SRS AIRBAG

PRECAUTION

R5021-02

NOTICE:

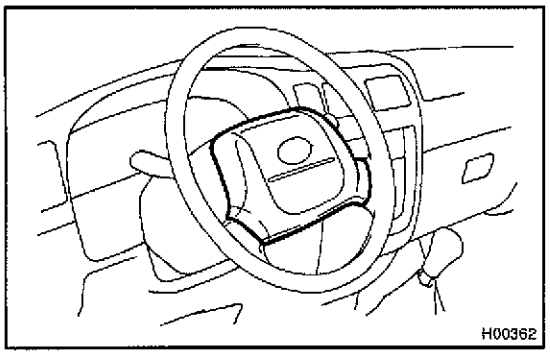
- The HILUX is equipped with a SRS, which comprises a driver airbag and a front passenger airbag. Failure to carry out service operations in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Further, if a mistake is made in servicing the SRS, it is possible the SRS may fail to operate when required. Before performing servicing (including removal or installation of parts, inspection or replacement), be sure to read the following items carefully, then follow the correct procedure described in the repair manual.
- Malfunction symptoms of the SRS are difficult to confirm, so the DTCs become the most important source of information when troubleshooting the SRS, always inspect the DTCs before disconnecting the battery.
- Even in cases of a minor collision where the SRS does not deploy, the steering wheel pad, front passenger airbag assembly and airbag sensor if shocks are likely to be inspected.
  (See page RS–9, RS–23, RS–35)
- Never use SRS parts from another vehicle. When replacing parts, replace them with new parts.
- Never disassemble and repair the steering wheel pad, front passenger airbag assembly or airbag sensor assembly in order to reuse it.
- If the steering wheel pad, front passenger airbag assembly or airbag sensor assembly has been dropped, or if there are cracks, dents or other defects in the case, bracket or connector, replace them with new ones.
- Use a volt/ohmmeter with high impedance (10 kΩ/V minimum) for troubleshooting the system's electrical circuits.
- Information labels are attached to the periphery of the SRS components. Follow the instruction on the notices.
- After work on the SRS is completed, check the SRS warning light. (See page DI–109)
- If the vehicle is equipped with a mobile communication system, refer to the precaution in the IN section.

CAUTION:

- Work must be started after 90 seconds from the time the ignition switch is turned to the "LOCK" position and the negative (–) terminal cable is disconnected from the battery. (The SRS is equipped with a back–up power source so that if work is started within 90 seconds of disconnecting the negative (–) terminal cable of the battery, the SRS may be deployed.)
- When the negative (–) terminal cable is disconnected from the battery, the memory of the clock and audio system will be canceled. So before starting work, make a record of the contents memorized in the audio memory system. When work is finished, reset the audio systems as before and adjust the clock. To avoid erasing the memory of each memory system, never use a back–up power supply from outside the vehicle.
- Before repairs, remove the airbag sensor if shocks are likely to be applied to the sensor during repairs.
- Do not expose the steering wheel pad, front passenger airbag assembly or airbag sensor assembly directly to hot air or flames.

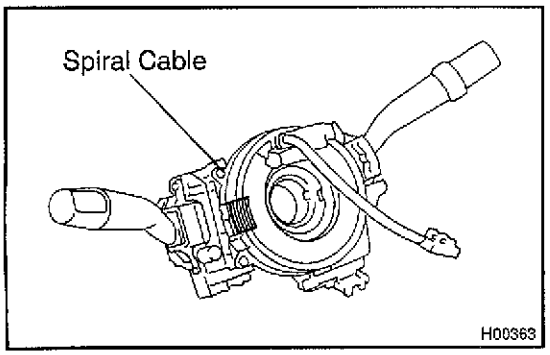
RS022-02

OPERATION



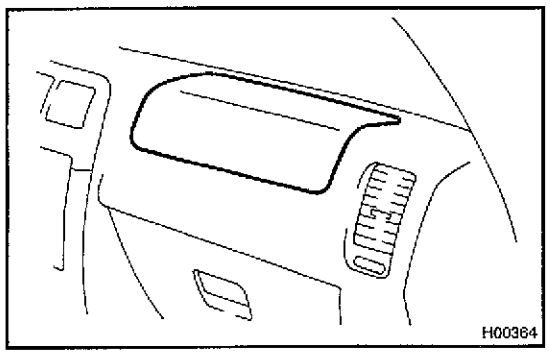
1. STEERING WHEEL PAD (with AIRBAG)

The inflater and bag of the SRS are stored in the steering wheel pad and cannot be disassembled. The inflater contains a squib, igniter charge, gas generant, etc., and inflates the bag when instructed by the airbag sensor assembly.



2. SPIRAL CABLE (in COMBINATION SWITCH)

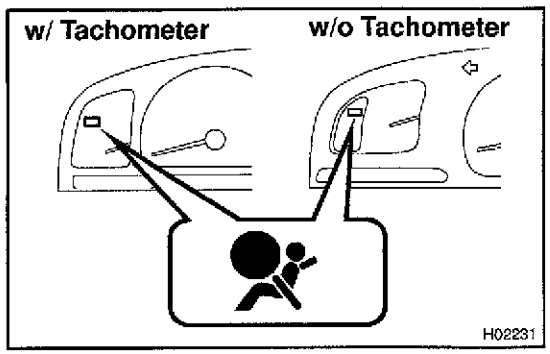
A spiral cable is used as an electrical joint from the vehicle body side to the steering wheel.



3. FRONT PASSENGER AIRBAG ASSEMBLY

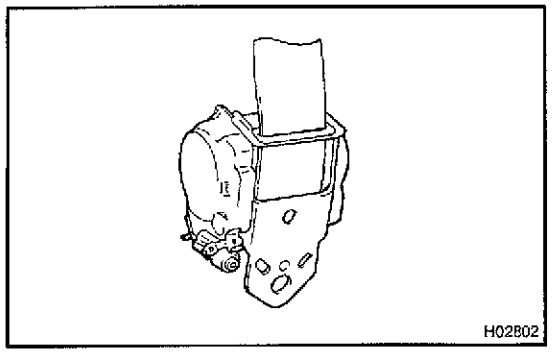
The inflater and bag of the SRS are stored in the front passenger airbag assembly and cannot be disassembled. The inflater contains a squib, igniter charge and gas generant, etc., and inflates the bag when instructed by the airbag sensor assembly.

RS



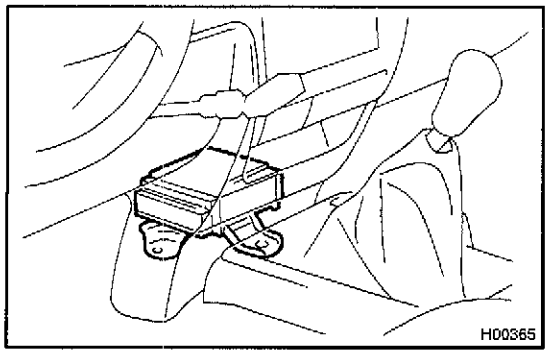
4. SRS WARNING LIGHT

The SRS warning light is located on the combination meter. It goes on to alert the driver of trouble in the system when a malfunction is detected in the airbag sensor assembly self–diagnosis. In normal operating conditions when the ignition switch is turned to the ACC or ON position, the light goes on for about 6 seconds and then goes off.



5. SEAT BELT PRETENSIONER

The seat belt pretensioner system is a component of the front seat outer belt. The pretensioner contains a squib, gas generater, strip or wire and piston, etc., and operates in the event of a frontal collision.

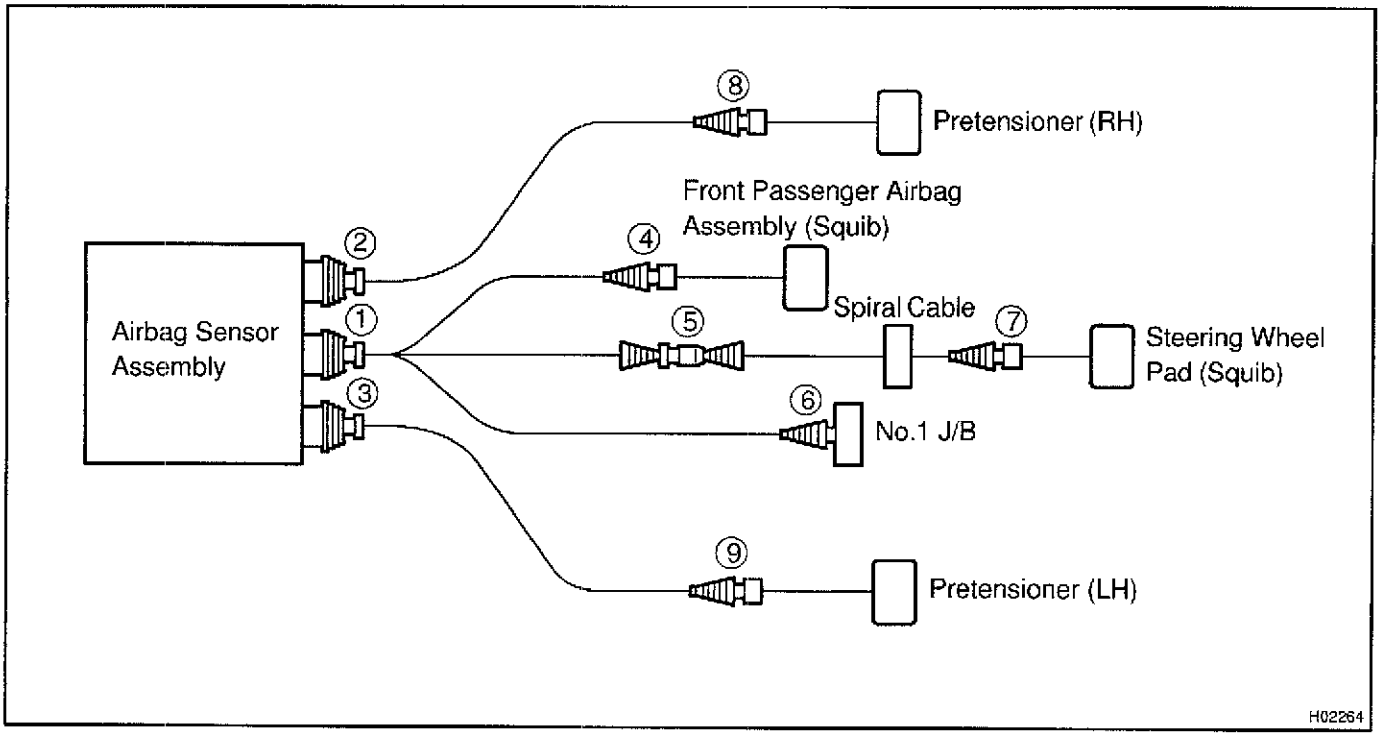


6. AIRBAG SENSOR ASSEMBLY

The airbag sensor assembly is mounted on the floor inside the center cluster. The airbag sensor assembly consists of a airbag sensor, safing sensor, diagnosis circuit, ignition control and drive circuit, etc.

It receives signals from the airbag sensor assembly and judges whether the SRS must be activated or not and diagnosis system malfunctions.

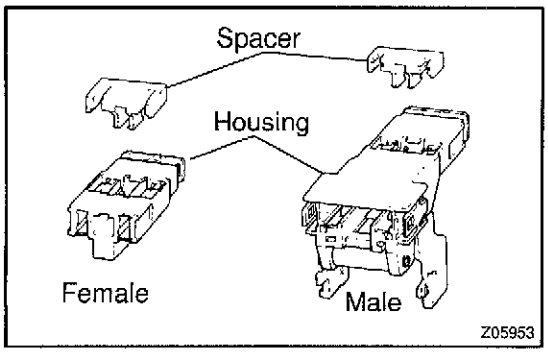
7. SRS CONNECTORS



No.	Item	Application
(1)	Terminal Twin–Lock Mechanism	Connectors 1, 2, 3, 4, 5
(2)	Airbag Activation Prevention Mechanism	Connectors 1, 2, 3, 4, 5, 7, 8, 9
(3)	Electrical Connection Check Mechanism	Connectors 1, 2, 3
(4)	Connector Twin–Lock Mechanism	Connectors 5, 6, 7

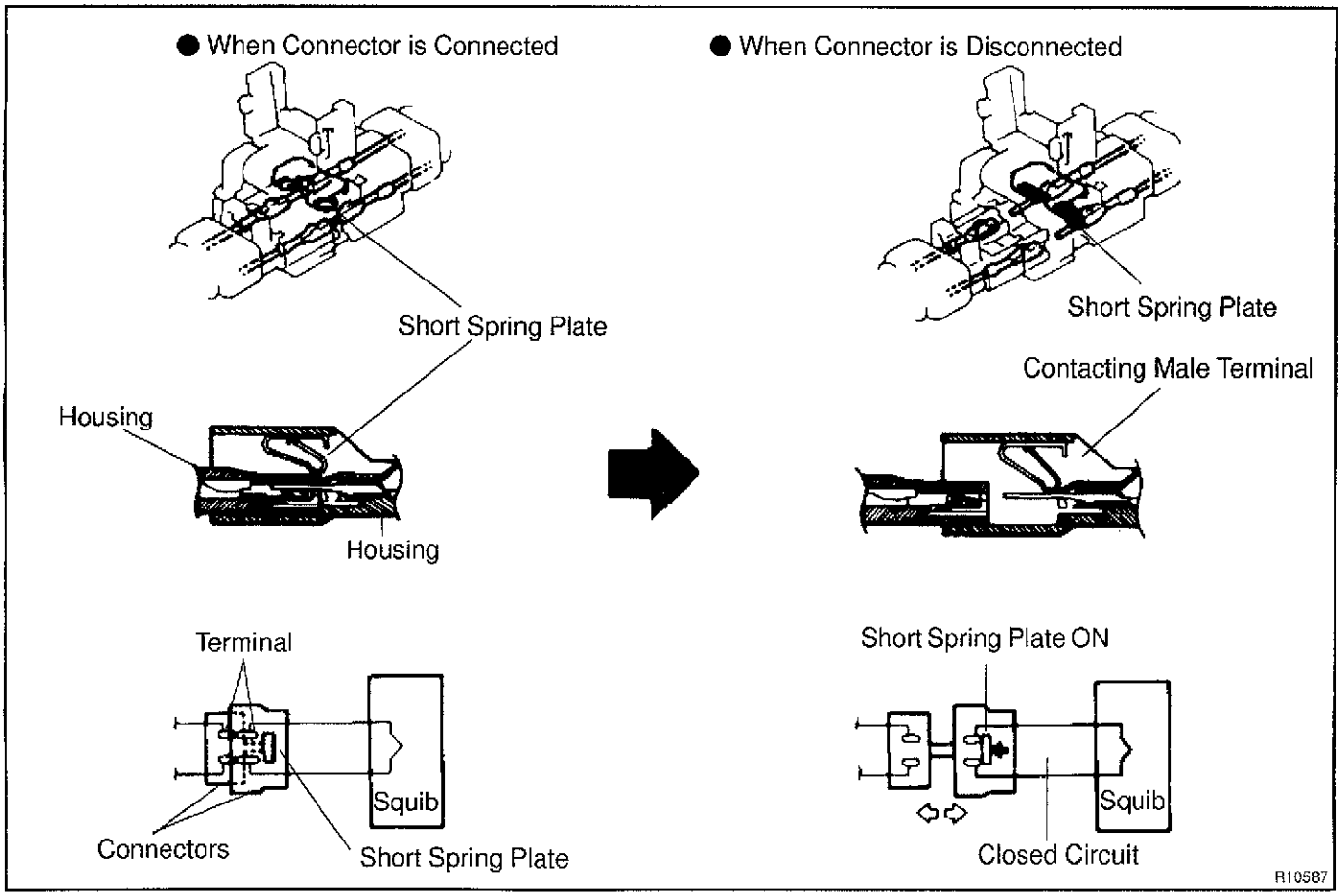
(a) All connectors in the SRS are colored in yellow to distinguish them from other connectors. Connectors having special functions and specifically designed for SRS are used in the locations shown above to ensure high reliability. These connectors use durable gold–plated terminals.

RS



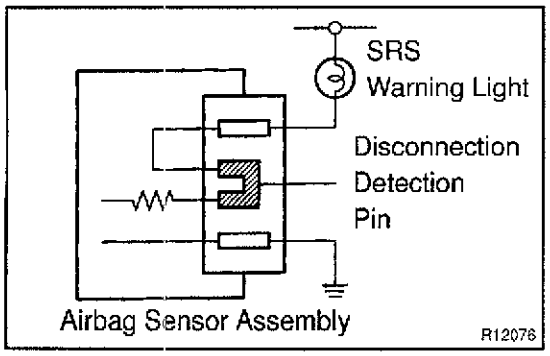
(1) Terminal Twin–Lock Mechanism
Each connector has a two–piece construction consisting of a housing and a spacer. This design enables the terminal to be locked securely by two locking devices (the spacer and the lance) to prevent terminals from coming out.

(2) Airbag Activation Prevention Mechanism
Each connector contains a short spring plate. When the connector is disconnected, positive (+) terminal and negative (–) terminal of the squib are attached.

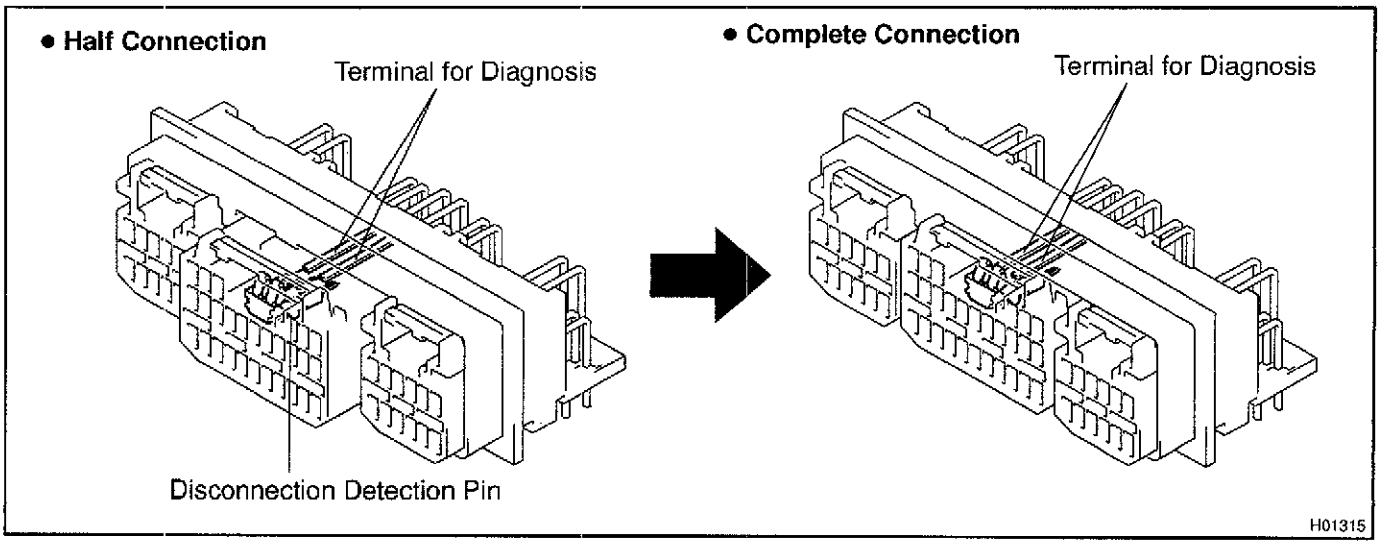


RS

HINT:
The type of connector shown on the previous page is "1", "2", "3", "4", "5", "7", "8" and "9" in the diagram on the preceding page but the operating principle is the same.



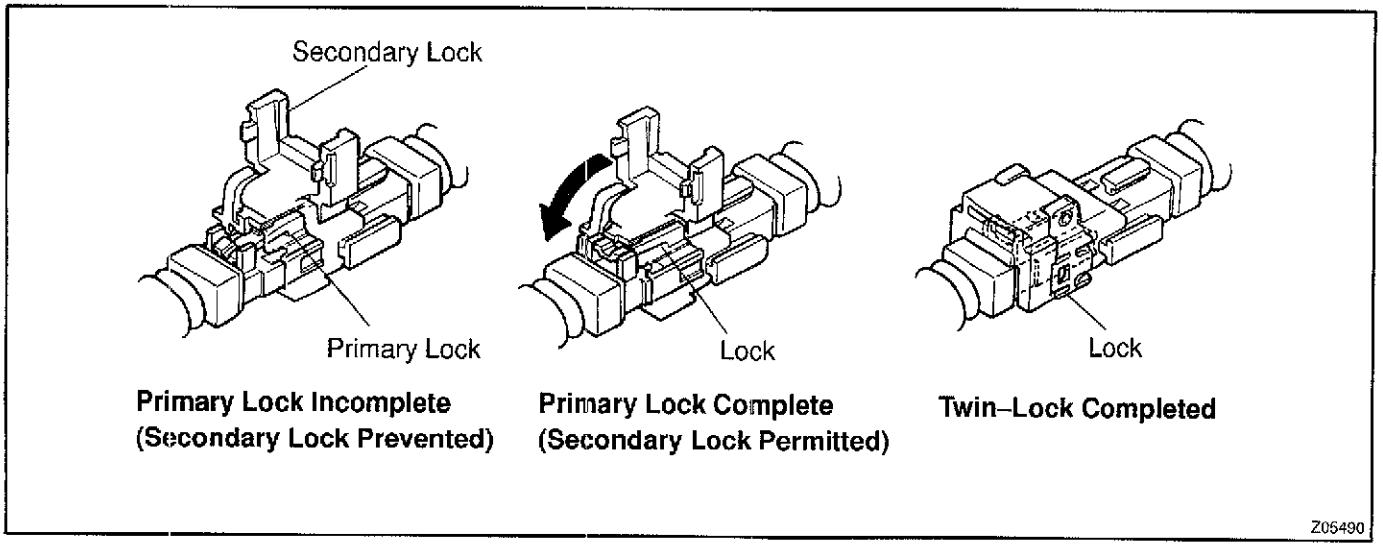
(3) Electrical Connection Check Mechanism
This mechanism is designed to electrically check if connectors are connected correctly and completely. The electrical connection check mechanism is designed so that the connection detection pin connects with the diagnosis terminals when the connector housing lock is in the locked condition.



(4) Connector Twin–Lock Mechanism
With this mechanism connectors (male and female connectors) are locked by two locking devices to increase connection reliability.

RS

If the primary lock is incomplete, ribs interfere and prevent the secondary lock.



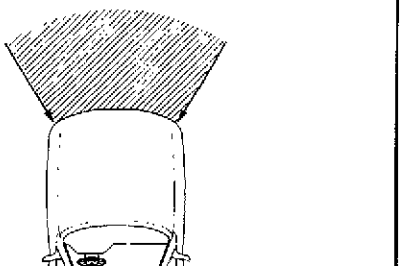


Fig.1

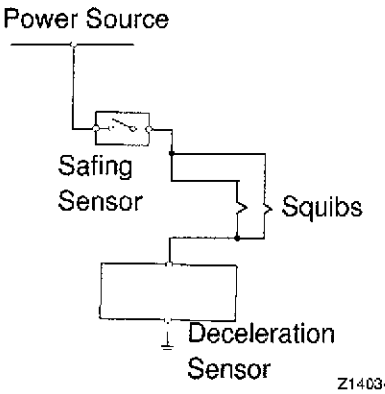


Fig.2

(b) When the vehicle is involved in a frontal collision in the hatched area (Fig. 1) and the shock is larger than a predetermined level, the SRS is activated automatically. A safing sensor is designed to go on at a smaller deceleration rate than the airbag sensors. As illustrated in Fig. 2, ignition is caused when a safing sensor and the deceleration sensor go on simultaneously. When a deceleration force acts on the sensors, two squibs in the driver airbag and front passenger airbag ignite and generate gas. The gas discharging into the driver and front passenger airbags rapidly increases the pressure inside the bags breaking open the steering wheel pad and instrument panel door. Bag inflation then ends, and the bags deflate as the gas is discharged through discharge holes at the bag's rear or side.