4. Construction and Operation

Dual-stage SRS Airbags System

1) General

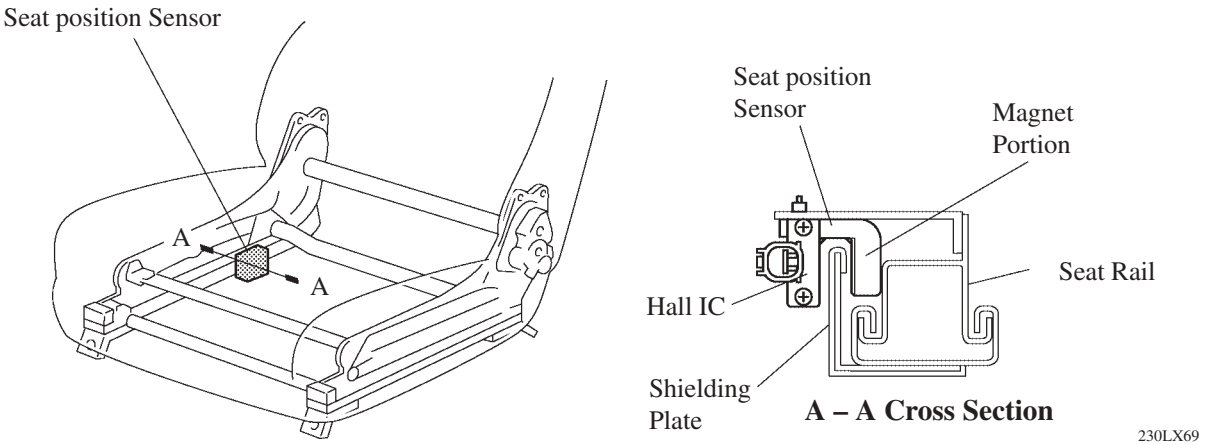
In this system, when the front airbag sensors and airbag sensor assembly detect the front collision, the airbag sensor assembly judges the extent of impact and seat position, Thus making the airbag inflating output optimum by delaying the inflating timing of the 2nd initiator and the 1st initiator.

Service Tip

In accordance with the structure change of the driver and front passenger inflators on new Land Cruiser, a SST (09082-00800) used for scrapping driver and front passenger airbag assemblies of the vehicle has been newly established.

2) Seat Position Sensor

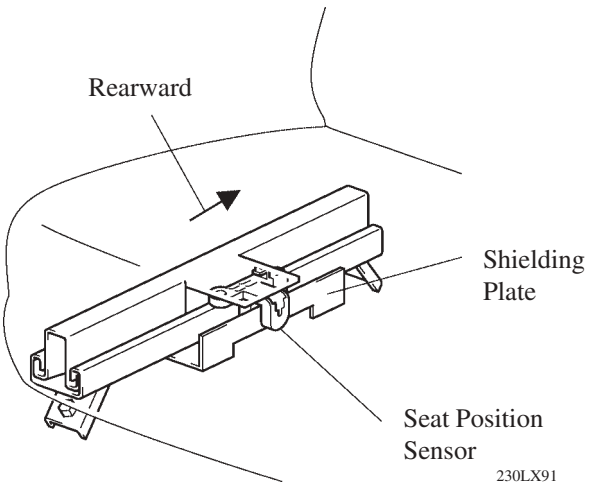
- The seat position sensor, which is attached to the seat rail of the driver seat, detects the sliding position of the seat. In addition, the shielding plate to make the seat position sensor judge the seat position is installed on this seat rail.
- The seat position sensor use a Hall IC for its sensor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



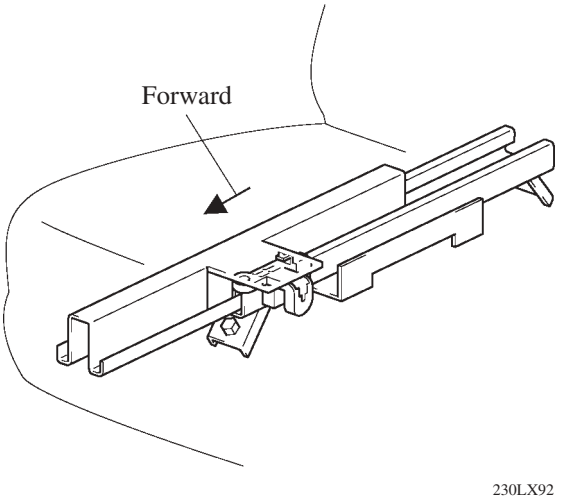
LHD Model

- 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 ◀



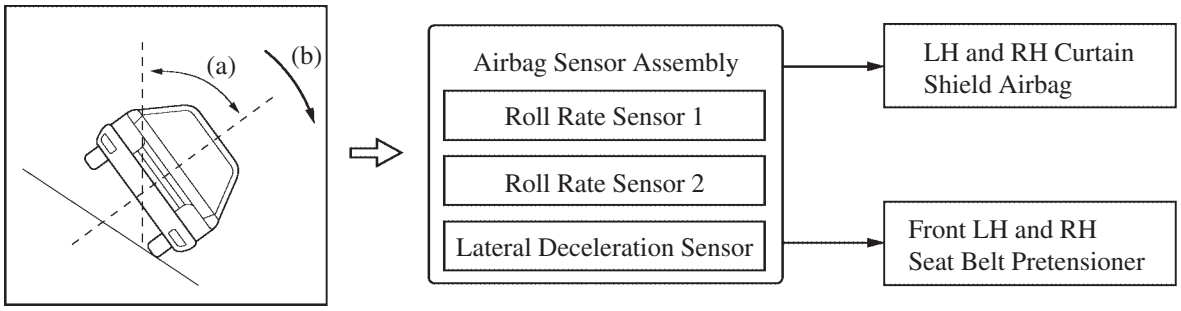
LHD Model

Roll Sensing of Curtain Shield Airbags Control

1) General

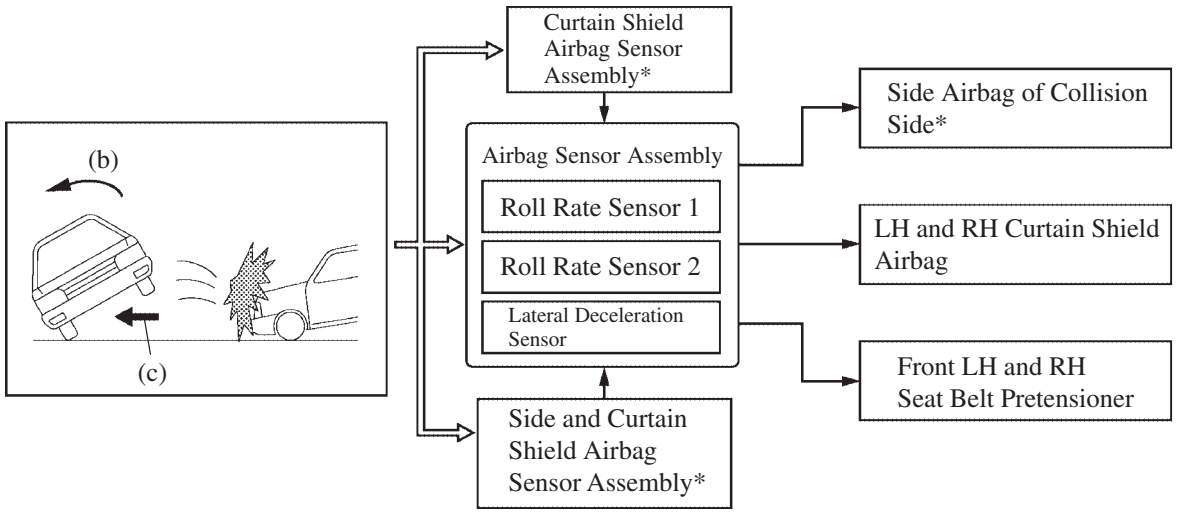
- In this system, the airbag sensor assembly contains a roll rate sensor 1 and roll rate sensor 2 (that determine the inclination angle of the vehicle) and a lateral deceleration sensor (that determine the lateral force that is applied to the vehicle). These sensors detect the vehicle's roll angle (a), rotational speed (b), and lateral acceleration speed (c).
- Based on the information obtained from the sensors, the airbag sensor assembly makes an overall judgment of the vehicle's roll angle (a), rotational speed (b), and lateral acceleration speed (c). If the airbag sensor assembly determines that the vehicle has rolled over due to a cause other than the side collision, it deploys the right and left curtain shield airbags and the front right and left seat belt pretensioners.
  If the airbag sensor assembly determines that the vehicle has rolled over due to a cause such as a side collision, it deploys the side and curtain shield airbags on the side of the vehicle that has sustained the collision, as well as the curtain shield airbag of the opposite side and the front right and left seat belt pretensioners.
- This system provides a roll sensing of curtain shield airbags cutoff switch on the driver side of the instrument panel with which the driver can stop the operation of the function.
  However, by operating this cutoff switch and while the roll sensing of the curtain shield airbag control is OFF, and when the airbag sensor assembly judges to operate the side and curtain shield airbag system in the event of side collision, it is no need to prohibit this operation.

▶ Rollover Detection ◀



230LX71

▶ Side Collision and Rollover Detection ◀

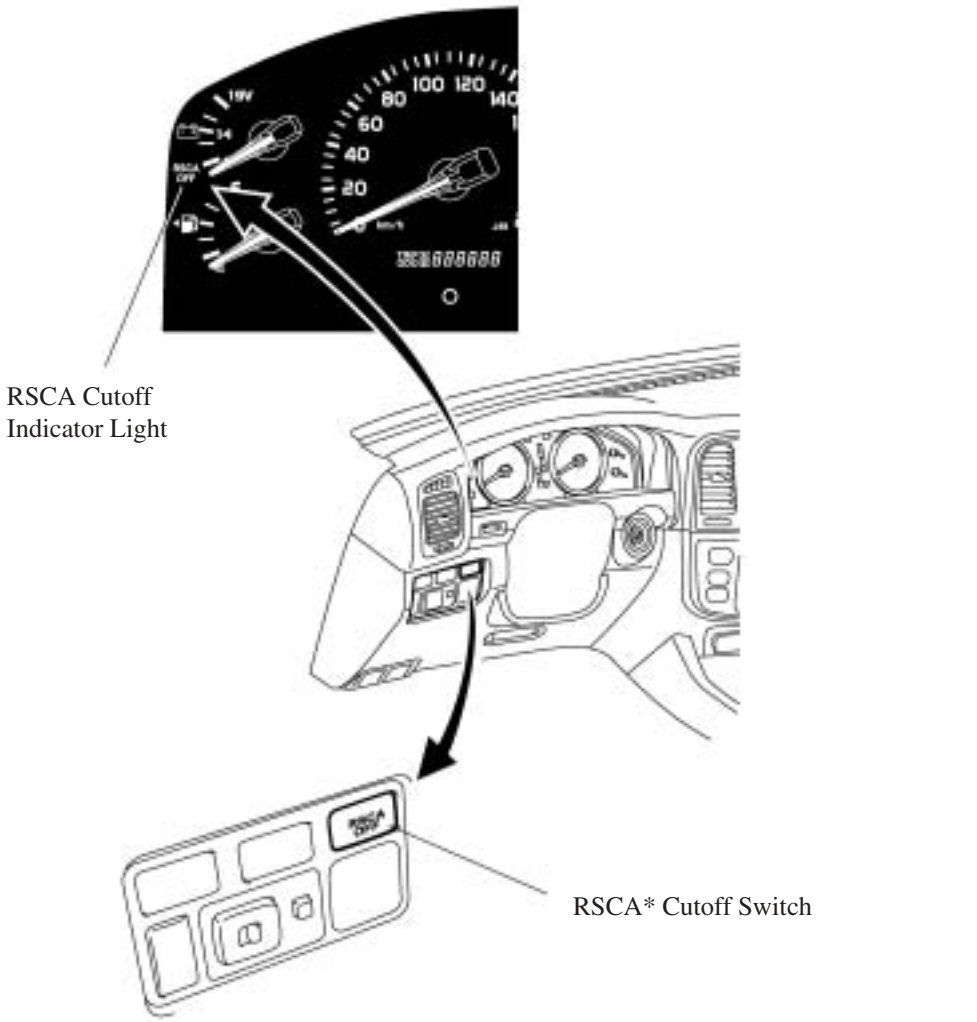


230LX72

*: Activates depending on the condition of the collision.

2) Roll Sensing of Curtain Shield Airbags Cutoff Switch

- The roll sensing of curtain shield airbags cutoff switch is mounted on the driver side of the instrument panel.
- Pressing this switch longer than 2 seconds, it enables to cut off the operation of the roll sensing of the curtain shield airbags control.
- This switch is a momentary type. Each time when the ignition switch is turned ON, in spite of the condition selected previously, roll sensing of the curtain shield airbags control will return to ON condition.
- When this switch is turned ON, an indicator light in the combination meter illuminates to inform the driver that the operation of the roll sensing of curtain shield airbags control has been disabled.



LHD Model

*: RSCA (Roll Sensing of Curtain Shield Airbags)

Front Airbag Sensor Assembly

- The front airbag sensor assembly is mounted on the radiator support.
- The deceleration sensor is enclosed in the front airbag sensor assembly based on the deceleration of the vehicle that occurs during a front collision. The distortion that is created in the sensor is converted into an electric signal. Accordingly, the extent of the initial collision can be detected in detail.

Diagnosis Function

The following DTC is newly added.

DTC No.	Detection Item	DTC No.	Detection Item
B1180/17	Short in D squib (2nd step) circuit	B0100/43	Short in side squib (RH) circuit
B1181/18	Open in D squib (2nd step) circuit	B0111/44	Open in side squib (RH) circuit
B1182/19	Short in D squib (2nd step) circuit (to ground)	B0117/45	Short in side squib (LH) circuit (to ground)
B1183/22	Short in D squib (2nd step) circuit (to B+)	B0118/46	Short in side squib (LH) circuit (to B+)
B1153/25	Seat position sensor assembly malfunction	B0115/47	Short in side squib (LH) circuit
*1B0121/26	Seat belt buckle switch (RH) malfunction	B0116/48	Open in side squib (LH) circuit
*1B0122/26	Seat belt buckle switch (RH) malfunction	B1187/55	Short in P squib (2nd step) circuit (to ground)
*2B0126/27	Seat belt buckle switch (LH) malfunction	B1188/56	Short in P squib (2nd step) circuit (to B+)
*2B0127/27	Seat belt buckle switch (LH) malfunction	B1185/57	Short in P squib (2nd step) circuit
B1628/29	RSCA*3 cutoff indicator light malfunction	B1186/58	Open in P squib (2nd step) circuit
B1140/32	Side airbag sensor assembly (RH) malfunction	B1162/81	Short in curtain shield airbag (RH) circuit (to ground)
B1141/33	Side airbag sensor assembly (LH) malfunction	B1163/82	Short in curtain shield airbag (RH) circuit (to B+)
B1148/36	Front airbag sensor (RH) malfunction	B1160/83	Short in curtain shield airbag (RH) squib circuit
B1149/37	Front airbag sensor (LH) malfunction	B1161/84	Open in curtain shield airbag (RH) squib circuit
B1154/38	Curtain shield airbag sensor assembly (RH) malfunction	B1167/85	Short in curtain shield airbag (LH) circuit (to ground)
B1155/39	Curtain shield airbag sensor assembly (LH) malfunction	B1168/86	Short in curtain shield airbag (LH) circuit (to B+)
B0112/41	Short in side squib (RH) circuit (to ground)	B1165/87	Short in curtain shield airbag (LH) squib circuit
B0113/42	Short in side squib (RH) circuit (to B+)	B1166/88	Open in curtain shield airbag (LH) squib circuit

*1: Only for RHD model
*2: Only for LHD model
*3: RSCA (Roll sensing of curtain shield airbags)

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