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WIPER AND WASHER SYSTEMS

General Description

WIPER AND WASHER SYSTEMS

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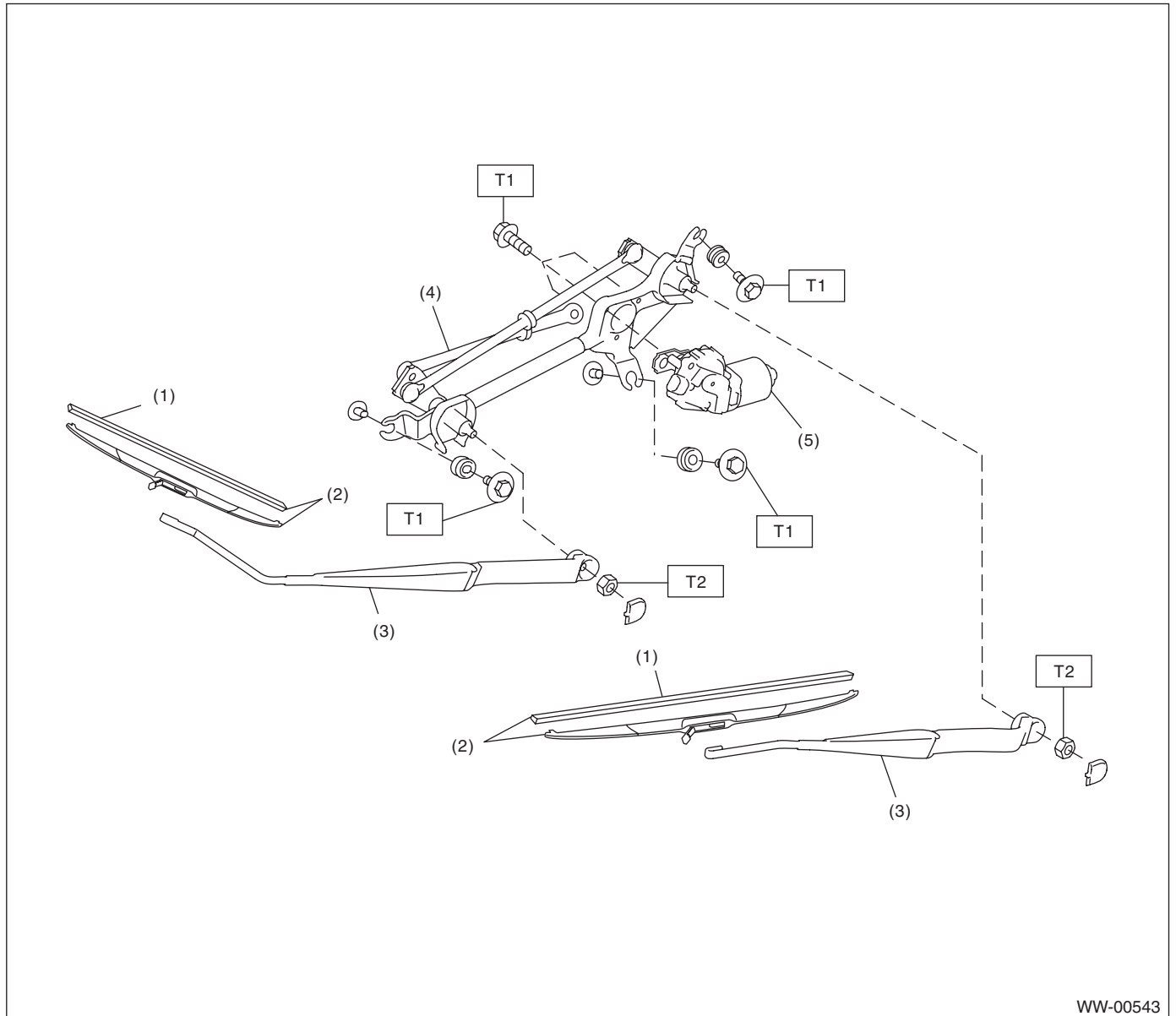
1. General Description

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-00543

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

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

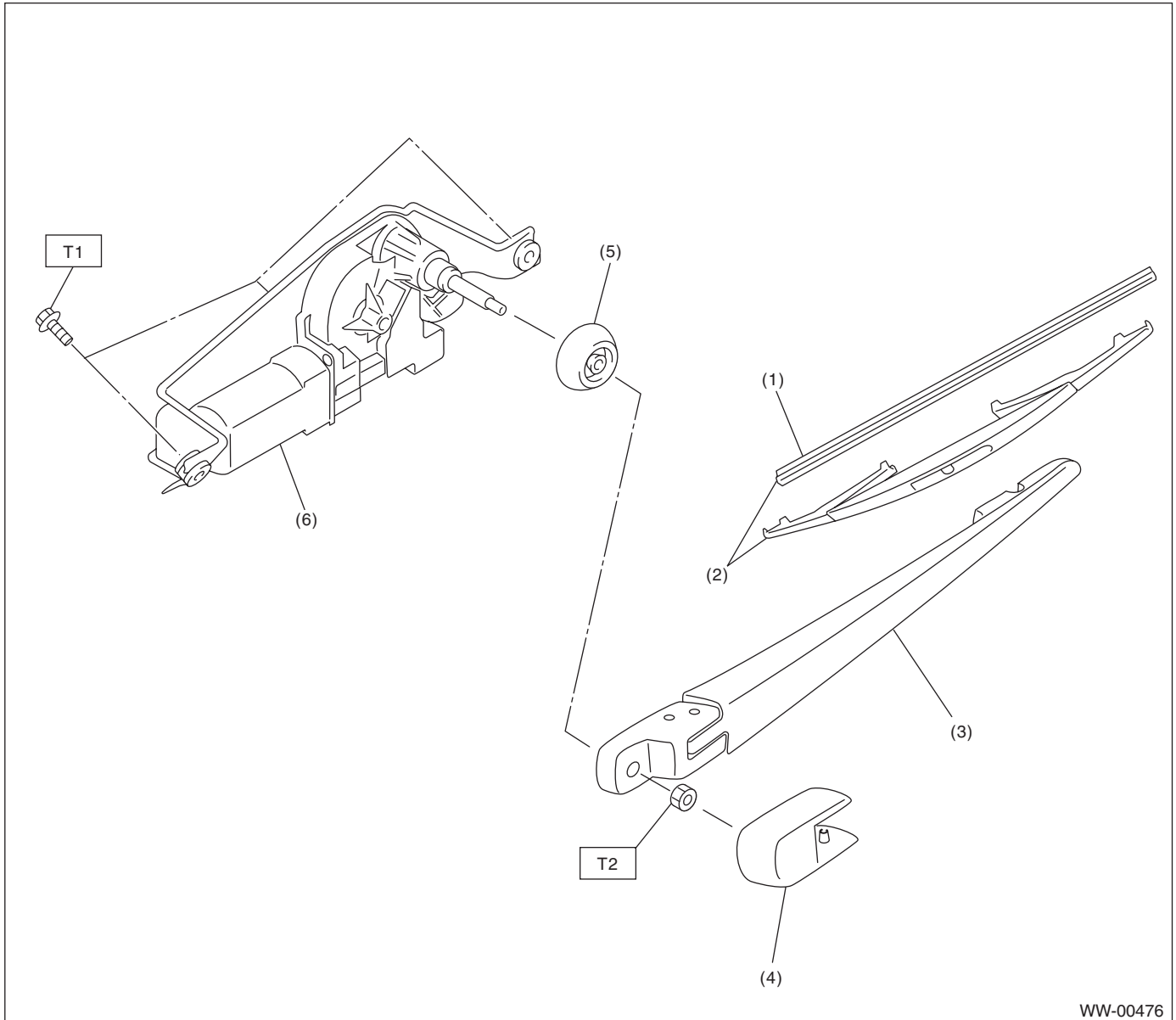
Tightening torque: N·m (kgf·m, ft·lb)

T1: 6.0 (0.61, 4.4)

T2: 20 (2.0, 14.5)

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2. REAR WIPER



WW-00476

- | | |
|----------------------|---------------------|
| (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)

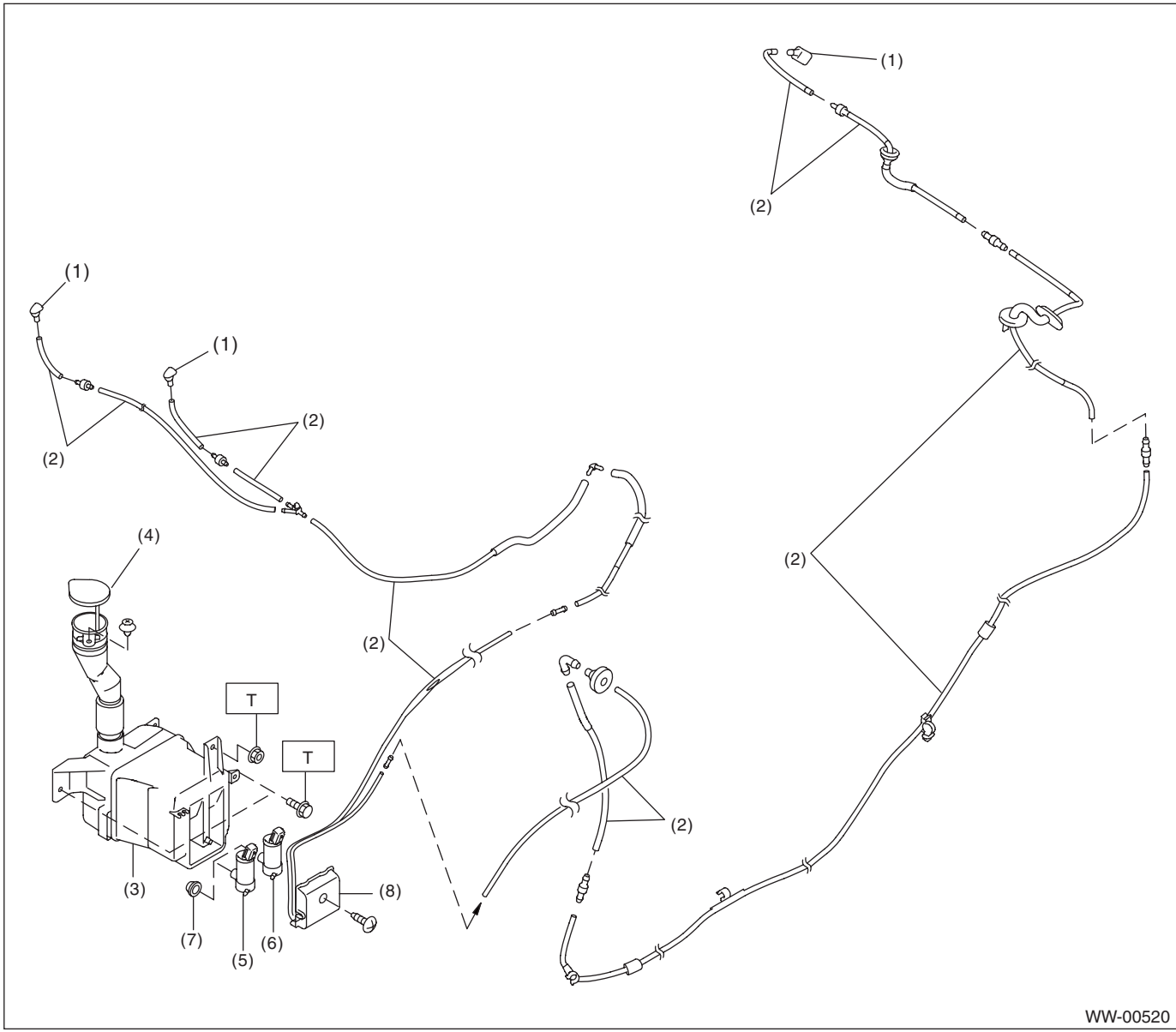
T2: 8.0 (0.82, 5.9)

General Description

WIPER AND WASHER SYSTEMS

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3. WASHER TANK



WW-00520

- | | |
|-----------------------------------|------------------------|
| (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)

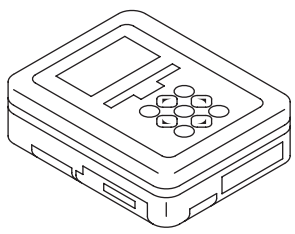
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C: CAUTION

- Connect the connectors and hoses securely during reassembly.
- After reassembly, make sure functional parts operates smoothly.
- Be careful with the airbag system wiring harness which passes near electrical parts and switches.
- Airbag system wiring harnesses connectors are yellow. Do not use a tester equipment on these circuits.
- Care must be taken when connecting the hose to the pipe so that no bending, jamming, etc. are caused.
- 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.

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST1B021XU0	1B021XU0	SUBARU SELECT MONITOR III KIT	Used for settings of each function and troubleshooting for electrical system.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for checking voltage and continuity.

Wiper and Washer System

WIPER AND WASHER SYSTEMS

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2. Wiper and Washer System

A: WIRING DIAGRAM

1. WIPER AND WASHER (FRONT)

<Ref. to WI-86, WIRING DIAGRAM, Front Wiper and Washer System.>

2. WIPER AND WASHER (REAR)

<Ref. to WI-87, WIRING DIAGRAM, Rear Wiper and Washer System.>

B: INSPECTION

Symptom	Repair order
Wiper and washers do not operate.	1. Wiper fuse (F/B No. 14, 15) 2. Combination switch 3. Wiper motor assembly 4. Wiring harness
Wipers do not operate in LO or HI.	1. Combination switch 2. Wiper motor assembly 3. Wiring harness
Wipers do not operate in INT.	1. Combination switch 2. Wiper motor assembly 3. Wiring harness
Washer motor does not operate.	1. Washer switch 2. Washer motor 3. Wiring harness
Wipers do not operate when washer switch is ON.	1. Wiper motor assembly 2. Wiring harness
Washer fluid spray does not operate properly.	1. Washer motor 2. Washer hose and nozzle

C: NOTE

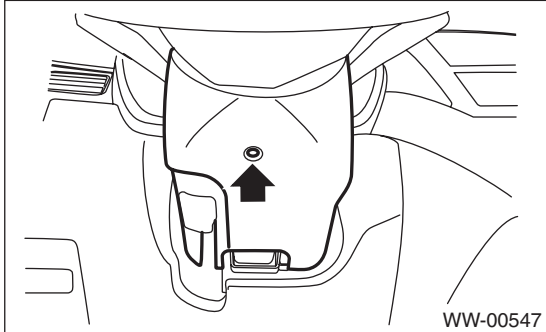
For removal procedure of each component in the wiper & washer system, refer to the respective section.

- Combination switch (wiper) <Ref. to WW-7, Combination Switch (Wiper).>
- Wiper blade <Ref. to WW-11, Wiper Blade.>
- Front wiper arm <Ref. to WW-14, Front Wiper Arm.>
- Front wiper motor & link <Ref. to WW-15, Front Wiper Motor and Link.>
- Rear wiper arm <Ref. to WW-18, Rear Wiper Arm.>
- Rear wiper motor <Ref. to WW-19, Rear Wiper Motor.>
- Washer tank & motor <Ref. to WW-13, Washer Tank and Motor.>
- Front washer nozzle <Ref. to WW-17, Front Washer Nozzle.>
- Rear washer nozzle <Ref. to WW-20, Rear Washer.>

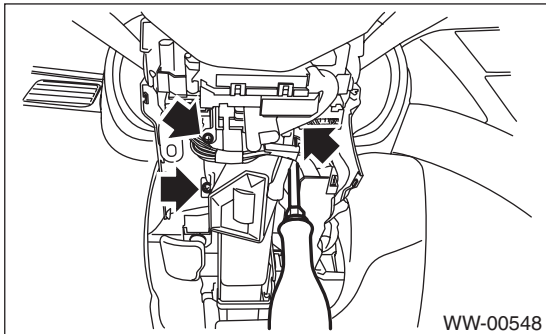
3. Combination Switch (Wiper)

A: REMOVAL

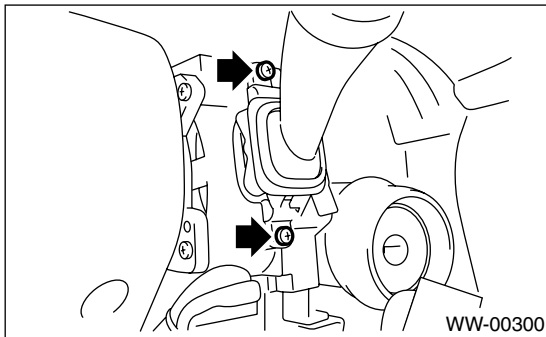
- 1) Disconnect the ground cable from the battery.
- 2) Loosen the screw to remove a steering column lower cover.



- 3) Remove the steering column upper cover mounting three screws.



- 4) Disconnect the connector from wiper switch.
- 5) Loosen the screws to remove the wiper switch

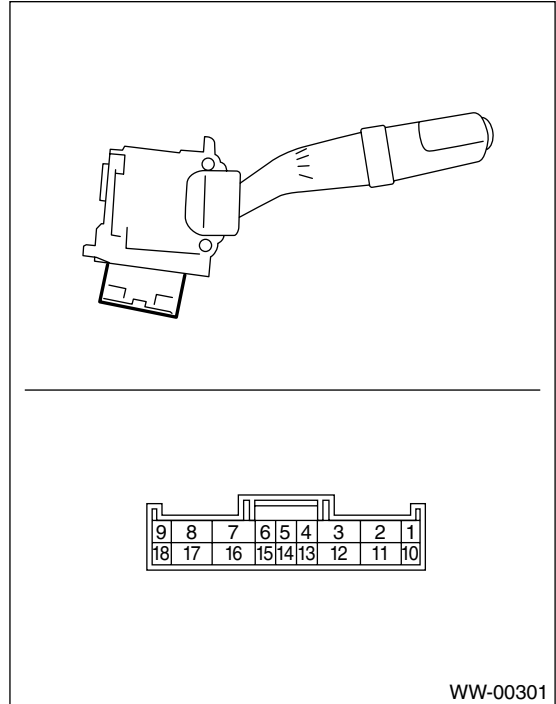


B: INSTALLATION

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	OFF	2 and 10 10 and 12 2 and 12	1 MΩ or more
	INT	2 and 13	Less than 1 Ω
	ON	2 and 10	Less than 1 Ω
	Washer ON	2 and 12	Less than 1 Ω

If continuity is not as specified, replace the switch.

1. FRONT WIPER

1) Check with Subaru Select Monitor

When the front wiper switch is operated, check the input signal using the Subaru Select Monitor.

- (1) Prepare the Subaru Select Monitor kit.
- (2) Turn the ignition switch to ON.
- (3) On the "System Selection Menu" display screen, select the {Integ. unit mode}.
- (4) Select the {Current Data Display & Save}.
- (5) Check the input signal when the front wiper switch is set to LO or HI.

Is the input signal normal?

- Yes → Finish the diagnosis.
- No →
 1. Check the harness.
 2. Check ACC input voltage of body integrated unit.

Connector & terminal

(B280) No. 7 (+) — Chassis ground (-):

3. Replace the body integrated unit. <Ref. to SL-47, Body Integrated Unit.>

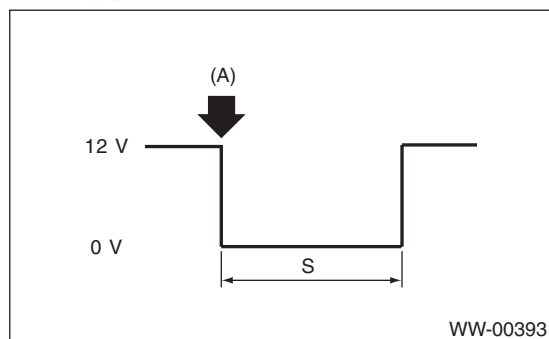
2) Check the intermittent operation (inspection of the wiper switch alone)

- (1) Set the voltage meter between connector terminal No. 7 (+) and No. 2 (-).
- (2) Connect the battery to the connector. (Terminal No. 17 (+), terminal No. 2 & 16 — (-))
- (3) Turn the front wiper switch to INT.
- (4) Connect the battery (+) to the terminal No. 16 for 5 seconds.
- (5) Connect the battery (-) to the terminal No. 16, and check the voltage between terminal No. 7 — No. 2 when performing the intermittent operation.
- (6) Perform step 1) to 5) when intermittent control switch is in MIN or MAX. If operation is not as specified, replace the switch.

Intermittent stationary time

MIN: Approx. 4 seconds

MAX: Approx. 19 seconds



(A): Connect the battery (-) to the terminal No. 16.

S: Intermittent downtime (sec.)

Combination Switch (Wiper)

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2. REAR WIPER

1) Check with Subaru Select Monitor

	Step	Check	Yes	No
1	<p>CHECK INPUT OF REAR WIPER SWITCH. Check the input from body integrated unit using the Subaru Select Monitor.</p> <ol style="list-style-type: none"> 1) Prepare the Subaru Select Monitor kit. 2) Turn the ignition switch to ON. 3) On the "System Selection Menu" display screen, select the {Integ. unit mode}. 4) Select the {Current Data Display & Save}. 5) Check the input of the rear wiper switch. 	Is the input normal?	Go to step 4.	Go to step 2.
2	<p>CHECK HARNESS.</p> <ol style="list-style-type: none"> 1) Disconnect the ground cable from the battery. 2) Disconnect the connector of body integrated unit. 3) Disconnect the connector from wiper switch. 4) Measure the resistance between the body integrated unit and wiper switch. <p>Connector & terminal (B281) No. 18 — (B70) No. 10: (B281) No. 27 — (B70) No. 13: (B281) No. 28 — (B70) No. 12:</p>	Is the resistance less than 10 Ω?	Go to step 3.	Repair the harness between the body integrated unit and wiper switch.
3	<p>CHECK INPUT VOLTAGE OF BODY INTEGRATED UNIT.</p> <ol style="list-style-type: none"> 1) Connect the ground cable to the battery. 2) Turn the ignition switch to ACC. 3) Check the input voltage of body integrated unit. <p>Connector & terminal (B280) No. 7 (+) — Chassis ground (-):</p>	Is the voltage 10 V or more?	Go to step 4.	Check the harness and fuse.
4	<p>CHECK OUTPUT OF BODY INTEGRATED UNIT. When the rear wiper switch is operated, check the output using the Subaru Select Monitor.</p> <ol style="list-style-type: none"> 1) Turn the ignition switch to ON. 2) Operate the rear wiper switch and set to each position of ON and INT. 3) At this time, check the body integrated unit output. 	When set to ON, is ON output continuous? When set to INT, is ON/OFF output repeated? (INT OFF time (when vehicle parked): 12 seconds)	Check the rear wiper motor circuit.	Replace the body integrated unit. <Ref. to SL-47, Body Integrated Unit.>

Combination Switch (Wiper)

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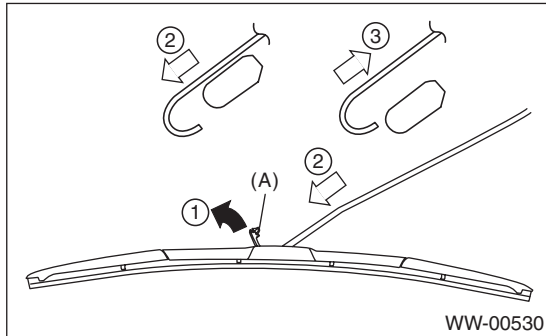
2) Check rear wiper motor circuit

Step	Check	Yes	No
1 CHECK POWER SUPPLY CIRCUIT OF THE REAR WIPER MOTOR. 1) Disconnect the harness connector of the rear wiper motor. 2) Turn the ignition switch to ACC. 3) Measure the voltage between the rear wiper motor harness connector terminal and chassis ground. Connector & terminal (D43) No. 3 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Go to step 2.	<ul style="list-style-type: none"> • Check the fuse (No. 23 in fuse & relay box). • Check the fusible link (No. 7 in main fuse box).
2 CHECK GROUND CIRCUIT OF REAR WIPER MOTOR. 1) Turn the ignition switch to OFF. 2) Measure the resistance between the rear wiper motor harness connector terminal and chassis ground. Connector & terminal (D43) No. 3 — Chassis ground:	Is the resistance less than 10 Ω?	Go to step 3.	Repair the open circuit of the rear wiper motor ground circuit.
3 CHECK HARNESS BETWEEN BODY INTEGRATED UNIT AND REAR WIPER MOTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the harness connector of body integrated unit. 3) Disconnect the harness connector of the rear wiper motor. 4) Measure the resistance between the harness connector terminals of the body integrated unit and rear wiper motor. Connector & terminal (B279) No. 8 — (D43) No. 1: (B279) No. 9 — (D43) No. 2:	Is the resistance less than 10 Ω?	Go to step 4.	Repair the open circuit of the harness between body integrated unit and rear wiper motor.
4 CHECK INPUT VOLTAGE OF BODY INTEGRATED UNIT. 1) Turn the ignition switch to ACC. 2) Check the input voltage of body integrated unit. Connector & terminal (B279) No. 21 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Go to step 5.	Check the harness and fuse.
5 CHECK OUTPUT OF BODY INTEGRATED UNIT. 1) Connect the harness connector of the body integrated unit. 2) Disconnect the connector of the rear wiper motor. 3) Turn the ignition switch to ACC. 4) Measure the voltage between rear wiper motor connector and chassis ground. Connector & terminal (B279) No. 9 (+) — Chassis ground (-):	Is the voltage less than 1.5 V when rear wiper switch is to OFF? / Is the voltage more than 10 V when rear wiper switch is to ON?	Go to step 6.	Replace the body integrated unit. <Ref. to SL-47, Body Integrated Unit.>
6 CHECK OPERATION OF REAR WIPER MOTOR. 1) Remove the rear wiper motor. 2) Check the rear wiper motor. <Ref. to WW-19, INSPECTION, Rear Wiper Motor.>	Does the rear wiper motor rotate normally?	End.	Replace the rear wiper motor.

4. Wiper Blade

A: REMOVAL

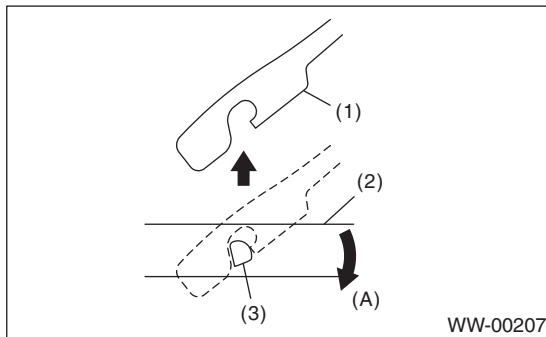
1. FRONT



- 1) Pull up the locking clip (A) and then push the arm to blade assembly side. (arrow mark 2)
- 2) Pull the arm while lifting the arm (arrow mark 3), and then remove the blade assembly from the 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

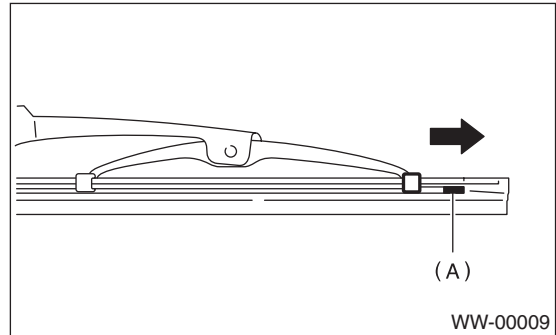
B: INSTALLATION

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

C: DISASSEMBLY

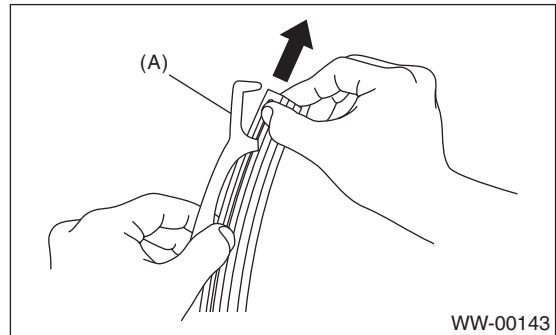
1. FRONT

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



2. REAR

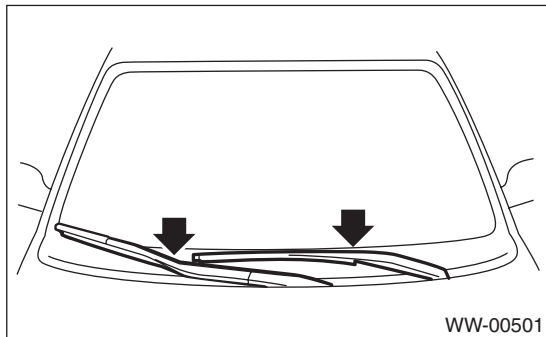
Pull the wiper rubber top slightly from stopper (A) and pull out completely.



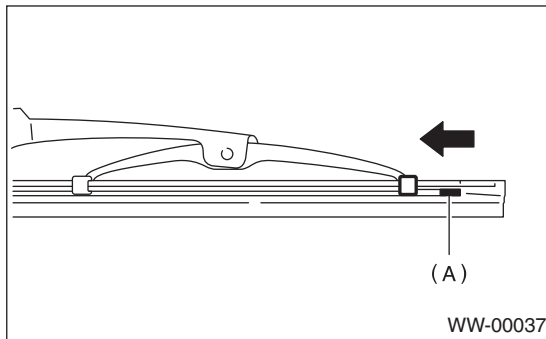
D: ASSEMBLY

1. FRONT

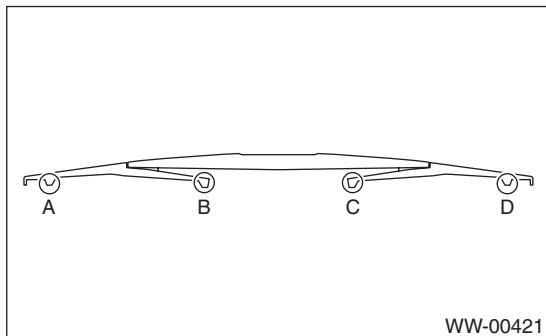
1) Insert the wiper rubber onto the blade so that the stopper is in the position shown in the figure.



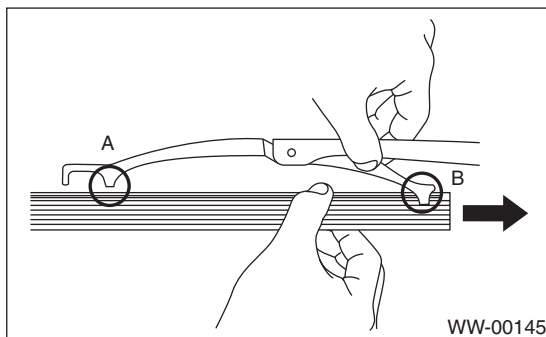
2) Make sure the wiper rubber is securely fastened to the pull stopper (A).



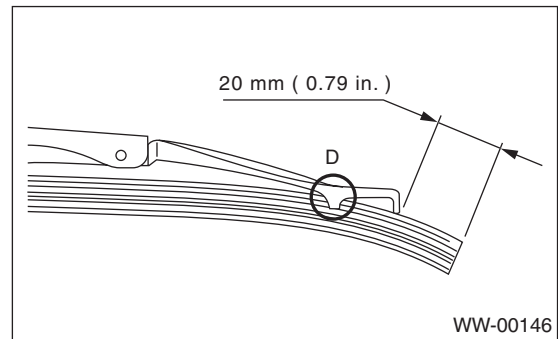
2. REAR



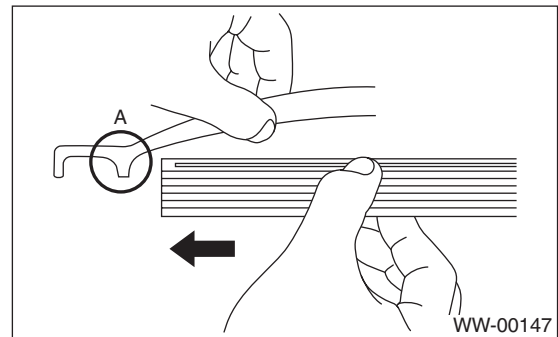
1) Insert the wiper rubber into claw (B).



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



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



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.

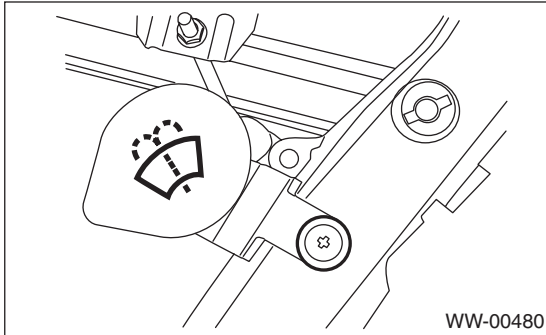
2) Replace with a new part if damage is found.

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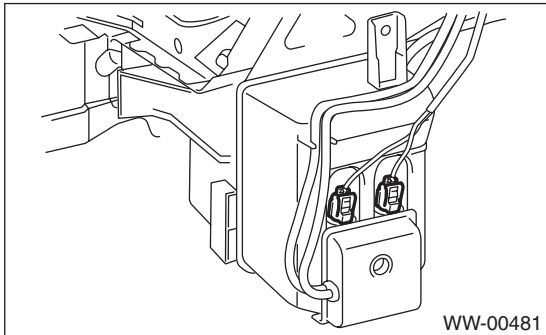
5. Washer Tank and Motor

A: REMOVAL

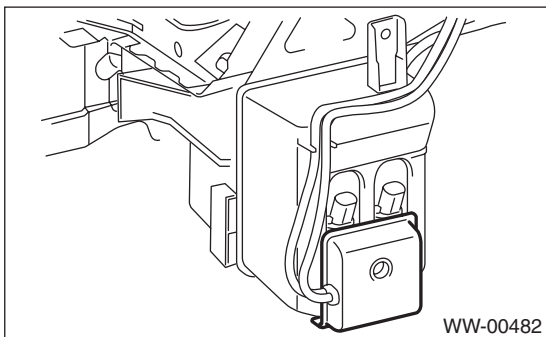
- 1) Open the front hood.
- 2) Disconnect the ground cable from the battery.
- 3) Remove the front bumper. <Ref. to EI-26, REMOVAL, Front Bumper.>
- 4) Remove the duct clip.



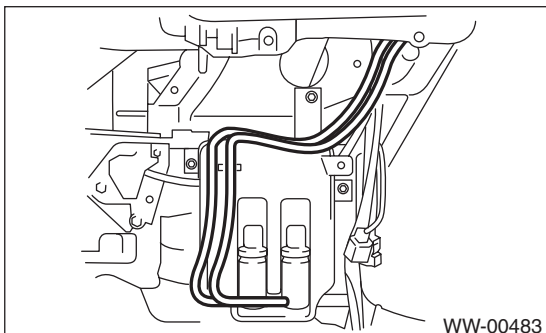
- 5) Disconnect the connector.



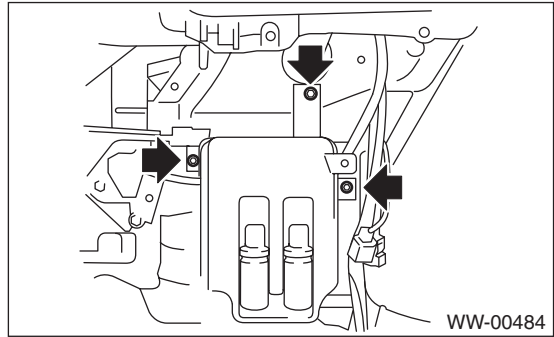
- 6) Remove the screws and detach the cover.



- 7) Disconnect the hose.



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



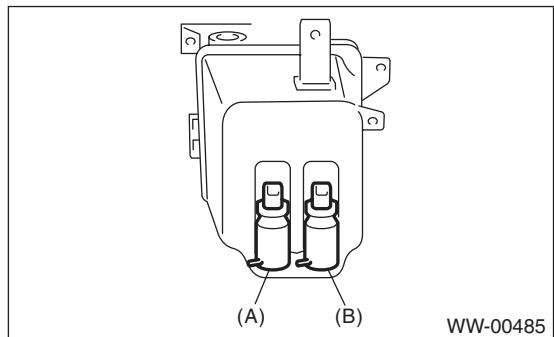
B: INSTALLATION

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.



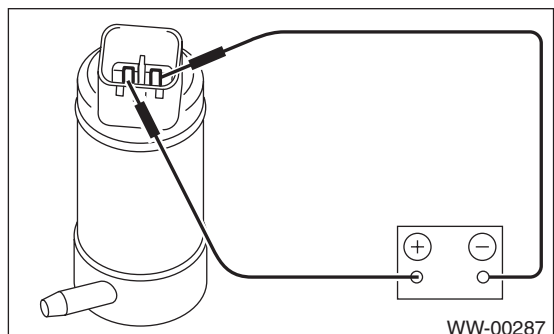
- (A) Front
- (B) Rear

D: ASSEMBLY

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

E: INSPECTION

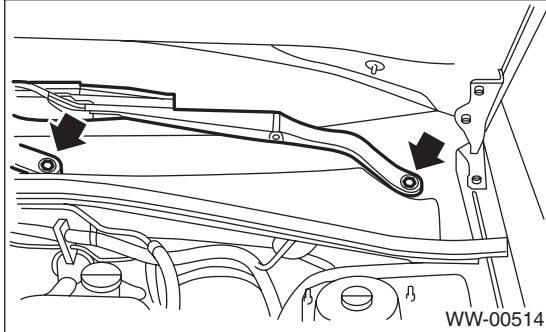
Apply battery voltage to the connector terminal of the washer motor and make sure the motor operates.



6. Front Wiper Arm

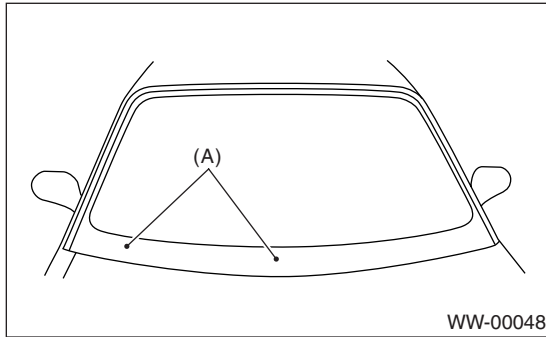
A: REMOVAL

- 1) Open the front hood.
- 2) Remove the cap.
- 3) Remove the nut and 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 panel.



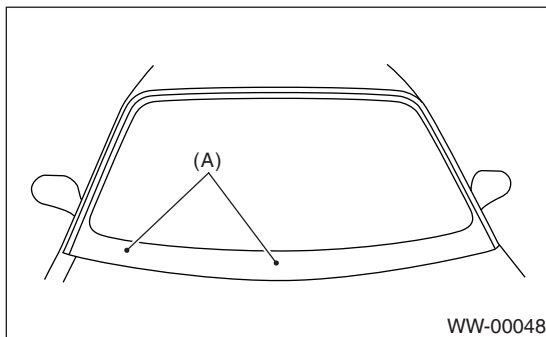
Tightening torque:

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 panel.

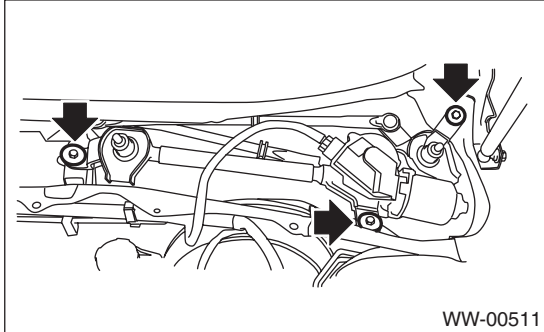


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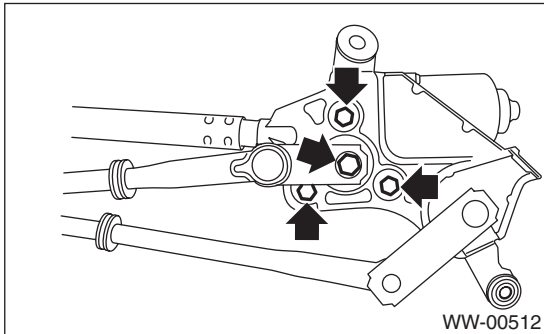
7. Front Wiper Motor and Link

A: REMOVAL

- 1) Disconnect the ground cable from the battery.
- 2) Remove the cowl panel. <Ref. to EI-35, REMOVAL, Cowl Panel.>
- 3) Disconnect the connector of motor.
- 4) Remove the bolt, and then remove the wiper link.

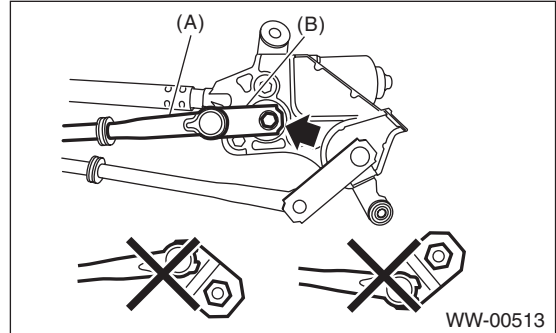


- 5) Remove the bolts and nuts and remove the motor.



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.>

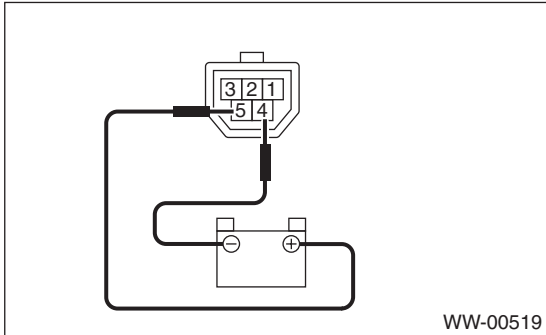
Front Wiper Motor and Link

WIPER AND WASHER SYSTEMS

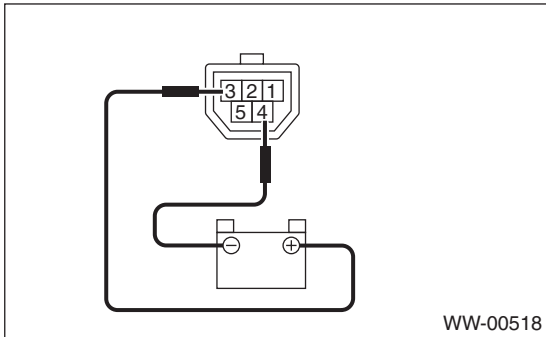
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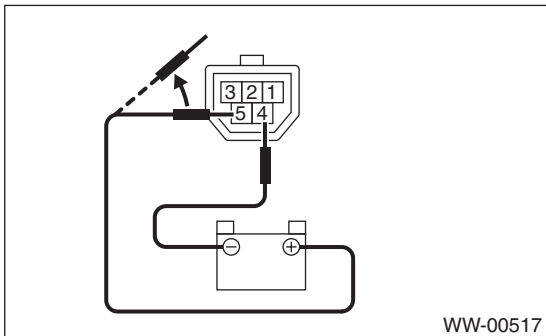
1) When the battery is connected to the terminal of connectors as shown in the figure, confirm that the motor operates at low speed.



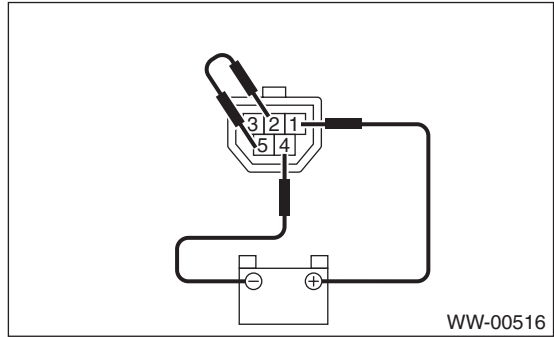
2) When the battery is connected to the terminal of connectors as shown in the figure, confirm that the wiper motor operates at high speed.



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.



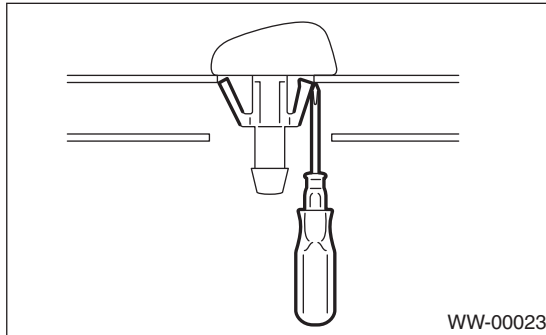
4) Connect the battery and confirm that the motor stops at the automatic stop position after the motor operates at low speed again.



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 washer nozzle position. <Ref. to WW-17, ADJUSTMENT, Front Washer Nozzle.>

C: INSPECTION

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

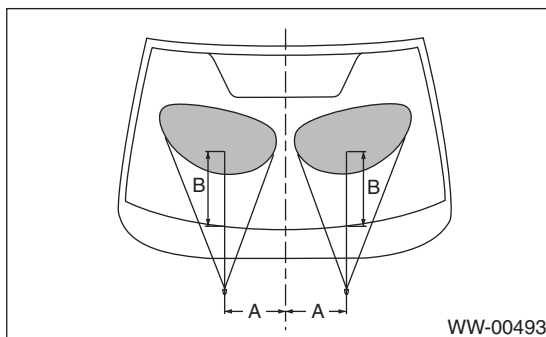
D: ADJUSTMENT

- 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.

Spray position:

A: 250 mm (9.84 in)

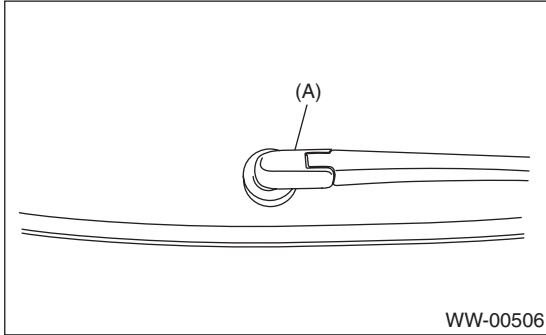
B: 315 mm (12.4 in)



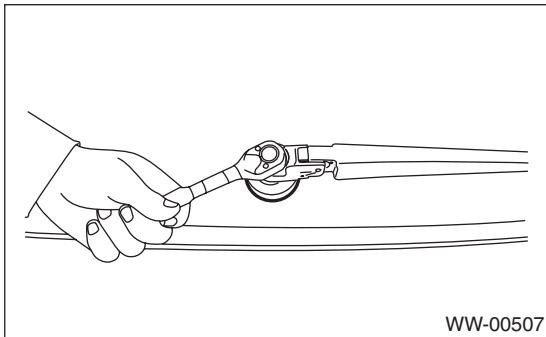
9. Rear Wiper Arm

A: REMOVAL

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

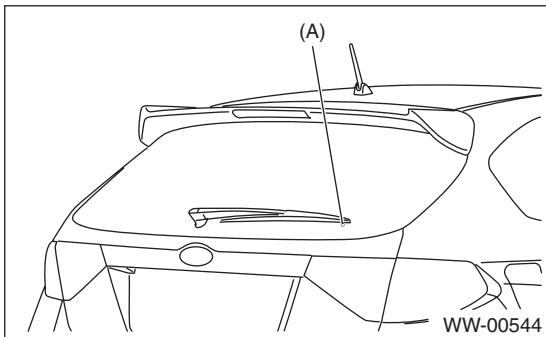


- 2) Remove the nut and remove the wiper arm.



B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Operate the rear wiper once.
- 3) Align the blade with the marking (A) of the glass.



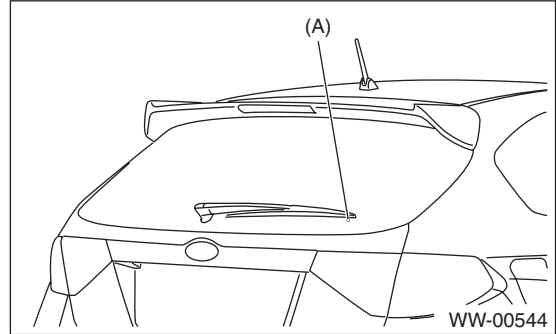
Tightening torque:

Refer to "COMPONENT" of "General Description".

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

C: ADJUSTMENT

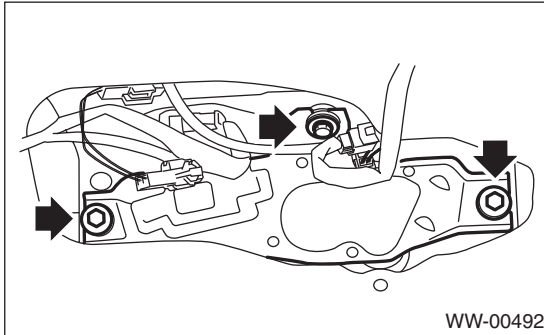
- 1) Operate the rear wiper once.
- 2) Align the blade with the marking (A) of the glass.



10. Rear Wiper Motor

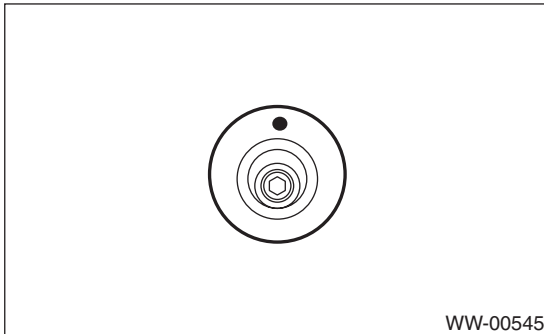
A: REMOVAL

- 1) Disconnect the ground cable from the battery.
- 2) Remove the rear wiper arm. <Ref. to WW-18, REMOVAL, Rear Wiper Arm.>
- 3) Remove the rear gate lower trim. <Ref. to EI-55, REMOVAL, Rear Gate Trim.>
- 4) Disconnect the harness connector of wiper motor assembly.
- 5) Remove the bolt, and then remove the wiper motor assembly.



B: INSTALLATION

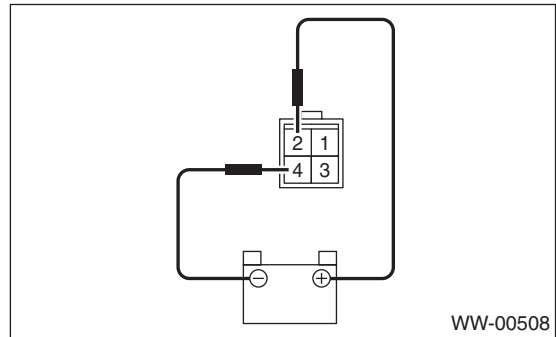
- 1) Install in the reverse order of removal.
- 2) Be sure that the pivot cap with the mark facing up, as shown in the figure.



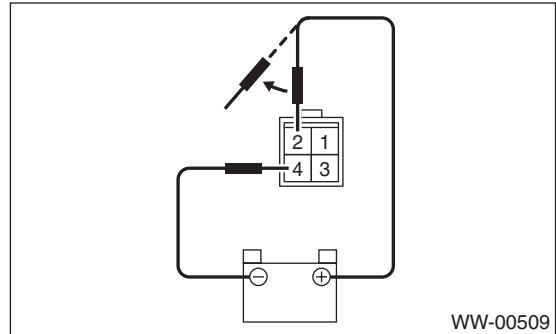
Tightening torque:
Refer to "COMPONENT" of "General Description".
<Ref. to WW-3, REAR WIPER, COMPONENT, General Description.>

C: INSPECTION

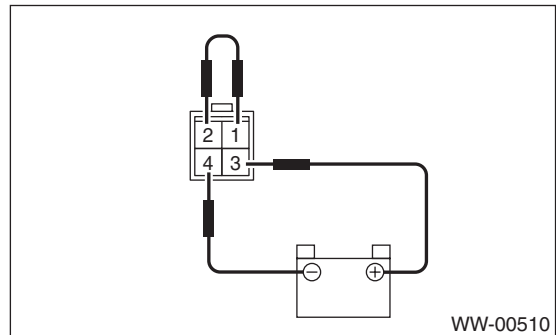
- 1) Connect the battery to the wiper motor connector and confirm that wiper motor operates.



- 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.



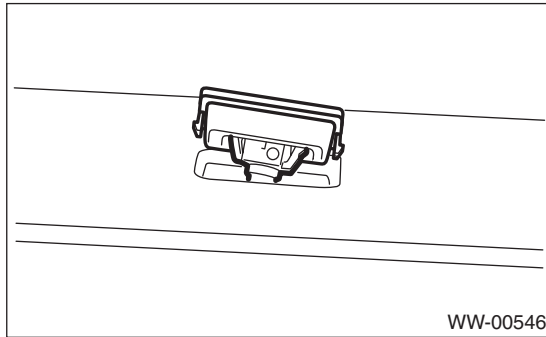
- 3) Connect the battery and confirm that the motor stops at the automatic stop position after the motor operates at low speed again.



11.Rear Washer

A: REMOVAL

- 1) Remove the high-mounted stop light. <Ref. to LI-30, REMOVAL, High-mounted Stop Light.>
- 2) Remove the washer hose from the washer nozzle.
- 3) Push the claw of the nozzle from the reverse side of roof spoiler with a flat tip screwdriver or equivalent, and remove the washer nozzle.



B: INSTALLATION

- 1) Install in the reverse order of removal.
- 2) Adjust the washer nozzle position. <Ref. to WW-20, 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.

Spray position:

A: 140 mm (5.5 in)

B: 70°

