

■ AIRBAG FOR FRONTAL COLLISION

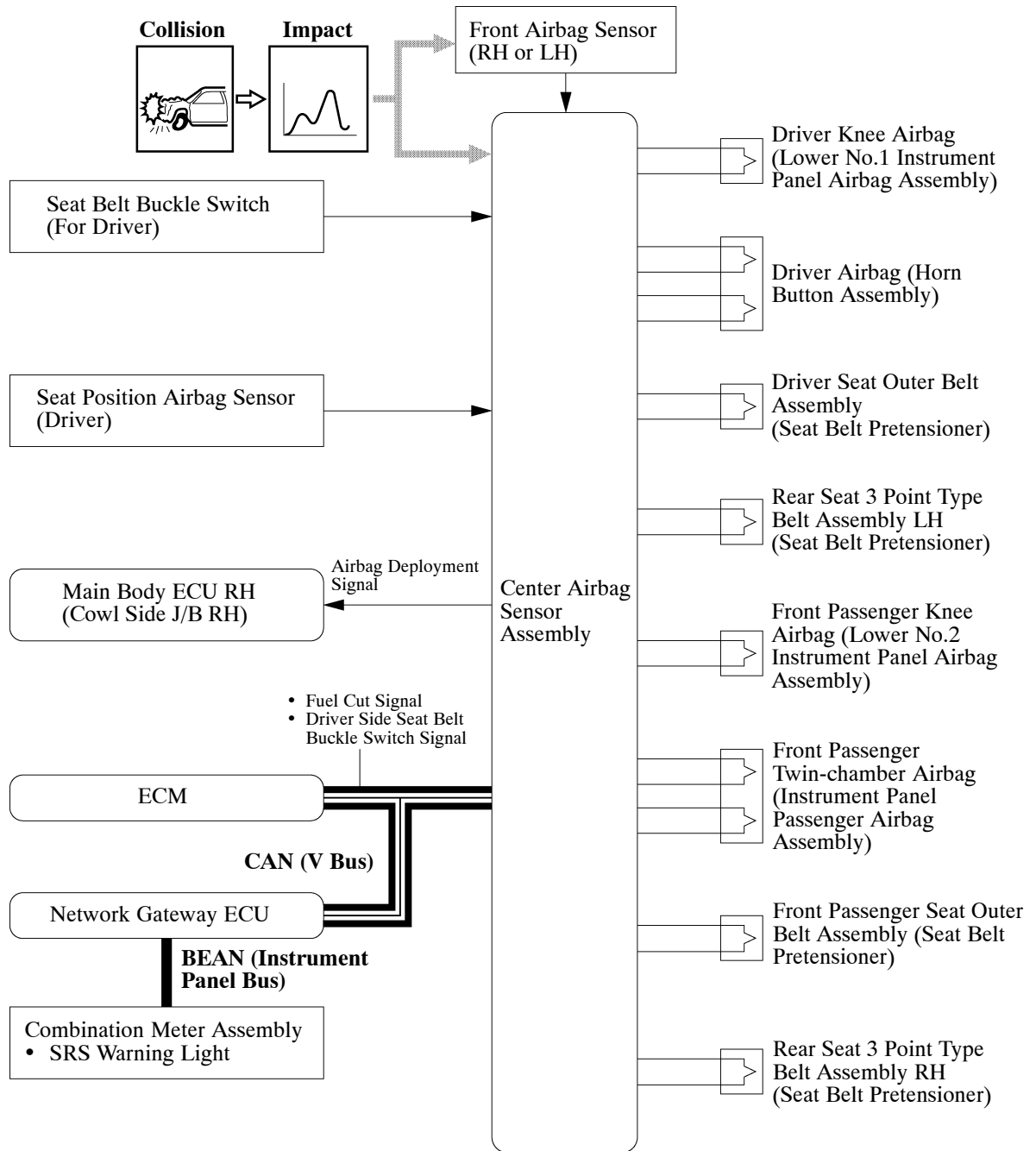
1. General

There are four airbags that can deploy in frontal collisions: driver, front passenger, and knee airbags (driver and front passenger). These airbags deploy simultaneously. The driver and front passenger airbags use a dual-stage control.

- The center airbag sensor assembly detects the information indicated below from various sources in order to activate the dual-stage control.

Airbag	Information	Source
Driver	Extent of Impact	<ul style="list-style-type: none">• Front Airbag Sensor (RH or LH)• Center Airbag Sensor Assembly
	Driver Seat Position	Seat Position Airbag Sensor
	Seat Belt Condition	Seat Belt Buckle Switch (Non-contact Type)
Front Passenger	Extent of Impact	<ul style="list-style-type: none">• Front Airbag Sensor (RH or LH)• Center Airbag Sensor Assembly

2. System Diagram



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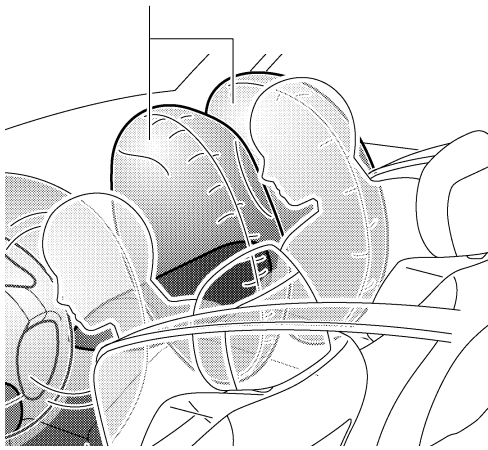
3. Driver Airbag

A driver airbag contains two sets of initiators and propellants. The center airbag sensor assembly helps optimize the airbag inflation speed by controlling the inflation timing of these initiators.

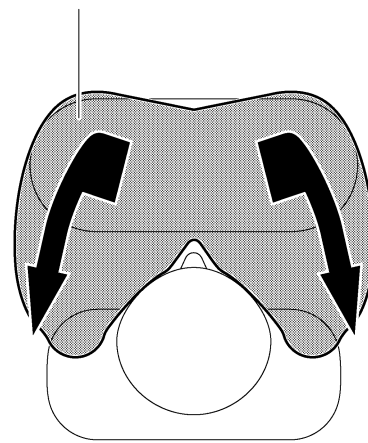
4. Front Passenger Twin-chamber Airbag

- Front passenger twin-chamber airbag contain two sets of initiators and propellants. The center airbag sensor assembly helps optimize the airbag inflation speed by controlling the inflation timing of these initiators.
- When the front passenger twin-chamber airbag is deployed, it forms the shapes of two bags with a depression in the middle. Immediately after the airbag is deployed, the shapes of two bags support the occupant on many planes, including the head and shoulders. Thus, this airbag disperses the load that is applied to the occupant in order to lessen the localized impact that is applied to the occupant immediately upon deployment.

Front Passenger Twin-chamber Airbag



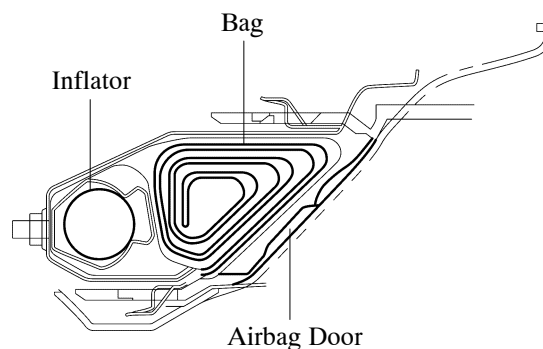
Front Passenger Twin-chamber Airbag



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5. Driver and Front Passenger Knee Airbags

A driver or front passenger knee airbag consists of an airbag door, inflator, and a bag.



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6. Front Airbag Sensors

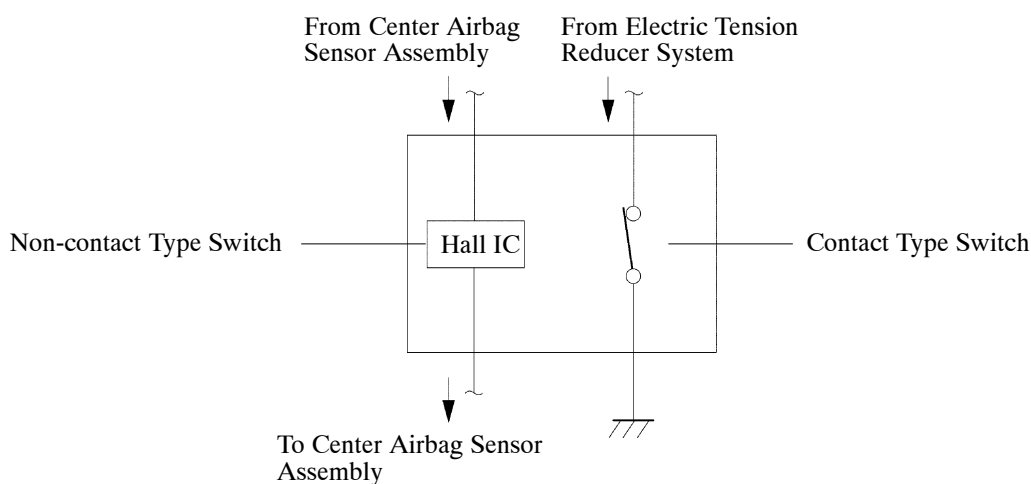
The front airbag sensors use an electrical type deceleration sensor. Based on the deceleration of the vehicle during a front collision, a distortion is created in the sensor and converted into an electrical signal. Accordingly, the extent of the initial collision can be detected in detail.

7. Seat Belt Buckle Switch (Driver)

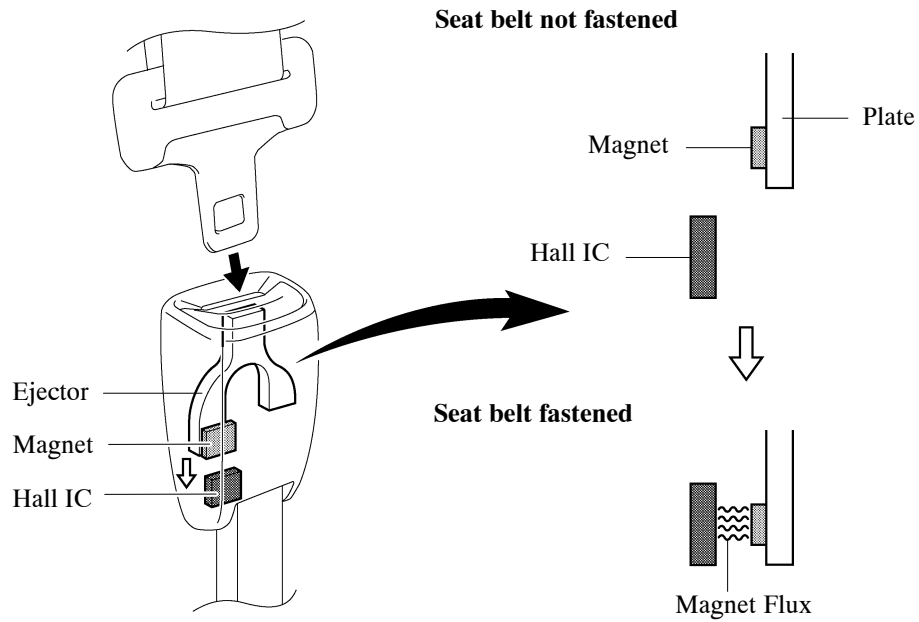
The seat belt buckle switch detects whether or not the seat belt is fastened.

- A contact type and non-contact type is built in to the seat belt buckle switch. The contact type is for the electric tension reducer system and the non-contact type is for the SRS airbag system, pre-crash safety system, or seat belt warning system.
- The non-contact type switch is comprised of a Hall IC and two magnets, installed into the front seat inner belt assembly.

► Electrical Circuit ◀



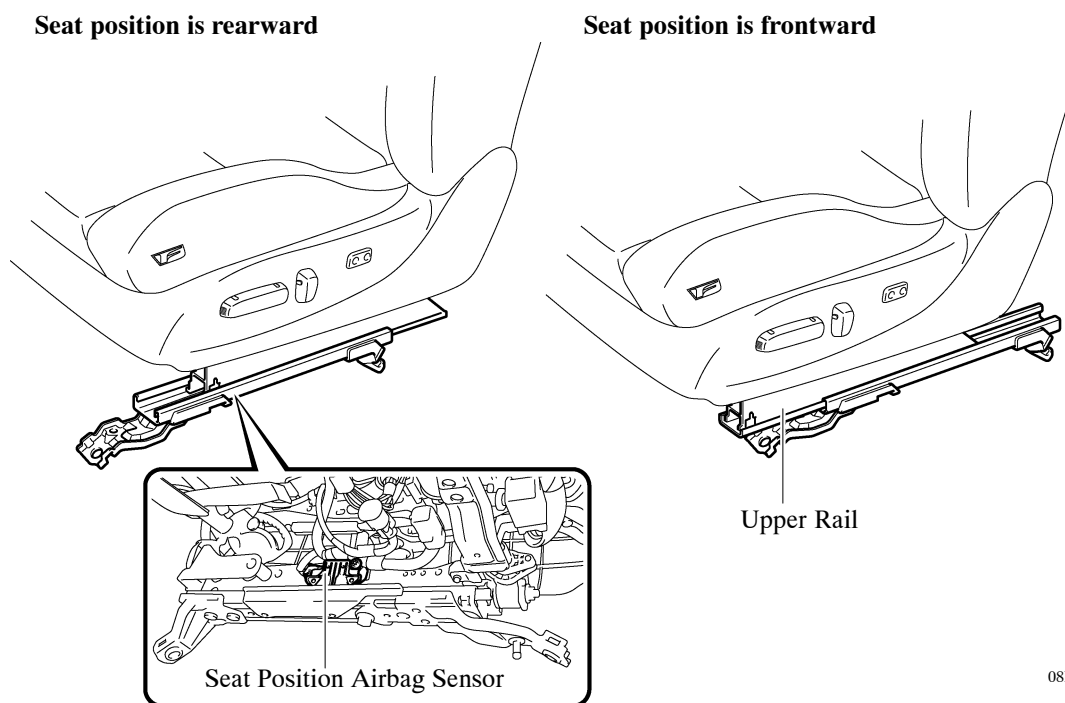
- The ejector inside the front seat inner belt assembly and the plate installed to the ejector move when the seat belt is removed or inserted. The movement of the plate changes the magnetic flux density of the magnet.
- The Hall IC detects the changes in the magnetic flux density as seat belt removal or insertion, and outputs a signal to center airbag sensor assembly.



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8. Seat Position Airbag Sensor

The seat position airbag sensor detects the slide position of the driver seat. This sensor, which uses a Hall IC, detects changes in the magnetic flux that occur due to the movement of the upper rail.



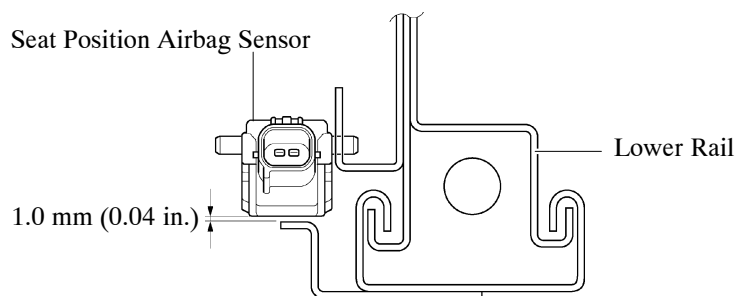
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Service Tip

Follow the procedure indicated below to install the seat position airbag sensor.

- 1) Insert a 1 mm (0.04 in.) feeler gauge between the seat position airbag sensor and the lower rail portion.
- 2) Tighten the mounting bolt to the specified torque with the seat position airbag sensor pushed down as shown.

For details, see the LEXUS IS F Repair Manual (Pub. No. RM08E0E).



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