

**BODY SECTION**

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

<b>HVAC SYSTEM (HEATER, VENTILATOR AND A/C)</b>	<b>AC</b>
<b>HVAC SYSTEM (AUTO A/C) (DIAGNOSTICS)</b>	<b>AC(diag)</b>
<b>AIRBAG SYSTEM</b>	<b>AB</b>
<b>AIRBAG SYSTEM (DIAGNOSTICS)</b>	<b>AB(diag)</b>
<b>SEAT BELT SYSTEM</b>	<b>SB</b>
<b>LIGHTING SYSTEM</b>	<b>LI</b>
<b>WIPER AND WASHER SYSTEMS</b>	<b>WW</b>
<b>ENTERTAINMENT</b>	<b>ET</b>
<b>COMMUNICATION SYSTEM</b>	<b>COM</b>
<b>GLASS/WINDOWS/MIRRORS</b>	<b>GW</b>
<b>BODY STRUCTURE</b>	<b>BS</b>
<b>INSTRUMENTATION/DRIVER INFO</b>	<b>IDI</b>
<b>SEATS</b>	<b>SE</b>
<b>SECURITY AND LOCKS</b>	<b>SL</b>
<b>SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)</b>	<b>SR</b>
<b>EXTERIOR/INTERIOR TRIM</b>	<b>EI</b>
<b>EXTERIOR BODY PANELS</b>	<b>EB</b>

BODY SECTION

CRUISE CONTROL SYSTEM

CC

CRUISE CONTROL SYSTEM  
(DIAGNOSTICS)

CC(diag)

IMMOBILIZER (DIAGNOSTICS)

IM(diag)

# SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

# SR

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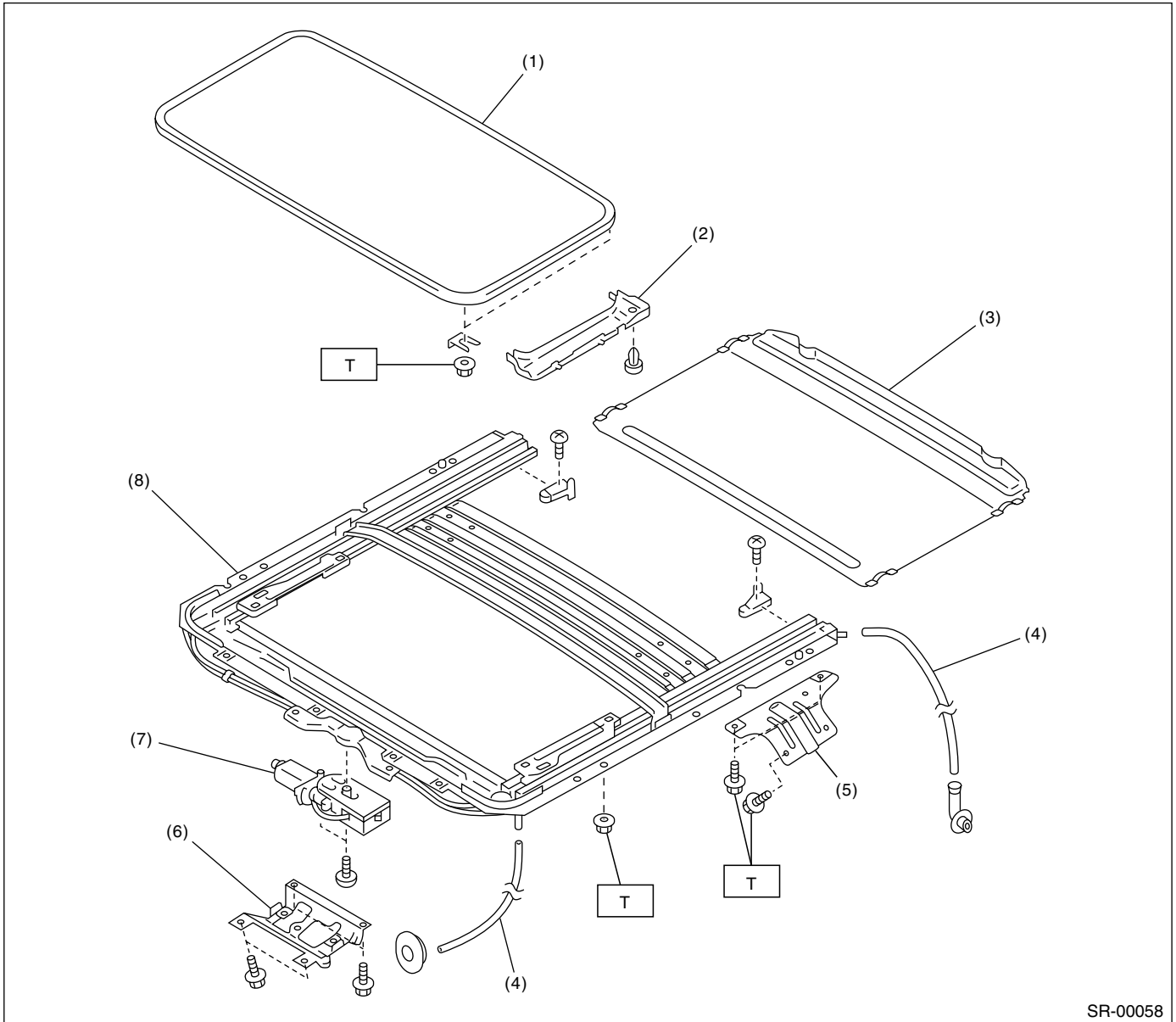
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# General Description

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 1. General Description

### A: COMPONENT



SR-00058

- |                      |                     |
|----------------------|---------------------|
| (1) Glass lid        | (5) Sunroof bracket |
| (2) Guide rail cover | (6) Motor cover     |
| (3) Sunshade         | (7) Motor ASSY      |
| (4) Drain tube       | (8) Frame ASSY      |

**Tightening torque: N·m (kgf·m, ft·lb)**  
**T: 7.4 (0.75, 5.4)**

## General Description

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

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### B: CAUTION

- Before disassembling or reassembling parts, always disconnect battery ground cable. When replacing radio, control module, and other parts provided with memory functions, record memory contents before disconnecting the battery ground cable. Otherwise, the memory will be erased.
- Reassemble in reverse order of disassembly, unless otherwise indicated.
- Adjust parts to the given specifications.
- Connect the connectors and hoses securely during reassembly.
- After reassembly, make sure functional parts operate smoothly.

### C: PREPARATION TOOL

#### 1. GENERAL TOOLS

TOOL NAME	REMARKS
Circuit Tester	Used for measuring resistance and voltage.

# Sunroof Control System

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

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## 2. Sunroof Control System

### A: WIRING DIAGRAM

#### 1. SUNROOF

<Ref. to WI-255, WIRING DIAGRAM, Sunroof System.>

### B: INSPECTION

Symptom	Checking order
Water leaks.	(1) Check roof panel and sunroof lid for improper or poor sealing. (2) Check drain tube for clogging. (3) Check sunroof frame seal and body for improper fit.
Booming noise	(1) Check sunroof lid and roof panel for improper clearance. (2) Check sunshade and roof trim for improper clearance.
Abnormal motor noise	(1) Check motor for looseness. (2) Check gears and bearings for wear. (3) Check cables for wear. (4) Check cable pipe for deformities.
Failure of sunroof (Motor operates properly.)	(1) Check guide rail for foreign particles. (2) Check guide rail for improper installation. (3) Check parts for mutual interference. (4) Check cable slider for improper clinching. (5) Check cable for improper installation. (6) Check clutch adjustment nut for improper tightness.
Motor does not rotate or rotates improperly.	(1) Check fuse for blow-out. (2) Check switch for improper function. (3) Check motor for incorrect terminal voltage. (4) Check relay for improper operation. (5) Check poor grounding system. (6) Check harness for open or short and terminals for poor connections. (7) Check limit switch for improper operation.

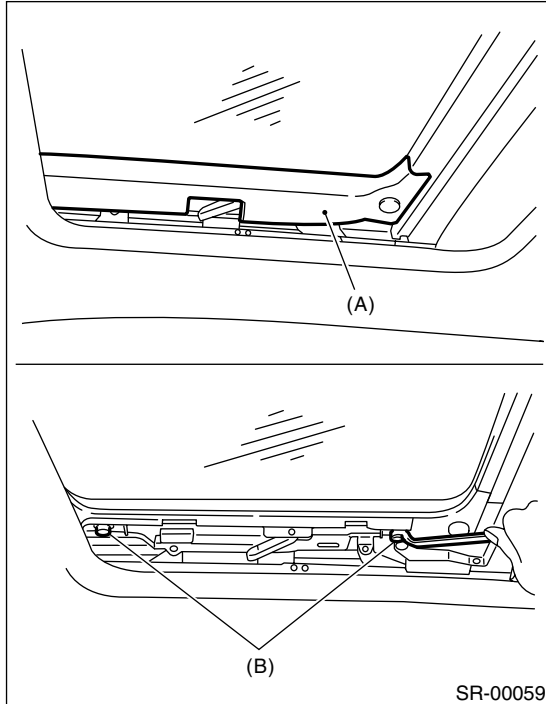
# Sunroof Lid

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 3. Sunroof Lid

### A: REMOVAL

- 1) Completely close the sunroof lid and open the sunshade.
- 2) Remove the cover (A) then remove the nuts (B).



- 3) Remove the sunroof lid carefully.

### B: INSTALLATION

Install in the reverse order of removal.

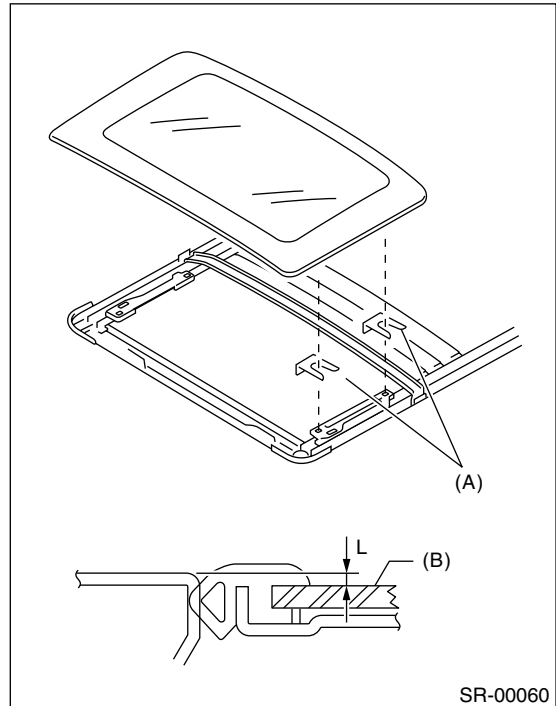
## C: ADJUSTMENT

### 1. ALIGNMENT OF HEIGHT BETWEEN SUNROOF LID AND ROOF PANEL

Loosen the sunroof lid installation nuts and then adjust the height by adding (max: three pieces) or extracting (min: zero pieces) shims (standard: one piece).

**Difference in height between sunroof lid and roof panel: L**

**L:  $2.0 \pm 0.5$  mm ( $0.079 \pm 0.020$  in)**



- (A) Shim
- (B) Sunroof lid

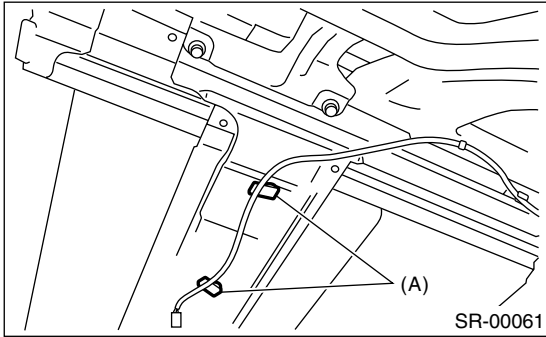
# Sunroof Assembly

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

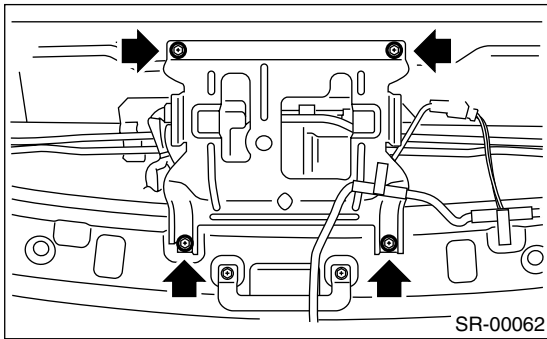
## 4. Sunroof Assembly

### A: REMOVAL

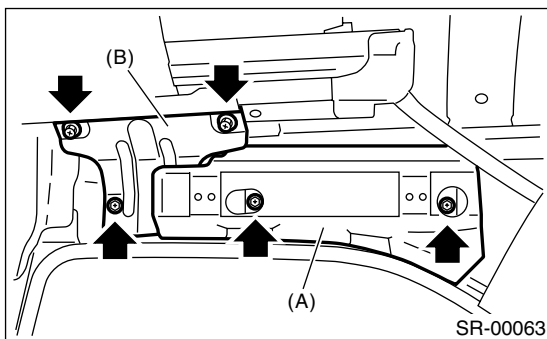
- 1) Disconnect the ground cable from battery.
- 2) Remove the roof trim. <Ref. to EI-50, REMOVAL, Roof Trim.>
- 3) Remove the sunroof lid. <Ref. to SR-5, REMOVAL, Sunroof Lid.>
- 4) Disconnect the drain tubes from sunroof frame.
- 5) Remove the room lamp harness clip (A).



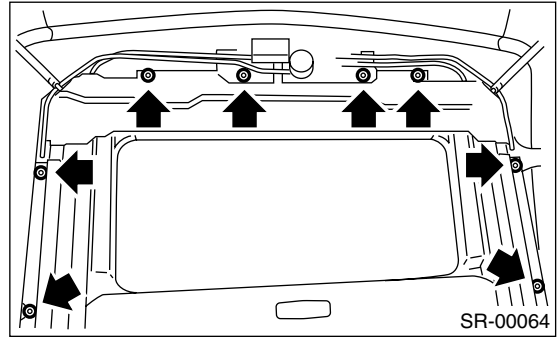
- 6) Disconnect the sunroof harness connector.
- 7) Remove the motor cover.



- 8) Remove the assist grip bracket (A) and sunroof bracket (B).



- 9) Remove the nuts then detach the sunroof frame.



### B: INSTALLATION

Install in the reverse order of removal.

#### CAUTION:

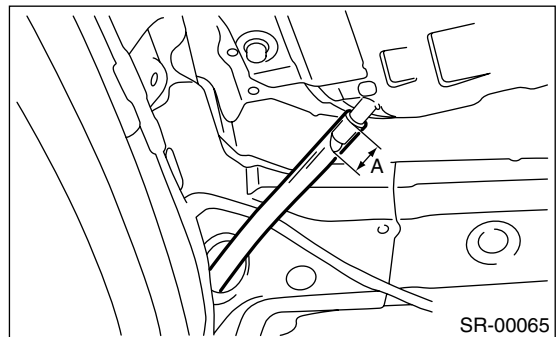
Be careful not to snag the harness.

#### NOTE:

- Make sure to connect the harness connector.
- When installing the drain tube, insert it securely onto drain pipe.

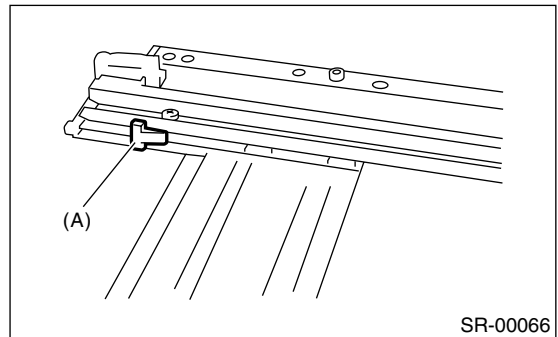
#### Length A:

15 mm (0.59 in) or more



### C: DISASSEMBLY

- 1) Remove the sunroof frame.
- 2) Remove the rail stoppers (A).

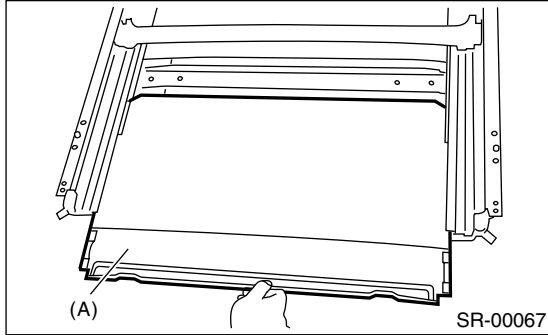




# Sunroof Assembly

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

3) Pull out the sunshade (A) from sunroof frame.



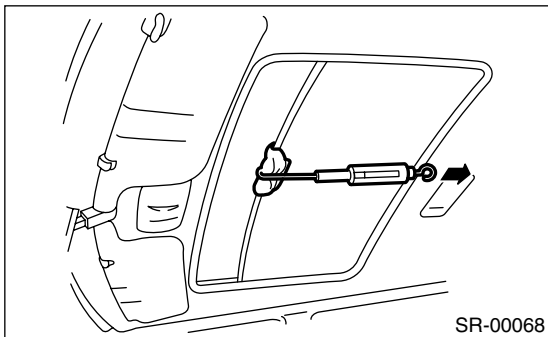
## D: ASSEMBLY

Assemble in the reverse order of disassembly.

## E: INSPECTION

### 1. CHECK FOR MOVING LOAD OF SUNSHADE

1) Attach a spring scale to sunshade edge using a cloth.



2) Pull the spring scale back to measure moving load of the sunshade.

#### ***Moving load of rear sunshade:***

***Less than 24.5±4.9 N (2.5±0.5 kgf, 55±1.1 lb)***

#### **NOTE:**

Moving load is larger at the beginning of pulling a spring scale, so take a scale reading while sunshade sliding smoothly.

3) If moving load exceeds specifications, check the sunroof lid, sunshade and guide rail assembly for improper installation.

# Sunroof Motor

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

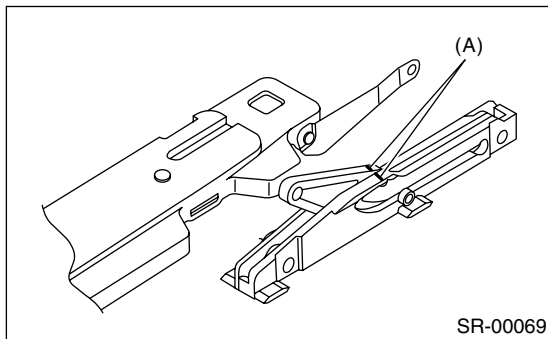
## 5. Sunroof Motor

### A: REMOVAL

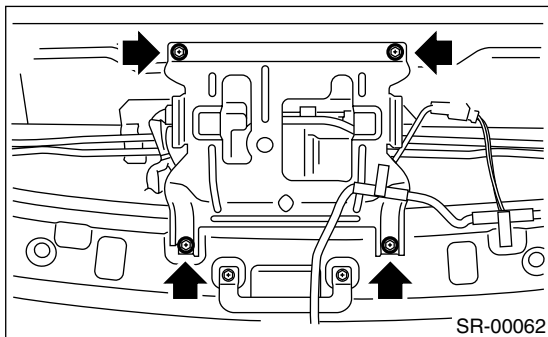
#### CAUTION:

- When removing the clip, use great care to not damage the roof trim.
- Never rotate the sunroof motor after removing it.

- 1) Completely close the sunroof.
- 2) Disconnect the ground cable from battery.
- 3) Remove the sunroof lid. <Ref. to SR-5, REMOVAL, Sunroof Lid.>
- 4) Confirm the alignment mark (A) of sunroof bracket link and the guide from sunroof opening. (If the mark does not align, adjust to align the mark.)



- 5) Remove the roof trim. <Ref. to EI-50, REMOVAL, Roof Trim.>
- 6) Remove the motor cover.



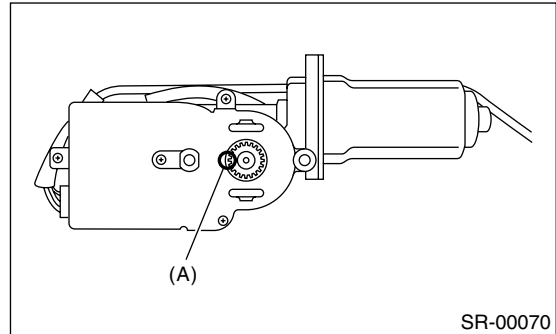
- 7) Disconnect the harness connector and remove the sunroof motor mounting screw.

### B: INSTALLATION

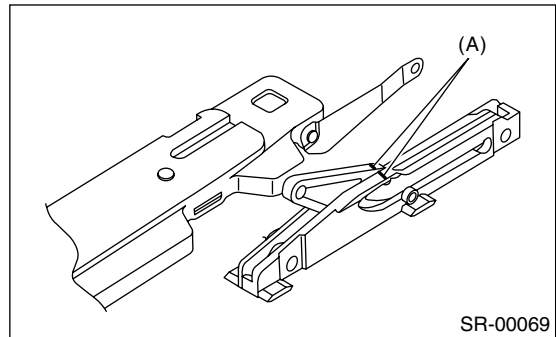
#### CAUTION:

Be careful not to move the sunroof cable when installing sunroof motor.

- 1) Check the alignment mark (A) of sunroof motor.



- 2) Confirm the alignment mark (A) of sunroof bracket link.



- 3) Install the sunroof motor.
- 4) After installing the motor, reconfirm the alignment marks of motor side and sunroof bracket link side.
- 5) Connect the sunroof motor harness connector and then connect the battery ground cable.
- 6) Check the sunroof operation with the procedure as shown in the table.

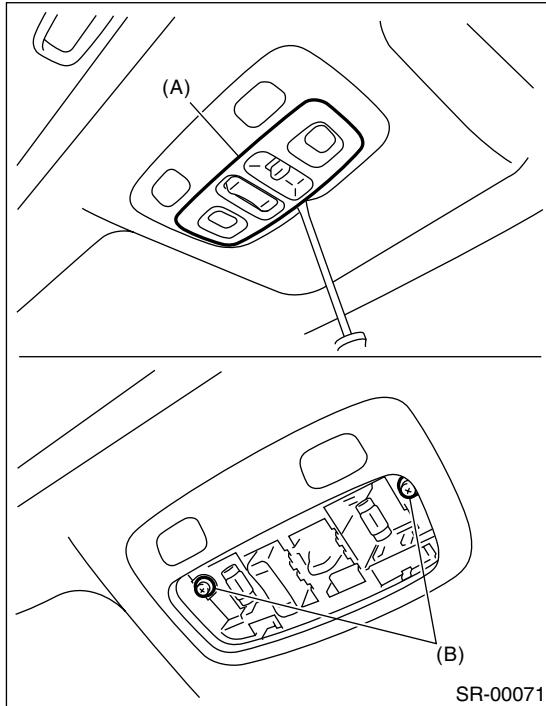
Checking order	Switch position
Completely close sunroof.	Closed
Tilt-up sunroof to most upper position.	Tilt-up
Lower sunroof completely.	Tilt-down
Open sunroof to near the completely open position.	Open
Completely open sunroof.	Open
Close sunroof 150 mm (5.91 in) away from completely closed position.	Closed
Completely close sunroof.	Closed

- 7) Install the sunroof lid and trims in the reverse order of removal.

## 6. Sunroof Switch

### A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the spot light lens (A) and sunroof switch mounting screw (B).



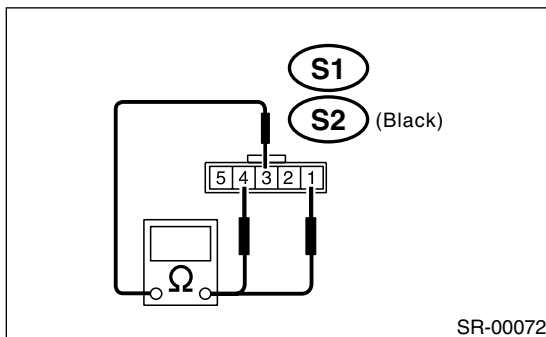
- 3) Disconnect the harness connectors and remove the sunroof switch.

### B: INSTALLATION

Install in the reverse order of removal.

### C: INSPECTION

Measure the sunroof switch resistance.



Switch	Terminal No.	Standard value
Open	S1: 3 and 4	Less than 1 Ω
Close	S1: 1 and 3	Less than 1 Ω
Tilt-up	S2: 3 and 4	Less than 1 Ω
Tilt-down	S2: 1 and 3	Less than 1 Ω

# Sunroof Switch

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

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