SUBARU

QUALITY DRIVEN®

SERVICE

CERTIFIED SUBARU TECHNICIAN

Technicians Reference Booklet

Supplemental Restraint System (SRS)

Module SRS-604

AUTOMOTIVE Youth Educational Systems®

December 2005

MSA5P0136C

Technical Training

Subaru of America, Inc. reserves the right at any time to make changes or modifications to systems, procedures, descriptions, and illustrations contained in this book without necessarily updating this document. Information contained herein is considered current as of December 2005.

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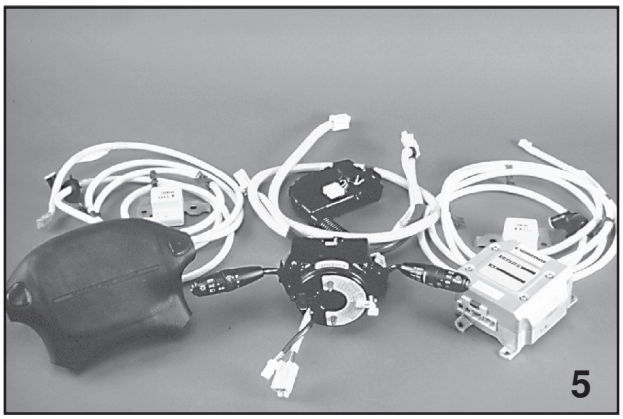
NOTES

SVX System Overview

The SRS Airbag System is a safety device designed to function in conjunction with a knee bolster, seat belts, and shoulder belts. Similar to other manufacturers, it deploys in frontal collisions only. It is an electrically operated system which uses a chemical deployment device.



SRS Components

The SRS System features built-in Self-Diagnostics and a redundant Safety Design built into all of the circuits.

The system safeguards include double locking connectors with Diagnostic Sensors, a self-shorting inflator SRS Airbag Module connector to prevent accidental deployment during servicing, and a Steering Roll Connector. A capacitor supplies backup power.

Finally, for redundancy, there are two front Inertia Sensors and two Safety Sensor Circuits.

NOTE: THE SRS AIRBAG SYSTEM IS THOROUGHLY DESIGNED TO PREVENT ACCIDENTAL DEPLOYMENT, HOWEVER, CAUTION SHOULD ALWAYS BE USED WHEN SERVICING OR DIAGNOSING THE SYSTEM. THE SRS SYSTEM, WHEN HANDLED PROPERLY, IS LESS HAZARDOUS TO SERVICE THAN A CAR BATTERY OR FUEL SYSTEM.

SRS System Precautions

1. Whenever serving the SRS System disconnect the battery and wait at least 10 minutes before proceeding.
2. Always store the SRS Airbag Module (steering wheel pad) facing up.
3. All of the SRS components are sealed - DO NOT DISASSEMBLE.
4. All of the SRS wiring is enclosed in a yellow housing for quick identification. Use care whenever working near a yellow housing. These wires may not be repaired if they are damaged. They MUST be replaced.
5. Do not drop any of the components. This could alter their sensitivity.
6. The SRS Module must avoid extreme heat exposure (200 degrees F. or greater).

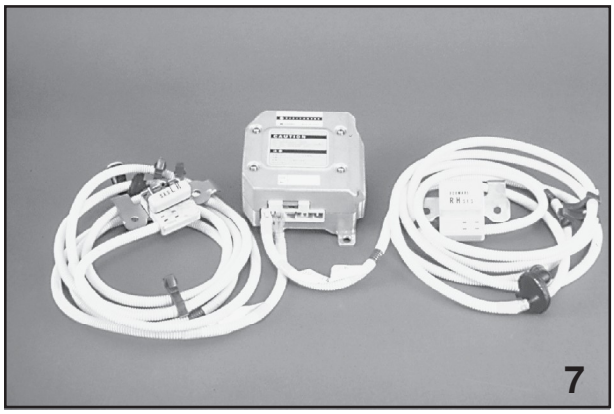
NOTE: EXPOSURE TO TEMPERATURES OF 300 DEGREES F. OR GREATER WILL CAUSE DEPLOYMENT.

7. Wear protective clothing when handling deployed Airbag components. Always use gloves and eye protection. Although the residue is NON toxic, it may cause minor eye and skin irritation.
8. Never place yourself or test equipment between the Airbag Module and seat when serving the Airbag System.

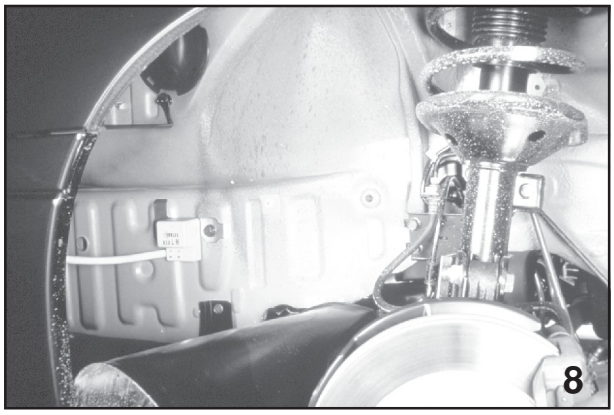
NOTE: REVIEW ALL CAUTIONS OUTLINED IN THE SERVICE MANUAL REGARDING SKIN AND EYE EXPOSURE TO DEPLOYED AIRBAG RESIDUES.

Component Overview

The Airbag and Inflator Module is attached to the steering wheel and covered by the steering wheel pad. It contains the Deployment module, Airbag and cover pad.

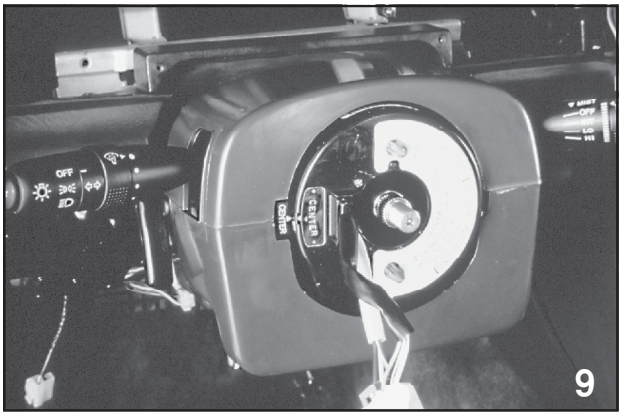


Front Sensors and ECM



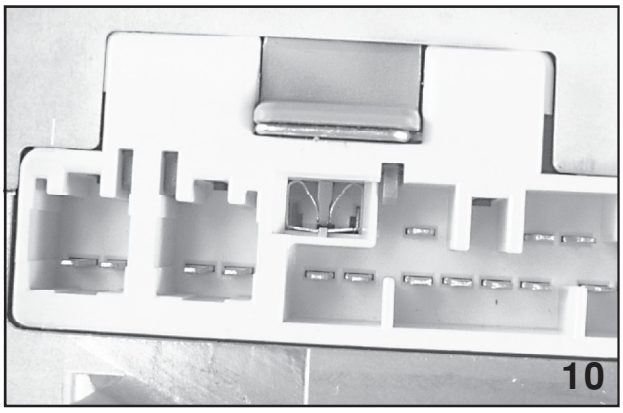
Front Sensor

There are two (2) front sensors located inside the front fenders behind each inner fender liner. In addition, there are two Safety Sensors located inside the ECM.



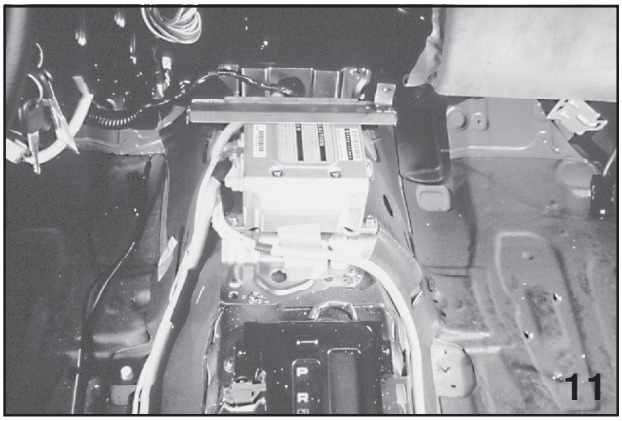
Steering Roll Connector

The steering roll connector is mounted between the steering wheel and the combination switch. It is an integral part of the combination switch assembly. The design of this assembly allows for steering wheel rotation. It also provides the hard wire connection between the Airbag module and the SRS system harness.



Double Lock Connector

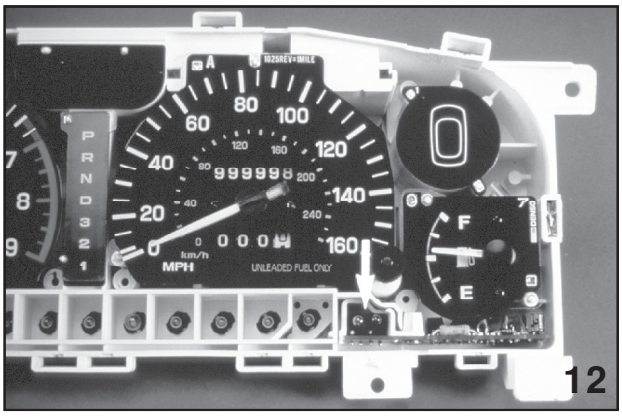
All SRS connectors are equipped with double locks and sensors. The sensors are used to indicate that the connector is not double-locked. For identification purposes, they are green in color.



SRS ECM Location

The ECM is located under the center console. It receives sensor input signals in the event of a frontal impact. It then sends a signal to trigger Airbag deployment. The ECM has self-diagnostic capabilities, incorporating long term memory.

The ECM sends a continuous low voltage signal to monitor the sensors, the harness, the deployment module, and to check for connector integrity.

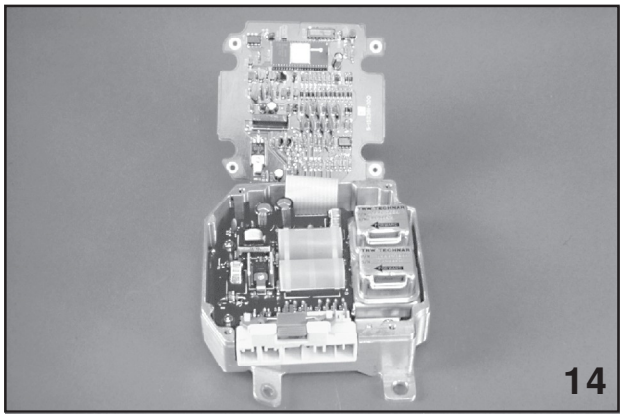


Combination Meter

There are two (2) Airbag warning lamps located in the combination meter. For safety purposes, there are also two (2) independent drive circuits. Only one lamp should illuminate at time.

Component Operation

The ECM controls the SRS Airbag System by constantly monitoring the input signals from the front sensors, the Safety Sensors and the double lock circuit. It also generates output signals to the warning lamps and to the inflator module.



Open ECM

The ECM contains two Safety Sensors which provide input signals, and two capacitors which supplement low battery voltage.

The capacitors also provide backup voltage in the event of a total loss of battery voltage. They are triggered by an internal voltage regulator.

NOTE: THE CAPACITORS CAN ACTIVATE THE SRS AIRBAG UP TO 10 MINUTES AFTER A TOTAL LOSS OF BATTERY VOLTAGE. THE REGULATOR MONITORS BATTERY VOLTAGE AND CAN SUPPLEMENT BATTERY VOLTAGE AS NEEDED IN THE EVENT OF A COLLISION.

Front Sensor Cut-Away

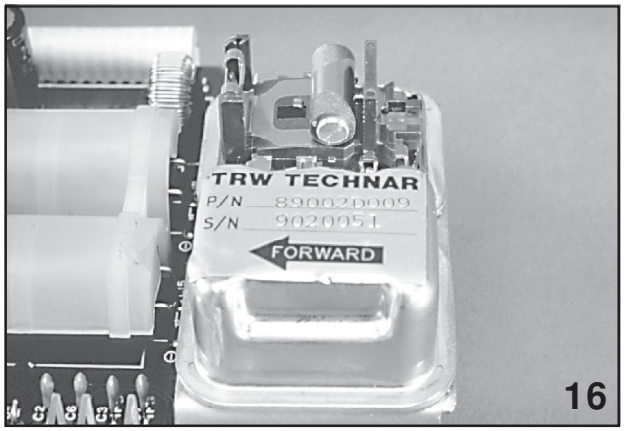
Redundancy is provided by the front left hand and right hand sensors. The hollow roller design provides a movable mass. The roller is mounted on a flat surface and held in place by a flat roller spring. The roller spring allows forward roller movement during frontal impacts of 12.5 MPH or greater. In this case, the roller and spring assembly makes contact with the circuit terminal.

When the roller makes contact with the circuit terminal, it sends a collision signal to the ECM. This completes the sensor circuit and provides a ground circuit to the inflator.

The metal housing of the front sensors are surrounded by resin and filled with inert gas to prevent moisture damage.

CAUTION: DO NOT OPEN THE SENSOR HOUSING. THE INTERNAL COMPONENTS ARE NOT SERVICEABLE.

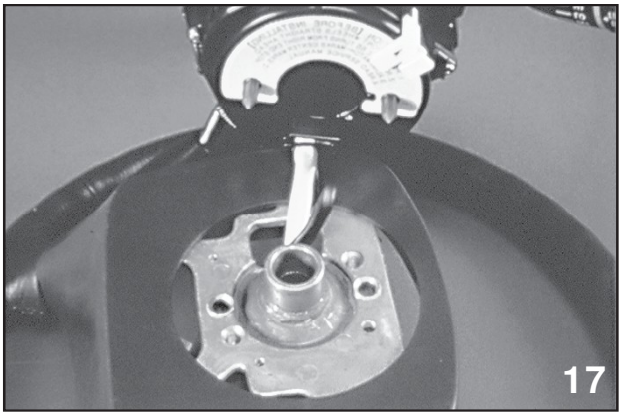
The continuous sensor harness is molded directly into the sensor body. The harness has only one sensor connector, which is located at the ECM. This provides a one-piece circuit path to the ECM. A damaged harness or sensor must be replaced as an assembly.



Safety Sensor

Two Safety Sensors located inside the ECM provide redundancy. They operate similar to the Front Sensors in that they provide a B+ circuit to the Inflator. Although they are similar in construction and operation to the Front Sensors, the Safety Sensors are more sensitive.

Weight added to the center of the roller makes it heavier, which in turn, makes the sensor more sensitive to impact. The ECM must be replaced if one of the Safety Sensors fail.



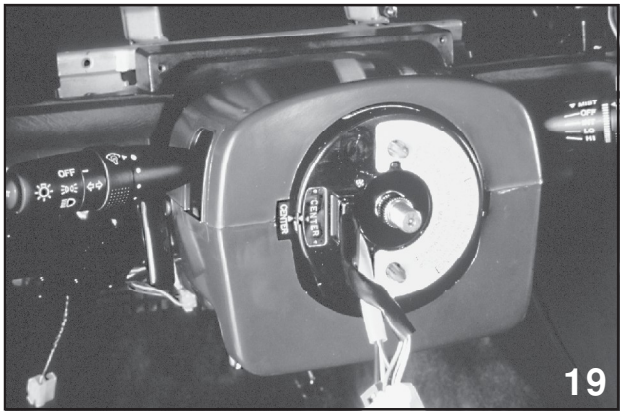
Steering Roll Connector

The Steering Roll Connector is a continuous flat ribbon-type cable. The cable coils around the hub which allows 2.65 turns (either direction) from the center steering position. This provides a direct hard wire connection between the SRS Airbag Module and the ECM harness. It also includes the Horn Circuit. This eliminates the potential circuit interruption inherent to sliding contact-type connectors, which also prevents false trouble codes.

Two guide pins are used to align the roll connector with the steering wheel.

Roll Connector Phasing

The roll connector MUST be phased to the steering system. With the front wheels centered, align the inner "center" indicator located behind the window in the roll connector, with the "center" indicator located on the rotating cover next to the window. There is also an alignment arrow on the connector case.



Roll Connector Indicator

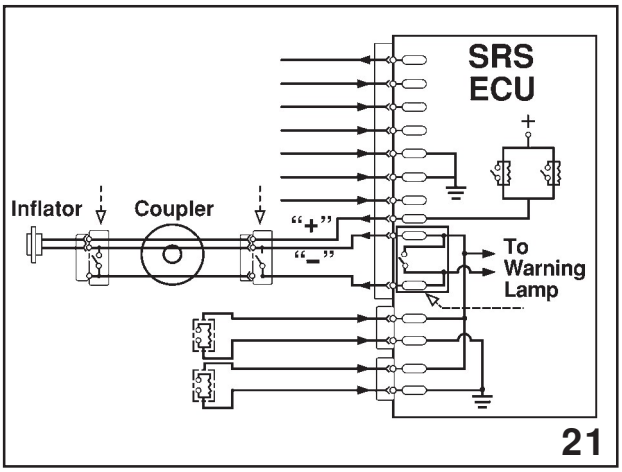
If the inner indicator shows "1R" in the window, rotate the cover one full rotation to the right. If the inner indicator shows "2R" in the window, rotate the cover two full rotations to the right. Similarly, if the indicator shows either "1L" or "2L", rotate the cover one or two left hand rotations.

NOTE: TO MAINTAIN PROPER STEERING WHEEL ALIGNMENT, CENTER THE FRONT WHEELS AND SCRIBE AN ALIGNMENT MARK BETWEEN THE STEERING WHEEL HUB AND THE SHAFT, PRIOR TO DISASSEMBLY.

Connector Double Lock Sensors

Double lock sensor mechanisms are identified by a green color. They are used on all SRS electrical connectors. The system uses four 4 double lock sensors between:

1. The main ECM connection
2. The system power supply and the warning light.
3. The ECM harness and the roll connector at the combination switch.
4. The roll connector and the Airbag module located behind the steering wheel pad.

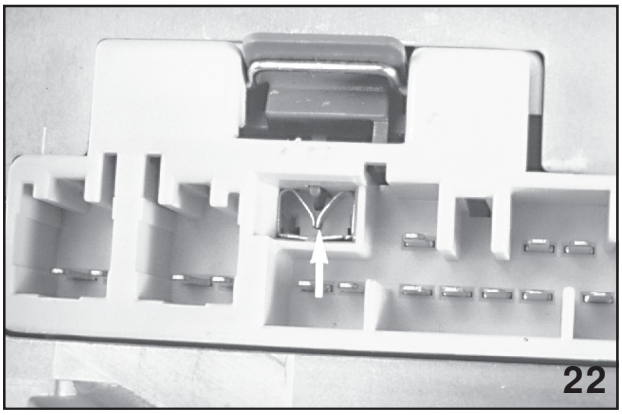


Schematic (Artwork)

These sensors connect the double lock detecting circuit to the negative side of the igniter circuit. This provides a ground signal circuit for the warning light system.

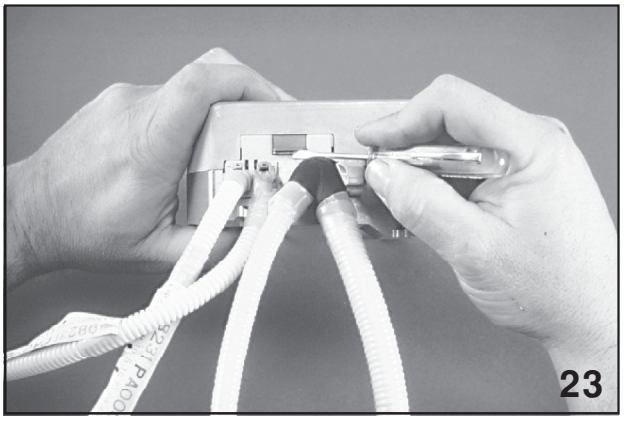
If any green double-lock lever is not properly latched, the SRS warning lamp will be illuminated and a Trouble Code will be displayed (Code 14).

The primary double lock at the ECM secures the main harness connector as well as the two front sensor harness connectors.



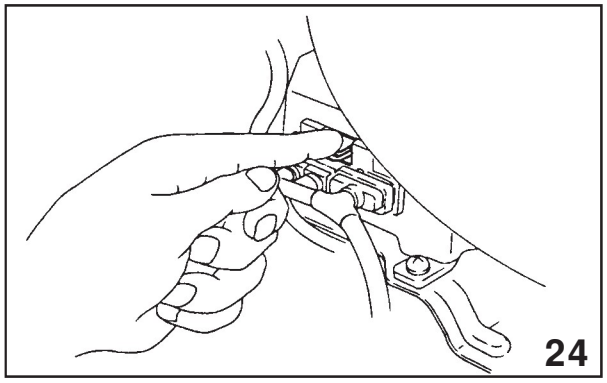
Primary Double Lock Connector (unlocked)

Double lock sensor terminals make contact when they are unlocked and they separate when they are locked. The green tabs mechanically prevent the connector from being removed. The primary double lock will not latch unless the connectors are completely inserted.



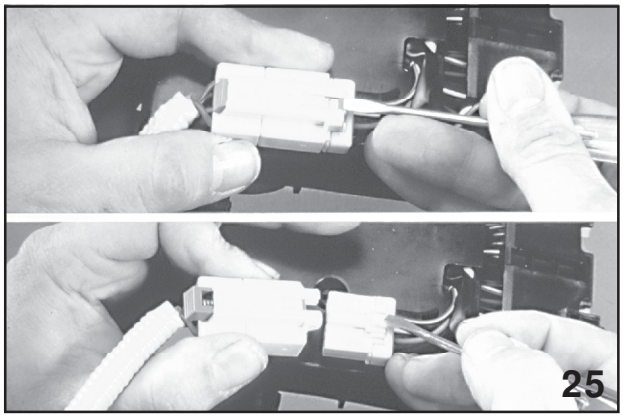
Releasing Primary Double Lock

In order to release the primary double lock, use a small screw driver. Press in on the metal loop and simultaneously raise the green latch. Then to remove the individual connectors, press down on the primary connector locks.



Connector Lock Operation

Secure the primary double lock by pressing the green latch down until a click is heard.



Two Step Lock

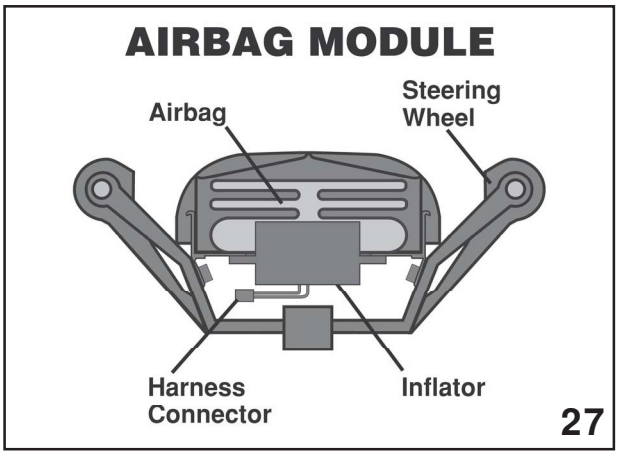
The procedure for locks #2 and #3 are similar to the primary double lock, except that they are released at the primary lock in two steps. First, press down once on the spring-loaded green latch and it will pop out. Then press it down a second time in order to remove the connector. To secure the double lock, push in the green latch until a click is heard.

Double lock locations:

1. The main ECM connection
2. The system power supply and the warning light.
3. The ECM harness and the roll connector at the combination switch.
4. The roll connector and the Airbag module located behind the steering wheel pad.

Airbag Module

The Airbag module comes as a one piece assembly with the horn buttons. It is mounted to the steering wheel with four #30 tamper-proof torx bolts.



Airbag Module (Artwork)

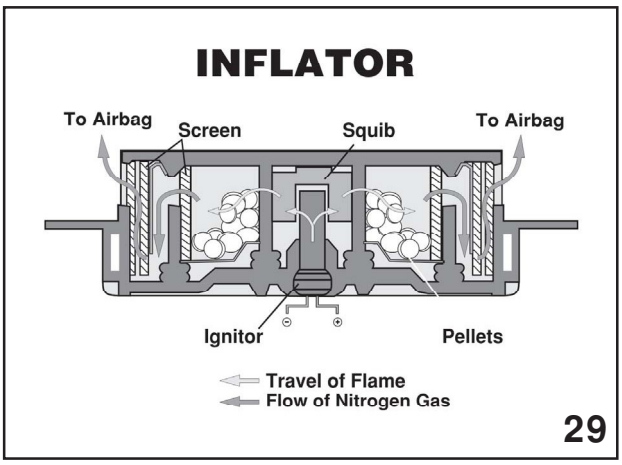
The Airbag module consists of three subcomponents:

1. Inflator
2. Airbag
3. Inflator harness with connector

NOTE: THE AIRBAG MODULE IS SERVICED ONLY AS AN ASSEMBLY. DO NOT ATTEMPT TO DISASSEMBLE OR REPACK THE AIRBAG.

Inflator Igniter

The inflator igniter is designed to ignite a squib after it receives an input from the ECM. The igniter is an electrically heated device which generates temperatures in excess of 300 degrees F. to ignite the squib.



Squib (Artwork)

The squib consists of fire transmissive material used to ignite nitrogen pellets. The nitrogen pellets generate nitrogen gas (N2) during combustion. This creates rapid gas expansion which, in turn, inflates the Airbag.

The built-in screen cools and removes hot cinders from the N2 before the N2 enters the Airbag.

NOTE: FOR MORE SPECIFIC CHEMICAL CONTENT, PLEASE REFER TO THE SUBARU SVX SERVICE MANUAL.

Airbag

The Airbag itself is located behind the steering wheel center pad. It is made out of nylon material which expands to a diameter of approximately 30 inches (762mm) when inflated.

The bag is coated on the inside with silicone and is coated on the outside with talcum powder or cornstarch. This provides lubrication for deployment. These inner and outer coatings produce the majority of the residue found after deployment.

Airbag Deployment

In order to activate the system, a frontal force of 12.5 MPH or greater is required. This force overcomes the inertia and the tension of the roller springs of the rollers in the front sensors and the Safety Sensors. The rollers then make contact with the circuit terminals. The front sensors provide a ground circuit while the Safety Sensors provide a positive circuit.

In order for the ECM to activate the inflator, it must receive at least one collision signal from the front sensors and at least one collision signal from the Safety Sensors.

After receiving a signal from the ECM, the igniter instantly heats up to 300 degrees F., igniting the squib which burns the nitrogen pellets to create nitrogen gas. The generated N2 goes through the screen into the Airbag. The outer skin (steering wheel pad) of the inflator Airbag module then ruptures as the Airbag deploys. The drivers forward movement is absorbed by the Airbag as it vents the N2 through two 1.58 inch (40mm) holes.

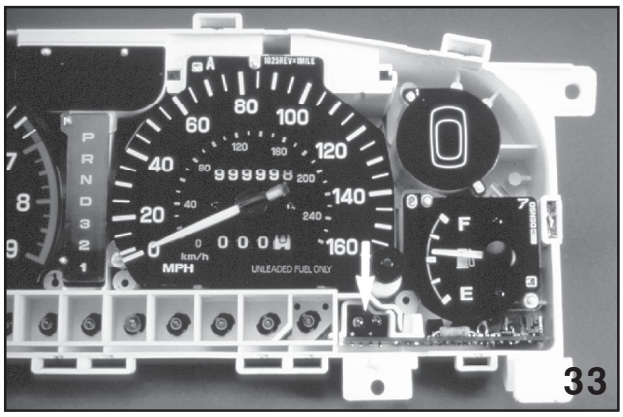
The Operational Time Sequence is almost instantaneous:

1. Collision: Zero seconds
2. Operation of the inflator: 30 millisecond
3. Discharge of the N2: About 60 millisecond
4. Completion: About 110 milliseconds

NOTE: A VEHICLE WITH A DEPLOYED AIRBAG MUST BE TOWED TO THE DEALER FOR SERVICE.

Airbag Warning Lamps

Two (2) Airbag warning lamps are located on the lower right-hand corner of the combination meter. Two bulbs are used with independent drive circuits for redundancy. The assembly is replaced as one unit.



Airbag Warning Lamps

The lamp illuminates for 8 seconds after the key is turned to the "ON" position. It communicates to the operator when service is required and it communicates trouble codes to the technician.

Diagnostics and Servicing

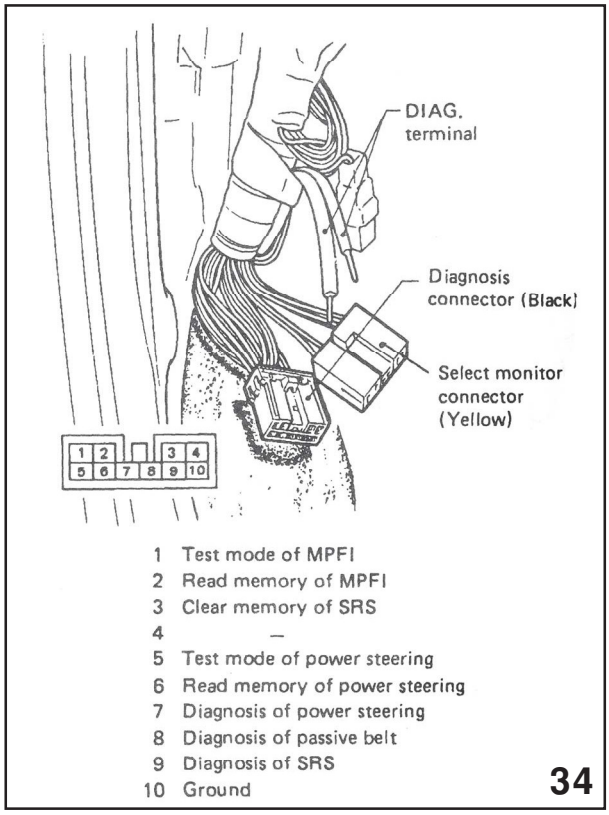
The self-diagnostic system employs three modes similar to the fuel system self-diagnostics:

1. U-Check (User Check)
2. D-Check (Dealer Check)
3. Read Memory

The U-Check Mode warns the driver of a system fault by illumination of the "AIRBAG" light on the dash. The light will turn off if the trouble source corrects itself.

Trouble codes are stored in long term memory and displayed similar to the fuel system codes. They are indicated by the "AIRBAG" light with the following values:

1. 1.2 Second (Long) Flash = 10
2. 0.3 Second (Short) Flash = 1
3. Continuous 0.6 Second Flashes = no trouble



Diagnostic Connector

There is also an additional factory long-term memory which can only be accessed by the factory. The purpose of this is for the ECM to maintain a vehicle trouble code history. The long term memory cannot be cleared in the field.

NOTE: THE DIAGNOSTIC PROCEDURES ARE FOUND IN THE SUBARU SVX SERVICE MANUAL ON THE STIS WEB SITE.

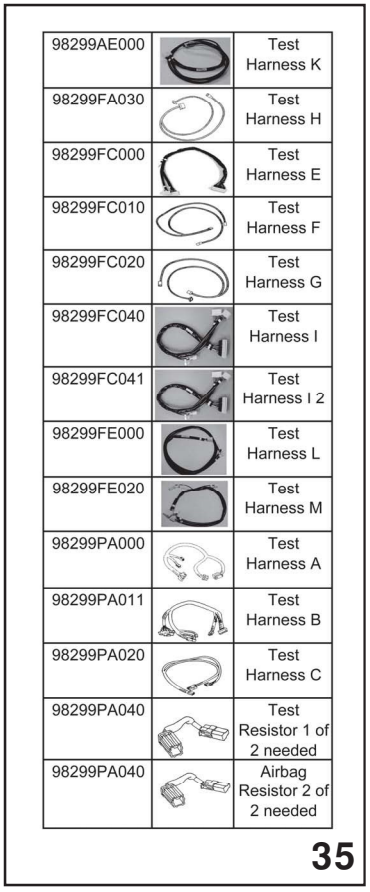
CAUTION: DO NOT UNLOCK "DOUBLE LOCK" CONNECTORS OR DISCONNECT SYSTEM CONNECTORS WITH THE IGNITION "ON". THE ECM WILL SET A TROUBLE CODE IMMEDIATELY. THESE CODES WILL ALSO BE SET IN HIDDEN MEMORY AND CANNOT BE CLEARED.

SRS System Servicing

An SRS inspection is required every ten (10) years. Perform the Self-Diagnostic Checks and verify that the Airbag warning lights are functioning. Also verify that there are no codes in memory and no current codes existing.

NOTE: REFER TO THE SUBARU SVX SERVICE MANUAL ON THE STIS WEB SITE. TO REVIEW THE TEN YEAR SERVICE PROCEDURES.

NOTE: REFER TO THE SUBARU SVX SERVICE MANUAL ON THE STIS WEB SITE. TO IDENTIFY THE TEST HARNESSES AND THE CONNECTOR NUMBERS.



Sample List of Test Harnesses

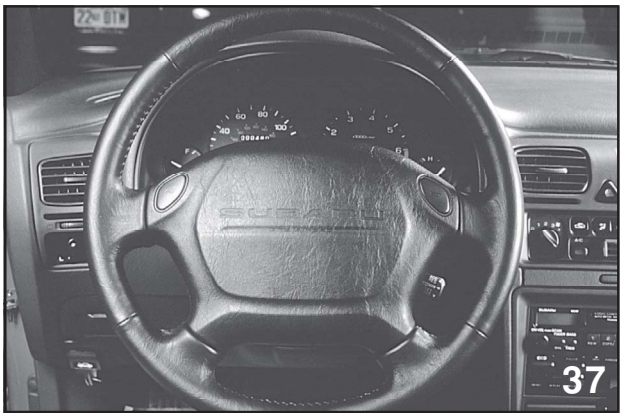
NOTE: REFER TO THE APPROPRIATE MODEL YEAR SUBARU SERVICE MANUAL ON THE STIS WEB SITE FOR COMPLETE TEST HARNESS LIST.

CAUTION: NEVER USE TEST HARNESS "C" TO CHECK THE RESISTANCE OF THE AIRBAG MODULE.

CAUTION: THE DEPLOYMENT HARNESS SHOULD NEVER BE CONNECTED TO THE AIRBAG MODULE WHILE THE MODULE IS IN THE VEHICLE.

CAUTION: ALWAYS US A DIGITAL TYPE OHM METER WITH AN OUTPUT SPECIFICATION OF 100 MILLI-AMPS OR LESS WHEN TESTING THE AIRBAG SRS CIRCUITS. USE OF THE INCORRECT TYPE OF METER MAY CAUSE ACCIDENTAL DEPLOYMENT. IF YOU ARE NOT SURE ABOUT THE SPECIFICATION OF YOUR METER, DO NOT USE IT UNTIL THE SPECIFICATIONS CAN BE VERIFIED.

1995 Model Legacy

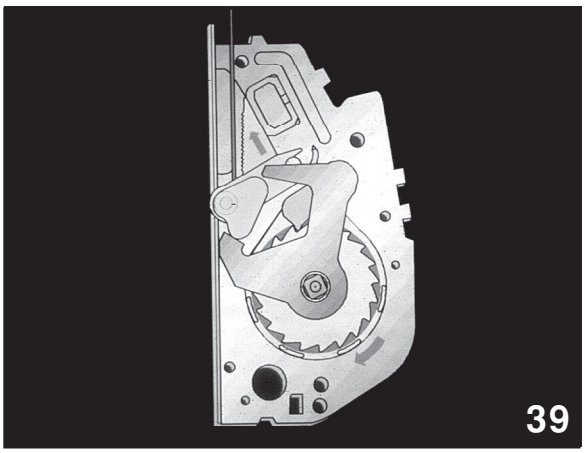


Steering Wheel

Dual Supplemental Restraint System Airbags will be standard equipment on all 1995MY Legacys and functions are similar to previous Model Year Legacys.

Dash Board Airbag

The passenger front Airbag Module is wired in parallel with the driver's side. Both sides will deploy in the event of a frontal collision of 12.5 mph or greater.

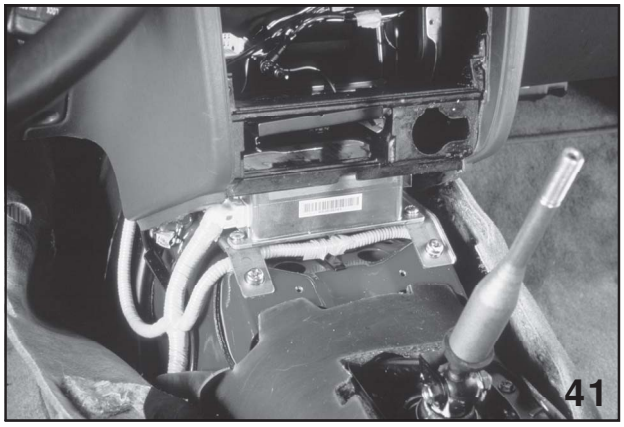


Seat belt

Four (4) position, three (3) point seat belts with ELRS are used in the front seats. The outer rear seat positions use a three (3) point seat belt with ALR assemblies. The center rear seat position uses a two (2) point seat belt.

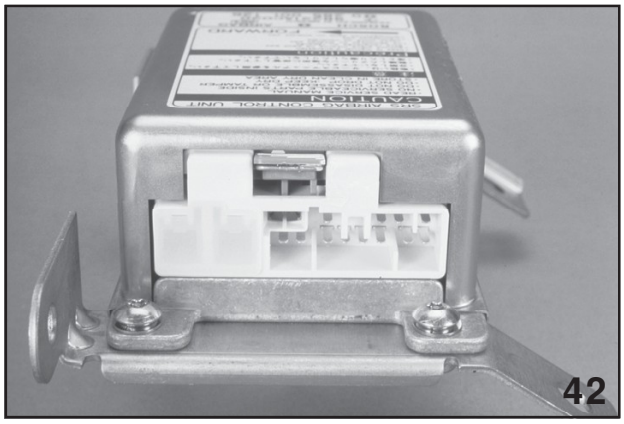
CAUTION: BEFORE SERVICING ANY SRS COMPONENT, DISCONNECT THE BATTERY AND WAIT 30 SECONDS FOR THE CAPACITORS TO DISCHARGE.

1996 Model Legacy and Outback



ECM Location

All 1996MY Legacy and Outback vehicles have dual Airbags. However, the electrical systems operating them will differ.



ECM on Bench

The Outback utilizes the same system as was used on the 1995MY Legacy which have front sensors and Safety Sensors incorporated in the SRS control unit.

The 1996MY Legacy vehicles no longer have separate front sensors. A "G" sensor located in the control unit performs all impact sensing.

Steering Wheel

Steering Wheel Side View

Both models use a floating type SRS Airbag module. The 1996MY Legacy steering wheel will no longer have horn buttons. To use the horn, press on the SRS Airbag module, which activates a switch plate.

1998 Model Forester

Dash

The SRS Airbag system for the 1998MY Forester employs both a driver and passenger Airbag. Please observe all warning precautions listed on the appropriate service publications and warning labels of the vehicle.

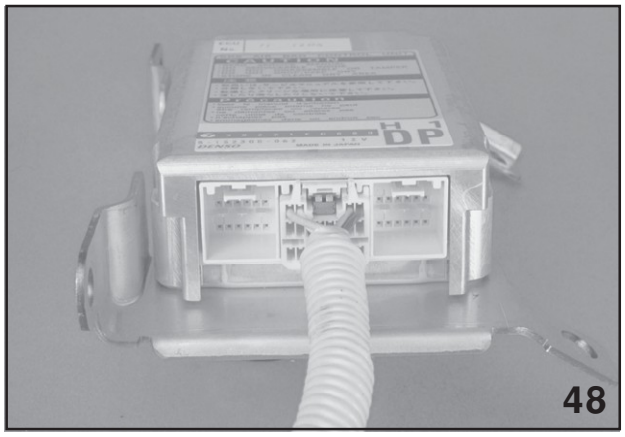
The driver side Airbag is unchanged from that of the 1997 Impreza. Dashboard configuration for the passenger side requires a new Airbag design. The Airbag module can be removed or installed with the instrument panel in place.

The inflator of the passenger side Airbag is a new design. During deployment, a liquid fuel (Alcohol 10 milliliters) is ignited. The expansion of gasses during the burning of the fuel inflates the Airbag.

Gasses produced during burning include Argon and Helium.

Control Unit Location

Control unit location is just forward of the shifter assembly.



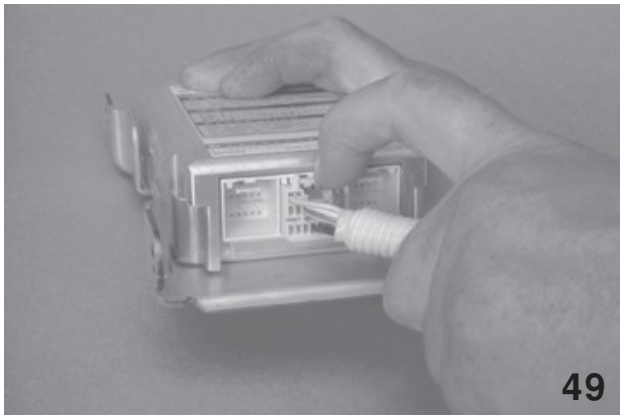
Control Unit on Bench

The connector appearance and double lock feature have changed.

The control unit connector plate is designed for use with other Subaru SRS systems as well as the North American models. The connector is yellow with 20 pins.

The connector is disengaged by pushing down on the top tab and gently pulling, applying force to the tab and the connector.

A plastic tab inside the connector area separates the contacts that monitor the circuit for loose connections (Code 14).



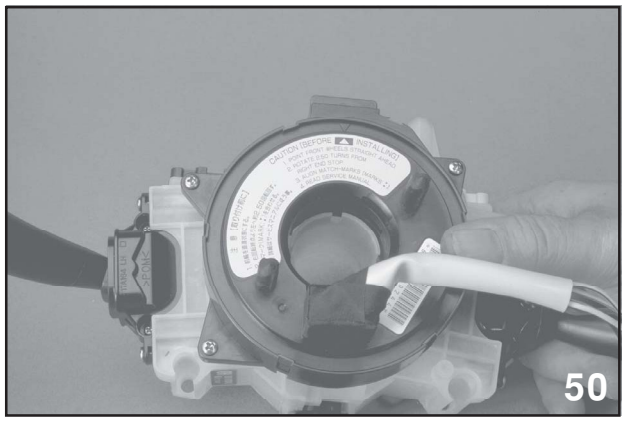
Double Lock

The connector "double-locks" for the driver side and passenger side Airbag modules have also changed.

To disengage, push down on the yellow tab and slide the green tab in the direction of the arrow on the connector. Next, release the tab and pull gently on the connector. Failure to release the tab before attempting separation will result in the connector remaining engaged.

The new test harnesses are labeled, respectfully: **E, F, and G.**

The same test resistor is used when checking driver or passenger Airbag module integrity.



Steering Roll Connector

The window of the Steering Roll Connector has been deleted. Follow the direction on the Steering Roll Connector and the service manual when working with an area that will change the wheel to Steering Roll Connector phasing.

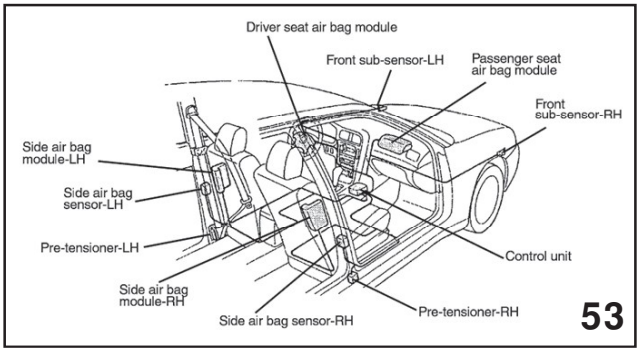
Side Airbag

The Legacy SRS Airbag system utilizes the same type of control unit and connectors with the addition of two (2) front sub-sensors mounted just forward of the wheel arch area. Their input to the SRS ECM influences deployment, however, deployment is not dependent on the front sensors switches closing. The ECM makes the final determination to deploy or not using logic that contains preset values.

Side SRS Airbags are equipped on GT Limited and Outback Limited models. They are designed to deploy on impact to the side of the vehicle. The severity of the impact is determined by the side Airbag sensor located in the B-Pillar.

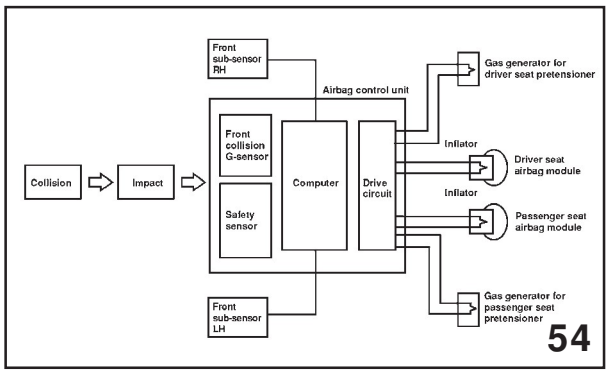
Side impacts to the rear door of the vehicle are absorbed by the door and body of the vehicle as well as to the shield under the rear passenger seat. The transferred force is then distributed through the shield and back to the body of the vehicle.

2000 Model Legacy and Outback



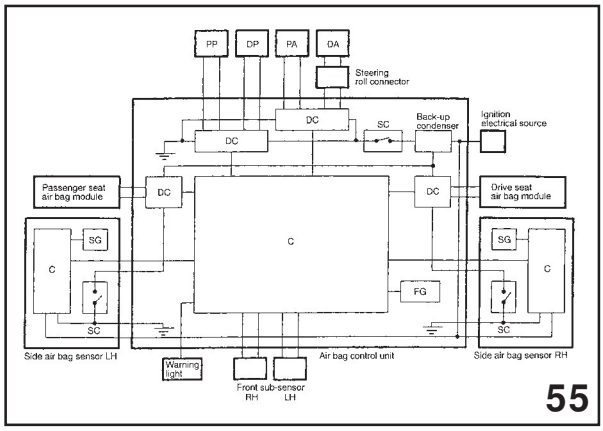
Vehicle Electrical (Artwork)

The SRS Airbag control unit has been changed to include the addition of inputs and provide the output necessary for side Airbag and seat belt pretensioner operation.



Pretensioner Schematic (Artwork)

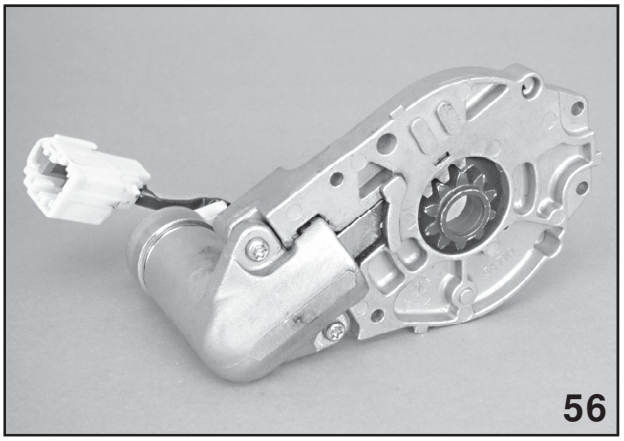
This diagram illustrates the electrical layout of the SRS Airbag system without side Airbags. The front sub-sensors are located in the front bumper area. The seat belt pretensioners will activate at the same time the front Airbags activate.



System Schematic (Artwork)

This diagram illustrates the total SRS Airbag system electrical layout. During a frontal impact, the front sub-sensors and sensors contained in the SRS control unit determine the severity of impact. If the impact exceeds preestablished parameters, the front Airbags, driver and passenger side, as well as both front seat belt pretensioners activate.

Seat belt pretensioner operation winds the belt to restrain the occupant.

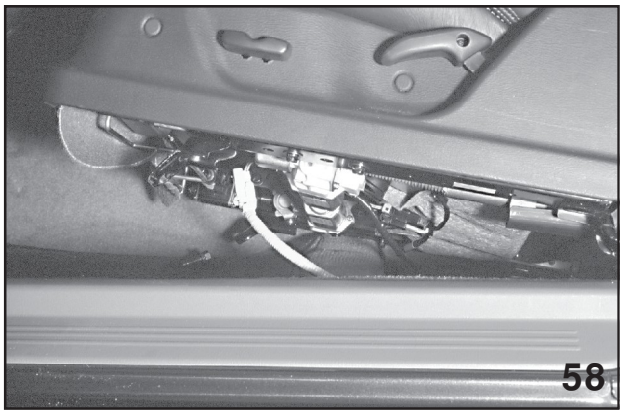


Pretensioner

The gas generator, when activated, pushes a piston which is made onto a rack-type gear. This gear rotates the winding gear creating the motion and force necessary to wind the belt inward. When the force of the belt reaches a fixed value, the force limiter contained in the seat belt assembly operates to control the restraint force so it does not increase further.

Front Seat

The GT and Outback models have a 6-way power driver seat. When servicing this seat, disconnect the side SRS Airbag connector after positioning the seat for mounting bolt removal and disconnecting the battery. (Wait 30 seconds before proceeding).

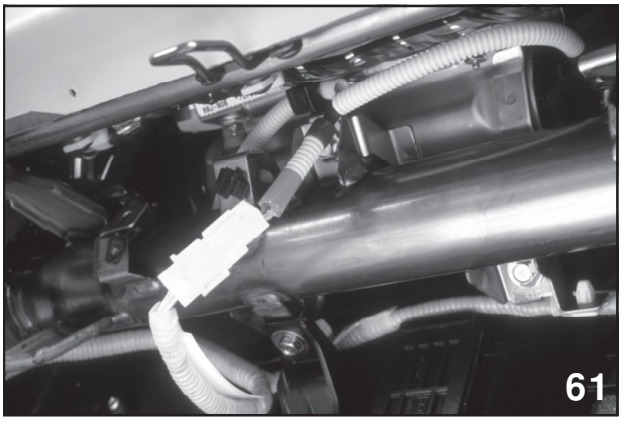


Side Airbag Harness

2001 Model Legacy

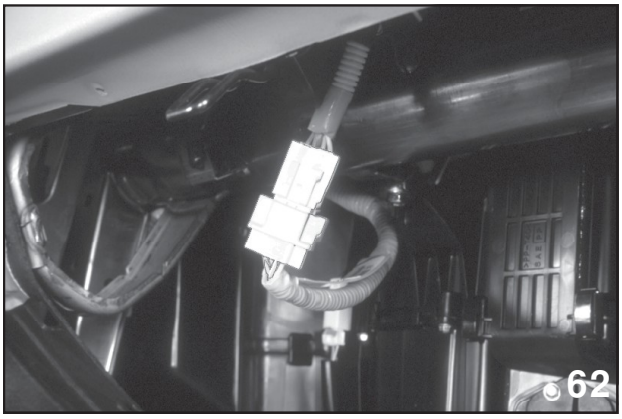
Passenger Airbag

All Legacy vehicles will share an enhancement to the passenger side SRS Airbag System.



Passenger Harness

The Airbag module now contains 2 inflation units. Each one independently controlled by the SRS ECM. During an impact of lower speeds (above the deployment minimum specification) one side of the module will be activated followed by the other side. The time between the two sides activating for deployment is controlled by the ECM to decrease the impact of the bag with the passenger. The higher the impact speed, the shorter the time between the two sides activating for deployment. The two sides will be activated together above a higher impact speed.



Harness Connector

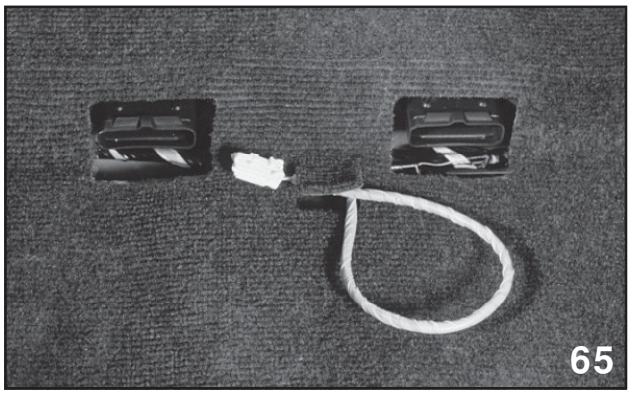
A new style of connector is used for the passenger side Airbag module. The connector is disengaged by pulling down on the wider portion of the body harness while supporting the lower portion.

Driver Side Airbag

There is no change to the driver side SRS Airbag.

2002 Model Impreza WRX

WRX models will have side Airbags as standard equipment.



Under Seat Connector

Caution must be observed while removing the front seats to ensure the SRS wiring harness is not damaged.

Side Impact Sensor

The Side Impact Sensor is mounted on the left and right B pillars behind the seat belt trim panels.

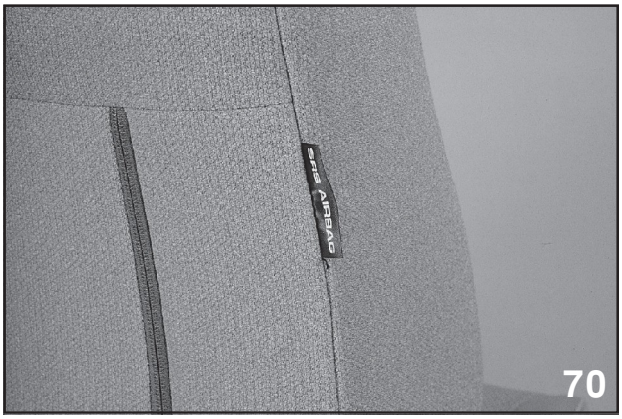
Seat belt Pretensioner

The SRS Airbag for Impreza 2002 will include the addition of seat belt pretensioners for all models (Passenger side Airbag module is the single deployment type).

Control Unit

The Control Unit is located in front of the gate type shifter.

2003 Supplemental Restraint System (SRS)



Seat Tag

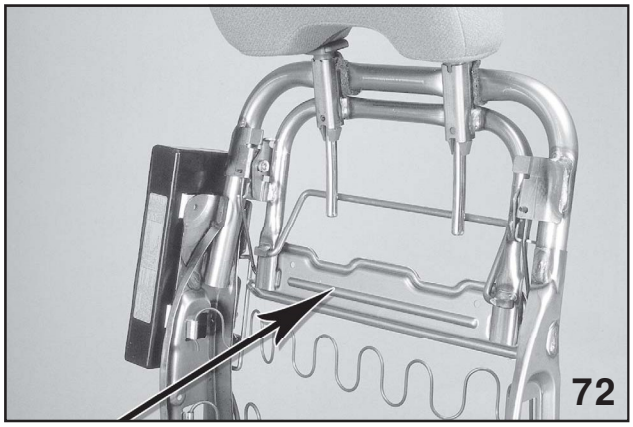
All Forester models are equipped with front side Airbags. The seat covers are tagged as a reminder for technicians.

Upper Seat Frame

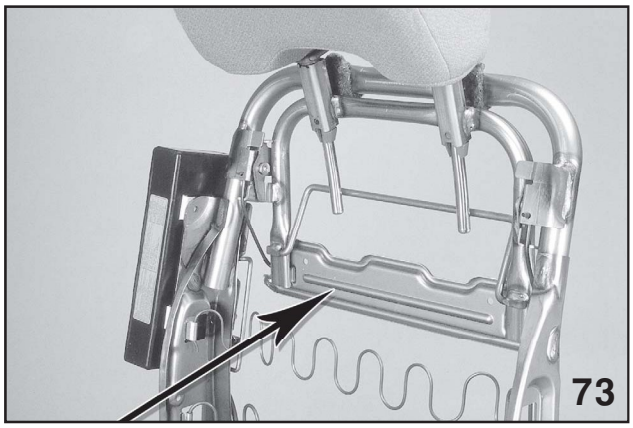
The Airbag is attached to the upper seat frame and inflates to form a larger pillow when activated in a side collision.

All Forester front seats are also equipped with active head restraint.

SRS wires routed through the seat are not covered with the yellow plastic cover.

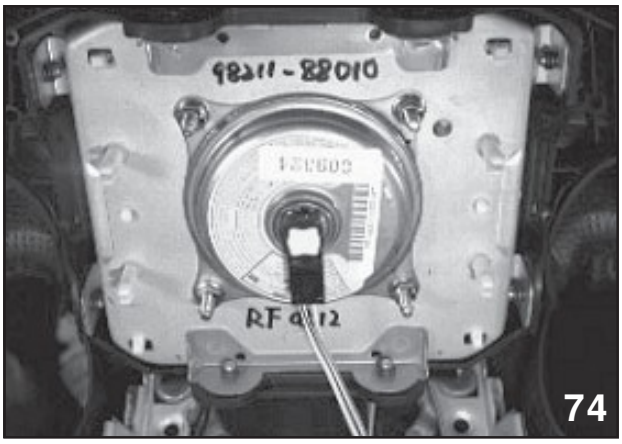


Normal Position



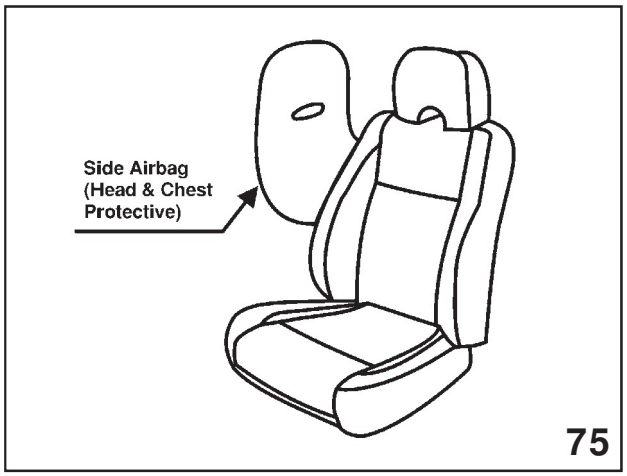
Rear Impact

Position during rear impact.



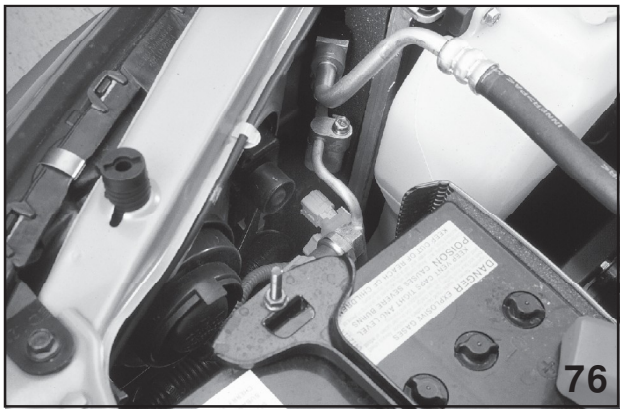
Airbag Module

All 2003 Forester models will be equipped with driver and passenger front SRS Airbags, seat-belt pretensioners and driver and passenger side Airbags.



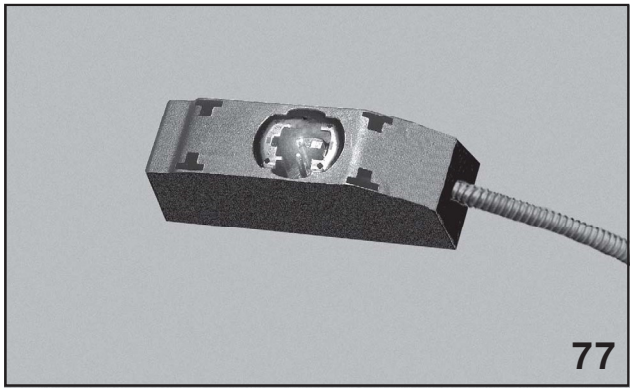
Side Airbag (Artwork)

The side Airbags when deployed are larger and provide additional protection for the chest and head.

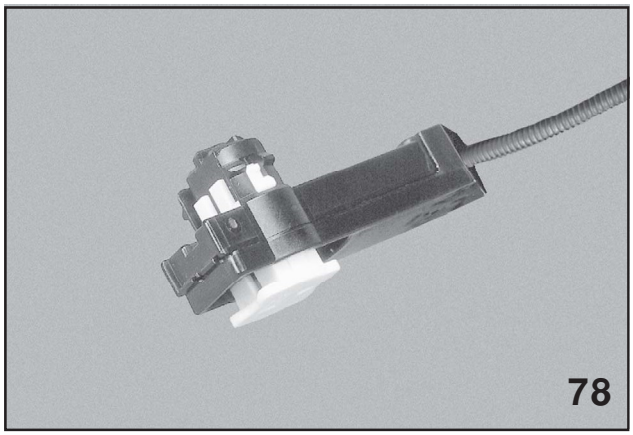


Satellite Discrimination Sensor

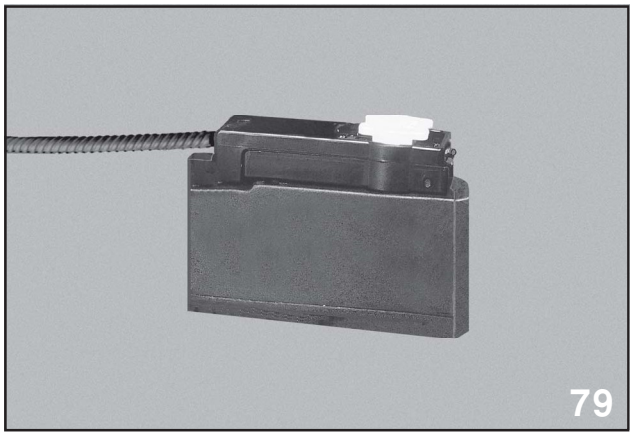
The location of the front Satellite Discrimination Sensor has been relocated due to the new vehicle design.



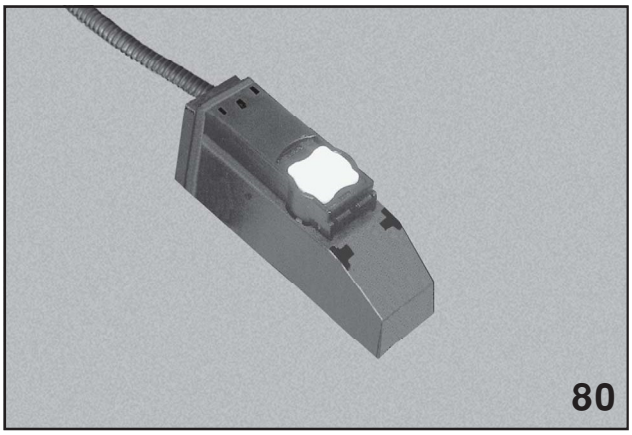
Connector



Connector Lock



Lock-Up



Lock Down

The connector and connector lock on all deployment devices have changed. The new style requires the release of the yellow tab by pulling up on the tab and then separating the connector from the deployment device.

NOTE: FRONT SEAT HEAD / AND CHEST SIDE-IMPACT AIRBAGS (SRS) ARE STANDARD ON ALL WRX AND WRX STI MODELS.

2005 Legacy Airbag System

Warning Label

Driver's Visor

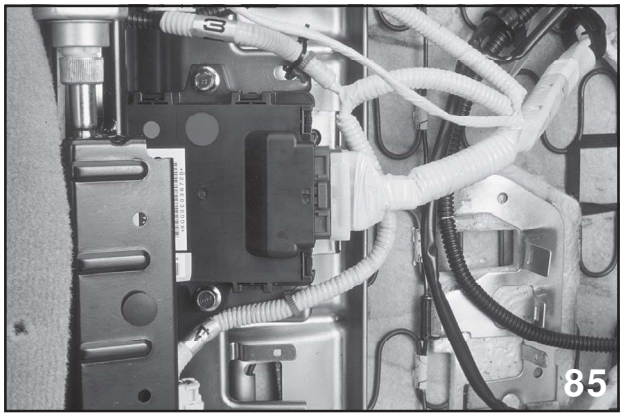
All 2005 Legacy vehicles are equipped with the Occupant Detection System (ODS).

Designed to identify the front seat passenger's weight, the system determines if the front passenger seat is empty or occupied by a person exceeding approximately 80 pounds.

NOTE: THIS SYSTEM IS ALSO EQUIPPED ON FORESTER MODELS BEGINING ON THE 2006 MODEL YEAR.

Under Passenger Seat

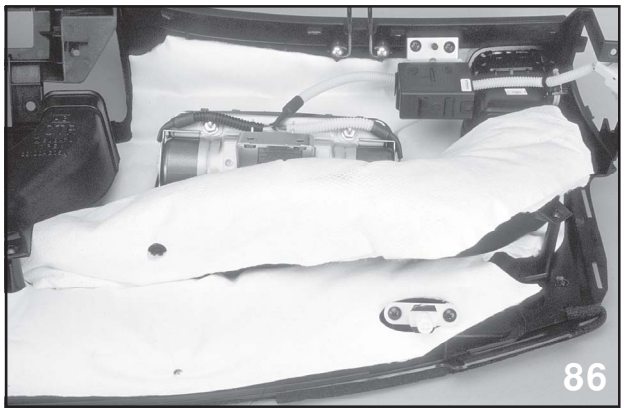
A load cell or strain gauge is located in the corners of the lower seat frame on the passenger side. The weight of the passenger is distributed into the frame and is sensed by the 4 load cells.



Occupant Detection System (ODS) Control Unit

Signals from each load cell are amplified and send to the Occupant Detection Control Module.

The Occupant Detection Control Module sends its determination of the front passenger occupancy to the SRS Airbag control unit. Should the need for deployment occur the data from the Occupant Detection Control Module determines if the passenger side Airbag module will deploy.



Airbag Module

With the seat empty the passenger side Airbag will not deploy, but the seat belt pretensioner will activate. With the weight of a person exceeding approximately 80 pounds the passenger Airbag will deploy and activate the seat belt pretensioners.

Passenger Airbag Light Off

The vehicle communicates the front passenger Airbag status to the dash using the center Pass Airbag Off/On light.

Passenger Airbag Light On

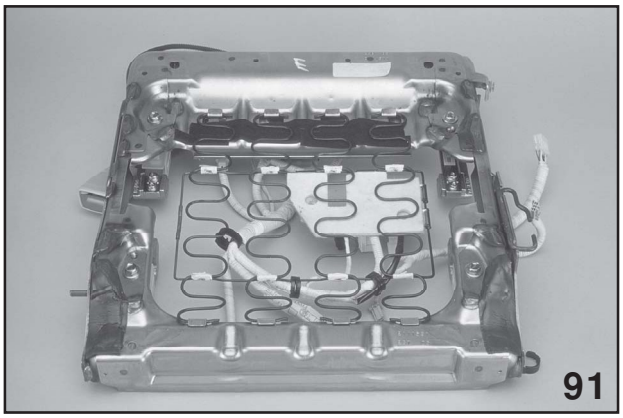
With the seat empty the light will indicate off. When a passenger exceeding approximately 80 pounds occupies the seat the light will change to On.

Passenger Seat belt Light

When this light changes to on the warning light above the rear view mirror indicates the status of the passenger side seat belt. The light will illuminate as a reminder for the front passenger to buckle their seat belt.

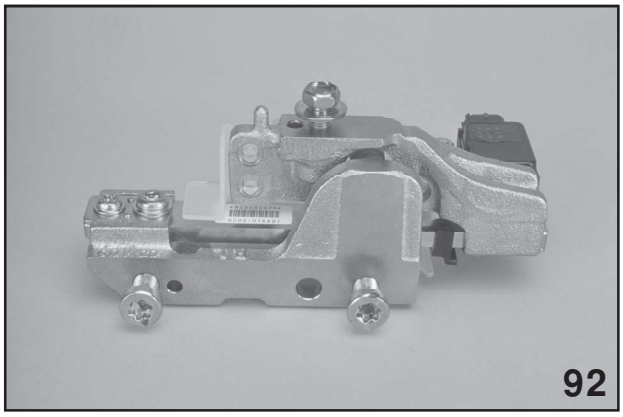
NOTE: THE PASSENGER SEAT BELT LIGHT WILL ALSO ILLUMINATE WITH A WEIGHT BELOW THE THRESHOLD ON THE SEAR EVEN WITH THE AIRBAG IN PASSIVE MODE.

Seat Bottom Corner



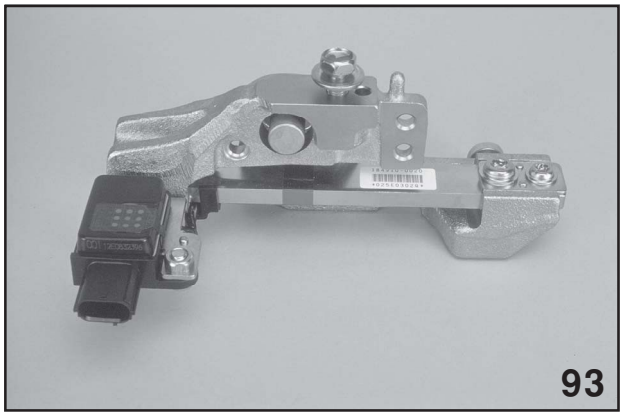
Seat Frame

The load cell construction attaches to the slide rail and the seat frame. Force from the downward movement of the seat cushion transfers to the seat frame.



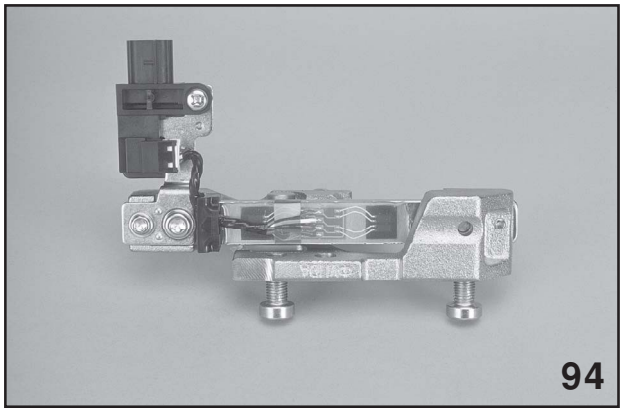
Load Cell Slide Rail View

This force changes the output of the load cell.

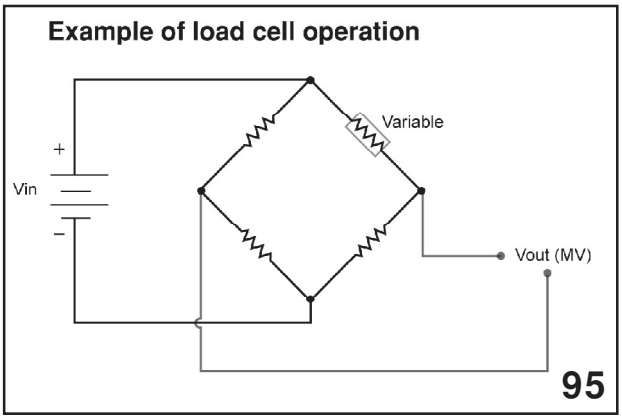


Load Cell Seat Frame View

The output is a very low voltage and must be amplified before it is sent to the Occupant Recognition System control module.



Load Cell Bottom View



Bridge Circuit (Artwork)

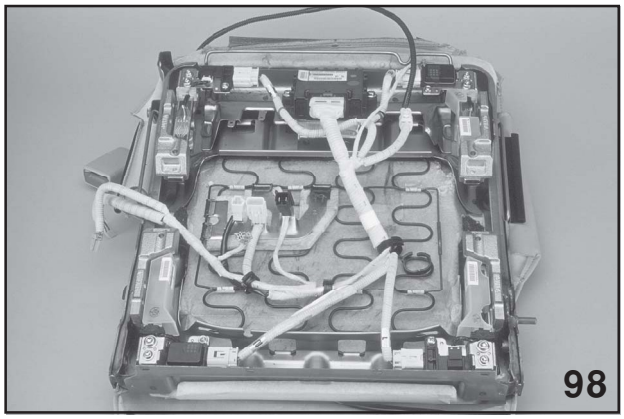
The sensitivity and low voltage output of the load cell makes it necessary to ensure the relationship of the load cell and the parts they attach to remains constant. The load cell operates by comparing the voltage output of two branches of a parallel circuit. One branch is fixed and the other is variable and its output (millivolts) varies by the load placed on the seat. The two outputs are amplified at the load cell by the built in amplifier and compared to each other to form the signal that is sent to the Occupant Detection Control Module.

The components of the ODS located on the lower seat are not serviceable. The lower seat frame and rails are replaced as a unit.

Seat belt Anchor Cover

Seat belt Anchor Cover Removed

If the seat is removed or the bolts of the seat loosened, the load cells will need to be recalibrated. Calibration is accomplished using the select monitor and special tools 98399AG000 and 98399AG010. Before seat removal the front passenger seat belt must be removed from the right side of the front seat.



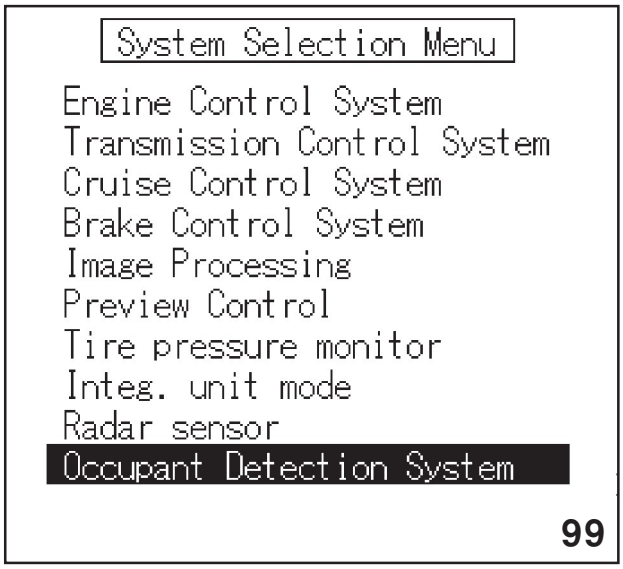
98

ODS Seat Harness

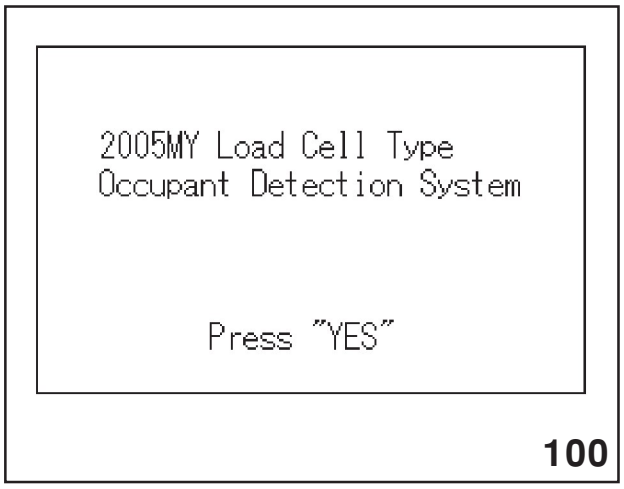
Carefully disconnect all connectors before seat removal.

Calibration Process

Using the Select Monitor and cartridge 24082AA260 or SMIII scroll over “Occupant Detection System” Press “yes” and follow the instructions on the Select Monitor.



99



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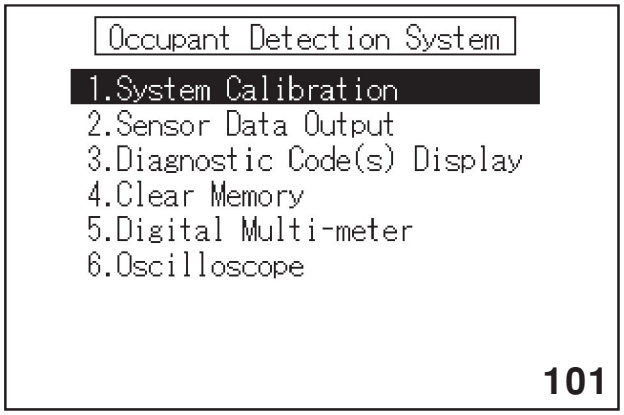

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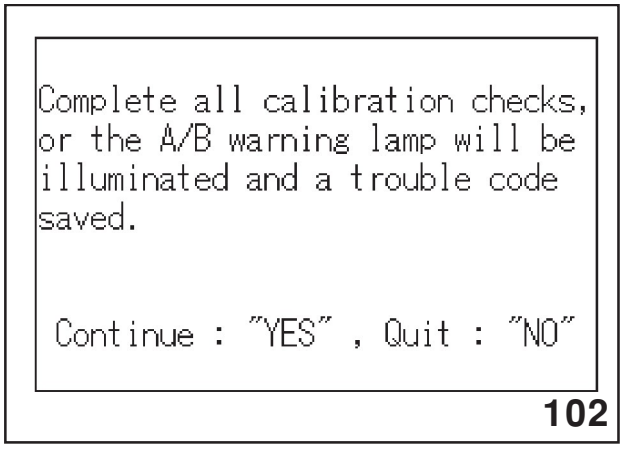

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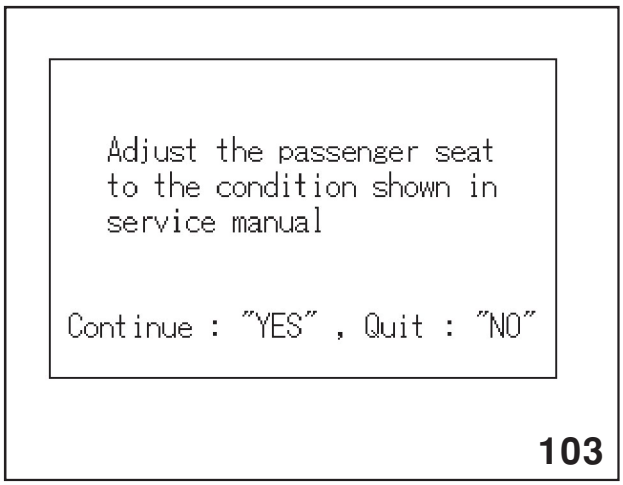
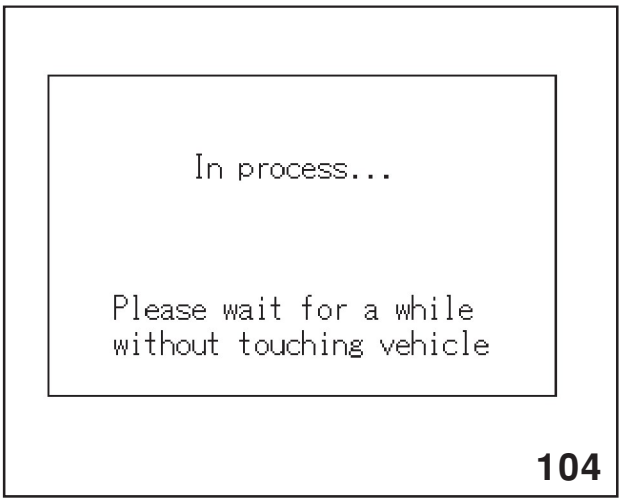
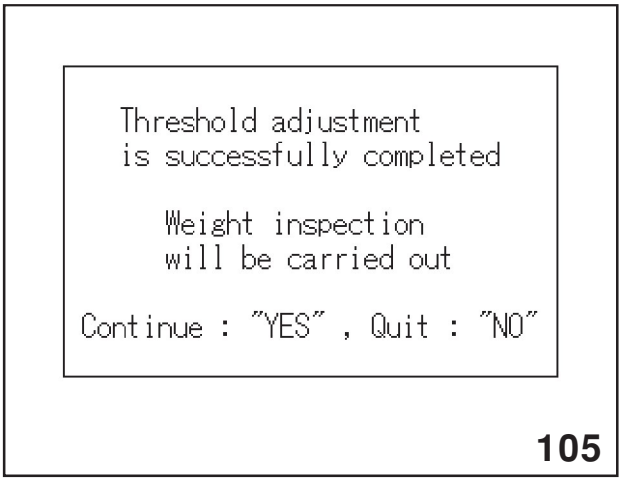
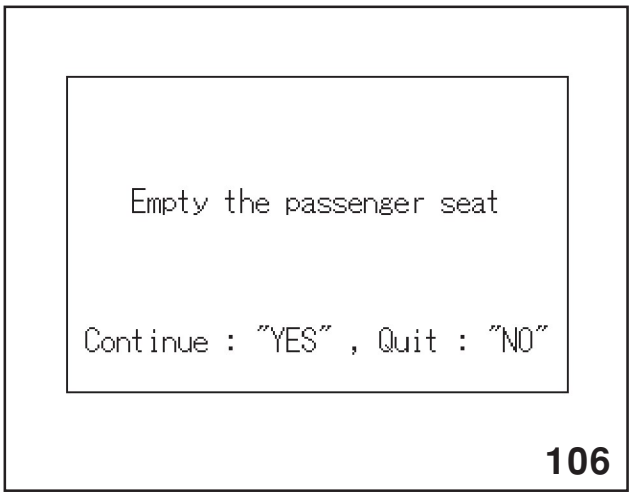
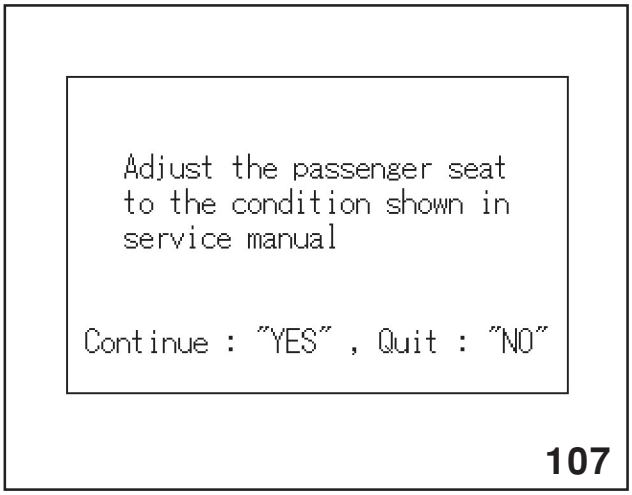
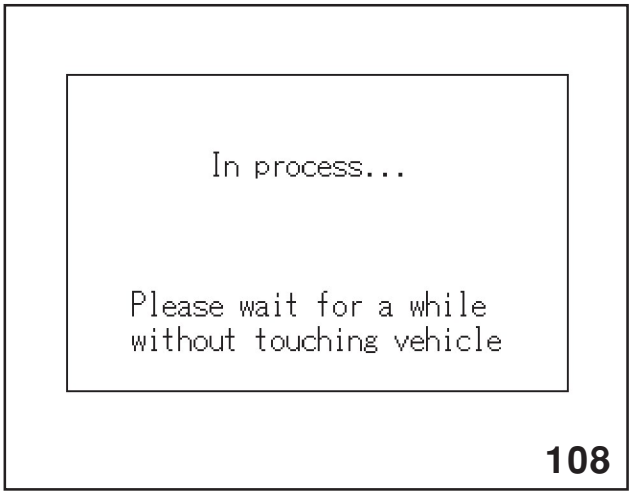

Adjust the passenger seat
to the condition shown in
service manual
Continue : "YES" , Quit : "NO"
103

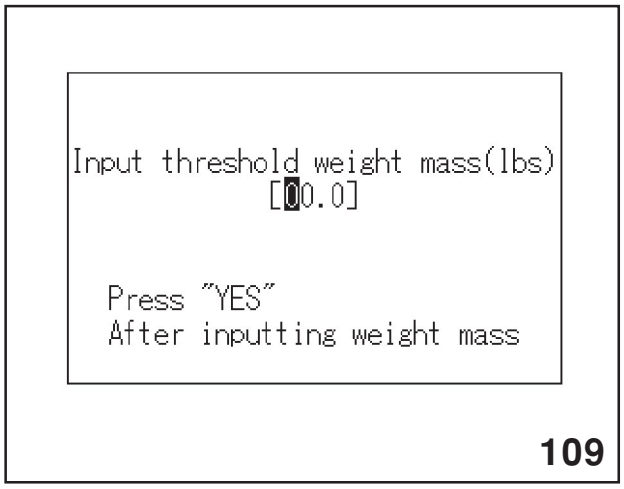

In process...
Please wait for a while
without touching vehicle
104


Threshold adjustment
is successfully completed
Weight inspection
will be carried out
Continue : "YES" , Quit : "NO"
105


Empty the passenger seat
Continue : "YES" , Quit : "NO"
106


Adjust the passenger seat
to the condition shown in
service manual
Continue : "YES" , Quit : "NO"
107


In process...
Please wait for a while
without touching vehicle
108

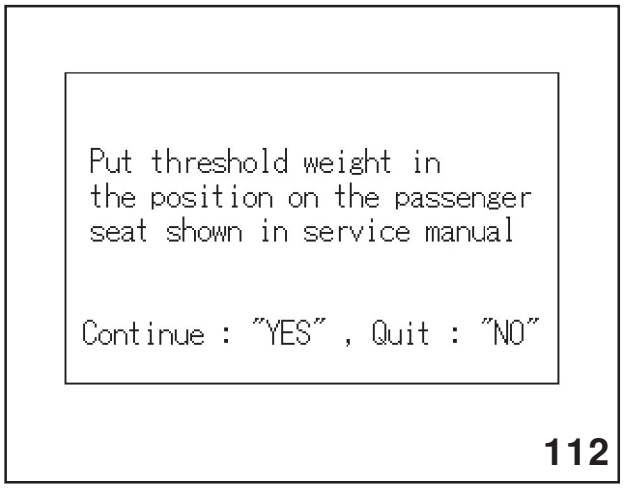


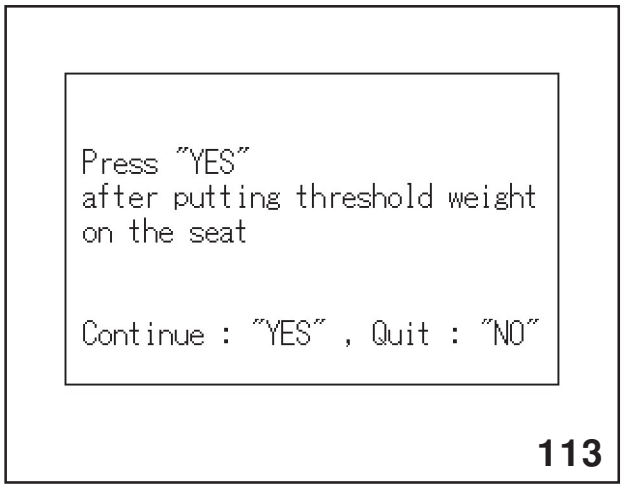
(See appropriate Service Manual for this information)

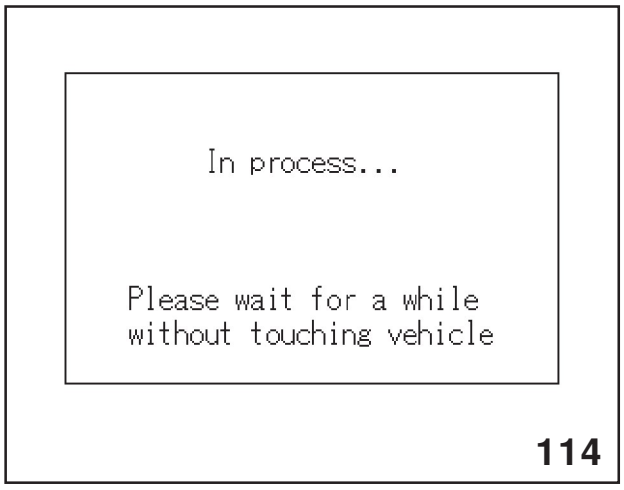
Lower Weight on Seat

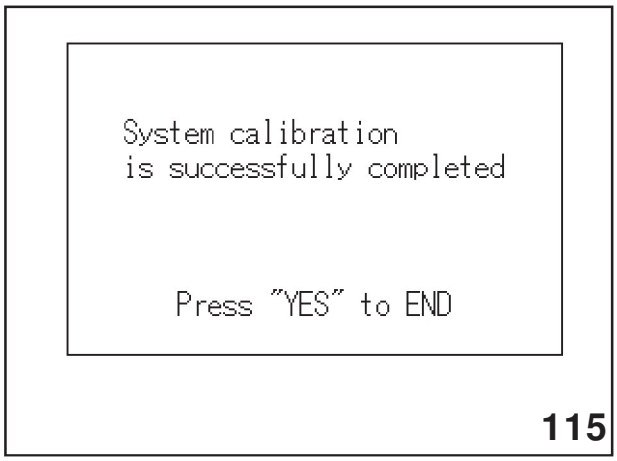
Upper Weight on Lower Weight

Place the lower calibration weight in place, followed by the upper weight. Be certain to engage the alignment notches before releasing the upper weight.



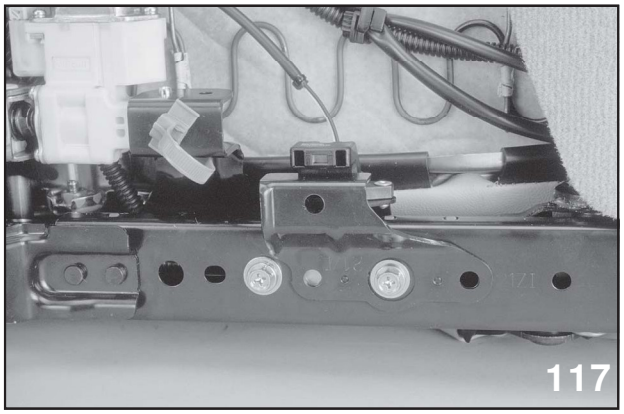






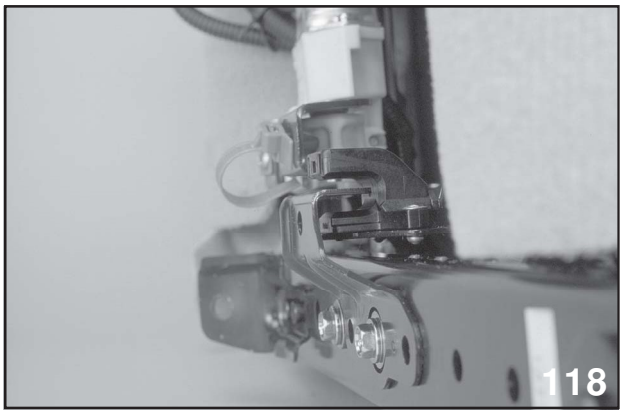
NOTE: THE SMIII CAN ALSO BE USED TO CALIBRATE THE SYSTEM

Steering Wheel

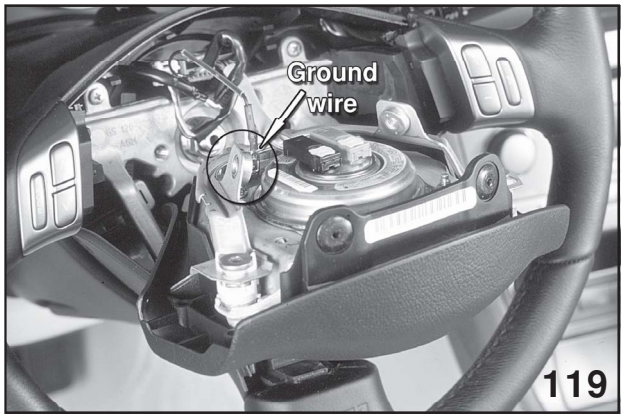


Driver Seat Bottom

The driver seat is equipped with a sensor that is used to judge how close a driver is sitting to the steering wheel.



Hall Type Sensor



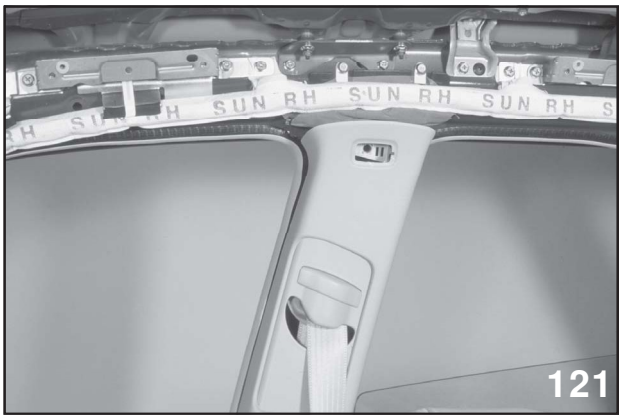
Back of Driver Airbag

When the driver is sitting close to the steering wheel the hall type sensor sends a signal to the SRS control unit which during deployment will activate the SRS Airbag in 2 stages, reducing the deployment force to the driver.

2005 Legacy vehicles are equipped with curtain Airbags. These Airbags will deploy in a side impact which exceeds the preset values of the curtain Airbag sensors or the side Airbag sensors.

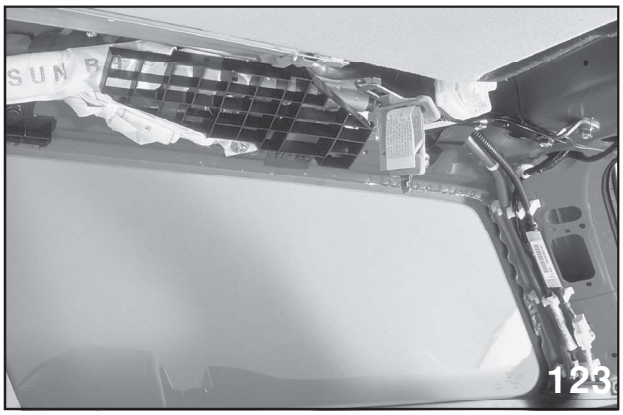
A Pillar

C Pillar



B Pillar

The curtain Airbag module is mounted above the head liner along the entire length of the roof line.



D Pillar

The connector for the curtain Airbag module is located in the D pillar area.

Curtain Beginning Deployment

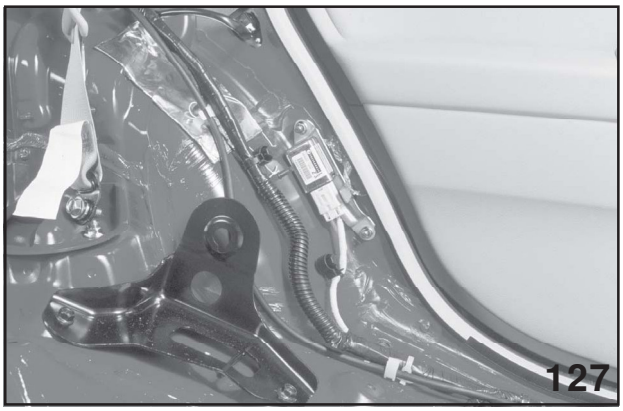
Curtain Airbag Deployed

During deployment the curtain Airbag will push the far side of the headliner down and form a curtain that will provide protection to the head and shoulder areas of the front and rear seat occupants.

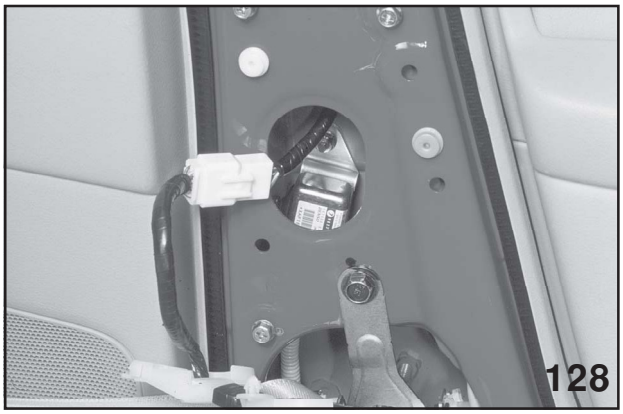
Curtain Airbag Side View

The curtain Airbag will maintain an extended inflation time which will continue to provide protection during secondary impacts.

Side Impact Sensor



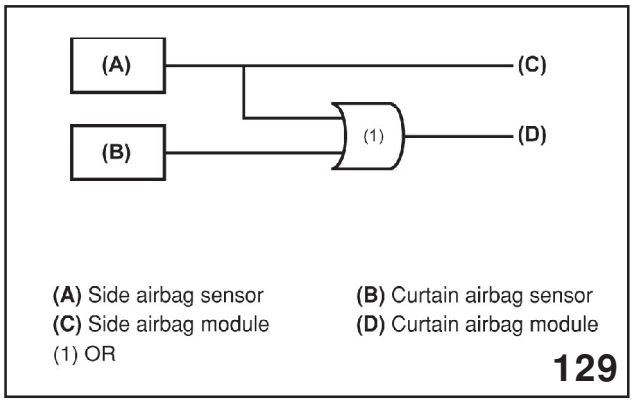
Curtain Airbag Sensor



Side Airbag Sensor

The side impact sensors (side Airbag sensor, curtain Airbag sensor) are installed at the bottom of the center pillars and the rear quarter pillars.

If a sensor detects an impact exceeding the specified level from the side, it sends a signal which is used for Airbag system deployment judgement to the Airbag control module.

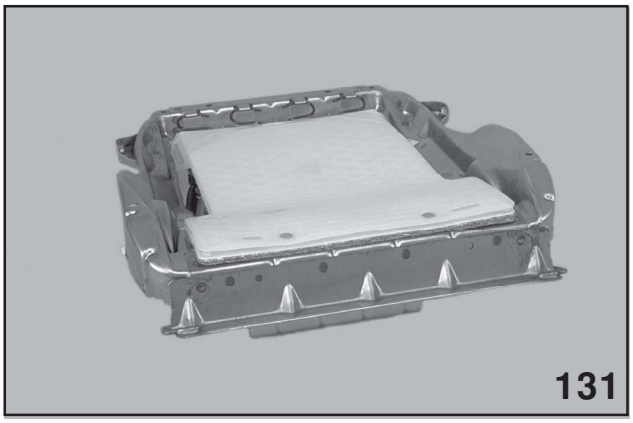


Side Impact Sensors (Artwork)

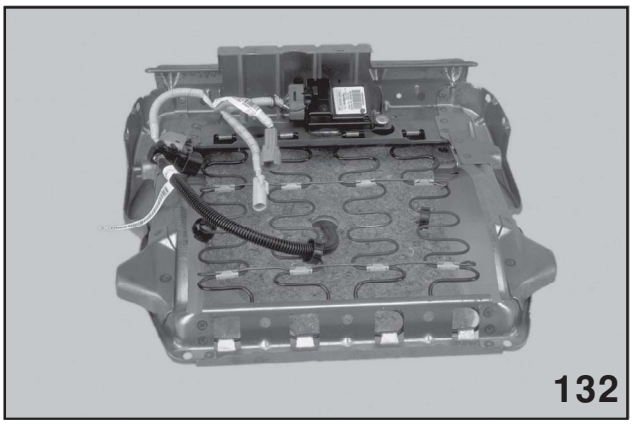
Signals from the side Airbag sensors are effective for both the side Airbags and curtain Airbags, while signals from the curtain Airbag sensors detect impact to the rear seat sides and let only the curtain Airbags deploy.

2006 Subaru B9 Tribeca

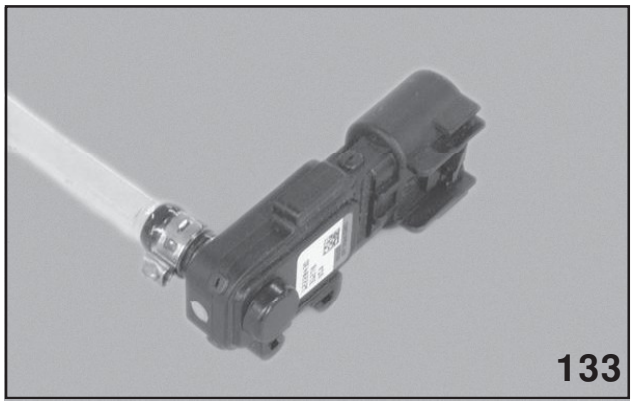
SRS Airbags



Seat Frame Top Side



Seat Frame Bottom View



Pressure Sensor

All Subaru B9 Tribeca models are equipped with driver and passenger front Airbags, front seat active headrests, front seat belt pretensioners, front side Airbags and curtain Airbags. The front passenger seat is equipped with the Passenger Occupancy Detection system. This enhanced system provides the Occupancy Detection System (ODS) with improved diagnostics and calibration.

The occupant detection system for the 2006 model year will consist of the PODS-B system (Passive Occupant Detection System with Bladder). This system will be used to determine if the passenger side Airbag will be deployed or not in a frontal collision.

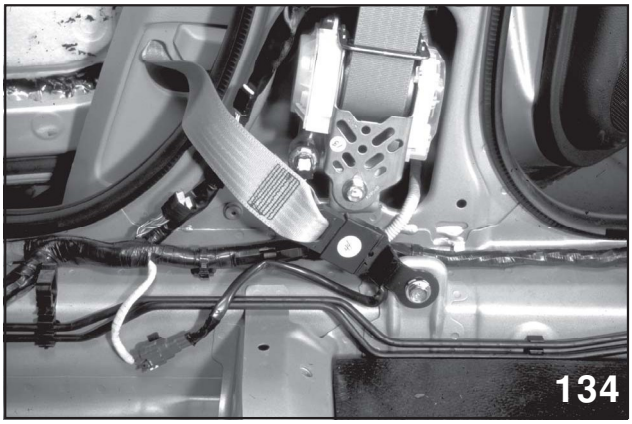
NOTE: DO NOT DISCONNECT ANY ELECTRICAL CONNECTOR OF THE SRS OR ODS UNTIL THE BATTERY HAS BEEN DISCONNECTED.

The PODS system determines the weight of the occupant by measuring the pressure created in a silicon filled bladder. The weight placed on the bladder pushes the silicon through a tube to the pressure sensor. The pressure sensor will then send the value of the weight to the PODS control module. The PODS control module will then send a signal to the SRS control unit, indicating deploy or do not deploy.

Replacement parts for the PODS system are supplied as a service kit, which includes the foam for the lower seat cushion, bladder with pressure sensor, seat harness and PODs control module. Additional replacement items are the Belt Tension Sensor and the seat belt buckle switch. Never change any part of the service kit without changing the contents of the entire kit. Service kit components are calibrated together and calibration of these parts can only be performed at the seat manufacture.

After installation of the service kit or when the seat cover has been removed or replaced, Zero the PODS system with the select monitor. Zeroing tells the PODs control module that the seat is empty and allows the calibration of the service kit items to be compared to empty seat conditions.

Zeroing does not need to be performed when the seat is removed to access other vehicle parts. Unnecessary Zeroing will not harm the system.



Seat Belt Tension Sensor

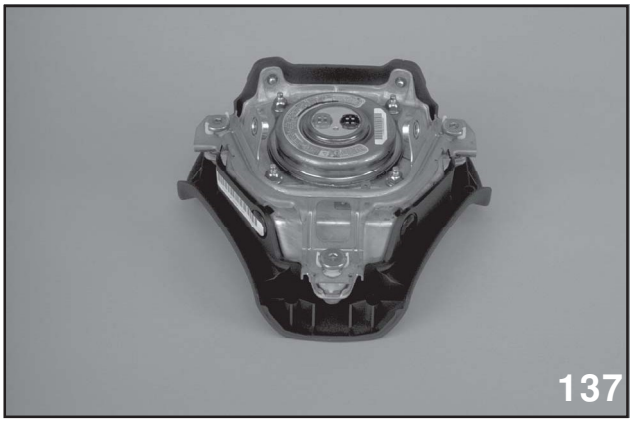
A seat belt Tension Sensor is used with this system. It will send a signal to the PODS Control Unit regarding the current seat belt tension which changes dependant on ALR (Automatic Locking Retractor) function. ALR function of the seat belt is used when child seats are anchored in the front seat.

NOTE: CHILDREN UNDER THE AGE OF 12 YEARS SHOULD ALWAYS BE SEATED IN THE BACK ROW SEATS. INPUT OF HIGH BELT TENSION WILL CANCEL THE ON STATUS OF THE PASSENGER SIDE AIRBAG, DISREGARDING THE WEIGHT VALUE OF THE LOWER SEAT.

Passenger Airbag Light OFF

Passenger Airbag Light ON

Status is indicated on the dash in sight of the front seat passenger and works in conjunction with the front passenger seat belt warning light. When the passenger Airbag status changes to on the seat belt warning light will be activated and will be continue to flash until the passenger has connected the seat belt.



Driver Side Airbag Module

The driver seat is equipped with a hall effect type sensor that indicates the proximity of the driver to the steering wheel. The hall effect type sensor will send a signal to the SRS control unit. A driver sitting close to the steering wheel will activate a dual deployment of the driver side Airbag in a frontal collision, reducing the force of the Airbag to the driver. The timing of the dual deployment is dependant on the severity of the frontal collision.

Curtain Airbag

Close up of Curtain Airbag

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6	Title Slide (Component Overview)	7
7	Front Sensors and ECM	7
8	Front Sensor	7
9	Steering Roll Connector	7
10	Double Lock Connector	7
11	SRS ECM Location	8
12	Combination Meter	8
13	Title Slide (Component Operation)	8
14	Open ECM	8
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16	Safety Sensor	9
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Slide Sequence

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105	Select Monitor Image (Threshold adjustment)	31
106	Select Monitor Image (Empty the passenger seat)	31
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Tools and Equipment

SRS Test Harnesses

Letter Designation	Part Number
K	98299AE000
H	98299FA030
E	98299FC000
F	98299FC010
G	98299FC020
I	98299FC040
I-2	98299FC041
L	98299FE000
M	98299FE020
A	98299PA000
B	98299PA011
C	98299PA020
D	98299AG060
N	98299SA000
P	98299SA020
Q	98299SA040
R	98299FE030
T	98299SA060
U	98299AG000
V	98299AG010
Y	28299AG040
Z	98299AG050
AB	98299XA000
AC	98299XA010
AD	98299XA020
AE	98299XA030
Test resistor 1 of 2 needed	98299PA040
Airbag resistor 2 of 2 needed	98299PA040

Special Tools

Tool Number	Description
24082AA260	Scan Cartridge (05”)
24082AA010	Scan Cartridge (06”)
22771AA030	Subaru Select Monitor Kit
98399AG000	ODS Weight “A”
98399AG010	ODS Weight “B”
64186AG00A	ODS Spacer Kit
J-39401-B	SPX/Kent Moore Airbag Deployment Tool

Service Bulletins

No.	Date	Subject	Applicability Title
17-01-92	03/17/92	Recommended Parts Replacement when the Airbag is discharged in a Collision	SRS Airbag Equipped Vehicles
17-01-92R	11/22/94	Recommended Parts Replacement when the Airbag is discharged in a Collision	SRS Airbag Equipped Vehicles
17-03-01	02/04/98	De-Powered Airbags	1998 Legacy, Impreza, Forester
17-05-01	05/01/01	Airbag On/Off Switches	1995~1999MY Legacy Vehicles 1994~2001MY Impreza Vehicles
17-02-95R	03/27/01	SRS Airbag-Equipped Vehicles	Airbag Procedures
17-07-04	08/12/04	2003~2004 Forester Vehicles	Trouble code 41 and 42 in the Diagnostic System of the SRS Side Airbag System
17-09-04	11/23/04	Airbag Deployment	Special Tool deploy Airbag

Warranty Bulletin

No.	Date	Title	Subject
WWR-02	06/2004	2005MY Legacy Sedan and Outback Sedan Vehicles	Side Curtain Airbags

Tech TIPS

Date	Subject
06/95	1995 Subaru Legacy Passenger SRS
07/95	Diagnosing SRS (Air Bag) Codes
04/96	Removal of Passenger's Air Bag Module
06/96	Deployed SRS Air Bags
11/96	Passenger's Side Air Bags
02/98	Depowered Air Bags
03/98	All 1998 Model Air Bag Applicability
08/98	Availability of Retrofit Air Bag "On - Off" Switches
08/00	Subaru Vehicles Equipped with SRS Side Airbags
08/00	10 Year SRS inspections
10/00	Diagnosing SRS (Air Bag) Codes
07/01	Subaru Vehicles Equipped with SRS Side Air Bags
10/01	2002MY Impreza SRS Harness Change
07/03	2003MY Forester SRS Codes 41 or 42
09/03	Air Bag Connector
03/05	SRS Codes 41 and 42


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