

SUN ROOF - POWER

1993 Mitsubishi Montero

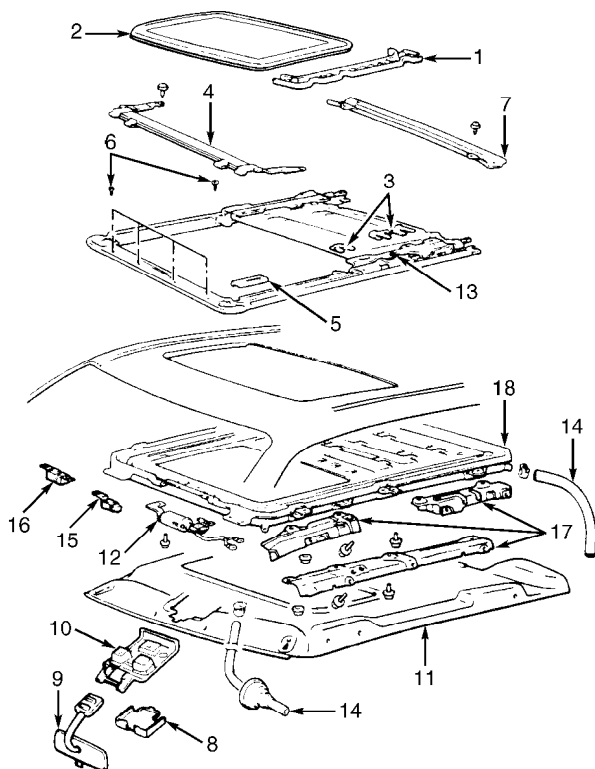
1993 ACCESSORIES & EQUIPMENT
Mitsubishi Power Sun Roof

Montero

DESCRIPTION & OPERATION

The sun roof is actuated by a overhead console mounted switch. The motor, located near the switch, moves the sun roof panel by means of drive cables. If necessary, sun roof can be closed manually, using crank handle stored in tool pouch.

Sun roof motor incorporates feature to initially limit opening or closing of roof glass panel (safety feature). For example, sun roof will not fully close from fully open position without releasing, then depressing slide switch during operation. Sun roof initially stops approximately 8" short of fully closed position.



- | | |
|----------------------|---------------------------|
| 1. Side Trim Strip | 10. Switch Assembly |
| 2. Roof Glass Panel | 11. Headliner |
| 3. Adjust Plate | 12. Motor |
| 4. Deflector | 13. Sliding Roof Assembly |
| 5. Guide Rail Cover | 14. Drain Hose |
| 6. Screw | 15. Power Relay |
| 7. Rear Drip Channel | 16. Control Relay |
| 8. Cover | 17. Set Plate |
| 9. Rear View Mirror | 18. Housing Assembly |

93B83445
Fig. 1: Exploded View Of Sun Roof Assembly (Typical)
Courtesy of Mitsubishi Motor Sales of America.

MAINTENANCE

LUBRICATION

NOTE: Manufacturer only provides lubrication procedures during reassembly of sliding roof assembly components.

TROUBLE SHOOTING

Check following items listed below symptom to aid in diagnosis and repair of sun roof assembly.

SUN ROOF INOPERATIVE

- * Fusible link or multipurpose fuse.
- * Sun roof switch.
- * Drive motor.
- * Control relay.
- * Power relay.

ROOF GLASS PANEL DOES NOT OPERATE CORRECTLY

- * Foreign matter lodged in guide rail.
- * Drive motor drive gear not correctly indexed with drive cables.
- * Decrease in clutch slipping force of drive motor.
- * Misaligned roof glass panel causing binding.

NOISY MOTOR OPERATION

- * Drive motor drive gear not correctly indexed with drive cables.
- * Worn or damaged drive motor pinion bearing.
- * Worn or deformed drive cable.

NOISY ROOF PANEL OPERATION

- * Foreign matter lodged in guide rail.
- * Loose guide rail and lid.

WATER LINKS

- * Dust accumulation in housing assembly.
- * Clogged drain hose.
- * Broken or disconnected drain hose.
- * Worn roof lid weatherstrip.
- * Excessive roof panel-to-roof opening clearance and/or incorrectly fitted weatherstrip.

WIND NOISE

- * Loose or deformed deflector.

TESTING

DRIVE MOTOR

Remove drive motor. See DRIVE MOTOR under REMOVAL & INSTALLATION. Using 12-volt power supply, apply voltage to left side terminals of 4-terminal connector (connector latch upward). Reverse power supply leads to reverse motor direction. Replace motor as

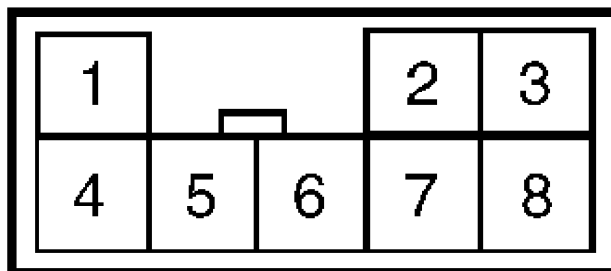
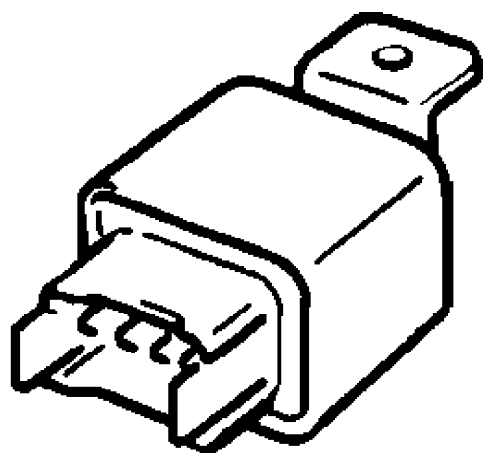
needed.

DRIVE MOTOR LIMIT SWITCH

Using ohmmeter, check continuity of limit switch. When intermittent gear cam of drive motor depresses switch lever, continuity should exist between right side terminals of drive motor 4-terminal connector (connector latch upward). Replace drive motor if switch fails test.

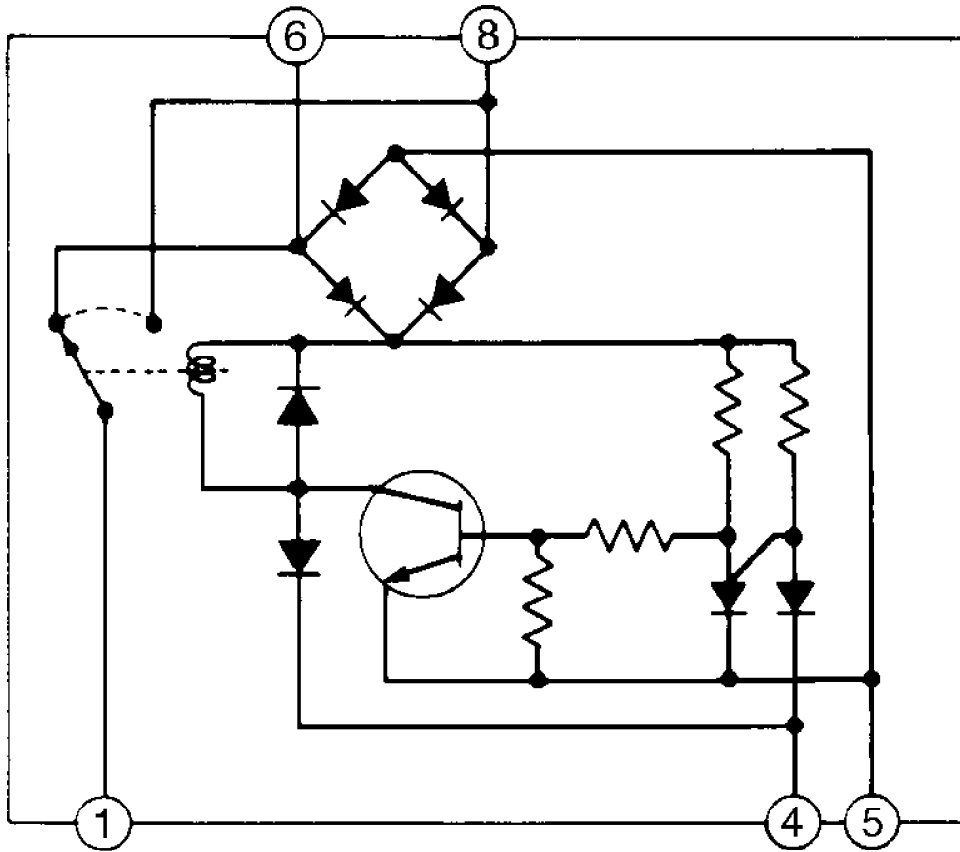
SUN ROOF CONTROL RELAY

To gain access to control relay, see CONTROL RELAY/POWER RELAY under REMOVAL & INSTALLATION. Disconnect harness connector. Using ohmmeter, check continuity of control relay. See Figs. 2 and 3. Replace relay as needed.



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Fig. 2: Control Relay Terminal ID
Courtesy of Mitsubishi Motor Sales of America.



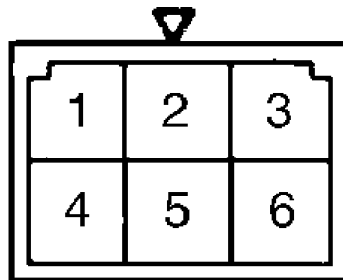
Battery positive voltage	Terminal	1	8	6	5	4
When there is no current		○—○	⊕—⊖	⊕—⊖	⊖	⊕
When there is current		○	⊕—⊖	⊖—⊕		

NOTE

- (1) ○—○ indicates that there is continuity between the terminals.
- (2) ⊕—⊖ indicates that there is continuity when the (+) is connected to the tester plus terminal, and the (-) is connected to the tester minus terminal.
- (3) ⊕—⊖ indicates terminals to which battery positive voltage is applied.

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 Fig. 3: Testing Control Relay
 Courtesy of Mitsubishi Motor Sales of America.

Using ohmmeter, check continuity between selected switch terminals. See Fig. 4. Replace switch as needed.



Switch \ Terminal	1	2	3	5	6
OPEN	○	○	○	○	○
OFF		○	○	○	○
CLOSED	○	○	○	○	

NOTE

○—○ Indicates that there is continuity between the terminals.

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Fig. 4: Inspecting Sun Roof Switch Continuity
 Courtesy of Mitsubishi Motor Sales of America.

REMOVAL & INSTALLATION

CONTROL RELAY/POWER RELAY

Removal & Installation

Remove overhead switch assembly. Lower headliner to gain access to relays. See DRIVE MOTOR under REMOVAL & INSTALLATION. Remove relays. To install, reverse removal procedure.

DRIVE CABLES

Removal & Installation

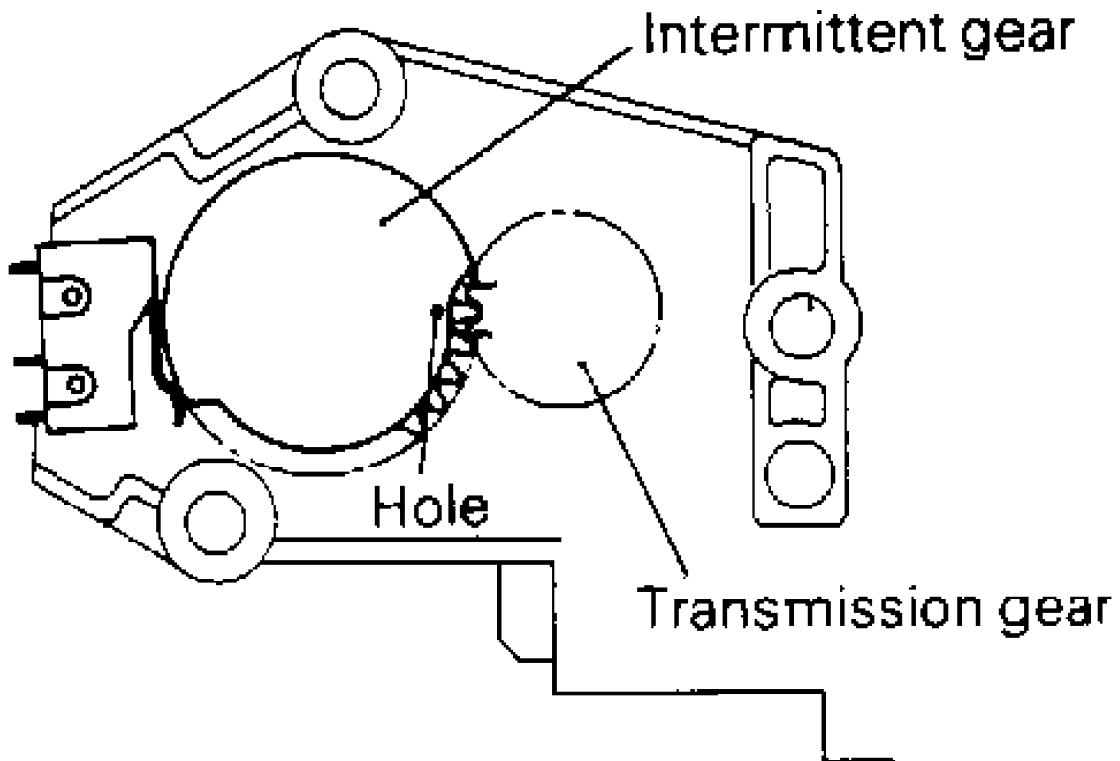
1) With sun roof assembly removed from vehicle, remove plastic mounting cover and roof glass panel. Remove front guide bracket and deflector assembly. Remove front guide rail end cover. Remove set plate and guide rail assembly. Remove sun shade and drive cable tube. Remove lifter assembly and slider assembly from housing assembly.

2) Ensure guide rail, sliding assembly and drive cables are clean before reassembly. To reassemble, reverse disassembly procedure. Apply multipurpose grease to all moving components. To install sliding roof assembly, reverse removal procedure.

DRIVE MOTOR

Removal & Installation

Remove sun roof switch assembly. Remove drive motor. To install, open roof glass panel approximately 7.9" (200 mm). Using manual closure wrench, rotate drive motor until alignment hole of intermittent gear is aligned with center of drive gear. See Fig. 5. To complete installation, reverse removal procedure.



93H46240

Fig. 5: Aligning Sun Roof Motor Drive Gears
Courtesy of Mitsubishi Motor Sales of America.

SUN ROOF

Removal & Installation

1) Remove decoration covers. Unbolt roof glass panel from sliding assembly and remove. Remove sun roof switch assembly and drive motor. Remove front and rear door scuff plate.

2) Remove center pillar lower and upper trim. Remove roof rail and sun roof trim strips. Remove front and rear pillar trim. Remove assist handle. Remove headliner. Remove rear set bracket. Remove sun roof assembly. Disconnect drain hoses.

3) If drain hoses need replacement, attach cord to exterior end of drain hose. Pull drain hose from interior end. To install hose, reverse removal procedure. To install, reverse removal procedure. See

DRIVE MOTOR for installation procedures.

WIRING DIAGRAMS

See appropriate chassis wiring diagram in the WIRING DIAGRAMS section.