

## ■ MOON ROOF

### 1. General

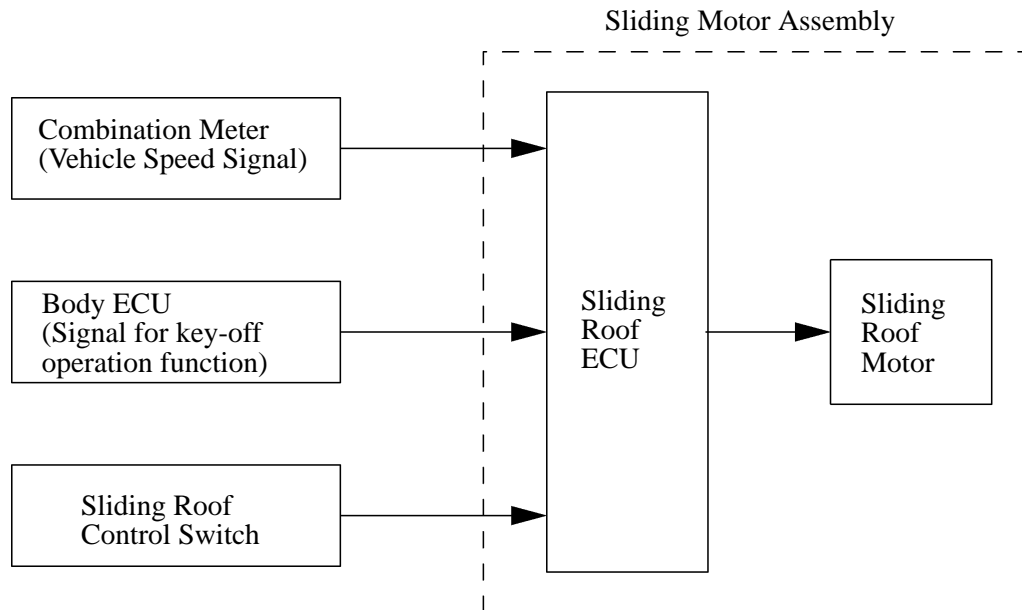
- This system has been provided as optional equipment.
- The sliding roof ECU and the sliding roof motor have been integrated to reduce the number of components.
- This system controlled by the sliding roof ECU.
- A function to control the wind deflector height in accordance with the vehicle speed has been adopted to reduce wind noise at high speeds and prevent the generation of wind throb at low speeds.
- On the '02 4Runner, the moon roof position was detected by a limit switch. However, the '03 4Runner has discontinued the use of the limit switch and has adopted a new mechanism that uses pulse sensors (Hall IC) to detect the position. The pulse sensors count the pulses that are output as the moon roof travels from the specified initial position in order to detect the position of the moon roof. The basic operation of the moon roof position detection mechanism that uses 2 pulse sensors is the same as the mechanism that is used in the power window system. For details, refer to the Power Window System section.

#### Service Tip

The sliding roof ECU memorizes the initial position of the moon roof, therefore, the data will be lost when the battery terminal is removed, so that only manual operation is available. After connecting the battery terminal, move the moon roof once to the tilt-up full open state with a manual operation. With this, the sliding roof ECU will memorize the initial position again.

For details, refer to the 2003 4Runner Repair Manual (Pub. No. RM1001U).

### 2. System Diagram



### 3. Function

#### General

The moon roof has following functions:

Function	Outline
Wind deflector height control function	Controls the wind deflector height to 2 levels in accordance with the vehicle speed.
One touch tilt up-and-down function	The “tilt one touch auto up-and-down” function enables the moon roof to be tilt up or down a touch of the tilt up switch or slide close switch.
One touch open-and-close function	The “one touch auto open-and-close” function enables the moon roof to be open or close a touch of the slide open switch or slide close switch.
Jam protection function	The “jam protection” function detects if a foreign object gets caught while the moon roof is closing (in the slide-close or tilt-down mode).
Key-off operation function	The “key-off operation” function makes it possible to operate the moon roof for approximately 45 seconds after the ignition switch is turned to the ACC or Lock position, if the front doors are not opened.

#### Wind Deflector Height Control Function

- When the moon roof is fully open, this function controls the wind deflector height to 2 levels in accordance with the vehicle speed, as described below. At low driving speeds, it raises the wind deflector height to the full-up position to prevent wind throb from being generated. At high driving speeds, it lowers the wind deflector height to the half-up position to reduce wind noise.
- The wind deflector height control function operates as follows:

