

WIPER AND WASHER SYSTEM

PRECAUTION

NOTICE:
When disconnecting the cable from the negative (-) battery terminal, initialize the following systems after the cable is reconnected.

System	See procedure
Power window control system (with Jam protection function)	IN-23
Sliding roof system	

1. PRECAUTION OF WASHER NOZZLE ADJUSTMENT
- (a) Do not clean or adjust the washer nozzle with a safety pin, etc. because;

(1) the washer nozzle tip is made of resin and could be damaged.

(2) adjustment is not necessary because the washer nozzle is a spray type.

(b) In case the washer nozzle is clogged with wax, etc., remove it and clean the nozzle hole with a soft resin brush, etc.



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WIPER AND WASHER – WIPER AND WASHER SYSTEM

PROBLEM SYMPTOMS TABLE

HINT:

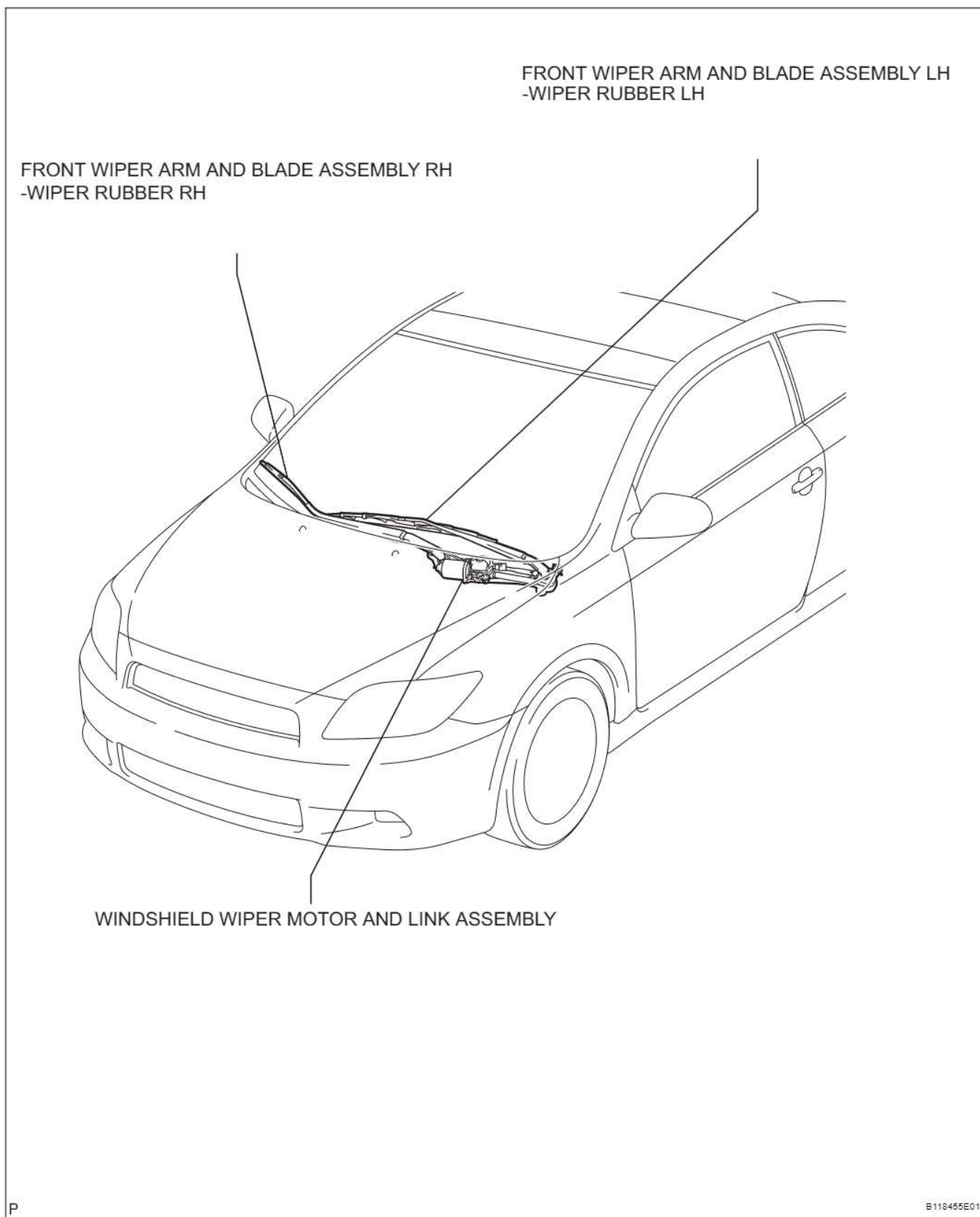
Use the table below, with suspected areas listed in numerical order, to determine the cause of the problem. Inspect and repair or replace parts as necessary according to the steps on the following pages.

Wiper and washer system

Symptom	Suspected Area	See page
Front wipers do not operate.	1. FR WIP fuse	-
	2. IG1 relay	ES-402
	3. Windshield wiper switch assembly (Front wiper switch)	WW-12
	4. Windshield wiper motor assembly	WW-5
	5. Wire harness or connector	-
Front wipers do not operate in LO or HI.	1. Windshield wiper switch assembly	WW-12
	2. Windshield wiper motor assembly	WW-5
	3. Wire harness or connector	-
Front wipers do not operate in INT.	1. Windshield wiper switch assembly	WW-12
	2. Windshield wiper motor assembly	WW-5
	3. Wire harness or connector	-
Front washer motor does not operate.	1. FR WSH fuse	-
	2. IG1 relay	ES-402
	3. Windshield wiper switch assembly (Front washer switch)	WW-12
	4. Front washer motor	WW-15
	5. Wire harness or connector	-
Front wipers do not operate when washer switch is in the ON position.	1. Windshield wiper switch assembly (Operation check)	WW-12
	2. Windshield wiper motor assembly	WW-5
	3. Wire harness or connector	-
Washer fluid does not flow.	1. Washer hose and nozzle	-
When the wiper switch is off, the wiper does not retract or retracts in the wrong position.	1. Windshield wiper motor assembly (Wiper arm and blade set position)	WW-4
The wiper blade is in contact with the body.	1. Windshield wiper motor assembly (Wiper arm and blade set position)	WW-4

FRONT WIPER MOTOR AND LINK

COMPONENTS



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WIPER AND WASHER – FRONT WIPER MOTOR AND LINK

REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

CAUTION:

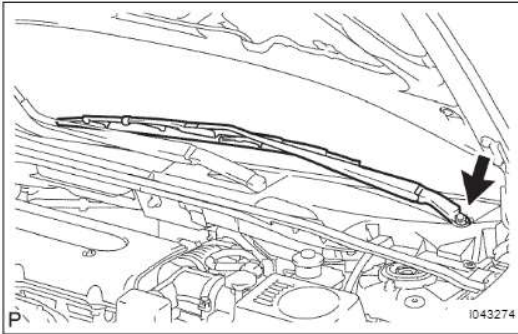
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

2. **REMOVE FRONT WIPER ARM HEAD CAP**

(a) Remove the 2 front wiper arm head caps.

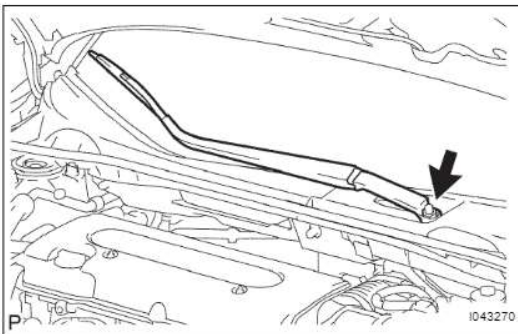
3. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH**

(a) Remove the nut and front wiper arm and blade assembly LH.



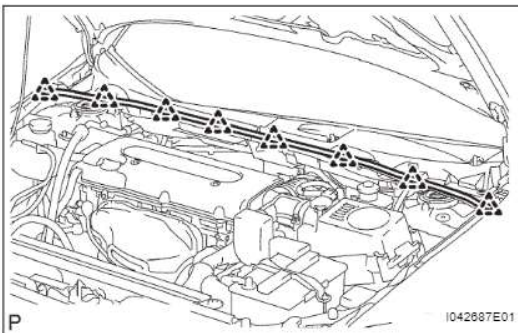
4. **REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH**

(a) Remove the nut and front wiper arm and blade assembly RH.



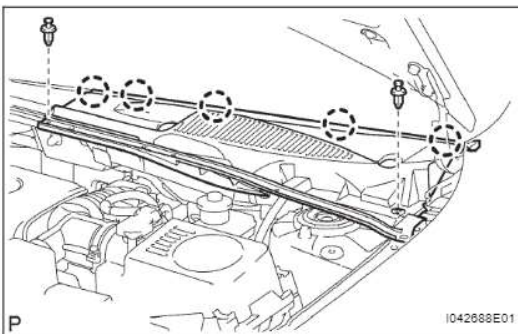
5. **REMOVE HOOD TO COWL TOP SEAL**

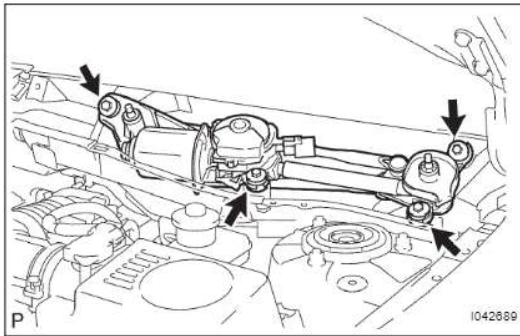
(a) Detach the 8 clips, and remove the hood to cowl top seal.



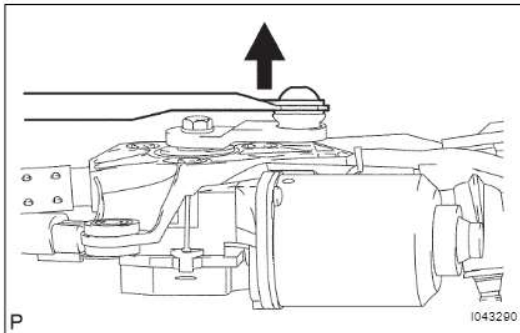
6. **REMOVE COWL TOP VENTILATOR LOUVER LH**

(a) Detach the 5 claws and 2 clips, and remove the cowl top ventilator louver LH.

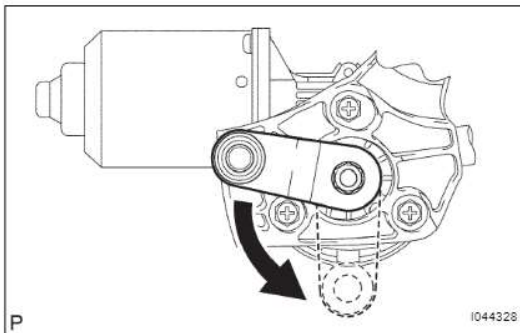


WIPER AND WASHER – FRONT WIPER MOTOR AND LINK**WW-5****7. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY**

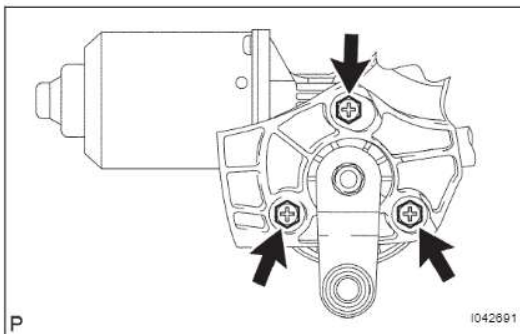
- (a) Disconnect the connector.
- (b) Remove the 4 bolts and windshield wiper motor and link assembly.

**8. REMOVE WIPER LINK ASSEMBLY**

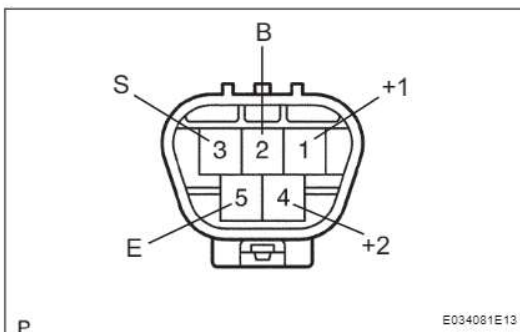
- (a) Using a screwdriver wrapped with protective tape, disconnect the rod of the wiper link from the windshield wiper motor as shown in the illustration.



- (b) Turn the crank arm of the windshield wiper motor by hand to the position shown in the illustration.



- (c) Remove the 3 bolts and wiper motor.

**INSPECTION****1. INSPECT WINDSHIELD WIPER MOTOR ASSEMBLY**

- (a) Check the Lo operation.
 - (1) Connect the battery positive (+) lead to terminal 1 (+1) of the connector and the battery negative (-) lead to terminal 5 (E).
 - (2) Check that the motor operates at low speed (LO).

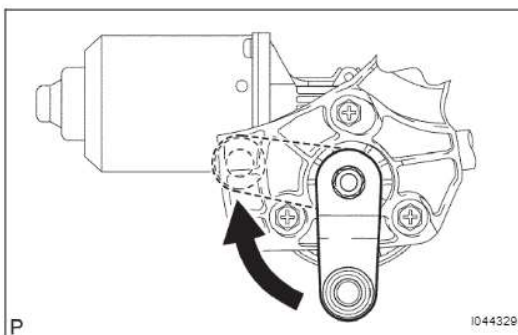
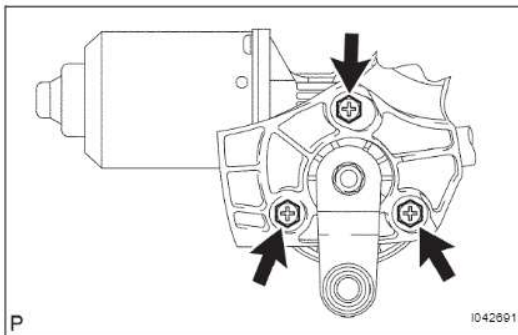
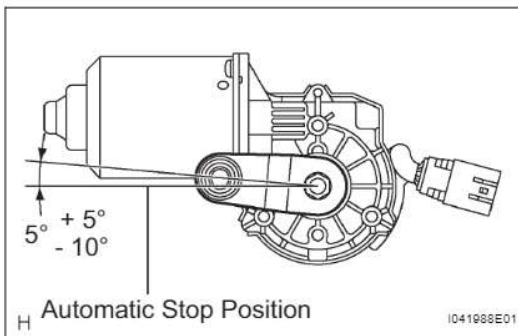
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WIPER AND WASHER – FRONT WIPER MOTOR AND LINK

- (b) Check the Hi operation.
 - (1) Connect the battery positive (+) lead to terminal 4 (+2) of the connector and the battery negative (-) lead to terminal 5 (E).
 - (2) Check that the motor operates at high speed (HI).
- (c) Check the automatic stop operation.
 - (1) Connect the battery positive (+) lead to terminal 1 (+1) of the connector and the battery negative (-) lead to terminal 5 (E).
 - (2) With the motor being rotated at low speed (LO) disconnect terminal 1 (+1) to stop the wiper motor operation at any position other than the automatic stop position.
 - (3) Using SST, connect terminals 1 (+1) and 3 (S).
SST 09843-18040
 - (4) Connect the positive (+) lead from the battery to terminal 2 (B).
 - (5) Check that the motor stops running at the stop position after the motor operates again.
 - (6) Check the automatic stop position.

OK:

See the illustration.



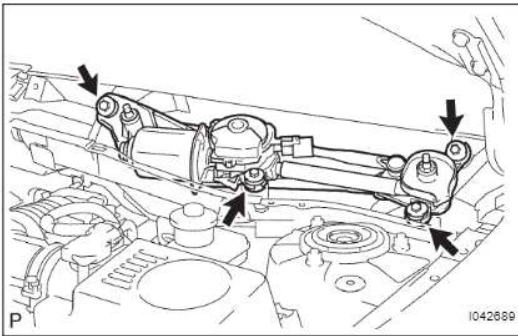
INSTALLATION

1. INSTALL WIPER LINK ASSEMBLY

- (a) Install the windshield wiper motor with the 3 bolts.
Torque: 5.4 N*m (55 kgf*cm, 47 in.*lbf)
- (b) Turn the crank arm of the windshield wiper motor by hand to the position shown in the illustration.
- (c) Apply DENSO No. 50 grease to the crank arm pivot of the windshield wiper motor.
- (d) Install the rod to the wiper link.

WIPER AND WASHER – FRONT WIPER MOTOR AND LINK

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**2. INSTALL WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY**

- (a) Install the windshield wiper motor and link assembly with the 4 bolts.

Torque: 5.4 N*m (55 kgf*cm, 47 in.*lbf)

- (b) Connect the connector.

3. INSTALL COWL TOP VENTILATOR LOUVER LH

- (a) Attach the 5 claws and 2 clips, and install the cowl top ventilator louver LH.

4. INSTALL HOOD TO COWL TOP SEAL

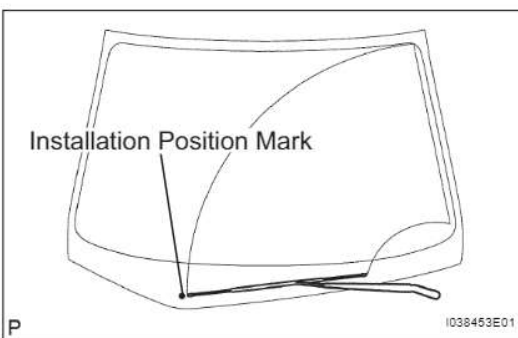
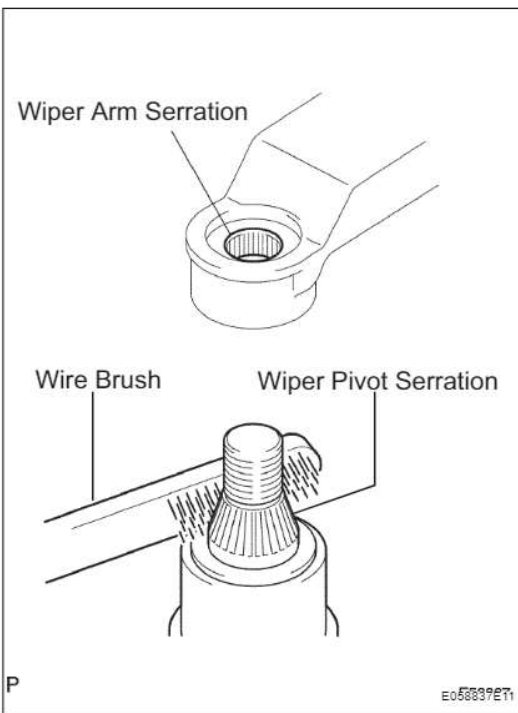
- (a) Attach the 8 clips, and install the hood to cowl top seal.

5. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH

- (a) Operate the wiper, and stop the windshield wiper motor assembly at the automatic stop position.

- (b) Clean the wiper arm serrations.

- (c) Clean the wiper pivot serration with a wire brush (when reinstalling).



- (d) Install the front wiper arm and blade assembly LH with the nut at the position as shown in the illustration.

Torque: 34.3 N*m (350 kgf*cm, 25 ft.*lbf)

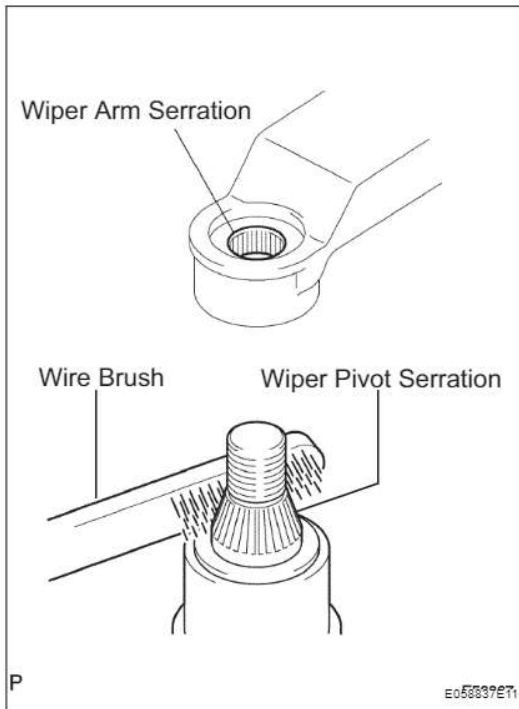
HINT:

Hold the arm hinge by hand to fasten the nut.

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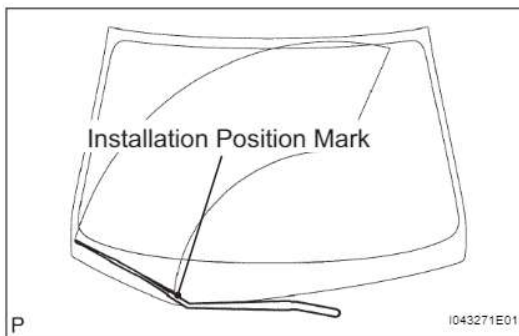
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WIPER AND WASHER – FRONT WIPER MOTOR AND LINK



6. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH

- Clean the wiper arm serrations.
- Clean the wiper pivot serration with a wire brush (when reinstalling).



- Install the front wiper arm and blade assembly RH with the nut at the position shown in the illustration.

Torque: 34.3 N*m (350 kgf*cm, 25 in.*lbf)

HINT:

Hold the arm hinge by hand to fasten the nut.

7. INSTALL FRONT WIPER ARM HEAD CAP

8. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

9. PERFORM INITIALIZATION

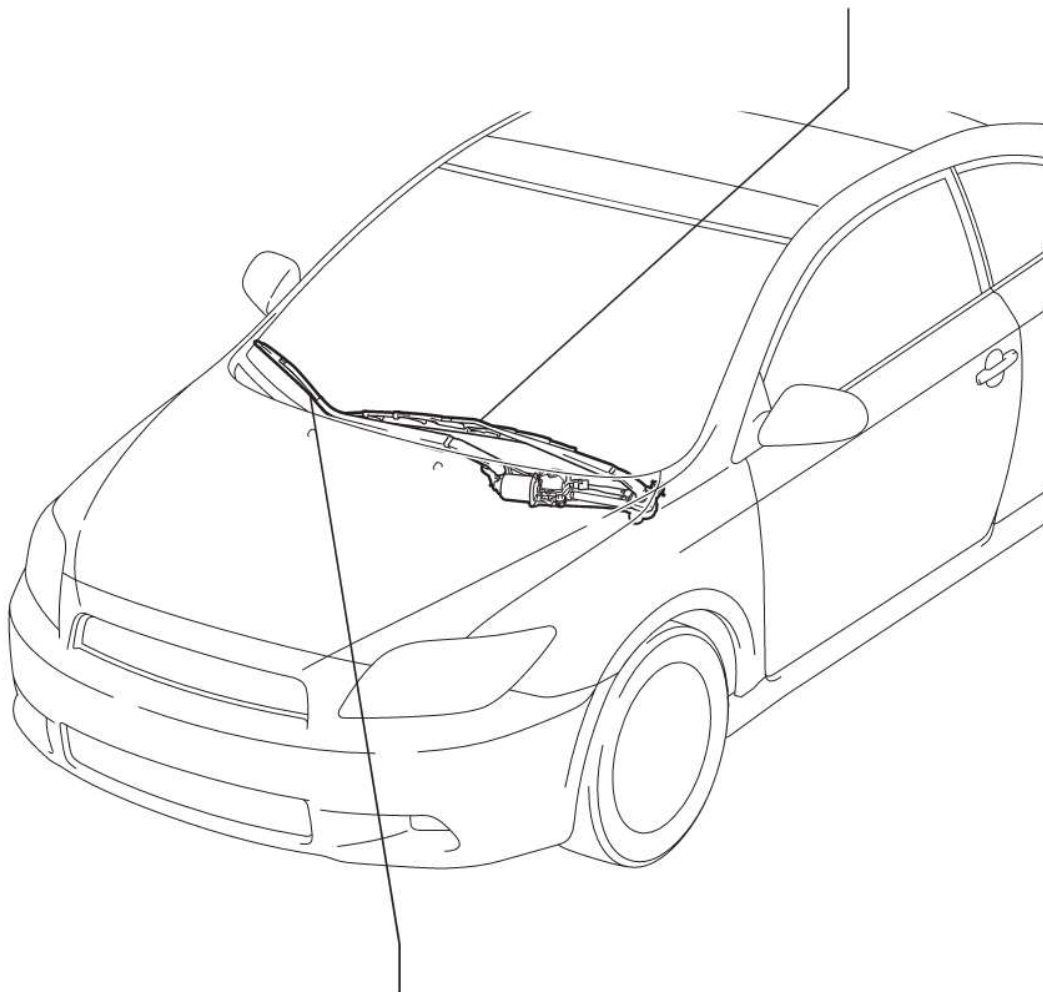
- Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

FRONT WIPER RUBBER COMPONENTS

FRONT WIPER ARM AND BLADE ASSEMBLY LH
- WIPER RUBBER LH



FRONT WIPER ARM AND BLADE ASSEMBLY RH
- WIPER RUBBER RH

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WIPER AND WASHER – FRONT WIPER RUBBER

REMOVAL

HINT:

- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.

1. REMOVE FRONT WIPER BLADE LH

- (a) Remove the front wiper blade LH from the front wiper arm LH.

NOTICE:

Do not bend the front wiper arm with the front wiper blade LH removed, as the arm tip could damage the windshield surface.

2. REMOVE WIPER RUBBER LH

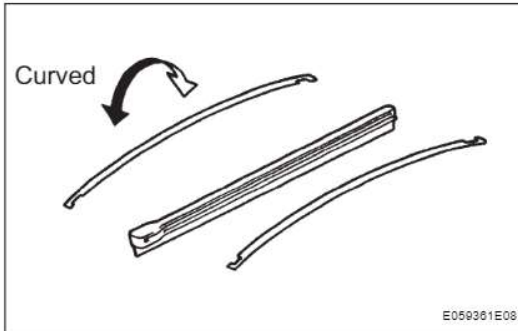
- (a) Remove the wiper rubber LH from the front wiper blade LH.
- (b) Remove the 2 wiper rubber backing plates from the wiper rubber LH.

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INSTALLATION

HINT:

- Use the same procedures for the RH side and LH side.
- The procedures listed below are for the LH side.

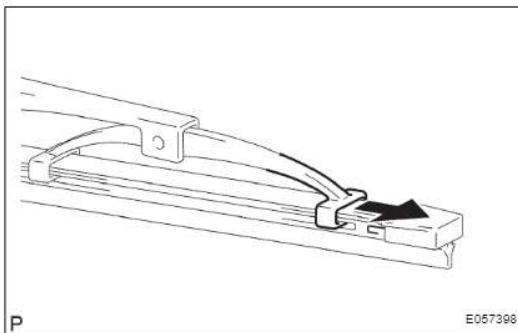


1. INSTALL WIPER RUBBER LH

- (a) Install the 2 wiper rubber backing plates to the wiper rubber LH.

NOTICE:

Be sure to install the wiper rubber backing plates in the correct direction.



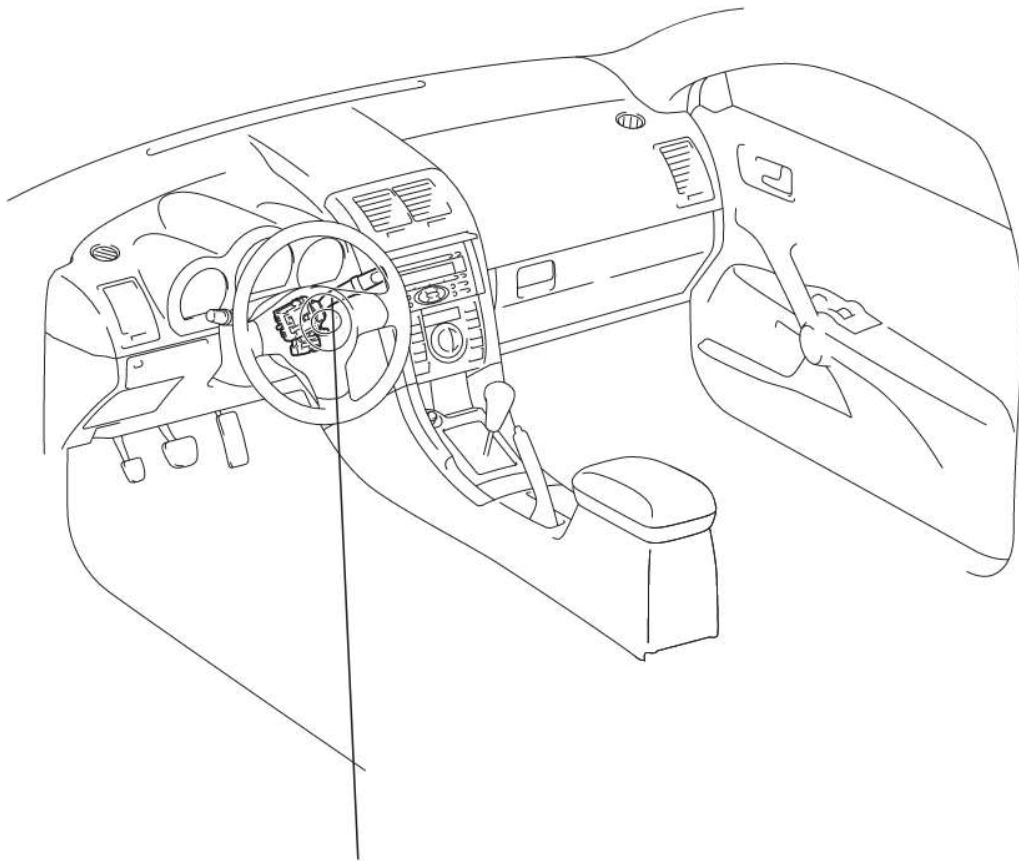
- (b) Install the wiper rubber LH so that the head part (longer side) of the wiper rubber faces the arm axle side.

2. INSTALL FRONT WIPER BLADE LH

- (a) Install the front wiper blade LH to the front wiper arm LH.

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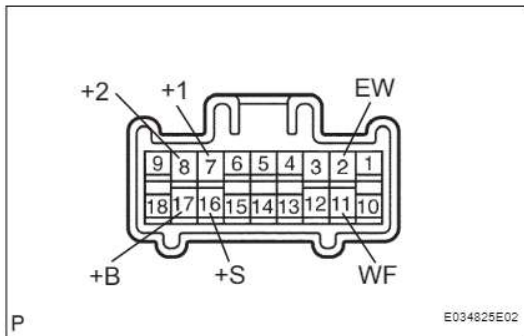
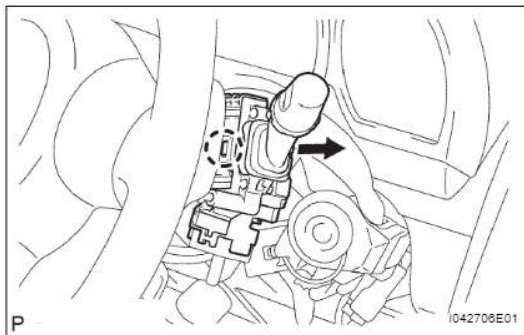
WIPER SWITCH COMPONENTS



WINDSHIELD WIPER SWITCH ASSEMBLY

REMOVAL

- 1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
CAUTION:
Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
- 2. REMOVE STEERING COLUMN COVER (See page SR-8)
- 3. REMOVE WINDSHIELD WIPER SWITCH ASSEMBLY
 - (a) Disconnect the connector.
 - (b) Detach the claw, and remove the windshield wiper switch.**NOTICE:**
If the claw is pushed with excessive force, it may be broken.



INSPECTION

- 1. INSPECT WINDSHIELD WIPER SWITCH ASSEMBLY
 - (a) Measure the resistance according to the value(s) in the table below.
Standard resistance
Front wiper switch

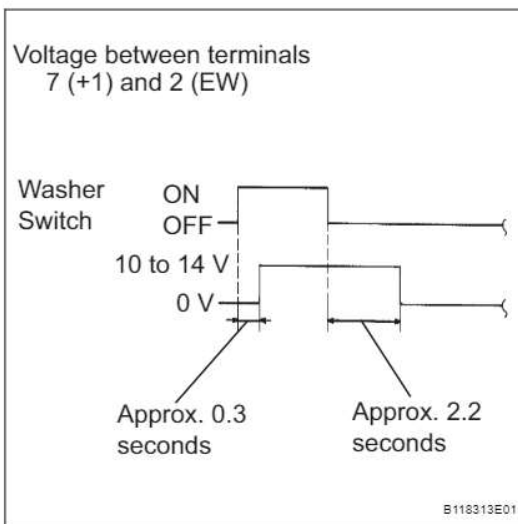
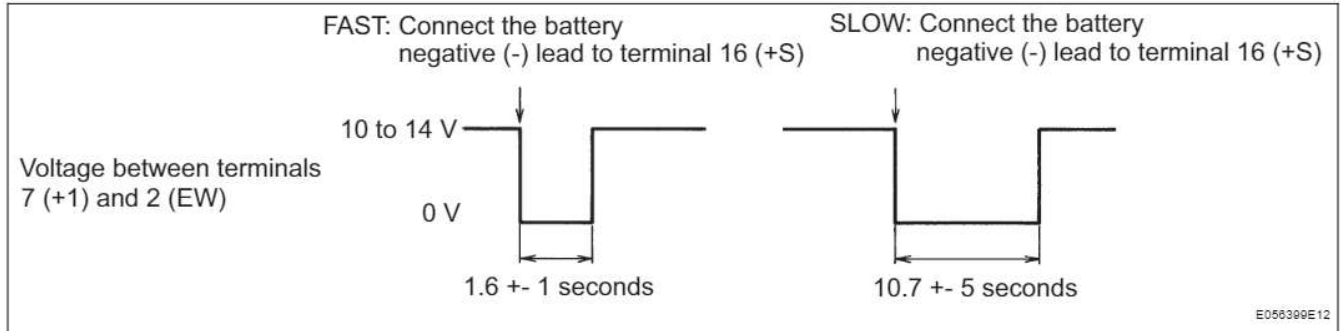
Tester Connection	Condition	Specified Condition
7 (+1) - 17 (+B)	MIST	Below 1 Ω
7 (+1) - 16 (+S)	OFF	Below 1 Ω
7 (+1) - 16 (+S)	INT	Below 1 Ω
7 (+1) - 17 (+B)	LO	Below 1 Ω
8 (+2) - 17 (+B)	HI	Below 1 Ω
 - (b) Measure the resistance of the switch connector terminals when the washer switch is operated.
Standard resistance
Front washer switch

Tester Connection	Condition	Specified Condition
2 (EW) -11 (WF)	OFF	10 kΩ or higher
2 (EW) -11 (WF)	ON	Below 1 Ω
 - (c) Check the intermittent operation.
 - (1) Connect the voltmeter positive (+) terminal to terminal 7 (+1) of the connector and the voltmeter negative (-) terminal to terminal 2 (EW).
 - (2) Connect the battery positive (+) lead to terminal 17 (+B) and the battery negative (-) lead to terminals 2 (EW) and 16 (+S).
 - (3) Turn the wiper switch to the INT position.
 - (4) Connect the battery positive (+) lead to terminal 16 (+S) of the connector for 5 seconds.

WIPER AND WASHER – WIPER SWITCH

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- (5) Connect the battery negative (-) lead to terminal 16 (+S) of the connector. Operate the intermittent wiper relay.
- (6) Check the voltage between terminals 7 (+1) and 2 (EW).



- (d) Check the front washer operation.
 - (1) Turn the wiper switch off.
 - (2) Connect the battery positive (+) lead to terminal 17 (+B) of the connector and the battery negative cable to terminals 16 (+S) and 2 (EW).
 - (3) Connect the voltmeter positive (+) terminal to terminal 7 (+1) of the connector and the voltmeter negative (-) terminal to terminal 2 (EW).
 - (4) Turn the washer switch on and off, and check the voltage between terminals 7 (+1) and 2 (EW).

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WIPER AND WASHER – WIPER SWITCH

INSTALLATION**1. INSTALL WINDSHIELD WIPER SWITCH ASSEMBLY**

- (a) Attach the claw to install the windshield wiper switch.
- (b) Connect the connector.

2. INSTALL STEERING COLUMN COVER**3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL****4. PERFORM INITIALIZATION**

- (a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

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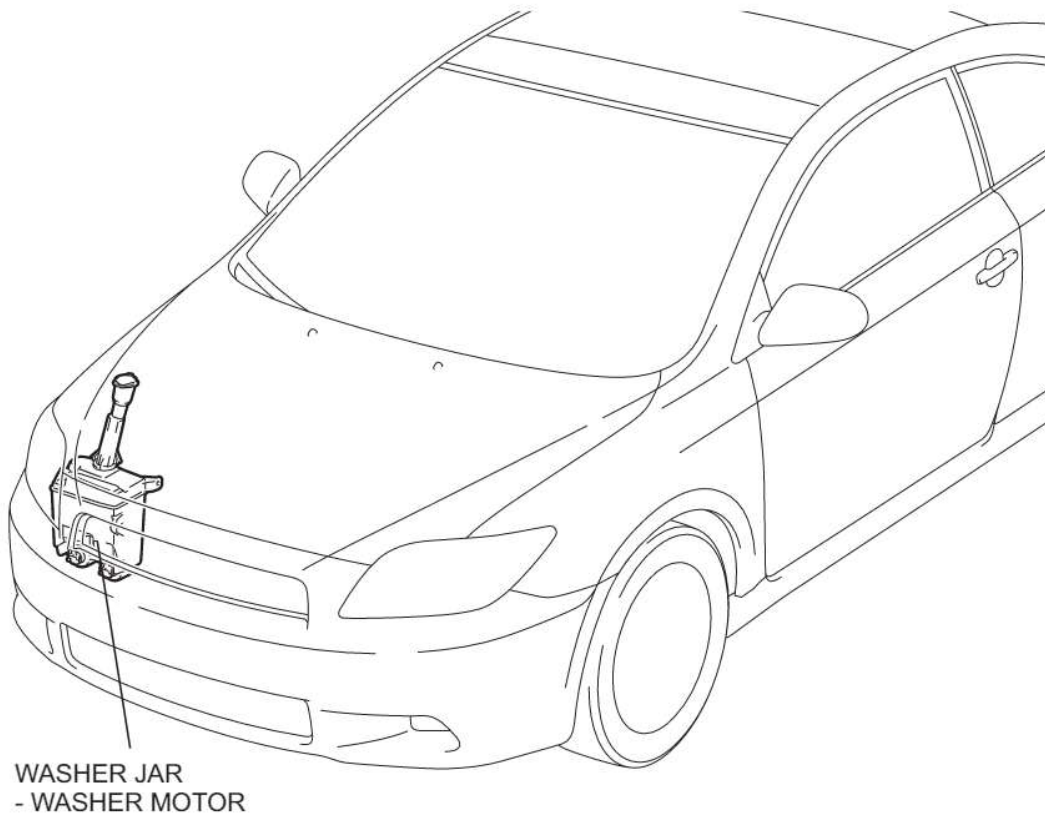
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WIPER AND WASHER – WASHER MOTOR

WASHER MOTOR

PARTS LOCATION

WW

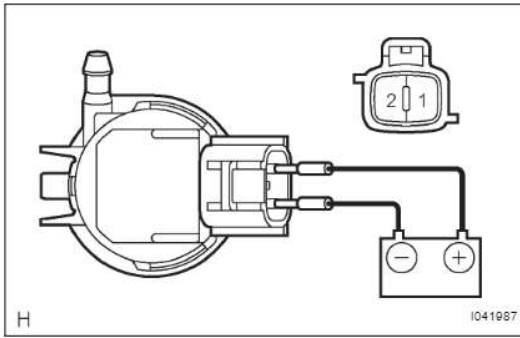


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WIPER AND WASHER – WASHER MOTOR

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**ON-VEHICLE INSPECTION****1. INSPECT FRONT WASHER MOTOR**

- (a) Check the motor operation.
 - (1) Fill the washer jar with washer fluid.
 - (2) Connect the positive battery (+) lead to terminal 1 of the windshield washer motor and pump assembly, and the negative battery (-) lead to terminal 2.
 - (3) Check that washer fluid flows from the washer jar.

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