

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

# SR

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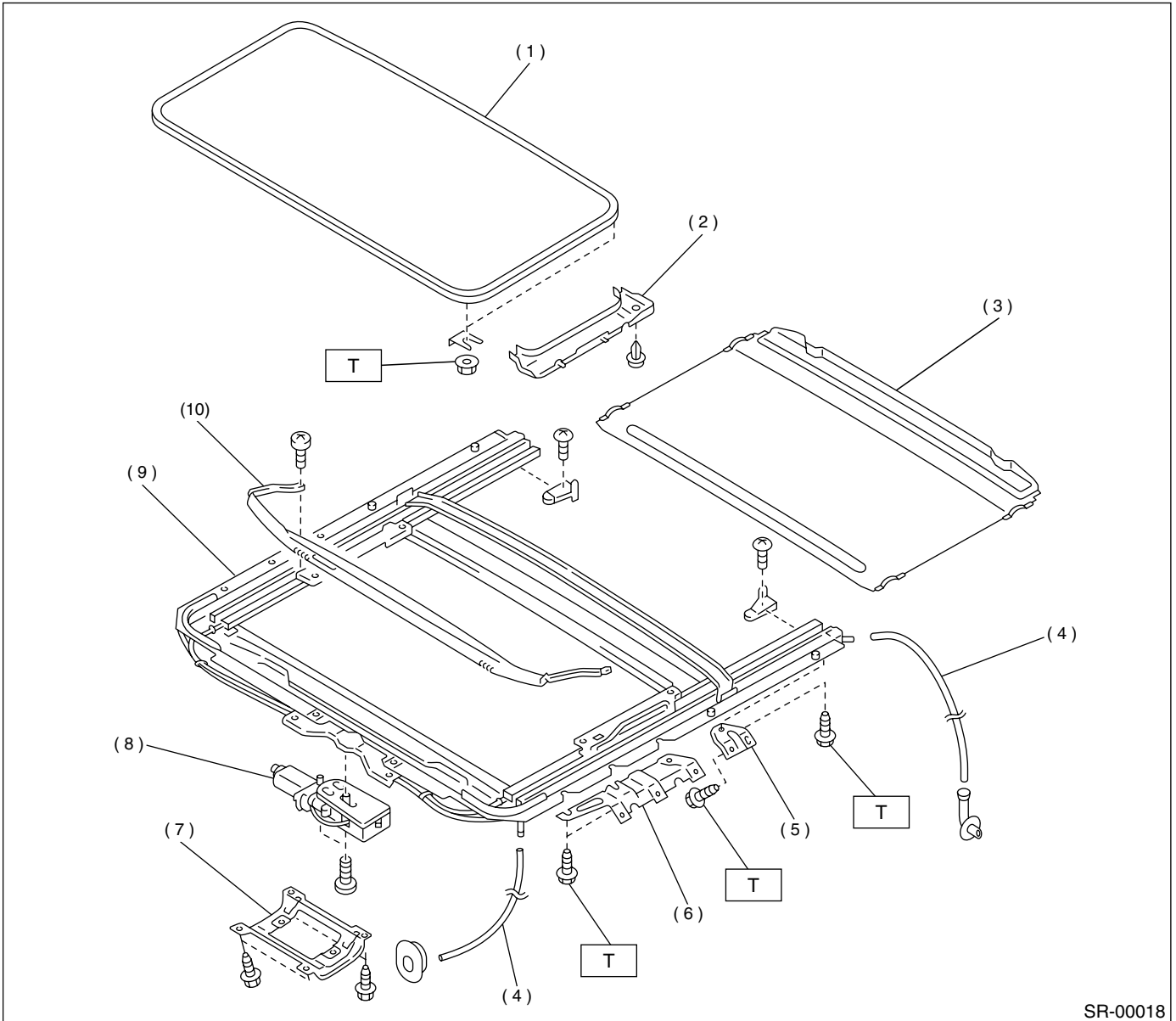
# GENERAL DESCRIPTION

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 1. General Description

### A: COMPONENT

#### 1. SEDAN



- |                            |                             |
|----------------------------|-----------------------------|
| (1) Glass lid              | (6) Sunroof bracket (Front) |
| (2) Guide rail cover       | (7) Motor cover             |
| (3) Sunshade               | (8) Motor ASSY              |
| (4) Drain tube             | (9) Frame ASSY              |
| (5) Sunroof bracket (Rear) | (10) Deflector              |

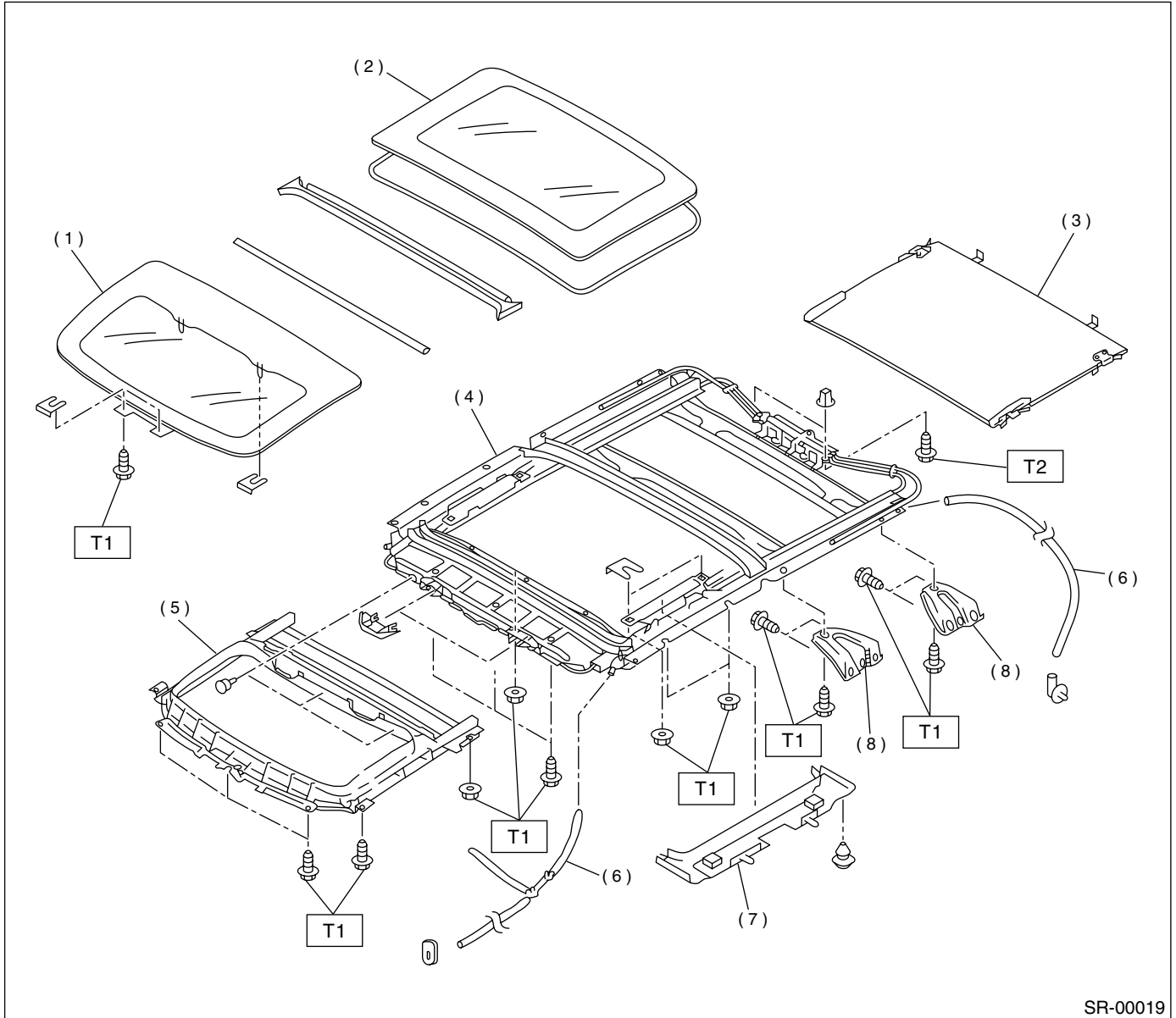
**Tightening torque: N·m (kgf·m, ft·lb)**

**T: 7.4 (0.75, 5.4)**

# GENERAL DESCRIPTION

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 2. WAGON



SR-00019

- (1) Glass lid (Front)
- (2) Glass lid (Rear)
- (3) Sunshade
- (4) Frame ASSY (Rear)

- (5) Frame ASSY (Front)
- (6) Drain tube
- (7) Cover
- (8) Sunroof bracket

**Tightening torque: N·m (kgf·m, ft·lb)**

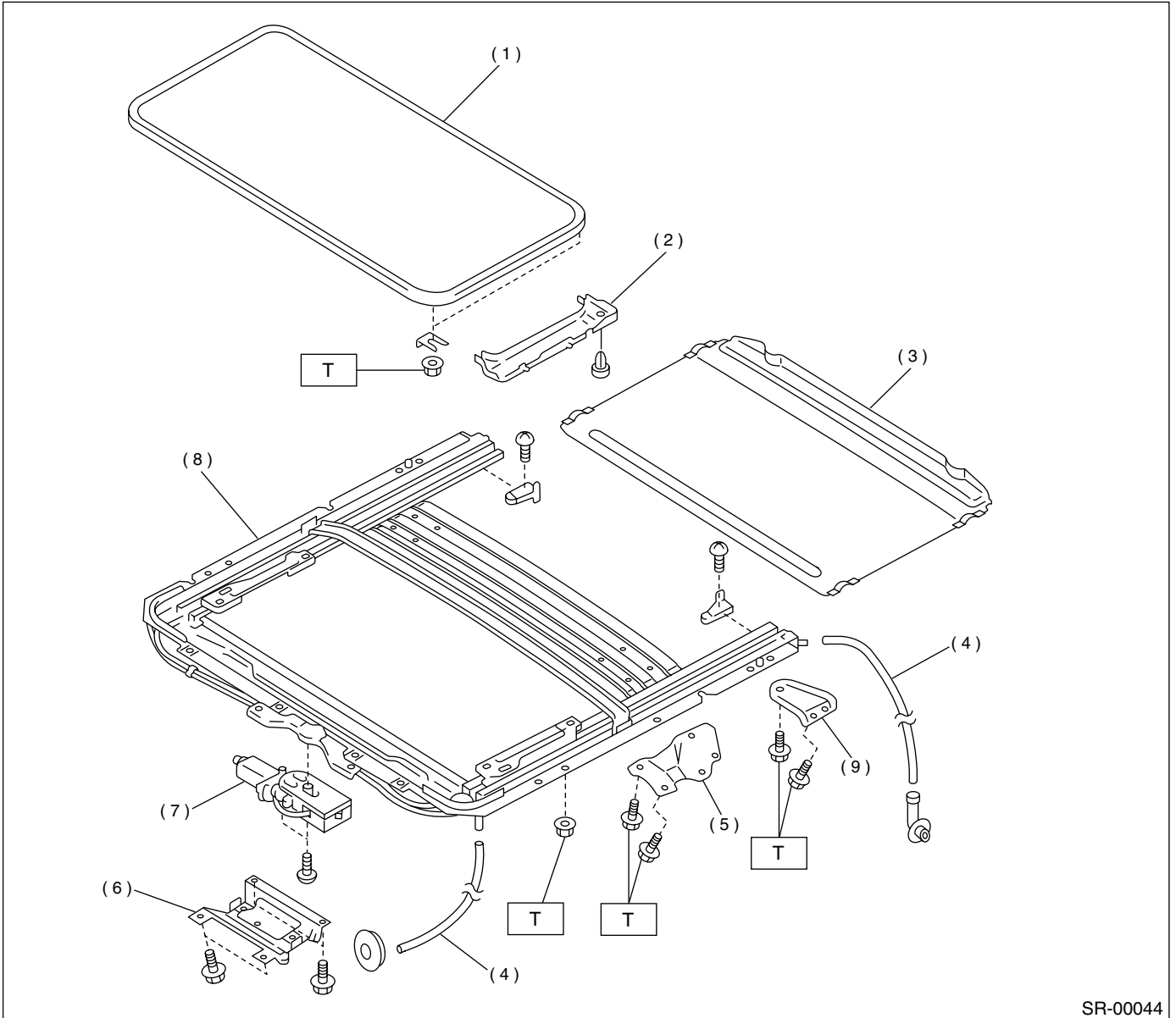
**T1: 7.4 (0.75, 5.4)**

**T2: 1.5 (0.15, 1.1)**

# GENERAL DESCRIPTION

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

### 3. PICKUP



SR-00044

- |                             |                            |
|-----------------------------|----------------------------|
| (1) Glass lid               | (6) Motor cover            |
| (2) Guide rail cover        | (7) Motor ASSY             |
| (3) Sunshade                | (8) Frame ASSY             |
| (4) Drain tube              | (9) Sunroof bracket (Rear) |
| (5) Sunroof bracket (Front) |                            |

**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 connectors and hoses securely during reassembly.
- After reassembly, make sure all 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: SCHEMATIC

#### 1. SUNROOF

<Ref. to WI-288, SCHEMATIC, Sunroof System.>

### B: INSPECTION

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

# SUNROOF LID

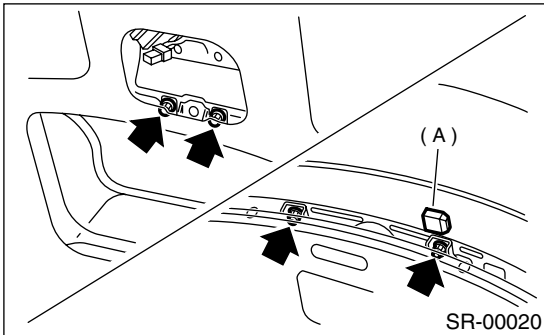
SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 3. Sunroof Lid

### A: REMOVAL

#### 1. WAGON (FRONT)

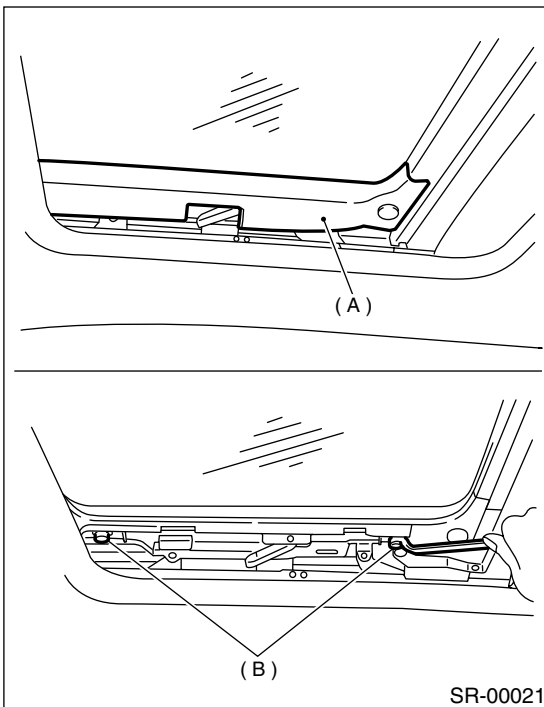
- 1) Tilt-up the front sunroof (most upper position).
- 2) Remove sunroof switch. <Ref. to SR-16, REMOVAL, Sunroof Switch.>
- 3) Remove two mounting bolts.
- 4) Detach covers (A) then remove two nuts from tilt-up assembly.



- 5) Remove the sunroof lid carefully.

#### 2. SEDAN AND WAGON (REAR)

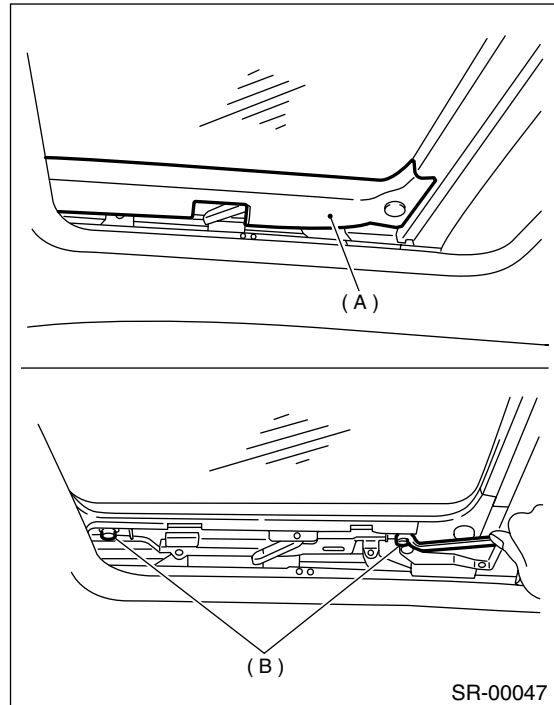
- 1) Completely close rear sunroof lid and open sunshade.
- 2) Remove covers (A) then remove nuts (B).



- 3) Remove the sunroof lid carefully.

### 3. PICKUP

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



- 3) Remove the sunroof lid carefully.

### B: INSTALLATION

Install in the reverse order of removal.

# SUNROOF LID

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## C: ADJUSTMENT

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

Loosen sunroof lid mounting nut. Adjust height between sunroof lid and lid bracket by number of shims being inserted into the space.

Number of shims:

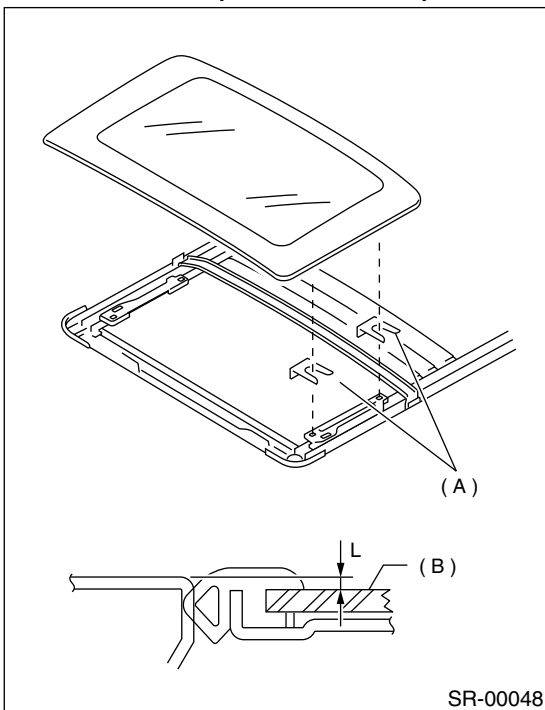
Standard : 1 piece

Max. : 3 pieces [1 piece (standard) + 2 pieces (addition)]

Min. : zero piece

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

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





# SUNROOF ASSEMBLY

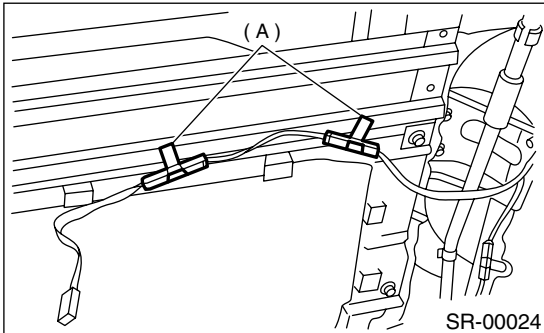
SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 4. Sunroof Assembly

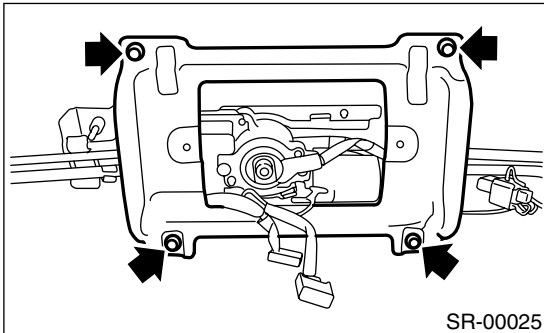
### A: REMOVAL

#### 1. SEDAN

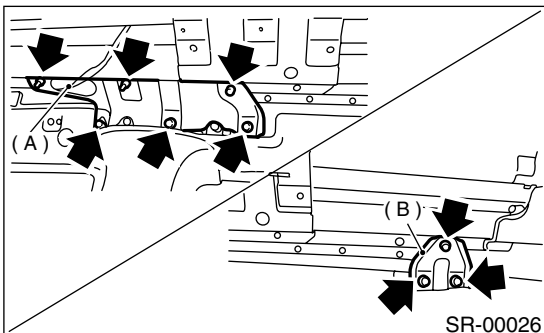
- 1) Disconnect ground cable from battery.
- 2) Remove roof trim. <Ref. to EI-54, SEDAN, REMOVAL, Roof Trim.>
- 3) Remove sunroof lid. <Ref. to SR-7, SEDAN AND WAGON (REAR), REMOVAL, Sunroof Lid.>
- 4) Disconnect drain tubes from sunroof frame.
- 5) Remove room lamp harness clip (A).



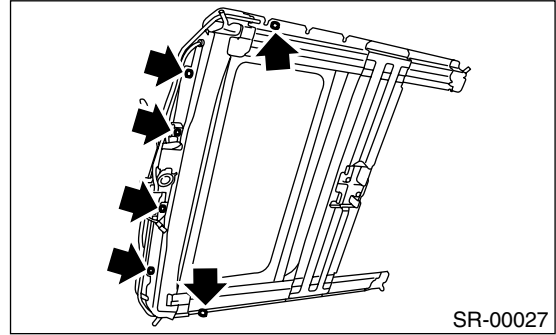
- 6) Disconnect sunroof harness connector.
- 7) Remove motor cover.



- 8) Remove sunroof brackets front (A) and rear (B).

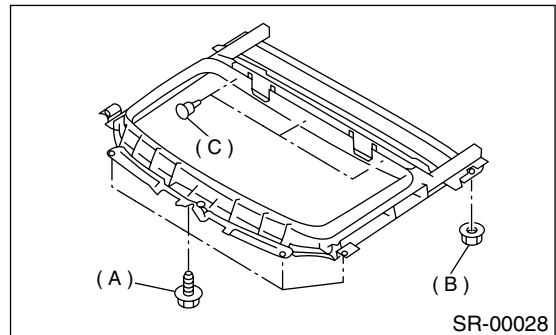


- 9) Remove nuts then detach the sunroof frame.



#### 2. WAGON (FRONT)

- 1) Disconnect ground cable from battery.
- 2) Remove roof trim. <Ref. to EI-55, WAGON, REMOVAL, Roof Trim.>
- 3) Remove front sunroof lid. <Ref. to SR-7, WAGON (FRONT), REMOVAL, Sunroof Lid.>
- 4) Remove room lamp harness clip.
- 5) Remove bolts (A), nuts (B) and clips (C) then detach the sunroof frame.

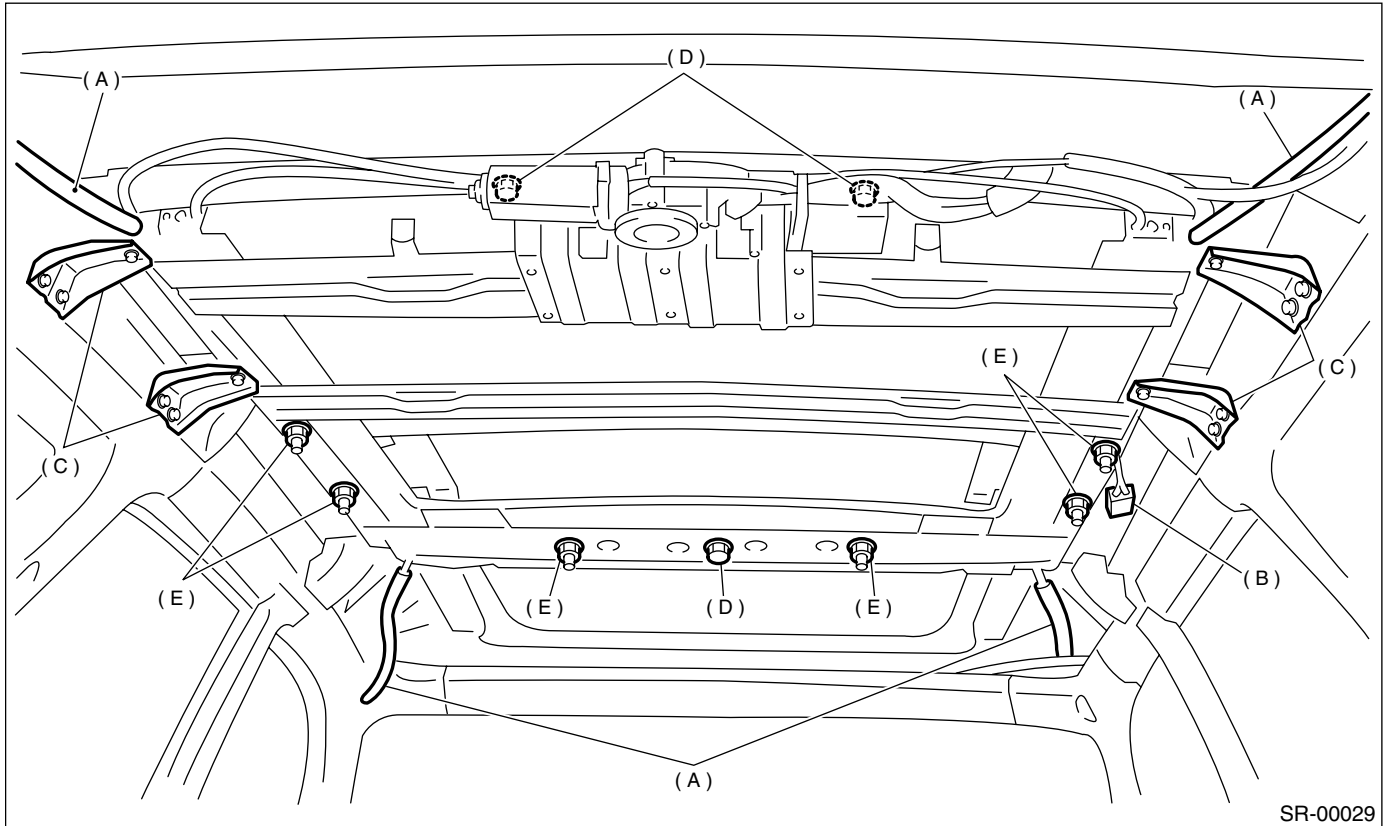


# SUNROOF ASSEMBLY

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

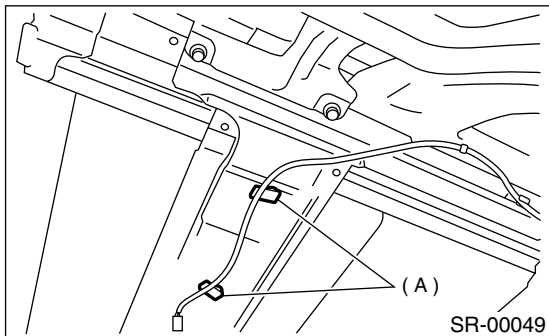
### 3. WAGON (REAR)

- 1) Disconnect ground cable from battery.
- 2) Remove roof trim. <Ref. to EI-55, WAGON, REMOVAL, Roof Trim.>
- 3) Remove rear sunroof lid. <Ref. to SR-7, SEDAN AND WAGON (REAR), REMOVAL, Sunroof Lid.>
- 4) Disconnect drain tubes (A) from rear sunroof frame.
- 5) Disconnect sunroof harness connector (B).
- 6) Remove sunroof brackets (C).
- 7) Remove bolts (D) and nuts (E) then detach the sunroof frame.

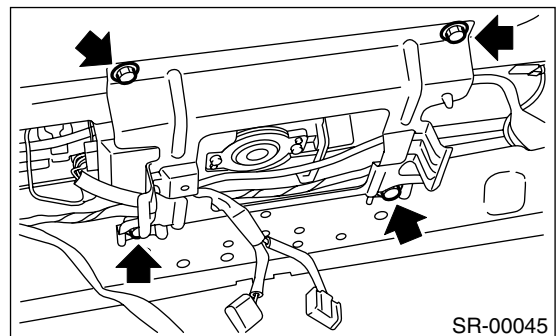


### 4. PICKUP

- 1) Disconnect ground cable from battery.
- 2) Remove roof trim. <Ref. to EI-54, REMOVAL, Roof Trim.>
- 3) Remove sunroof lid. <Ref. to SR-7, REMOVAL, Sunroof Lid.>
- 4) Disconnect drain tube from sunroof frame.
- 5) Remove room lamp harness clip (A).



- 7) Remove motor cover.

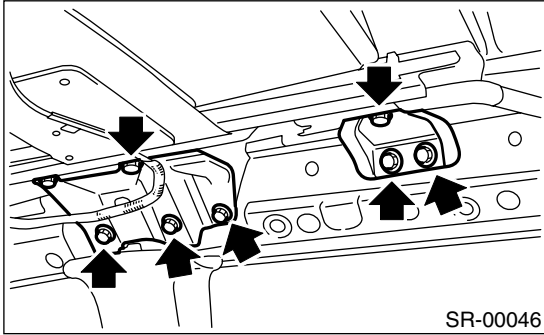


- 6) Disconnect sunroof harness connector.

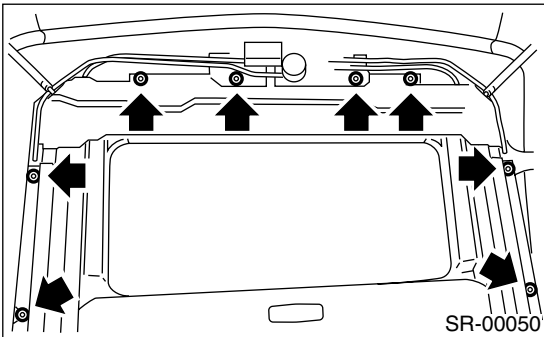
# SUNROOF ASSEMBLY

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

8) Remove sunroof brackets.



9) Remove nuts then detach the sunroof frame.



## B: INSTALLATION

Install in the reverse order of removal.

### CAUTION:

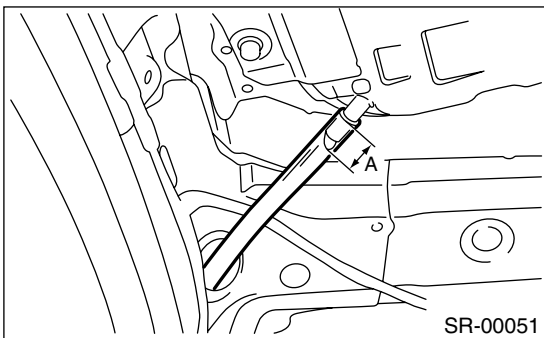
**Be careful not to snag the harness.**

### NOTE:

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

### Length A:

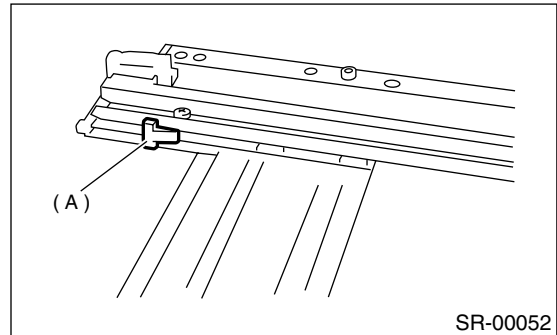
**15 mm (0.59 in) or more**



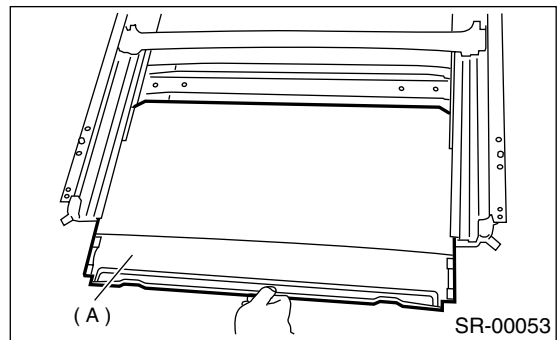
## C: DISASSEMBLY

### 1. SEDAN AND WAGON (FRONT)

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



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

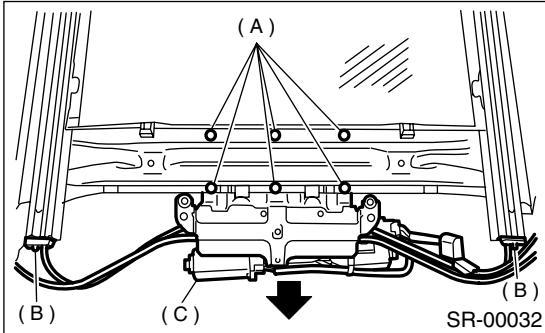


# SUNROOF ASSEMBLY

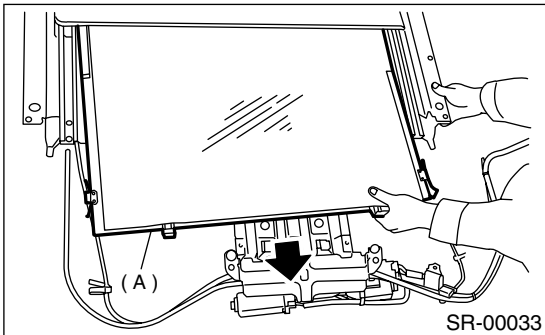
## SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

### 2. WAGON (REAR)

- 1) Remove rear sunroof frame.
- 2) Remove sunroof motor bracket mounting screws (A).
- 3) Remove rail stoppers (B) then pull the motor assembly (C) in the direction shown in the figure.

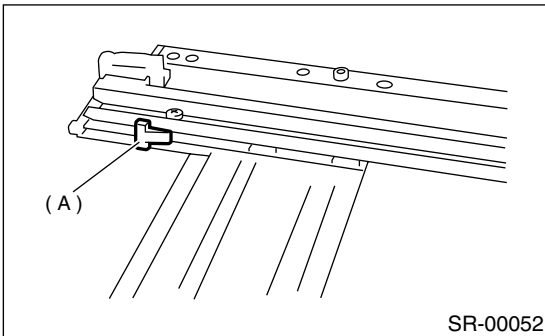


- 4) Pull out the sunshade (A) from sunroof frame.

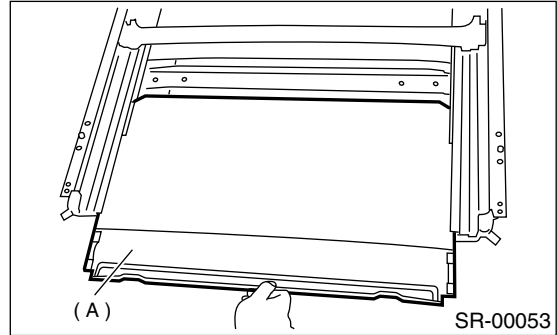


### 3. PICKUP

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



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



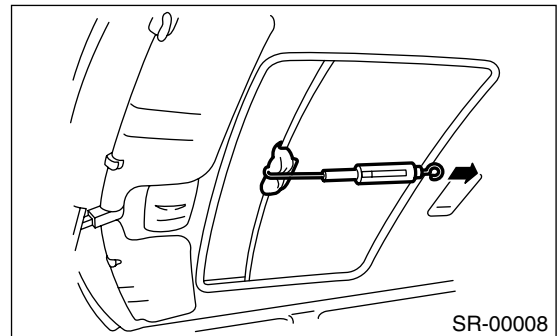
### D: ASSEMBLY

Assemble in the reverse order of disassembly.

### E: INSPECTION

#### 1. CHECK FOR MOVEMENT OF SUNSHADE

- 1) Place a cloth on sunshade edge, and attach a spring scale.



- 2) Pull spring scale backward, and measure the load to move the sunshade.

#### **Load to move rear sunshade:**

**Less than  $24.5 \pm 4.9$  N ( $2.5 \pm 0.5$  kgf,  $5.5 \pm 1.1$  lb)**

#### NOTE:

Considerable load is required to start pulling spring scale, so take a scale reading when it moves smoothly.

- 3) If the measured value is more than the specified value, check sunroof lid, sunshade and guide rail assembly for improper installation.

# SUNROOF MOTOR

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 5. Sunroof Motor

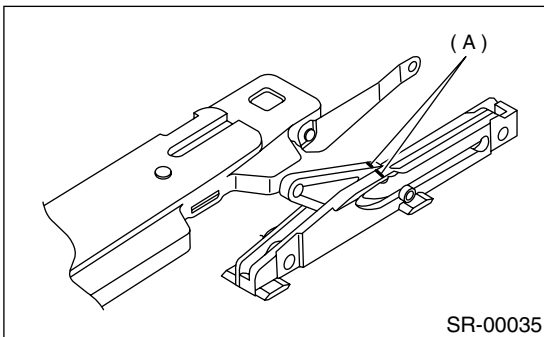
### A: REMOVAL

#### CAUTION:

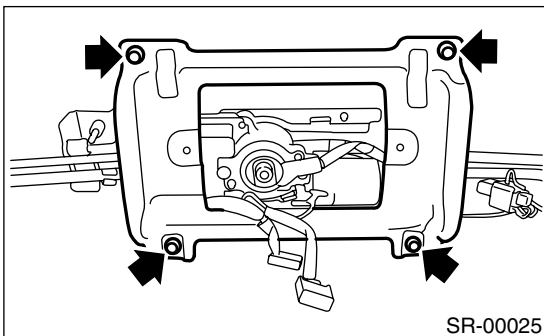
When removing clip, use great care not to damage the roof trim.

#### 1. SEDAN

- 1) Completely close the sunroof.
- 2) Disconnect ground cable from battery.
- 3) Remove sunroof lid. <Ref. to SR-7, SEDAN AND WAGON (REAR), REMOVAL, Sunroof Lid.>
- 4) Confirm the matching mark (A) of sunroof bracket link and the guide from sunroof opening. (If the mark does not match, adjust to match the mark.)



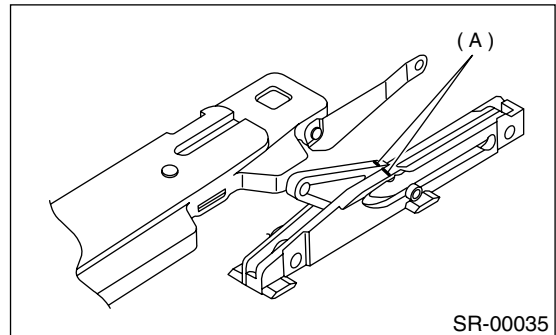
- 5) Remove roof trim. <Ref. to EI-54, SEDAN, REMOVAL, Roof Trim.>
- 6) Remove motor cover.



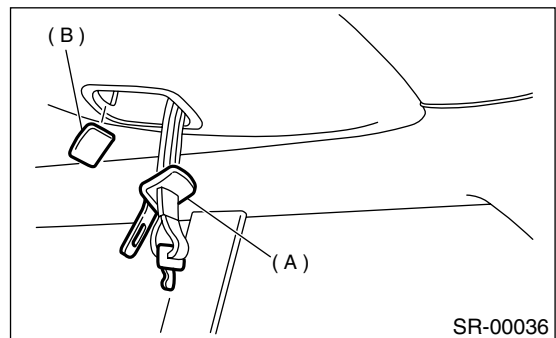
- 7) Disconnect harness connector and remove sunroof motor mounting screw.

#### 2. WAGON

- 1) Completely close the front and rear sunroof, then tilt-up the front sunroof to the most upper position.
- 2) Disconnect ground cable from battery.
- 3) Remove rear sunroof lid. <Ref. to SR-7, SEDAN AND WAGON (REAR), REMOVAL, Sunroof Lid.>
- 4) Confirm the matching mark (A) of rear sunroof bracket link and the guide from sunroof opening. (If the mark does not match, adjust to match the mark.)



- 5) Remove luggage room light. <Ref. to LI-30, REMOVAL, Luggage Room Light.>
- 6) Remove rear assist grips.
- 7) Remove rear quarter trim. <Ref. to EI-52, WAGON, REMOVAL, Rear Quarter Trim.>
- 8) Remove cover (B) while detaching snap lock carefully. Put the rear center seat belt tongue (A) out to the other side of the trim through the hole.

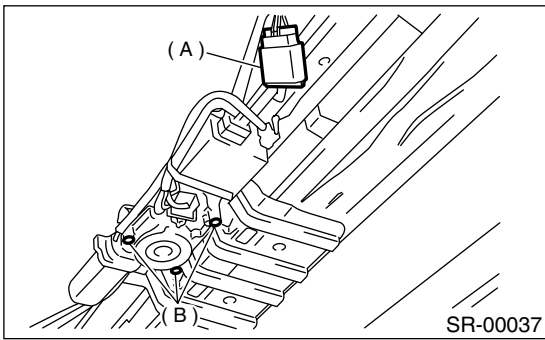


- 9) Remove clips and hang down rear end of roof trim.

# SUNROOF MOTOR

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

- 10) Disconnect harness connector (A) and remove sunroof motor mounting screw (B).

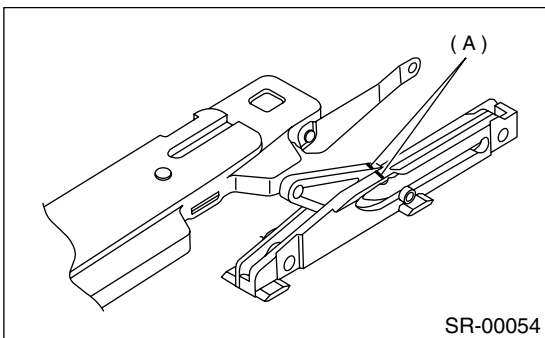


### 3. PICKUP

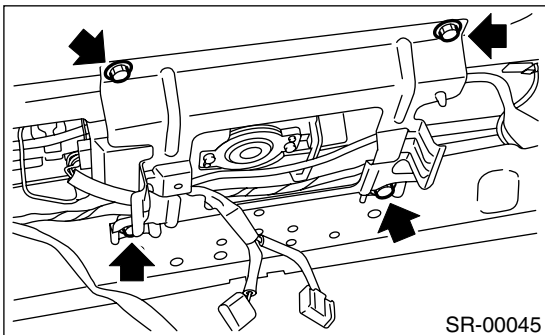
#### CAUTION:

When removing clip, use great care not to damage the roof trim.

- 1) Completely close the sunroof.
- 2) Disconnect ground cable from battery.
- 3) Remove sunroof lid. <Ref. to SR-7, REMOVAL, Sunroof Lid.>
- 4) Confirm the matching mark (A) of rear sunroof bracket link and the guide from sunroof opening. (If the mark does not match, adjust to match the mark.)



- 5) Remove roof trim. <Ref. to EI-54, REMOVAL, Roof Trim.>
- 6) Remove motor cover.



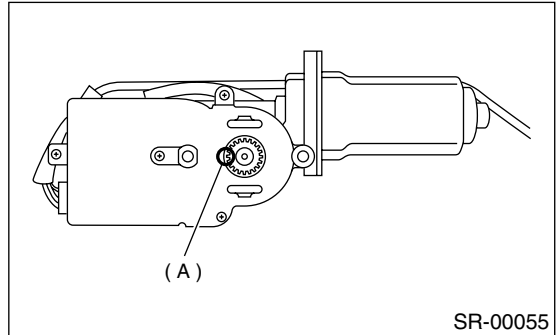
- 7) Disconnect harness connector and remove sunroof motor mounting screw.

### B: INSTALLATION

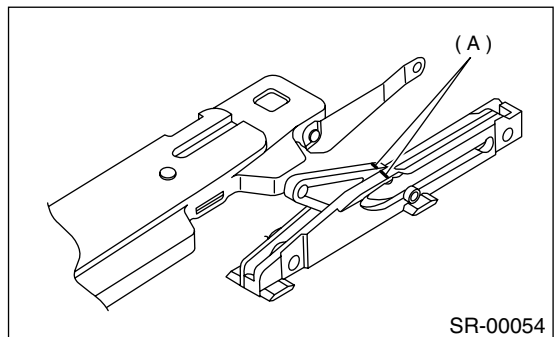
#### CAUTION:

- Never rotate the sunroof motor while removed.
- Be careful not to move the sunroof cable when installing sunroof motor.

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



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



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

# SUNROOF MOTOR

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

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| Operation  | Switch position |
|--|-----------------|
| Completely close sunroof.  | Closed          |
| Tilt-up sunroof to most upper position.                              | Tilt up         |
| Completely lower sunroof.  | 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 sunroof lid and trim in the reverse order of removal.

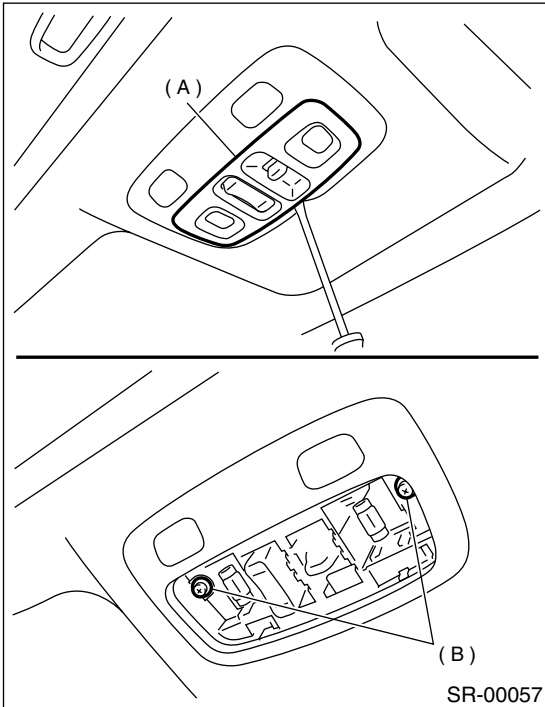
# SUNROOF SWITCH

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 6. Sunroof Switch

### A: REMOVAL

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



- 3) Disconnect harness connectors and remove sunroof switch.

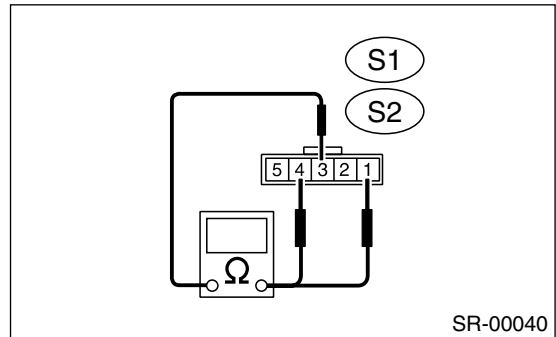
### B: INSTALLATION

Install in the reverse order of removal.

## C: INSPECTION

### 1. SEDAN

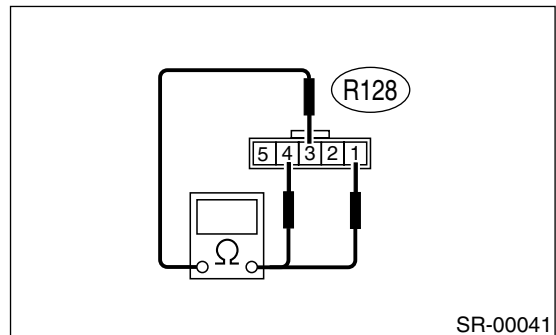
Measure sunroof switch resistance.



| Switch position | Terminal No. | Standard      |
|-----------------|--------------|---------------|
| 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 |

### 2. WAGON

Measure sunroof switch resistance.



| Switch position | Terminal No. | Standard      |
|-----------------|--------------|---------------|
| Open            | 3 and 4      | Less than 1 Ω |
| Close           | 1 and 3      | Less than 1 Ω |

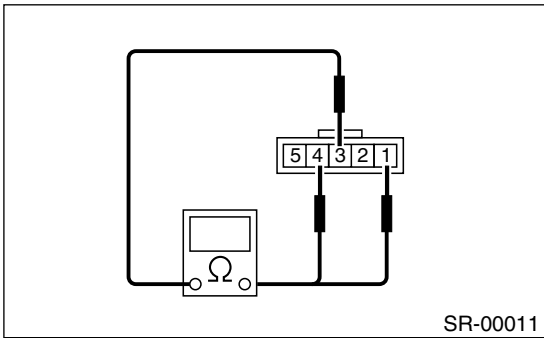


# SUNROOF SWITCH

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

## 3. PICKUP

Measure sunroof switch resistance.



| Switch position | Terminal No. | Specified condition  |
|-----------------|--------------|----------------------|
| Open            | 3 and 4      | Less than 1 $\Omega$ |
| Close           | 1 and 3      | Less than 1 $\Omega$ |
| Tilt up         | 3 and 4      | Less than 1 $\Omega$ |
| Tilt down       | 1 and 3      | Less than 1 $\Omega$ |

# SUNROOF SWITCH

SUNROOF/T-TOP/CONVERTIBLE TOP (SUNROOF)

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**MEMO:**