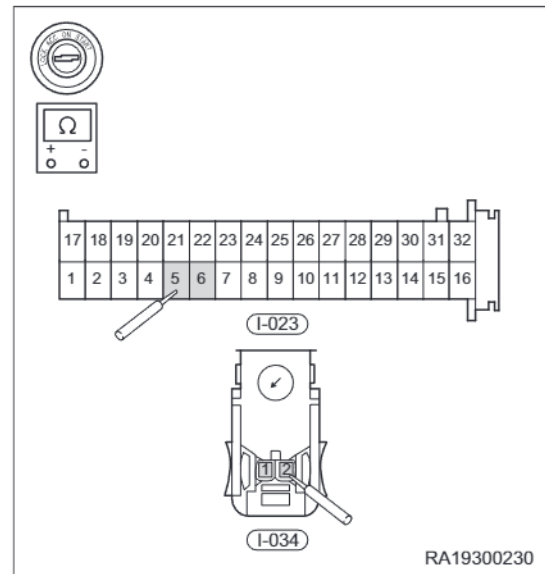
Multimeter Connection	Condition	Specified Condition
I-034-1 - I-034-2	Always	No continuity

OK**Replace SRS control module assembly****NG****4****Check airbag wire harness and connector (SRS control module assembly - front passenger airbag)**

- a. Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- b. Disconnect the SRS control module connector I-023 and the front passenger airbag connector I-034.
- c. Using a digital multimeter, check for continuity between the terminals of connector I-023 and connector I-034 according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-6 - I-034-1	Always	Continuity
I-023-5 - I-034-2	Always	Continuity
I-023-5 - I-034-1	Always	Continuity
I-023-6 - I-034-2	Always	Continuity
I-023-5 - I-023-6	Always	Continuity
I-034-1 - I-034-2	Always	Continuity



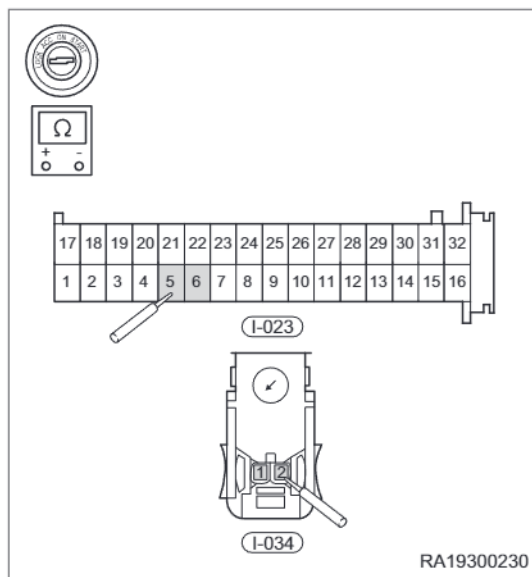
- d. Release the activation prevention mechanism built into the SRS control module assembly connector I-023.
- e. Using a digital multimeter, check for continuity between the terminals of connector I-023 and connector I-034 according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-6 - I-034-1	Always	Continuity
I-023-5 - I-034-2	Always	Continuity
I-023-5 - I-034-1	Always	No continuity
I-023-6 - I-034-2	Always	No continuity
I-023-5 - I-023-6	Always	No continuity
I-034-1 - I-034-2	Always	No continuity

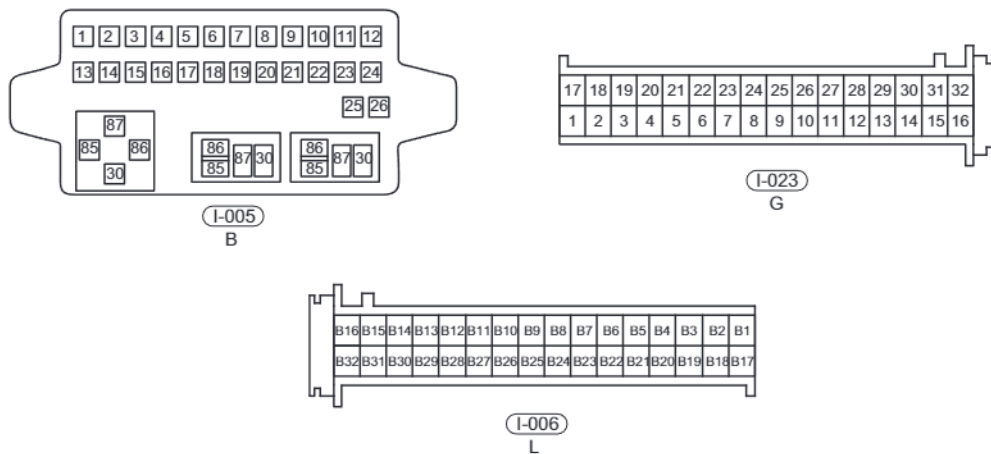
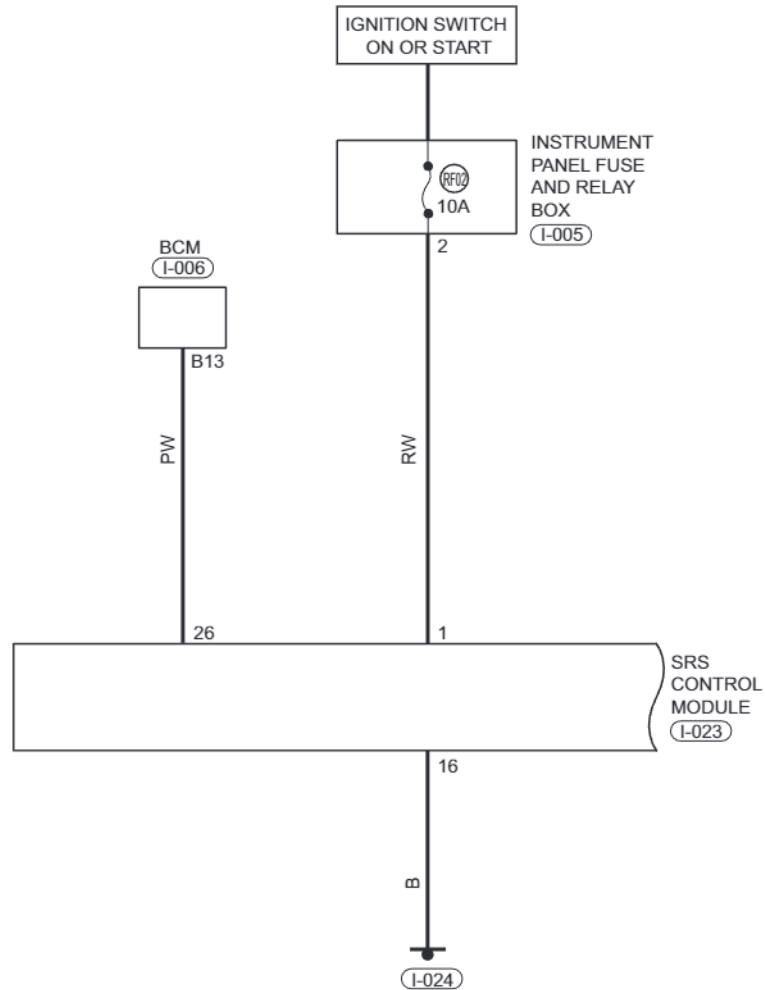
30**NG**

Replace instrument panel wire harness and connector



DTC	B0049	Crash Output Short to Battery
-----	-------	-------------------------------

DTC	B0048	Crash Output Short to GND or open
-----	-------	-----------------------------------



EA19300050

Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B0049	Crash Output Short to Battery	Ignition switch ON	ON	- Wire harness and connector - SRS control module assembly
B0048	Crash Output Short to GND or open			

30

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure

1 Check wire harness and connector (SRS control module assembly - body control module)

Use the circuit diagram as a guide to perform the following procedures:

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023 and body control module (BCM) connector I-006.
- Check if the wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if the related connector terminal contact pins are in good condition.

NG

Repair or replace instrument panel wire harness and connector

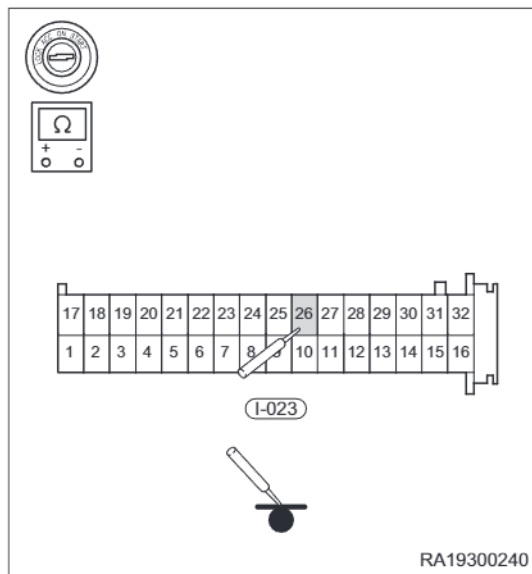
OK

2 Check collision output control circuit (SRS control module assembly side)

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023.
- Using a digital multimeter, check for continuity between SRS control module assembly connector I-023 and body ground to check if the collision output circuit is short to the ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-26 - Body ground	Always	No continuity



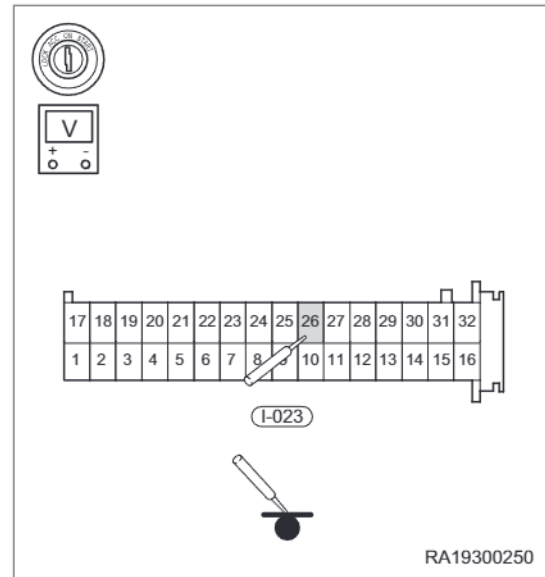
- d. Turn the ignition switch to ON.
- e. Using a digital multimeter, check the voltage between SRS control module assembly connector I-023 and body ground to check if the collision output circuit is short to the power supply according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-26 - Body ground	Ignition switch ON	Below 1 V

NG

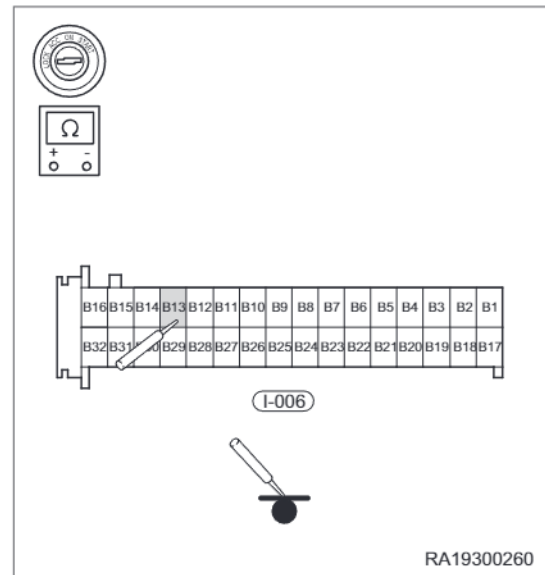
Repair or replace instrument panel wire harness and connector

**OK****3****Check collision output control circuit (body control module side)**

- a. Turn the ignition switch to LOCK, disconnect the negative battery cable.
- b. Disconnect the body control module (BCM) connector I-006.
- c. Using a digital multimeter, check for continuity between body control module (BCM) connector I-006 and body ground to check if the collision output circuit is short to the ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-006-B13 - Body ground	Always	No continuity



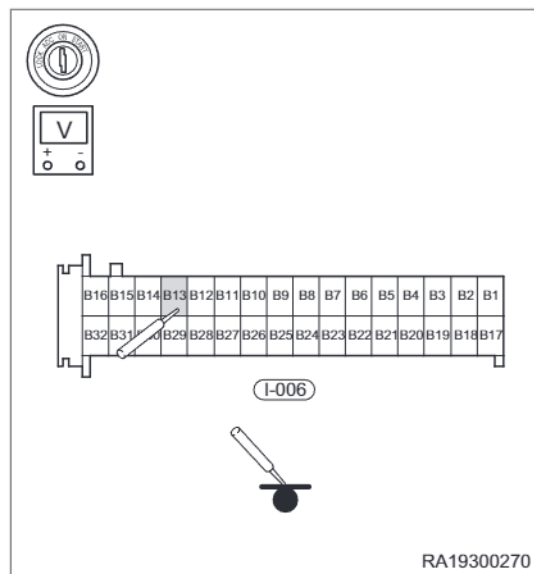
- d. Turn the ignition switch to ON.
- e. Using a digital multimeter, check the voltage between body control module (BCM) connector I-006 and body ground to check if the collision output circuit is short to the power supply according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-006-B13 - Body ground	Ignition switch ON	Below 1 V

NG

Repair or replace instrument panel wire harness and connector



RA19300270

OK
4

Check collision output control circuit (SRS control module assembly - body control module)

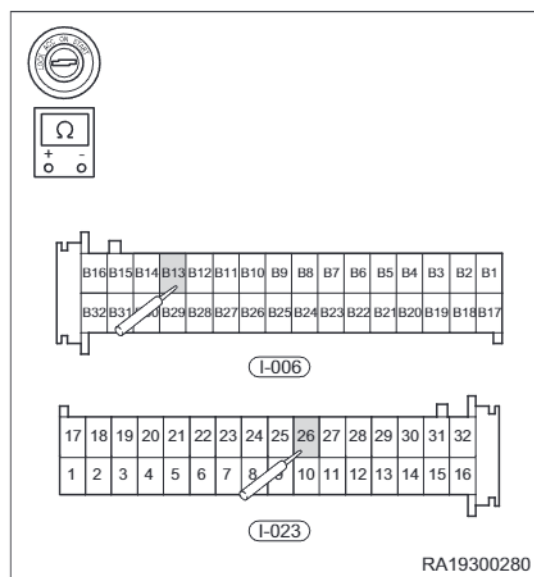
- a. Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- b. Disconnect the SRS control module assembly connector I-023.
- c. Disconnect the body control module (BCM) connector I-006.
- d. Using a digital multimeter, check for continuity between the connector I-006 and connector I-023 to check for an open in the collision output circuit according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-006-B13 - I-023-26	Always	Continuity

NG

Repair or replace instrument panel wire harness and connector



RA19300280

OK

5**Reconfirm DTCs**

- a. Reconnect the SRS control module assembly connector I-023 securely.
- b. Reconnect the body control module (BCM) connector I-006 securely.
- c. Connect the negative battery cable.
- d. Turn the ignition switch to ON.
- e. Use the X-431 3G diagnostic tester (the latest software) to record and clear the DTCs stored in the supplemental restraint system.
- f. Turn the ignition switch to LOCK and wait for a few seconds.
- g. Turn the ignition switch to ON.
- h. Use the X-431 3G diagnostic tester to read the DTCs stored in the supplemental restraint system again.
- i. Check if the same DTCs are still output.

No**System operates normally****Yes****Replace SRS control module assembly****30**

DTC	B0051	Front Airbag Deployment Commanded
DTC	B0052	Airbag ECU Reaches the Maximum Usage, and It Cannot Be Reusable
DTC	B1000	Electronic Control Unit (ECU) Internal Fault

30

Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B0051	Front Airbag Deployment Commanded	Ignition switch ON	ON	SRS control module assembly
B0052	Airbag ECU Reaches the Maximum Usage, and It Cannot Be Reusable			
B1000	Electronic Control Unit (ECU) Internal Fault			

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure

1	Check SRS control module assembly
----------	--

- Turn the ignition switch to LOCK.
- Disconnect the negative battery cable and wait for at least 90 seconds.
- Connect the negative battery cable.
- Turn the ignition switch to ON.
- Use the X-431 3G diagnostic tester (the latest software) to record and clear the DTCs stored in the supplemental restraint system.
- Turn the ignition switch to LOCK and wait for a few seconds.
- Turn the ignition switch to ON and then select Read Code.

NG

Replace SRS control module assembly

OK

Malfunction has been solved and system operates normally

DTC	B1001	Option Configuration Error
------------	--------------	-----------------------------------

30

Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B1001	Option Configuration Error	Ignition switch ON	ON	- Outside option configuration error - SRS control module assembly

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure**1 Check for DTCs**

- Use the X-431 3G diagnostic tester (the latest software) to clear and read the DTCs stored in the supplemental restraint system again.
- Refer to DTC Confirmation Procedure.
- Check if the same DTC is output.

No

Malfunction indicated by DTC is intermittent problem

Yes

2 Check configuration of SRS Control Module Assembly

- Turn the ignition switch to ON.
- Use the X-431 3G diagnostic tester (the latest software) to check whether the setting of SRS control module assembly matches the actual configuration of the vehicle.

No

Reset SRS control module assembly

Yes

3 Reconfirm DTCs

- Turn the ignition switch to LOCK.
- Disconnect the negative battery cable and wait for at least 90 seconds.
- Connect the negative battery cable.
- Turn the ignition switch to ON.
- Use the X-431 3G diagnostic tester (the latest software) to record and clear the DTCs stored in the supplemental restraint system.
- Turn the ignition switch to LOCK and wait for a few seconds.
- Turn the ignition switch to ON and then select Read Code.



NG

Replace SRS control module assembly

OK

Malfunction has been solved and system operates normally

Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B0671	System Warning Lamp Short to GND or Open	Ignition switch ON	ON	- Wire harness and connector - SRS control module assembly
B0673	System Warning Lamp Short to Battery			

30

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure

1 Check wire harness and connector (SRS control module assembly - instrument cluster)

Use the circuit diagram as a guide to perform the following procedures:

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023 and the instrument cluster connector I-043.
- Check if the wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if the related connector terminal contact pins are in good condition.

NG

Repair or replace instrument panel wire harness and connector

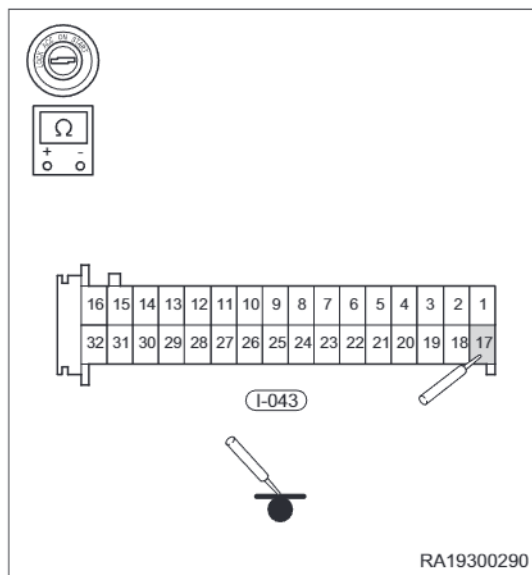
OK

2 Check airbag malfunction indicator control circuit (instrument cluster side)

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the instrument cluster connector I-043.
- Using a digital multimeter, check for continuity between instrument cluster connector I-043 and body ground to check for a short circuit to the ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-043-17 - Body ground	Always	No continuity



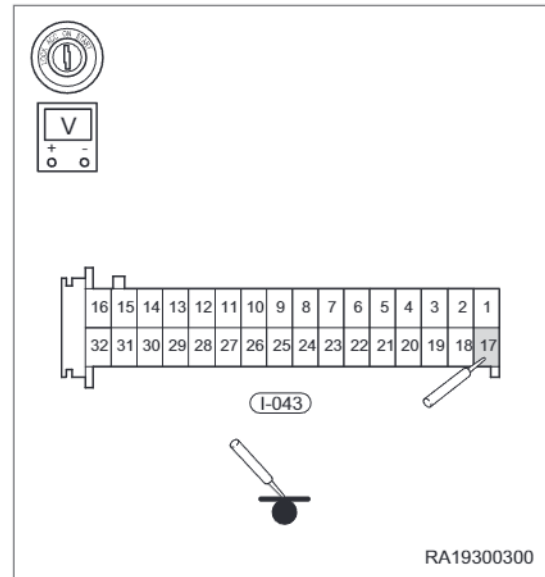
- d. Turn the ignition switch to ON.
- e. Using a digital multimeter, measure the voltage between instrument cluster connector I-043 and body ground to check for a short circuit to the power supply according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-043-17 - Body ground	Ignition switch ON	Below 1 V

NG

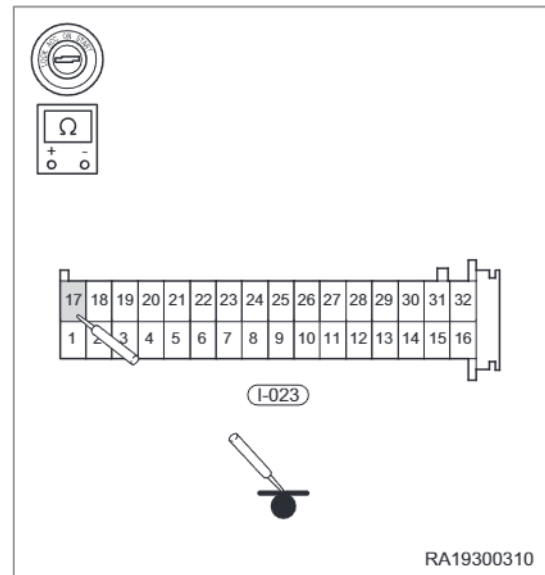
Repair or replace instrument panel wire harness and connector

**OK****3****Check airbag malfunction indicator control circuit (SRS control module assembly side)**

- a. Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- b. Disconnect the SRS control module assembly connector I-023.
- c. Using a digital multimeter, check for continuity between SRS control module assembly connector I-023 and body ground to check for a short circuit to the ground according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-17 - Body ground	Always	No continuity



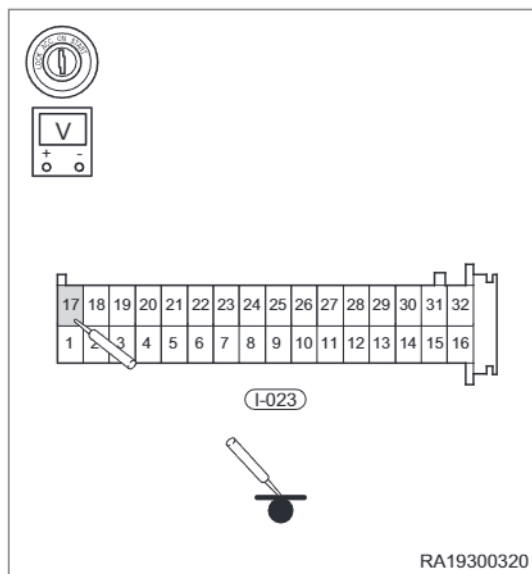
- d. Turn the ignition switch to ON.
- e. Using a digital multimeter, measure the voltage between SRS control module assembly connector I-023 and body ground to check for a short circuit to the power supply according to the table below.

Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-17 - Body ground	Ignition switch ON	Below 1 V

NG

Repair or replace instrument panel wire harness and connector

**OK****4****Reconfirm DTCs**

- Reconnect the SRS control module assembly connector I-023 and the instrument cluster connector I-043 securely.
- Connect the negative battery cable.
- Turn the ignition switch to ON.
- Use the X-431 3G diagnostic tester (the latest software) to record and clear the DTCs stored in the supplemental restraint system.
- Turn the ignition switch to LOCK and wait for a few seconds.
- Turn the ignition switch to ON.
- Use the X-431 3G diagnostic tester to read the DTCs stored in the supplemental restraint system again.
- Check if the same DTCs are still output.

No

System operates normally

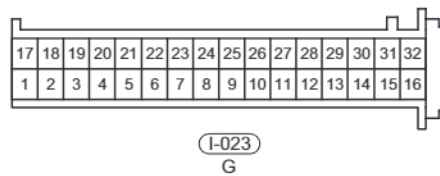
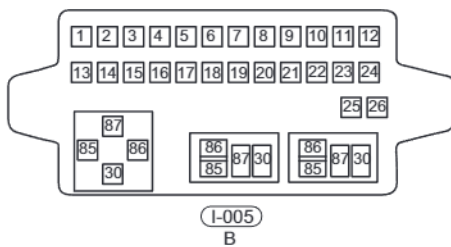
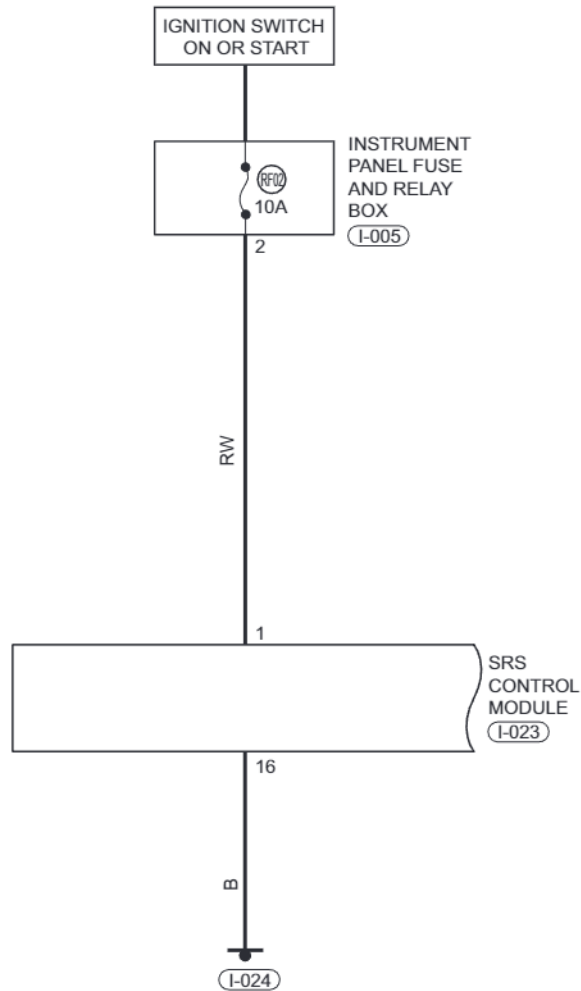
Yes

Replace SRS control module assembly

DTC	B1328	Power Supply Voltage is Too High
-----	-------	----------------------------------

DTC	B1327	Power Supply Voltage is Too Low
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EA19300070

Self-diagnosis Detection Logic

DTC Code	DTC Definition	DTC Detection Condition	Warning Light Condition	Possible Cause
B1328	Power Supply Voltage is Too High	Ignition switch ON	ON	- Battery - Charging system - Wire harness and connector - SRS control module assembly
B1327	Power Supply Voltage is Too Low			

HINT:

While performing the electrical diagnosis and testing, always refer to the relevant circuit diagram for the special circuit and component information.

Diagnosis Procedure

1	Check battery
----------	----------------------

a. Using a digital multimeter, check the battery voltage.

Standard voltage: 11 to 14 V

NG

Check charging system ([See page 16-6](#))

OK

2	Check wire harness and connector (SRS control module assembly - instrument panel fuse and relay box)
----------	---

Use the circuit diagram as a guide to perform the following procedures:

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023 and instrument panel fuse and relay box connector I-005.
- Check if the wire harnesses are worn, pierced, pinched or partially broken.
- Look for broken, bent, protruded or corroded terminals.
- Check if the related connector terminal contact pins are in good condition.

NG

Repair or replace instrument panel wire harness and connector

OK

3

Check wire harness and connector (SRS control module assembly - battery)

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023.
- Connect the negative battery cable and wait for a few seconds.
- Turn the ignition switch to ON.
- Using a digital multimeter, measure the power supply voltage of SRS control module assembly connector I-023 to check if the system power supply is normal according to the table below.

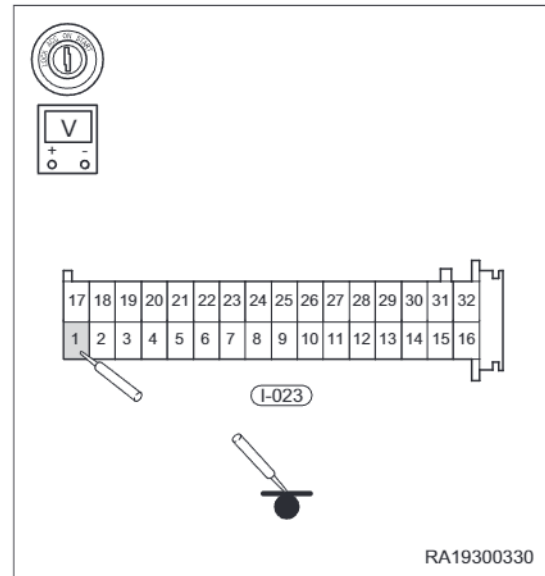
Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-1 - Body ground	Ignition switch ON	11 V to 14 V

NG

Repair or replace instrument panel wire harness and connector

OK



30

4

Check wire harness and connector (SRS control module assembly - body ground)

- Turn the ignition switch to LOCK, disconnect the negative battery cable and wait for at least 90 seconds.
- Disconnect the SRS control module assembly connector I-023.
- Using a digital multimeter, measure the ground circuit of SRS control module assembly connector I-023 to check if the system ground is normal according to the table below.

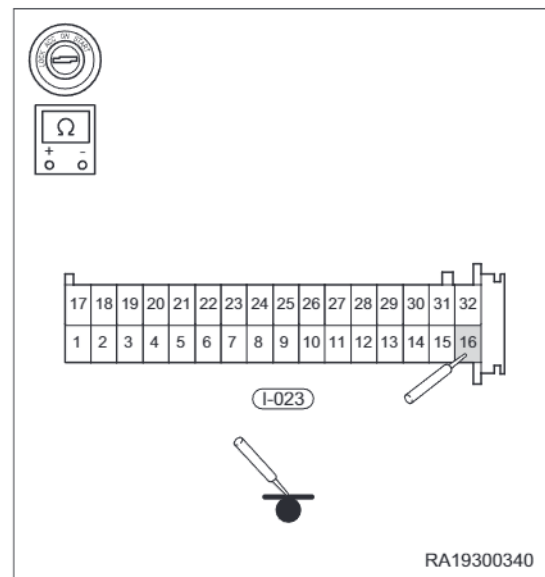
Standard Condition

Multimeter Connection	Condition	Specified Condition
I-023-16 - Body ground	Always	Continuity

NG

Repair or replace instrument panel wire harness and connector

OK



5**Reconfirm DTCs**

- a. Reconnect the SRS control module assembly connector I-023 securely.
- b. Reconnect the instrument panel fuse and relay box wire harness connector I-005 securely.
- c. Connect the negative battery cable.
- d. Turn the ignition switch to ON.
- e. Use the X-431 3G diagnostic tester (the latest software) to record and clear the DTCs stored in the supplemental restraint system.
- f. Turn the ignition switch to LOCK and wait for a few seconds.
- g. Turn the ignition switch to ON.
- h. Use the X-431 3G diagnostic tester to read the DTCs stored in the supplemental restraint system again.
- i. Check if the same DTCs are still output.

No**System operates normally****Yes****Replace SRS control module assembly**

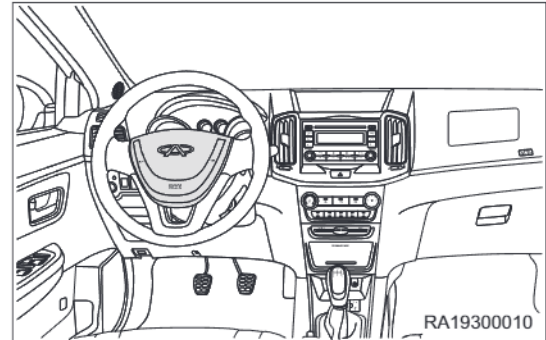
ON-VEHICLE SERVICE

Driver Airbag

On-vehicle Inspection

1. Check the driver airbag (vehicle is not involved in a collision and airbag is not deployed).

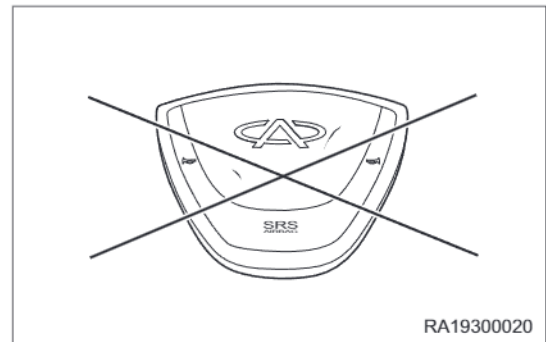
- a. Perform a diagnosis system inspection.
- b. Perform visual inspection with the driver airbag on the vehicle:
 - Check for cuts, cracks or discoloration on the outer surface of driver airbag and in the grooved portion.
 - If any defect above is found, replace the driver airbag with a new one.



30

2. Check the driver airbag (vehicle is involved in a collision but airbag is not deployed).

- a. Perform a diagnosis system inspection.
- b. Perform visual inspection with the driver airbag removed from the vehicle:
 - Check for cuts, cracks or discoloration on the outer surface of driver airbag and in the grooved portion.
 - Check the wire harness for cuts and cracks, and if the connectors are chipped.
 - Check the steering wheel for deformation.

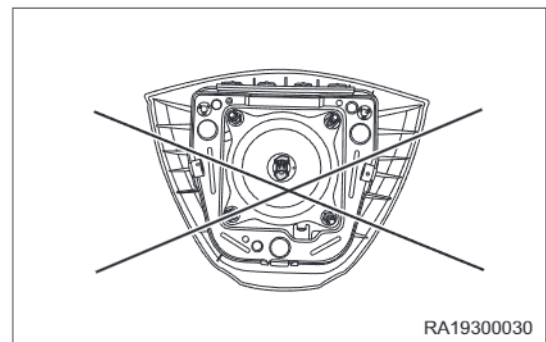


⚠ WARNING

- Be sure to follow the correct procedures to remove and install the driver airbag.

HINT:

- If the driver airbag contact plate is deformed, never repair it. Always replace the driver airbag with a new one.
- There should not be any contact between driver airbag and steering wheel, and keep an even clearance all around when installing the new driver airbag onto the steering wheel.



Removal

CAUTION

- Handle the airbag and airbag control module assembly carefully, and never tap or strike them fiercely.
- Removal, inspection and installation of airbag system must meet the relevant requirements and specifications, and never perform operation casually.
- The removed airbag should be kept properly with the face up. Store the airbag in a place with enough spare space to prevent accidental airbag deployment.

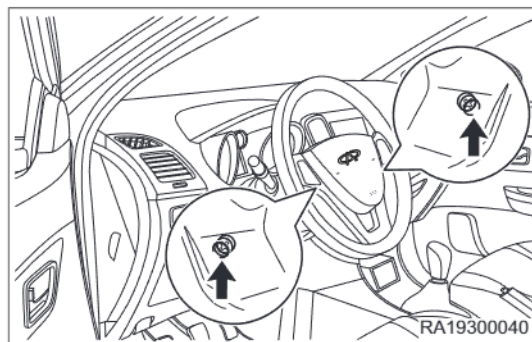
30

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.

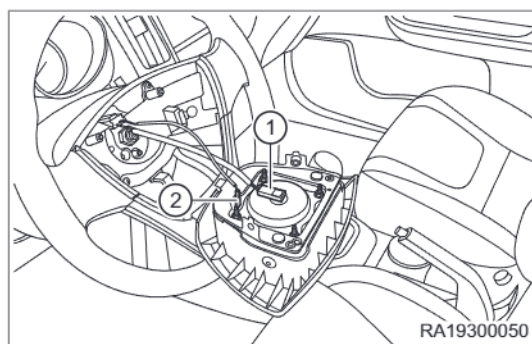
WARNING

- Wait at least 90 seconds after disconnecting the negative battery cable to disable the supplemental restraint system.

3. Remove the driver airbag.
 - a. Set the front wheels straight ahead.
 - b. Using a proper tool, loosen the fixing bolts (arrow) on both sides of the driver airbag.
(Tightening torque: $10 \pm 1.5 \text{ N}\cdot\text{m}$)



- c. Pull out the driver airbag from the steering wheel, and support the driver airbag smoothly by hands.
- d. Disconnect the driver airbag wire harness connector (1) and the horn wire harness connector (2).



WARNING

- DO NOT damage the airbag wire harness when handling the airbag wire harness connector.

 CAUTION

- DO NOT pull the airbag wire harness when removing the driver airbag.

e. Remove the driver airbag.

Installation

Installation is in the reverse order of removal.

30 **CAUTION**

- Make sure to tighten the fixing bolts to the specified torque during installation.
- Check that the horn operates normally after installation.
- Check the SRS warning light after installation, and make sure that the supplemental restraint system operates normally.

Disposal

Always dispose of the airbag together with the vehicle which is equipped with supplemental restraint system. Otherwise, the airbag will be in chemical and physical dangerous state. Failure to handle it properly will cause personal injury. Do not dispose of the airbag on your own, and always contact the professional service department to perform the disposal.

Spiral Cable

Removal

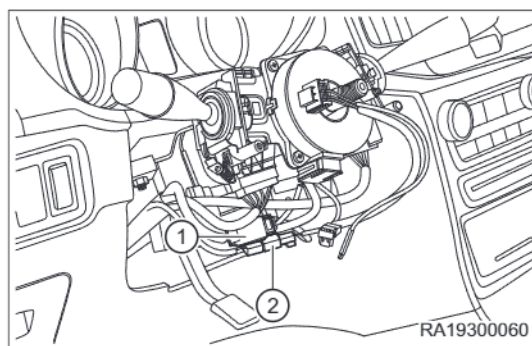
1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.

WARNING

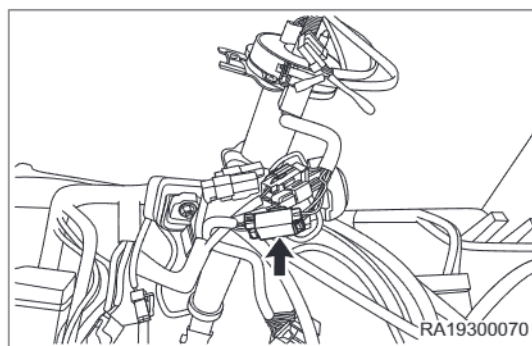
- Wait at least 90 seconds after disconnecting the negative battery cable to disable the supplemental restraint system.

30

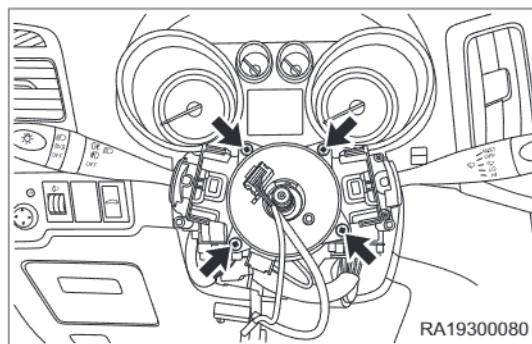
3. Position the front wheels straight ahead.
4. Remove the steering wheel assembly (See page 27-9).
5. Remove the steering column upper/lower cover (See page 27-12).
6. Remove the spiral cable.
 - a. Disconnect the spiral cable wire harness connectors (1) and (2).



- b. Disconnect the spiral cable (steering wheel quick button) wire harness connector (arrow) (if equipped).



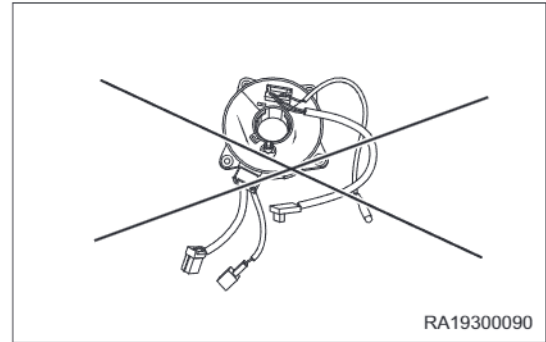
- c. Remove 4 fixing screws (arrow) between spiral cable and steering column.
(Tightening torque: 1.5 ± 0.5 N·m)



- d. Detach and remove the spiral cable from the positioning hole of steering column.

Inspection

1. Check the spiral cable.
 - a. Check that there are no scratches or cracks on the connectors, and/or no cracks, dents or chipping on the cable.
 - b. If there are scratches, cracks, dents or cuts on the connectors or the spiral cable, replace the spiral cable with a new one.



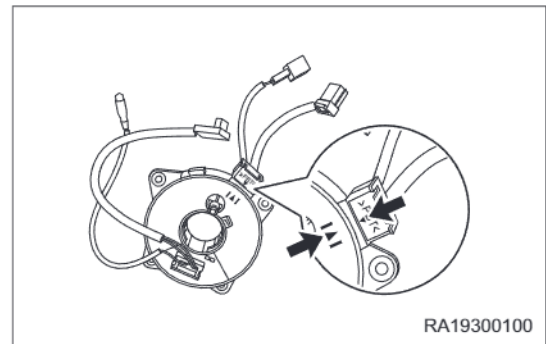
30

Installation

Installation is in the reverse order of removal.

HINT:

Always install the spiral cable correctly according to the matchmarks on spiral cable and steering column (fully turn the spiral cable clockwise slowly, then rotate it counterclockwise by approximately 3.2 turns to align the arrow marks), otherwise, the spiral cable may be damaged.



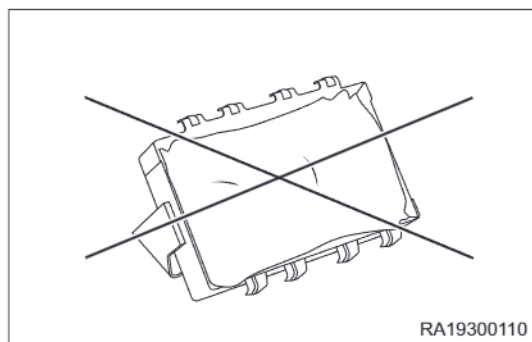
CAUTION

- Always install the spiral cable correctly according to the specified operating instructions.
- DO NOT rotate the spiral cable over specified turns to prevent it from breaking.
- Always align the locating pin of spiral cable with the positioning hole of steering column when installing the spiral cable.
- Check that the horn operates normally after installation.
- Check the SRS warning light after installation, and make sure that the supplemental restraint system operates normally.

Front Passenger Airbag

On-vehicle Inspection

1. Check the front passenger airbag (vehicle is involved in a collision but airbag is not deployed).
 - a. Perform a diagnosis system inspection.
 - b. Perform visual inspection with the front passenger airbag removed from the vehicle:
 - Check for cuts, cracks or wear on the front passenger airbag.
 - Check for cracks or other damage on the connector.
 - Check the instrument panel or instrument panel crossmember assembly for deformation or break. If any defect above is found, replace the front passenger airbag with a new one.



WARNING

- Be sure to follow the correct procedures to remove and install the front passenger airbag.

Removal

CAUTION

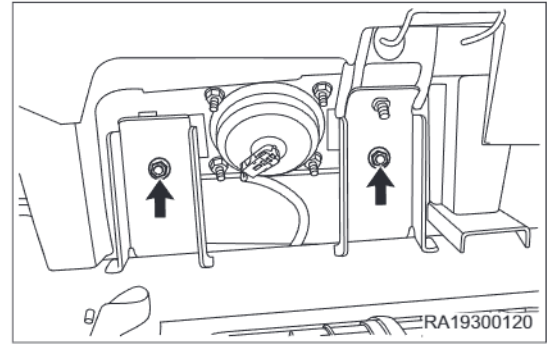
- Handle the airbag and airbag control module assembly carefully, and never tap or strike them fiercely.
- Removal, inspection and installation of airbag system must meet the relevant requirements and specifications, and never perform operation casually.
- The removed airbag should be kept properly. Store the airbag in a place with enough spare space to prevent accidental airbag deployment.

1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.

WARNING

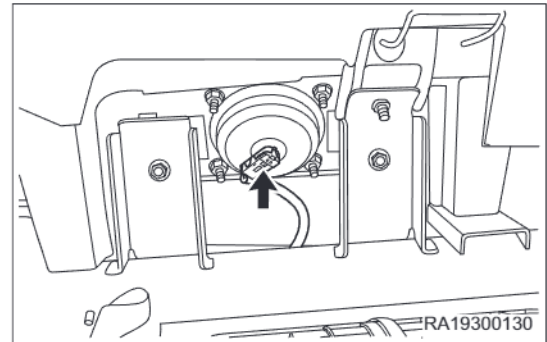
- Wait at least 90 seconds after disconnecting the negative battery cable to disable the supplemental restraint system.

3. Remove the glove box assembly ([See page 43-16](#)).
4. Remove the front passenger airbag.
 - a. Remove 2 coupling bolts (arrow) between front passenger airbag and instrument panel crossmember assembly.
(Tightening torque: $10 \pm 1.5 \text{ N}\cdot\text{m}$)



30

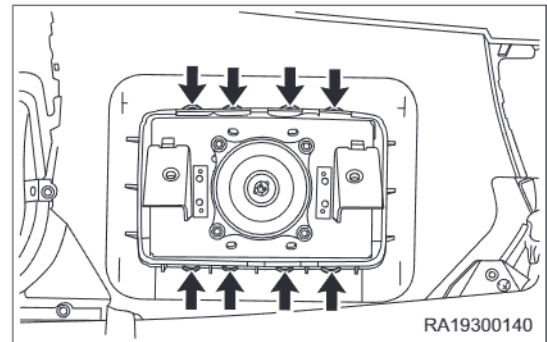
- b. Disconnect the front passenger airbag wire harness connector (arrow).



⚠ WARNING

- DO NOT damage the airbag wire harness when handling the airbag wire harness connector.

- c. Remove the instrument panel upper body assembly ([See page 43-16](#)).
 - d. Using a flat tip screwdriver wrapped with protective tape, slightly pry the front passenger airbag fixing bracket all around to separate it from the instrument panel upper body assembly.



- e. Remove the front passenger airbag.

Installation

Installation is in the reverse order of removal.

CAUTION

- Before installing the tightening bolts, always make sure that the airbag wire harness is not hold down or stuck, perform adjustment if necessary and install it in place.
- Make sure to tighten the fixing bolts to the specified torque during installation.
- When installing the front passenger airbag, first slide the hook on one side into the locating hole, and then press in the hook on the other side firmly, making sure that hooks on both sides enter the corresponding locating holes correctly.
- Always make sure that the vehicle is powered off during installation, and never install the front passenger airbag when the vehicle is powered on.
- During the installation of instrument panel upper body assembly, if installation cannot proceed due to contact of front passenger airbag bracket and instrument panel crossmember assembly, hold the airbag slightly at the opening of the glove box assembly to install it in place.
- Check the SRS warning light after installation, and make sure that the supplemental restraint system operates normally.

Disposal

Always dispose of the airbag together with the vehicle which is equipped with supplemental restraint system. Otherwise, the airbag will be in chemical and physical dangerous state. Failure to handle it properly will cause personal injury. Do not dispose of the airbag on your own, and always contact the professional service department to perform the disposal.

SRS Control Module Assembly

Removal

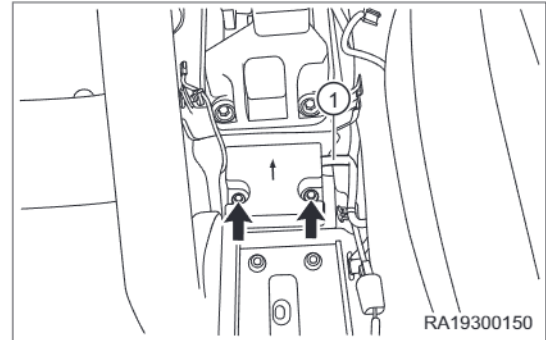
1. Turn off all the electrical equipment and ignition switch.
2. Disconnect the negative battery cable.

WARNING

- Wait at least 90 seconds after disconnecting the negative battery cable to disable the supplemental restraint system.

3. Remove the auxiliary fascia console body assembly (See page 43-10).
4. Remove the SRS control module assembly.

- a. Disconnect the SRS control module assembly wire harness connector (1).
- b. Remove 2 fixing bolts (arrow) between SRS control module assembly and body.
(Tightening torque: $10 \pm 1.5 \text{ N}\cdot\text{m}$)



WARNING

- DO NOT damage the airbag wire harness when handling the airbag wire harness connector.

- c. Remove the SRS control module assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

- Make sure to tighten the fixing bolts to the specified torque during installation.
- Always install the SRS control module assembly correctly in the direction indicated by the arrow on the SRS control module assembly.
- DO NOT put any object between the SRS control module assembly and the installation surface.
- After installing the tightening bolts, connect the SRS control module assembly securely. Always keep the vehicle power off during installation.
- Check the SRS warning light after installation, and make sure that the supplemental restraint system operates normally.

