

■ SRS AIRBAG SYSTEM

1. General

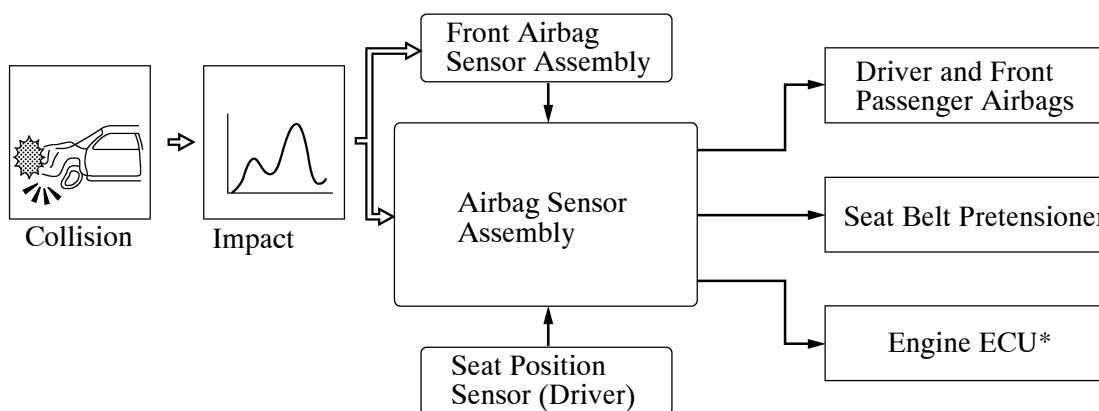
- Dual-stage SRS airbags system, that controls the airbag inflating output optimum by judging the extent of impact and seat position, has been adopted for the driver and front passenger airbags on the model for Europe and Australia as standard equipment and model for G.C.C. countries and General countries as optional equipment.
- In accordance with the adoption of the dual-stage SRS airbags system, a seat position sensor has been established for the driver seat.
- On the new Land Cruiser/Land Cruiser Prado, the previous mechanical type front airbag sensor assembly (consisting of movable and stationary contact points) has been changed to an electrical (deceleration sensor) type front airbag sensor assembly.
- The SRS side airbags help to reduce injuries mainly to the driver's or front passenger's chest in the event of a side collision.

The SRS side airbags are optional equipment for the driver and front passenger.

- A curtain shield airbag system that helps reduce the impact applied to the front and No.1 rear outer seat occupants with a single curtain shield airbag have been adopted as optional equipment.
In conjunction with this system, a side and curtain shield airbag sensor assembly has been provided at the bottom of the center pillar and a curtain shield airbag sensor assembly at the bottom of the rear pillar.
- In this system, a front side collision is detected by the side and curtain shield airbag sensor assembly in order to simultaneously deploy the side and curtain shield airbags. A rear side collision is detected by the curtain shield airbag sensor assembly in order to deploy only the curtain shield airbag.
- An active circuit is used in the SRS warning light circuit in order to illuminate the light when there is an open or short circuit in the wiring harness.
- Electrical connection check mechanism to detect the connection condition of the connector in the airbag sensor assembly has been adopted.
- Front passenger airbag door is made invisible. This means that without the airbag door, the airbag will be inflated by splitting the instrument panel along the cleavage line.
- On the models with the 3RZ-FE engine (unleaded model), this system has adopted a fuel cut control that stops the fuel pump when the airbag is deployed.

2. System Diagram

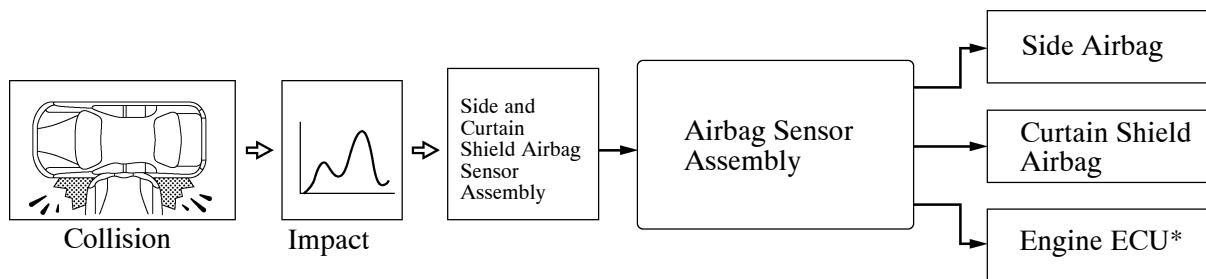
► Front Airbag Operation ◀



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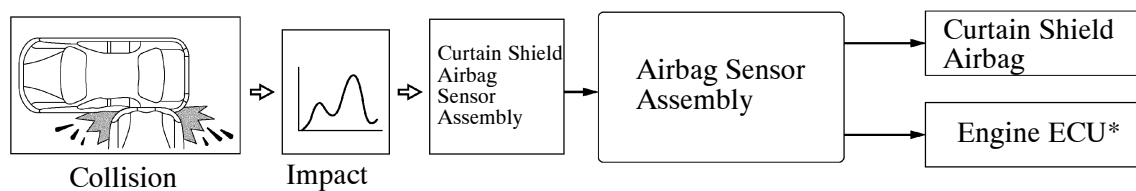
*: Only for Models with 3RZ-FE Engine (unleaded model)

► Side and Curtain Shield Airbag Operation ◀



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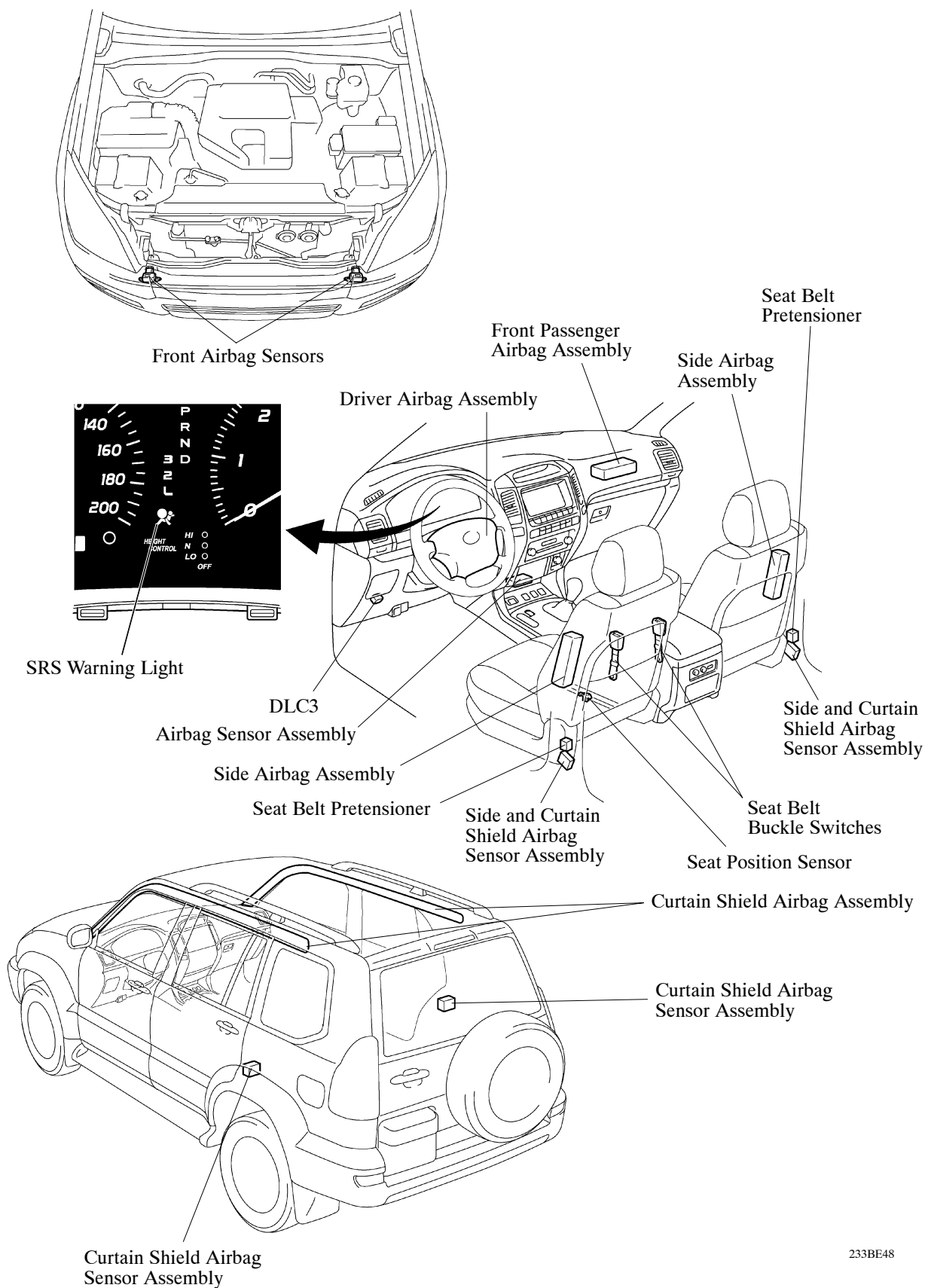
► Curtain Shield Airbag Operation ◀



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*: Only for Models with 3RZ-FE Engine (unleaded model)

3. Layout of Main Component



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4. Dual-stage SRS Airbag System

General

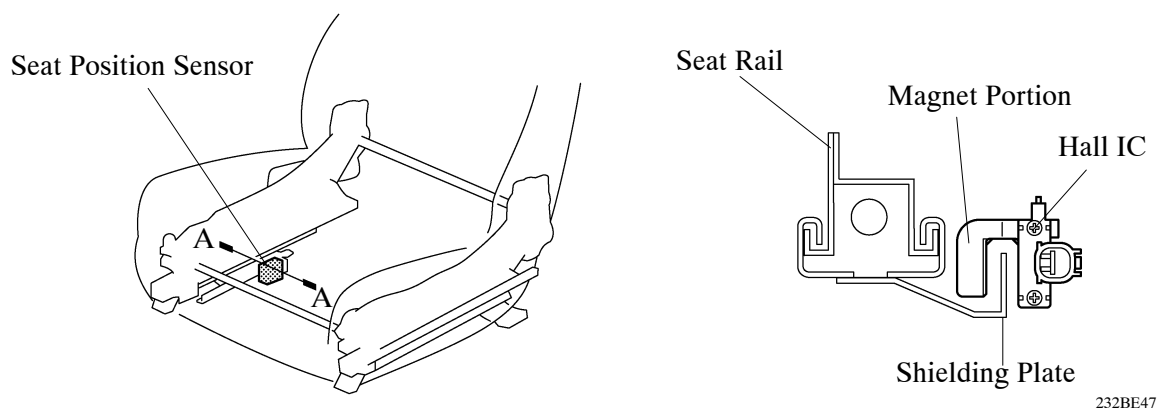
In this system, when the front airbag sensors and airbag sensor assembly detect the front collision, the airbag sensor assembly judges the extent of impact and seat position. Thus making the airbag inflating output optimum by delaying the inflating timing of the 2nd initiator and the 1st initiator.

Service Tip

In accordance with the structure change of the driver and front passenger inflators on new Land Cruiser/Land Cruiser Prado, a SST (09082-00801) used for scrapping driver and front passenger airbag assemblies of the vehicle has been newly established.

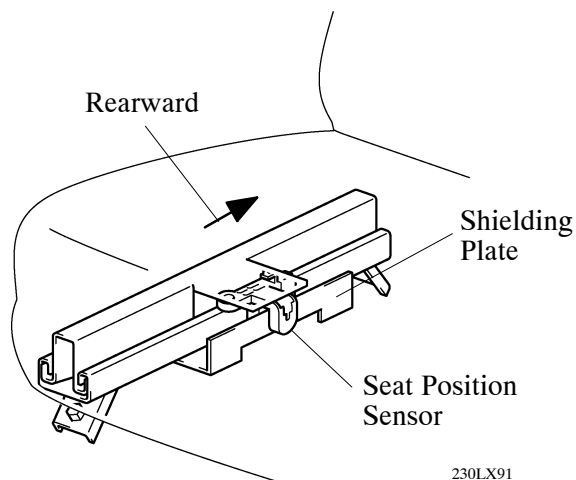
Seat Position Sensor

- The seat position sensor, which is attached to the seat rail of the driver seat, detects the sliding position of the seat. In addition, the shielding plate to make the seat position sensor judge the seat position is installed on this seat rail.
- The seat position sensor use a Hall IC for its sensor and has magnet portion on its opposite side.

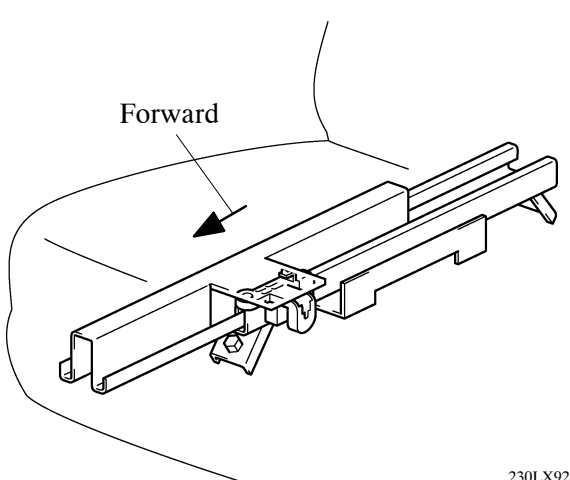


- The seat position detection by the seat position sensor judges that the seat position is rearward if the shielding plate is between the sensor and the seat position is forward if the shielding plate is not between the sensor.

► Seat position is rearward ◀



► Seat position is forward ◀



5. Self-Diagnosis Function

General

- If the airbag sensor assembly detects a malfunction in the SRS airbag system, the airbag sensor assembly stores the malfunction data in memory, in addition to illuminating the SRS warning light. Then, the DTC (Diagnostic Trouble Codes) can be accessed by connecting a hand-held tester to the DLC3 terminal or the SST (09843-18040) to the Tc and CG terminals of the DLC3 and reading the blinking of the SRS warning light. For further details, see the new Land Cruiser/Land Cruiser Prado Repair Manual (Pub. No. RM990E).
- The system can output 5-digit DTC to the hand-held tester, which are more detailed than the previous 2-digit DTC, thus making it easier to identify the location of the problem.
The DTC listed below is used.

DTC No.	Detection Item	DTC No.	Detection Item
B0102 / 11	Short in D squib circuit (to ground)	B0112 / 41*3	Short in side squib (RH) circuit (to ground)
B0103 / 12	Short in D squib circuit (to +B)	B0113 / 42*3	Short in side squib (RH) circuit (to B+)
B0100 / 13	Short in D squib circuit	B0110 / 43*3	Short in side squib (RH) circuit
B0101 / 14	Open in D squib circuit	B0111 / 44*3	Open in side squib (RH) circuit
B1180 / 17	Short in D squib (2nd step) circuit	B0117 / 45*3	Short in side squib (LH) circuit (to ground)
B1181 / 18	Open in D squib (2nd step) circuit	B0118 / 46*3	Short in side squib (LH) circuit (to B+)
B1182 / 19	Short in D squib (2nd step) circuit (to ground)	B0115 / 47*3	Short in side squib (LH) circuit
B1183 / 22	Short in D squib (2nd step) circuit (to B+)	B0116 / 48*3	Open in side squib (LH) circuit
B1153 / 25	Seat position sensor assembly malfunction	B0107 / 51	Short in P squib circuit (to ground)
B0121 / 26*1	Seat belt buckle switch (RH) malfunction	B0108 / 52	Short in P squib circuit (to +B)
B0122 / 26*1	Seat belt buckle switch (RH) malfunction	B0105 / 53	Short in P squib circuit
B0126 / 27*2	Seat belt buckle switch (LH) malfunction	B0106 / 54	Open in P squib circuit
B0127 / 27*2	Seat belt buckle switch (LH) malfunction	B1187 / 55	Short in P squib (2nd step) circuit (to ground)
B1100 / 31	Airbag sensor assembly malfunction	B1188 / 56	Short in P squib (2nd step) circuit (to B+)
B1140 / 32*3	Side airbag sensor assy (RH) malfunction	B1185 / 57	Short in P squib (2nd step) circuit
B1141 / 33*3	Side airbag sensor assy (LH) malfunction	B1186 / 58	Open in P squib (2nd step) circuit
B1148 / 36	Front airbag sensor (RH) malfunction	B0132 / 61	Short in P/T squib (RH) circuit (to ground)
B1149 / 37	Front airbag sensor (LH) malfunction	B0133 / 62	Short in P/T squib (RH) circuit (to +B)
B1154 / 38*3	Curtain shield airbag sensor assembly (RH) malfunction	B0130 / 63	Short in P/T squib (RH) circuit
B1155 / 39*3	Curtain shield airbag sensor assembly (LH) malfunction	B0131 / 64	Open in P/T squib (RH) circuit

(Continued)

DTC No.	Detection Item	DTC No.	Detection Item
B0137 / 71	Short in P/T squib (LH) circuit (to ground)	B1160 / 83*3	Short in curtain shield airbag (RH) squib circuit
B0138 / 72	Short in P/T squib (LH) circuit (to +B)	B1161 / 84*3	Open in curtain shield airbag (RH) squib circuit
B0135 / 73	Short in P/T squib (LH) circuit	B1167 / 85*3	Short in curtain shield airbag (LH) circuit (to ground)
B0136 / 74	Open in P/T squib (LH) circuit	B1168 / 86*3	Short in curtain shield airbag (LH) circuit (to +B)
B1162 / 81*3	Short in curtain shield airbag (RH) circuit (to ground)	B1165 / 87*3	Short in curtain shield airbag (LH) squib circuit
B1163 / 82*3	Short in curtain shield airbag (RH) circuit (to +B)	B1166 / 88*3	Open in curtain shield airbag (LH) squib circuit

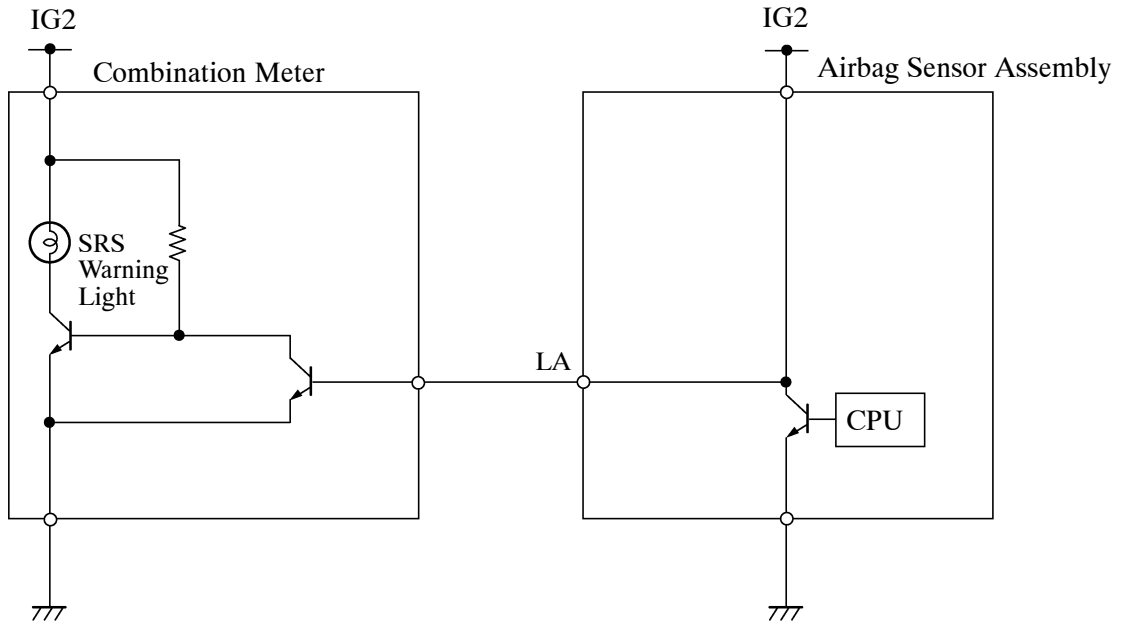
*1: Only for RHD Models

*2: Only for LHD Models

*3: Only for Models with SRS Side and Curtain Shield Airbag

Active Circuit

An active circuit is used in the SRS warning light circuit in order to illuminate the light when there is an open or short circuit in the wiring harness. Thus, the malfunction detection area has been expanded.

► Circuit Diagram ◀

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Electrical Connection Check Mechanism

- This mechanism is composed from the terminals for diagnosis arranged for each of 3 connectors of the airbag sensor assembly side and the disconnection detection pin arranged for each of 3 connectors of wiring harness side.
- The disconnection detection pin connects with the diagnosis terminals when the connector housing lock is completely locked.
- When these connectors are connected (the connector housing lock is completely locked), the terminals for diagnosis and the disconnection detection pin will be similarly connected. As a result, a series circuit that leads to the active circuit is created, causing the LA terminal voltage to attain the level of the power supply voltage. Upon detecting this condition, the airbag sensor assembly will determine that these connectors are completely locked.
- When these connectors are partially connected (the connector housing lock is not completely locked), the terminals for diagnosis and the disconnection detection pin will not be connected. As a result, the series circuit that leads to the active circuit is not created, causing the LA terminal voltage to be 0V. Upon detecting this condition, the airbag sensor assembly will determine that these connectors are partially connected, and will cause the SRS warning light to illuminate. At this time, no DTC will be output.

