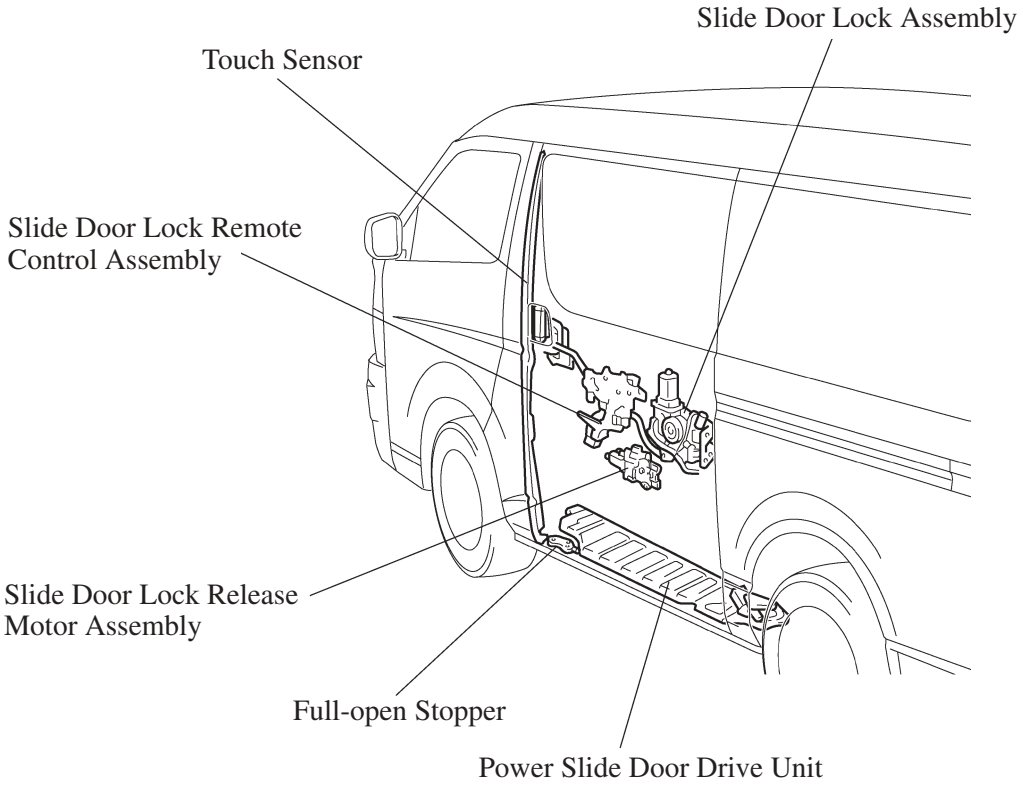
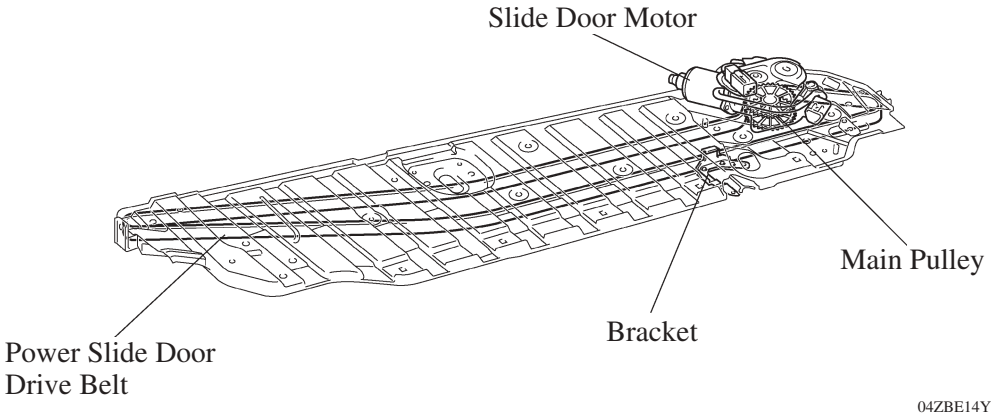
■CONSTRUCTION AND OPERATION

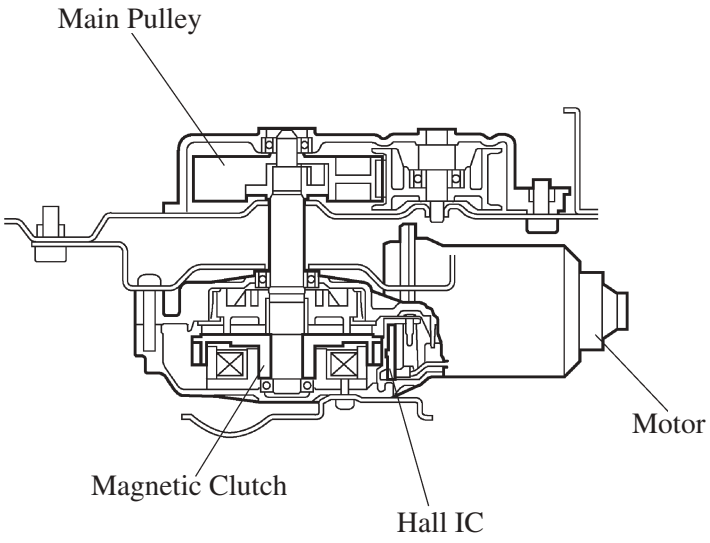


04ZBE22Y

1. Power Slide Door Drive Unit

- The slide door motor rotates the main pulley, which drives the power slide door drive belt. This allows the slide door to operate via a bracket that is provided between the power slide door drive belt and the slide door.
- The Hall ICs in the slide door motor detect the slide door position and the open-close direction, as well as the speed changes that occur when the slide door becomes jammed with an object during an automatic opening or closing operation.

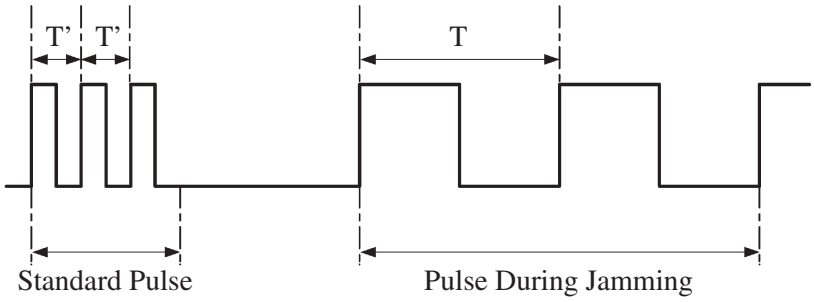




Slide Door Motor

- The power slide door ECU detects the motor speed by way of the intervals of the pulses that are output by the Hall IC. Accordingly, the power slide door ECU controls the overload detection of the jam protection function by sensing the load that is applied to the slide door.

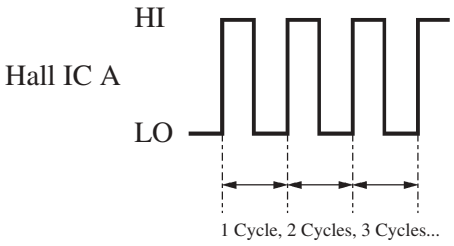
▶ Speed Detection of Slide Door ◀



251BE40

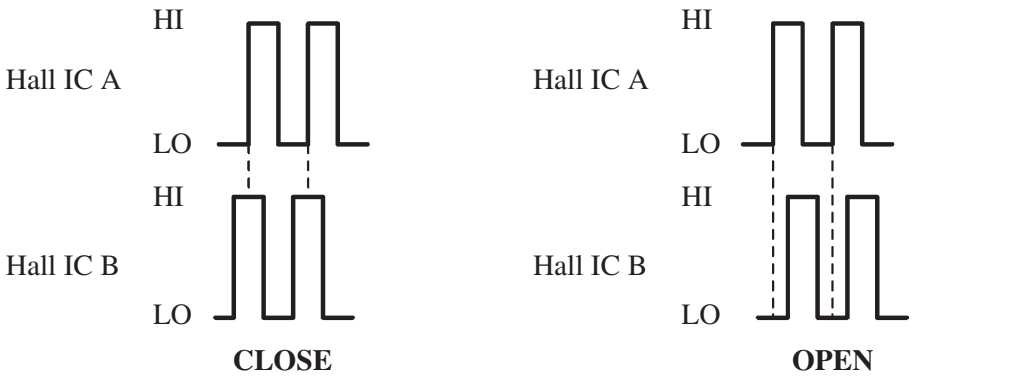
- The power slide door ECU detects the amount of the movement of the slide door by counting the pulses output by the Hall IC A per cycle. Furthermore, the power slide door ECU detects the direction of the movement of the slide door by detecting the HI/LO cycles of the pulses that are output by the Hall IC B, which varies by the rotational direction of the motor. The ECU stores these pieces of data in memory in order to recognize the present position of the slide door.

▶ Detection of Movement Amount of Slide Door ◀



04ZBE05Y

▶ Detection of Movement Direction of Slide Door ◀



251BE41

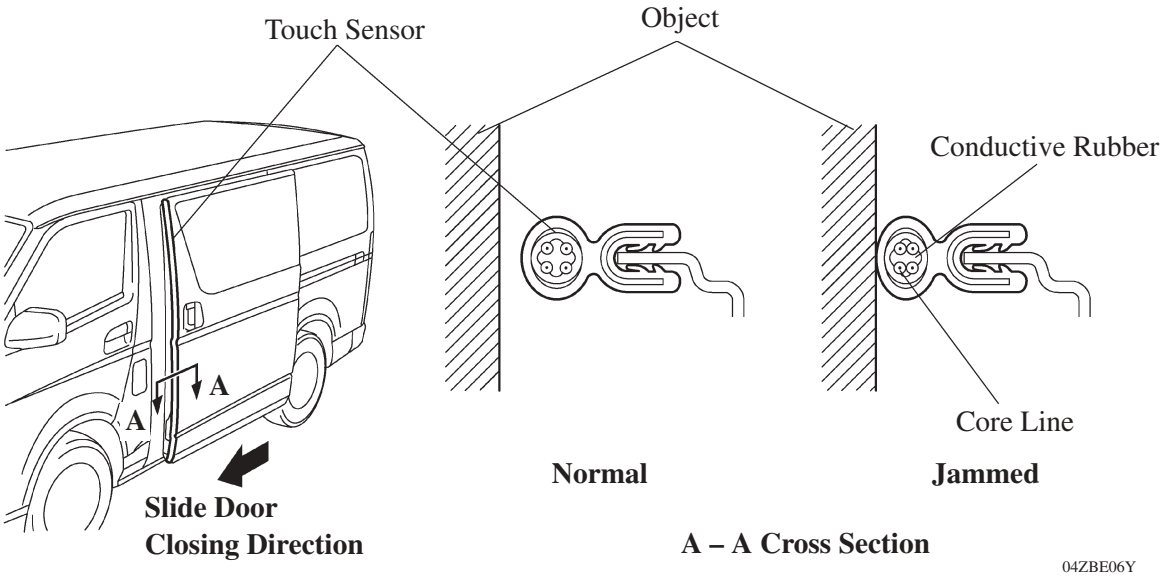
NF

2. Touch Sensor

If the touch sensor becomes compressed while the slide door is moving in the closing direction, the built-in pieces of conductive rubber contact each other, causing the resistance of the sensor to change. This change in resistance is output to the power slide door ECU to detect the presence of a jammed object.

▶ Change in Touch Sensor Resistance ◀

Normal	Jammed
Approx. 1 kΩ	Approx. 100 Ω

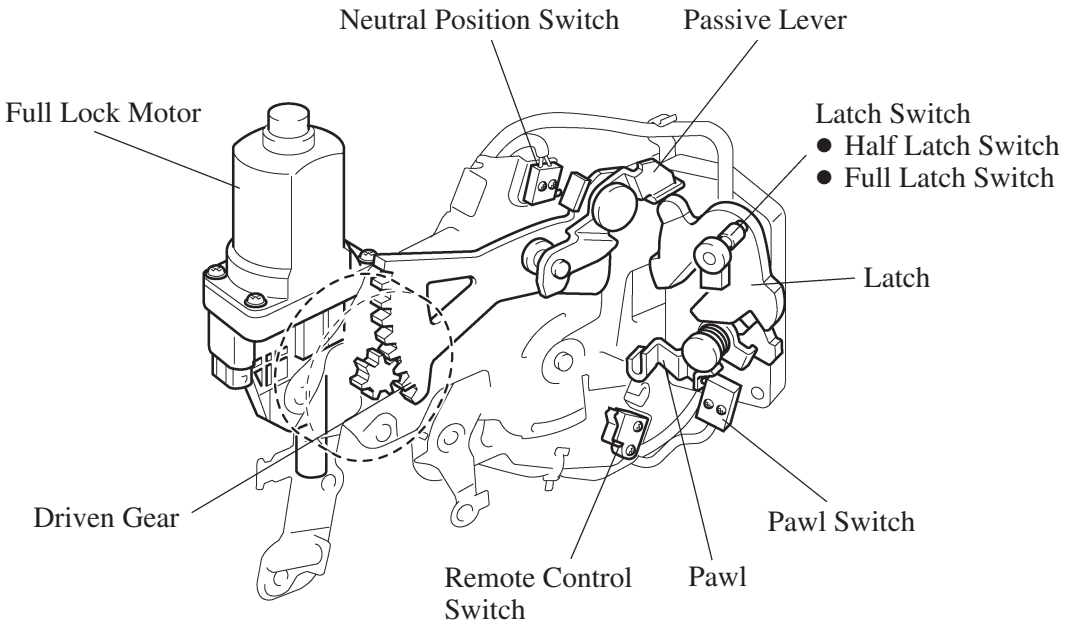


3. Slide Door Lock Assembly

General

- In the slide door lock assembly, the motor is actuated to close the slide door lock from the half latch to the full latch state.
- When the rotational movement of the full lock motor is transferred to the driven gear, the latch turns with the passive lever. Thus, the latch changes to the full latch state, fully closing the slide door.
- The slide door lock assembly contains four switches to detect the locked state. The detection functions of the switches are as follows:

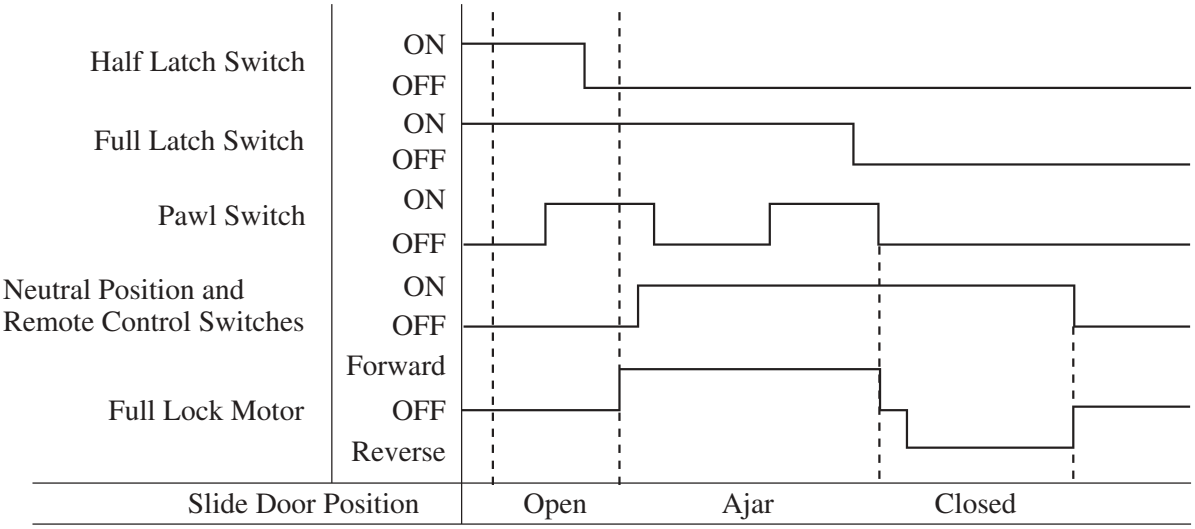
Detection Switch		Function
Latch Switch	Half Latch Switch	Detects the half open position of the latch. It turns ON when the door moves from a fully open position to just before an ajar position, and OFF in other positions.
	Full Latch Switch	Detects the fully closed position of the latch. It turns ON when the door moves from a fully open position to just before a fully closed position, and turns OFF in the fully closed position.
Pawl Switch		Detects the pawl position. It is OFF for the fully closed state and turns ON while the latch is turning.
Neutral Position Switch		Detects the initial position of the driven gear. It is ON while the motor is operating, and turns OFF when the driven gear returns to its initial position.
Remote Control Switch		Detects whether or not a slide door inside/outside handle has been operated by observing the movement of the open lever. It turns OFF when a handle is operated, and turns ON when no handle is operated.



04ZBE24Y

Closer Operation (Forward Rotation Control)

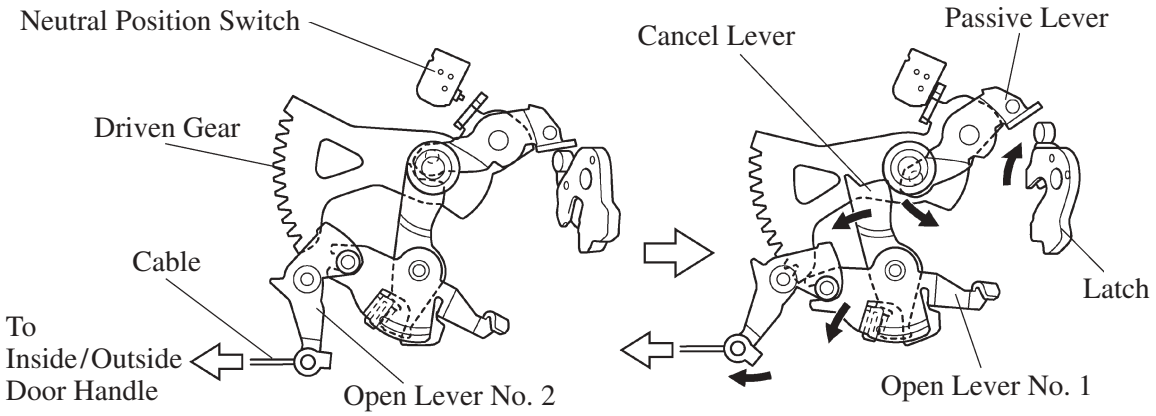
- The power slide door ECU rotates the full lock motor forward in order to move the latch in the full latch direction via the driven gear. Also, the neutral position switch turns ON. When the full latch switch and the pawl switch turn OFF thereafter, the full lock motor stops.
- If the remote control switch turns OFF (by the operation of the inside door handle or outside door handle) while the full lock motor is rotating forward, the power slide door ECU stops the full lock motor. Then (0.1 seconds later), the power slide door ECU rotates the motor in reverse to stop the system until the half latch switch is turned ON.
- After the slide door is fully closed and the motor has stopped, the power slide door ECU rotates the full lock motor in reverse until the neutral position switch turns OFF, in order to return the latch and pawl to their initial positions.



286BE61

Cancellation System

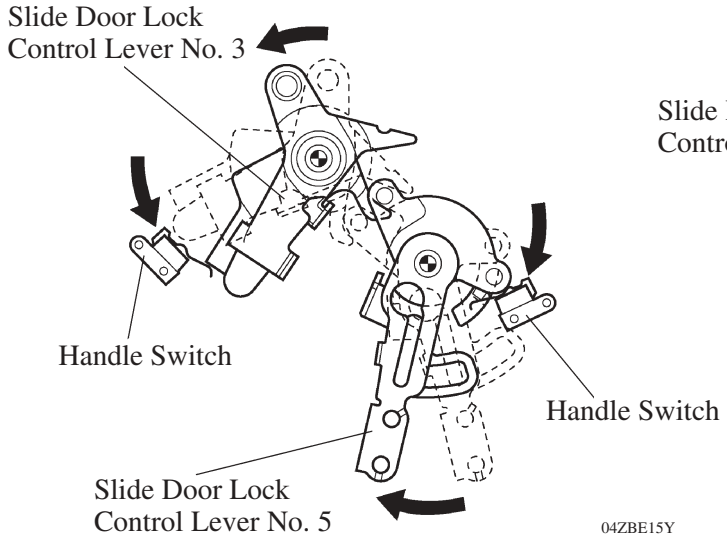
- A cancellation system enables the slide door to be opened by operating an inside or outside door handle if an object is jammed while the slide door that is ajar is closing. If the rotational movement of the full lock motor is interrupted, the slide door will be unlocked by disrupting the actuation transmission path of the full lock motor (by releasing the cancel lever). The mechanism of the cancel system is described below.
- Operating an inside or outside door handle pulls the cable. At this time, the open lever No. 2 turns clockwise, and the open lever No. 1 turns counterclockwise via a pin.
- The cancel lever, which is synchronized with the open lever No. 1, turns counterclockwise. Simultaneously, the passive lever turns counterclockwise, which releases the latch.



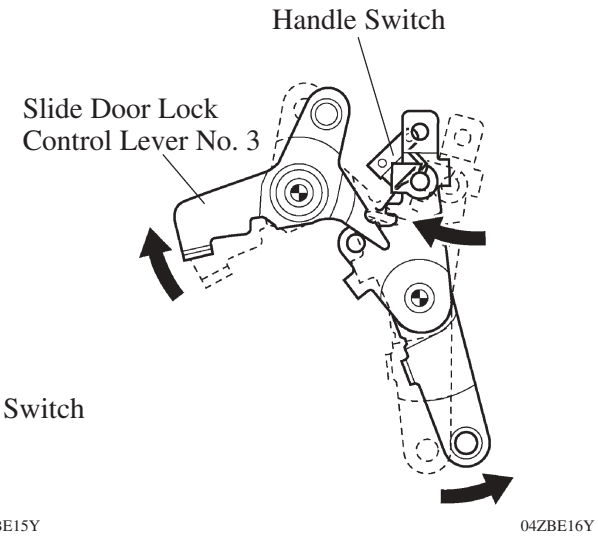
286BE13

4. Slide Door Lock Remote Control Assembly

- The slide door lock remote control assembly is provided with handle switches. When the inside or outside door handle is operated, the handle switch turns ON, and the resultant signal is output to the power slide door ECU.
- Operating the inside door handle while the slide door is closed will cause the slide door lock control lever No. 5 to rotate clockwise, and the slide door lock control lever No. 3 to rotate counterclockwise. This causes the handle switches to turn ON.
- Operating the inside door handle while the slide door is open will cause the slide door lock control lever No. 3 to rotate clockwise, and the slide door lock control lever No. 5 to rotate counterclockwise. This causes the handle switch to turn ON.

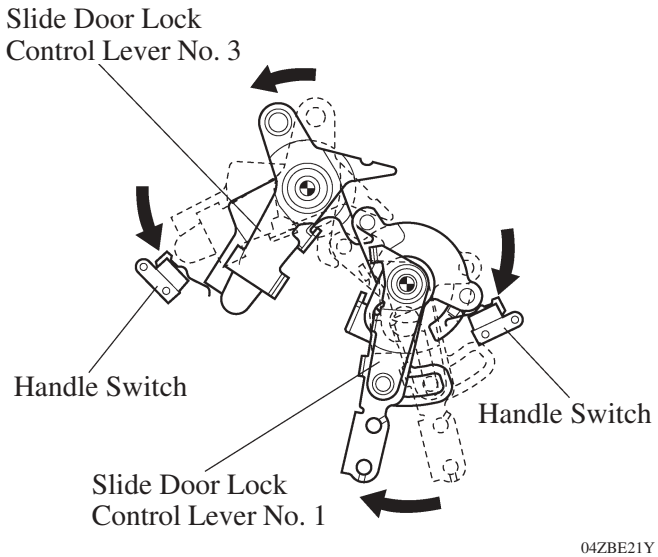


Slide Door Closed

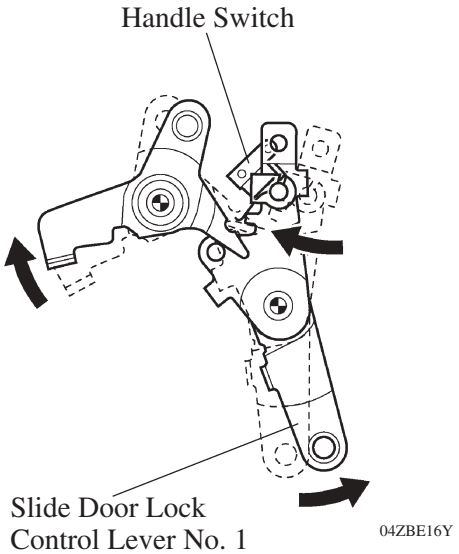


Slide Door Open

- Operating the outside door handle while the slide door is closed will cause the slide door lock control lever No. 1 to rotate clockwise, and the slide door lock control lever No. 3 to rotate counterclockwise. This causes the handle switches to turn ON.
- Operating the outside door handle while the slide door is open will cause the slide door lock control lever No. 1 to rotate counterclockwise. This causes the handle switch to turn ON.



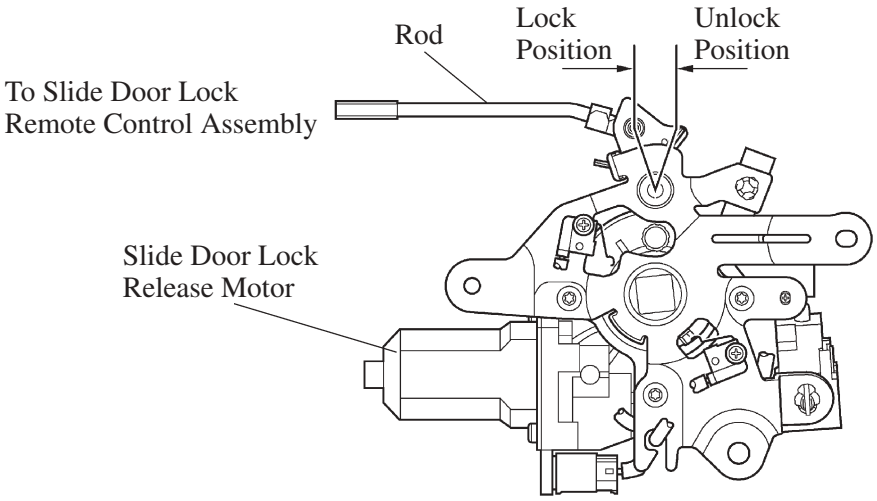
Slide Door Closed



Slide Door Open

5. Slide Door Lock Release Motor Assembly

- Operating the power slide door switch while the slide door is fully closed or fully open will cause the slide door lock release motor to rotate, thus pulling the rod. This causes the slide door lock remote control assembly, which is linked to the rod, to operate. When the slide door is closed, this releases the slide door front lock assembly and the slide door lock assembly. When the slide door is open, this releases the full-open stopper.



04ZBE17Y

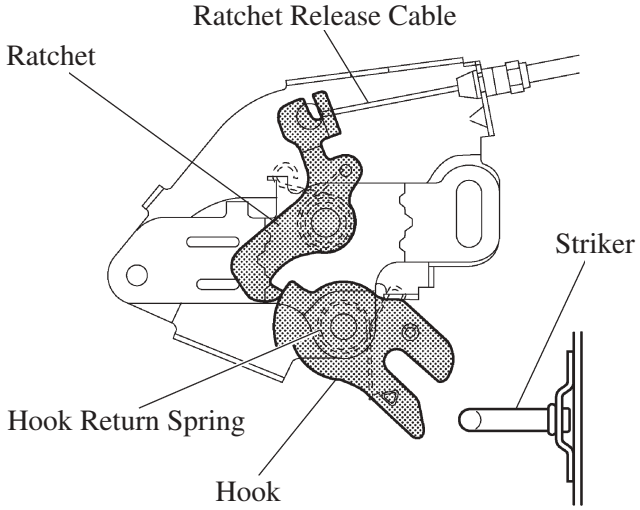
6. Full-open Stopper

General

- The full-open stopper prevents a slide door from closing unintentionally under its own weight when the vehicle is parked on a slope.
- When a slide door is locked by this system, operating the inside or outside door handle releases the lock and enables the door to be closed.

Construction

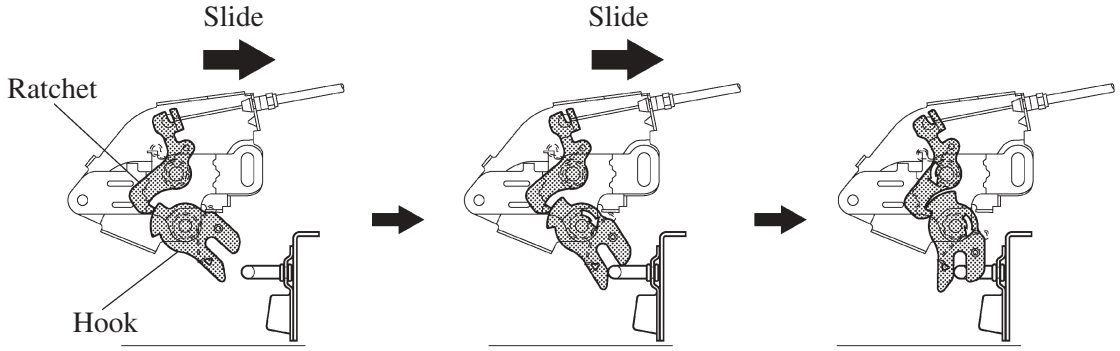
The full-open stopper mechanism consists of a striker that is secured on the body as well as a hook, ratchet release cable, and hook return spring that are installed inside the slide door.



286BE12

Operation

When the slide door is slid to the full-open position, the hook contacts the striker and rotates along with the movement of the slide door. Next, the hook engages with the pawl of the ratchet, which causes the hook to stop moving. As a result, the slide door locks into a fully-opened position.



Starting Opening Operation **During Operation** **Fully-opened Position**

04ZBE23Y

■SYSTEM CONTROL

1. General

The following slide door operations are available: assist operation (to slightly open and close the slide door manually), inside/outside door handle operation and power slide door switch operation.

2. Operating Conditions

Ignition Switch	Operating Condition (The slide door operates only when all the conditions below have been met.)
ON	PWR DOOR OFF switch is ON
	Slide door is unlocked
	Battery voltage is 11 V or more
	Shift lever is P position
	The vehicle speed is 3 km/h (1.9 mph) or less
	Touch sensor is free of problems, such as an open circuit
OFF	PWR DOOR OFF switch is ON
	Slide door is unlocked
	Battery voltage is 11 V or more
	Touch sensor is free of problems, such as an open circuit