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WIPER AND WASHER SYSTEMS

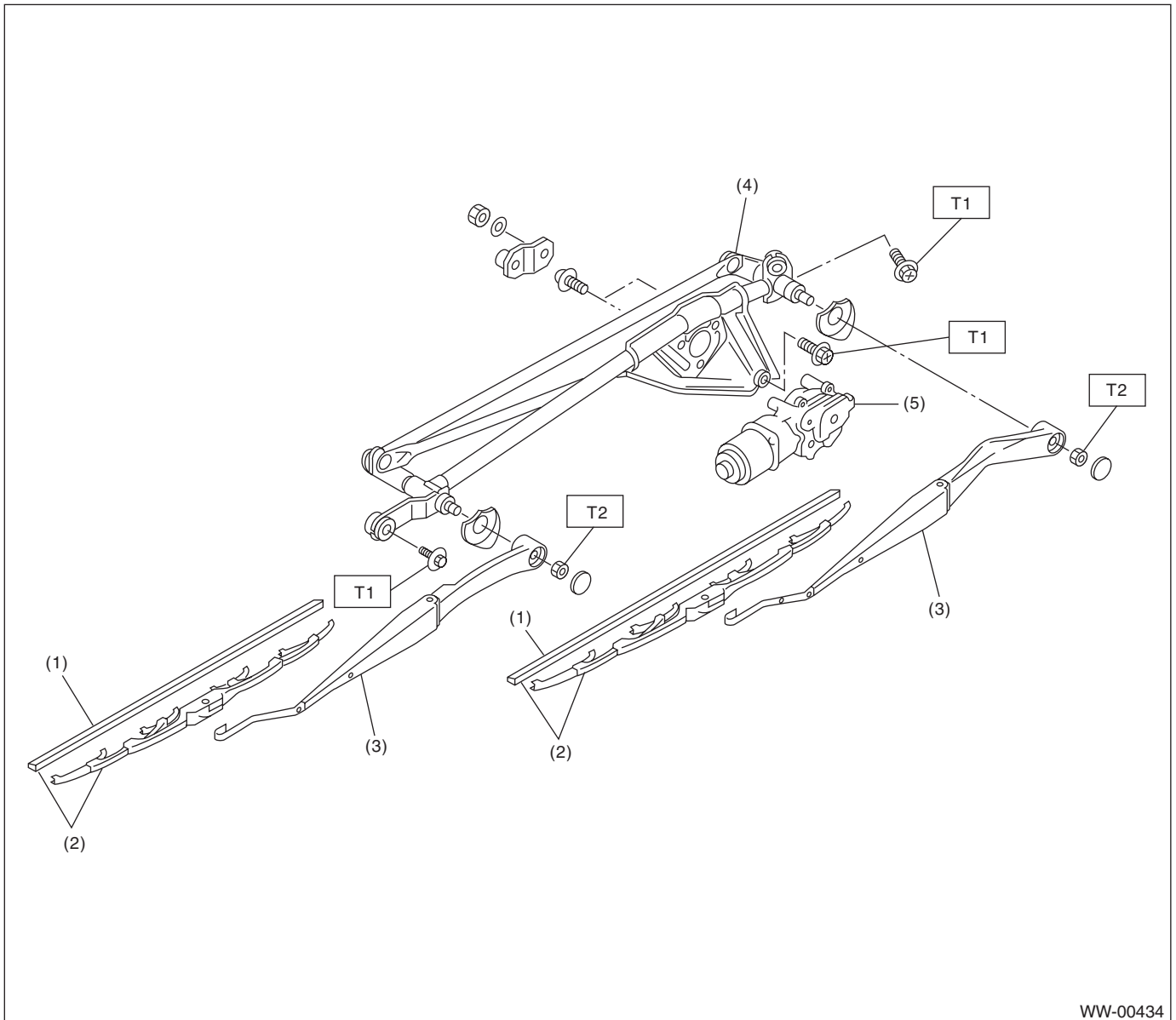
1. General Description

A: SPECIFICATION

Front wiper motor	Input	12 V — 72 W or less
Rear wiper motor	Input	12 V — 42 W or less
Front washer motor	Pump type	Centrifugal
	Input	12 V — 36 W or less
Rear washer motor	Pump type	Centrifugal
	Input	12 V — 36 W or less

B: COMPONENT

1. FRONT WIPER



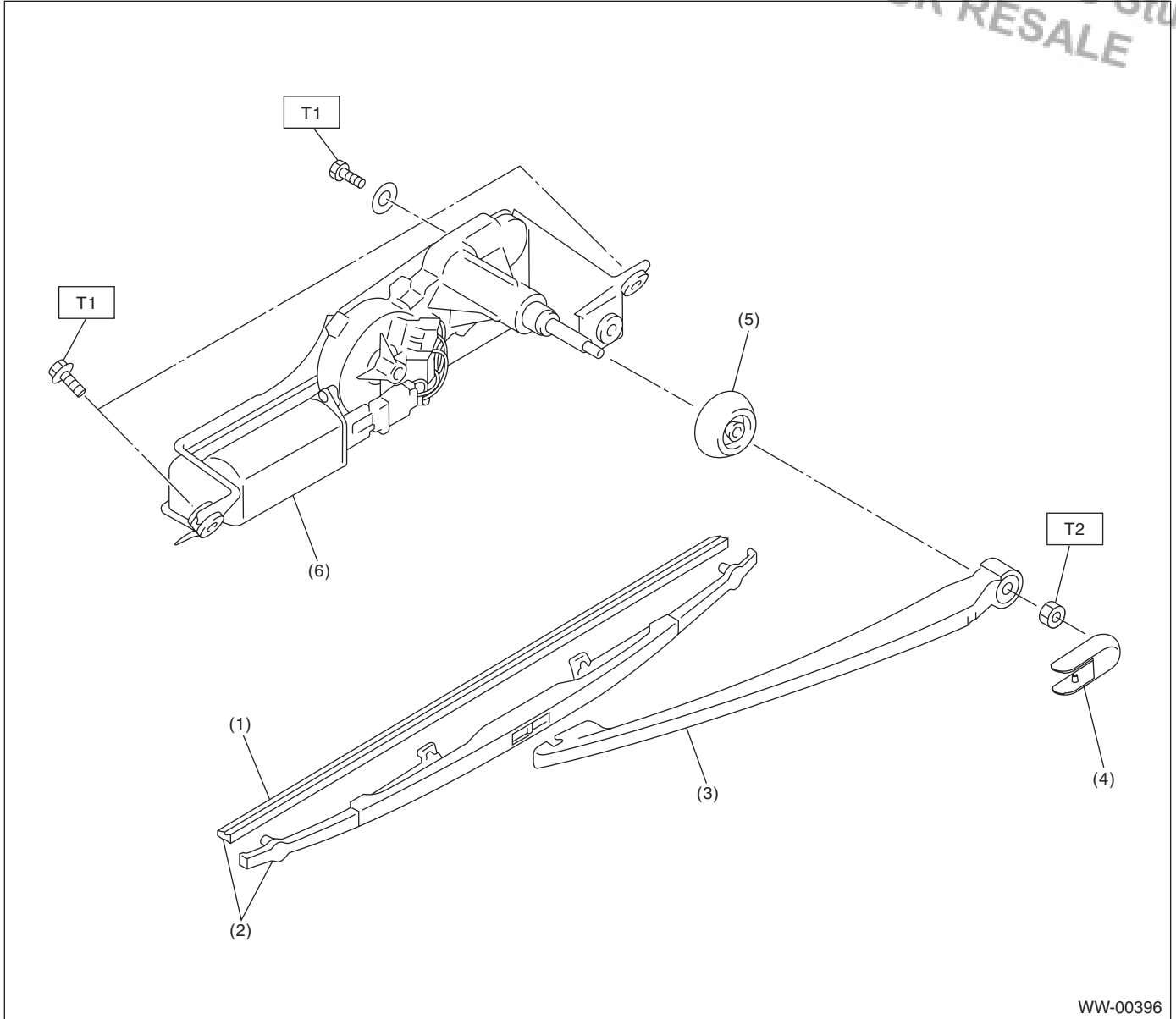
WW-00434

- (1) Wiper rubber
- (2) Wiper blade ASSY
- (3) Wiper arm

- (4) Wiper link
- (5) Wiper motor

Tightening torque: N·m (kgf·m, ft·lb)
T1: 6.0 (0.61, 4.4)
T2: 20 (2.0, 14.5)

2. REAR WIPER

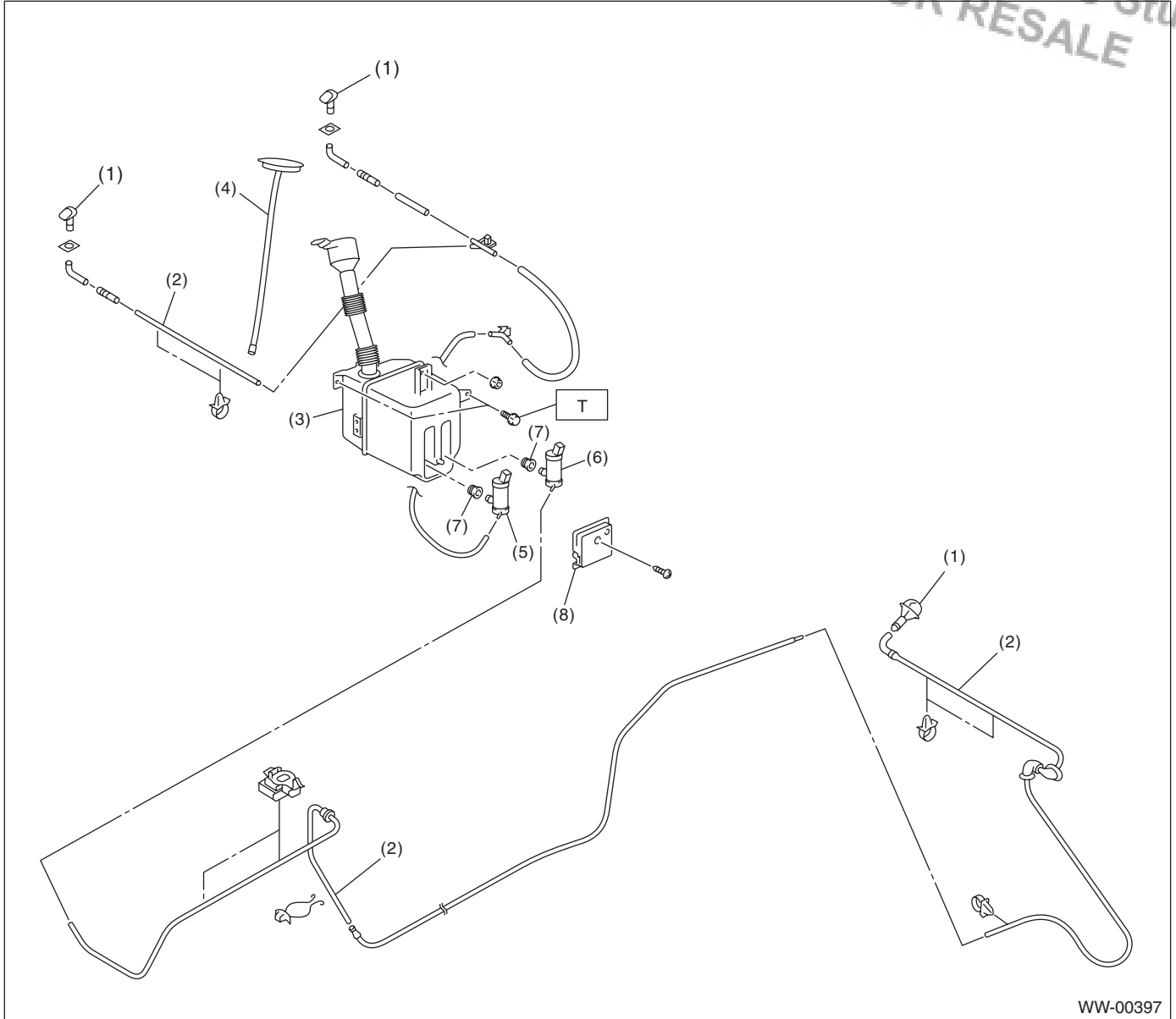


WW-00396

- | | |
|----------------------|---------------------|
| (1) Wiper rubber | (4) Wiper arm cover |
| (2) Wiper blade ASSY | (5) Pivot cap |
| (3) Wiper arm | (6) Wiper motor |

Tightening torque: N·m (kgf·m, ft·lb)
T1: 6.0 (0.61, 4.4)
T2: 8.0 (0.82, 5.9)

3. WASHER TANK



WW-00397

- | | |
|-----------------------------------|------------------------|
| (1) Washer nozzle | (5) Front washer motor |
| (2) Washer hose | (6) Rear washer motor |
| (3) Washer tank | (7) Grommet |
| (4) Washer tank cap & level gauge | (8) Washer motor cover |

Tightening torque: N·m (kgf·m, ft·lb)
T: 6.0 (0.61, 4.4)

C: CAUTION

- Connect the connectors and hoses securely during reassembly.
- After reassembly, make sure functional parts operate smoothly.
- Be careful with the airbag system wiring harness which passes near electrical parts and switches.
- Airbag system wiring harnesses and connectors are yellow. Do not use a tester equipment on these circuits.
- Care must be taken when connecting the hoses to pipes so that there are no bends or blockage.
- If even a small amount of silicon oil or grease enters tank and washer fluid passages, an oil film will be formed on the glass and will cause the wiper to chatter and judder. Make sure that no oil comes into contact with the system.

2. Wiper and Washer System

A: WIRING DIAGRAM

1. WIPER AND WASHER (FRONT)

<Ref. to WI-137, WIRING DIAGRAM, Front Wiper and Washer System.>

2. WIPER AND WASHER (REAR)

<Ref. to WI-138, WIRING DIAGRAM, Rear Wiper and Washer System.>

B: INSPECTION

Symptom	Repair order
Wiper and washers do not operate.	<ol style="list-style-type: none"> 1. Wiper fuse (F/B No. 14, 15) 2. Combination switch 3. Wiper motor assembly 4. Wiring harness 5. Wiper relay unit (rear wiper only)
Wipers do not operate in LO or HI.	<ol style="list-style-type: none"> 1. Combination switch 2. Wiper motor assembly 3. Wiring harness 4. Wiper relay unit (rear wiper only)
Wipers do not operate in INT.	<ol style="list-style-type: none"> 1. Combination switch 2. Wiper motor assembly 3. Wiring harness 4. Wiper relay unit (rear wiper only)
Washer motor does not operate.	<ol style="list-style-type: none"> 1. Washer switch 2. Washer motor 3. Wiring harness
Wipers do not operate when washer switch is ON.	<ol style="list-style-type: none"> 1. Wiper motor assembly 2. Wiring harness
Washer fluid spray does not operate properly.	<ol style="list-style-type: none"> 1. Washer motor 2. Washer hose and nozzle

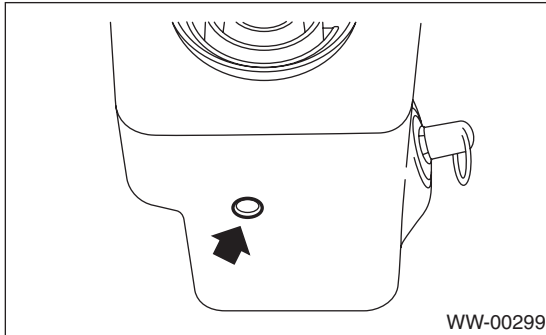
Combination Switch (Wiper)

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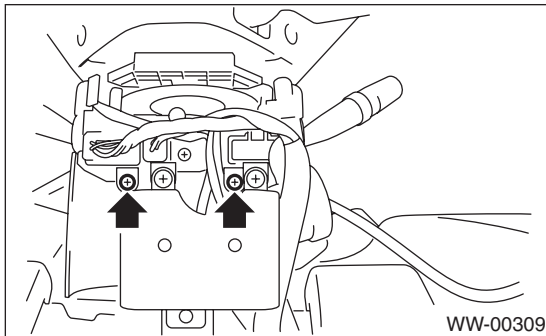
3. Combination Switch (Wiper)

A: REMOVAL

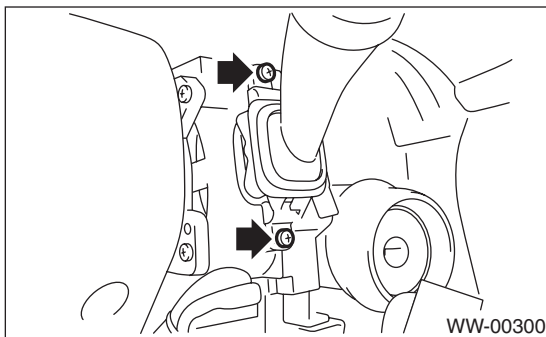
- 1) Disconnect the ground cable from the battery.
- 2) Remove the instrument panel lower cover. <Ref. to EI-47, REMOVAL, Instrument Panel Assembly.>
- 3) Loosen the screw to remove a steering column lower cover.



- 4) Remove the steering column upper cover mounting screw.



- 5) Disconnect the connector from the combination switch.
- 6) Loosen the screw to remove the combination switch.

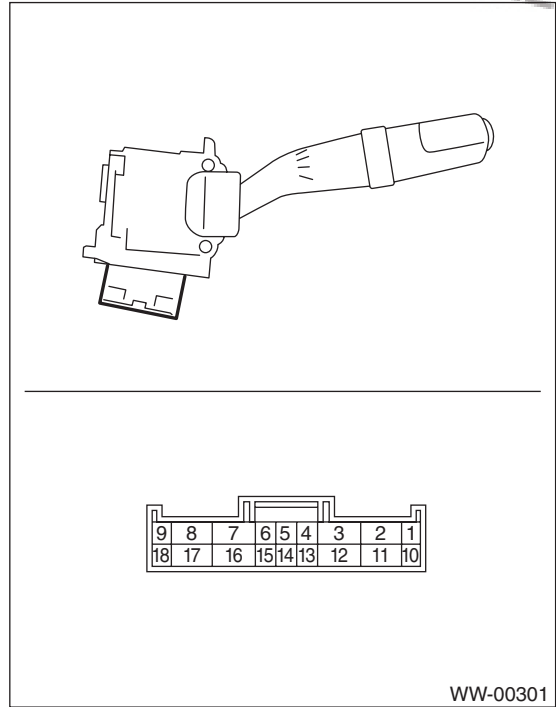


B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

- Inspect the continuity between each connector terminal.



	Switch position	Terminal No.	Standard
Front	OFF	7 and 16	Less than 1 Ω
	INT	7 and 16	Less than 1 Ω
	LO	7 and 17	Less than 1 Ω
	HI	8 and 17	Less than 1 Ω
	Washer ON	2 and 11	Less than 1 Ω
Rear	Washer ON	2 and 10 10 and 12 2 and 12	Less than 1 Ω
	OFF	—	1 MΩ or more
	ON	2 and 10	Less than 1 Ω
	Washer ON	2 and 10 10 and 12 2 and 12	Less than 1 Ω

If continuity is not as specified, replace the switch.

- Check the intermittent operation (inspection of the wiper switch alone)

- 1) Set the voltage meter between connector terminal No. 7 (+) and No. 2 (-).
- 2) Connect battery positive lead to the connector terminal No. 17, and negative lead to the terminals No. 2 and No. 16.
- 3) Turn the wiper switch to INT.
- 4) Disconnect the battery negative lead from the connector terminal No. 16.
- 5) Connect the battery positive lead to the connector terminal No. 16 for 5 seconds.

Combination Switch (Wiper)

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- 6) Connect the battery negative lead to the terminal No. 16, and measure the voltage between terminal No. 7 (+) and No. 2 (-).
- 7) Perform step 1) to 6) when intermittent control switch is in MIN or MAX. If operation is not as specified, replace the wiper switch assembly.

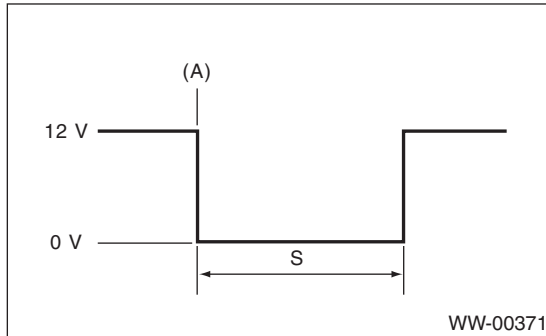
Intermittent stationary time:

At MIN:

1.6±1 sec.

At MAX:

16±6 sec.



S Intermittent downtime (sec.)

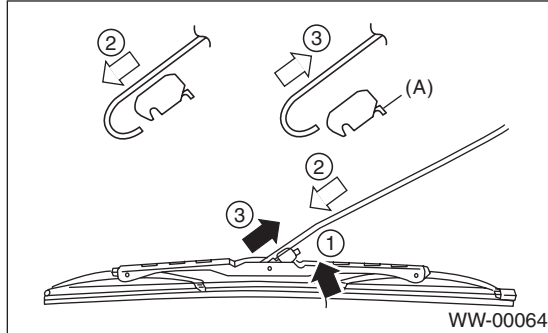
- (A) Connect the battery negative lead to the connector terminal No. 16.

4. Wiper Blade

A: REMOVAL

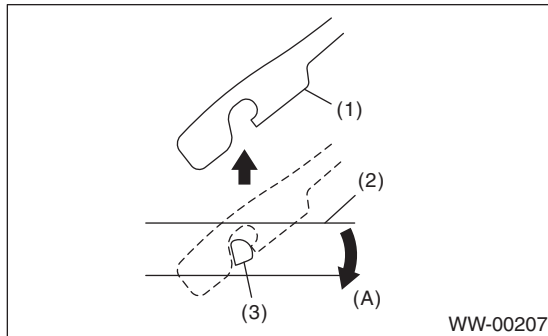
1. FRONT

While pushing the locking clip (A) up, pull out the blade in the direction of the arrow and remove it from the wiper arm.



2. REAR

Turn the blade in the direction of arrow (A) and remove it from arm.



(A) Turn the wiper blade.

- 1) Wiper arm
- 2) Wiper blade
- 3) Wiper blade attachment section

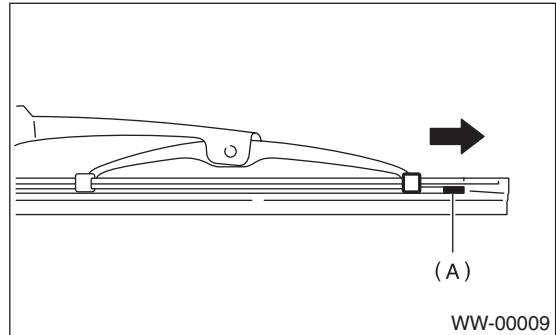
B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Confirm that the clip is locked securely.

C: DISASSEMBLY

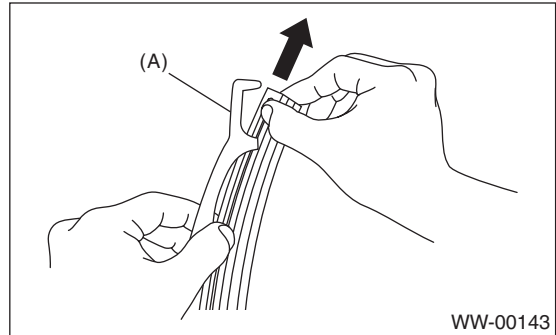
1. FRONT

Pull side (A) of the wiper rubber stopper and remove the rubber from the blade assembly.



2. REAR

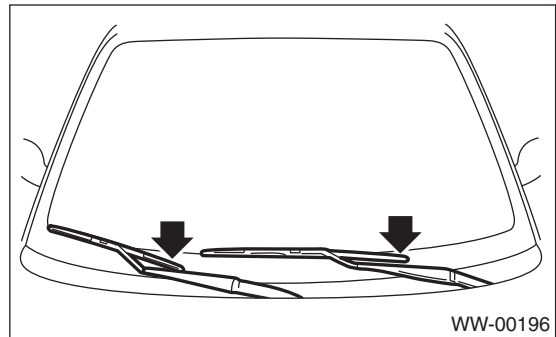
Pull the wiper rubber top slightly from stopper (A) and pull out completely.



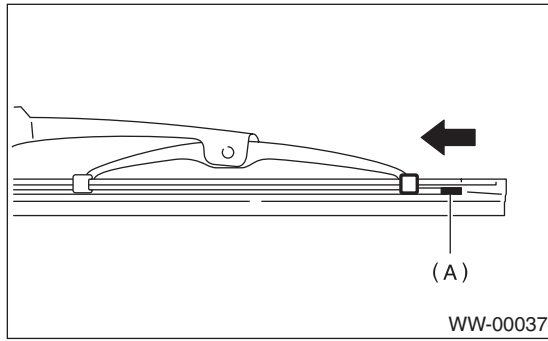
D: ASSEMBLY

1. FRONT

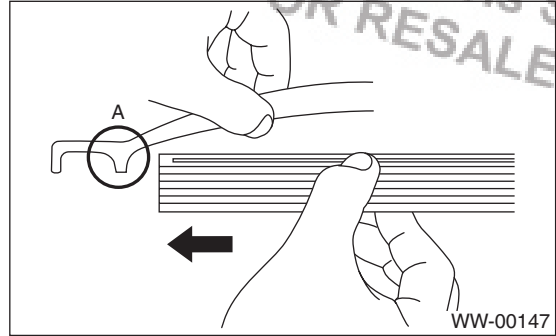
1) Insert the wiper rubber onto the blade so that the stopper is in the position shown in the figure.



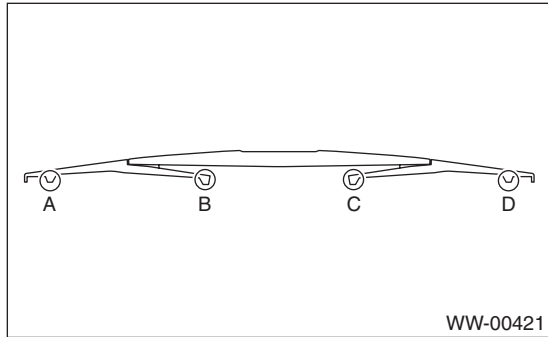
2) Make sure the wiper rubber is securely fastened to the pull stopper (A).



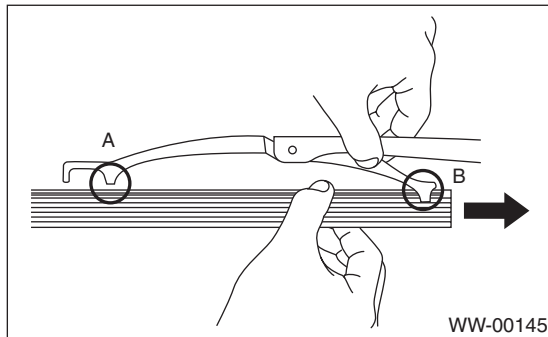
3) Insert the wiper rubber into claw (A).



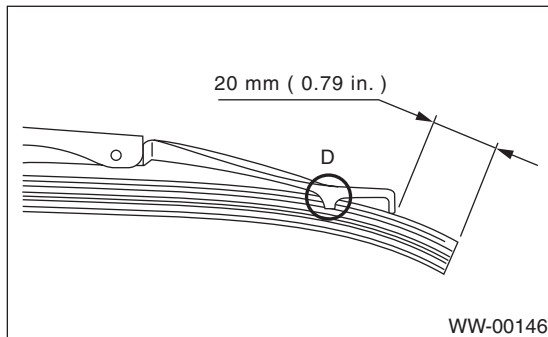
2. REAR



1) Insert the wiper rubber into claw (B).



2) Insert the wiper rubber until its top end protrudes approx. 20 mm (0.79 in) from stopper (D).



E: INSPECTION

1) When the wiper does not operate properly, inspect the following item.

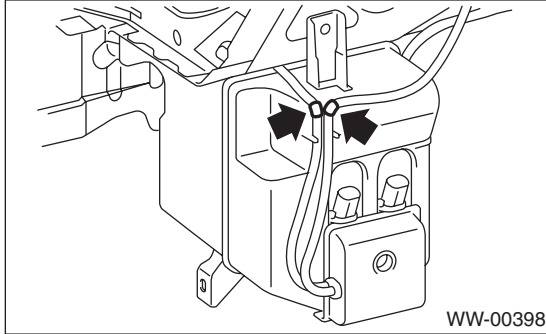
- Make sure the movable part of blade assembly moves smoothly.
- Make sure the wiper rubber is not deformed or damaged.

2) Replace with a new part if damage is found.

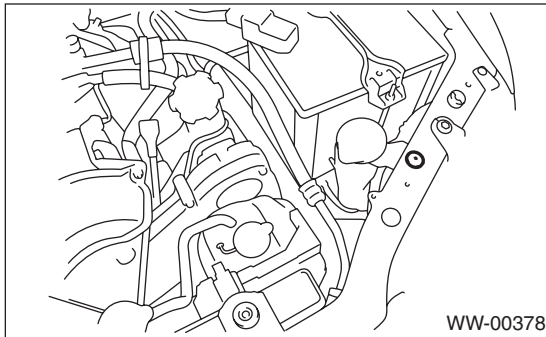
5. Washer Tank and Motor

A: REMOVAL

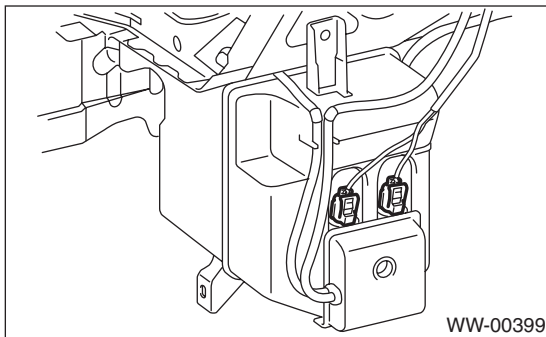
- 1) Open the front hood.
- 2) Disconnect the ground cable from the battery.
- 3) Remove the front bumper. <Ref. to EI-24, REMOVAL, Front Bumper.>
- 4) Disconnect hose from the L joint and drain the washer fluid.



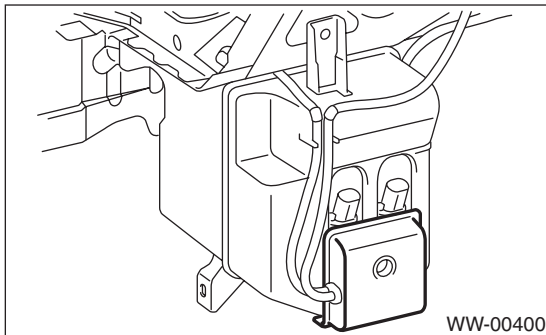
- 5) Remove the duct clip.



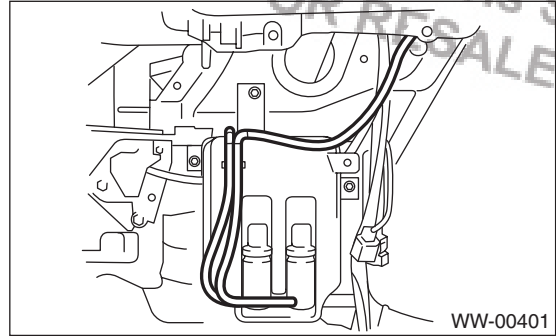
- 6) Disconnect the connector.



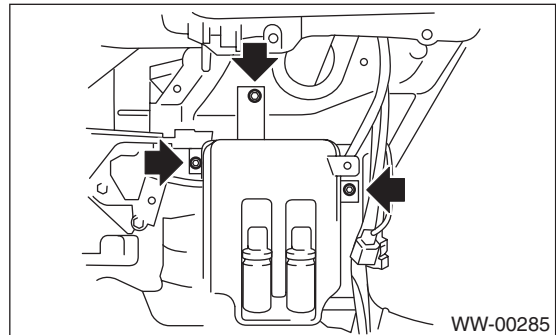
- 7) Remove the screws and detach the cover.



- 8) Disconnect the hose.



- 9) Remove the bolts and nuts and remove the washer tank.



B: INSTALLATION

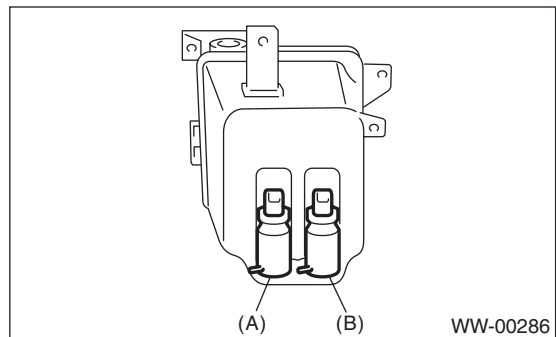
Install in the reverse order of removal.

Tightening torque:

6.0 N·m (0.61 kgf-m, 4.4 ft-lb)

C: DISASSEMBLY

Pull out the washer motor from the tank.



(A) Front

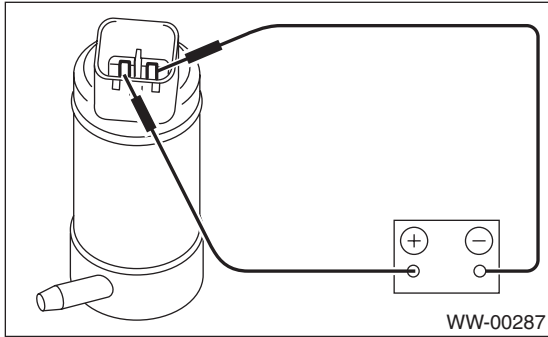
(B) Rear

D: ASSEMBLY

- 1) Assemble in the reverse order of disassembly.
- 2) Confirm that water does not leak from installation area of motor.

E: INSPECTION

Apply battery voltage to the connector terminal of the washer motor and make sure the motor operates.



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6. Front Wiper Arm

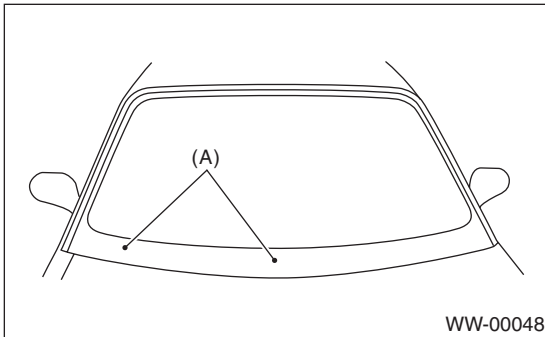
A: REMOVAL

- 1) Open the front hood.
- 2) Remove the cap.
- 3) Remove the nuts to remove the arm.



B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Operate the wiper once.
- 3) Align the wiper blade to ceramic print point mark (A) of front window glass.



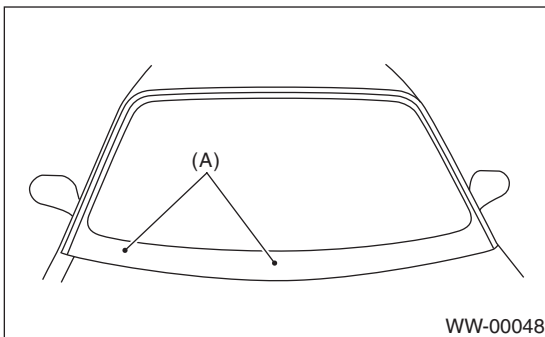
Tightening torque:

Refer to "COMPONENT" of "General Description".

<Ref. to WW-2, FRONT WIPER, COMPONENT, General Description.>

C: ADJUSTMENT

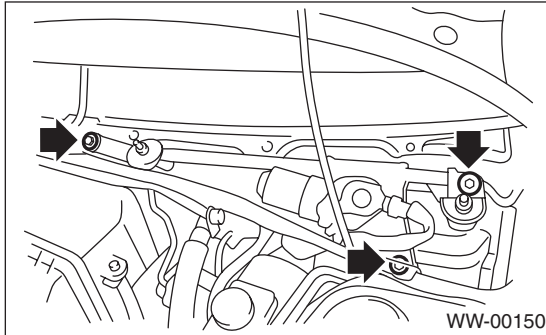
Operate the wiper once. Align the wiper blade to ceramic print point mark (A) of front window glass.



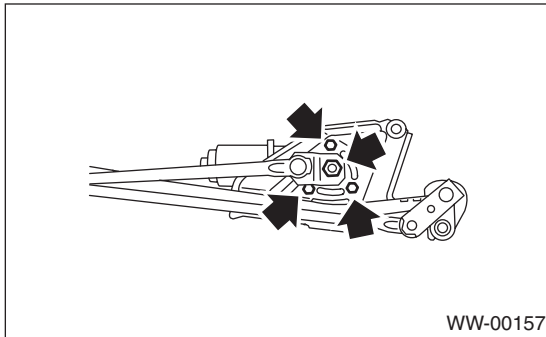
7. Front Wiper Motor and Link

A: REMOVAL

- 1) Disconnect the ground cable from the battery.
- 2) Remove the cowl panel. <Ref. to EI-34, REMOVAL, Cowl Panel.>
- 3) Disconnect the connector of motor.
- 4) Remove the bolts and remove the wiper link.

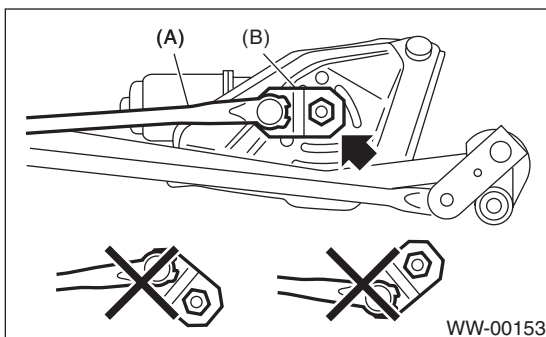


- 5) Remove the bolts and nuts, and then remove the motor.



B: INSTALLATION

- 1) Connect the ground cable to the battery.
- 2) To confirm that the motor is at the auto stop position, connect the harness to the motor and turn the wiper switch to ON/OFF once.
- 3) Disconnect the ground cable from the battery.
- 4) Tighten the nut where rod (A) and link plate (B) is aligned in a straight line.



- 5) Install in the reverse order of removal.

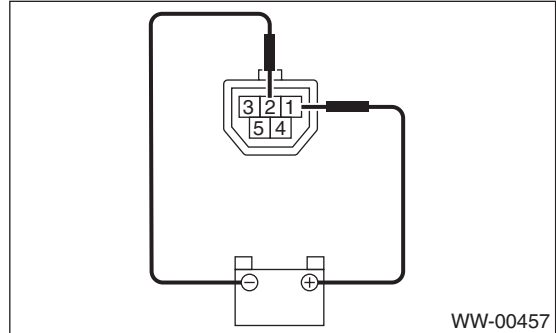
Tightening torque:

Refer to "COMPONENT" of "General Description".

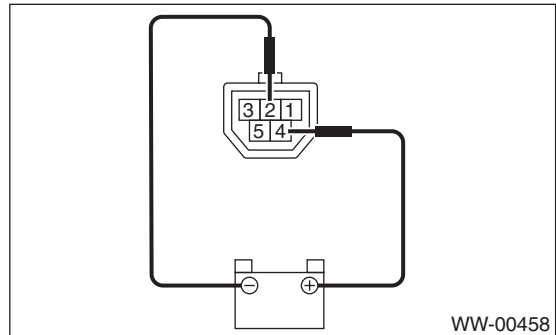
<Ref. to WW-2, FRONT WIPER, COMPONENT, General Description.>

C: INSPECTION

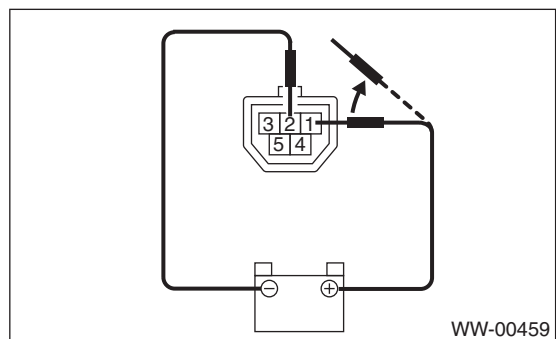
- 1) When the battery is connected to the terminal of connectors as shown in the figure, confirm that the motor operates at low speed.



- 2) When the battery is connected to the terminal of connectors as shown in the figure, confirm that the wiper motor operates at high speed.



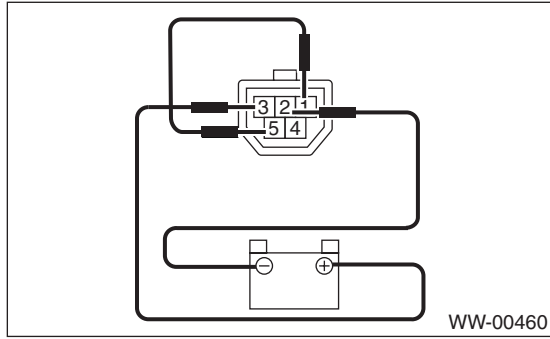
- 3) Connect the battery to terminals of the connector, and remove the terminal connection with motor rotating at low speed, and stop the wiper motor in mid-operation.



Front Wiper Motor and Link

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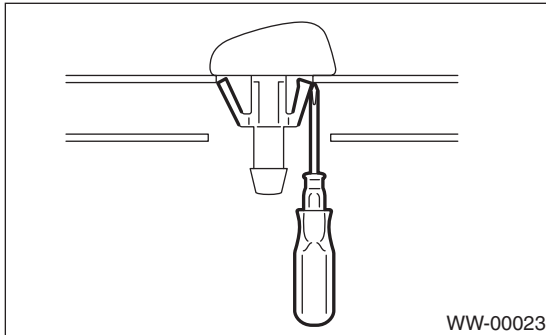
4) Connect the battery and confirm that the motor stops at the automatic stop position after the motor operates at low speed again.



8. Front Washer Nozzle

A: REMOVAL

- 1) Remove the washer hose from the washer nozzle.
- 2) Open the clips on the underside of the front hood with a thin screwdriver or other tool, and remove the washer nozzle.



B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Adjust the position of the washer fluid sprayer.
<Ref. to WW-15, ADJUSTMENT, Front Washer Nozzle.>

C: INSPECTION

- Make sure the nozzle and hose are not clogged.
- Make sure the hose is not bent.

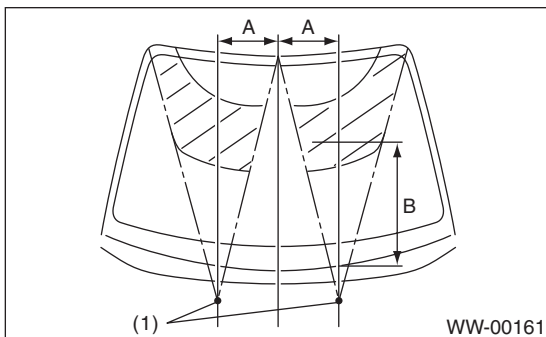
D: ADJUSTMENT

- 1) Turn the wiper switch to OFF position.
- 2) While the vehicle is at a standstill, adjust the washer injection position as shown in the figure.

Injection position:

A: 257 mm (10.12 in)

B: 512 mm (20.16 in)

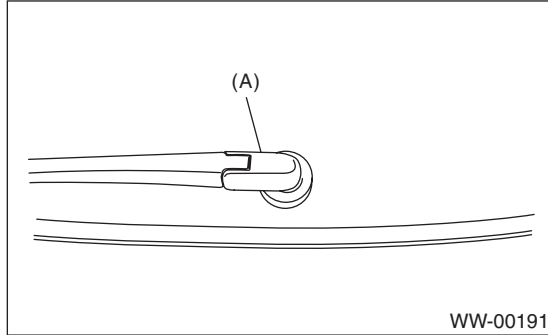


(1) Nozzle

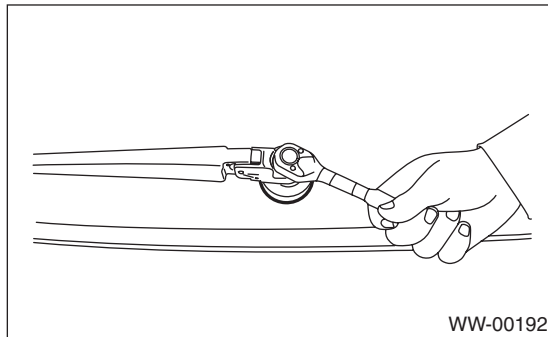
9. Rear Wiper Arm

A: REMOVAL

- 1) Detach the wiper arm cover (A).

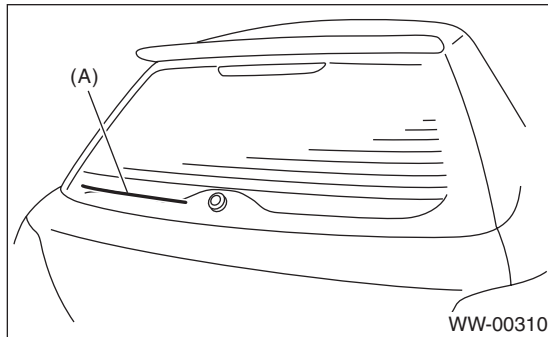


- 2) Remove the nut and remove the wiper arm.



B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Operate the rear wiper once.
- 3) Align the blade to heat wire (A) of rear defogger.



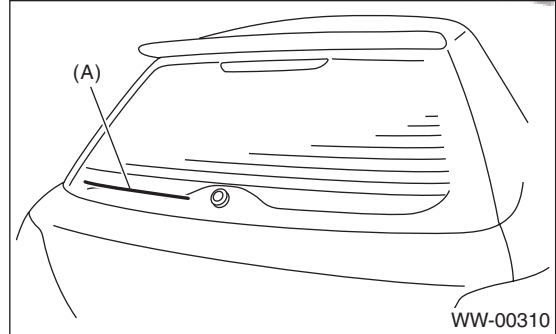
Tightening torque:

Refer to "COMPONENT" of "General Description".

<Ref. to WW-3, REAR WIPER, COMPONENT, General Description.>

C: ADJUSTMENT

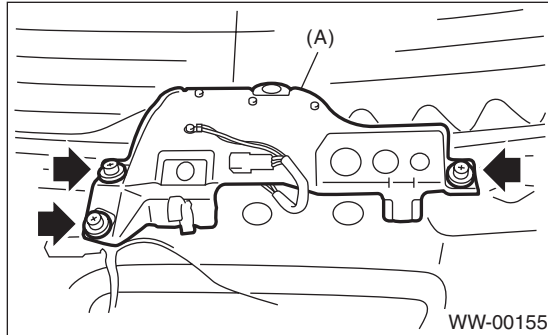
- 1) Operate the rear wiper once.
- 2) Align the blade to heat wire (A) of rear defogger.



10.Rear Wiper Motor

A: REMOVAL

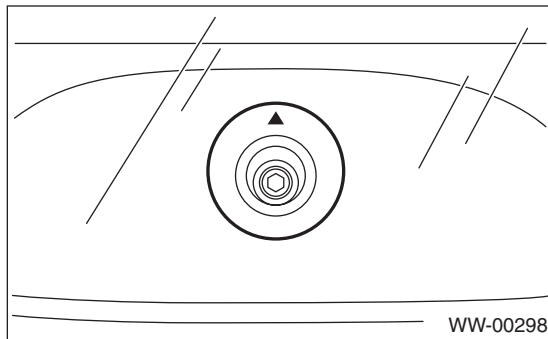
- 1) Disconnect the ground cable from the battery.
- 2) Remove the rear wiper arm. <Ref. to WW-16, REMOVAL, Rear Wiper Arm.>
- 3) Remove the rear gate lower trim. <Ref. to EI-57, REMOVAL, Rear Gate Trim.>
- 4) Unclip the clip of harness and disconnect connector of wiper motor.
- 5) Loosen the bolts to remove the wiper motor assembly (A).



- 6) Remove the rear wiper cushion.

B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Install the rear wiper pivot cap with the arrow mark facing up, as shown in the figure.



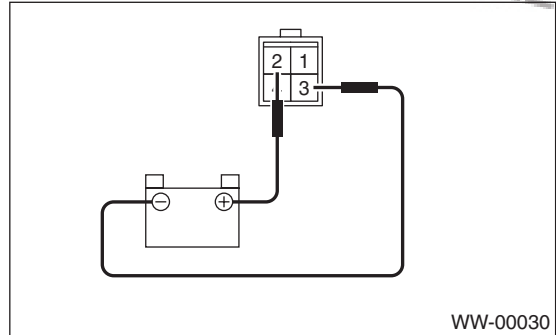
Tightening torque:

Refer to "COMPONENT" of "General Description".

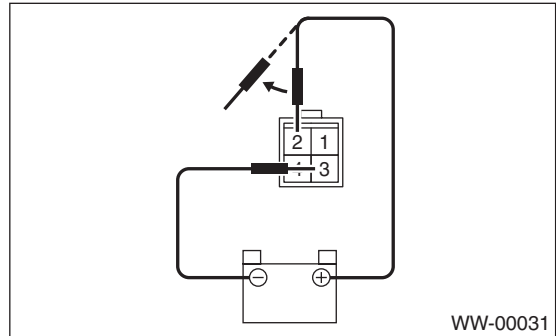
<Ref. to WW-3, REAR WIPER, COMPONENT, General Description.>

C: INSPECTION

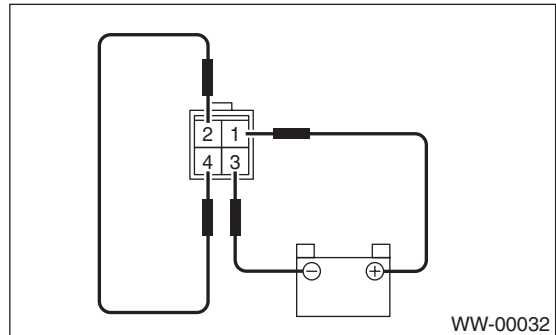
- 1) Connect the battery to the wiper motor connector and confirm that wiper motor operates.



- 2) Connect the battery to terminals of the connector, and remove the terminal connection with motor rotating, and stop the wiper motor in mid-operation.



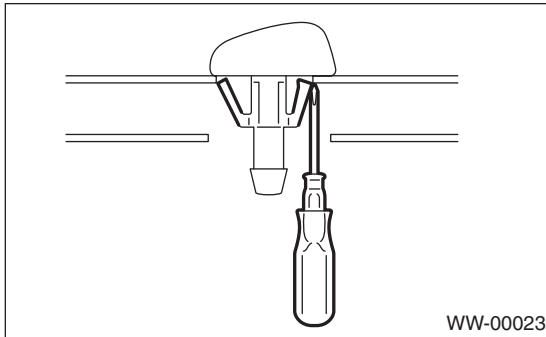
- 3) Connect the battery and confirm that the motor stops at the automatic stop position after the motor operates at low speed.



11.Rear Washer

A: REMOVAL

- 1) Remove the high-mounted stop light. <Ref. to LI-31, REMOVAL, High-mounted Stop Light.>
- 2) Remove the washer hose from the washer nozzle.
- 3) Open the clips on the back of rear gate panel with a thin screwdriver or other tool, and remove the washer nozzle.



B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Adjust the position of the washer fluid sprayer. <Ref. to WW-18, ADJUSTMENT, Rear Washer.>

C: INSPECTION

- Make sure the nozzle and hose are not clogged.
- Make sure the hose is not bent.

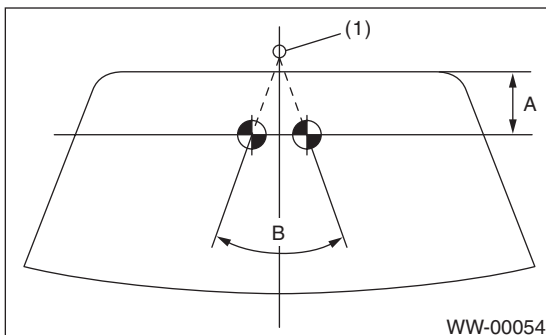
D: ADJUSTMENT

- 1) Turn the wiper switch to OFF position.
- 2) While the vehicle is at a standstill, adjust the washer injection position as shown in the figure.

Injection position:

A: 39 mm (1.54 in)

B: 72°

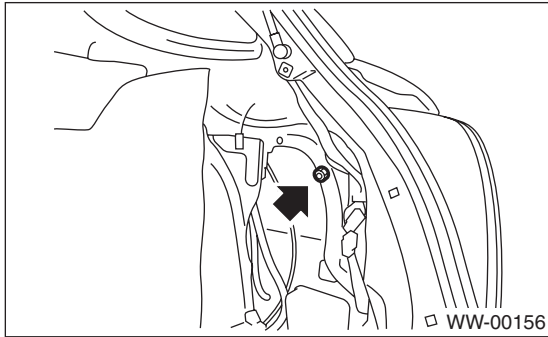


(1) Nozzle

12. Wiper Control Relay

A: REMOVAL

- 1) Disconnect the ground cable from the battery.
- 2) Remove the quarter lower trim RH. <Ref. to EI-52, REMOVAL, Rear Quarter Trim.>
- 3) Loosen the nut to remove the control module.

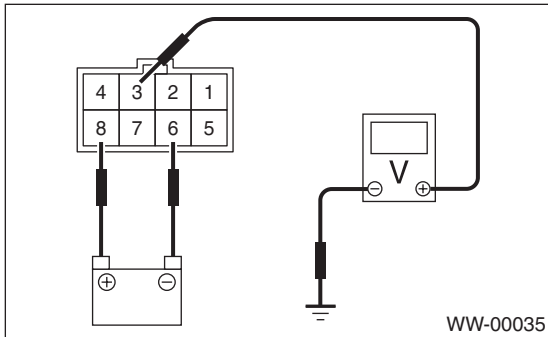


B: INSTALLATION

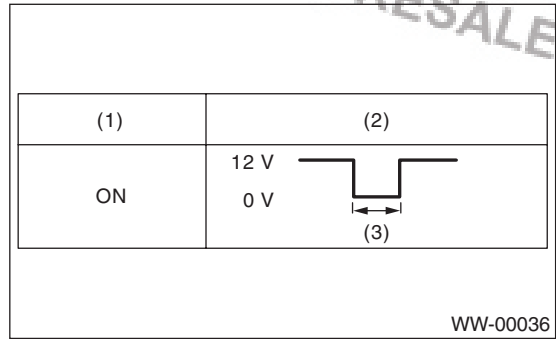
Install in the reverse order of removal.

C: INSPECTION

- 1) Disconnect the connector from the wiper control relay.
- 2) Connect battery positive lead to the terminal 8 and negative lead to the terminal 6. Connect the positive lead of a voltmeter to terminal 3 and the negative lead to ground.



- 3) Measure the voltage when the wiper relay operates.



- (1) Switch position
- (2) Voltage
- (3) 9 ± 2 sec.

If operation is not as specified, replace the switch.

Wiper Control Relay

WIPER AND WASHER SYSTEMS

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