

■ MOON ROOF

1. General

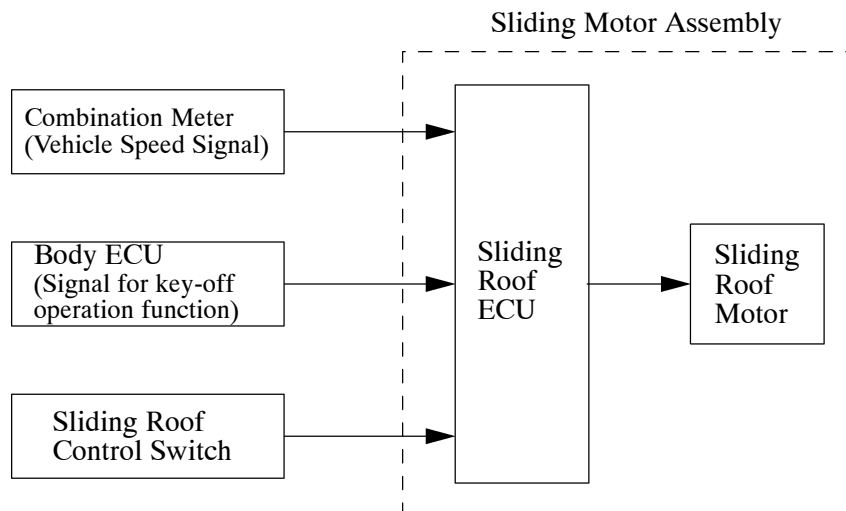
- This system is provided as optional equipment on all models except the 5-door model with 3RZ-FE engine for Australia and G.C.C. countries.
- The sliding roof ECU and the sliding roof motor have been integrated to reduce the number of components.
- A function to control the wind deflector height in 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.
- Through the control effected by the sliding roof ECU, this system enables the sliding roof motor to operate the following three moon roof functions: open-and-close, tilt up-and-down, and wind deflector height control.
- A “jam protection function” has been adopted.
- On the previous model, the moon roof position was detected by a limit switch. However, the new Land Cruiser/Land Cruiser Prado 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 automatic operation and wind deflector height control are not functioned. 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 Land Cruiser/Land Cruiser Repair Manual (Pub. No. RM990E).

2. System Diagram



3. Function

General

The moon roof has the following functions:

☐ : New

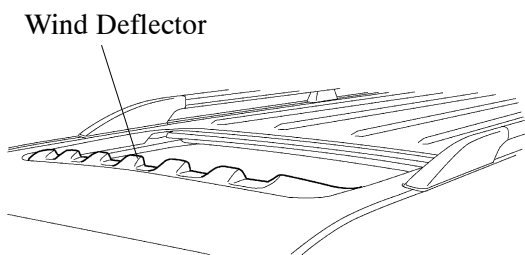
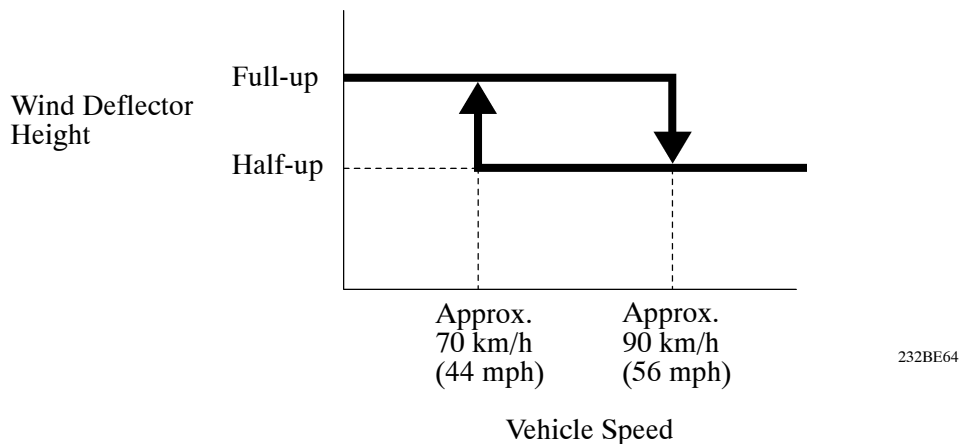
Function	Outline
Wind deflector height control function	Controls the wind deflector height to 2 levels in accordance with the vehicle speed.
One touch tilt up-and-down function	The “tilt one-touch auto up-and-down” function enables the moon roof to be tilted up or down at a touch of the tilt-up switch or slide close switch. However, the provision of this function varies by destination countries. For details, refer to the table below.
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. However, the provision of this function varies by destination countries. For details, refer to the table below.
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). However, the provision of this function varies by destination countries. For details, refer to the table below.
Key-off operation function	The “key-off operation” function makes it possible to operate the moon roof for approximately 43 seconds after the ignition switch is turned to the ACC or Lock position, if the front doors are not opened.

► Moon Roof Operating Condition ◀

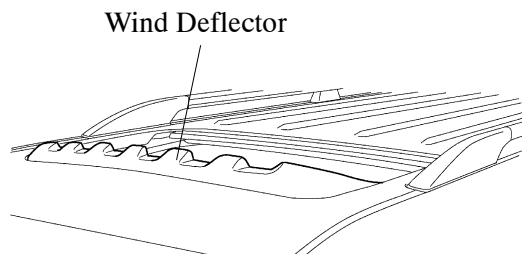
Model	Ignition Switch	Operation	
Europe	ON	Slide	Press switch more than 0.3 sec. ↓ Automatic close operation with Jam Protection
			Press switch less than 0.3 sec. ↓ Manual
		Tilt	Manual
	43 sec after OFF	Slide	Manual with Jam Protection
		Tilt	Manual
Australia	ON	Slide	Manual
		Tilt	Manual
	43 sec after OFF	Slide	Manual with Jam Protection
		Tilt	Manual with Jam Protection
Others	ON	Slide and Tilt	Press switch more than 0.3 sec. ↓ Automatic close operation with Jam Protection
			Press switch less than 0.3 sec. ↓ Manual
	43 sec after OFF	Slide and Tilt	Press switch more than 0.3 sec. ↓ Automatic close operation with Jam Protection
			Press switch less than 0.3 sec. ↓ Manual

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:



Half-up Position



Full-up Position