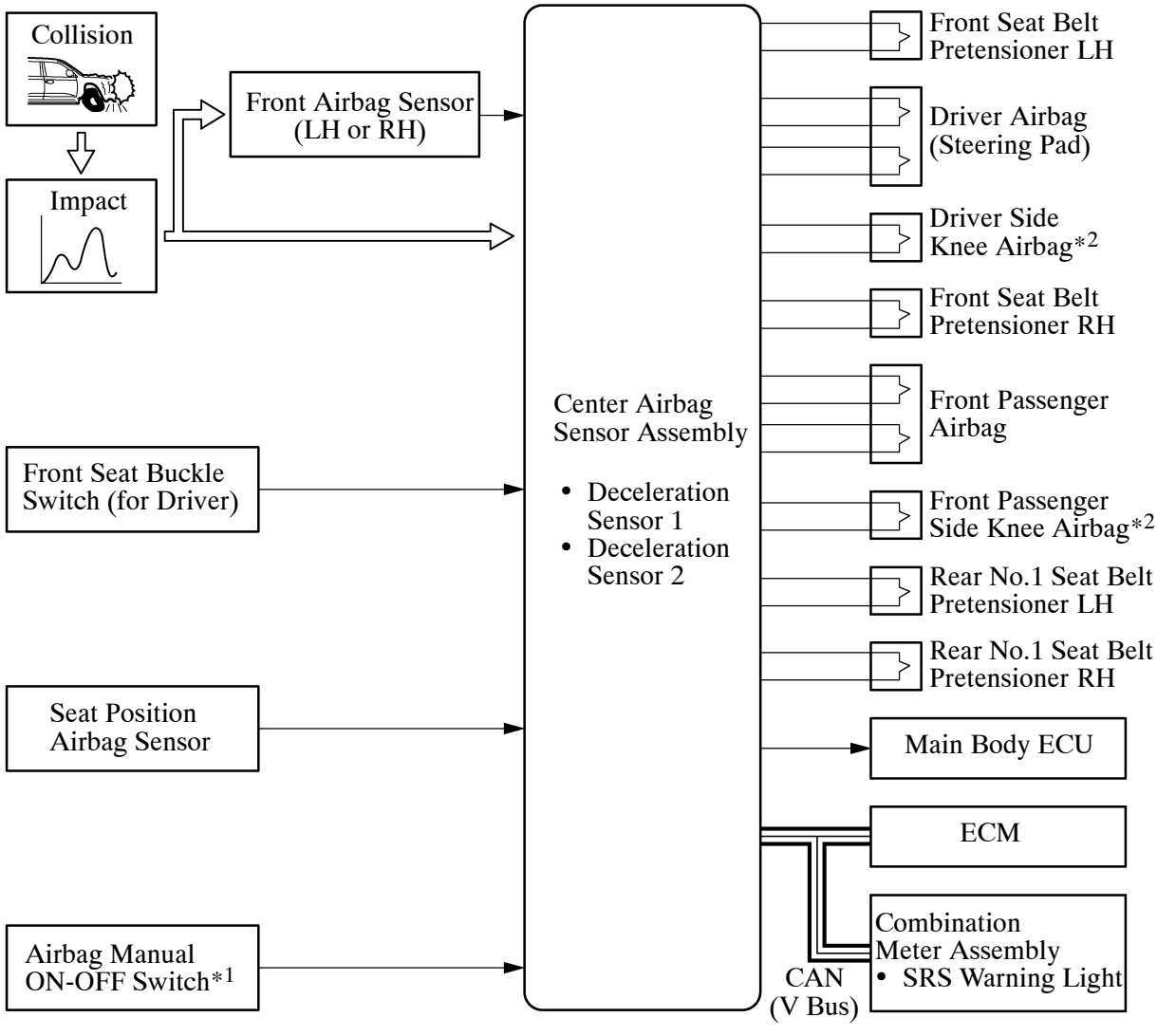
■AIRBAG FOR FRONTAL COLLISION

1. General

- In conjunction with their impact absorbing structure for frontal collisions, the driver and front passenger dual-stage SRS airbags and the driver side and front passenger side knee airbags* deploy simultaneously and are supplements to the seat belts. The driver and front passenger dual-stage SRS airbags have been designed to help reduce injuries to the head and chest in the event of a frontal collision. The driver and passenger knee airbags* restrict the lower parts of the occupants' bodies, thus enhancing the excellent passenger protection provided by the seat belts and front airbags.
- A deceleration sensor is provided in the front airbag sensor and the center airbag sensor assembly. Due to 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.

*: Provided on models with SRS knee airbags

▶ Front Airbag Operation ◀



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*1: Provided on European models and Russian package models
*2: Provided on models with the SRS knee airbag

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2. Dual-stage SRS Airbag System

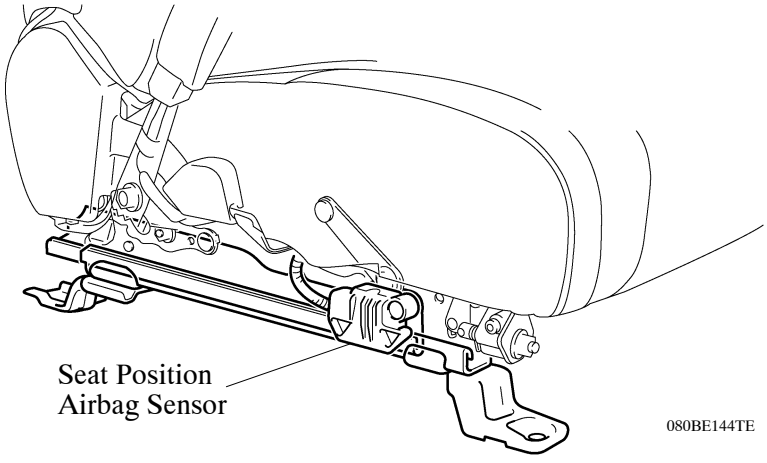
General

In this system, when the front airbag sensors and center airbag sensor assembly detect a front collision, the center airbag sensor assembly judges the extent of impact, seat position, and whether or not the seat belts are fastened, thus optimizing the airbag inflating output by delaying the inflation timing of the 2nd initiator and the 1st initiator.

Seat Position Airbag Sensor

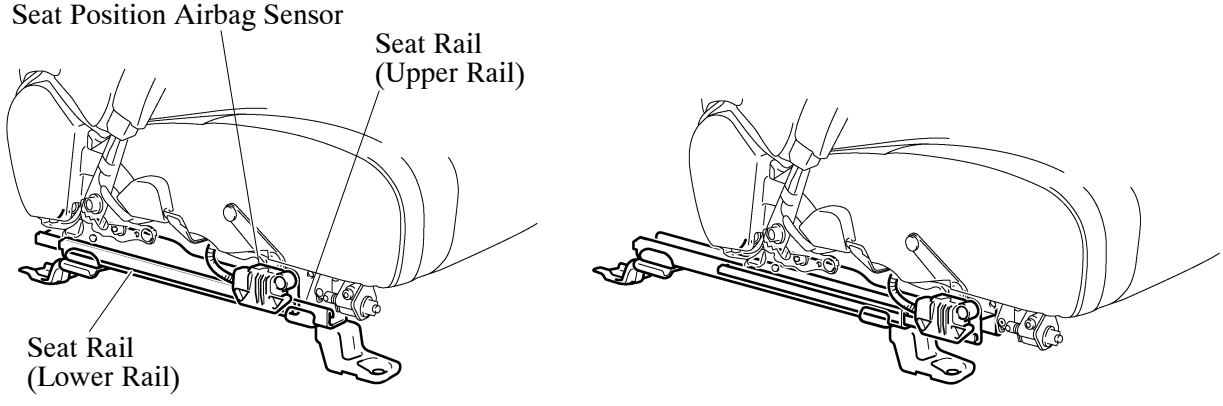
1) General

The seat position airbag sensor is mounted on the upper rail portion of the driver seat rail, and includes a Hall IC and a magnet. This sensor is used to detect the sliding position of the driver seat.



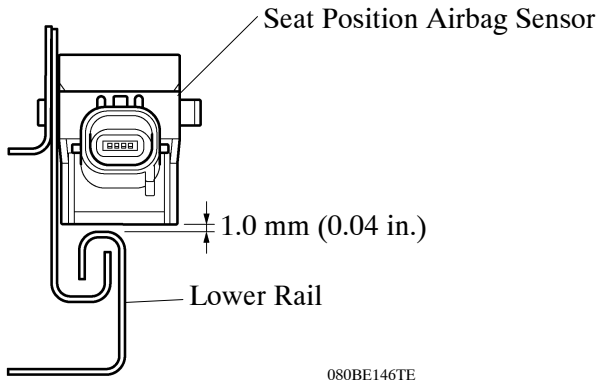
2) Operation

When the seat is in the rearward position, the lower rail portion of the seat rail is close to the seat position airbag sensor. When it is in the forward position, the distance between the lower rail portion and the sensor becomes larger.
Thus, the magnetic flux of the magnet inside the seat position airbag sensor varies depending on the seat position. The Hall IC detects this variation and outputs signals to the center airbag sensor assembly.



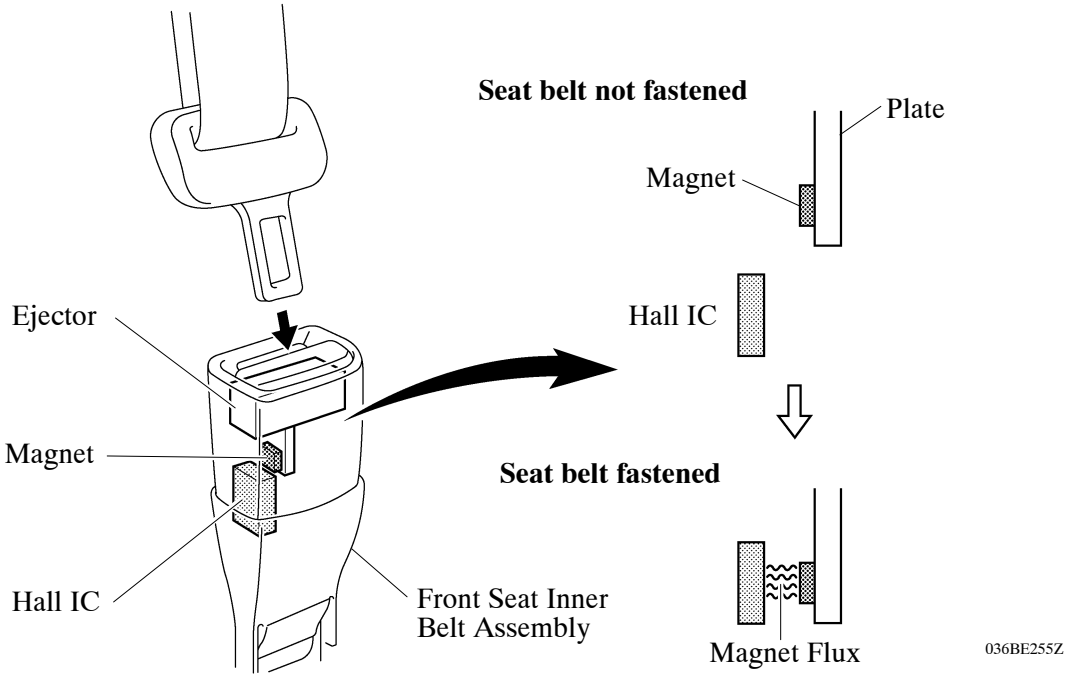
Service Tip

Follow the procedure indicated below to install the seat position airbag sensor.
1) Insert a 1.0 mm (0.04 in.) feeler gauge between the seat position sensor and the lower rail portion.
2) Tighten the mounting bolt to the specified torque with the seat position sensor pushed down as shown.
For details, see the Land Cruiser (Station Wagon) Repair Manual (Pub. No. RM0810E).



Front Seat Buckle Switch

- The front seat buckle switch detects whether or not the seat belt is fastened.
- The non-contact type switch is composed of a Hall IC and magnet, installed into the front seat inner belt assembly.
- 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 changes in the magnetic flux density in accordance with the seat belt removal or insertion and outputs the front seat buckle switch signal for the driver seat to the center airbag sensor assembly.



3. SRS Driver and Front Passenger Airbag

SRS driver and front passenger airbags contain 2 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. SRS Knee Airbag

The knee airbags deploy simultaneously with the front airbags in a frontal collision. With the deployment of the knee airbags, the driver and front passenger's lower bodies are restricted, thus enhancing the excellent the passenger protection provided by the seat belts and front airbags.

5. Front Airbag Sensor

Front airbag sensor uses an electrical type deceleration sensor. Based on the deceleration of the vehicle during a frontal collision, distortion is created in the sensor and converted into an electrical signal. Accordingly, the extent of the initial collision can be accurately detected.