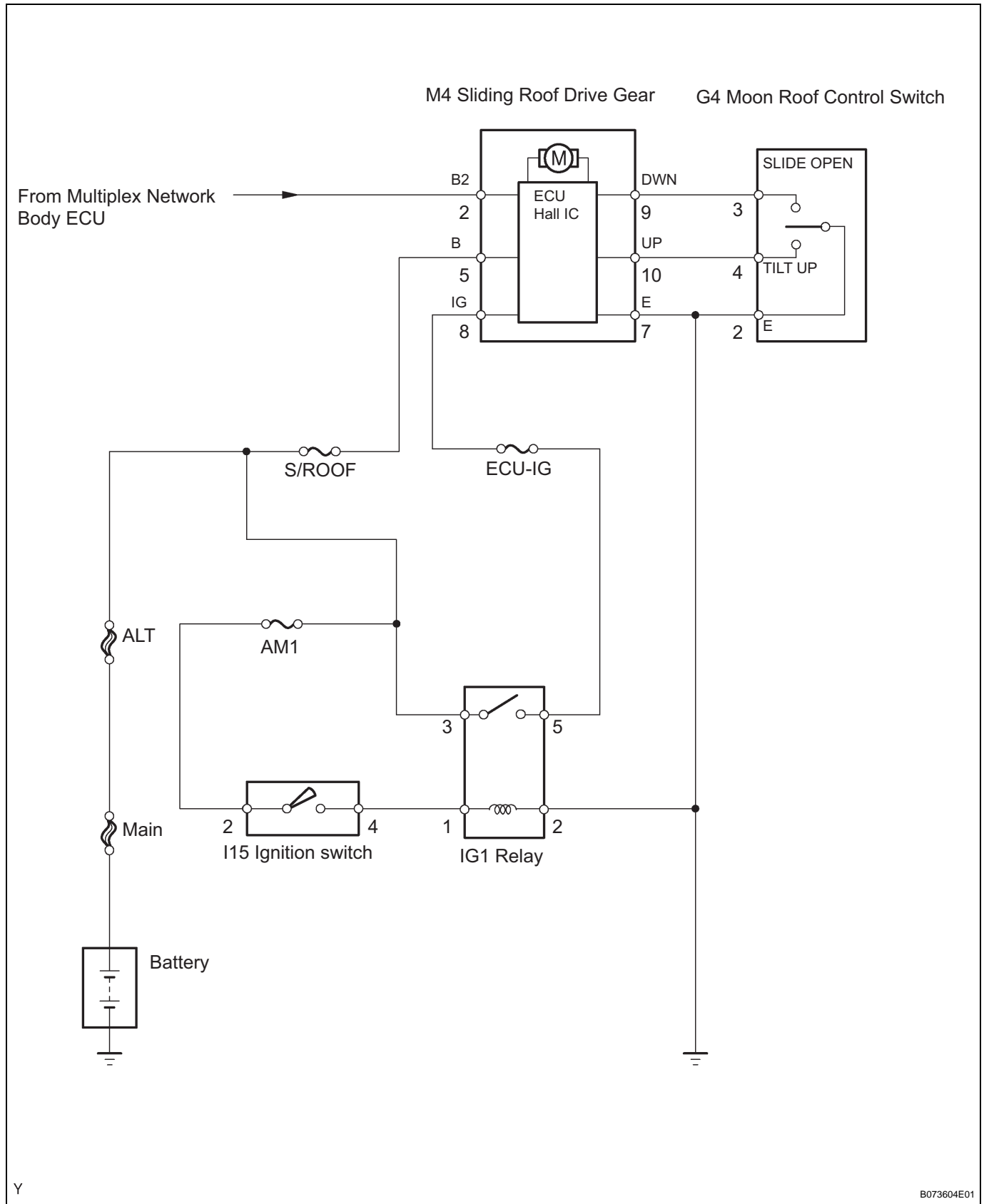


SYSTEM DIAGRAM

INITIALIZATION

1. INITIALIZATION OF SLIDING ROOF MOTOR

- (a) The sliding roof AUTO operation and the jam protection function may not operate normally if the battery is disconnected/reconnected, replaced or recharged. Initialize the sliding roof system using the method below.
 - (1) Turn the ignition switch ON.
 - (2) Initialize the sliding roof by pressing and holding the TILT UP switch until the roof glass tilts upward fully (the roof glass automatically tilts downward slightly after fully tilting upward).
 - (3) Release the switch.

HINT:

If the battery terminal is disconnected, the moon roof control ECU may not detect the position of the roof glass. If the sliding roof AUTO operation is still disabled even after the sliding roof drive gear has been initialized, the hall IC may be malfunctioning. The hall IC is built into the sliding roof drive gear and detects the roof glass position.

If the result is not as specified, replace the drive gear (moon roof control ECU).

PROBLEM SYMPTOMS TABLE

SLIDING ROOF SYSTEM

Symptom	Suspected area	See page
Sliding roof does not operate	1. ECU-IG fuse	-
	2. S/ROOF fuse	-
	3. IG1 Relay	-
	4. Moon roof control switch	RF-7
	5. Sliding roof drive gear	RF-4
	6. Wire harness	RF-4
	7. Faulty sliding of sliding roof	-
Sliding roof operation is abnormal	1. Moon roof control switch	RF-7
	2. Sliding roof drive gear	RF-4
	3. Wire harness	-
Sliding roof system stops operation halfway when no foreign object is in the motor	1. Moon roof control switch	RF-7
	2. Sliding roof drive gear	RF-4
	3. Wire harness	-
	4. Resetting sliding roof	RF-4
Sliding roof does not operate after turning ignition switch to OFF	1. Instrument panel J/B (Multiplex network body ECU)	RF-4
	2. Wire harness	-
AUTO function is inoperative	1. Resetting sliding roof drive gear	RF-4
Jam protection function is inoperative	1. Resetting sliding roof drive gear	RF-4

RF

ON-VEHICLE INSPECTION

1. CHECK AUTO SLIDE-OPEN/CLOSE FUNCTION

- (a) Check the AUTO slide OPEN operation function.
 - (1) Turn the ignition switch ON.
 - (2) If the door glass is not fully closed, slide or tilt it so that it is fully closed.
 - (3) Press the sliding roof OPEN switch for 0.3 seconds or more. The roof glass should automatically slide open and stop slightly before the fully open position.
- (b) Check the AUTO slide Close operation function.
 - (1) Turn the ignition switch ON.
 - (2) Press the sliding roof CLOSE switch for 0.3 seconds or more. The roof glass should automatically close.
 - (3) If the CLOSE or OPEN switch is pressed while the roof glass is in motion, the roof glass should stop moving.

2. CHECK AUTO TILT-UP/DOWN FUNCTION

- (a) Check the AUTO tilting UP operation function.
 - (1) Turn the ignition switch ON.
 - (2) If the roof glass is not fully closed, slide or tilt it so that it is fully closed.
 - (3) Press the sliding roof UP switch for 0.3 seconds or more. The roof glass should automatically tilt upward until it is fully open.
- (b) Check the AUTO tilting DOWN operation function.
 - (1) Turn the ignition switch to the ON position.
 - (2) When the roof glass is fully tilted upward, press the sliding roof DOWN switch for 0.3 seconds or more. The roof glass should automatically tilt downward until it is fully closed.

3. CHECK SLIDING ROOF OPERATION FUNCTION AFTER IGNITION SWITCH IS TURNED OFF

- (a) Turn the ignition switch from ON to OFF.
- (b) The sliding roof's AUTO operation function should be available for 45 seconds. However, if one of the front doors is opened during AUTO operation, the sliding roof should stop its operation immediately.
- (c) Wait for 45 seconds after the ignition switch is turned off. Then, both the AUTO and manual operation functions should not be available any more.
- (d) With one of the front doors open, turn the ignition switch OFF. If foreign matters are caught between the sliding roof and vehicle body, and the sliding roof's jam protection function is triggered, the sliding roof should reverse its movement and stop at the fully open position.

4. CHECK JAM PROTECTION FUNCTION

HINT:

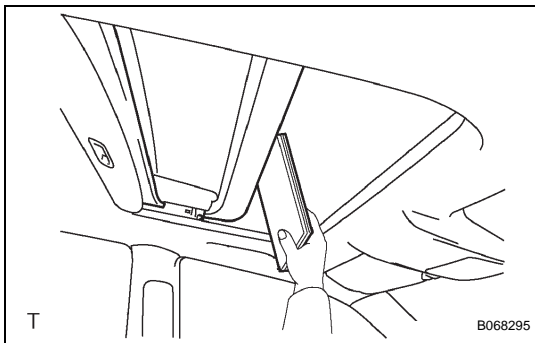
When the sliding roof AUTO operation is being used, the jam protection function prevents objects from being caught between the vehicle body and the roof glass.

(a) Operative condition:

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

CAUTION:

- **Do not use a part of your body, for example your hand, or any object to check the jam protection. Do not allow anything to become caught in the sliding roof by accident in this procedure.**
- **The jam protection function may not operate with an object that is less than 5 mm (0.20 in.) in width.**

RF

- (b) When the sliding roof AUTO operation is being used and an object is caught between the vehicle body and the roof glass, the roof glass should open a distance of 200 mm (7.87 in.) from the point of contact with the object, or open fully if 200 mm (7.87 in.) of opening distance is not available.

5. CHECK FAIL-SAFE FUNCTION

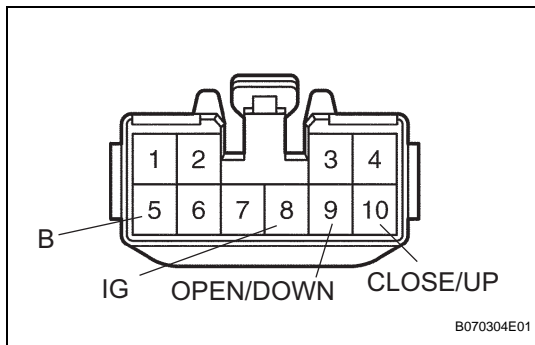
- (a) If the sliding roof's jam protection function is triggered and, afterward, the sliding roof cannot be fully closed due to a malfunctioning sliding roof or a malfunctioning actuator, press and hold the TILT UP switch for at least 10 seconds. This will disable the jam protection function and the sliding roof can then be closed.

HINT:

- Before checking the fail-safe function, make sure that there is nothing that triggers the jam protection function.
- Pressing the TILT UP switch for 10 seconds will clear the memory of the sliding roof's fully closed position from the moon roof control ECU, which results in disablement of the jam protection function.

CAUTION:

Be careful with the closing sliding roof glass. The jam protection function does not operate at this time.



6. CHECK SLIDING ROOF DRIVE GEAR

- Disconnect the drive gear wire harness connector.
- Measure the voltage and of the wire harness side connector.

Standard voltage

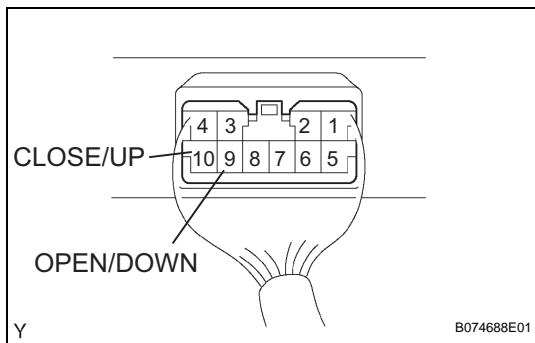
Tester Connection	Tester Connection	Specified Condition
5 (B) - Body ground	Always	10 to 14 V
8 (IG) - Body ground	Ignition switch OFF → ON	0 → 10 to 14 V

Standard resistance

Tester Connection	Tester Connection	Specified Condition
9 (OPEN/DOWN) - Body ground	Moon roof control switch OFF → ON	10 k Ω or higher → Below 1 Ω
10 (CLOSE/UP) - Body ground	Moon roof control switch OFF → ON	10 k Ω or higher → Below 1 Ω

If the result is not as specified, replace the drive gear sub-assembly (moon roof control ECU).

- Reconnect the drive gear wire harness connector.
- Initialize the sliding roof position (See page RF-4).
- Check the voltage of the terminals of the wire harness side connector.



Standard voltage

Tester Connection	Condition	Specified Condition
9 (OPEN/DOWN) - Body ground	Ignition switch ON and OPEN/DOWN switch OFF → OPEN/DOWN switch ON	10 to 14 V → 0 V
10 (CLOSE/UP) - Body ground	Ignition switch ON and CLOSE/UP switch OFF → CLOSE/UP switch ON	10 to 14 V → 0 V

If the result is not as specified, replace the drive gear (moon roof control ECU).

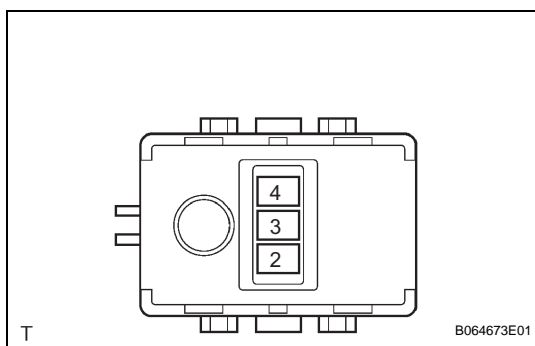
INSPECTION

1. INSPECT MOON ROOF CONTROL SWITCH

- Measure the resistance of the switch when operating the switch.

Standard resistance

Tester Connection	Switch Condition	Specified Condition
4 - 2	TILT UP is pressed	Below 1 Ω
3 - 2	SLIDE OPEN is pressed	Below 1 Ω
4 - 3	OFF	10 k Ω or higher

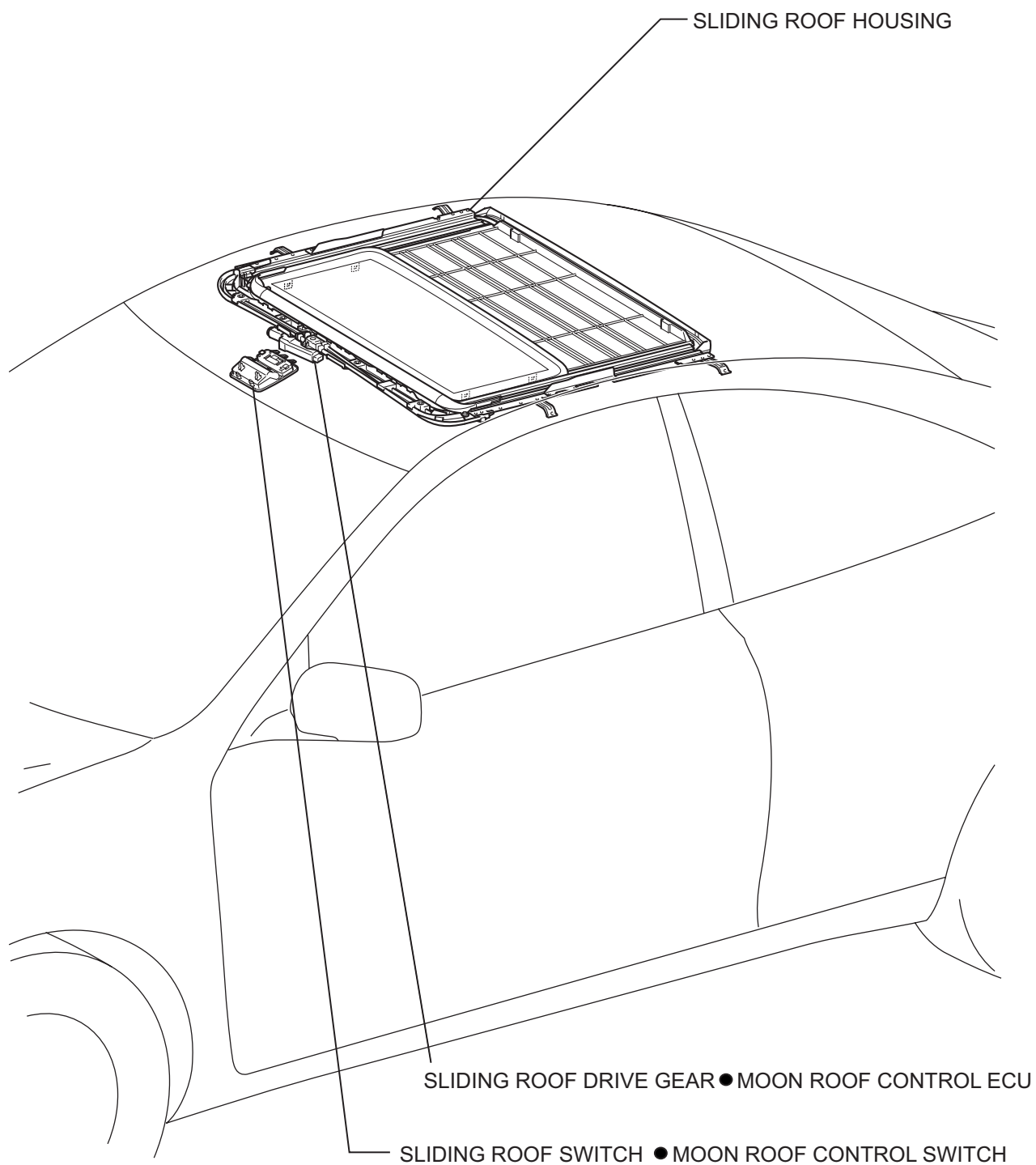


Tester Connection	Switch Condition	Specified Condition
3 - 2	OFF	10 k Ω or higher

If the result is not as specified, replace the switch.

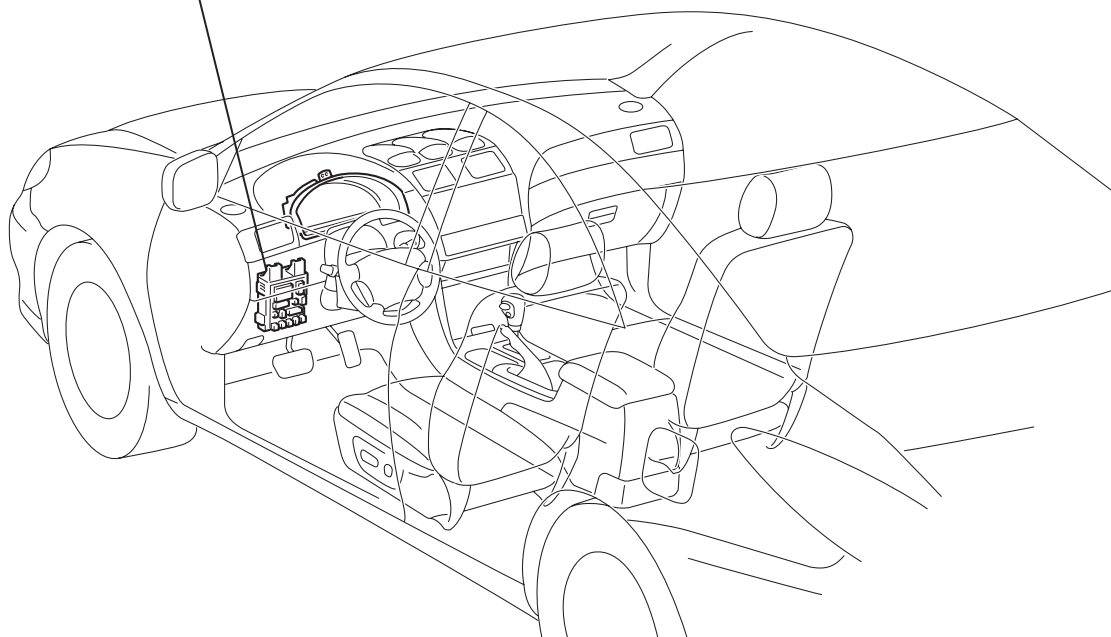
SLIDING ROOF SYSTEM

PARTS LOCATION

**RF**

INSTRUMENT PANEL J/B ASSEMBLY

- IG1 RELAY
- ECU-IG FUSE
- S/RROF FUSE
- AM1 FUSE



RF

REMOVAL

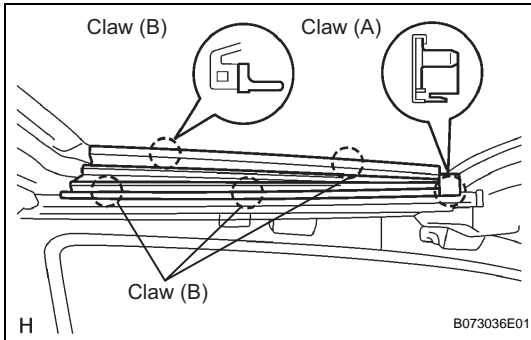
HINT:

- The installation procedures are the removal procedures in reverse order. However, only installation procedures requiring additional information are included.
- A bolt without a torque specification is shown in the standard bolt chart (See page [SS-2](#)).

1. REMOVE ROOF HEADLINING ASSEMBLY

HINT:

See page [IR-4](#)



2. REMOVE SLIDING ROOF SIDE GARNISH LH

- Using a screwdriver, disengage the claw (A) and 4 claws (B).

HINT:

Tape the screwdriver tip before use.

- Remove the side garnish.

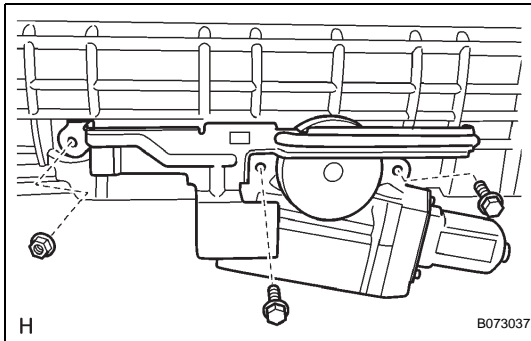
3. REMOVE SLIDING ROOF SIDE GARNISH RH

HINT:

Use the same procedures described for the LH side.

4. REMOVE SLIDING ROOF GLASS SUB-ASSEMBLY

- Using a "torx" driver (T25), remove the 4 screws and roof glass.



5. REMOVE SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY

- Remove the nut.
- Using a screwdriver, disengage the claw and remove the bracket.

HINT:

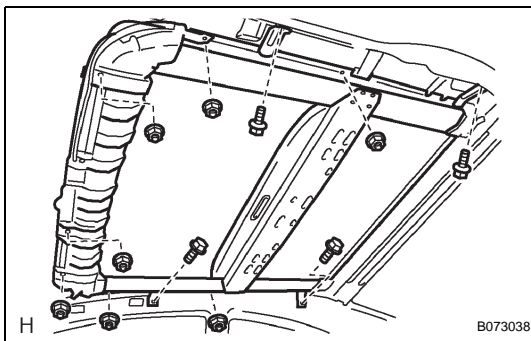
Tape the screwdriver tip before use.

- Remove the 2 bolts and drive gear.

6. DISCONNECT SLIDING ROOF DRAIN HOSE

7. REMOVE SLIDING ROOF HOUSING SUB-ASSEMBLY

- Remove the 4 bolts, 7 nuts and roof housing.



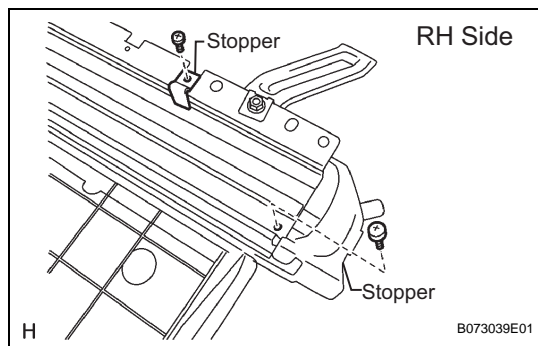
DISASSEMBLY

1. REMOVE SUNSHADE TRIM SUB-ASSEMBLY
2. REMOVE ROOF DRIP CHANNEL REAR
3. REMOVE SLIDING ROOF DRIVE CABLE SUB-ASSEMBLY

(a) Remove the 2 screws and 2 stoppers.

HINT:

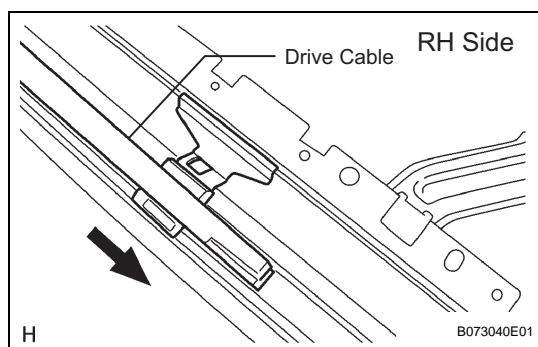
Use the same procedures for the RH side and LH side.



(b) Slide the drive cable backward and remove it.

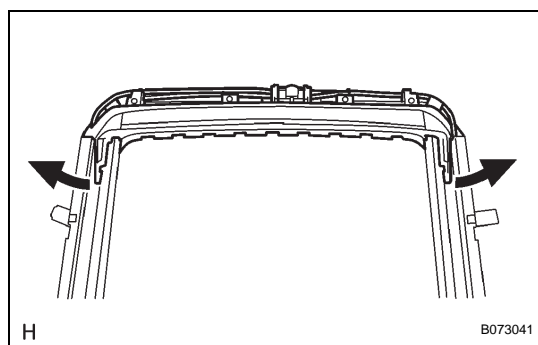
HINT:

Use the same procedures for the RH side and LH side.



4. REMOVE ROOF WIND DEFLECTOR PANEL SUB-ASSEMBLY

(a) Remove the wind deflector panel as shown in the illustration.

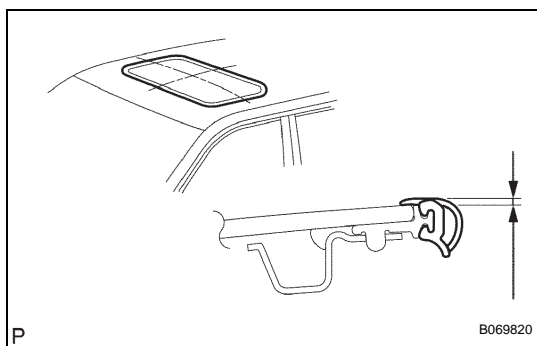
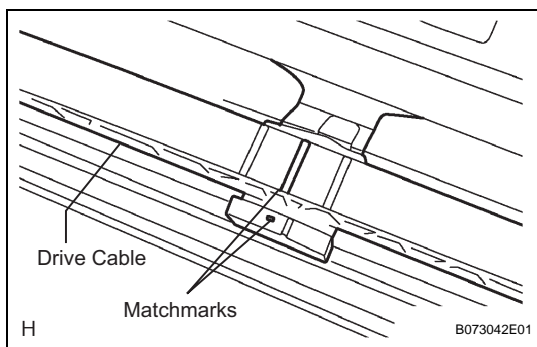


REASSEMBLY

1. **INSTALL ROOF WIND DEFLECTOR PANEL SUB-ASSEMBLY**
2. **INSTALL SLIDING ROOF DRIVE CABLE SUB-ASSEMBLY**
3. **INSTALL ROOF DRIP CHANNEL REAR**
4. **INSTALL SUNSHADE TRIM SUB-ASSEMBLY**

INSTALLATION

1. **ADJUST FULLY CLOSED POSITION**
 - (a) Using a screwdriver, slide the sliding roof drive cable to align the matchmarks.
HINT:
Tape the screwdriver tip before use.
2. **INSTALL SLIDING ROOF HOUSING SUB-ASSEMBLY**
 - (a) Install the roof housing with the 7 nuts and 4 bolts.
Torque: 5.5 N*m (55 kgf*cm, 49 in.*lbf)
3. **CONNECT SLIDING ROOF DRAIN HOSE**
4. **INSTALL SLIDING ROOF DRIVE GEAR SUB-ASSEMBLY**
5. **ADJUST SLIDING ROOF GLASS SUB-ASSEMBLY**
 - (a) Check for clearance between the roof glass and roof panel. Using a torx) wrench (T25), loosen the 4 screws and adjust the sliding roof panel position.
Difference:
+ 1.4 mm to - 1.4 mm (+ 0.055 to - 0.055 in.)
NOTICE:
The difference should be even all around.
6. **INSTALL SLIDING ROOF GLASS SUB-ASSEMBLY**
 - (a) Using a "torx" wrench (T25), tighten the 4 screws.
Torque: 4.5 N*m (45 kgf*cm, 40 in.*lbf)
7. **INSTALL SLIDING ROOF SIDE GARNISH RH**
8. **INSTALL SLIDING ROOF SIDE GARNISH LH**
9. **INSTALL ROOF HEADLINING ASSEMBLY**
10. **CHECK FOR WATER LEAKS**
 - (a) Adjusting the sliding roof. No water should leak.
If a leak is found, readjust the sliding roof.
11. **INITIALIZATION OF SLIDING ROOF MOTOR ASSEMBLY**

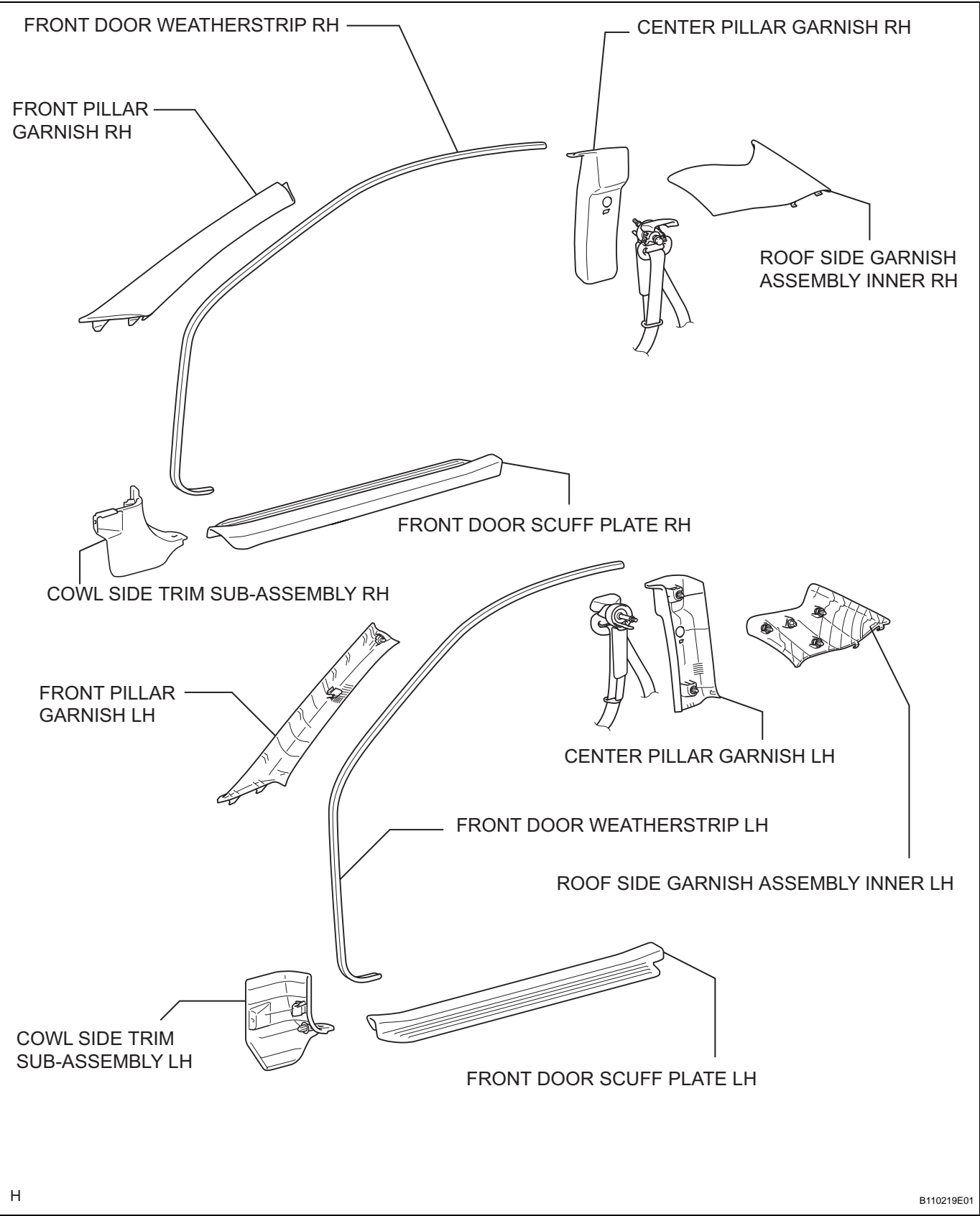


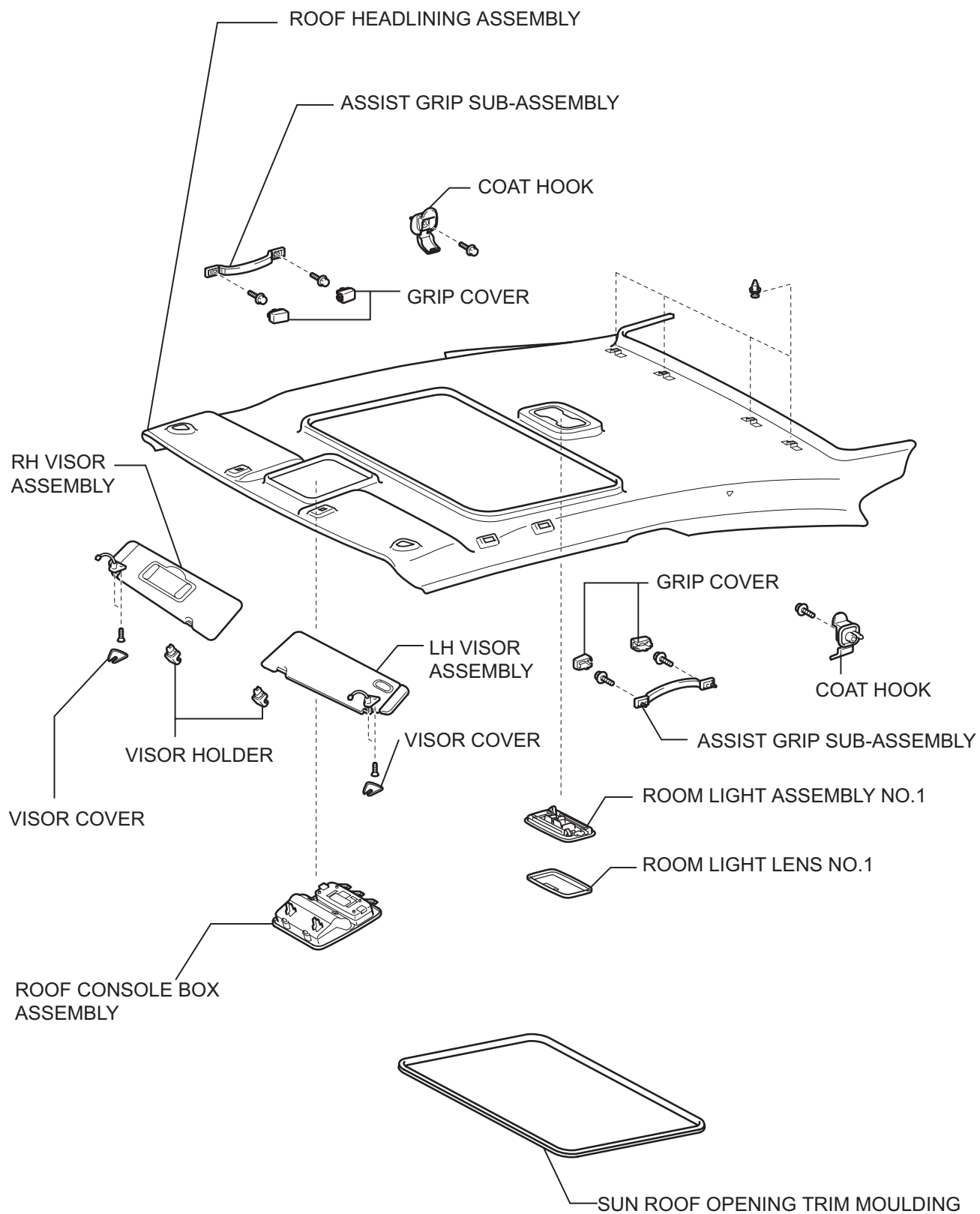
RF

SLIDING ROOF HOUSING

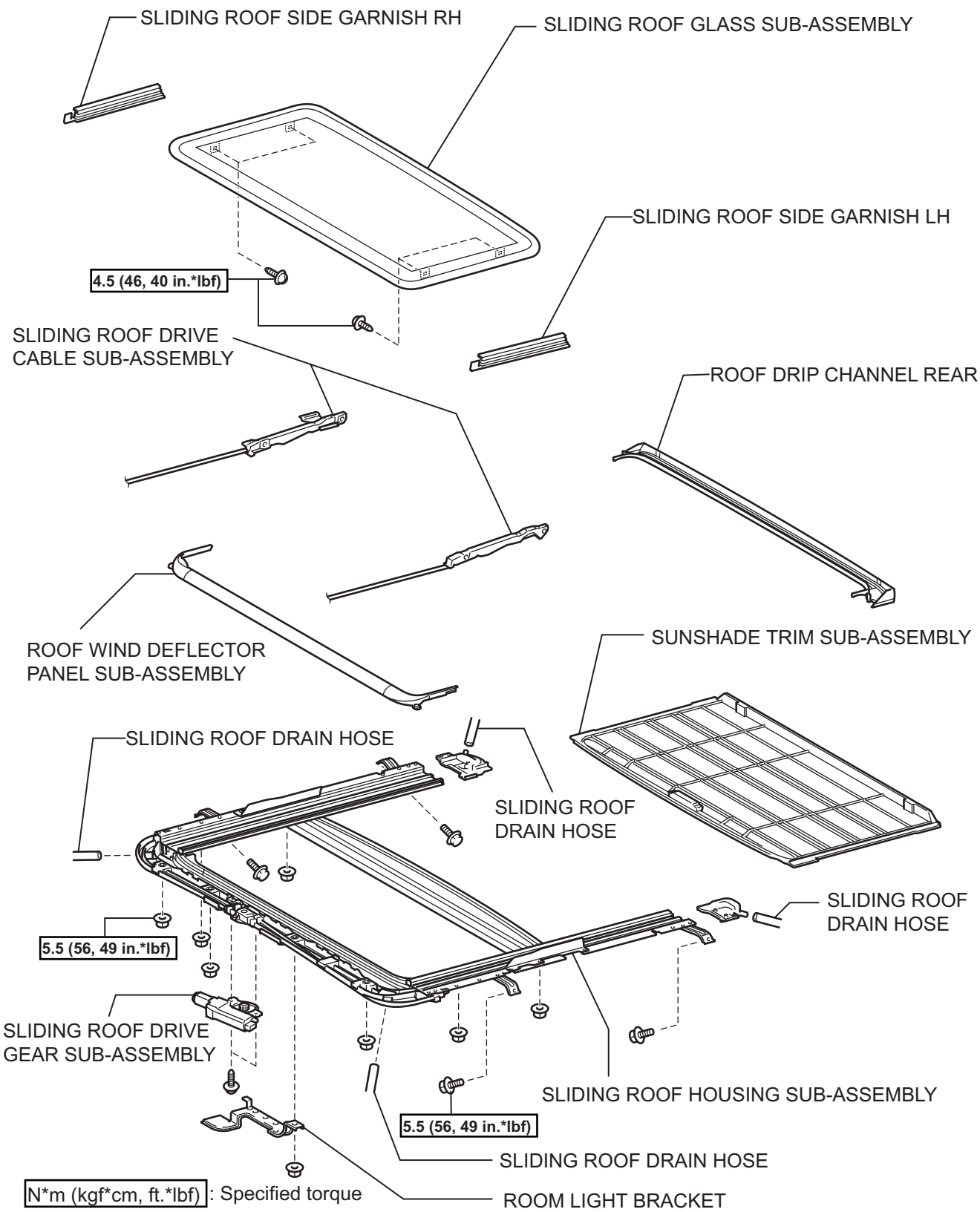
COMPONENTS

RF





RF



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