■JAM PROTECTION FUNCTION

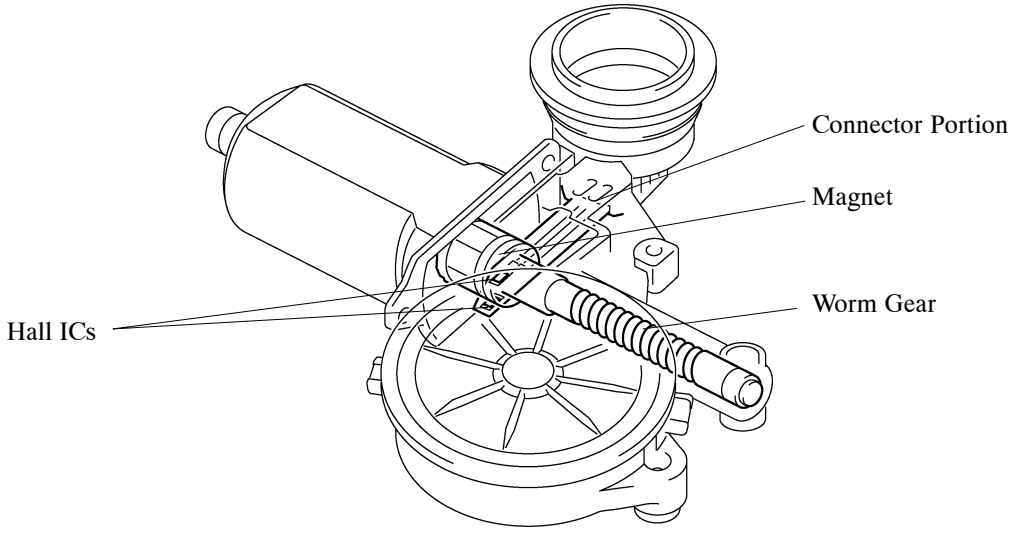
1. General

- This function automatically stops the power window and moves it downward if a foreign object gets jammed in the driver's door window during one-touch auto-up operation.
- The jamming of the power window is detected by the two pulse sensors (Hall ICs) that are integrated in the driver's power window motor.
- The activation of the jam protection function is described below.

Door Window Position from Full Close	Operation of Jam Protection Function
200 mm (7.87 in.) or more	Down operation of 50 mm (1.97 in.) or 1 sec.
200 mm (7.87 in.) or less	Down operation until door window opening of 200 mm (7.87 in.) is reached or 5 sec.

2. Jammed Window Detection Mechanism

- The jammed window detection mechanism consists of a magnet that is provided on the worm gear of the power window motor assembly and the two Hall ICs that are provided on the connector.

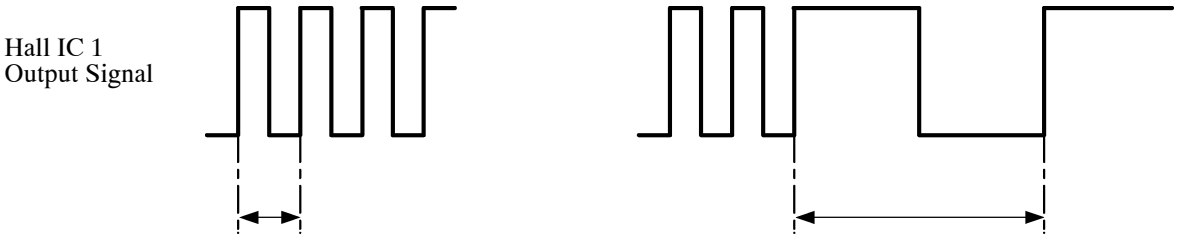


Power Window Motor Assembly

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- The Hall IC converts the changes in the magnetic flux that occur through the rotation of the worm gear into pulse signals and outputs them to the power window master switch.
- To control the jam protection function, the power window master switch determines the amount of movement and the jamming of the window glass from the pulse signals from the Hall IC1, and the moving direction of the window glass from the phase difference between the pulses from the Hall IC1 and Hall IC2.

▶ Judgment of Amount of Movement and Jamming of Window Glass ◀

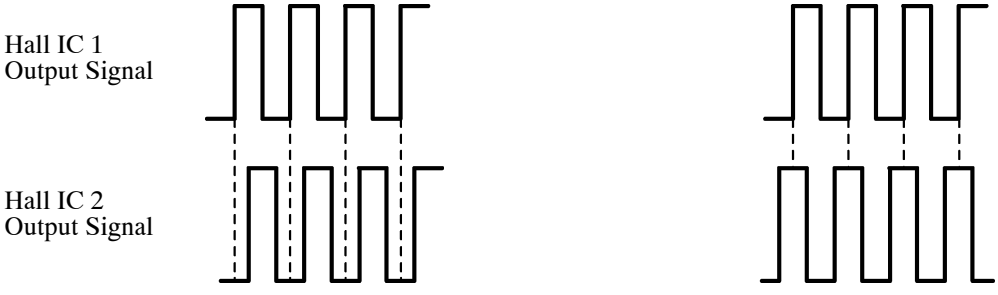


Power Window Motor
1 Revolution (Normal)

Power Window Motor
1 Revolution (Jammed)

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▶ Judgment of Window Glass Moving Direction ◀



Window Glass Down

Window Glass Up

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Service Tip

The power window master switch memorizes the initial position of the driver's door window. This data will be lost if a battery terminal, fuse, or power window master switch is disconnected, allowing only a manual operation. Therefore, after reconnecting the battery terminal, fuse, or power master switch, initialize the system by performing the steps described below.

(1) Open the driver's door window a minimum of 1/4.
(2) Pull and hold the power window master switch. By pulling and holding the switch for approximately 1 second after the driver's door window is fully closed, the power window master switch memorizes the initial position of the driver's door window.

For details, refer to the Fortuner/Hilux SW4 Repair Manual.