

**2008 Lexus RX 350**

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350

**2008 ACCESSORIES AND EQUIPMENT**

**Sliding Roof - RX350**

**SLIDING ROOF SYSTEM (FOR MULTI PANEL MOON ROOF)**

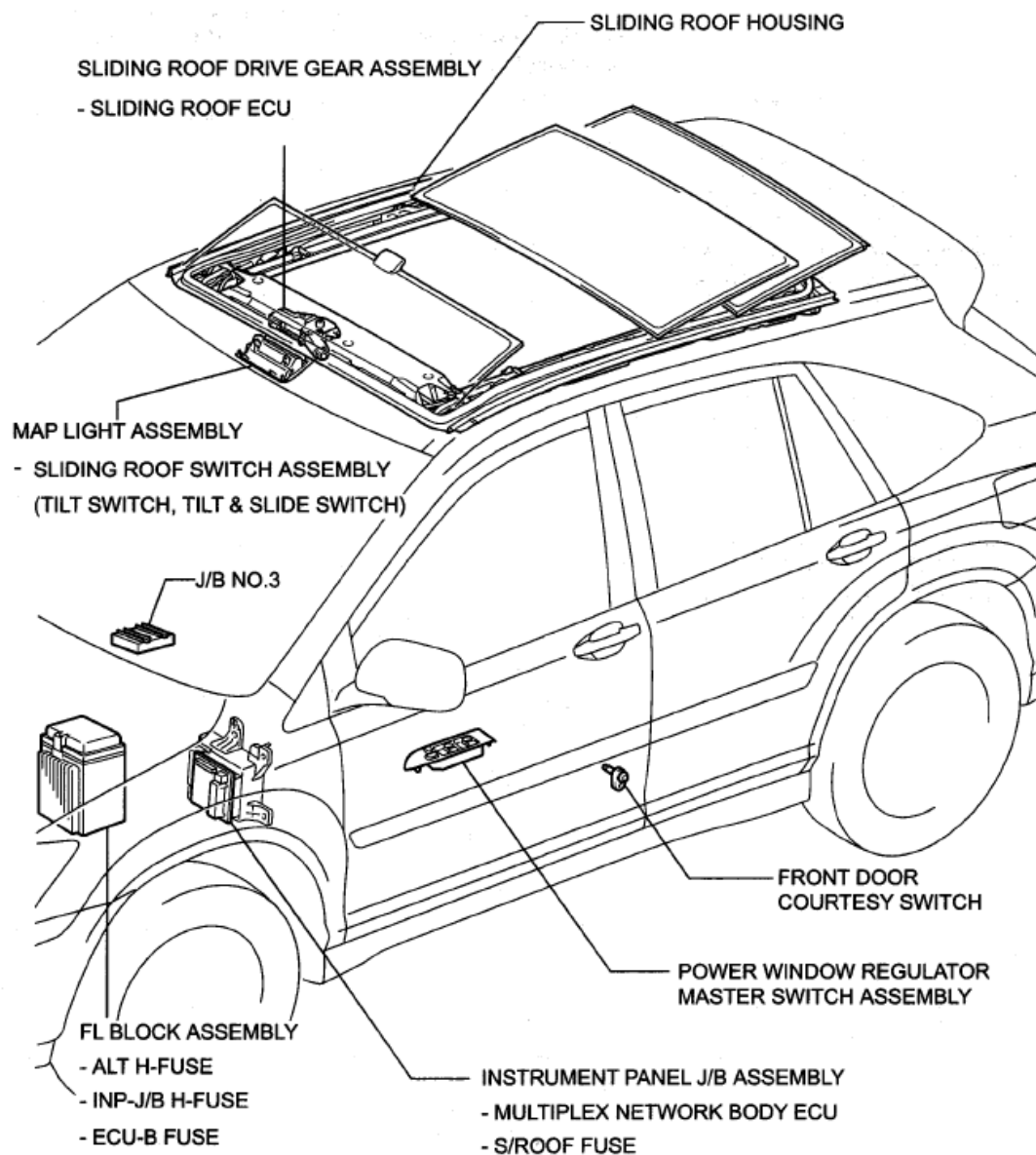
**PRECAUTION**

**NOTE:** When disconnecting the negative (-) battery terminal, initialize the following systems after the cable is reconnected.

**SYSTEM REFERENCE**

<b>System Name</b>	<b>See procedure</b>
Lighting System	<b><u>INITIALIZATION</u></b>
Power Door Lock Control System	
Power Window Control System	
Back Door Closer System	
Power Back Door System	
Electrical Back Door Outside Handle System	
Sliding Roof System (for Multi-panel Moon Roof)	
Sliding Roof System (for Standard)	

**PARTS LOCATION**



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**Fig. 1: Identifying Sliding Roof System Parts Location (For Multi-Panel Moon Roof)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## SYSTEM DESCRIPTION

### 1. SLIDING ROOF SYSTEM DESCRIPTION

- a. The sliding roof drive gear (sliding roof ECU) monitors switch signals from the sliding roof motor switch using a direct line and drives the motor built into the sliding roof drive gear (sliding roof ECU) according to the switch signals.

## HOW TO PROCEED WITH TROUBLESHOOTING

**HINT:**

- Use this procedure to troubleshoot the sliding roof system.
- The intelligent tester should be used in steps 3 and 5.

**1. VEHICLE BROUGHT TO WORKSHOP**

**2. CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK**

**3. INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE COMMUNICATION SYSTEM (BEAN) MULTIPLEX**

- Use the intelligent tester to check for normal function of the multiplex communication system.
  - (ECU unconnected, communication stop, communication line malfunctioning) Without code outputs, proceed to A.
  - (ECU unconnected, communication stop, communication line malfunctioning) With code outputs, proceed to B.

**B: Go to MULTIPLEX COMMUNICATION SYSTEM**

**A: Go to Next Step**

**4. PROBLEM SYMPTOMS TABLE**

- If the fault is not listed on the problem symptoms table, proceed to A.
- If the fault is listed on the problem symptoms table, proceed to B.

**B: Go to step 6**

**A: Go to Next Step**

**5. OVERALL ANALYSIS AND TROUBLESHOOTING**

- See DATA LIST / ACTIVE TEST
  - Inspection with intelligent tester (DATA LIST).
  - Inspection with the intelligent tester (ACTIVE TEST).
- See TERMINALS OF ECU
- See ON-VEHICLE INSPECTION .

**6. ADJUST, REPAIR OR REPLACE**

**7. CONFIRMATION TEST**

**NEXT: END**

**INITIALIZATION**

**1. RESET SLIDING ROOF MOTOR**

- The sliding roof may not operate automatically and the jam protection function will not function correctly after you reconnect, replace or recharge the battery. In any of these cases, reset the sliding

roof system using the following method.

1. Press the sliding roof switch on SLIDE CLOSE or TILT DOWN side and hold it. When the roof glass stops at the fully closed position for 1 second, the reset of the motor is completed.

HINT:

If the battery terminal is disconnected, the ECU of the sliding roof motor may not detect the position of the roof glass. If the AUTO operation function is still disabled even after the sliding roof motor is reset, the Hall IC (built in the sliding roof motor assembly) for detecting the roof glass position may be malfunctioning.

**PROBLEM SYMPTOMS TABLE**

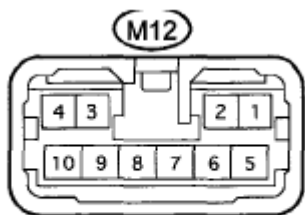
**Sliding roof system (Multi-panel moon roof type)**

**SLIDING ROOF SYSTEM (MULTI-PANEL MOON ROOF TYPE) - PROBLEM SYMPTOMS CHART**

Symptom	Suspected area	Refer to
Sliding roof does not move using sliding roof control switch	1. Sliding roof drive gear assembly (Sliding roof ECU)	<b><u>SLIDING ROOF DOES NOT MOVE BY OPERATING SLIDING ROOF CONTROL SWITCH</u></b>
	2. Map light assembly (Slide roof control switch)	<b><u>SLIDING ROOF SWITCH ASSEMBLY (FOR MULTI-PANEL MOON</u></b>
	3. Wire harness	-

**TERMINALS OF ECU**

1. **CHECK SLIDING ROOF DRIVE GEAR ASSEMBLY (SLIDING ROOF ECU)**
  - a. Disconnect the M12 ECU connector.
  - b. Check the voltage and resistance of each terminal of the wire harness side connector.



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**Fig. 2: Identifying M12 ECU Connector**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**Voltage**

**VOLTAGE SPECIFICATION**

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Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ECUB (M12-10) - E (M12-8)	SB - W-B	+B (ECUB) power supply	Constant	10 to 14 V
B (M12-4) - E (M12-8)	P - W-B	+B (B) power supply	Constant	10 to 14 V
IG (M12-9) - E (M12-8)	BR - W-B	Ignition power supply	Ignition switch OFF - -> ON	0 V --> 10 to 14 V

### Resistance

#### RESISTANCE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
OPN (M12-6) - E (M 12-8)	GR - W-B	Sliding roof motor open output	Tilt & Slide switch (OPEN) OFF --> ON	10 kohms or higher --> Below 1 ohms
CLS (M12-7) - E (M12-8)	LG - W-B	Sliding roof motor close output	Tilt & Slide switch (CLOSE) OFF --> ON	10 kohms or higher --> Below 1 ohms
UP (M12-2) - E (M12-8)	SB - W-B	Sliding roof motor up output	Tilt switch (UP) OFF --> ON	10 kohms or higher --> Below 1 ohms
DWN (M12-1) - E (M 12-8)	G-W-B	Sliding roof motor down output	Tilt switch (DOWN) OFF --> ON	10 kohms or higher --> Below 1 ohms
E (M12-8) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

- c. Reconnect the M12 ECU connector.
- d. Check the voltage and resistance of each terminal of the connector.

### Resistance

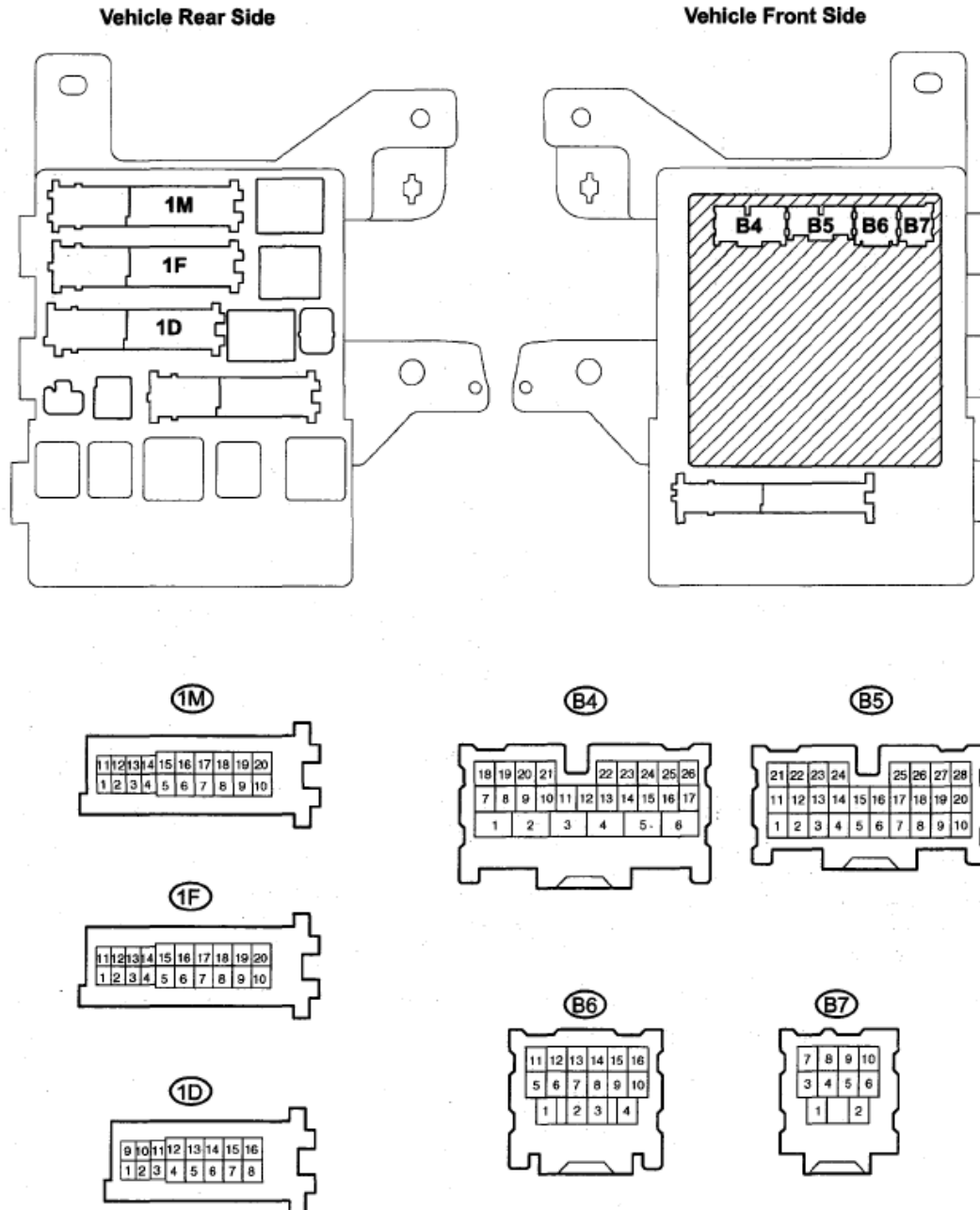
#### RESISTANCE AND VOLTAGE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
OPN (M12-6) - E (M12-8)	GR - W-B	Sliding roof motor open output	Tilt & Slide switch (OPEN) OFF --> ON	10 to 14V --> 0 V
CLS (M12-7) - E (M 12-8)	LG - W-B	Sliding roof motor close output	Tilt & Slide switch (CLOSE) OFF --> ON	10 to 14 V --> 0 V
UP (M12-2) - E (M12-8)	SB - W-B	Sliding roof motor up output	Tilt switch (UP) OFF --> ON	10 to 14 V --> 0 V
DWN (M12-1) - E (M12-8)	G-W-B	Sliding roof motor down output	Tilt switch (DOWN) OFF --> ON	10 to 14 V --> 0 V

If the result is not as specified, the sliding roof ECU may have a malfunction.

2. CHECK INSTRUMENT PANEL J/B ASSEMBLY (MULTIPLEX NETWORK BODY ECU)

- a. Disconnect the 1D, 1F and 1M J/B connectors.



**Fig. 3: Checking Instrument Panel J/B Assembly (Multiplex Network Body ECU)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the voltage and resistance between each terminal of the wire harness side connectors and body ground.

**Voltage**

**VOLTAGE SPECIFICATION**

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BECU (1D-10) - Body ground	LB - Body ground	+B (BECU) power supply	Constant	10 to 14 V

**Resistance**

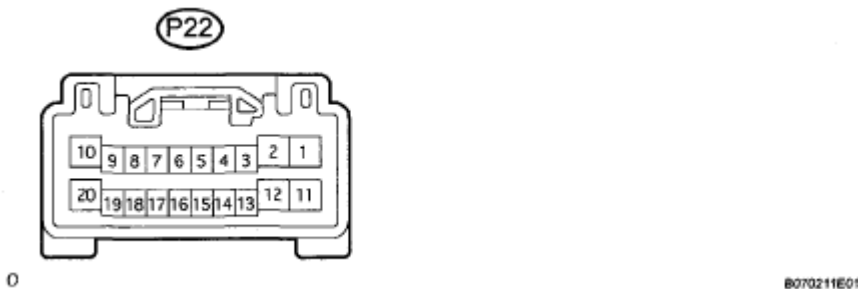
**RESISTANCE SPECIFICATION**

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND1 (1F-10) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms
GND2 (1M-9) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

**3. CHECK POWER WINDOW REGULATOR MASTER SWITCH ASSEMBLY**

- a. Disconnect the P22 ECU connector.



**Fig. 4: Identifying P22 ECU Connector**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the voltage and resistance of each terminal of the wire harness side connectors.

**Voltage**

**VOLTAGE SPECIFICATION**

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
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BDR (P22-10) - GND (P22-2)	G - W-B	+B (BDR) power supply	Constant	10 to 14 V
CPUB (P22-9) - GND (P22-2)	L-B - W-B	+B (CPUB) power supply	Constant	10 to 14 V
SIG (P22-20) - GND (P22-2)	BR - W-B	Ignition power supply	Ignition switch OFF - -> ON	0 V --> 10 to 14 V

### Resistance

#### RESISTANCE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (P22-2) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

## DIAGNOSIS SYSTEM

### 1. DIAGNOSIS SYSTEM

- a. Inspect the DLC3.

#### HINT:

The vehicle uses the SAE J1962 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



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**Fig. 5: Identifying DLC3 Connectors Terminals**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### Standard

#### STANDARD SPECIFICATION

Tester Connection	Condition	Specified Condition
7 (Bus+line) - 5 (Signal ground)	During communication	Pulse generation
4 (Chassis ground) - Body ground	Constant	Below 1 ohms
5 (Signal ground) - Body ground	Constant	Below 1 ohms



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16 (B+) - Body ground	Constant	9 to 14 V
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#### HINT:

If the screen displays **UNABLE TO CONNECT TO VEHICLE** after you have connected the cable of the intelligent tester to the DLC3, turned the ignition switch ON and used the intelligent tester, there is a problem on the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
  - If communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself, so consult the Service Department listed in the tester's service information.
- b. Check the battery voltage

**Standard: 11 to 14 V**

If the voltage is below 11 V, replace the battery before proceeding.

#### DATA LIST / ACTIVE TEST

##### 1. DATA LIST

#### HINT:

Using the DATA LIST displayed on the intelligent tester, you can read the value of the switch, sensor, actuator, etc. without parts removal. Reading the DATA LIST as the first step of troubleshooting is one way to shorten the labor time.

- a. Connect the intelligent tester to the DLC3.
- b. Turn the ignition switch ON.
- c. Read the DATA LIST according to the display on the tester.

**Standard (Sliding roof ECU)**

#### SLIDING ROOF ECU - DATA LIST

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
OPEN SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof open switch is pressed OFF: Sliding roof open switch is not pressed	-
CLOSE SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof close switch is pressed OFF: Sliding roof close switch	-

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		is not pressed	
UP SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof up switch is pressed OFF: Sliding roof up switch is not pressed	-
DOWN SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof down switch is pressed OFF: Sliding roof down switch is not pressed	-
LIMIT SW1	Sliding roof operating signal / ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
LIMIT SW2	Sliding roof operating signal / ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
MOTOR PULSE	Sliding roof operating signal / HI or LO	HI: Sliding roof motor is operating LO: Sliding roof motor is not operating	-
MOTOR STATUS	Sliding roof operating signal / NORMAL or LOCK	NORMAL: Sliding roof motor is operating LOCK: Sliding roof motor is not operating	-
IG (DIRCT SIG)	Ignition switch signal / ON or OFF	ON: Ignition switch ON OFF: Ignition switch OFF	-
IG (MPX)	Ignition switch signal (MPX signal) / ON or OFF	ON: Ignition switch ON OFF: Ignition switch OFF	-
D-DOOR WARN SW	Driver's door courtesy light switch signal / ON or OFF	ON: Driver's door is open OFF: Driver's door is closed	-
KEY OPEN OPERT	Key-linked sliding roof open signal / ON or OFF	ON: Door lock is turned to open position using key OFF: Door lock is not turned	-

## 2. ACTIVE TEST

### HINT:

Performing the ACTIVE TEST using the intelligent tester allows you to operate the relay, VSV, actuator, etc. without parts removal. Performing the ACTIVE TEST as the first step of troubleshooting is one way to shorten the labor time. It is possible to display the DATA LIST during the ACTIVE TEST.

- a. Connect the intelligent tester to the DLC3.
- b. Turn the ignition switch ON.

- c. Perform the ACTIVE TEST according to the display on the tester.

### Standard (Sliding roof ECU)

#### SLIDING ROOF ECU - ACTIVE TEST LIST

Item	Test Details	Diagnostic Note
SLIDE ROOF	Operate sliding roof CLOSE	-
SLIDE ROOF	Operate sliding roof OPEN	-

### ON-VEHICLE INSPECTION

#### 1. CHECK TILT & SLIDE-OPEN / CLOSE FUNCTION

- a. Check that the tilt & slide switch can open the sliding roof as follows:
1. Check that the vehicle is under the following conditions:
    - Ignition switch: ON
    - Window lock switch: OFF
    - Sliding roof: Fully closed
  2. Press the tilt & slide switch for approx. 0.3 seconds and check that the sliding roof fully opens.

#### HINT:

The sliding roof stops partway when the tilt & slide switch is pressed during AUTO operation.

- b. Check that the tilt & slide switch can close the sliding roof as follows:
- c. Check that the tilt & slide switch can open the sliding roof as follows:
1. Check that the vehicle is under the following conditions:
    - Ignition switch: ON
    - Window lock switch: OFF
    - Sliding roof: Fully open
  2. Press the tilt & slide switch for approx. 0.3 seconds and check that the 1st panel and 2nd panel of the sliding roof fully close.
  3. Press the tilt & slide switch again and hold it. Check that the 3rd panel moves to the fully closed position while the switch is being held down.

#### HINT:

The 1st panel and 2nd panel of the sliding roof automatically move to the fully closed position by one-press (AUTO operation). However, the 3rd panel moves only while the switch is being held down (manual operation).

#### 2. CHECK TILT-UP / DOWN FUNCTION

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- a. Check that the tilt switch can raise the sliding roof as follows:
  1. Check that the vehicle is under the following conditions:
    - Ignition switch: ON
    - Window lock switch: OFF
    - Sliding roof: Fully closed
  2. Press the tilt switch for approx. 0.3 seconds and check that the sliding roof fully tilts up.

**HINT:**

The sliding roof stops partway when the tilt switch is pressed during AUTO operation.

- b. Check that the tilt switch can lower the sliding roof as follows:
  1. Check that the vehicle is under the following conditions:
    - Ignition switch: ON
    - Window lock switch: OFF
    - Sliding roof: Fully up
  2. Press the tilt switch and hold it. Check that the sliding roof is lowered (tilts down) while the switch is held down.

#### 3. CHECK SLIDING ROOF OPERATION FUNCTION AFTER IGNITION OFF

- a. When both of the following conditions are met, check that the door window and the sliding roof can be operated even after the ignition switch is turned OFF:
  - Within 45 seconds after the ignition switch is turned OFF.
  - The driver side door and passenger side door are closed.

#### 4. CHECK JAM PROTECTION FUNCTION

**HINT:**

The jam protection function prevents any part of your body from getting caught by accident between the vehicle body and the roof glass during sliding roof operation.

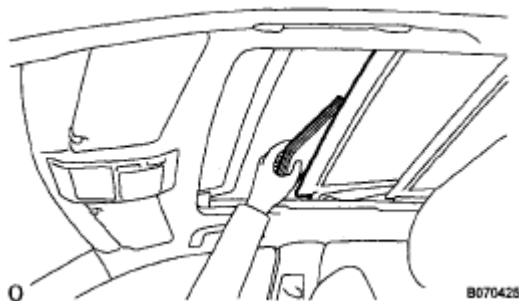
- AUTO CLOSE
- AUTO CLOSE during sliding roof operation after the ignition switch is turned OFF.
- TILT-DOWN
- TILT-DOWN during sliding roof operation after the ignition switch is turned OFF.

**CAUTION:**

- **Do not check this function using a part of your body such as a hand. Also, pay thorough attention that nothing gets caught by accident in this process.**
- **If checking this function with something thin (less than 5 mm (0.20 in.)) inserted between the glass and vehicle body, this function may not operate.**

- a. When the slide-OPEN / CLOSE function is operating:

Check that the sliding roof opens by approx. 210 mm (8.27 in.) right when something gets caught between the vehicle body and the sliding roof during sliding roof operation.



**Fig. 6: Checking Tilt (Jam Protection Function)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. When the tilt-UP / DOWN function is operating: Check that the sliding roof fully tilts up when something gets caught between the vehicle body and the sliding roof during sliding roof operation.

## 5. CHECK FAIL-SAFE FUNCTION

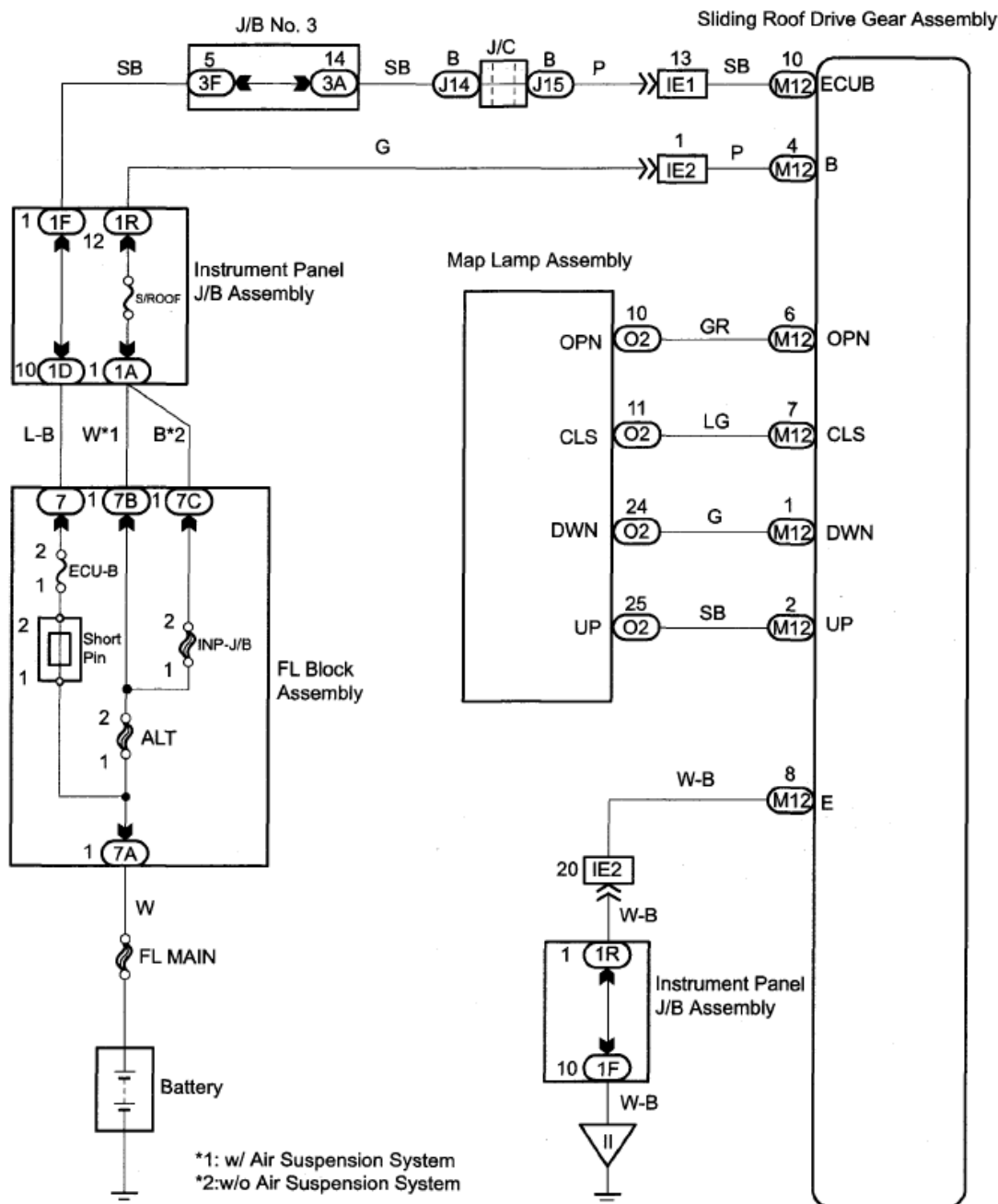
- a. If the sliding roof does not close because the jam protection function operates improperly, perform following operation. Then, you can close the sliding roof using the auto operation function.
  - 1. To normalize the moon roof, push and hold the slide control switch toward the front until the center and rear panels fully close, then push and hold the same switch toward the front for 1 second. Then you can use the auto operation function.

## SLIDING ROOF DOES NOT MOVE BY OPERATING SLIDING ROOF CONTROL SWITCH

### DESCRIPTION

The sliding roof drive gear (Sliding roof ECU) monitors a sliding roof motor switch signal in line and the motor built in the sliding roof gear is driven.

### WIRING DIAGRAM



**Fig. 7: Sliding Roof Drive Gear Assembly - Wiring Diagram**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**INSPECTION PROCEDURE**

1. **PERFORM ACTIVE TEST BY INTELLIGENT TESTER**
  - a. Connect the intelligent tester to the DLC3.
  - b. Enter into ACTIVE TEST of the intelligent tester.

**Standard (Sliding roof ECU)**

**SLIDING ROOF ECU - ACTIVE TEST LIST**

Item	Test Details	Diagnostic Note
SLIDE ROOF	Operate sliding roof CLOSE	-
	Operate sliding roof OPEN	-

**OK: Go to step 4**

**NG: Go to Next Step**

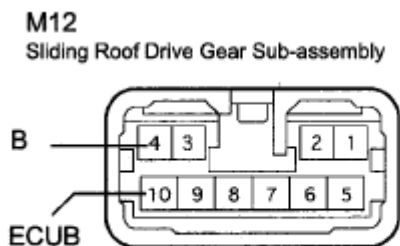
**2. CHECK SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY (POWER SOURCE)**

- a. Disconnect the M12 drive gear connector.
- b. Check the voltage between the wire harness side connector and the body ground.

**Voltage**

**VOLTAGE SPECIFICATION**

Tester Connection	Specified Condition
M12-10 (ECUB) - Body ground	10 to 14 V
M12-4 (B) - Body ground	



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**Fig. 8: Identifying M12 Sliding Roof Drive Gear Connector Terminal**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NG: REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK: Go to Next Step**

**3. CHECK SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY (GROUND)**

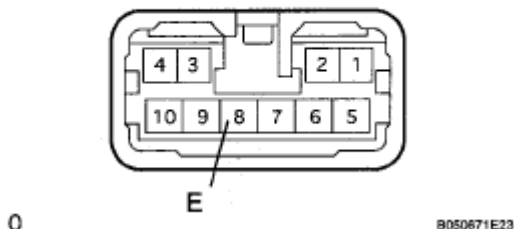
- a. Disconnect the M12 drive gear connector.
- b. Check the resistance between the wire harness side connector and the body ground.

**Resistance**

**RESISTANCE SPECIFICATION**

Tester Connection	Specified Condition
M12-8 (E) - Body ground	Below 1 ohms

**M12**  
Sliding Roof Drive Gear Sub-assembly



**Fig. 9: Identifying M12 Sliding Roof Drive Gear Connector Terminal**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NG: REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

**4. READ VALUE OF INTELLIGENT TESTER (SLIDING ROOF MOTOR)**

- a. Check the DATA LIST for proper functioning of the sliding roof motor.

**SLIDING ROOF MOTOR - DATA LIST**

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
LIMIT SW1	Sliding roof operating signal/ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
LIMIT SW2	Sliding roof operating signal/ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
MOTOR PULSE	Sliding roof operating signal/Hi or LO	HI: Sliding roof motor is operating LO: Sliding roof motor is not operating	-
MOTOR STATUS	Sliding roof operating signal/NORMAL or LOCK	NORMAL: Sliding roof motor is operating LOCK: Sliding roof motor is not operating	-

**NG: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**



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**OK: Go to Next Step**

5. **READ VALUE OF INTELLIGENT TESTER (SLIDING ROOF TILT AND SLIDE SWITCH)**
- a. Check the DATA LIST for proper functioning of the tilt and slide switches.

**TILT AND SLIDE SWITCHES - DATA LIST**

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
OPEN SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof open switch is pressed OFF: Sliding roof open switch is not pressed	-
CLOSE SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof close switch is pressed OFF: Sliding roof close switch is not pressed	-
UP SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof up switch is pressed OFF: Sliding roof up switch is not pressed	-
DOWN SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof down switch is pressed OFF: Sliding roof down switch is not pressed	-

**NG: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY****OK: Go to Next Step**

6. **INSPECT MAP LIGHT ASSEMBLY**
- a. Check the tilt switch resistance.

**Resistance****RESISTANCE SPECIFICATION**

Tester Connection	Switch Position	Specified Condition
24 (DWN) - 1 (GND)	DOWN	Below 1 ohms
25 (UP) - 1 (GND)	UP	

- b. Check the slide switch resistance.

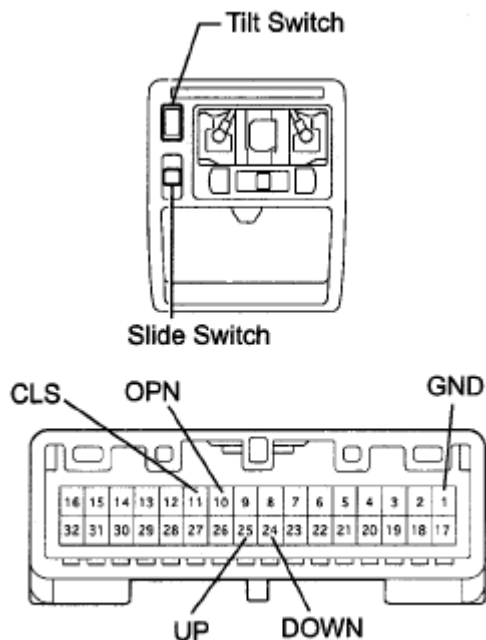
**Resistance****RESISTANCE SPECIFICATION**

Tester Connection	Switch Position	Specified Condition
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10 (OPN) - 1 (GND)	OPEN	Below 1 ohms
11 (CLS) - 1 (GND)	CLOSE	



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**Fig. 10: Identifying Tilt Switch And Slide Switch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### NG: REPLACE MAP LIGHT ASSEMBLY

**OK: Go to Next Step**

#### 7. CHECK WIRE HARNESS (SLIDING ROOF DRIVE GEAR ASSEMBLY (SLIDING ROOF ECU))

- a. Disconnect the M12 drive gear and O2 map light connectors.
- b. Check the resistance between the wire harness side connectors.

#### Resistance

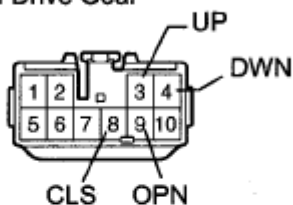
#### RESISTANCE SPECIFICATION

Tester Connection	Specified Condition
M12-9 (OPN) - O2-10 (OPN)	Below 1 ohms
M12-8 (CLS) - O2-11 (CLS)	
M12-4 (DWN) - O2-24 (DWN)	
M12-3 (UP) - O2-25 (UP)	

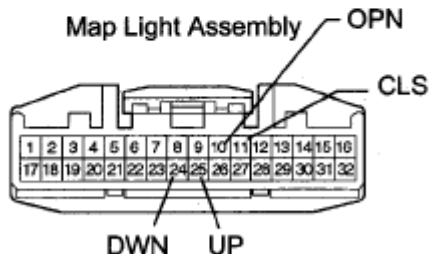
**Wire Harness side**

M12

Sliding Roof Drive Gear



Map Light Assembly



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**Fig. 11: Identifying M12 Sliding Roof Drive Gear And Map Light Assy Connectors**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NG: REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

**SLIDING ROOF SYSTEM (FOR STANDARD)**

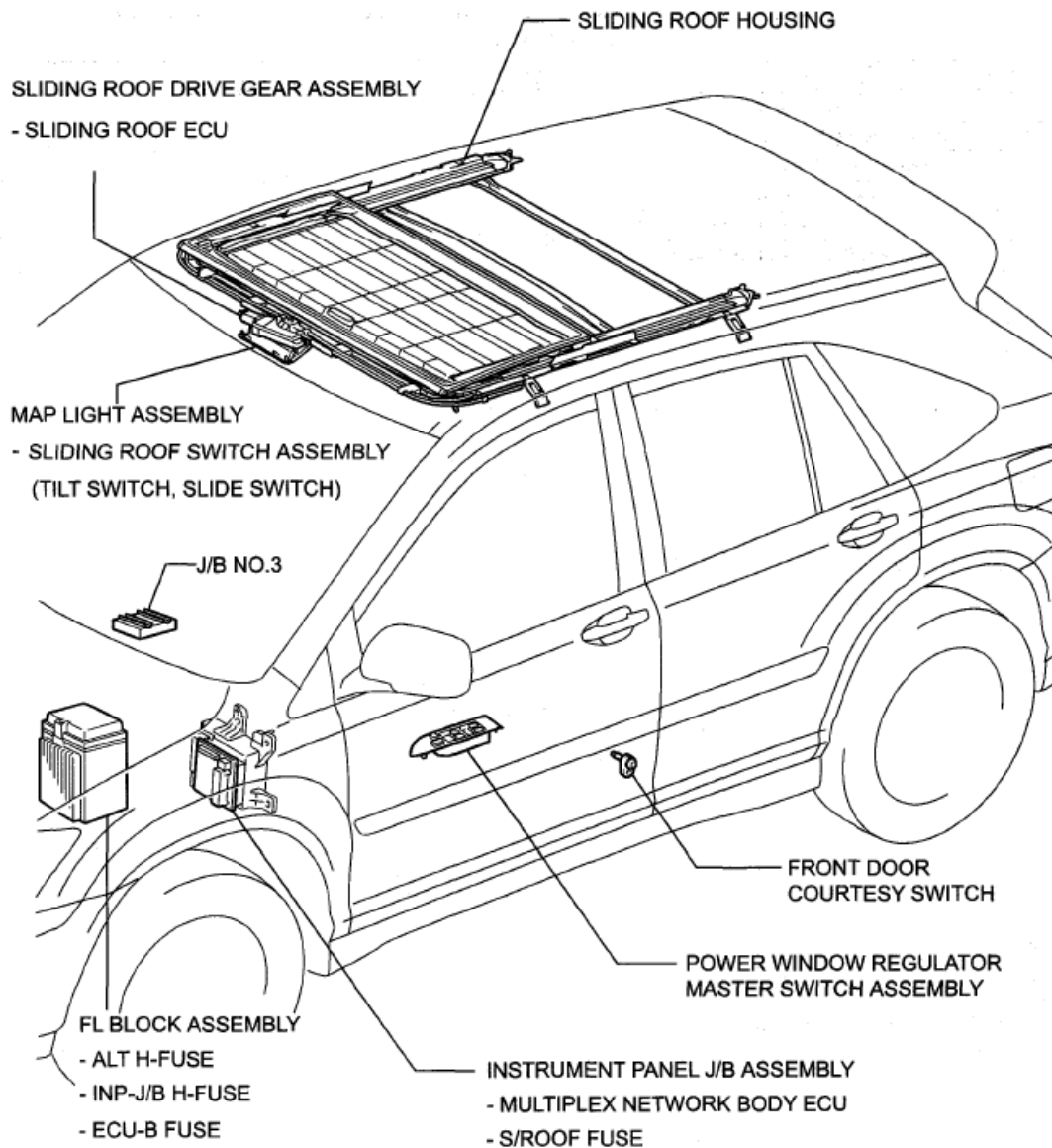
**PRECAUTION**

**NOTE:** When disconnecting the negative (-) battery terminal, initialize the following systems after the cable is reconnected.

**SYSTEM REFERENCE**

System Name	See procedure
Lighting System	<b><u>INITIALIZATION</u></b>
Power Door Lock Control System	
Power Window Control System	
Back Door Closer System	
Power Back Door System	
Electrical Back Door Outside Handle System	
Sliding Roof System (for Multi-panel Moon Roof)	
Sliding Roof System (for Standard)	

**PARTS LOCATION**



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**Fig. 12: Identifying Sliding Roof System Components Location (For Standard)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**SYSTEM DESCRIPTION**

**1. SLIDING ROOF SYSTEM DESCRIPTION**

- a. The sliding roof drive gear (sliding roof ECU) monitors switch signals from the sliding roof motor switch using a direct line and drives the motor built into the sliding roof drive gear (sliding roof ECU) according to the switch signals.

**HOW TO PROCEED WITH TROUBLESHOOTING**

**HINT:**

- Use this procedure to troubleshoot the sliding roof system.
- The intelligent tester should be used in steps 3 and 5.

**1. VEHICLE BROUGHT TO WORKSHOP****2. CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK****3. INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE COMMUNICATION SYSTEM (BEAN) MULTIPLEX**

- a. Use the intelligent tester to check for normal function of the multiplex communication system.
  1. (ECU unconnected, communication stop, communication line malfunctioning) Without code outputs, proceed to A.
  2. (ECU unconnected, communication stop, communication line malfunctioning) With code outputs, proceed to B.

**B:** Go to **MULTIPLEX COMMUNICATION SYSTEM**

**A:** Go to Next Step

**4. PROBLEM SYMPTOMS TABLE**

- a. If the fault is not listed on the problem symptoms table, proceed to A.
- b. If the fault is listed on the problem symptoms table, proceed to B.

**B:** Go to step 6

**A:** Go to Next Step

**5. OVERALL ANALYSIS AND TROUBLESHOOTING**

- a. See **DATA LIST / ACTIVE TEST**
  1. Inspection with intelligent tester (DATA LIST).
  2. Inspection with the intelligent tester (ACTIVE TEST).
- b. See **PROBLEM SYMPTOMS TABLE**
- c. See **ON-VEHICLE INSPECTION** .

**6. ADJUST/REPAIR OR REPLACE****7. CONFIRMATION TEST**

**NEXT: END**

**INITIALIZATION****1. RESET SLIDING ROOF MOTOR**

- a. The sliding roof may not operate automatically and the jam protection function will not function correctly after you reconnect, replace or recharge the battery. In any of these cases, reset the sliding

roof system using the following method.

1. Push and hold the slide switch toward the front or tilt switch on the rear side.
2. Check that the sliding roof will tilt up and down, or slide open and close.
3. After the slide operation, release the switch.
4. Make sure that the sliding roof opens and closes automatically.

HINT:

If the battery terminal is disconnected, the ECU of the sliding roof motor may not detect the position of the roof glass. If the AUTO operation function is still disabled even after the sliding roof motor is reset, the hall IC (built in the sliding roof motor assembly) for detecting the roof glass position may be malfunctioning.

**PROBLEM SYMPTOMS TABLE**

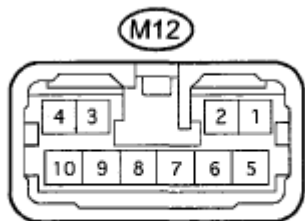
**Sliding roof system (Standard type)**

**SLIDING ROOF SYSTEM (STANDARD TYPE) - PROBLEM SYMPTOMS CHART**

Symptom	Suspected area	Refer to
Sliding roof does not move using sliding roof control switch	1. Sliding roof drive gear assembly (Sliding roof ECU)	<b><u>SLIDING ROOF DOES NOT MOVE BY OPERATING SLIDING ROOF CONTROL SWITCH</u></b>
	2. Map light assembly (Slide roof control switch)	<b><u>SLIDING ROOF SWITCH ASSEMBLY (FOR STANDARD)</u></b>
	3. Wire harness	-

**TERMINALS OF ECU**

1. **CHECK SLIDING ROOF DRIVE GEAR ASSEMBLY (SLIDING ROOF ECU)**
  - a. Disconnect the M12 ECU connector.
  - b. Check the voltage and resistance of each terminal of the wire harness side connector.



**Fig. 13: Identifying M12 ECU Sliding Roof Drive Gear Connector**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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#### VOLTAGE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ECUB (M12-5) - E (M12-7)	SB - W-B	+B (ECUB) power supply	Constant	10 to 14 V
B (M12-1) - E (M12-7)	P - W-B	+B (B) power supply	Constant	10 to 14 V
IG (M12-6) - E (M12-7)	BR - W-B	Ignition power supply	Ignition switch OFF --> ON	0 V --> 10 to 14 V

#### Resistance

#### RESISTANCE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
OPN (M12-9) - E (M 12-7)	GR - W-B	Sliding roof motor open output	Slide switch (OPEN) OFF --> ON	10 kohms or higher --> Below 1 ohms
CLS (M12-8) - E (M 12-7)	LG - W-B	Sliding roof motor close output	Slide switch (CLOSE) OFF --> ON	10 kohms or higher --> Below 1 ohms
UP (M12-3) - E (M12-7)	SB - W-B	Sliding roof motor up output	Tilt switch (UP) OFF --> ON	10 kohms or higher --> Below 1 ohms
DWN (M12-4) - E (M 12-7)	G - W-B	Sliding roof motor down output	Tilt switch (DOWN) OFF --> ON	10 kohms or higher --> Below 1 ohms
E (M12-7) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

- c. Reconnect the M12 ECU connector.
- d. Check the voltage and resistance of each terminal of the connector.

#### Resistance

#### RESISTANCE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
OPN (M12-9) - E (M 12-7)	GR - W-B	Sliding roof motor open output	Slide switch (OPEN) OFF --> ON	10 to 14 V --> 0 V
CLS (M12-8) - E (M12-7)	LG - W-B	Sliding roof motor close output	Slide switch (CLOSE) OFF --> ON	10 to 14 V --> 0 V
UP (M12-3) - E (M12-7)	SB - W-B	Sliding roof motor up output	Tilt switch (UP) OFF --> ON	10 to 14 V --> 0 V
DWN (M12-4) - E	G-W-B	Sliding roof motor	Tilt switch (DOWN)	10 to 14 V --> 0

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(M12-7)		down output	OFF --> ON	V
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If the result is not as specified, the sliding roof ECU may have a malfunction.

### 2. CHECK INSTRUMENT PANEL J/B ASSEMBLY (MULTIPLEX NETWORK BODY ECU)

- a. Disconnect the 1D, 1F and 1M J/B connectors.

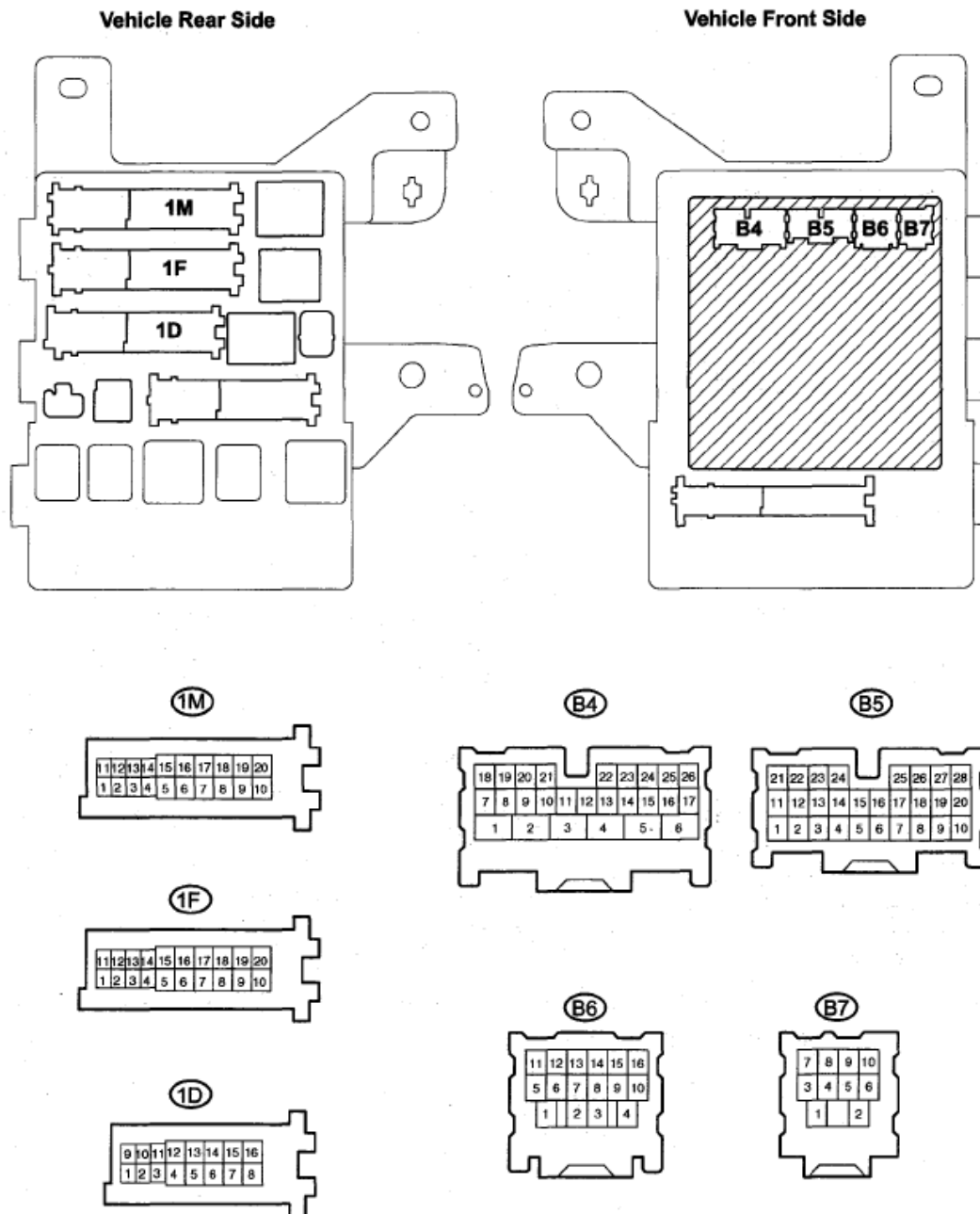


Fig. 14: Checking Instrument Panel J/B Assembly (Multiplex Network Body ECU)



Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the voltage and resistance between each terminal of the wire harness side connectors and body ground.

**Voltage**

**VOLTAGE SPECIFICATION**

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BECU (1D-10) - Body ground	LB - Body ground	+B (BECU) power supply	Constant	10 to 14 V

**Resistance**

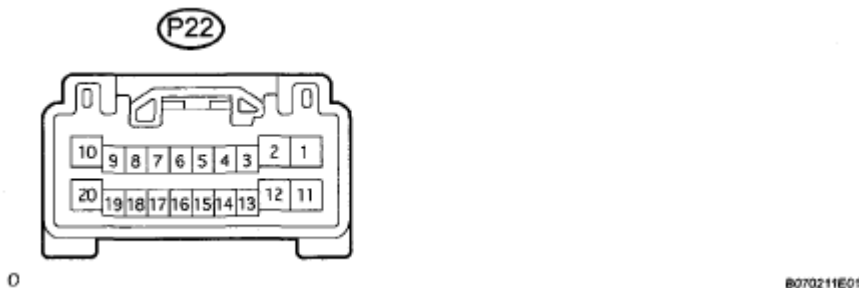
**RESISTANCE SPECIFICATION**

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND1 (1F-10) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms
GND2 (1M-9) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

**3. CHECK POWER WINDOW REGULATOR MASTER SWITCH ASSEMBLY**

- a. Disconnect the P22 ECU connector.



**Fig. 15: Identifying Power Window Regulator Master Switch P22 ECU Connector**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check the voltage and resistance of each terminal of the wire harness side connectors.

**Voltage**

**VOLTAGE SPECIFICATION**

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Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BDR (P22-10) - GND (P22-2)	G - W-B	+B (BDR) power supply	Constant	10 to 14 V
CPUB (P22-9) - GND (P22-2)	L-B - W-B	+B (CPUB) power supply	Constant	10 to 14 V
SIG (P22-20) - GND (P22-2)	BR - W-B	Ignition power supply	Ignition switch OFF - -> ON	0 V --> 10 to 14 V

### Resistance

#### RESISTANCE SPECIFICATION

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (P22-2) - Body ground	W-B - Body ground	Ground	Constant	Below 1 ohms

If the result is not as specified, there may be a malfunction on the wire harness side.

## DIAGNOSIS SYSTEM

### 1. DIAGNOSIS SYSTEM

- a. Inspect the DLC3.

#### HINT:

The vehicle uses the SAE J1962 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



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**Fig. 16: Identifying DLC3 Connector Terminal**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### Standard

#### VOLTAGE AND RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
7 (Bus+line) - 5 (Signal ground)	During communication	Pulse generation

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4 (Chassis ground) - Body ground	Constant	Below 1 ohms
5 (Signal ground) - Body ground	Constant	Below 1 ohms
16 (B+) - Body ground	Constant	9 to 14 V

#### HINT:

If the screen displays **UNABLE TO CONNECT TO VEHICLE** after you have connected the cable of the intelligent tester to the DLC3, turned the ignition switch ON and used the intelligent tester, there is a problem on the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
  - If communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself, so consult the Service Department listed in the tester's service information.
- b. Check the battery voltage

#### **Standard: 11 to 14 V**

If the voltage is below 11V, replace the battery before proceeding.

## DATA LIST / ACTIVE TEST

### 1. DATA LIST

#### HINT:

Using the DATA LIST displayed on the intelligent tester, you can read the value of the switch, sensor, actuator, etc. without parts removal. Reading the DATA LIST as the first step of troubleshooting is one way to shorten the labor time.

- a. Connect the intelligent tester to the DLC3.
- b. Turn the ignition switch ON.
- c. Read the DATA LIST according to the display on the tester.

#### **Standard (Sliding roof ECU)**

#### **SLIDING ROOF ECU - DATA LIST**

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
OPEN SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof open switch is pressed OFF: Sliding roof open switch is not pressed	-
		ON: Sliding roof close switch is	

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### 2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350

CLOSE SW	Sliding roof open switch signal / ON or OFF	pressed OFF: Sliding roof close switch is not pressed	-
UP SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof up switch is pressed OFF: Sliding roof up switch is not pressed	-
DOWN SW	Sliding roof open switch signal / ON or OFF	ON: Sliding roof down switch is pressed OFF: Sliding roof down switch is not pressed	-
LIMIT SW1	Sliding roof operating signal / ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
LIMIT SW2	Sliding roof operating signal / ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
MOTOR PULSE	Sliding roof operating signal / HI or LO	HI: Sliding roof motor is operating LO: Sliding roof motor is not operating	-
MOTOR STATUS	Sliding roof operating signal / NORMAL or LOCK	NORMAL: Sliding roof motor is operating LOCK: Sliding roof motor is not operating	-
IG (DIRCT SIG)	Ignition switch signal / ON or OFF	ON: Ignition switch ON OFF: Ignition switch OFF	-
IG (MPX)	Ignition switch signal (MPX signal) / ON or OFF	ON: Ignition switch ON OFF: Ignition switch OFF	-
D-DOOR WARN SW	Driver's door courtesy light switch signal / ON or OFF	ON: Driver's door is open OFF: Driver's door is closed	-
KEY OPEN OPERT	Key-linked sliding root open signal / ON or OFF	ON: Door lock is turned to open position using key OFF: Door lock is not turned	-
WIRLES OPN OPRT	Wireless sliding roof open signal / ON or OFF	ON: Transmitter UNLOCK switch is pressed OFF: Transmitter UNLOCK switch is not pressed	-
WIRLES CL OPRT	Wireless sliding roof close signal / ON or OFF	ON: Transmitter LOCK switch is pressed OFF: Transmitter LOCK switch is not pressed	-
	Sliding roof position signal /	OPEN: Sliding roof is open	-

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### 2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350

CLOSE SIGNAL	OPEN or CLOSE	CLOSE: Sliding roof is fully closed	-
KEY OFF PERMS	Key-OFF sliding roof operation permit signal / ON or OFF	ON: Driver's door is not closed within 45 sec. after ignition switch is turned OFF OFF: Any status except "ON" status	-
OPEN/DOOR KEY	Key-linked sliding roof open permit signal/AVAIL or NOT AVL	AVAIL: Driver's door is not closed within 45 sec. after ignition switch is turned OFF NOT AVL: Any status except "AVAIL" status	-
CLOSE/DOOR KEY	Key-linked sliding roof open permit signal /AVAIL or NOT AVL	AVAIL: Driver's door is not closed within 45 sec. after ignition switch is turned OFF NOT AVL: Any status except "AVAIL" status	-
OPEN/WIRELESS	Wireless sliding roof open permit signal / AVAIL or NOT AVL	AVAIL: No key is in ignition key cylinder and all doors closed NOT AVL: Any status except "AVAIL" status	-
DOOR KEY OPER	Key-linked sliding roof operating direction signal / SLIDE or TILT	SLIDE: Slide open direction --> Tilt down direction TILT: Slide close direction --> Tilt up direction	-
WIRELESS OPER	Wireless sliding roof operating direction signal/SLIDE or TILT	SLIDE: Slide open direction --> Tilt down direction TILT: Slide close direction --> Tilt up direction	-

## 2. ACTIVE TEST

### HINT:

Performing the ACTIVE TEST using the intelligent tester allows you to operate the relay, VSV, actuator, etc. without parts removal. Performing the ACTIVE TEST as the first step of troubleshooting is one way to shorten the labor time. It is possible to display the DATA LIST during the ACTIVE TEST.

- a. Connect the intelligent tester to the DLC3.
- b. Turn the ignition switch ON.
- c. Perform the ACTIVE TEST according to the display on the tester.

### Standard (Sliding roof ECU)

#### SLIDING ROOF ECU - ACTIVE TEST LIST

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### 2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350

Item	Test Details	Diagnostic Note
SLIDE ROOF	Operate sliding roof CLOSE/UP	-
SLIDE ROOF	Operate sliding roof OPEN/DOWN	-

## ON-VEHICLE INSPECTION

### 1. CHECK AUTO SLIDE-OPEN / CLOSE FUNCTION

a. Check that the slide switch can open the sliding roof as follows:

1. Check that the vehicle is under the following conditions:

- Ignition switch: ON
- Window lock switch: OFF
- Sliding roof: Fully closed

2. Press the slide switch for approx. 0.3 seconds and check the following:

The sliding roof starts opening but stops at approx. 45 mm (1.77 in.) from the fully closed position.

3. Press the slide switch again and check that the sliding roof fully opens.

HINT:

The sliding roof stops partway when the slide switch is pressed during AUTO operation.

b. Check that the slide switch can close the sliding roof as follows:

1. Check that vehicle is under the following conditions:

- Ignition switch: ON
- Window lock switch: OFF
- Sliding roof: Fully open

2. Press the slide switch for approx. 0.3 seconds and check the following:

The sliding roof starts closing but stops at approx. 45 mm (1.77 in.) from the fully open position.

3. Press the slide switch again and check that the sliding roof fully closes.

HINT:

The sliding roof stops partway when the slide switch is pressed during AUTO operation.

### 2. CHECK AUTO TILT-UP / DOWN FUNCTION

a. Check that the tilt switch can raise the sliding roof as follows:

1. Check that the vehicle is under the following conditions:

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### 2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350

- Ignition switch: ON
  - Window lock switch: OFF
  - Sliding roof: Fully closed
2. Press the tilt switch for approx. 0.3 seconds and check that the sliding roof fully tilts up.

#### HINT:

The sliding roof stops partway when the tilt switch is pressed during AUTO operation.

- b. Check that the tilt switch can lower the sliding roof as followings:
  1. Check that the vehicle is under the following conditions:
    - Ignition switch: ON
    - Window lock switch: OFF
    - Sliding roof: Fully UP
  2. Press the tilt switch for approx. 0.3 seconds and check that the sliding roof fully tilts down (fully closed).

#### HINT:

The sliding roof stops partway when the tilt switch is pressed during AUTO operation.

### 3. CHECK OPEN / CLOSE FUNCTION VIA DRIVER SIDE DOOR LOCK KEY CYLINDER

- a. Check that the key can open the sliding roof as follows when the ignition switch is OFF.
  1. Insert the key into the driver's door lock key cylinder. Then, turn the key right (UNLOCK position) and hold it there for more than 2.5 seconds. Check that the sliding roof opens.
- b. Check that the key can close the sliding roof as follows when the ignition switch is OFF.
  1. Insert the key into the driver's door lock key cylinder, and then turn the key left (LOCK position) and hold it there for more than 2.5 seconds. Check that the sliding roof closes.

### 4. CHECK SLIDING ROOF OPERATION FUNCTION AFTER IGNITION OFF

- a. When both of the following conditions are met, check that the door windows and the sliding roof can be operated even after the ignition switch is turned OFF:
  - Within 45 seconds after the ignition switch is turned OFF.
  - The driver side door and passenger side door are closed.

### 5. CHECK THAT SLIDING ROOF OPERATES BY WIRELESS OPERATION

- a. Check that the sliding roof starts operating when the transmitter UNLOCK switch has been pressed for approximately 2.5 seconds and that it stops operating when the UNLOCK switch is released.

### 6. CHECK JAM PROTECTION FUNCTION

#### HINT:

The jam protection function prevents any part of your body from getting caught by accident between the vehicle body and the roof glass during sliding roof operation.

Operative condition:

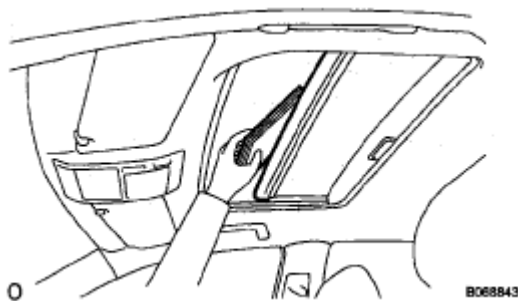
- AUTO CLOSE
- AUTO CLOSE during sliding roof operation after the ignition switch is turned OFF.
- AUTO TILT-DOWN
- AUTO TILT-DOWN during sliding roof operation after the ignition switch is turned OFF.

**CAUTION:**

- Do not check this function using a part of your body such as a hand. Also, pay thorough attention that nothing gets caught by accident in this process.
- If checking this function with something thin (less than 5 mm (0.20 in.)) inserted between the glass and vehicle body, this function may not operate.

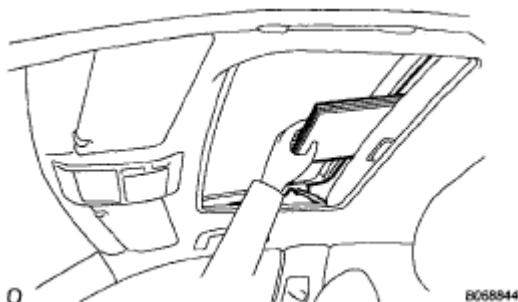
- a. When the slide-OPEN / CLOSE function is operating:

Check that the sliding roof opens by approx. 210 mm (8.27 in.) right when something gets caught between the vehicle body and the sliding roof during sliding roof operation.



**Fig. 17: Checking Sliding Roof Opening**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. When the tilt-UP / DOWN function is operating: Check that the sliding roof fully tilts up when something gets caught between the vehicle body and the sliding roof during sliding roof operation.



**Fig. 18: Checking Sliding Roof Tilts Up Position**



**Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.**

**7. CHECK FAIL-SAFE FUNCTION**

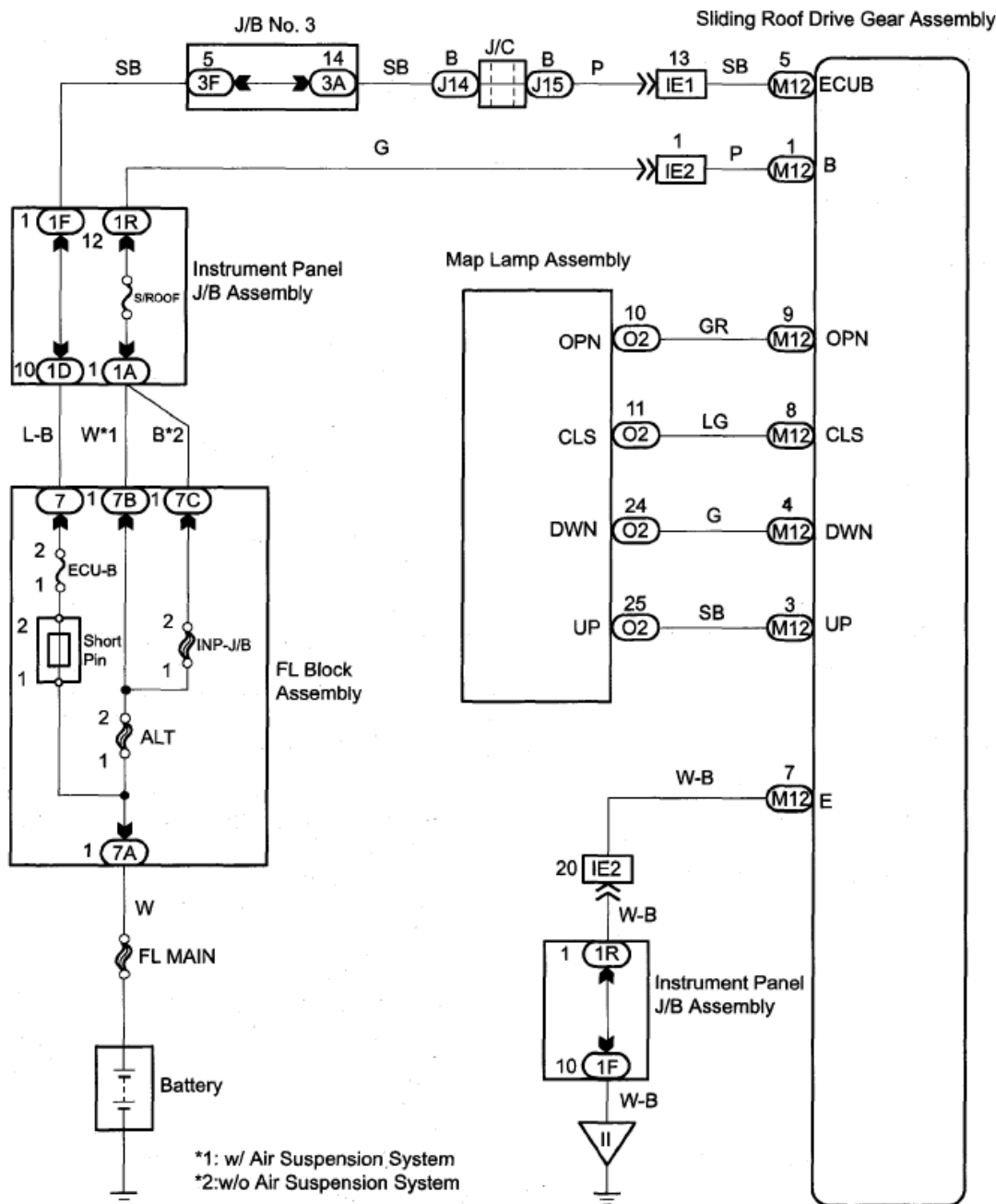
- a. If the sliding roof does not close because the jam protection function operates improperly, perform following operation. Then, you can close the sliding roof using the auto operation function.
  1. Press the slide control switch toward the front or tilt switch on the rear side and hold it for 10 seconds after the jam protection function operates. Then you can use the auto operation function.

**SLIDING ROOF DOES NOT MOVE BY OPERATING SLIDING ROOF CONTROL SWITCH**

**DESCRIPTION**

The sliding roof drive gear (Sliding roof ECU) monitors a sliding roof motor switch signal in line and the motor built in the sliding roof gear is driven.

**WIRING DIAGRAM**



**Fig. 19: Sliding Roof Drive Gear Assembly - Wiring Diagram**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**INSPECTION PROCEDURE**

**1. PERFORM ACTIVE TEST BY INTELLIGENT TESTER**

- a. Connect into intelligent tester to the DLC3.
- b. Enter the ACTIVE TEST of the intelligent tester.

**Standard (Sliding roof ECU)**

**SLIDING ROOF ECU - ACTIVE TEST LIST**

Item	Test Details	Diagnostic Note
SLIDE ROOF	Operate sliding roof CLOSE/UP	-
	Operate sliding roof OPEN/DOWN	-

**OK: Go to step 4**

**NG: Go to Next Step**

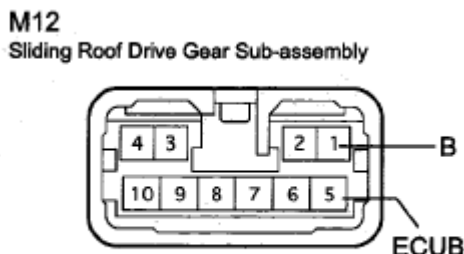
**2. CHECK SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY (POWER SOURCE)**

- a. Disconnect the M12 drive gear connector.
- b. Check the voltage between the wire harness side connector and the body ground.

**Voltage**

**VOLTAGE SPECIFICATION**

Tester Connection	Specified Condition
M12-5 (ECUB) - Body ground	10 to 14 V
M12-1 (B) - Body ground	



0

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**Fig. 20: Identifying M12 Sliding Roof Drive Gear Connector Terminal**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NG: REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK: Go to Next Step**

**3. CHECK SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY (GROUND)**

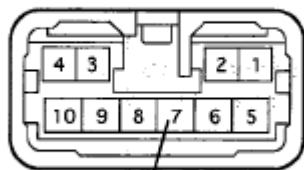
- a. Disconnect the M12 drive gear connector.
- b. Check the resistance between the wire harness side connector and the body ground.

**Resistance**

**RESISTANCE SPECIFICATION**

Tester Connection	Specified Condition
M12-7 (E) - Body ground	Below 1 ohms

**M12**  
Sliding Roof Drive Gear Sub-assembly



B050871E25

**Fig. 21: Identifying M12 Sliding Roof Drive Gear Connector Terminal**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NG: REPAIR OR REPLACE HARNESS AND CONNECTOR**

**OK: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

**4. READ VALUE OF INTELLIGENT TESTER (SLIDING ROOF MOTOR)**

- a. Check the DATA LIST for proper functioning of the sliding roof motor.

**SLIDING ROOF MOTOR - DATA LIST**

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
LIMIT SW1	Sliding roof operating signal/ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
LIMIT SW2	Sliding roof operating signal/ON or OFF	ON: Sliding roof motor is operating OFF: Sliding roof motor is not operating	-
MOTOR PULSE	Sliding roof operating signal/Hi or LO	HI: Sliding roof motor is operating LO: Sliding roof motor is not operating	-
MOTOR STATUS	Sliding roof operating signal/ NORMAL or LOCK	NORMAL: Sliding roof motor is not operating LOCK: Sliding roof motor is operating	-

**NG: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

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**OK: Go to Next Step**

5. **READ VALUE OF INTELLIGENT TESTER (SLIDING ROOF TILT AND SLIDE SWITCH)**
- a. Check the DATA LIST for proper functioning of the tilt and slide switches.

**SLIDING ROOF TILT AND SLIDE SWITCH - DATA LIST**

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
OPEN SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof open switch is pressed OFF: Sliding roof open switch is not pressed	-
CLOSE SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof close switch is pressed OFF: Sliding roof close switch is not pressed	-
UP SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof up switch is pressed OFF: Sliding roof up switch is not pressed	-
DOWN SW	Sliding roof open switch signal/ ON or OFF	ON: Sliding roof down switch is pressed OFF: Sliding roof down switch is not pressed	-

**NG: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY****OK: Go to Next Step**

6. **INSPECT MAP LIGHT ASSEMBLY**
- a. Check the tilt switch resistance.

**Resistance****RESISTANCE SPECIFICATION**

Tester Connection	Switch Position	Specified Condition
24 (DWN) - 1 (GND)	DOWN	Below 1 ohms
25 (UP) - 1 (GND)	UP	

- b. Check the tilt & slide switch resistance.

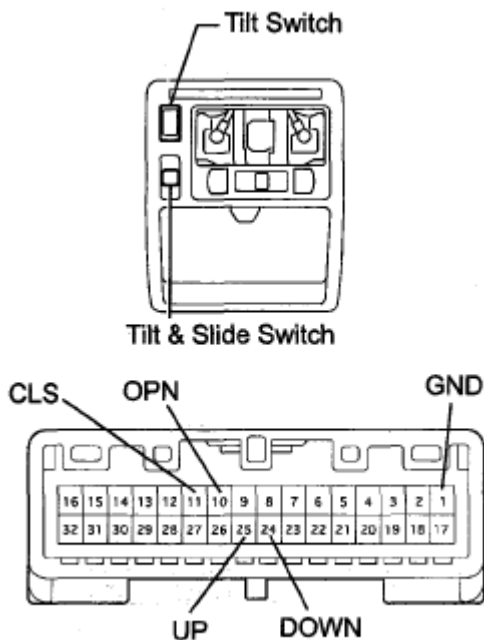
**Resistance****RESISTANCE SPECIFICATION**

Tester Connection	Switch Position	Specified Condition
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10 (OPN) - 1 (GND)	OPEN	Below 1 ohms
11 (CLS) - 1 (GND)	CLOSE	



**Fig. 22: Identifying Tilt Switch And Tilt & Slide Switch**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

#### NG: REPLACE MAP LIGHT ASSEMBLY

**OK: Go to Next Step**

#### 7. CHECK WIRE HARNESS ((SLIDING ROOF ECU) - MAP LIGHT ASSEMBLY)

- a. Disconnect the M12 drive gear and O2 map light connectors.
- b. Check the resistance between the wire harness side connectors.

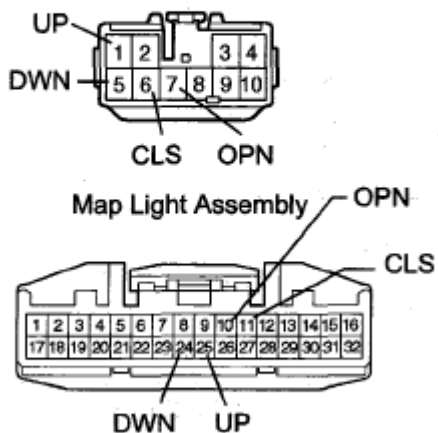
#### Resistance

#### RESISTANCE SPECIFICATION

Tester Connection	Specified Condition
M12-6 (OPN) - O2-10 (OPN)	Below 1 ohms
M12-7 (CLS) - O2-11 (CLS)	
M12-1 (DWN) - O2-24 (DWN)	
M12-2 (UP) - O2-25 (UP)	

**Wire Harness side**

M12  
Sliding Roof Drive Gear



B070214E04

**Fig. 23: Identifying Sliding Roof Drive Gear And Map Light Connector Terminal**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**NG: REPAIR OR REPLACE HARNESS AND CONNECTOR**

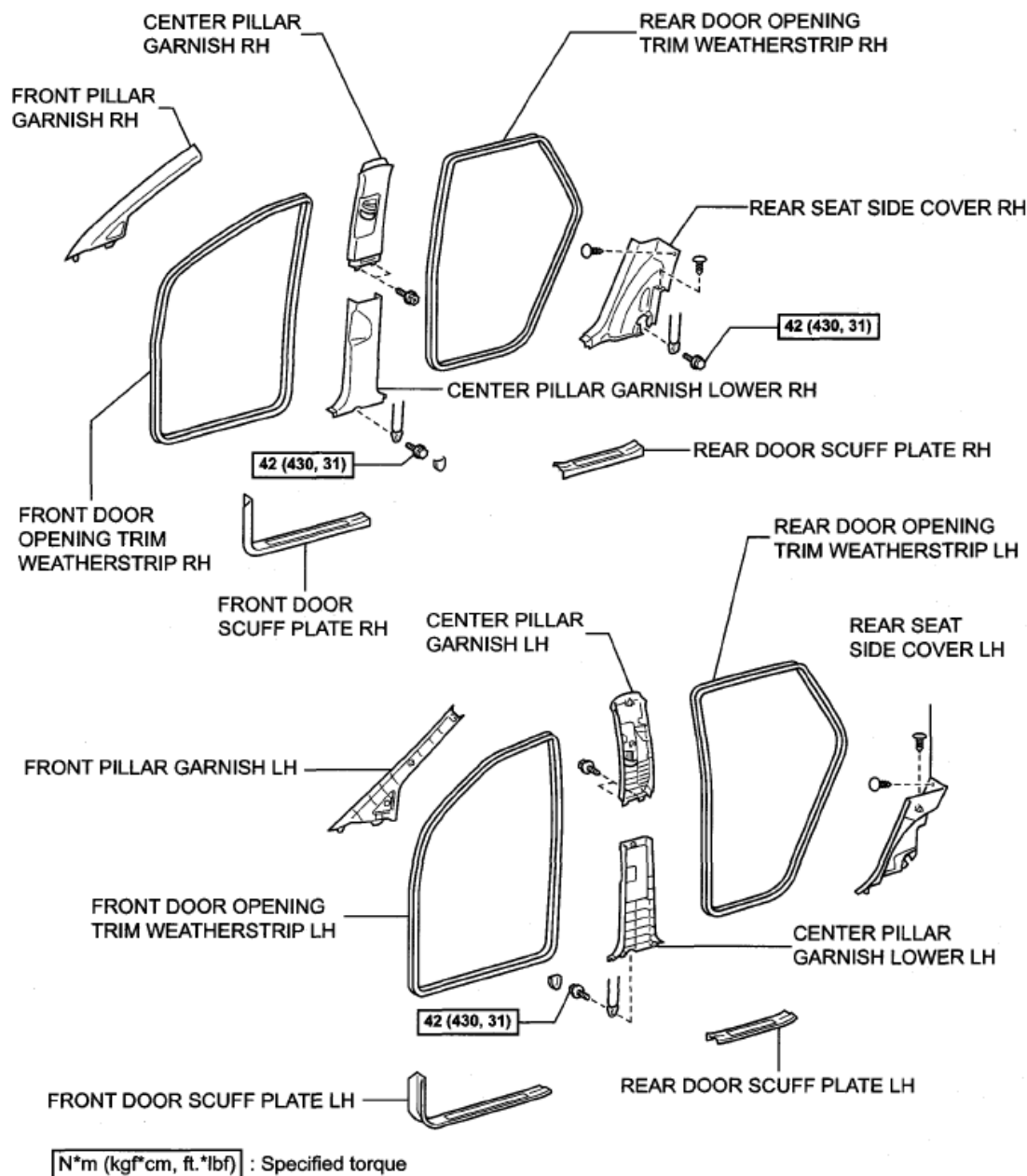
**OK: REPLACE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

**SLIDING ROOF HOUSING (FOR MULTI-PANEL MOON ROOF)**

**COMPONENTS**

2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



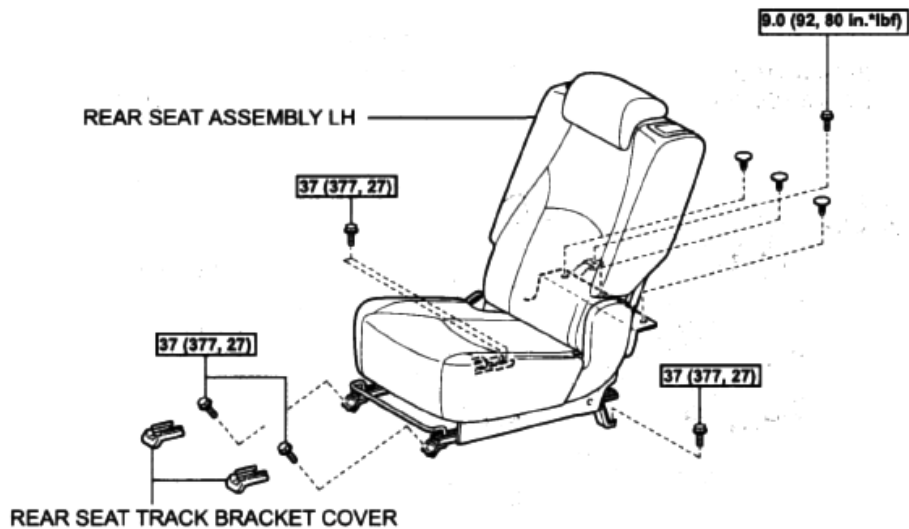
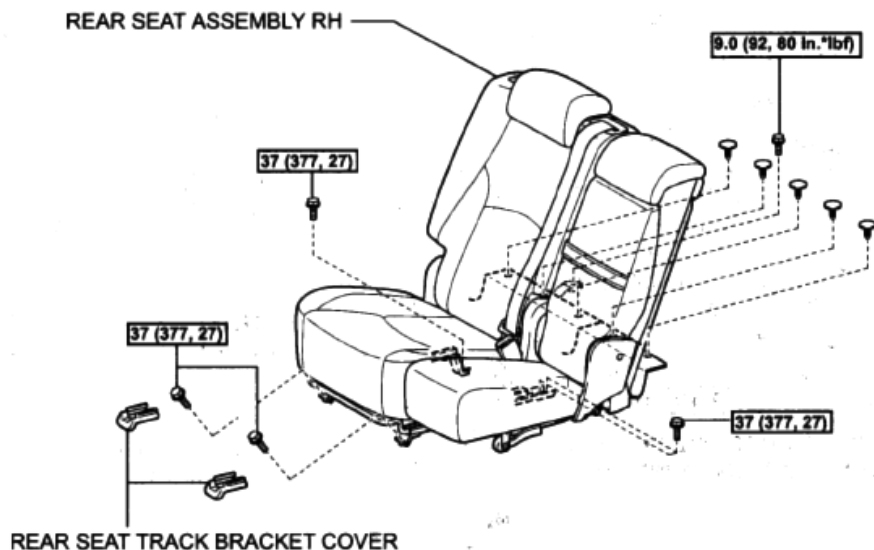
**Fig. 24: Identifying Sliding Roof Housing Replacement Components - For Multi-Panel Moon Roof With Torque Specifications (1 Of 6)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



**N\*m (kg\*cm, ft.\*lbf)**: Specified torque

P

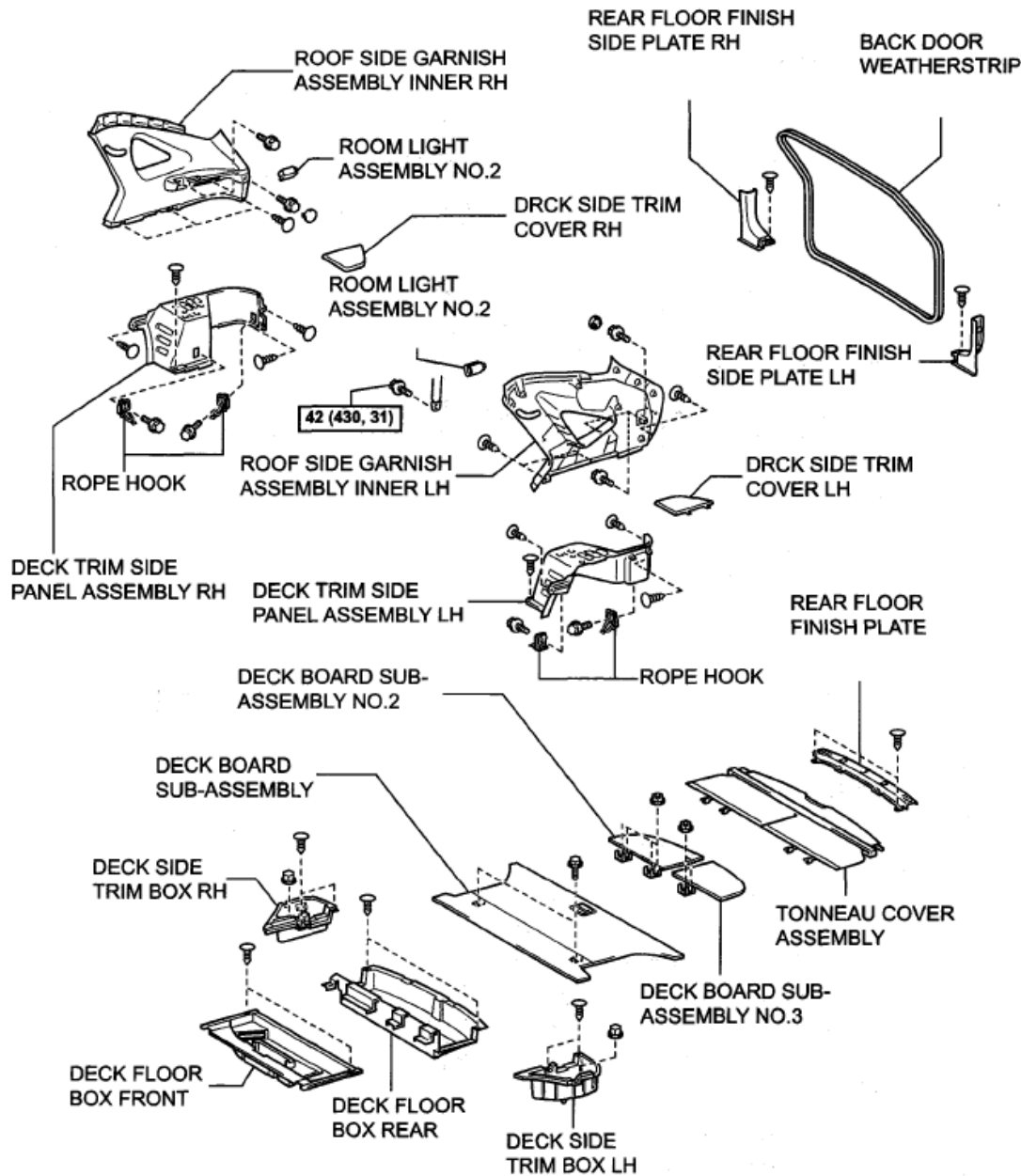
8120081E05

**Fig. 25: Identifying Sliding Roof Housing Replacement Components - For Multi-Panel Moon Roof With Torque Specifications (2 Of 6)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



N\*m (kgf\*cm, ft.\*lbf) : Specified torque

0

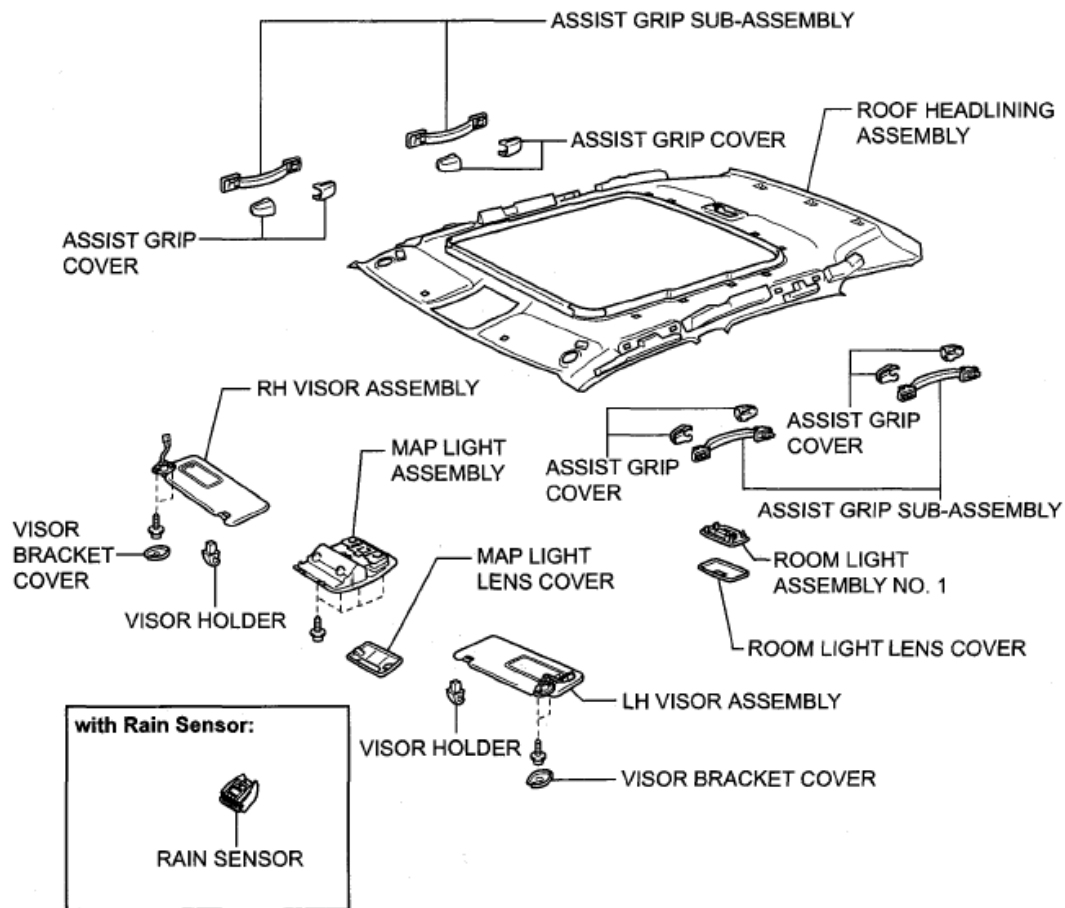
B119148E04

**Fig. 26: Identifying Sliding Roof Housing Replacement Components - For Multi-Panel Moon Roof With Torque Specifications (3 Of 6)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350

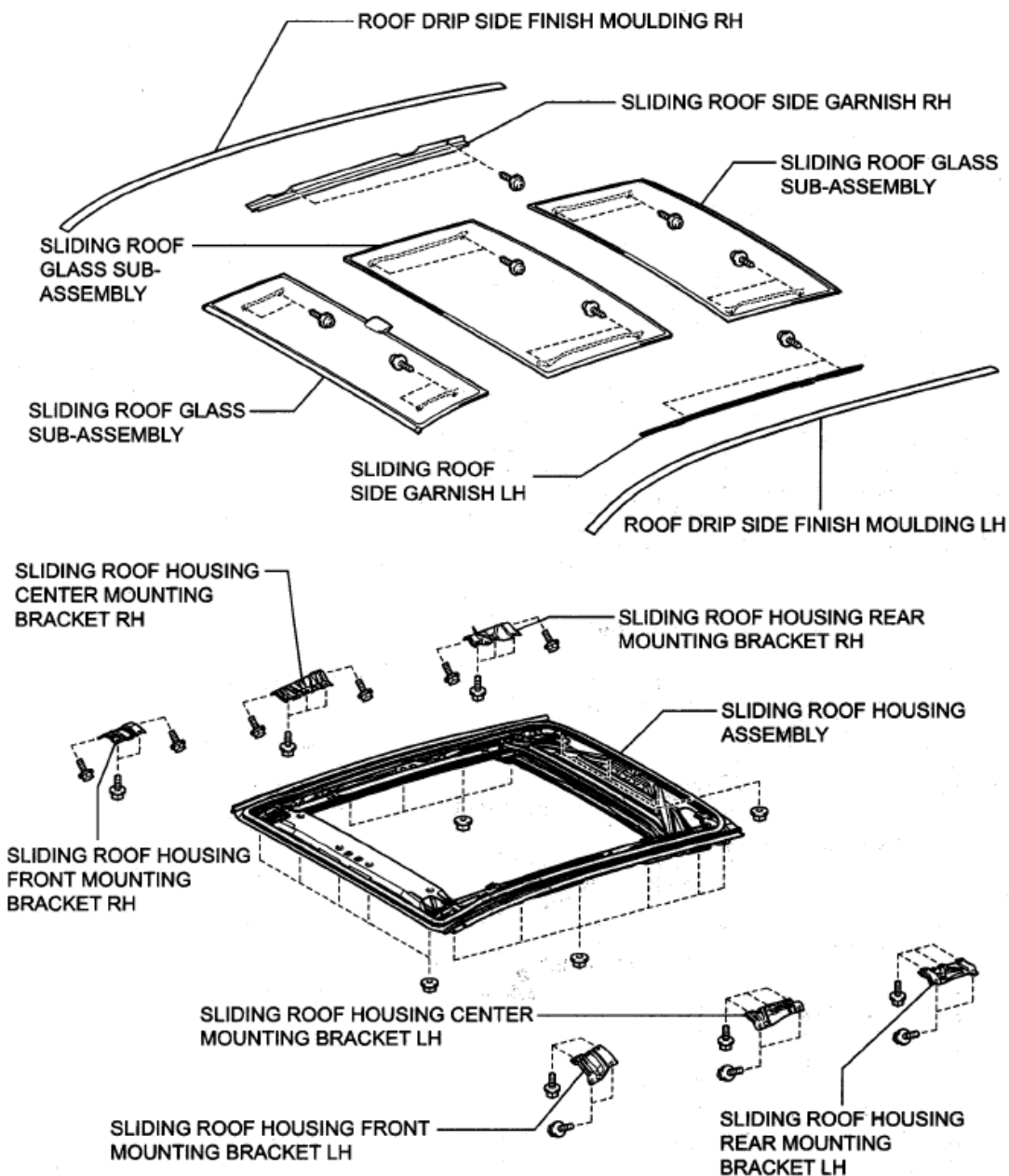


P

B139549E02

**Fig. 27: Identifying Sliding Roof Housing Replacement Components - For Multi-Panel Moon Roof (4 Of 6)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

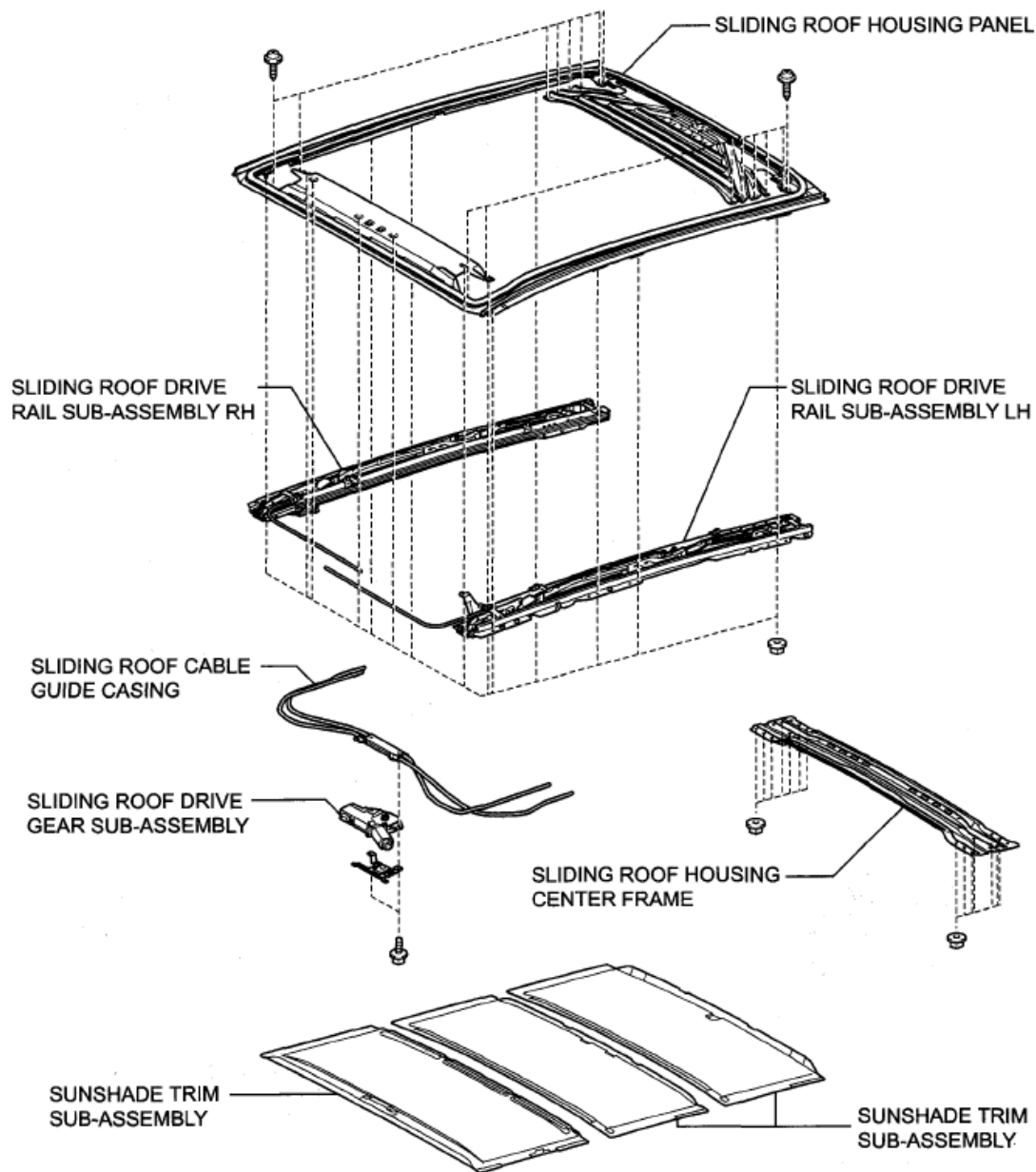


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B119152E04

**Fig. 28: Identifying Sliding Roof Housing Replacement Components - For Multi-Panel Moon Roof (5 Of 6)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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B119153E02

**Fig. 29: Identifying Sliding Roof Housing Replacement Components - For Multi-Panel Moon Roof (6 Of 6)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**REMOVAL**

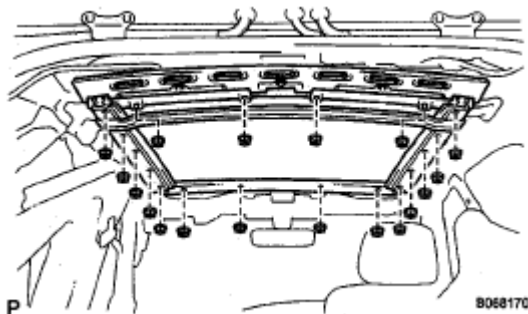
1. REMOVE ROOF HEADLINING ASSEMBLY

(See **REMOVAL** )

2. REMOVE ROOF DRIP SIDE FINISH MOLDING LH

3. **REMOVE ROOF DRIP SIDE FINISH MOLDING RH**
4. **REMOVE SLIDING ROOF SIDE GARNISH LH**
  - a. Remove the 2 screws and side garnish.
5. **REMOVE SLIDING ROOF SIDE GARNISH RH**
  - a. Remove the 2 screws and side garnish.
6. **REMOVE SLIDING ROOF GLASS SUB-ASSEMBLY**
  - a. Using a T25 "Torx" driver, remove the 12 screws.
  - b. Gradually remove the sliding roof glass from the front side.
7. **REMOVE SLIDING ROOF HOUSING FRONT MOUNTING BRACKET LH**
  - a. Remove the 4 bolts and front bracket.
8. **REMOVE SLIDING ROOF HOUSING FRONT MOUNTING BRACKET RH**
  - a. Remove the 4 bolts and front bracket.
9. **REMOVE SLIDING ROOF HOUSING CENTER MOUNTING BRACKET LH**
  - a. Remove the 5 bolts and center bracket.
10. **REMOVE SLIDING ROOF HOUSING CENTER MOUNTING BRACKET RH**
  - a. Remove the 5 bolts and center bracket.
11. **REMOVE SLIDING ROOF HOUSING REAR MOUNTING BRACKET LH**
  - a. Remove the 5 bolts and rear bracket.
12. **REMOVE SLIDING ROOF HOUSING REAR MOUNTING BRACKET RH**
  - a. Remove the 5 bolts and rear bracket.
13. **REMOVE SLIDING ROOF HOUSING ASSEMBLY**
  - a. Disconnect the drive gear wire harness connector.
  - b. Remove the 18 nuts and housing.

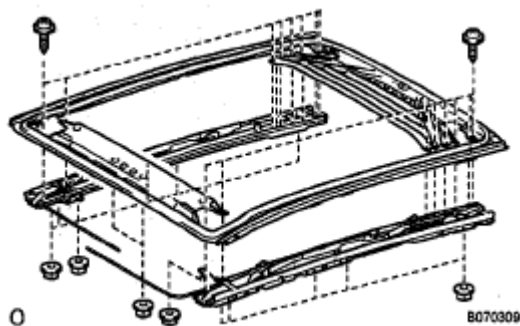
**NOTE:** As the housing is very heavy, work must be done by 2 or more persons together.



**Fig. 30: Identifying Sliding Roof Housing Assembly With Nuts**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

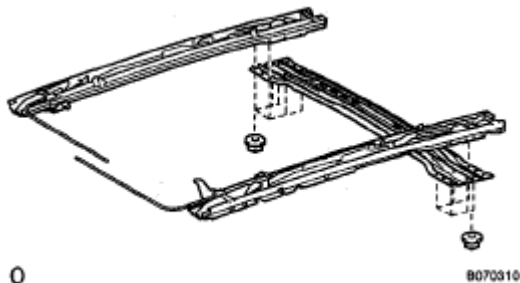
14. **REMOVE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

- a. Remove the 2 bolts and drive gear.
- 15. **REMOVE SUNSHADE TRIM SUB-ASSEMBLY**
- 16. **REMOVE SLIDING ROOF HOUSING PANEL**
  - a. Remove the 16 screws, 14 nuts and housing panel.



**Fig. 31: Identifying Sliding Roof Drive Gear Sub-Assembly With Bolts**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 17. **REMOVE SLIDING ROOF HOUSING CENTER FRAME**
  - a. Remove the 12 nuts and center frame.



**Fig. 32: Identifying Sliding Roof Housing Center Frame With Nuts**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 18. **REMOVE SLIDING ROOF DRIVE RAIL SUB-ASSEMBLY LH**
  - a. Pull out the drive cable.
- 19. **REMOVE SLIDING ROOF DRIVE RAIL SUB-ASSEMBLY RH**
- 20. **REMOVE SLIDING ROOF CABLE GUIDE CASING**

## INSTALLATION

### 1. INSTALL SLIDING ROOF CABLE GUIDE CASING

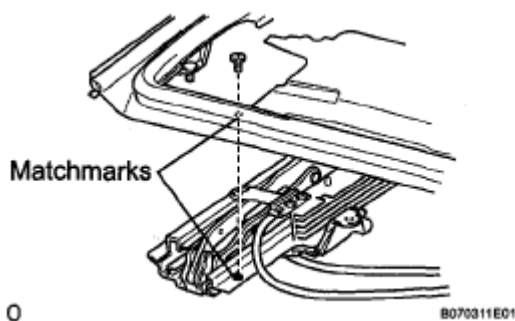
- a. Insert the sliding roof drive rail sub-assembly into the sliding roof cable guide casing, and then insert the cable guide casing together with the drive gear rail sub-assembly until the pipe of the casing touches the frame.

## 2. INSTALL SLIDING ROOF HOUSING CENTER FRAME

- a. Install the roof drip channel to the sliding roof drive rail assembly RH and LH.
- b. Install the center frame with the 12 nuts.

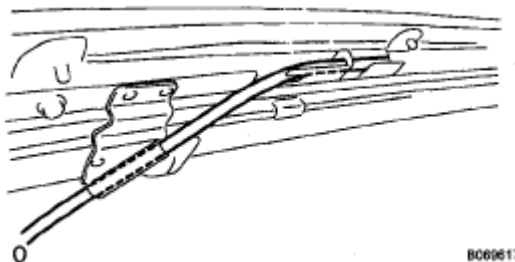
## 3. INSTALL SLIDING ROOF HOUSING PANEL

- a. Install the sliding roof drive rail sub-assembly RH and LH to the sliding roof housing panel.
- b. Temporarily tighten the 16 mounting screws and 14 nuts for the sliding roof housing panel.
- c. Completely tighten the 16 mounting screws and 14 nuts for the sliding roof housing panel, and the 12 mounting nuts for the roof center frame.



**Fig. 33: Identifying Matchmarks On Sliding Roof Housing Panel**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- d. After the sliding roof housing panel is completely tightened, pass the sliding roof cable guide casing through the frames of the sliding roof drive rail sub-assembly RH and LH.



**Fig. 34: Identifying Sliding Roof Cable Guide**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

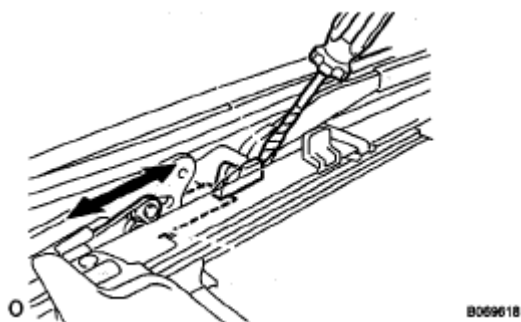
## 4. ADJUST FULLY CLOSED POSITION

- a. Using a screwdriver, slide the drive cable of the sliding roof to align the matchmarks.

HINT:

Tape the screwdriver tip before use.

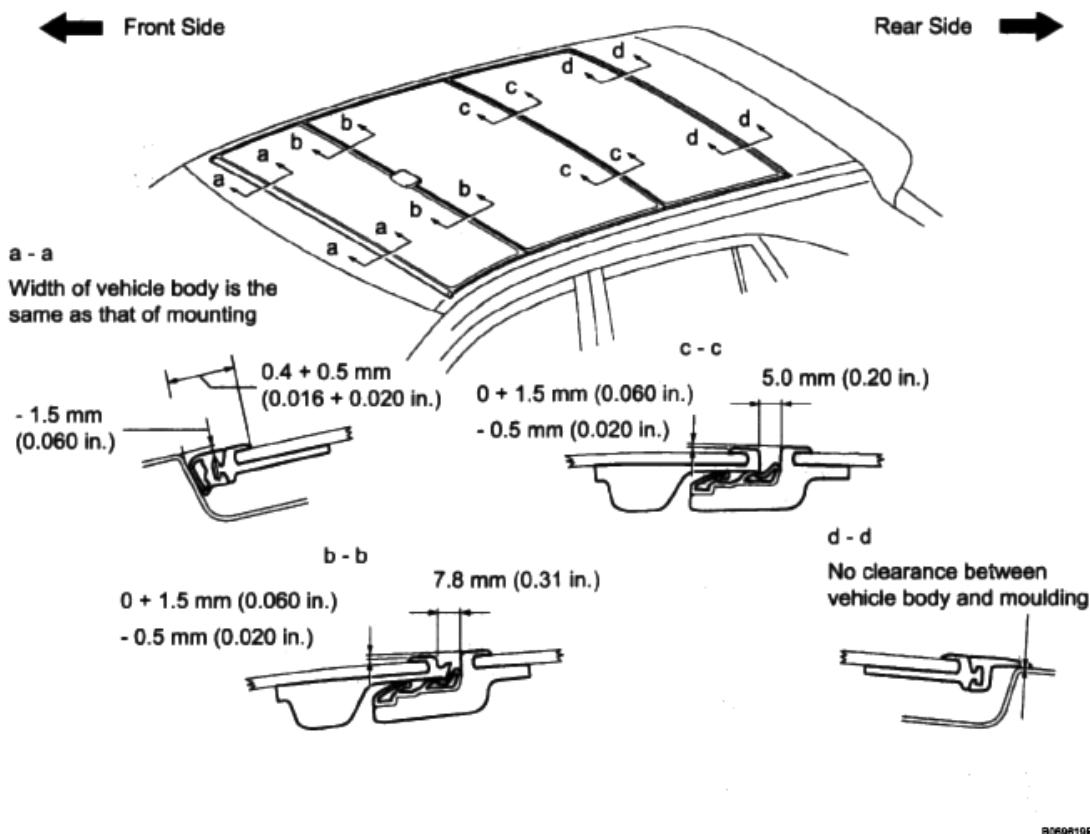




**Fig. 35: Sliding Drive Cable Of Sliding Roof For Aligning Matchmarks**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**5. ADJUST SLIDING ROOF GLASS SUB-ASSEMBLY**

- a. Gradually adjust the sliding roof glass from the front side.



**Fig. 36: Identifying Sliding Roof Glass Sub-Assembly Clearance**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**6. INSTALL SLIDING ROOF GLASS SUB-ASSEMBLY**

- a. Using a T25 "Torx" driver, install the glass with the 12 screws.

**7. CHECK FOR WATER LEAKS**

- a. Adjusting the sliding roof, check that there is no water leak.

If a leak is found, readjust the sliding roof.

#### **8. RESET SLIDING ROOF POSITION**

(See INITIALIZATION )

#### **9. INSTALL ROOF HEADLINING ASSEMBLY**

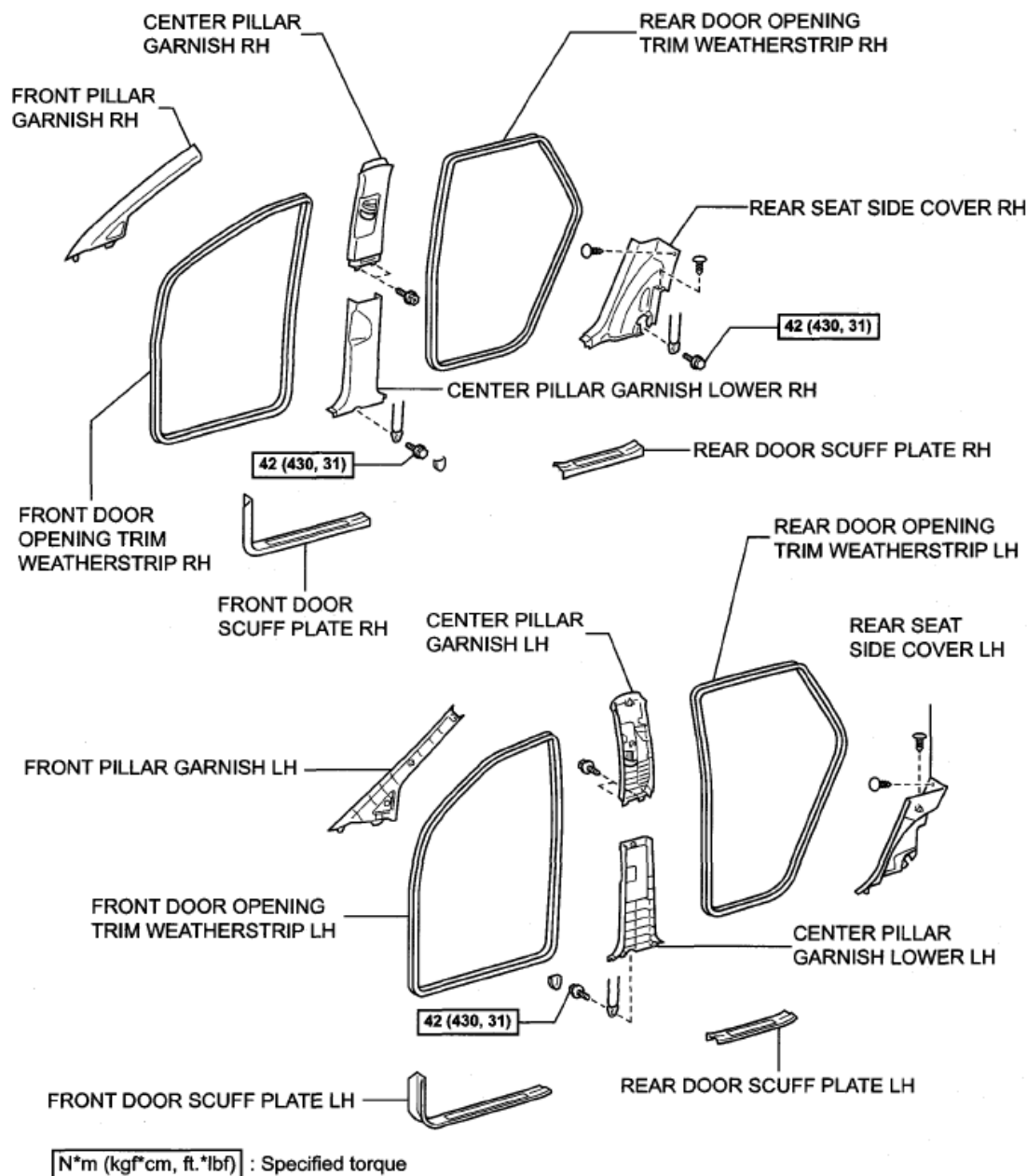
(See INSTALLATION )

### **SLIDING ROOF HOUSING (FOR STANDARD)**

#### **COMPONENTS**

# 2008 Lexus RX 350

## 2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



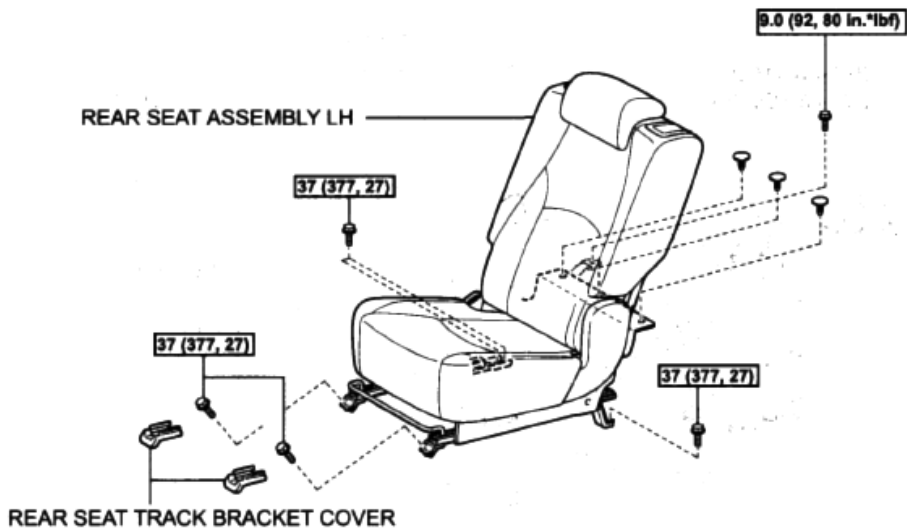
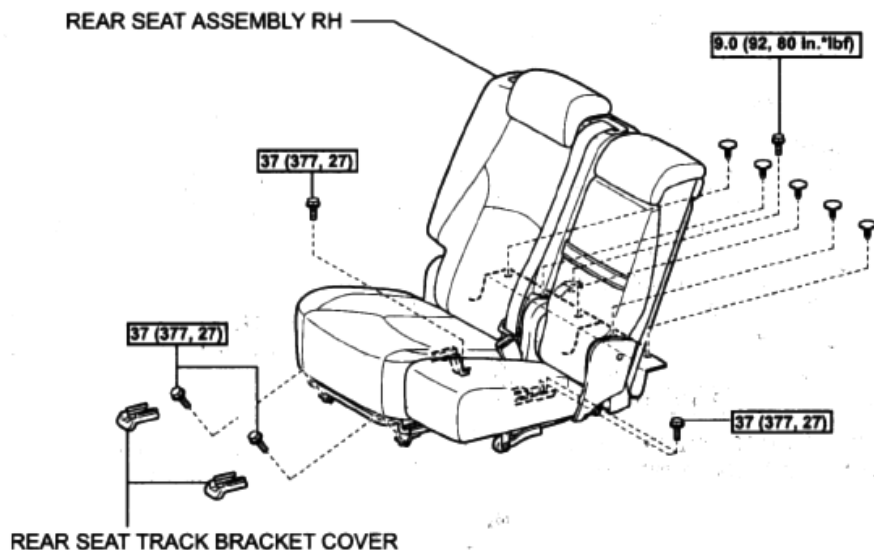
B119147E05

**Fig. 37: Identifying Sliding Roof Housing Replacement Components With Torque Specifications - For Standard (1 Of 5)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



**N·m (kgf·cm, ft.·lbf)**: Specified torque

P

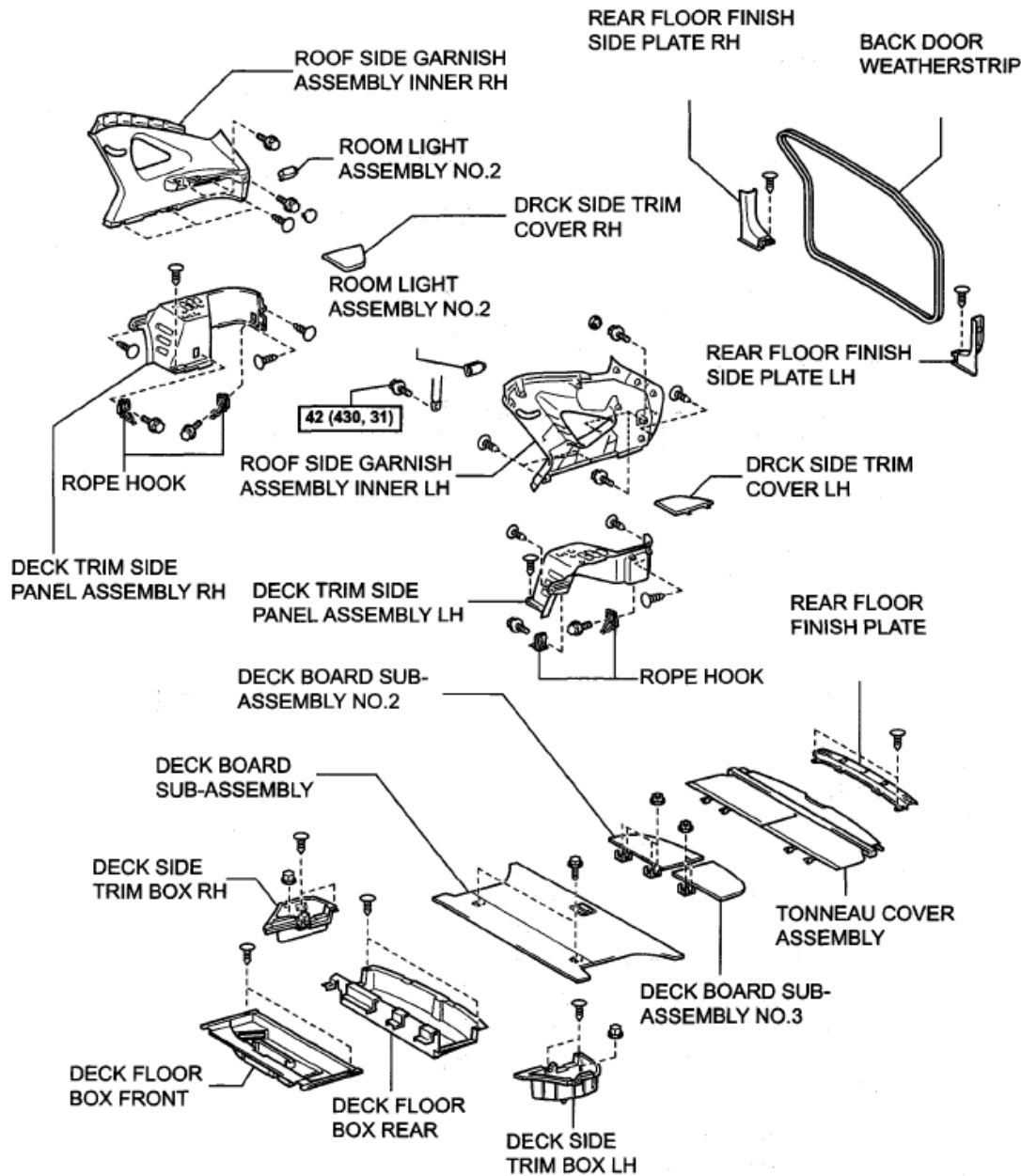
8120081E05

**Fig. 38: Identifying Sliding Roof Housing Replacement Components With Torque Specifications - For Standard (2 Of 5)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



**N\*m (kgf\*cm, ft.\*lbf)** : Specified torque

0

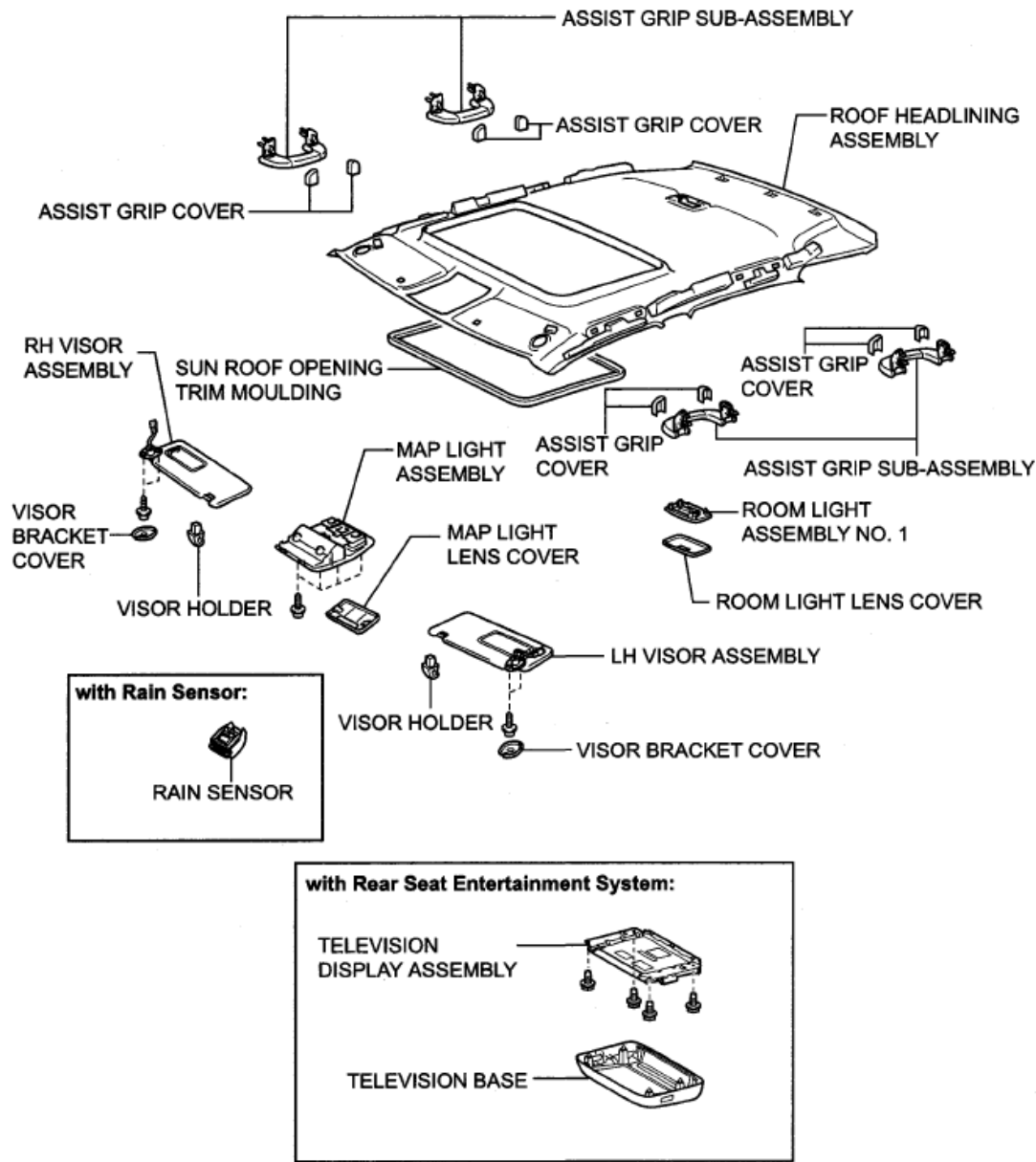
B119148E04

**Fig. 39: Identifying Sliding Roof Housing Replacement Components With Torque Specifications - For Standard (3 Of 5)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2008 Lexus RX 350

2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



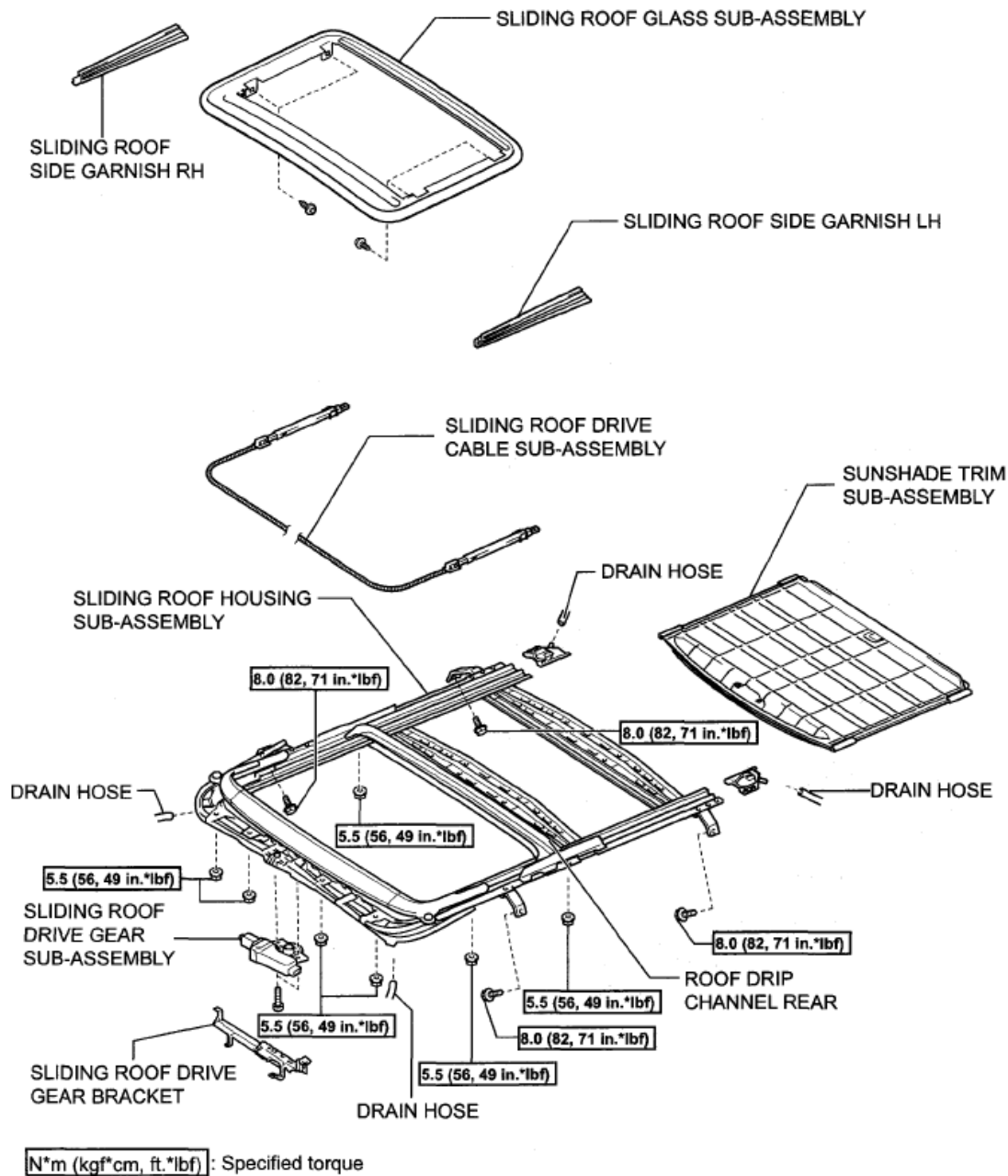
P

B139548E02

**Fig. 40: Identifying Sliding Roof Housing Replacement Components - For Standard (4 Of 5)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

# 2008 Lexus RX 350

## 2008 ACCESSORIES AND EQUIPMENT Sliding Roof - RX350



P

B1191506/2

**Fig. 41: Identifying Sliding Roof Housing Replacement Components With Torque Specifications - For Standard (5 Of 5)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### REMOVAL

#### 1. REMOVE ROOF HEADLINING ASSEMBLY

(See **REMOVAL** )

## 2. REMOVE SLIDING ROOF SIDE GARNISH LH

- a. Using a screwdriver, disengage the clip and remove the side garnish.

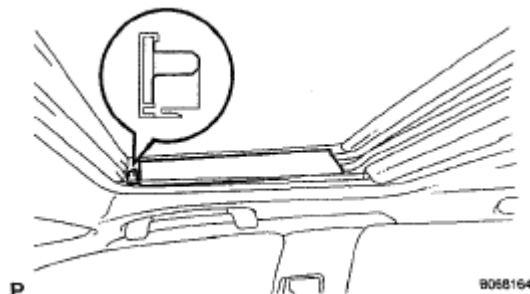
HINT:

Tape the screwdriver tip before use.

## 3. REMOVE SLIDING ROOF SIDE GARNISH RH

HINT:

Use the same procedures described for the LH side.



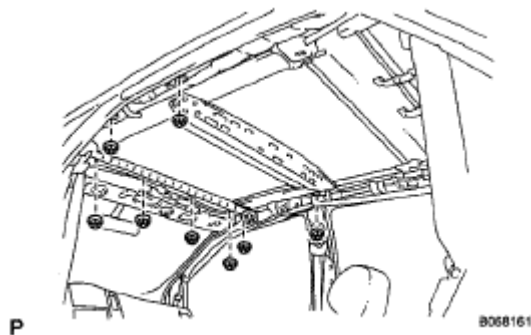
**Fig. 42: Identifying Clip On Sliding Roof Side Garnish RH**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## 4. REMOVE SLIDING ROOF GLASS SUB-ASSEMBLY

- a. Using a T25 "Torx" driver, remove the 4 screws and roof glass.

## 5. REMOVE SLIDING ROOF HOUSING SUB-ASSEMBLY

- a. Disconnect the 4 hoses and drive gear connector.
- b. Remove the 8 bolts and 4 brackets.
- c. Remove the 8 nuts and housing.



**Fig. 43: Identifying Sliding Roof Housing Sub-Assembly With Bolts**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

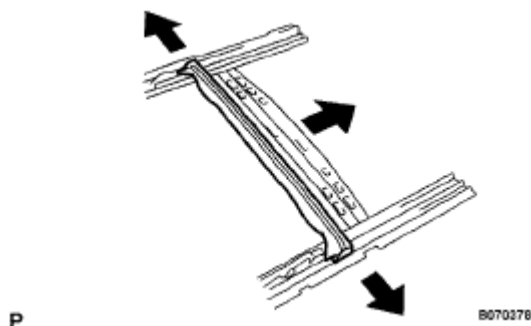


**6. REMOVE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**

- a. Remove the drive gear bracket.
- b. Remove the 2 bolts and drive gear.

**7. REMOVE SUNSHADE TRIM SUB-ASSEMBLY****8. REMOVE ROOF DRIP CHANNEL REAR**

- a. Remove the roof drip channel as shown in the illustration.



**Fig. 44: Removing Roof Drip Channel Rear**

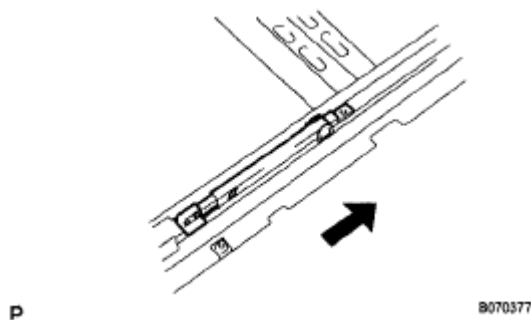
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**9. REMOVE SLIDING ROOF DRIVE CABLE SUB-ASSEMBLY**

- a. Using a screwdriver, remove the drive cable by sliding it backward.

HINT:

Tape the screwdriver tip before use.



**Fig. 45: Removing Sliding Roof Drive Cable**

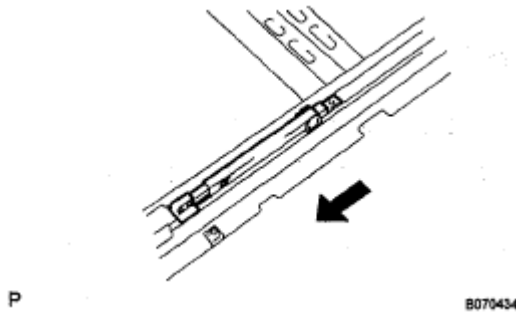
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**INSTALLATION****1. INSTALL SLIDING ROOF DRIVE CABLE SUB-ASSEMBLY**

- a. Sliding the drive cable forward, install it.

HINT:

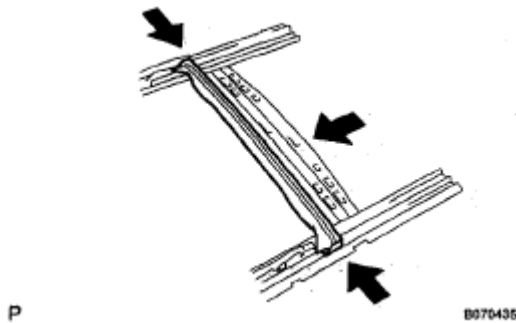
Tape the screwdriver tip before use.



**Fig. 46: Installing Sliding Roof Drive Cable**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**2. INSTALL ROOF DRIP CHANNEL REAR**

- a. Install the roof drip channel rear as shown in the illustration.



**Fig. 47: Installing Roof Drip Channel Rear**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**3. INSTALL SLIDING ROOF HOUSING SUB-ASSEMBLY**

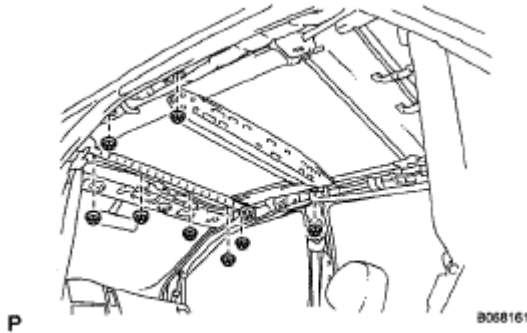
- a. Install the housing with the 8 nuts.

**Torque: 5.5 N\*m (56 kgf\*cm, 49 in.\*lbf)**

- b. Install the 4 brackets with the 8 bolts.

**Torque: 8.0 N\*m (82 kgf\*cm, 71 in.\*lbf)**

- c. Connect the 4 hoses and drive gear connector.



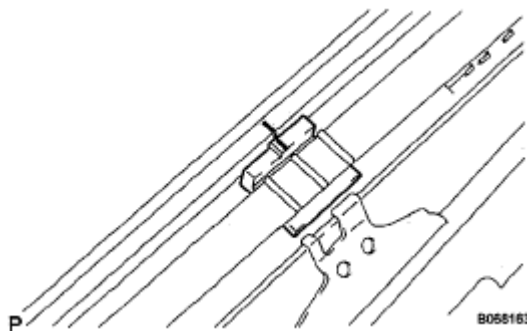
**Fig. 48: Identifying Sliding Roof Housing Sub-Assembly With Bolts**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**4. ADJUST FULLY CLOSED POSITION**

- a. Using a screwdriver, slide the drive cable of the sliding roof to align the matchmarks.

HINT:

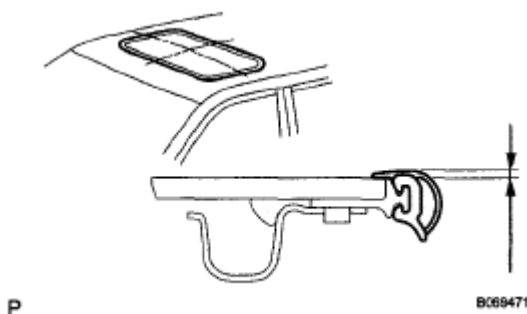
Tape the screwdriver tip before use.



**Fig. 49: Identifying Aligning Matchmarks On Drive Cable Of Sliding Roof**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**5. ADJUST SLIDING ROOF GLASS SUB-ASSEMBLY**

- a. Check for a difference in levels between the sliding roof (roof glass) and roof panel.



**Fig. 50: Identifying Difference In Levels Between Sliding Roof (Roof Glass) And Roof Panel**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**Difference**

**SLIDING ROOF (ROOF GLASS) AND ROOF PANEL DIFFERENCE REFERENCE**

Front side	Rear side	LH and RH side	Corner side
0 + 1.0 mm (0 + 0.039 in.) 0 - 2.0 mm (0 - 0.079 in.)	0 + 2.0 mm (0 + 0.079 in.) 0 - 1.0 mm (0 - 0.039 in.)	0 +- 1.5 mm (0.059 in.)	0 + 1.5 mm (0 + 0.059 in.) 0 - 1.0 mm (0 - 0.039 in.)

**NOTE:** The clearance should be even all around.

**6. INSTALL SLIDING ROOF GLASS SUB-ASSEMBLY**

- a. Using a T25 "Torx" driver, loosen a screw to adjust the sliding roof panel position. When the adjustment has been done, tighten the screw there.

**7. CHECK FOR WATER LEAKS**

- a. Adjusting the sliding roof, check that there is no water leak.

If a leak is found, readjust the sliding roof.

**8. RESET SLIDING ROOF POSITION**

(See INITIALIZATION )

**9. INSTALL ROOF HEADLINING ASSEMBLY**

(See INSTALLATION )

**SLIDING ROOF SWITCH ASSEMBLY (FOR MULTI-PANEL MOON**

**ON-VEHICLE INSPECTION**

**1. INSPECT MAP LIGHT ASSEMBLY**

- a. Check the tilt switch resistance.

**Resistance**

**RESISTANCE SPECIFICATION**

Tester Connection	Switch Position	Specified Condition
24 (DWN) - 1 (GND)	DOWN	Below 1 ohms
25 (UP) - 1 (GND)	UP	

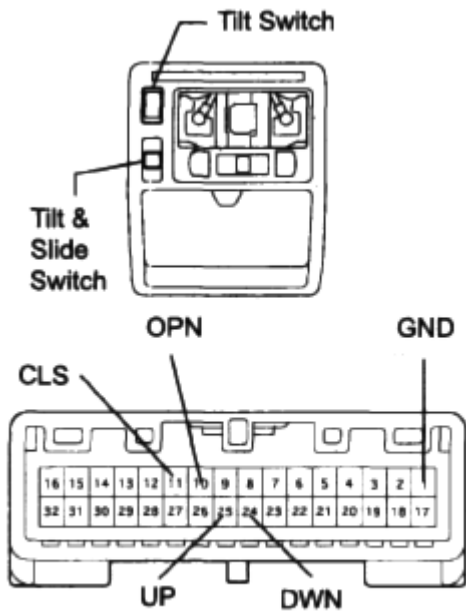
If the result is not as specified, replace the map light assembly.

- b. Check the tilt & slide switch resistance.

**Resistance**

**RESISTANCE SPECIFICATION**

Tester Connection	Switch Position	Specified Condition
10 (OPN) - 1 (GND)	OPEN	Below 1 ohms
11 (CLS) - 1 (GND)	CLOSE	



8070212E04

**Fig. 51: Identifying Sliding Roof Switch Assembly With Connector (For Multi-Panel Moon Roof)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If the result is not as specified, replace the map light assembly.

**SLIDING ROOF SWITCH ASSEMBLY (FOR STANDARD)**

**ON-VEHICLE INSPECTION**

**1. INSPECT MAP LIGHT ASSEMBLY**

- a. Check the tilt switch resistance.

**Resistance**

**RESISTANCE SPECIFICATION - TILT SWITCH**

Tester Connection	Switch Position	Specified Condition
-------------------	-----------------	---------------------

24 (DWN) - 1 (GND)	DOWN	Below 1 ohms
25 (UP) - 1 (GND)	UP	

If the result is not as specified, replace the map light assembly.

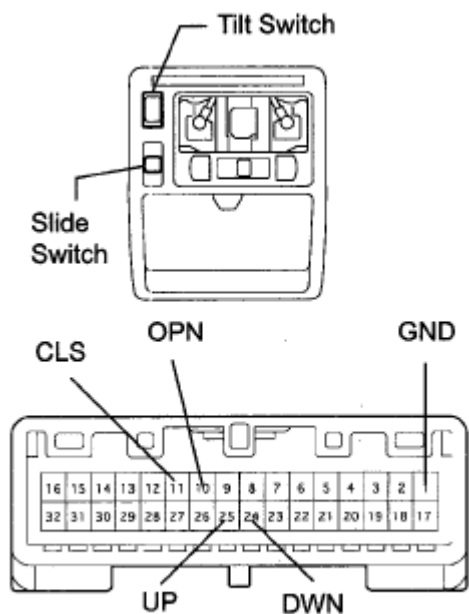
- b. Check the slide switch resistance.

**Resistance**

**RESISTANCE SPECIFICATION - SLIDE SWITCH**

Tester Connection	Switch Position	Specified Condition
10 (OPN) - 1 (GND)	OPEN	Below 1 ohms
11 (CLS) - 1 (GND)	CLOSE	

If the result is not as specified, replace the map light assembly.



8070212E03

**Fig. 52: Identifying Sliding Roof Switch Assembly With Connector (For Standard)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.