GENERAL INFORMATION SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

FOREWORD

FW

1. Foreword

A: FOREWORD

These manuals are used when performing maintenance, repair or diagnosis of S209.
Applicable model: 2019 MY VAF****
The manuals contain the latest information at the time of publication. Changes in the specifications, methods, etc. may be made without notice.

SPECIFICATIONS

SPC

1. S209

A: DIMENSION

Model			2.5 L DOHC high power turbo
Overall length		mm (in)	4,620 (181.9)
Overall width		mm (in)	1,840 (72.4)
Overall height		mm (in)	1,475 (58.1)
Compartment	Length	mm (in)	2,005 (78.9)
	Width	mm (in)	1,490 (58.7)
	Height	mm (in)	1,205 (47.4)
Wheelbase		mm (in)	2,650 (104.3)
Tread	Front	mm (in)	1,545 (60.8)
	Rear	mm (in)	1,555 (61.2)
Minimum road clearance		mm (in)	125 (4.9)

B: ENGINE

Model		2.5 L DOHC high power turbo
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine
Valve arrangement		DOHC
Bore × stroke	mm (in)	99.5 × 79.0 (3.92 × 3.11)
Displacement	cm^3 (cu in)	2,457 (150)
Compression ratio		8.2
Ignition order		1 — 3 — 2 — 4
Idle speed at parking or neutral position	r/min	700±100
Maximum output	kW (HP)/(r/min)	254 (341)/6,400*
Maximum torque	N·m (ft-lb)/(r/min)	447 (330)/3,600*

*Transient vehicle testing

C: STEERING

Model	2.5 L DOHC high power turbo
Type	Rack and pinion
	Hydraulic power steering
Turns, lock to lock	2.3
Minimum turning radius m (ft)	6.2 (20.34)

D: TIRE

Model	2.5 L DOHC high power turbo
Wheel size	19 × 9J
Tire size	265/35R19 94Y
Type	Tubeless, steel belted radial

E: WEIGHT

Model			Sedan
			2.5 L DOHC high power turbo
			S209
			6MT
OP code			U4
			YK
Curb weight (C.W.)	Total	kg (lb)	1,581 (3,485)
	Front	kg (lb)	934 (2,059)
	Rear	kg (lb)	647 (1,426)
Gross vehicle weight (G.V.W.)		kg (lb)	2,000 (4,409)
Maximum permissible axle weight (G.A.W.)	Front	kg (lb)	1,075 (2,370)
	Rear	kg (lb)	1,040 (2,293)
Option	Genuine leather seat		—
	RECARO seat		○
	Cold weather package		○
	Safety view package		—
	Advanced package		—
	BASE AUDIO		—
	HIGH AUDIO		○
	NAVI		—
	Harman/Kardon speaker system		—
	Sunroof		—
	High performance brake package		—

IDENTIFICATION

ID

1. Identification

A: IDENTIFICATION

1. MEANING OF V.I.N.

The meaning of the V.I.N. is as follows:
]JF1VA2Z6XK9800001[
The starting and ending brackets ( ] [ ) are stop marks.

Digits	Code	Meaning	Details
1 — 3	JF1	Manufacturer body area	JF1: Passenger car, SUBARU CORPORATION made
4	V	Car line	V: WRX
5	A	Body type	A: Sedan
6	2	Displacement class	2: 2.5 L AWD high power turbo 4-CYLINDERS GASOLINE
7	Z	Grade	Z: S209
8	6	Restraint	6: Manual belts, dual airbag, side airbag for seat back, curtain airbag for roof and driver's knee airbag
9	X	Check digit	X or 0 — 9
10	K	Model year	K: 2019MY
11	9	Transmission type & production site	9: Full-time AWD 6 speed MT (main plant, Gunma)
12 — 17	800001	Serial number	800001 — 999999

2. MODEL NUMBER LABEL

The model number label indicates: the applied model, the option code, the trim code, the engine type, the transmission type, and the exterior color code. This information is helpful when placing orders for parts.
VAFEYWH

Digits	Code	Meaning	Details
1	V	Series	V: WRX
2	A	Body type	A: Sedan
3	F	Total engine displacement / drive system	F: 2.5 L AWD high power turbo
4	E	Model year	E: 2019MY
5	Y	Destination	Y: U.S., Canada
6	W	Grade	W: S209
7	H	Fuel feed system / transmission	H: MFI High power turbo 6 speed MT AWD

The engine type is as follows.

- **Engine**

EJ257XG5LB

Digits	Code	Meaning	Details
1 and 2	EJ	Engine type symbol	EJ: 4 cylinders
3 and 4	25	Displacement	25: 2.5 L
5	7	Fuel feed device	7: MFI - single scroll high power turbo
6	X	Exhaust regulations	X: North America (Tier 3/LEV III)
7	G	Mounted transmission	G: 6MT
8 — 10	5LB	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

RECOMMENDED MATERIALS

RM

1. Recommended Materials

A: RECOMMENDED MATERIALS

1. LUBRICANT

Item	Recommended materials	Remarks
Engine oil	MOTUL 300V Power 5W-40	

PRE-DELIVERY INSPECTION

PI

1. Pre-delivery Inspection

A: GENERAL DESCRIPTION

The purposes of the pre-delivery inspection (PDI) are as follows.
- Remove the vehicle protective parts for transportation.
- Check that the vehicle or parts before delivery are not damaged during transportation or storage.
- Check that the vehicle after repair is normal.
- Make sure to provide a complete vehicle to customer.

For above reasons, all SOA service center must carry out the PDIs before delivery of vehicle. Besides, all SOA service center and PDI center check the condition of all vehicles to make sure to take responsibility.

B: PRE-DELIVERY INSPECTION (PDI) PROCEDURE

Static checks just after vehicle receipt

Item	Check point
1. Accessory	Check that the following accessories are provided. • Owner's manual • Warranty booklet • Maintenance note • Spare key • Key number plate • Jack • Tool set • Tire repair kit • Towing hook (eyebolt) • Front under spoiler

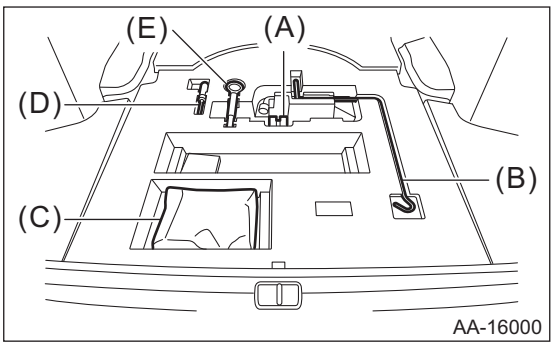
Checks with the engine running

Item	Check point
2. Intercooler water spray tank	Check the water level of the intercooler water spray tank.
3. Intercooler water spray system	Check that the intercooler water spray system operates normally.

1. ACCESSORY

Check that the following accessories are provided.
- Owner's manual
- Warranty booklet
- Maintenance note
- Spare key
- Key number plate
- Jack
- Tool set
- Tire repair kit
- Towing hook (eyebolt)

- Front under spoiler

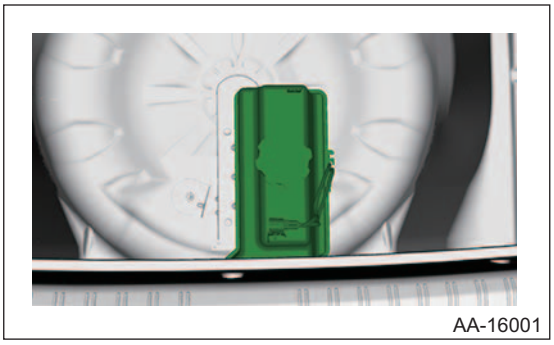


(A) Jack
(B) Jack handle
(C) Tire repair kit
(D) Screwdriver
(E) Towing hook (eyebolt)

2. INTERCOOLER WATER SPRAY TANK

NOTE:
- Use pure water.
- When the water level in the intercooler water spray tank is approx. 0.3 L (0.3 US qt, 0.3 Imp qt) or lower, the intercooler water spray warning light on the combination meter will illuminate.
- If there is the vibration, water comes into the layer of air in the intercooler water spray tank and the water level may drop. This is not a malfunction.

1) Turn the ignition switch to ON, and check that the intercooler water spray warning light illuminates.
2) Start the engine, and check that the intercooler water spray warning light goes off.
3) If the intercooler water spray warning light does not go off, check for any leakage, and add approx. 0.5 L (0.5 US qt, 0.4 Imp qt) of pure water into the intercooler water spray tank.
4) Restart the engine, and check that the intercooler water spray warning light goes off.



3. INTERCOOLER WATER SPRAY SYSTEM

Check that the intercooler water spray system operates normally.

PERIODIC MAINTENANCE SERVICES

PM

1. Schedule

A: MAINTENANCE SCHEDULE

1. MODEL WITH US SPECIFICATION

Maintenance item		Maintenance interval [Number of months or km (miles), whichever occurs first]													
	Months	3	6	12	18	24	30	36	42	48	54	60	66	To be continued to the next table.	Remarks
	× 1,000 km	4.8	9.6	19.2	28.8	38.4	48	57.6	67.2	76.8	86.4	96	105.6		
	× 1,000 miles	3	6	12	18	24	30	36	42	48	54	60	66		
1	Engine oil	Perform every 4,800 km (3,000 miles).													Note 1.
2	Engine oil filter		R	R	R	R	R	R	R	R	R	R	R		Note 1.
3	Spark plug											R			
4	V-belt						I					I			
5	Timing belt														STI model
6	Fuel line						I					I			Note 4. Note 5.
7	Fuel filter														Note 2. Note 5.
8	Air cleaner element						R					R			Note 6.
9	Cooling system						I					I			Note 8.
10	Engine coolant	Replace after the first 11 years or 220,000 km (137,500 miles), and every six years or 120,000 km (75,000 miles) thereafter													Note 8.
11	Clutch system			I		I		I		I		I			
12	Transmission gear oil						I					I			
13	CVTF						I					I			
14	Front & rear differential gear oil						I					I			
15	Brake line			I		I		I		I		I			Note 4.
16	Brake fluid / clutch fluid (MT model only)						R					R			Note 3.
17	Disc brake pad and disc			I		I		I		I		I			Note 4.
18	Parking brake			I		I		I		I		I			Note 4.
19	Suspension			I		I		I		I		I			Note 4.
20	Wheel bearing											I			
21	Axle boots and joints			I		I		I		I		I			Note 4.
22	Tire rotation	Perform every 10,000 km (6,000 miles).													Note 7.
23	Steering system (Power steering)			I		I		I		I		I			Note 4.
24	A/C filter	Replace every 12 months or 19,200 km (12,000 miles)													Note 6.

Maintenance item		Maintenance interval [Number of months or km (miles), whichever occurs first]												
	Months	Continued from previous table	72	78	84	90	96	102	108	114	120	126	132	Remarks
	× 1,000 km		115.2	124.8	134.4	144	153.6	163.2	172.8	182.4	192	201.6	211.2	
	× 1,000 miles		72	78	84	90	96	102	108	114	120	126	132	
1	Engine oil		Perform every 4,800 km (3,000 miles).											Note 1.
2	Engine oil filter		R	R	R	R	R	R	R	R	R	R	R	Note 1.
3	Spark plug										R			
4	V-belt					I					I			
5	Timing belt						R							STI model
6	Fuel line					I					I			Note 4. Note 5.
7	Fuel filter		R											Note 2. Note 5.
8	Air cleaner element					R					R			Note 6.
9	Cooling system					I					I			Note 8.
10	Engine coolant	Replace after the first 11 years or 220,000 km (137,500 miles), and every six years or 120,000 km (75,000 miles) thereafter												Note 8.
11	Clutch system		I		I		I		I		I		I	
12	Transmission gear oil					I					I			
13	CVTF					I					I			
14	Front & rear differential gear oil					I					I			
15	Brake line		I		I		I		I		I		I	Note 4.
16	Brake fluid / clutch fluid (MT model only)					R					R			Note 3.
17	Disc brake pad and disc		I		I		I		I		I		I	Note 4.
18	Parking brake		I		I		I		I		I		I	Note 4.
19	Suspension		I		I		I		I		I		I	Note 4.
20	Wheel bearing										I			
21	Axle boots and joints		I		I		I		I		I		I	Note 4.
22	Tire rotation	Perform every 10,000 km (6,000 miles).												Note 7.
23	Steering system (Power steering)		I		I		I		I		I		I	Note 4.
24	A/C filter	Replace every 12 months or 19,200 km (12,000 miles)												Note 6.

Symbol
R: Replace
I: Inspection
P: Perform

NOTE:
1. When the vehicle is used under severe conditions, replace the engine oil and engine oil filter every 3 months or 2,400 km (1,500 miles).
2. When the vehicle is used under extremely low or high temperature conditions, the fuel filter may become dirty. Therefore, it should be replaced frequently.
3. When the vehicle is used in high humidity area or mountain area, replace the brake fluid every 15 months or 24,000 km (15,000 miles).
4. When the vehicle is used under severe conditions, replace every 6 months or 9,600 km (6,000 miles).

5. This inspection is not required to maintain emission warranty eligibility and it does not affect the manufacturer's obligations under EPA's in-use compliance program.
6. When the vehicle is used in extremely dusty conditions, it should be replaced more often.
7. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicators appear when the remaining tread has been worn to 1.6 mm (0.063 in) or less.
8. To prevent cooling system leakage, be sure to add SUBARU genuine cooling system conditioner when replacing coolant.

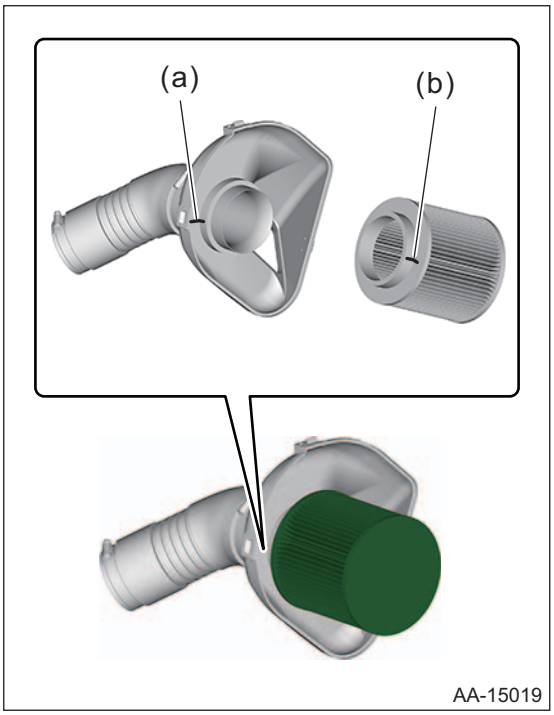
Examples of severe conditions

a. Drive repeatedly at short distance. (Maintenance items 1 and 2)
b. Drive repeatedly on bumpy muddy road. (Maintenance items 15, 17 and 19)
c. Drive repeatedly in dusty conditions. (Maintenance items 7 and 23)
d. Drive in extremely cold weather. (Maintenance items 1, 2, 16, 18, 20 and 22)
e. Area where salt or other corrosive used. (Maintenance items 5, 15, 16, 17 and 20)
f. Coastal area. (Maintenance item 5)

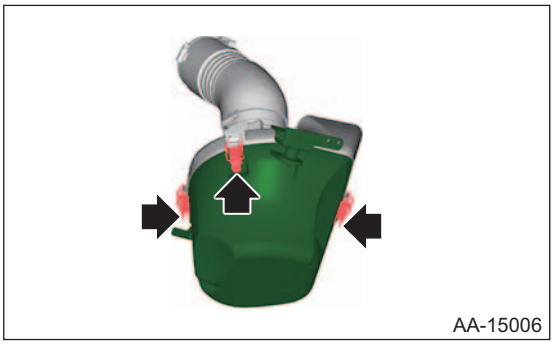
2. Air Cleaner Element

A: REPLACEMENT

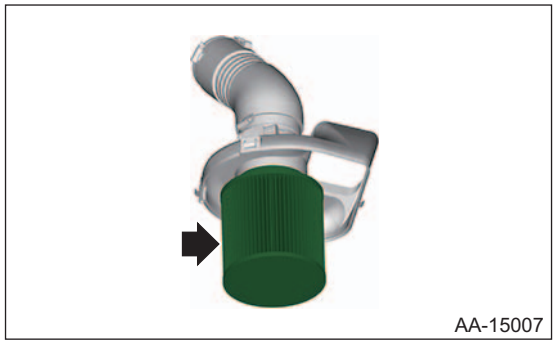
CAUTION:
• Be sure to use STi genuine air cleaner element depending on the engine type when replacing the air cleaner elements. Using other air cleaner element may affect the engine performance.
• Be sure to align the marking (a) of air cleaner case (upper) with the marking (b) of air cleaner element.



NOTE:
Check that there is no dirt or dust within the air cleaner case. If any dirt or dust is found, clean it.
1) Disconnect the ground terminal from battery.
2) Remove the air cleaner case.
3) Remove the air cleaner case (lower).



4) Remove the air cleaner element.



5) Install the air cleaner element.
6) Install the air cleaner case (lower).
7) Install the air cleaner case.
8) Connect the battery ground terminal.

ENGINE 1 SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

FUEL INJECTION (FUEL SYSTEMS)

FU

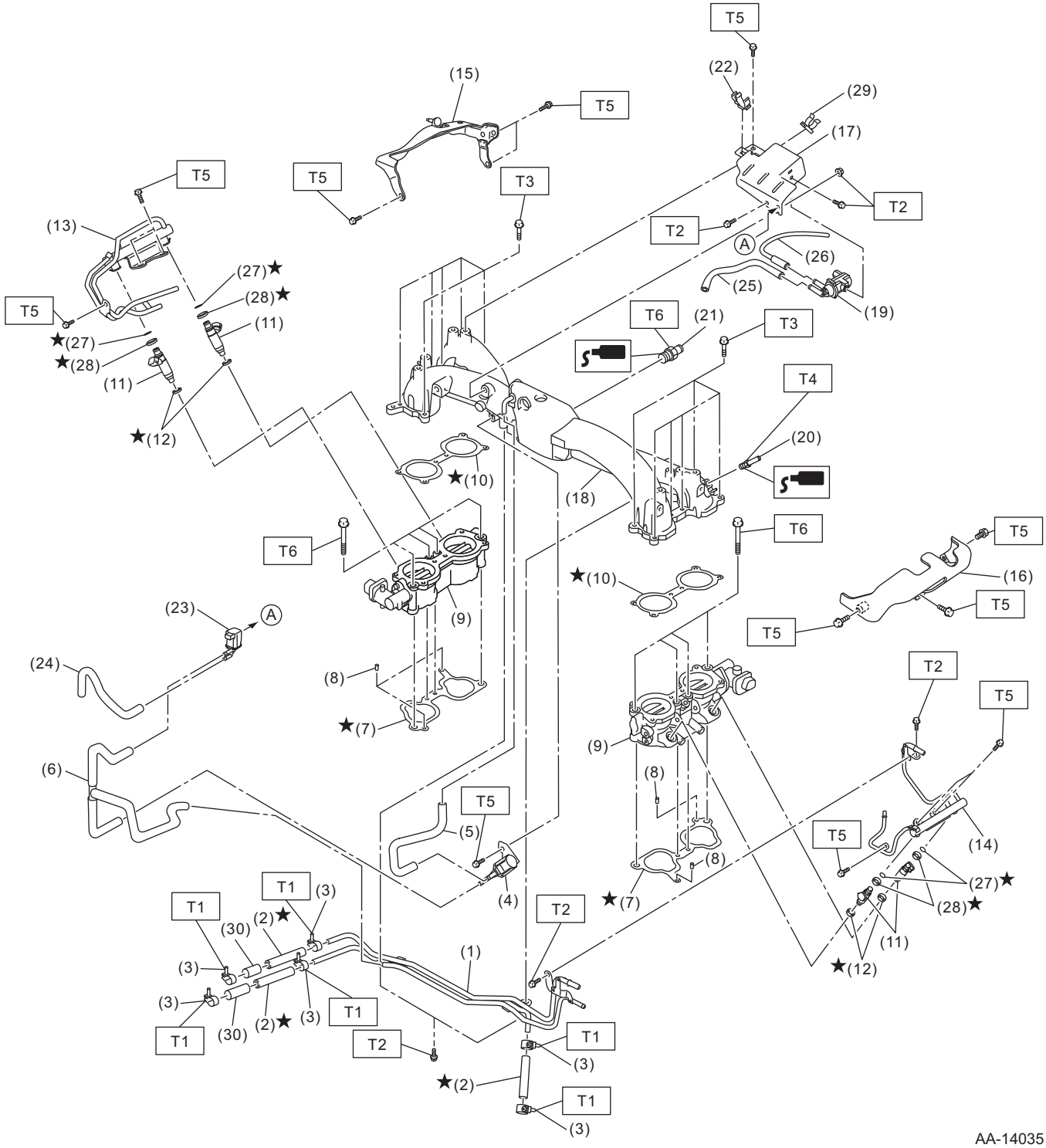
1. General Description

A: SPECIFICATION

Fuel tank	Capacity	60 L (15.9 US gal, 13.2 Imp gal)
	Location	Under rear seat
Fuel pump	Type	Impeller
	Shutoff discharge pressure	900 kPa (9.18 kg/cm^2, 130.5 psi) or less
	Discharge rate	230 L (60.8 US gal, 50.6 Imp gal)/h or more [12 V at 300 kPa (3.06 kg/cm^2, 43.5 psi)]
Fuel filter		In-tank type

B: COMPONENT

1. INTAKE MANIFOLD



(1) Fuel pipe ASSY
(2) Fuel hose
(3) Clamp
(4) Purge control solenoid valve 1
(5) Vacuum hose A
(6) Vacuum control hose
(7) Intake manifold gasket
(8) Guide pin
(9) Tumble generator valve ASSY
(10) Tumble generator valve gasket
(11) Fuel injector
(12) Seal ring
(13) Fuel injector pipe RH
(14) Fuel injector pipe LH
(15) Fuel pipe protector RH
(16) Fuel pipe protector LH
(17) Solenoid valve bracket
(18) Intake manifold
(19) Wastegate control solenoid valve
(20) Nipple
(21) Nipple
(22) Clip
(23) Purge control solenoid valve 2
(24) Vacuum hose
(25) Vacuum hose
(26) Air control hose
(27) O-ring
(28) Rubber
(29) Clip
(30) Protector

Tightening torque: N·m (kgf-m, ft-lb)

T1:	***1.25 (0.1, 0.9)***
T2:	***6.4 (0.7, 4.7)***
T3:	***8.2 (0.8, 6.0)***
T4:	***17 (1.7, 12.5)***
T5:	***19 (1.9, 14.0)***
T6:	***25 (2.5, 18.4)***

INTAKE (INDUCTION)

IN

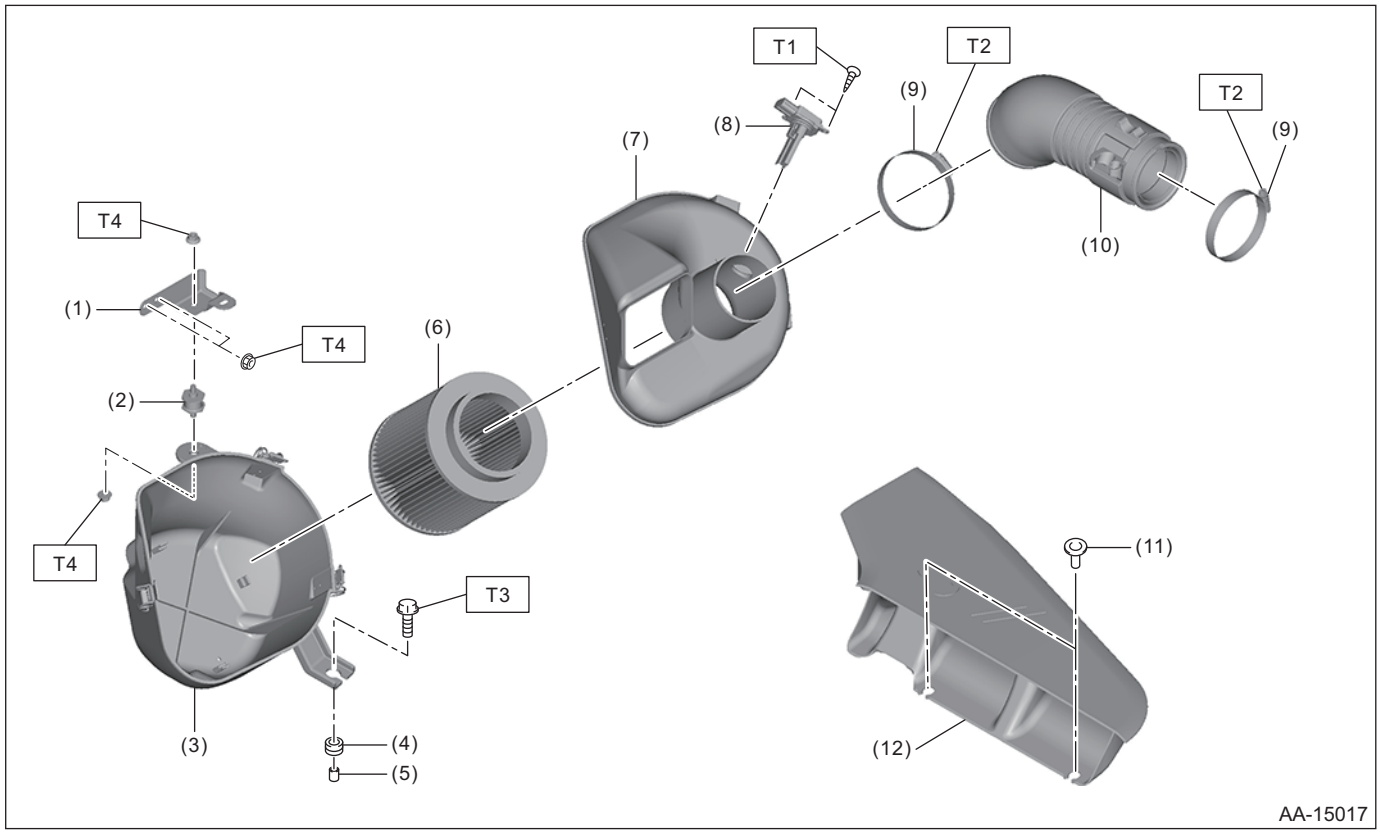
1. General Description

A: SPECIFICATION

Intercooler water spray motor	Pump type	Centrifugal
	Input	12 V — 36 W or less

B: COMPONENT

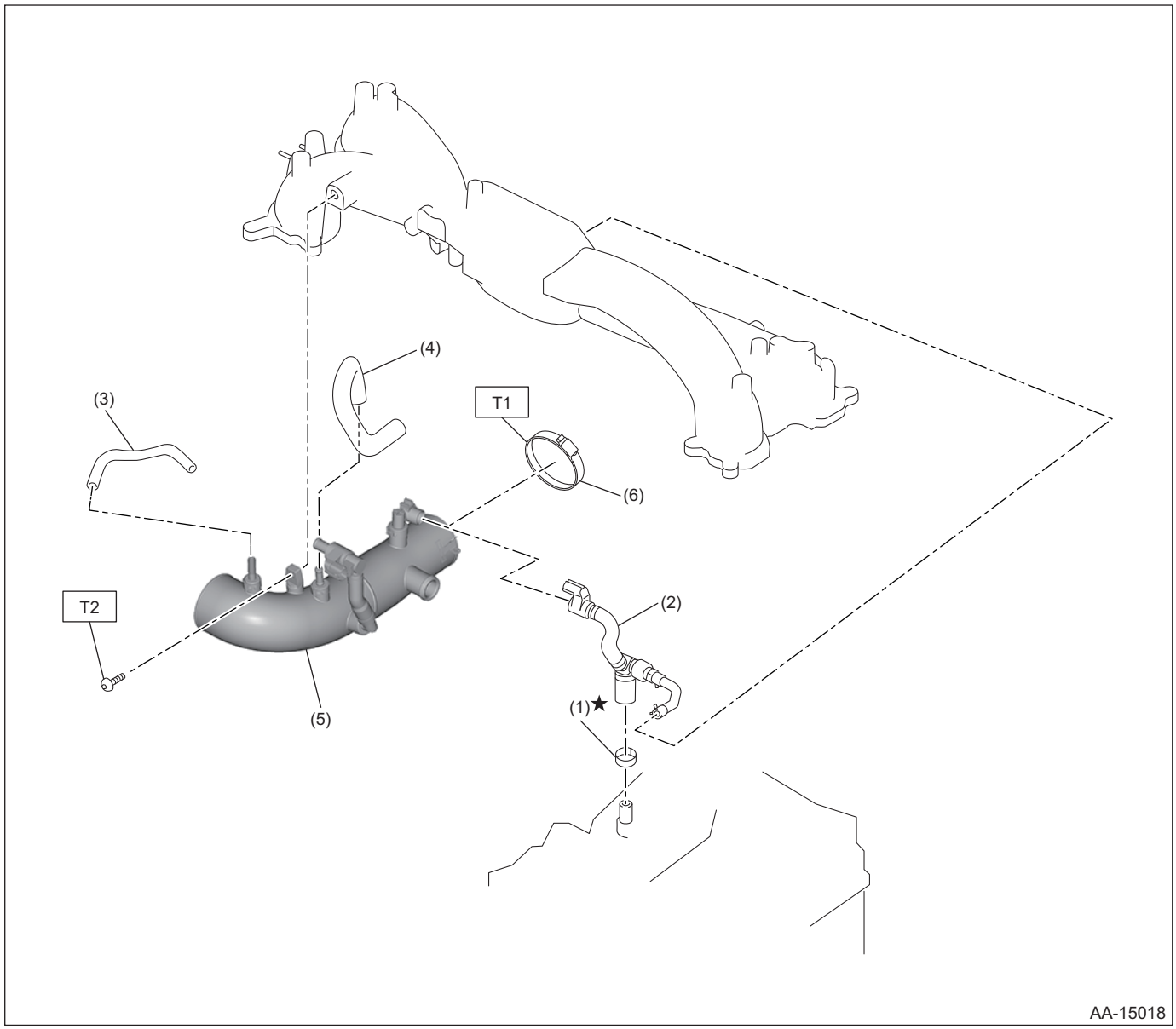
1. AIR CLEANER



(1)	Air cleaner case bracket	(7)	Air cleaner case (upper)
(2)	Cushion	(8)	Mass air flow and intake air temperature sensor
(3)	Air cleaner case (lower)	(9)	Clamp
(4)	Cushion	(10)	Air intake boot
(5)	Spacer	(11)	Clip
(6)	Air cleaner element	(12)	Air intake duct

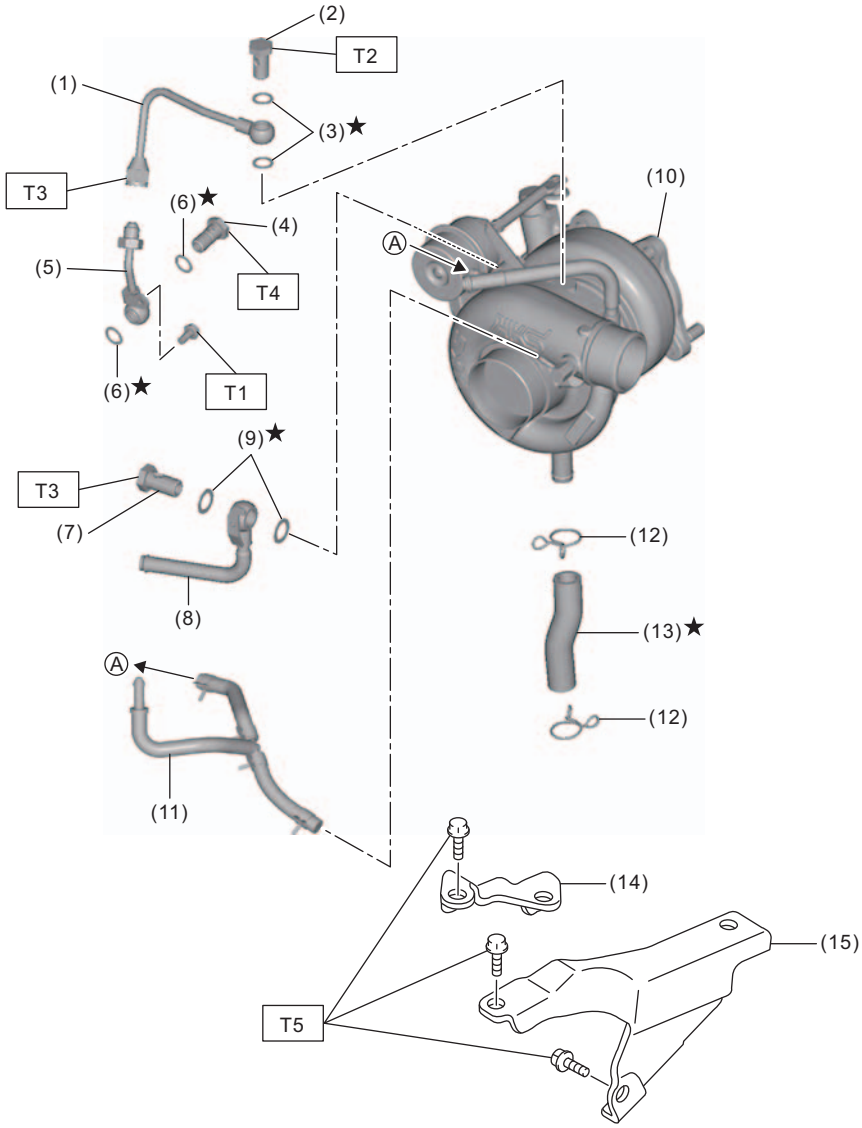
Tightening torque: N·m (kgf-m, ft-lb)
T1: 1 (0.1, 0.7)
T2: 2.5 (0.3, 1.8)
T3: 6.5 (0.7, 5.2)
T4: 7.5 (0.8, 5.5)

2. INTAKE DUCT



(1)	Clamp	(4)	Vacuum hose B	***Tightening torque: N·m (kgf-m, ft-lb)***
(2)	PCV hose ASSY	(5)	Intake duct	***T1: 3 (0.3, 2.2)***
(3)	Vacuum hose A	(6)	Clamp	***T2: 17 (1.7, 12.5)***

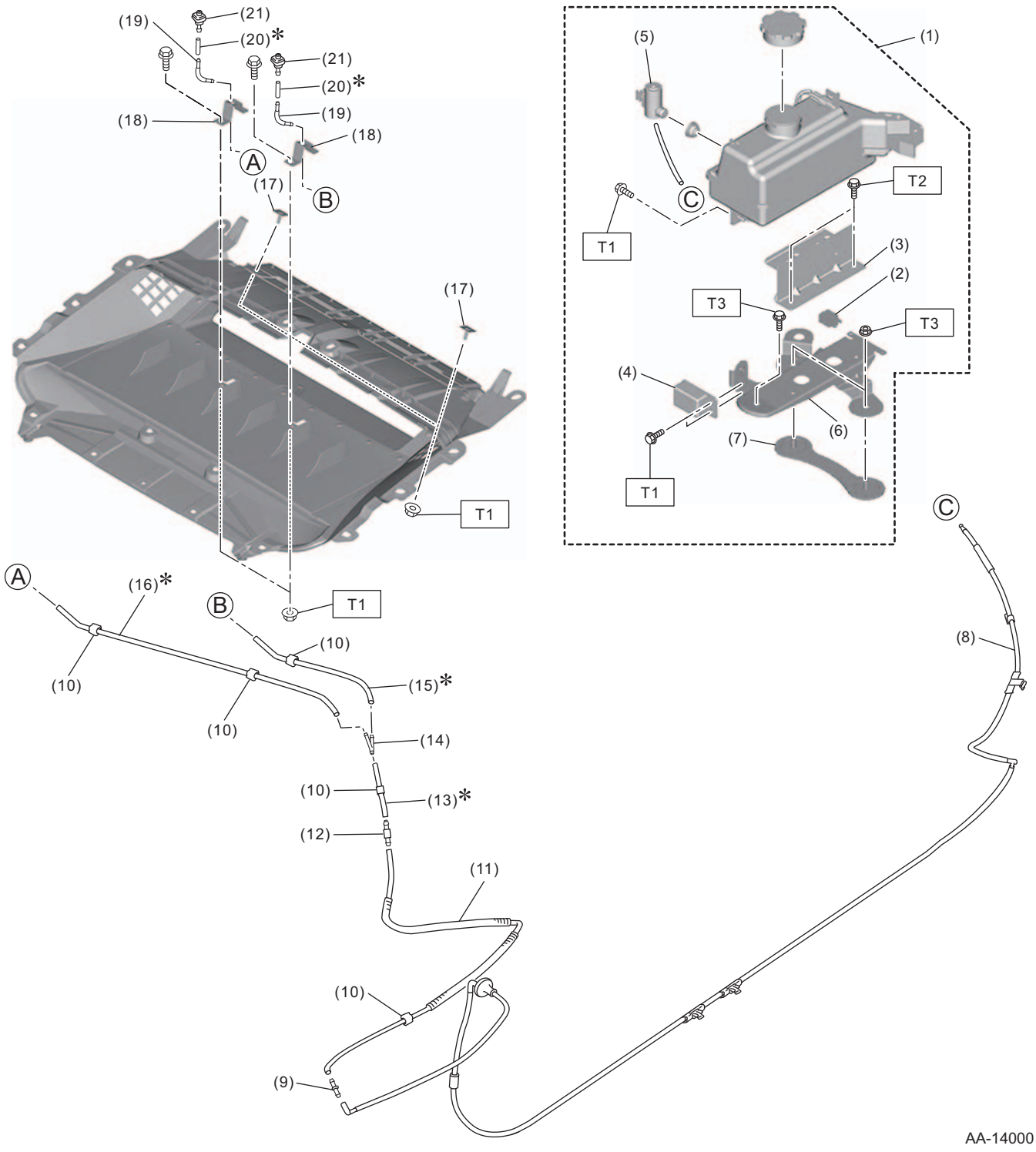
3. TURBOCHARGER



(1) Oil inlet pipe
(2) Union bolt
(3) Gasket
(4) Union bolt
(5) Turbocharger oil pipe
(6) Gasket
(7) Union bolt
(8) Water pipe
(9) Gasket
(10) Turbocharger ASSY
(11) Air control hose ASSY
(12) Clip
(13) Oil outlet hose
(14) Turbocharger stay RH
(15) Turbocharger stay LH

Tightening torque:N·m (kgf-m, ft-lb)
T1: 6.4 (0.7, 4.7)
T2: 16 (1.6, 11.8)
T3: 23 (2.3, 17.0)
T4: 31.5 (3.2, 23.2)
T5: 33 (3.4, 24.3)

4. INTERCOOLER WATER SPRAY



(1) Intercooler water spray tank ASSY
(2) Intercooler water spray relay
(3) Intercooler water spray tank bracket
(4) Intercooler water spray timer
(5) Intercooler water spray motor
(6) BRKT UPR TANK
(7) PLATE LWR ASSY
(8) Intercooler water spray side hose ASSY
(9) JOINT I
(10) Clip
(11) Intercooler water spray front hose ASSY
(12) VALVE F
(13) Intercooler water spray duct hose ③
(14) JOINT Y
(15) Intercooler water spray duct hose ①
(16) Intercooler water spray duct hose ②
(17) DUCT SEAL BRKT
(18) NOZZLE BRKT
(19) JOINT L
(20) NOZZLE HOSE
(21) Intercooler water spray nozzle

Tightening torque: N·m (kgf-m, ft-lb)
T1: 4.5 (0.5, 3.3)
T2: 7.5 (0.8, 5.5)
T3: 18 (1.8, 13.3)

*When installing a new intercooler water spray duct hose, refer to the Notes in the installation procedure of intercooler water spray hose.

C: CAUTION

- Prior to starting work, pay special attention to the following:
  1. Always wear work clothes, a work cap, and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
  2. Protect the vehicle using a seat cover, fender cover, etc.
  3. Prepare the service tools, clean cloth, containers to catch grease and oil, etc.
- Vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.
- When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
- Remove contamination including dirt and corrosion before removal, installation, disassembly or assembly.
- Keep the removed parts in order and protect them from dust and dirt.
- All removed parts, if to be reused, should be reinstalled in the original positions with attention to the correct directions, etc.
- Bolts, nuts and washers should be replaced with new parts as required.
- Be sure to tighten the fasteners including bolts and nuts to the specified torque.

D: PREPARATION TOOL

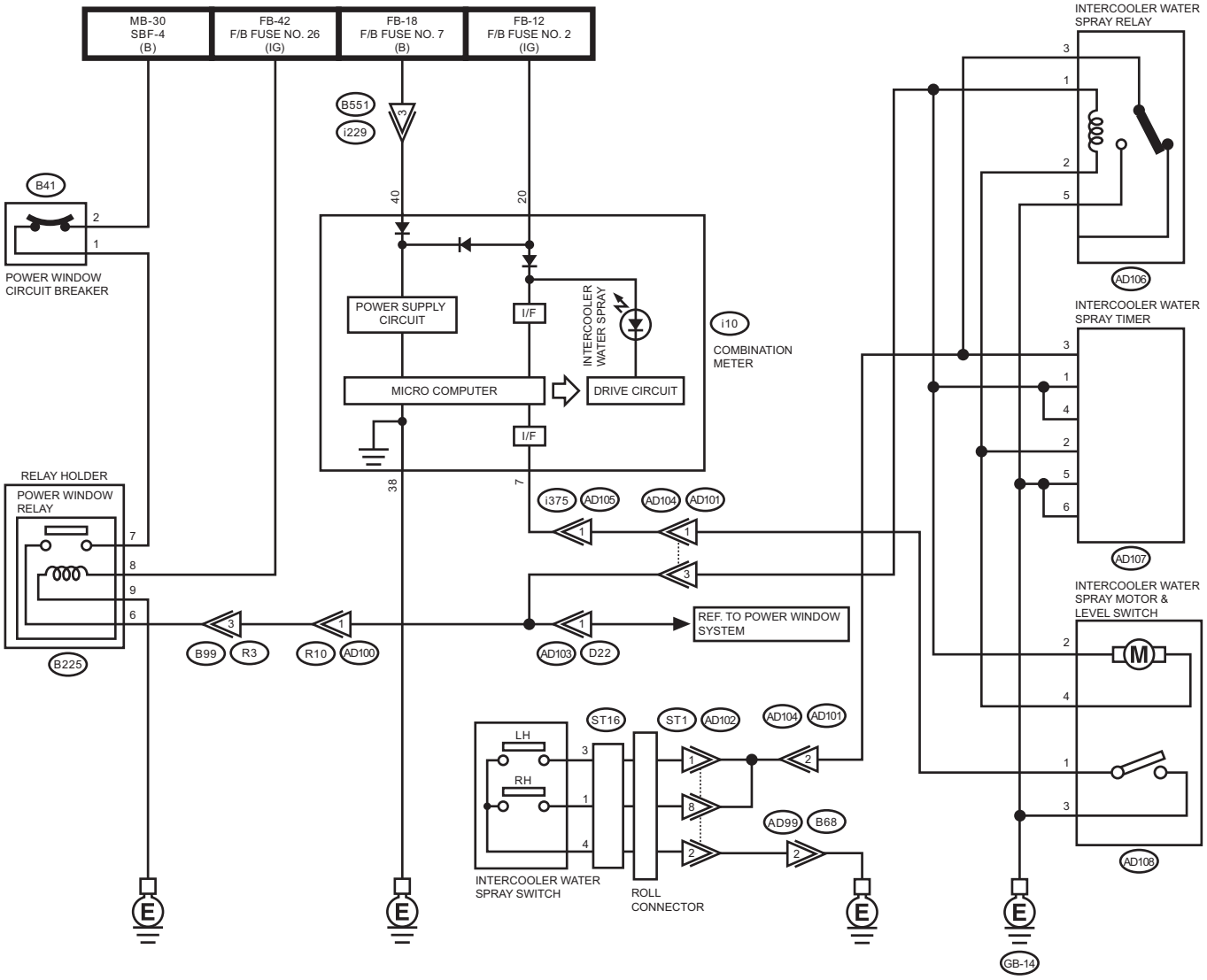
1. GENERAL TOOL

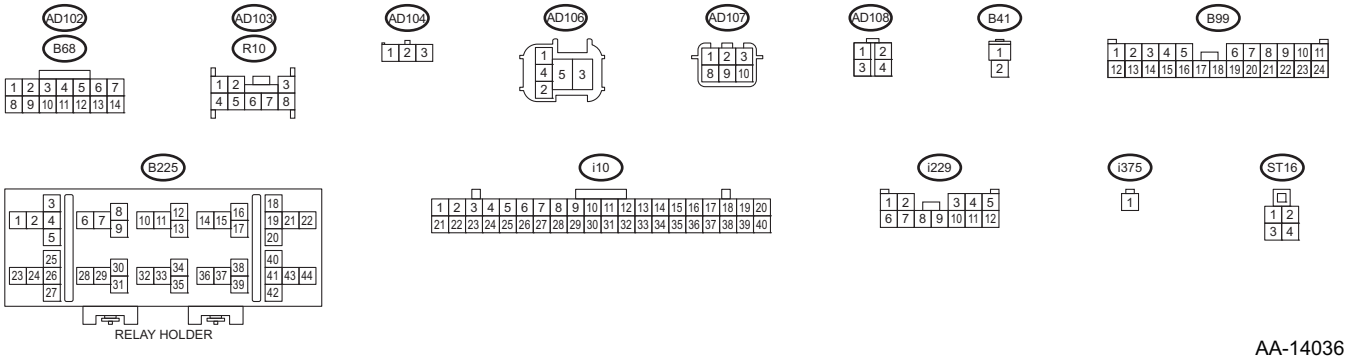
TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance and voltage.
Mighty Vac	Used for checking waste gate actuator and air by-pass valve.
Steering wheel puller	Used for removing the steering wheel.
Squeegee	Used for applying an I/C SPRAY SW LABEL.

2. Intercooler Water Spray System

A: WIRING DIAGRAM

Refer to “Intercooler Water Spray System” in WI section.





AA-14036

B: INSPECTION

Diagnosis:

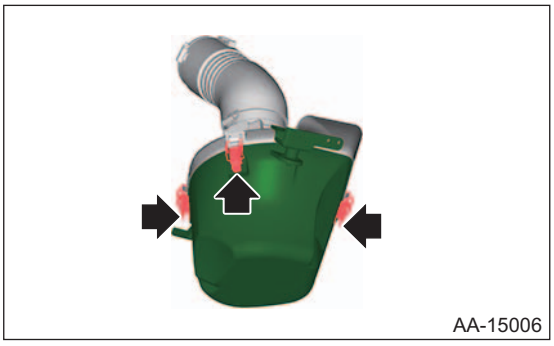
1. CHECK INTERCOOLER WATER SPRAY WARNING LIGHT

	Step	Check	Yes	No
1	**CHECK COMBINATION METER.** 1) Turn the ignition switch to ON. (Engine OFF) 2) Turn the ignition switch to OFF.	Does the warning light illuminate at ignition switch ON, and go off at ignition switch OFF?	Go to step **2**.	Repair or replace the combination meter.
2	**CHECK INTERCOOLER WATER SPRAY LEVEL SWITCH.** NOTE: Refer to the procedures for checking intercooler water spray level switch.	Does the intercooler water spray level switch operate properly?	Go to step **3**.	Replace the intercooler water spray tank assembly.
3	**CHECK HARNESS BETWEEN COMBINATION METER CONNECTOR AND INTERCOOLER WATER SPRAY LEVEL SWITCH CONNECTOR.** Measure the resistance between combination meter connector and intercooler water spray level switch connector. ***Connector & terminal*** ***(i10) No. 7 — (AD108) No. 1:***	Is the resistance less than 1 Ω?	If the intercooler water spray warning light does not operate normally, replace the combination meter.	Repair the open circuit between combination meter connector and intercooler water spray level switch connector, or poor contact of connector.

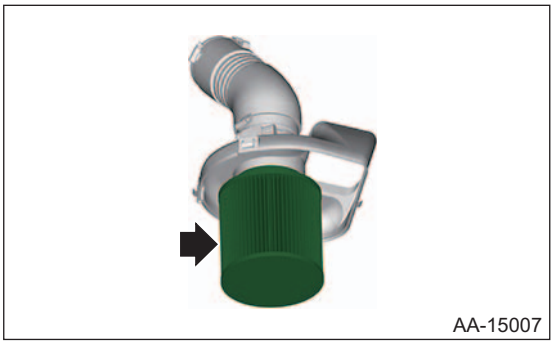
3. Air Cleaner Element

A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Remove the air cleaner case.
3) Remove the air cleaner case (lower).



4) Remove the air cleaner element.



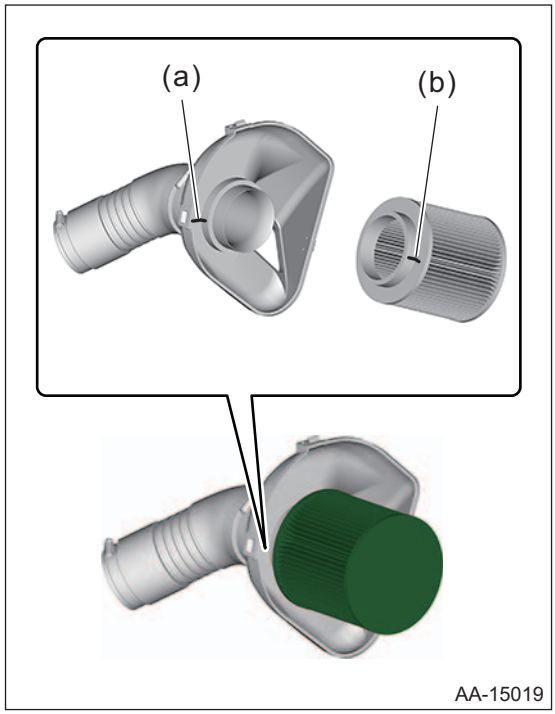
B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

• Be sure to use STi genuine air cleaner element depending on the engine type when replacing the air cleaner elements. Using other air cleaner element may affect the engine performance.

• Be sure to align the marking (a) of air cleaner case (upper) with the marking (b) of air cleaner element.



NOTE:
Check that there is no dirt or dust within the air cleaner case. If any dirt or dust is found, clean it.

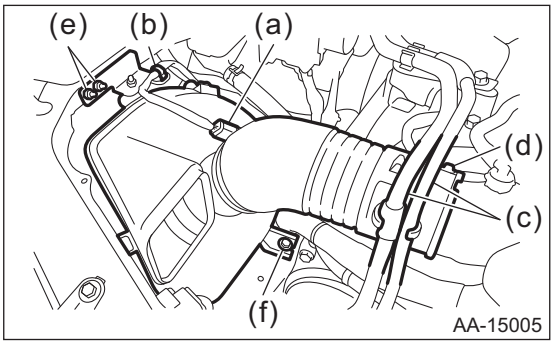
C: INSPECTION

1) Check that the air cleaner element has no deformation, cracks or other damages.
2) Check the air cleaner element for excessive dirt.

4. Air Cleaner Case

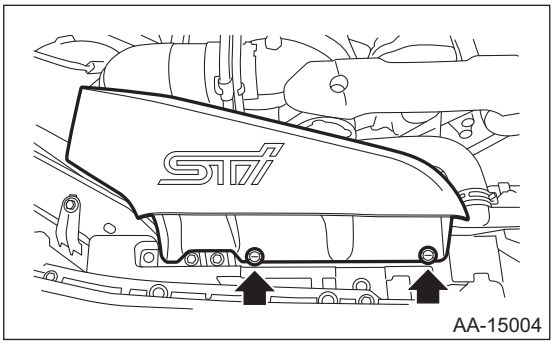
A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Remove the air intake duct.
3) Disconnect the connector (a) from the mass air flow and intake air temperature sensor, and remove the harness clip (b).
4) Remove the engine coolant hose (c) from the air intake boot, and loosen the clamp (d).
5) Remove the nut (e) of the air cleaner case bracket.
6) Remove the bolt (f), and then remove the air cleaner case as a unit.



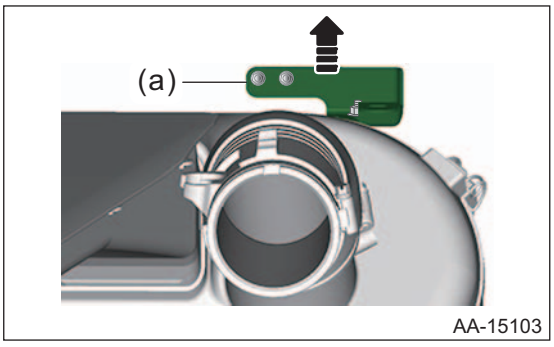
B: INSTALLATION

1) Set the air cleaner case and air intake duct as a unit, and secure the air intake duct with clips.



2) Install the nut (a) of the air cleaner case bracket.

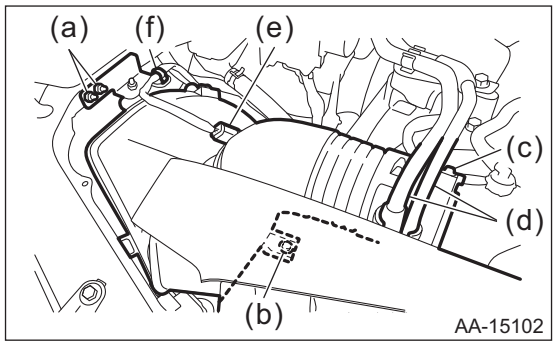
NOTE:
Tighten while pulling the air cleaner case bracket (a) upward of the vehicle.



Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)
3) Tighten the bolt (b).

Tightening torque:
6.5 N·m (0.7 kgf-m, 5.2 ft-lb)
4) Tighten the clamp (c) of the air intake boot, and restore the engine coolant hose (d) to the original position.

Tightening torque:
2.5 N·m (0.3 kgf-m, 1.8 ft-lb)
5) Connect the connector (e) to the mass air flow and intake air temperature sensor, and install the harness clip (f).



6) Connect the battery ground terminal.

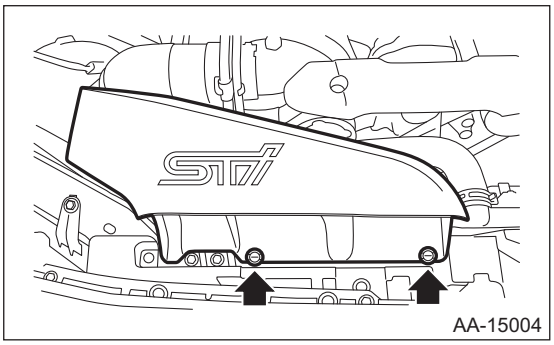
C: INSPECTION

1) Check that the air cleaner case has no deformation, cracks or other damages.
2) Check that the air intake boot has no cracks, damage or loose part.

5. Air Intake Duct

A: REMOVAL

Remove the clip which secures the air intake duct, and remove the air intake duct.



B: INSTALLATION

Install in the reverse order of removal.

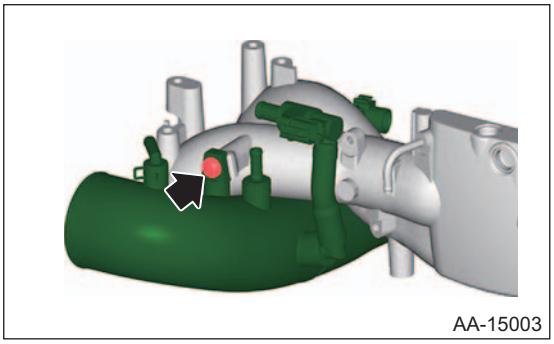
C: INSPECTION

1) Check that the air intake duct has no deformation, cracks or other damages.
2) Inspect that no foreign objects are mixed in the air intake duct.

6. Intake Duct

A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Remove the intake manifold.
3) Remove the sensor, engine harness and fuel pipe from the intake manifold.
4) Remove the intake duct from intake manifold.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:
17 N·m (1.7 kgf-m, 12.5 ft-lb)

C: INSPECTION

1. LEAK DIAGNOSIS CONNECTOR

Refer to “PCV Pipe Assembly” for inspection of leak diagnosis connector.

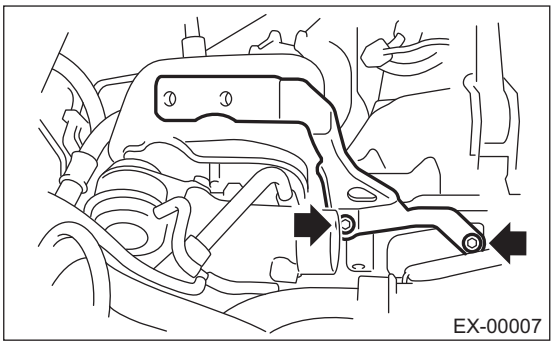
2. OTHER INSPECTIONS

Check that the intake duct has no deformation, cracks or other damages.

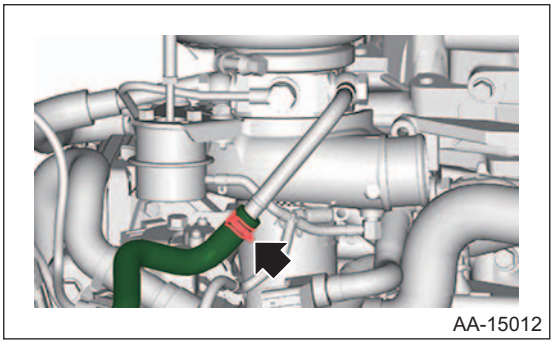
7. Turbocharger

A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Drain approximately 3.0 L (3.2 US qt, 2.6 Imp qt) of coolant.
3) Lower the vehicle.
4) Remove the intercooler.
5) Remove the intercooler stay RH No. 2.

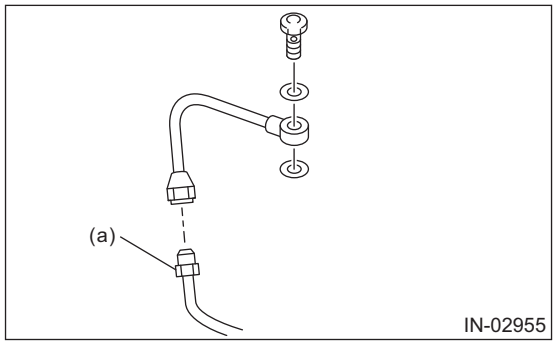


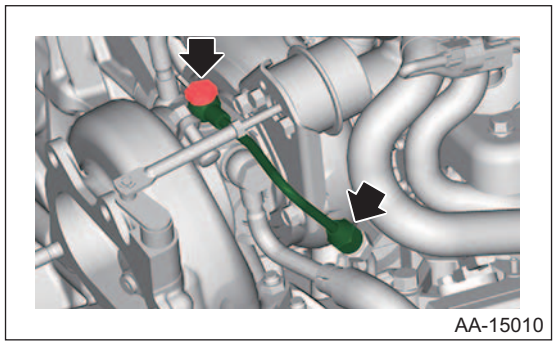
6) Remove the center exhaust pipe.
7) Lower the vehicle.
8) Disconnect the engine coolant hose from the water pipe.



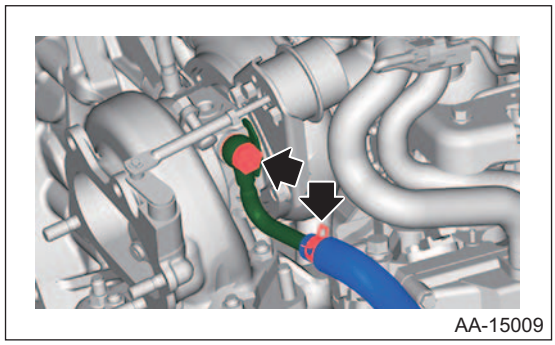
9) Remove the oil inlet pipe from the turbocharger.

CAUTION:
In order to prevent damaging the oil pipe on the cylinder head side, fix the section (a) shown in the figure when loosing the oil inlet pipe flare nut, and avoid the part from rotating together while loosening the nut.

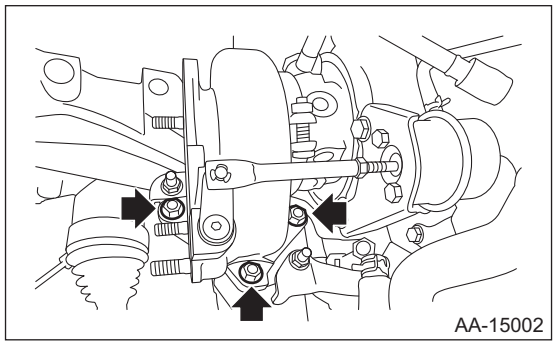




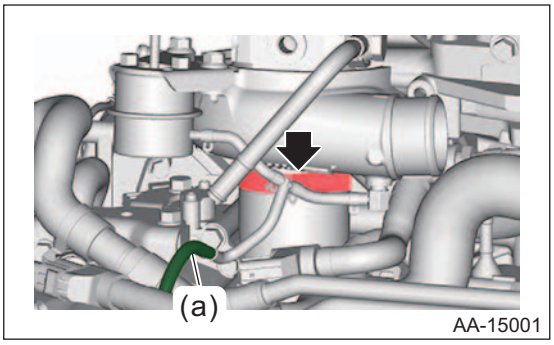
10) Disconnect the engine coolant hose from the water pipe, and remove the water pipe from the turbocharger.



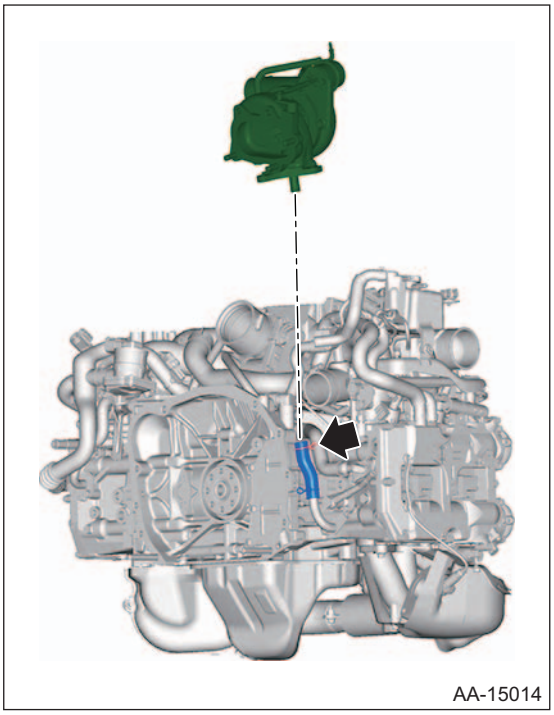
11) Remove the joint pipe from the turbocharger.



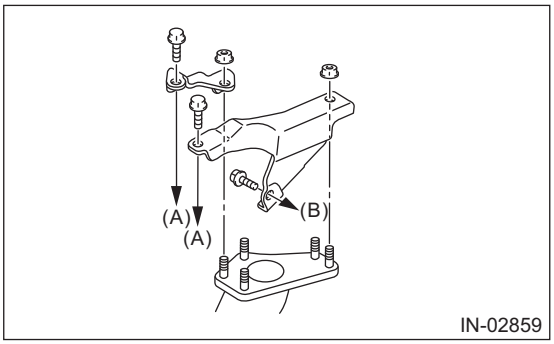
12) Disconnect the air control hose (a), and loosen the clamp holding the intake duct to the turbocharger.



13) Disconnect the oil outlet pipe from the oil outlet hose, and remove the turbocharger.



14) Remove the turbocharger stay.

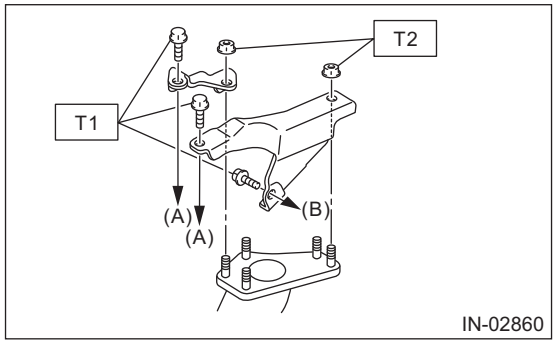


(A) To cylinder head RH
(B) To cylinder block RH

B: INSTALLATION

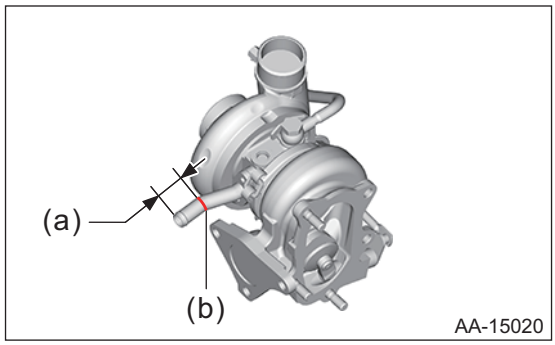
1) Install the turbocharger stay.

Tightening torque:
T1: 33 N·m (3.4 kgf-m, 24.3 ft-lb)
T2: 42.5 N·m (4.3 kgf-m, 31.3 ft-lb)



(A) To cylinder head RH
(B) To cylinder block RH

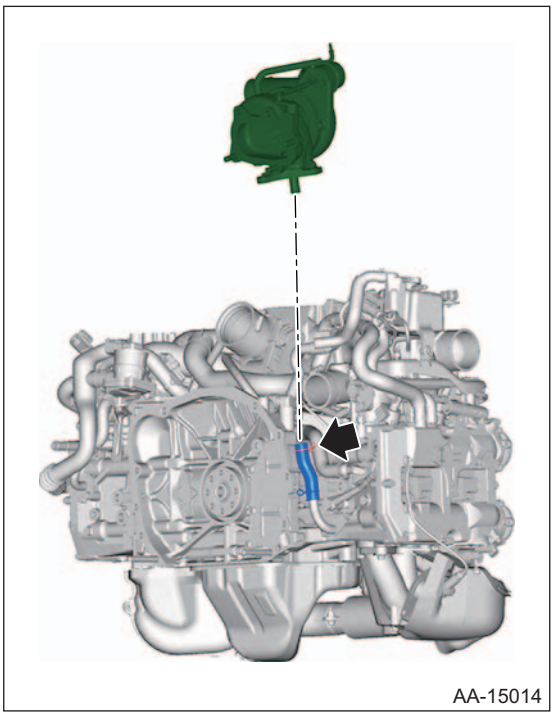
2) Make the marking (b) at a position of 25 mm (1.0 in) (a) from the lower end of oil outlet pipe.



3) Set the turbo charger, and connect the oil outlet pipe to the oil outlet hose.

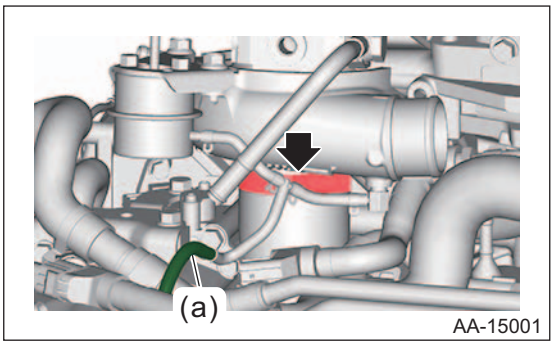
CAUTION:
Insert the oil outlet hose to the marking position of the oil outlet pipe.

NOTE:
Use a new gasket.


AA-15014

4) Connect the air control hose (a), and install the intake duct to the turbocharger.

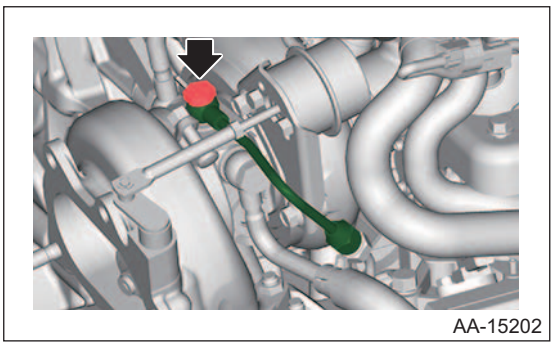
Tightening torque:
3 N·m (0.3 kgf-m, 2.2 ft-lb)



AA-15001

5) Temporarily tighten the union bolts which secure the oil inlet pipe to the turbocharger. (One or two thread(s))

NOTE:
Use a new gasket.

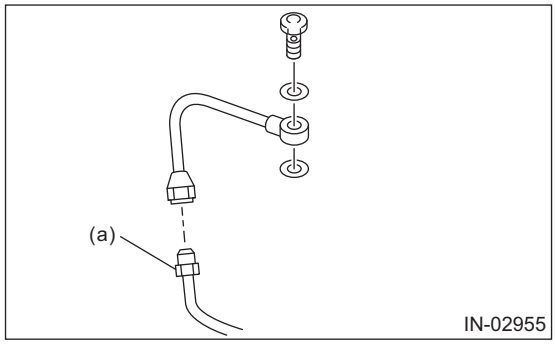

AA-15202

6) Temporarily tighten the flare nuts which secure the turbocharger oil pipe to the oil inlet pipe until they are seated.

CAUTION:
- **Tighten the flare nuts by hand.**
- **After the flare nuts are seated, check for looseness while moving the pipe portion of the oil inlet pipe.**

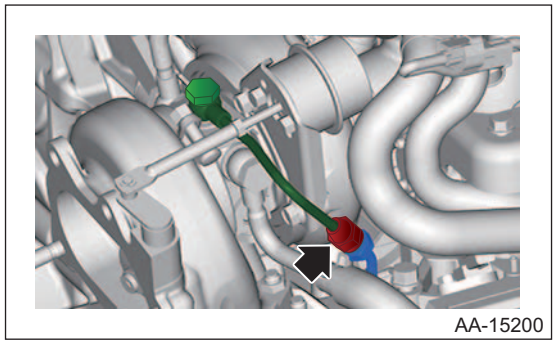
7) Tighten the flare nuts which secure the turbocharger oil pipe to the oil inlet pipe.

CAUTION:
In order to prevent damaging the oil pipe on the cylinder head side, fix the section (a) shown in the figure when tightening the oil inlet pipe flare nut, and avoid the part from rotating together while tightening the nut.

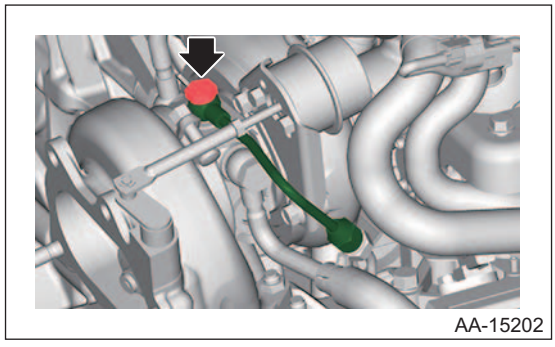


IN-02955

Tightening torque:
23 N·m (2.3 kgf-m, 17.0 ft-lb)

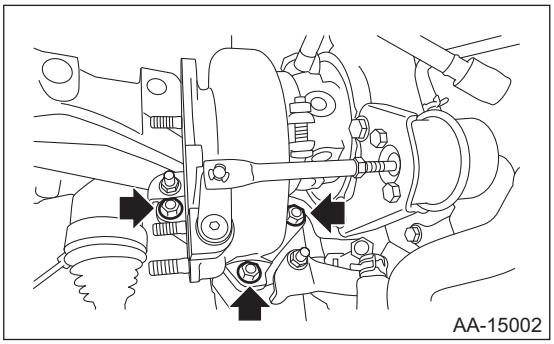

AA-15200

8) Temporarily tighten the union bolts which secure the oil inlet pipe to the turbocharger until they are seated.


AA-15202

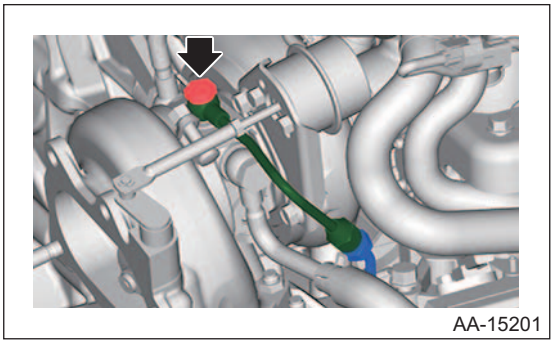
9) Install the nuts which secure the turbocharger to the joint pipe.

Tightening torque:
42.5 N·m (4.3 kgf-m, 31.3 ft-lb)


AA-15002

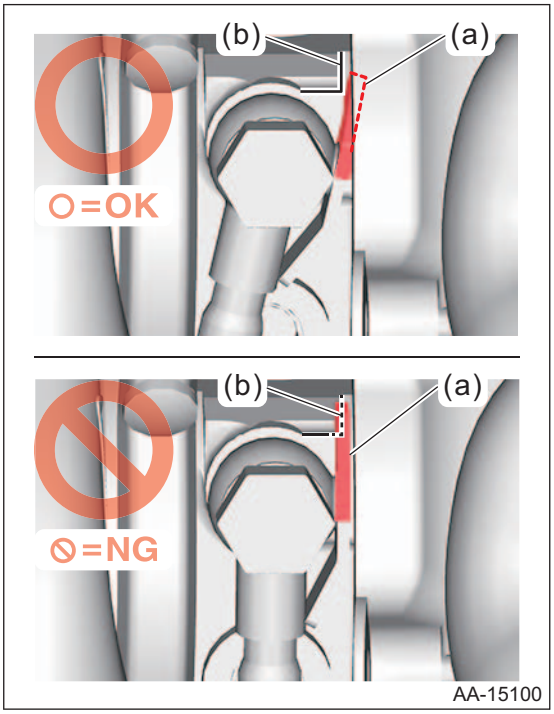
10) Tighten the union bolts which secure the oil inlet pipe to the turbocharger.

Tightening torque:
16 N·m (1.6 kgf-m, 11.8 ft-lb)


AA-15201

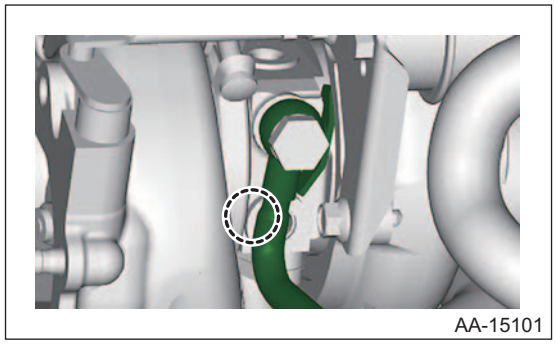
11) Install the water pipe to the turbocharger, and connect the engine coolant hose to the water pipe.

NOTE:
- Use a new gasket.
- Install so that the claw (a) of the water pipe contacts the side face (b) of the housing.

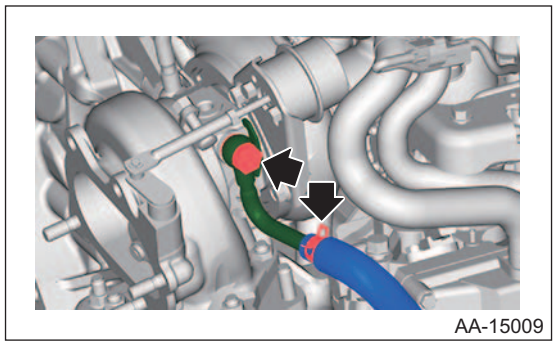


AA-15100

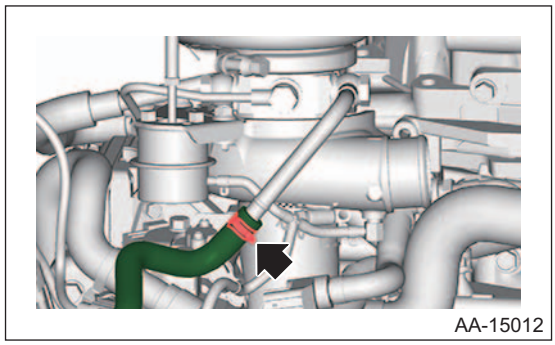
- Check the turbocharger and the water pipe for interference.


AA-15101

Tightening torque:
23 N·m (2.3 kgf-m, 17.0 ft-lb)

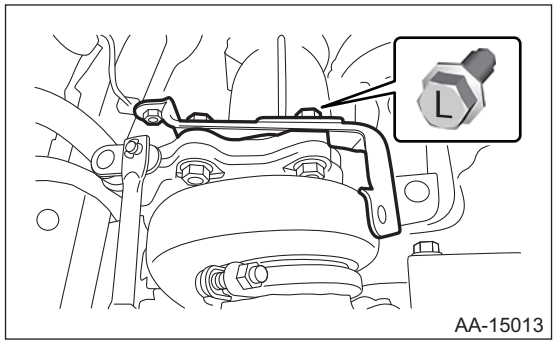

AA-15009

12) Connect the engine coolant hoses to the water pipe.


AA-15012

13) Lift up the vehicle.
14) Install the center exhaust pipe.

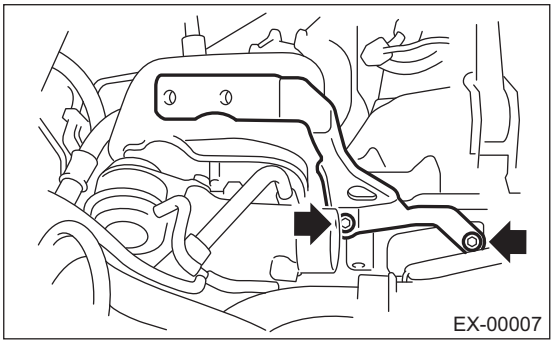
CAUTION:
Left and right bolts for a turbocharger cover stay differ in length. Use the bolt with “L” mark to the left side of vehicle.



AA-15013

15) Lower the vehicle.
16) Install the intercooler stay RH No. 2.

Tightening torque:
16 N·m (1.6 kgf-m, 11.8 ft-lb)



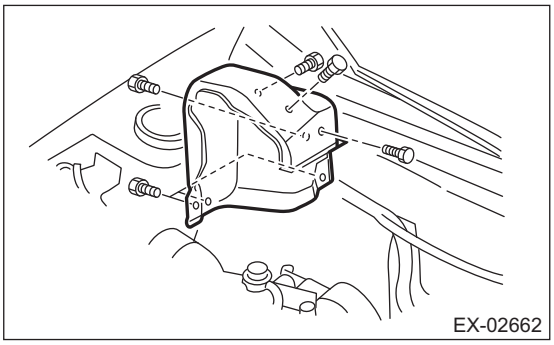
17) Install the intercooler.
18) Connect the battery ground terminal.
19) Fill engine coolant.

CAUTION:
• Restore the vehicle and warm up the engine. Then check that there are no oil leaks or oil oozing from the following parts.
• Oil pipe unit
• Flare portion
• Banjo portion
• Ventilate the room when warming up the engine.
• Engine and vehicle components are extremely hot. Be wary of receiving burns from heated parts.

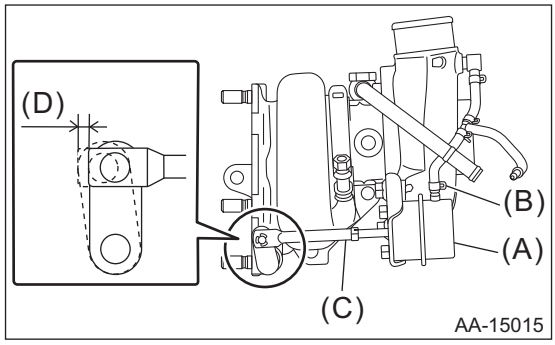
C: INSPECTION

1. WASTE GATE ACTUATOR

1) Remove the intercooler.
2) Remove the turbocharger upper cover.



3) Remove the boost hose (B) from the waste gate actuator (A) of the turbocharger, and connect the Mighty Vac to the waste gate actuator (A).



(A) Waste gate actuator
(B) Boost hose
(C) Control rod
(D) Control rod stroke

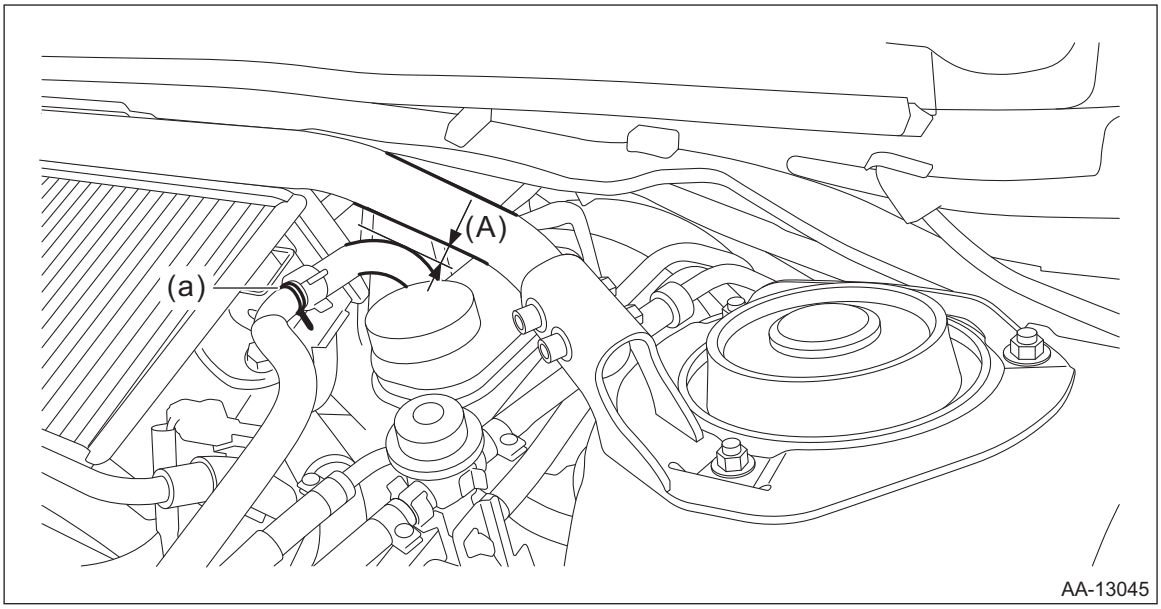
4) Pressurize slowly with the Mighty Vac, and measure the pressure when the control rod stroke (D) becomes 4 mm (0.16 in). If it is not within the standard, replace the turbocharger assembly.

CAUTION:
Do not pressurize over 130 kPa (1.33 kg/cm^2, 18.8 psi) to prevent damaging the waste gate actuator.

Operating pressure (control rod stroke 4 mm (0.16 in)):
Standard
113 — 128 kPa (1.15 — 1.31 kg/cm^2, 16.4 — 18.6 psi)

5) After inspection, install the related parts in the reverse order of removal.

NOTE:
• After installing the vacuum hose, make sure that the clearance (A) between the strut tower bar and the vacuum hose is 15 mm (0.591 in) or more.
• When replacing the tie-wrap (a) with a new part, use HellermannTyton GalvaLok GL150 or equivalent.



Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

2. OTHER INSPECTIONS

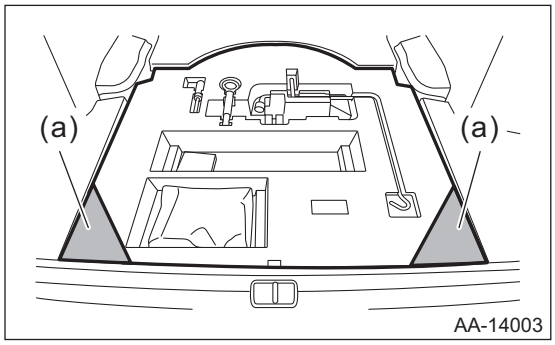
1) Check that the turbocharger, turbocharger stay and pipe have no deformation, cracks or other damages.
2) Check that the hose and intake duct have no cracks, damage or loose part.
3) Check that there are no oil leakage or water leakage from the pipe attachment section.

8. Intercooler Water Spray Tank & Motor

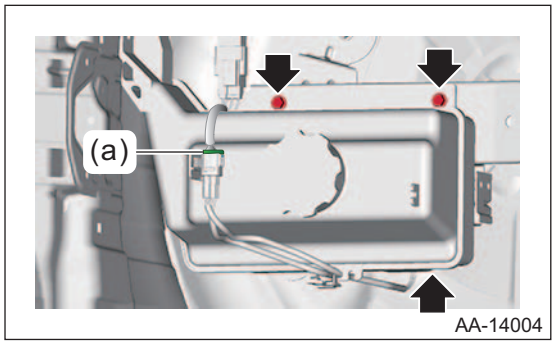
A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Open the trunk, and remove the mat - trunk.
3) Remove the sub trunk.

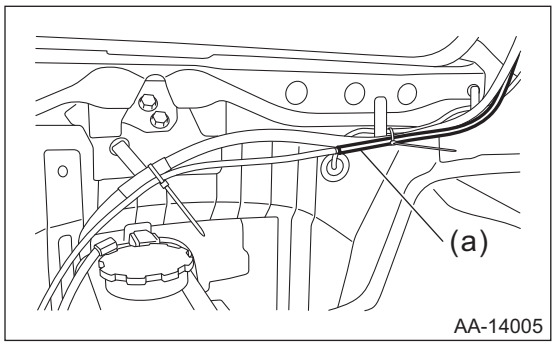
CAUTION:
Remove any luggage, etc. stored in the trunk room to outside of the vehicle, and then remove/install the sub trunk while holding its center area with both hands. Holding the corner part (a) with something stored inside may damage the sub trunk.



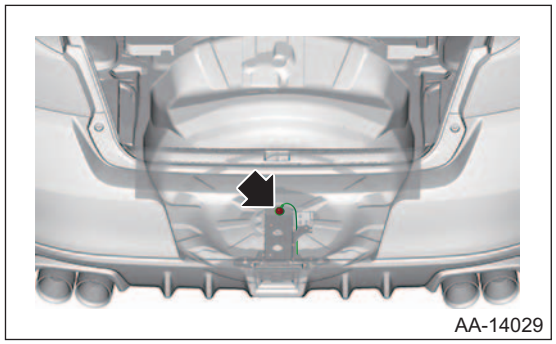
4) Disconnect the connector (a), and remove the bolts securing the intercooler water spray tank assembly.



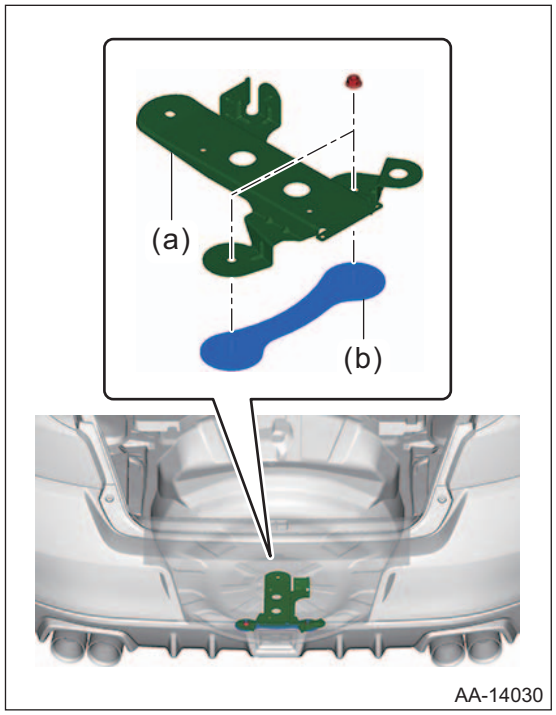
5) Prepare a container, and disconnect the intercooler water spray side hose assembly (a) to drain water in the intercooler water tank completely. And then remove the intercooler water spray tank assembly.



6) Remove the intercooler water spray timer.
7) Remove the intercooler water spray relay.
8) Remove the bolts, and then remove the ground terminal.

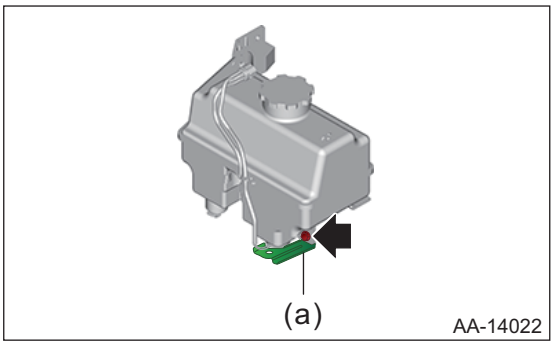


9) Remove the nuts, and remove the BRKT UPR TANK (a) and the PLATE LWR ASSY (b) under the rear floor pan.

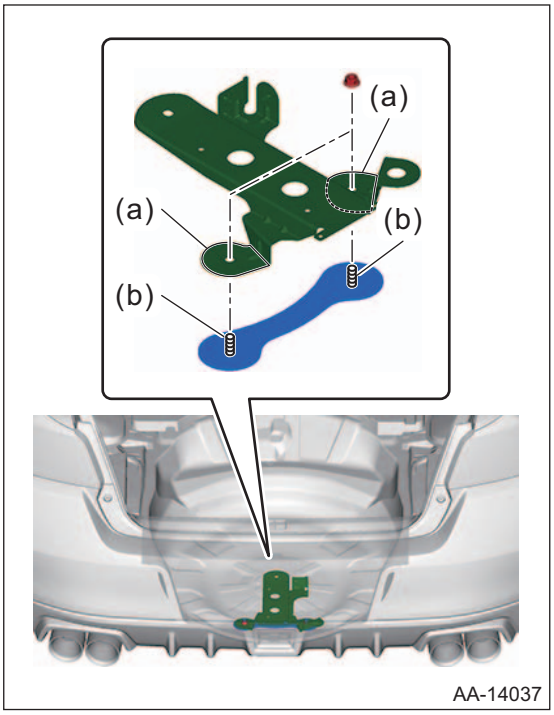


B: INSTALLATION

1) When using a new intercooler water spray tank assembly, remove the unnecessary bracket (a).



2) Securely insert the washer part (a) on the rear side of the BRKT UPR TANK into the grommet hole so that it catches the bolt (b) of the PLATE LWR ASSY, and temporarily tighten it with nuts.



3) Install the ground terminal, and tighten the nuts temporarily installed in step 2).

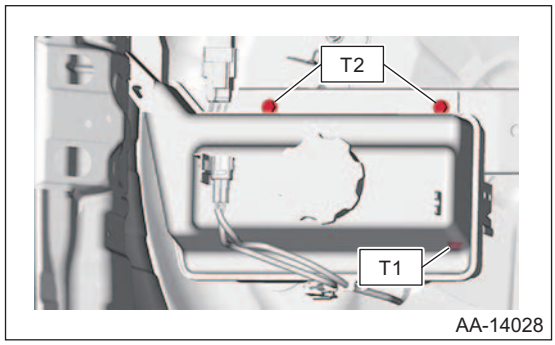
Tightening torque:
18 N·m (1.8 kgf-m, 13.3 ft-lb)

4) Install the intercooler water spray relay.
5) Install the intercooler water spray timer.

Tightening torque:
4.5 N·m (0.5 kgf-m, 3.3 ft-lb)

6) Thereafter, install in the reverse order of removal.

Tightening torque:
T1: 4.5 N·m (0.5 kgf-m, 3.3 ft-lb)
T2: 7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

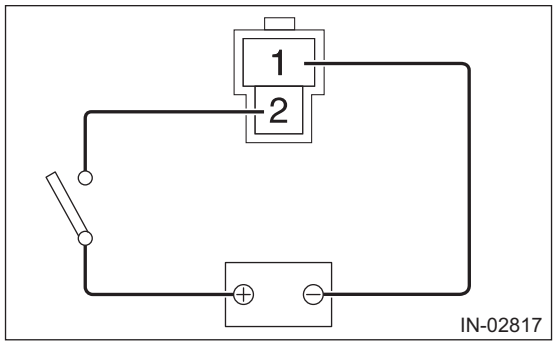


C: INSPECTION

1. INTERCOOLER WATER SPRAY MOTOR

1) Check that the intercooler water spray motor has no deformation, cracks or other damages.
2) Connect the battery positive terminal to terminal No. 2 and the battery ground terminal to terminal No. 1, and inspect the intercooler water spray motor operation.

CAUTION:
Do not run the intercooler water spray motor for a long time under non-load condition.



2. OTHER INSPECTIONS

1) Check that the intercooler water spray tank assembly has no deformation, cracks or other damages.
2) Check that the hose has no cracks, damage or loose part.

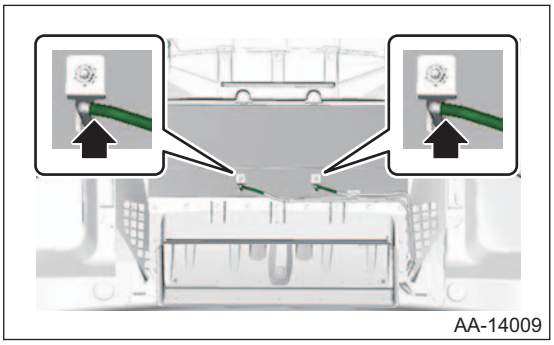
9. Intercooler Water Spray Nozzle

A: REMOVAL

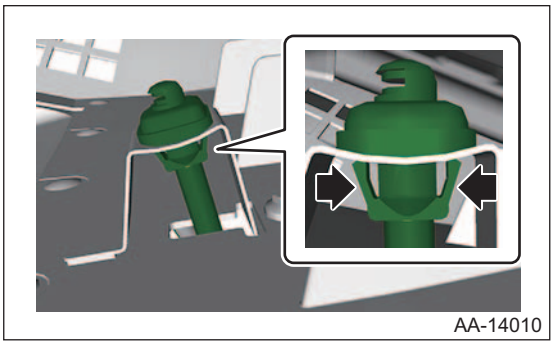
1) Open the front hood.
2) Remove the clips, and remove the insulator - front hood from the front hood.

CAUTION:
Do not reuse any clips damaged during removal. The damaged clip cannot fix the insulator - front hood securely. Therefore, always replace with a new part.

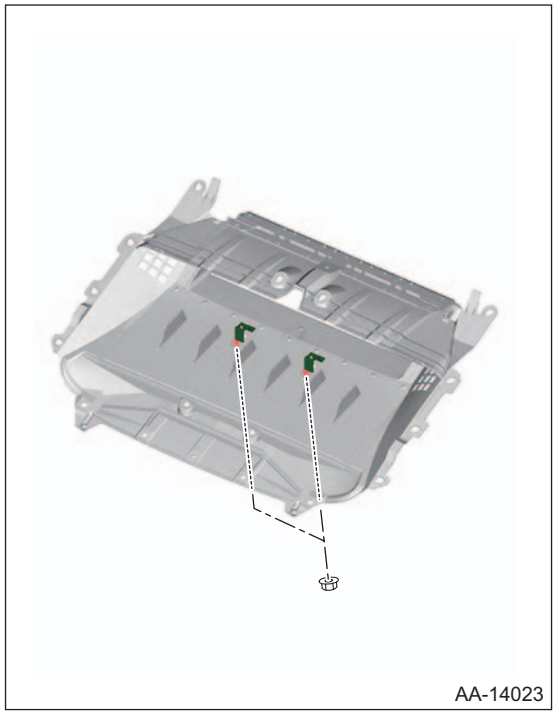
3) Remove the intercooler water spray duct hose assembly from the intercooler water spray nozzle.


AA-14009

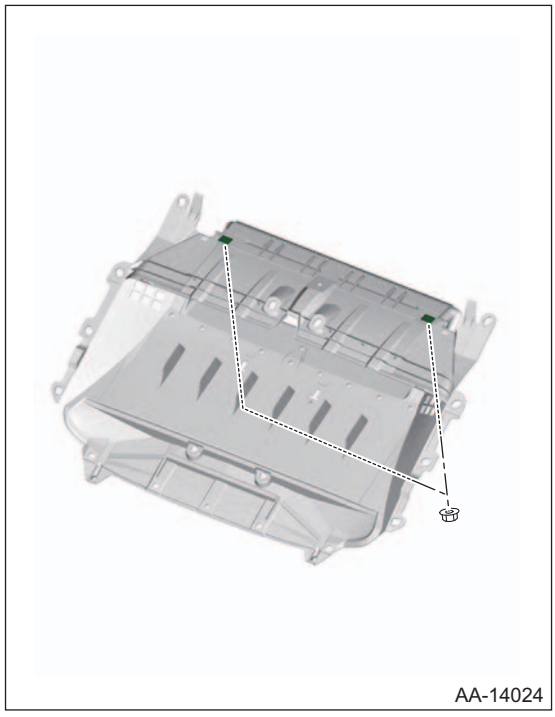
4) Remove the duct - inner front hood.
5) Press the two claws on the nozzle, and remove the intercooler water spray nozzle from the NOZZLE BRKT.


AA-14010

6) Remove the nuts, and remove the NOZZLE BRKT.


AA-14023

7) Remove the nuts, and remove the DUCT SEAL BRKT.


AA-14024

B: INSTALLATION

1) Install the DUCT SEAL BRKT.

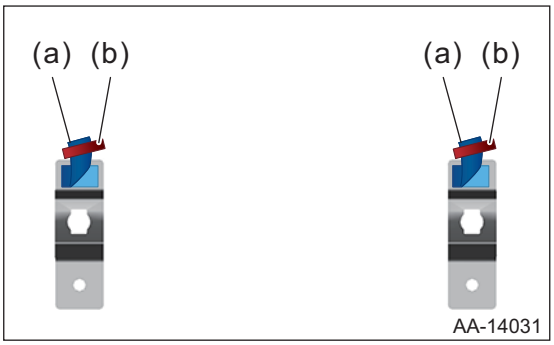
Tightening torque:
4.5 N·m (0.5 kgf-m, 3.3 ft-lb)

2) Install the NOZZLE BRKT.

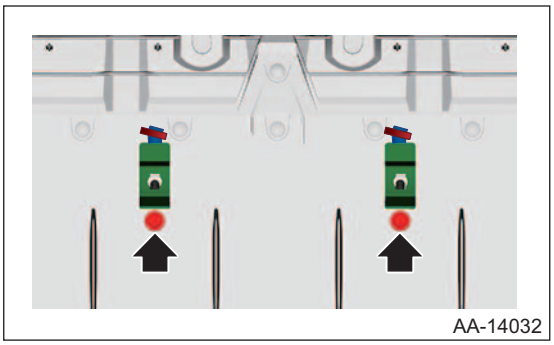
CAUTION:
When installing the NOZZLE BRKT, hold the NOZZLE BRKT while tightening so that it does not rotate.

NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
• Heating a particular small area will cause deformation of the parts.

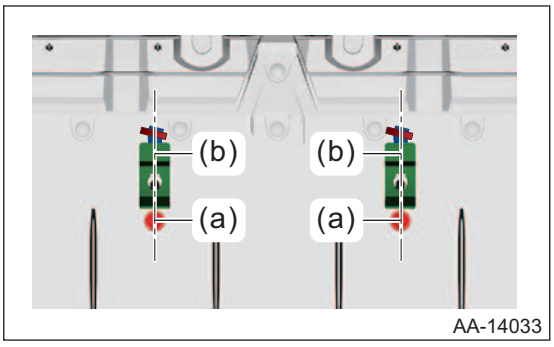
(1) Clean and degrease the attachment area of NOZZLE BRKT on the duct - inner front hood.
(2) Peel off a half of the backing sheet (a) of NOZZLE BRKT, and attach the masking tape (b).



(3) Temporarily install the NOZZLE BRKT with bolts.



(4) Adjust the position so that the center of the bolt (a) and the center of the attachment area (b) align in a straight line.



(5) Pull the masking tape attached in step (2) to remove the backing sheet, and press-fit the NOZZLE BRKT.
(6) Tighten the bolts temporarily installed in step (3).

Tightening torque:
4.5 N·m (0.5 kgf-m, 3.3 ft-lb)

3) Thereafter, install in the reverse order of removal.

NOTE:
When it is hard to install the intercooler water spray nozzle, insert the intercooler water spray nozzle by attaching one claw at a time.

C: INSPECTION

1) Check the intercooler water spray nozzle for clogging.
2) Check that the intercooler water spray nozzle has no deformation, cracks or other damages.
3) Check that the hose has no cracks, damage or loose part.

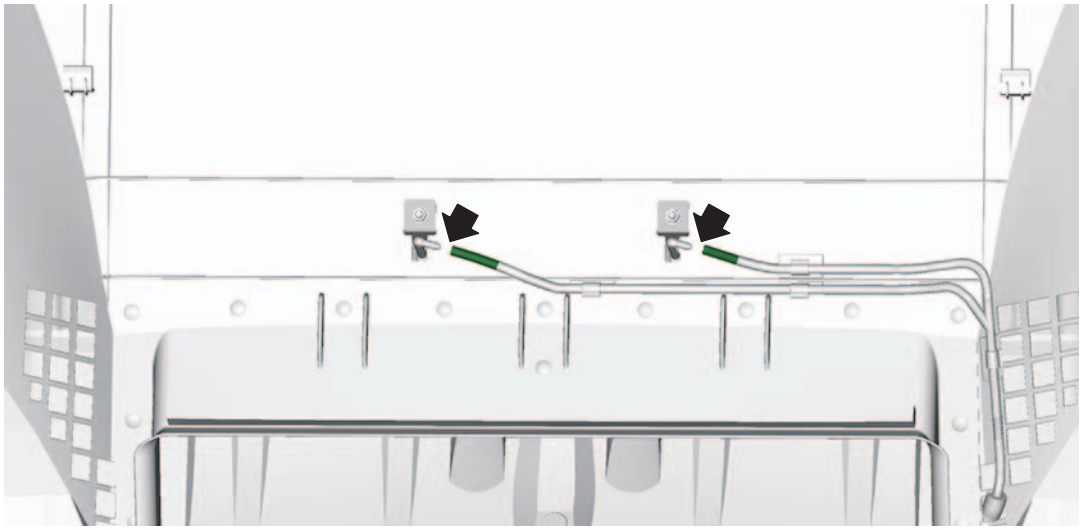
10.Intercooler Water Spray Hose

A: REMOVAL

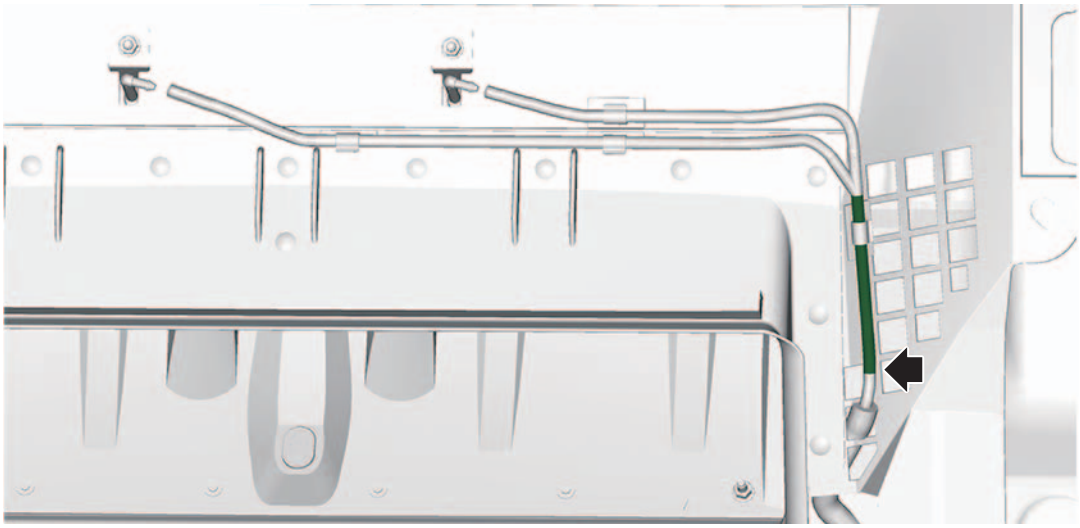
CAUTION:
• Before handling the airbag system components, refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM".
• Airbag system satellite safing sensor is located under the front center of the rear seat cushion. Be careful not to affect the sensor when working with the rear seat cushion removed.

NOTE:
Record the tie-wrap installation positions.
1) Open the front hood.
2) Disconnect the ground terminal from battery and wait for at least 60 seconds before starting work.
3) Remove the insulator - front hood.

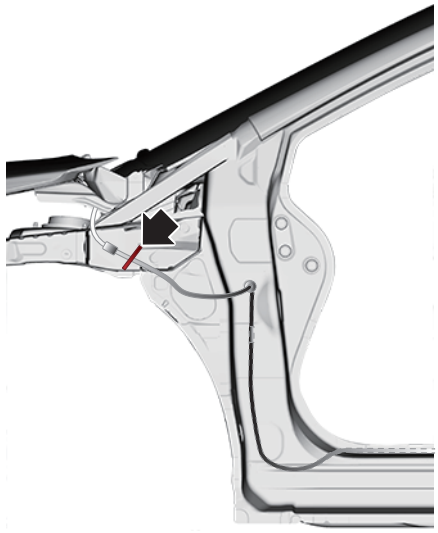
CAUTION:
Do not reuse any clips damaged during removal. The damaged clip cannot fix the insulator - front hood securely. Therefore, always replace with a new part.
4) Disconnect the intercooler water spray duct hose assembly from the intercooler water spray nozzle.


AA-14011

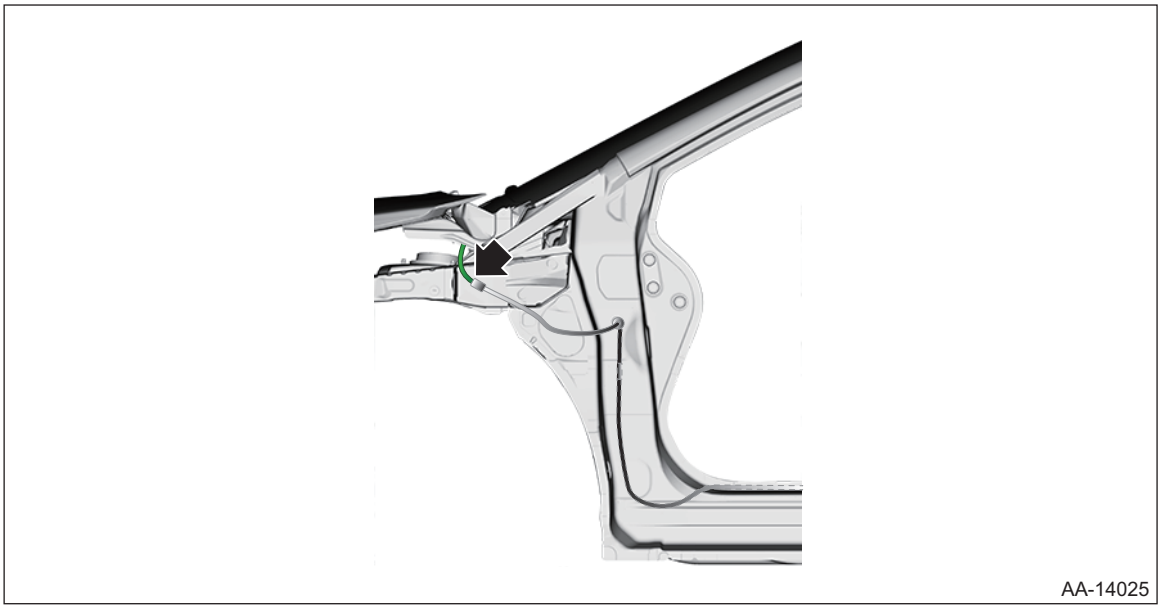
5) Disconnect the intercooler water spray duct hose assembly from the intercooler water spray front hose assembly.


AA-14012

6) Remove the intercooler water spray duct hose assembly from the duct - inner front hood.
7) Remove the mud guard - front LH.
8) Cut the tie-wrap securing the intercooler water spray side hose assembly using a pair of nippers, etc.

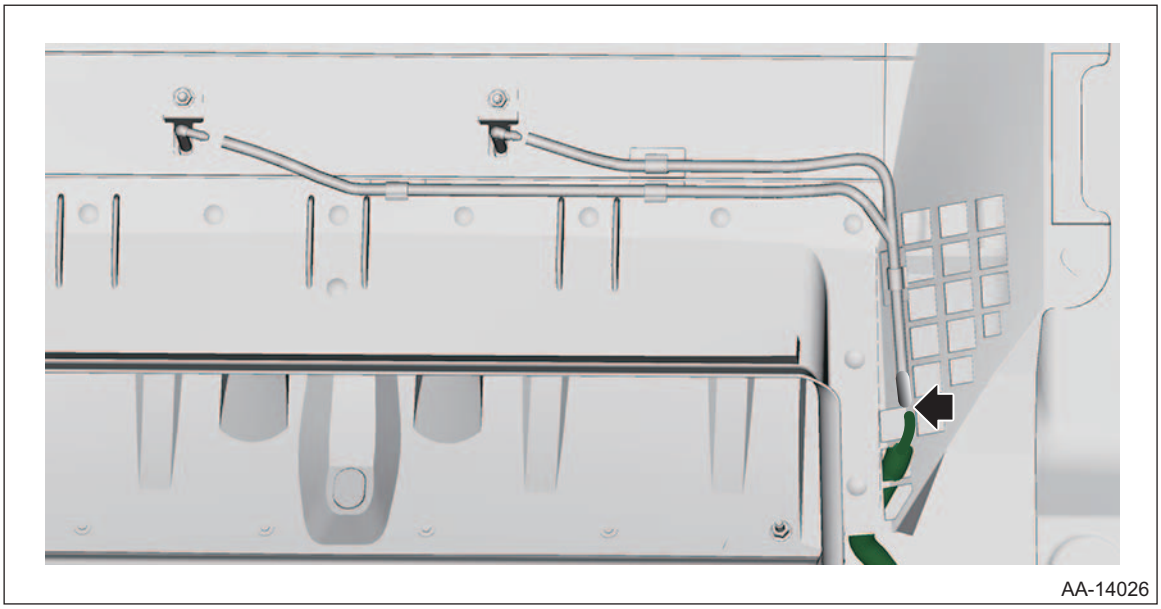

AA-14013

9) Disconnect the intercooler water spray front hose assembly from the intercooler water spray side hose assembly.



10) Tie a string to the front hood side of the intercooler water spray front hose assembly, and pull it out to the front fender side from the front hood.

NOTE:
Leave the string in the front hood or the front fender, and use it during installation.



11) After completely pulling out the intercooler water spray front hose assembly, remove the string tied to the intercooler water spray front hose assembly in step 10).
12) Release the claws, and then remove the cover side sill - front INN LH.

CAUTION:
Do not pull with excessive force. Doing so may damage the claws of the cover side sill - front INN LH.
13) Remove the clips, and remove the cover side sill - front LH.
14) Remove the rear seat cushion assembly.
15) Release the clips and claws, and then remove the cover side sill - rear INN LH.

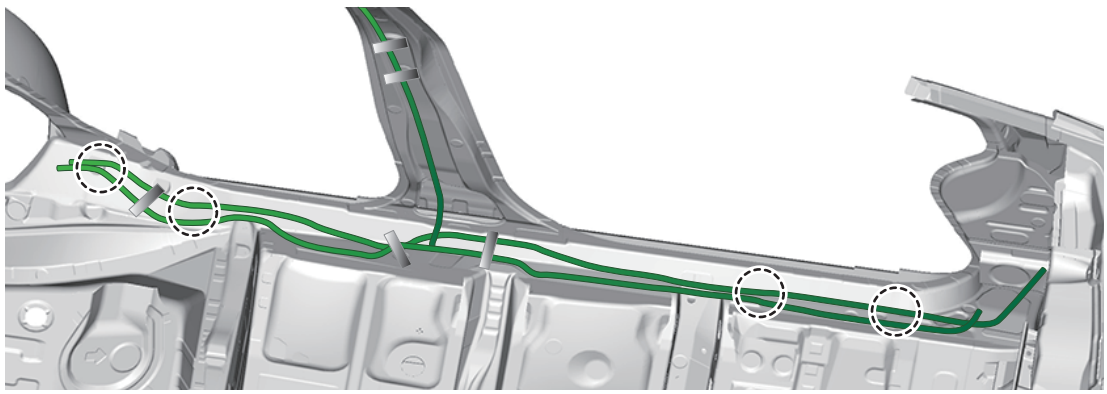
CAUTION:
Do not pull with excessive force. Doing so may damage the claws of the cover side sill - rear INN LH.
16) Remove the trim panel - center pillar LWR LH.

(1) Release the clip by pulling the trim panel - center pillar LWR LH toward you.
(2) Expand the claws of the trim panel - center pillar LWR LH outward, and remove it from the trim panel - center pillar UPR LH.

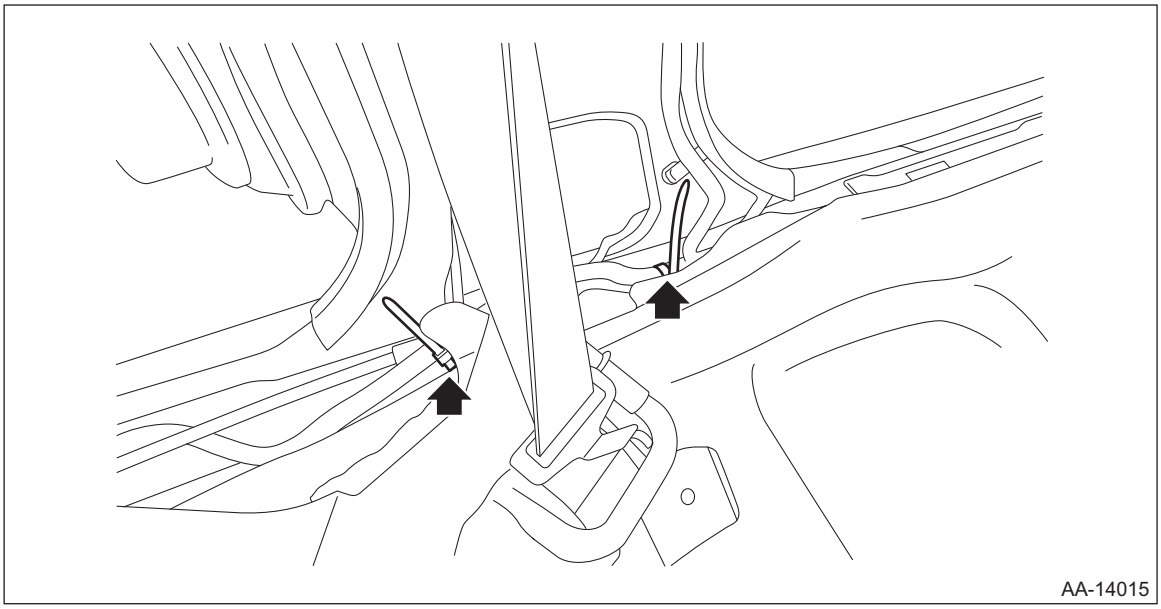
CAUTION:
Do not expand the trim panel - center pillar LWR LH excessively. Doing so may damage the trim.

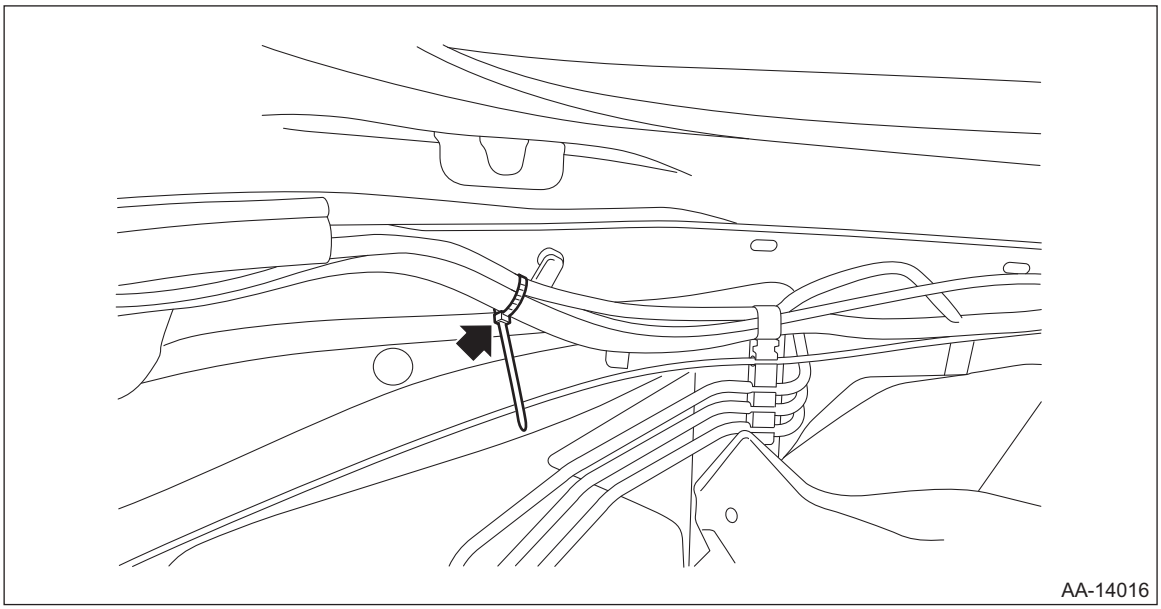
NOTE:
First release the claw located to the front of the vehicle.
17) Release the claws, and remove the cover - catcher LH.

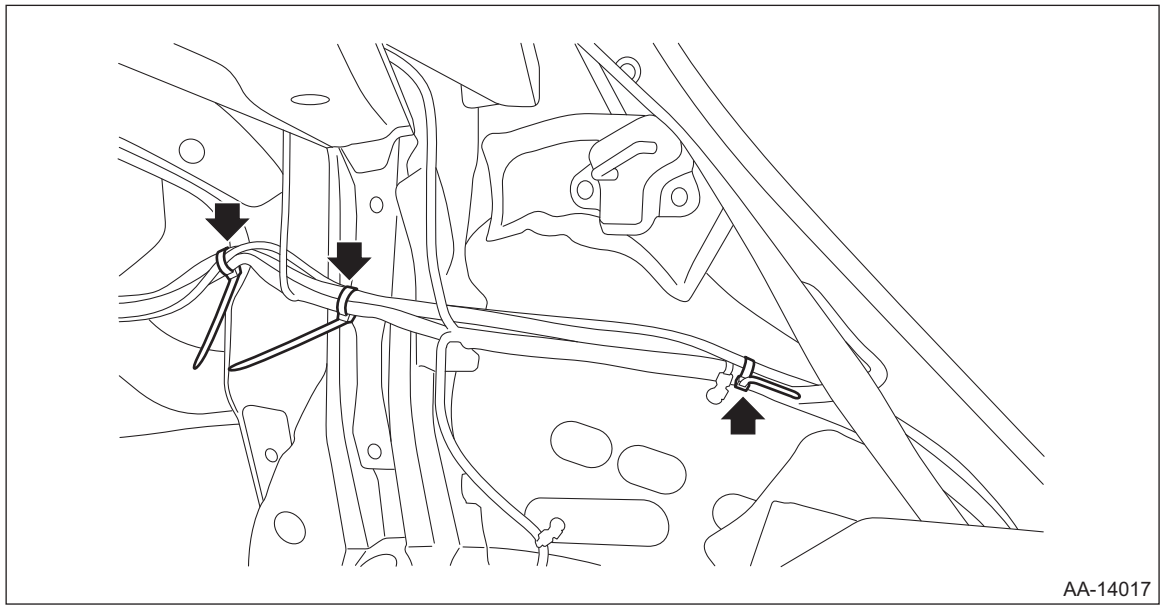
NOTE:
Remove the cover - catcher LH by using a plastic remover.
18) Remove the clips, and remove the trim panel - rear pillar UPR LH.
19) Remove the trim panel - rear pillar LWR LH.
(1) Remove the clips, and turn over the trim panel - trunk side.
(2) Remove the clips, and remove the trim panel - rear pillar LWR LH.
20) Remove the mat - trunk.
21) Remove the trim panel - trunk rear.
(1) Remove the clip.
(2) Release the claws, and remove the trim panel - trunk rear.
22) Remove the clips, and remove the trim panel - trunk side LH.
23) Remove the sub trunk assembly.
24) Remove the intercooler water spray side hose assembly from the rear harness clamp shown in the figure.

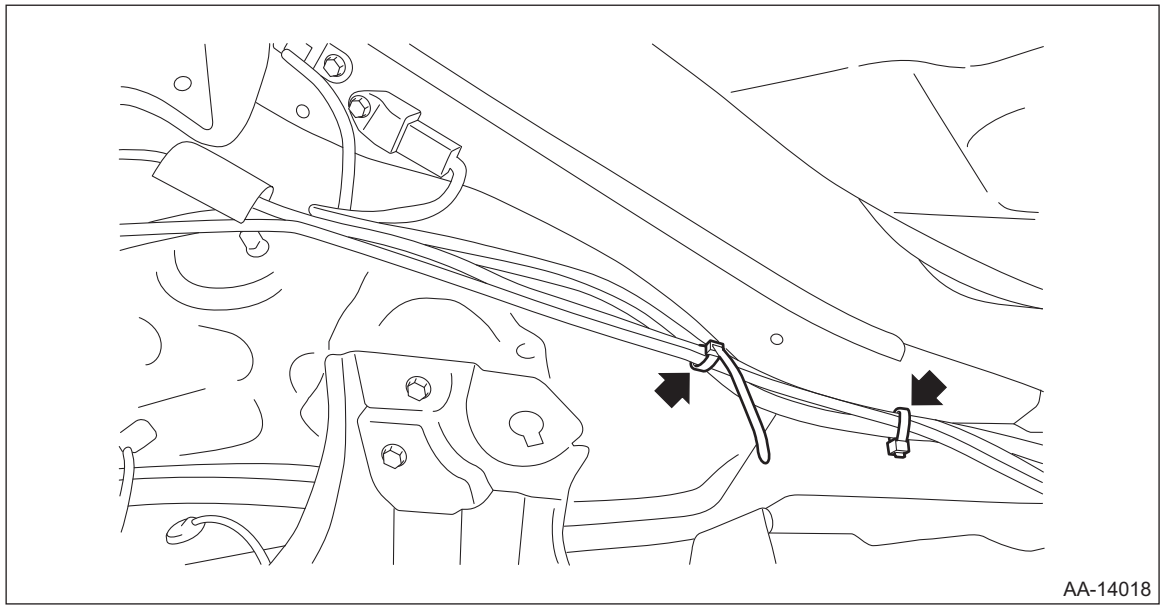

AA-14014

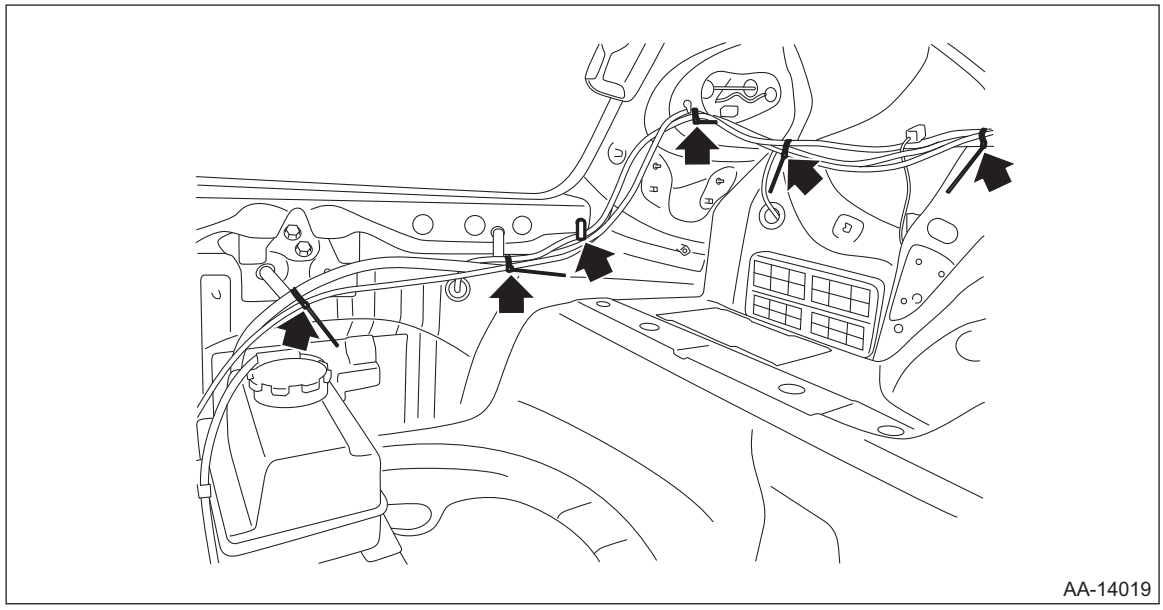
25) Cut the tie-wrap securing the intercooler water spray side hose assembly using a pair of nippers, etc.



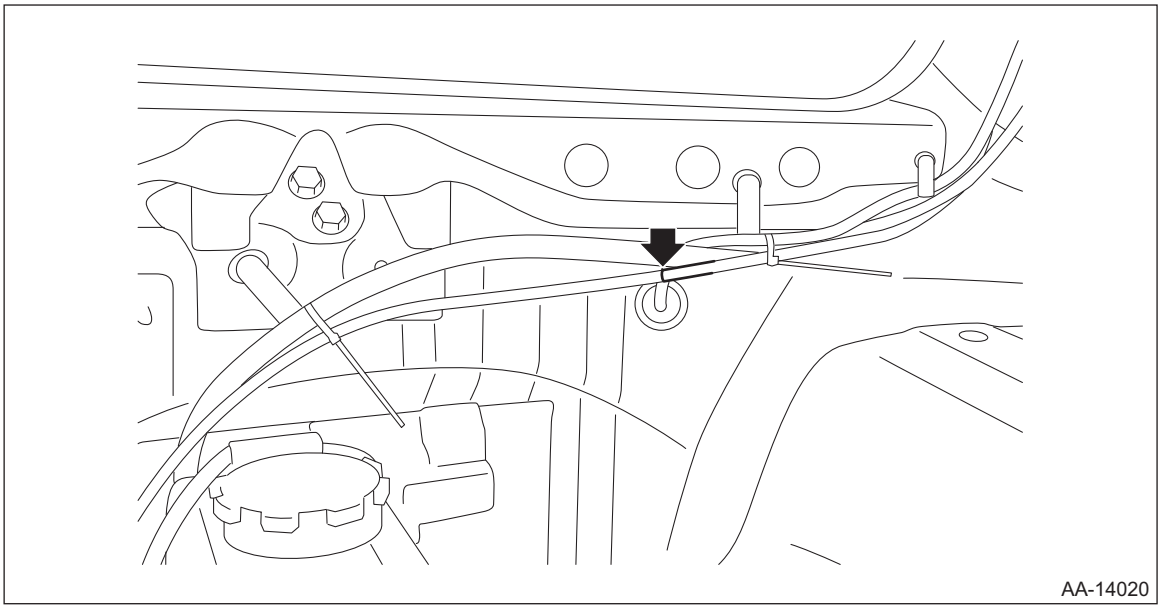



AA-14017


AA-14018


AA-14019

26) Prepare a container, and disconnect the intercooler water spray side hose assembly to drain water in the intercooler water spray side hose assembly.



27) Tie a string to the front fender side of the intercooler water spray side hose assembly, and pull it out to the passenger room side.

NOTE:
Leave the string in the front fender or the passenger room, and use it during installation.

28) After completely pulling out the intercooler water spray side hose assembly, remove the string tied to the intercooler water spray side hose assembly in step 27).

29) Remove the intercooler water spray side hose assembly from the vehicle.

B: INSTALLATION

Install in the reverse order of removal.

NOTE:
- Install the intercooler water spray hose using a new tie-wrap.
- When installing a new intercooler water spray duct hose ①, ② and NOZZLE HOSE, use the HOSE930 contained in the repair parts by cutting it to the following length.
  - Intercooler water spray duct hose ①: 230 mm (9.06 in): 1
  - Intercooler water spray duct hose ②: 380 mm (14.96 in): 1
  - NOZZLE HOSE: 30 mm (1.18 in): 2
- When installing a new intercooler water spray duct hose ③, use the HOSE ASSY contained in the repair parts by cutting it at 60 mm (2.36 in) from the JOINT Y section, and install the VALVE F.

11.Intercooler Water Spray Level Switch

A: REMOVAL

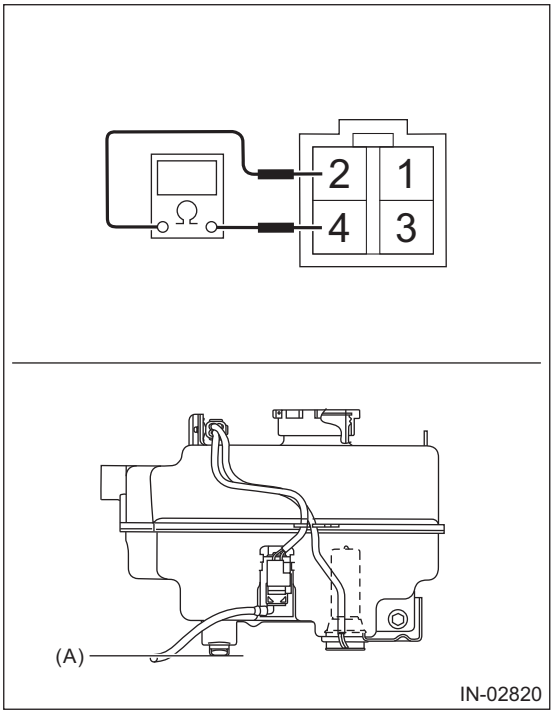
The intercooler water spray level switch is integrated into the intercooler water spray tank assembly; therefore, refer to “Intercooler Water Spray Tank & Motor” for removal procedure.

B: INSTALLATION

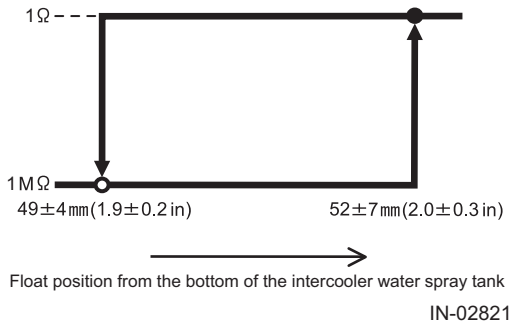
The intercooler water spray level switch is integrated into the intercooler water spray tank assembly; therefore, refer to “Intercooler Water Spray Tank & Motor” for installation procedure.

C: INSPECTION

1) Check that the intercooler water spray level switch has no deformation, cracks or other damages.
2) Measure the resistance between intercooler water spray level switch terminals.



(A) Bottom surface of intercooler water spray tank

Terminal No.	Standard
2 and 4	

12.Intercooler Water Spray Switch

A: REMOVAL

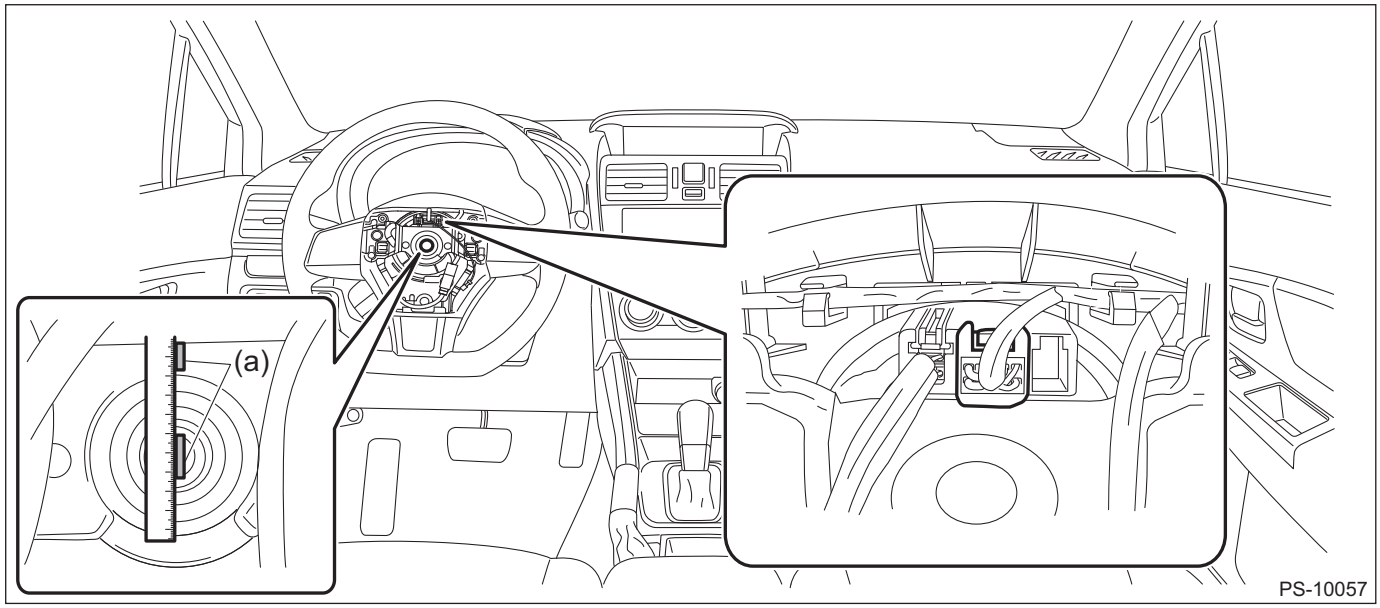
CAUTION:
Before handling the airbag system components, always refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM".

1) Disconnect the ground terminal from battery and wait for at least 60 seconds before starting work.
2) Set the tire to the straight-ahead position.
3) Remove the driver's airbag module.
4) Remove the steering wheel.

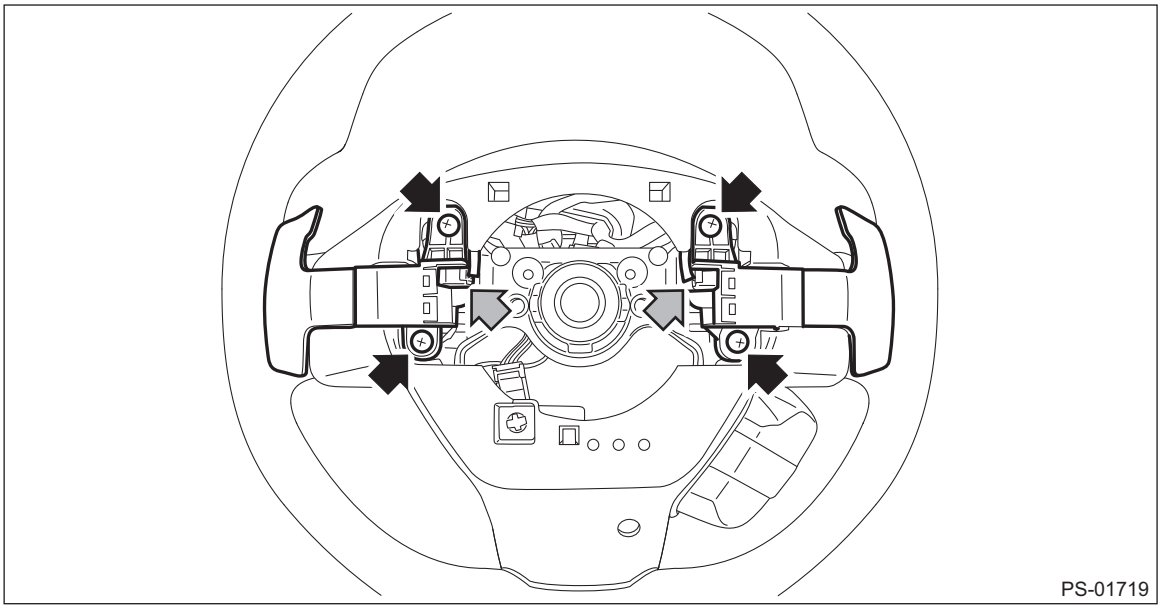
CAUTION:
- **Always use the steering wheel puller for removal to avoid deforming the steering wheel.**
- **If the steering wheel has been removed, make sure that the steering roll connector is not turned from the original position.**

(1) Disconnect the connector and remove the nut.
(2) Put an alignment mark (a) using a ruler as shown in the figure, and remove the steering wheel.

Preparation tool:
Steering wheel puller



5) Remove the screw, disconnect the connector and remove the intercooler water spray switch.



B: INSTALLATION

CAUTION:
• Before handling the airbag system components, refer to "CAUTION" of "General Description" in "AIRBAG SYSTEM".
• If the steering wheel has been removed, make sure that the steering roll connector is not turned from the original position.
• If the steering wheel and steering angle sensor are removed, perform "VSC(VDC) Centering Mode" of the VDC.
• Securely install the switch. Improper insertion of the pin or claw of the switch may cause improper installation.

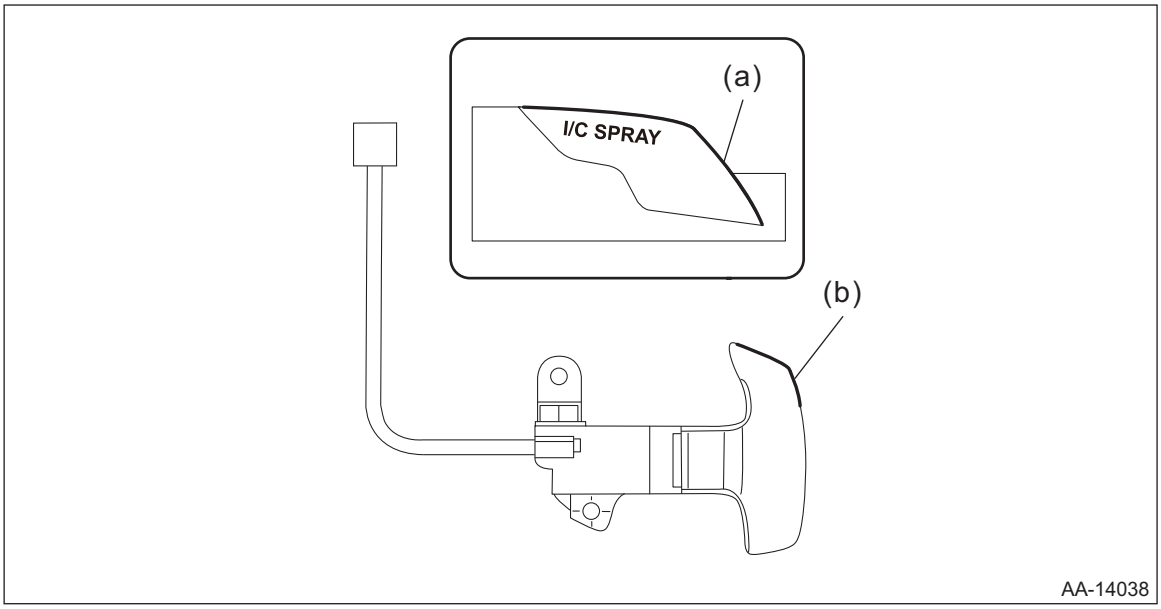
NOTE:
• When installing a new intercooler water spray switch, perform the following steps.
• Perform the procedures for the left side in the same way as for the right side.

1) Clean and degrease the I/C SPRAY SW LABEL application area.

NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of I/C SPRAY SW LABEL and its application area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
• Heating a particular small area will cause deformation of the parts.

2) Peel off a backing sheet of I/C SPRAY SW LABEL.

3) Adhere the I/C SPRAY SW LABEL with its aligning position (a) fitted to the aligning position (b) on the intercooler water spray switch.

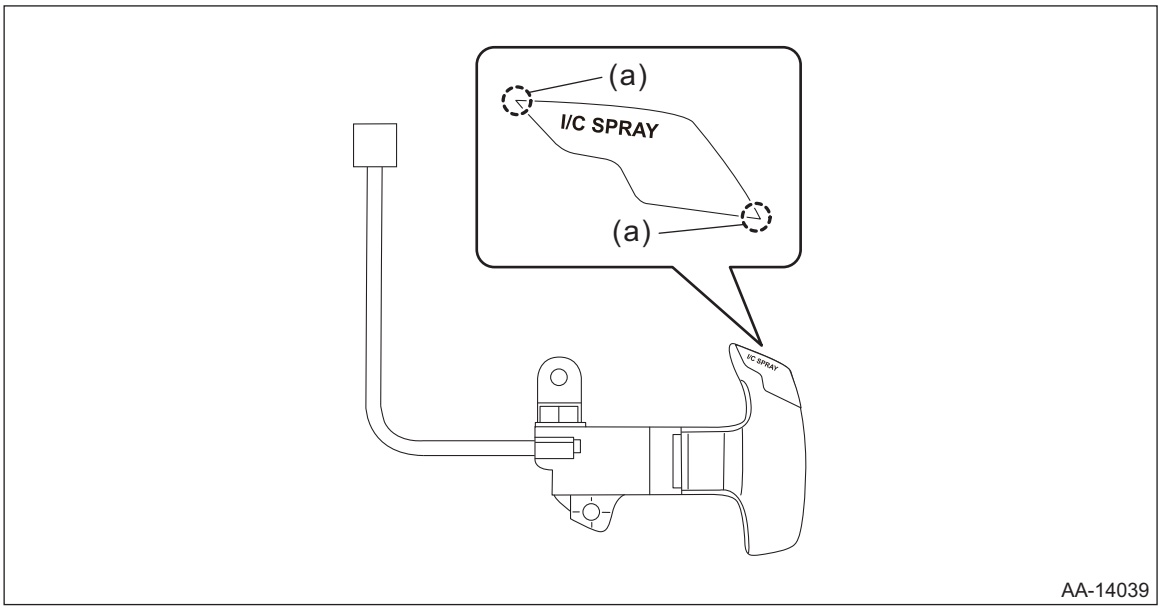


4) Press-fit the I/C SPRAY SW LABEL using a squeegee over a mounting paper.

Preparation tool:
Squeegee

5) Peel off the mounting paper of I/C SPRAY SW LABEL, and press-fit the I/C SPRAY SW LABEL again with your fingers.

NOTE:
The part with sharp angle (a) of the I/C SPRAY SW LABEL comes off easily, so press it firmly.



6) Install the intercooler water spray switch.
7) Align the center position of the roll connector.
8) Install the steering wheel.

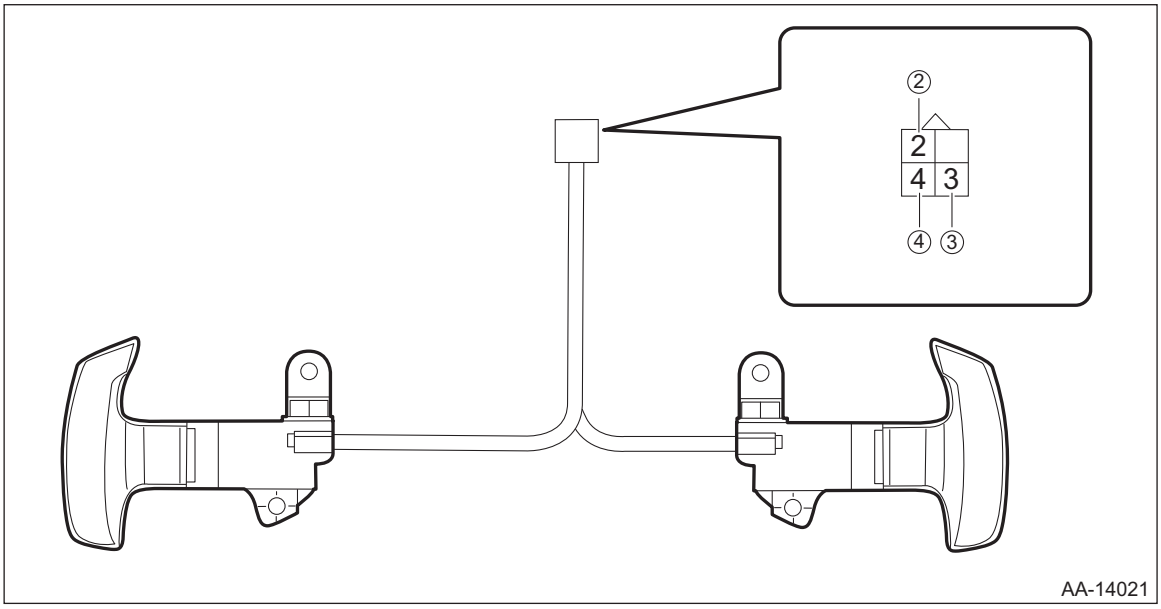
Tightening torque:
Steering wheel: 39 N·m (4 kgf-m, 28.8 ft-lb)

Clearance:
Between cover assembly - column and steering wheel: 4 — 6 mm (0.16 — 0.24 in)

9) Install the driver's airbag module.
10) Connect the battery ground terminal.

C: INSPECTION

1) Measure the resistance between connector terminals.



Terminal No.	Inspection conditions	Standard
3 — 4	Operate the RH side of the intercooler water spray switch assembly and hold it.	Less than 10 Ω
2 — 3	Operate the LH side of the intercooler water spray switch assembly and hold it.	Less than 10 Ω
2 — 3 3 — 4	Do not operate the intercooler water spray switch assembly.	1 MΩ or more

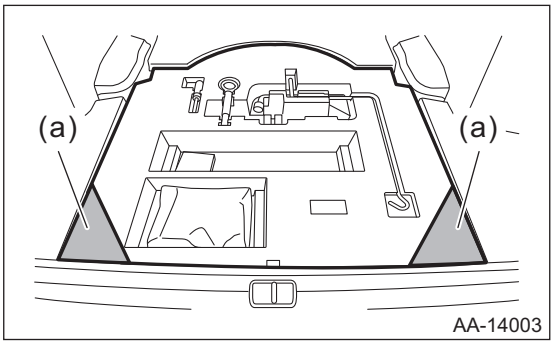
2) Replace the intercooler water spray switch if the inspection result is not within the standard value.

13.Intercooler Water Spray Relay

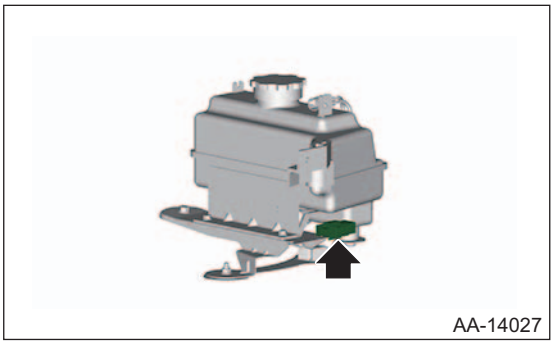
A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Open the trunk, and remove the mat - trunk.
3) Remove the sub trunk.

CAUTION:
Remove any luggage, etc. stored in the trunk room to outside of the vehicle, and then remove/install the sub trunk while holding its center area with both hands. Holding the corner part (a) with something stored inside may damage the sub trunk.



4) Remove the intercooler water spray relay from the BRKT UPR TANK.



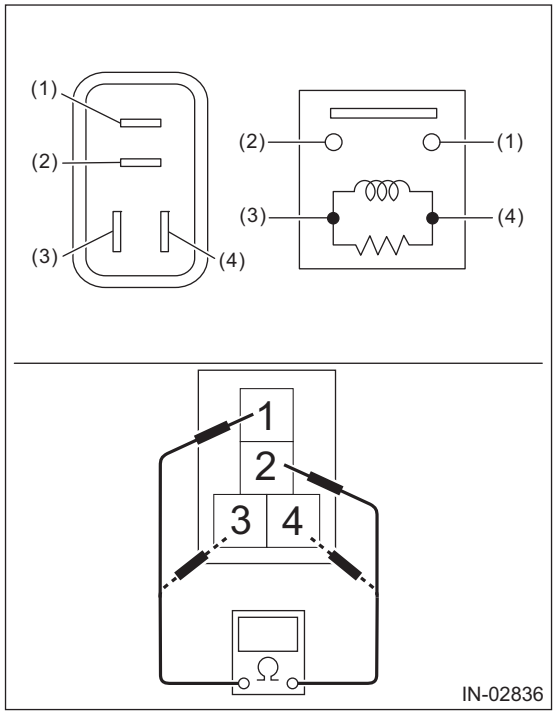
B: INSTALLATION

Install in the reverse order of removal.

C: INSPECTION

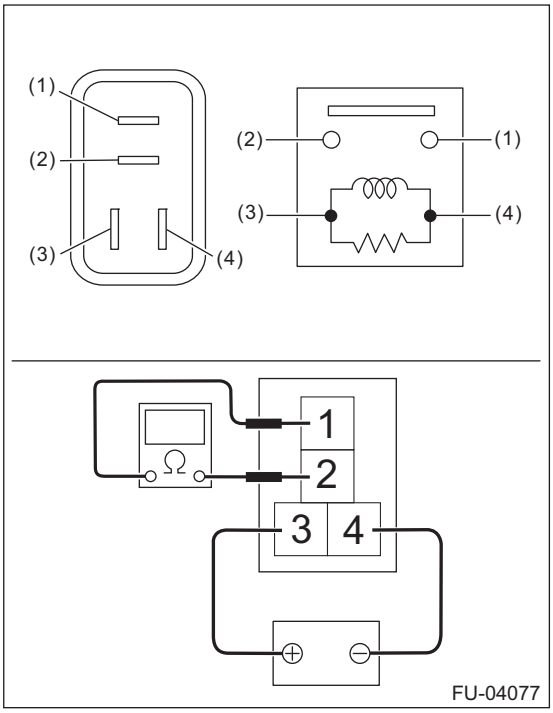
1) Check that the intercooler water spray relay has no deformation, cracks or other damages.

2) Measure the resistance between intercooler water spray relay terminals.



Terminal No.	Standard
1 and 2	1 MΩ or more
3 and 4	128.07 — 156.53 Ω (when 20°C (68°F))

3) Connect battery positive terminal to terminal No. 3 and battery ground terminal to terminal No. 4, and measure the resistance between the intercooler water spray relay terminals.



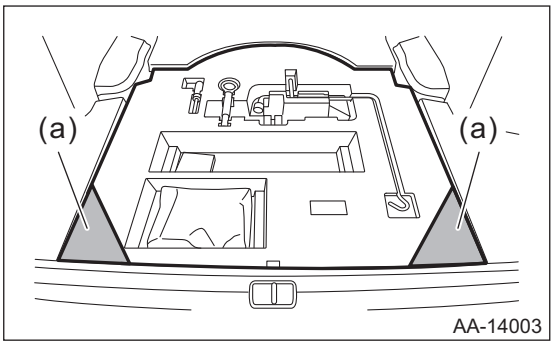
Terminal No.	Standard
1 and 2	Less than 1 Ω

14.Intercooler Water Spray Timer

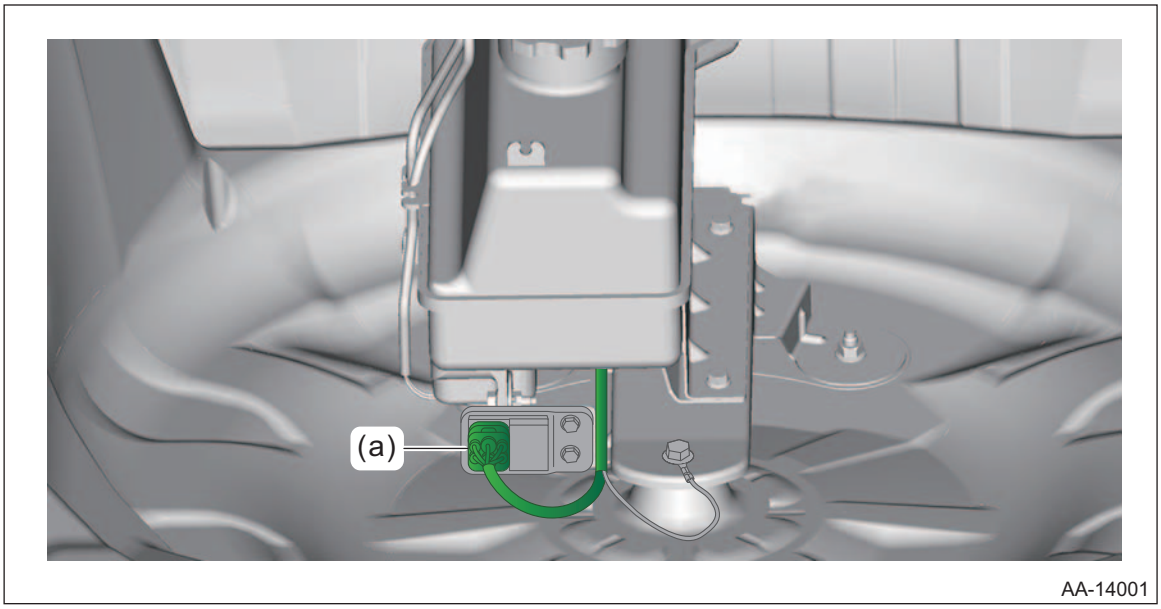
A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Open the trunk, and remove the mat - trunk.
3) Remove the sub trunk.

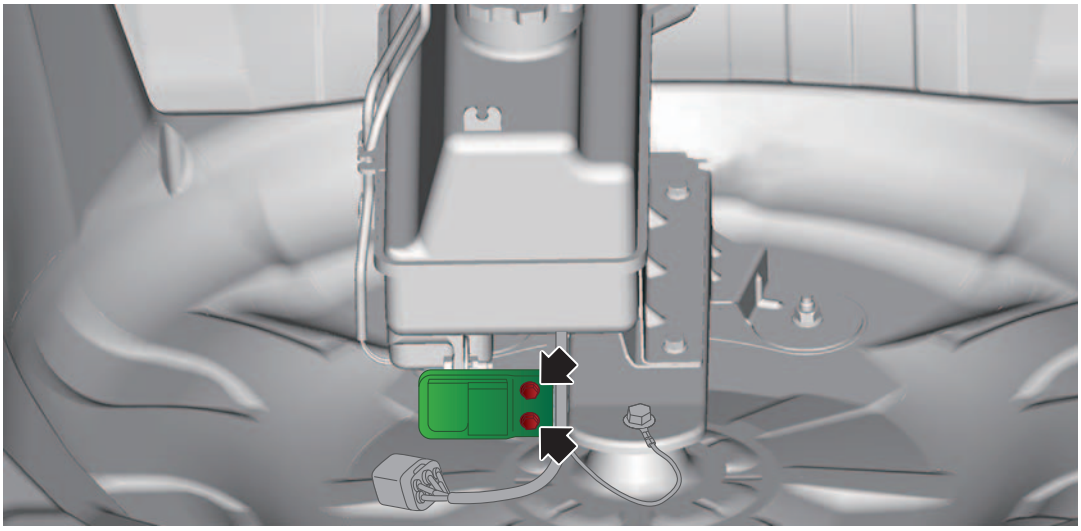
CAUTION:
Remove any luggage, etc. stored in the trunk room to outside of the vehicle, and then remove/install the sub trunk while holding its center area with both hands. Holding the corner part (a) with something stored inside may damage the sub trunk.



4) Disconnect the connector (a).



5) Remove the bolts, and remove the intercooler water spray timer.



AA-14002

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:
4.5 N·m (0.5 kgf-m, 3.3 ft-lb)

C: INSPECTION

Check that the intercooler water spray timer has no deformation, cracks or other damages.

MECHANICAL

ME

1. General Description

A: SPECIFICATION

Valve spring	Free length (reference) mm (in)	Intake		53.48 (2.1055)
		Exhaust		44.03 (1.7335)
	Tension/spring height N (kgf, lb)/mm (in)	Set	Intake	204.6 — 235.4 (20.86 — 24.00, 46.00 — 52.93)/36.0 (1.4173)
			Exhaust	182 — 210 (18.56 — 21.41, 40.92 — 47.22)/33.0 (1.2992)
		Lift	Intake	363.5 — 401.7 (37.07 — 40.96, 81.73 — 90.32)/26.7 (1.0512)
			Exhaust	440 — 486 (44.87 — 49.56, 98.93 — 109.27)/22.0 (0.8661)
	Squareness	Intake		2.5°, 2.3 mm (0.0906 in) or less
		Exhaust		2.5°, 1.9 mm (0.0748 in) or less

NOTE:
There is no repair parts for oversize pistons.

B: COMPONENT

NOTE:
- The repair parts for cylinder head are HEAD SET-CYL RH and HEAD SET-CYL LH only.
- The repair part related to cylinder block, crankshaft, and piston is SHORT BLOCK ENG only.

2. Cylinder Head

A: INSPECTION

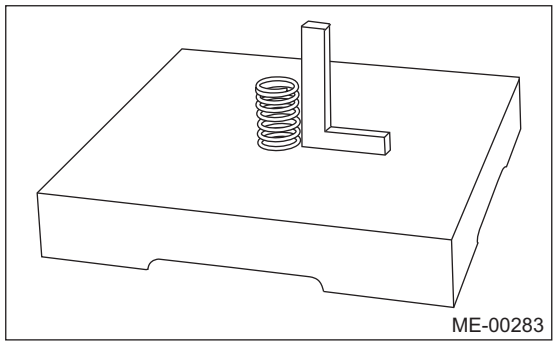
1. VALVE SPRING

1) Check the valve springs for damage, free length (reference), and tension. Replace the valve spring if it is not within the standard value presented in the table.

NOTE:
• Measurement should be performed at a temperature of 20°C (68°F).
• The free length of the valve spring is described as a reference. There is no need to replace the valve spring if the free length of the valve spring alone is out of standard.

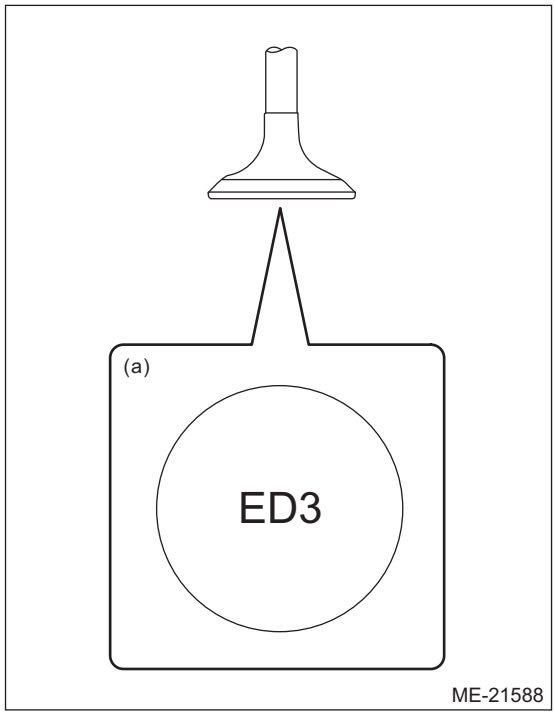
2) To measure the squareness of the valve spring, stand the valve spring on a surface plate and measure its deflection at the top of the valve spring using a try square.

Free length (reference) mm (in)		Intake	53.48 (2.1055)
		Exhaust	44.03 (1.7335)
Tension/ spring height N (kgf, lbf)/ mm (in)	Set	Intake	204.6 — 235.4 (20.86 — 24.00, 46.00 — 52.93)/36.0 (1.4173)
		Exhaust	182 — 210 (18.56 — 21.41, 40.92 — 47.22)/33.0 (1.2992)
	Lift	Intake	363.5 — 401.7 (37.07 — 40.96, 81.73 — 90.32)/26.7 (1.0512)
		Exhaust	440 — 486 (44.87 — 49.56, 98.93 — 109.27)/22.0 (0.8661)
Squareness		Intake	2.5°, 2.3 mm (0.0906 in) or less
		Exhaust	2.5°, 1.9 mm (0.0748 in) or less



B: DISPOSAL

WARNING:
• Metallic sodium is encapsulated in the exhaust valve. Metallic sodium is a strong alkaline material and poses a risk of causing a severe chemical reaction. Use great care when handling and disposing it.
• If the metallic sodium gets into your eyes, you may lose your sight. If it touches the skin, you may get burned severely or if it touches flame, fire may be caused by chemical reaction. Therefore, do not disassemble the exhaust valve.
• It is safe when the metallic sodium encapsulated in the exhaust valve is not exposed to the air.
• When the exhaust valve is broken, remove the broken exhaust valve, and dispose of the metallic sodium.
• Do not intentionally break the exhaust valve and take out the metallic sodium.
• Identify the exhaust valve in which the metallic sodium is encapsulated with the embossed mark.



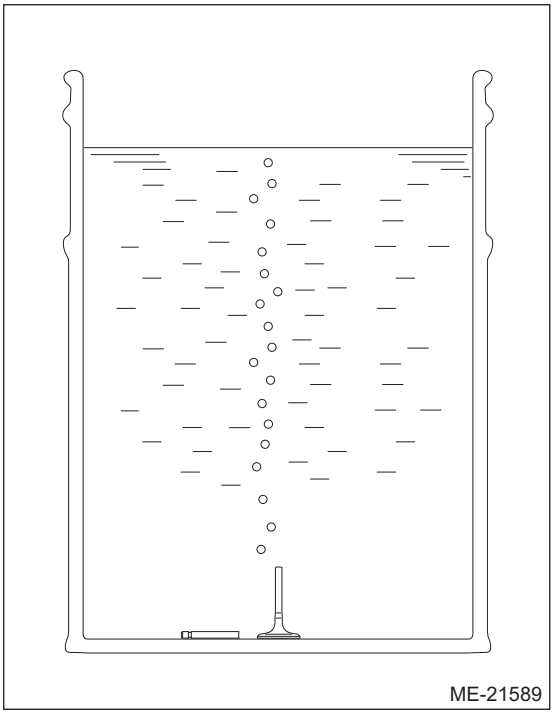
(a) Embossed mark (Identification: ED3)

CAUTION:
• When disposing of the exhaust valve that is not broken, entrust the disposal processing to the industrial waste disposer in charge of dissolution treatment.

• When the exhaust valve is broken, remove it from the cylinder head, perform appropriate processing in the same manner as the general steel material.
• When performing processing, be careful of the following.
1. Prepare the fire extinguisher nearby.
2. Wear the protective goggles.
3. Wear rubber gloves.

1) Wear rubber gloves and remove the broken exhaust valve from the cylinder head.
2) Prepare large container (bucket or oil can) in well-ventilated place, and fill the container with water (10 L or more).
3) Using a pair of large tweezers or pliers, immerse the broken exhaust valve in the water vertically.

CAUTION:
• Completely immerse the broken exhaust valve in the water.
• Hydrogen gas is produced by the chemical reaction. Therefore, always keep the container away from open flames such as sparks.
• Because the severe chemical reaction is developed, keep at least 2 to 3 m away from the container.



4) After completion of chemical reaction (after the elapse of 4 to 5 hours), carefully take out the exhaust valve using a pair of large tweezers or pliers, and dispose of the exhaust valve according to the same disposal procedure as general steel materials.

CAUTION:
• Concerning the liquid waste disposal of the liquid (sodium hydrate) produced in a chemical reaction, follow all governmental regulations and local regulations related to the liquid waste disposal.
• If the liquid produced in a chemical reaction (sodium hydrate) should touch the skin, immediately wash it away with plenty water.

LUBRICATION

LU

1. General Description

A: SPECIFICATION

Recommended oil:
MOTUL 300V Power (5W-40)

CAUTION:
Use 5W-40 (100% synthetic).

NOTE:
The proper viscosity oil helps the engine maintain its ideal temperature, and cranking speed increased by reducing viscosity friction in hot condition.

TRANSMISSION SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

CONTROL SYSTEMS

CS

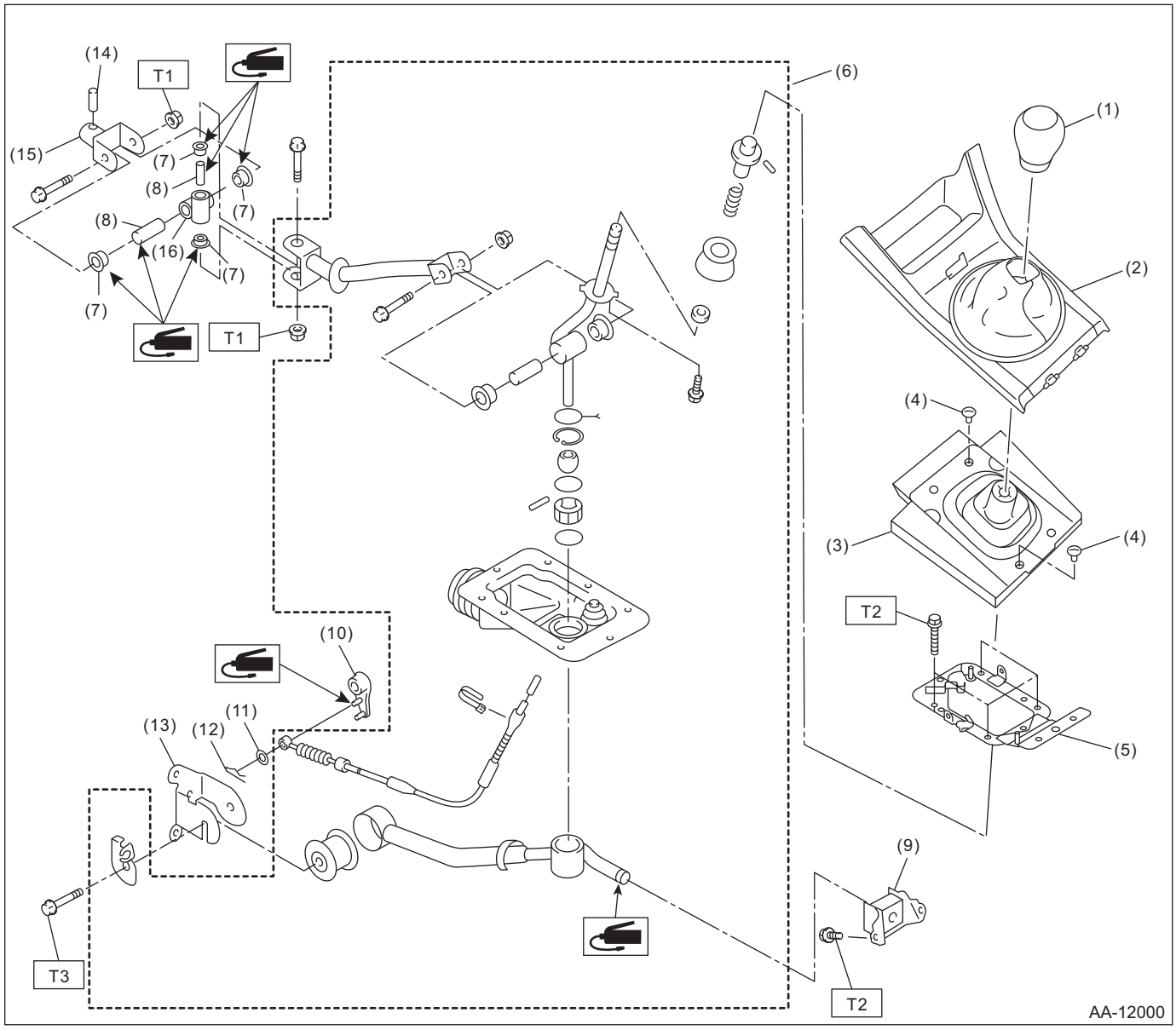
1. General Description

A: SPECIFICATION

Item		Specifications
Swing torque of rod against lever	N (kgf, lbf)	3.7 (0.38, 0.83) or less

B: COMPONENT

1. 6MT GEAR SHIFT LEVER



(1) Gear shift knob
(2) Cover - shift lever
(3) Boot and insulator ASSY
(4) Clamp
(5) Plate COMPL
(6) Gear shift lever ASSY
(7) Bushing
(8) Spacer
(9) Cushion rubber
(10) Reverse check lever
(11) Washer
(12) Snap pin
(13) Bracket
(14) Spring pin
(15) Joint
(16) Boss

Tightening torque: N·m (kgf-m, ft-lb)
T1: 12 (1.2, 8.9)
T2: 18 (1.8, 13.3)
T3: 32 (3.3, 23.6)

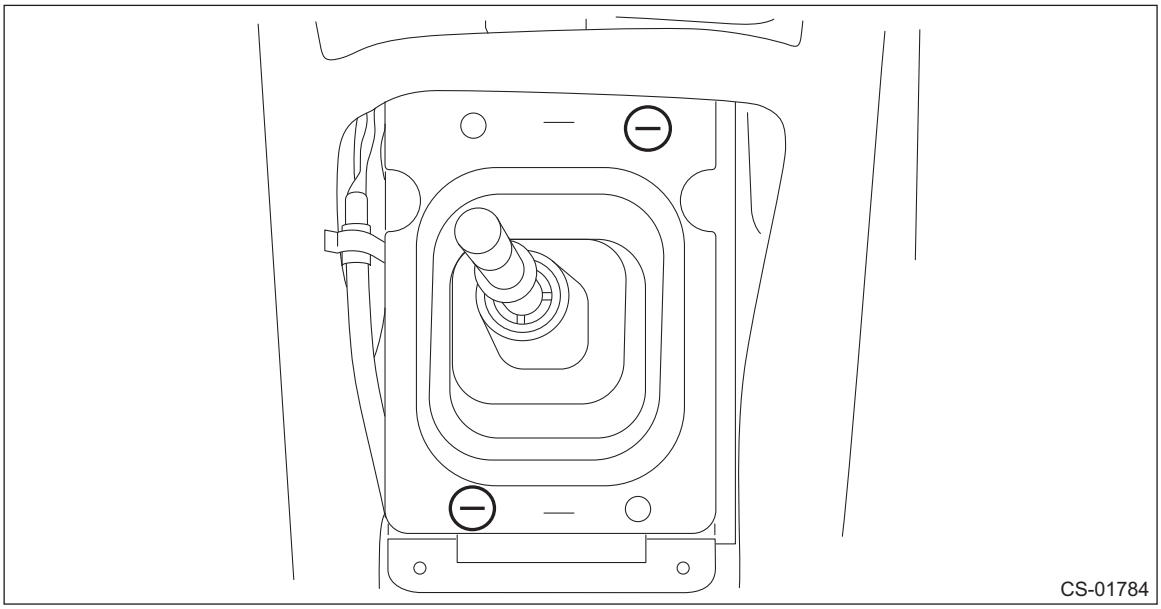
C: CAUTION

- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Use SUBARU genuine fluid, grease etc. or equivalent. Do not mix fluid, grease, etc. of different grades or manufacturers.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Apply grease onto sliding or revolving surfaces before installation.
- Before installing O-rings or snap rings, apply a proper amount of grease to avoid damage and deformation.
- Before securing a part in a vise, place cushioning material such as wood blocks, aluminum plate or cloth between the part and the vise.
- Before disconnecting electrical connectors, be sure to disconnect the negative terminal from battery.

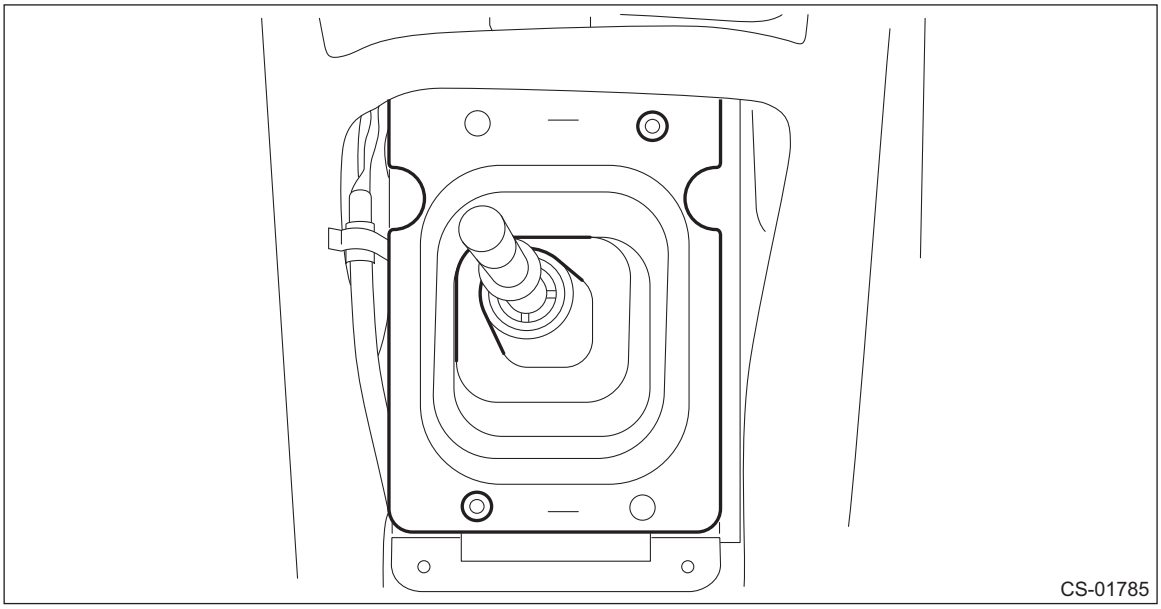
2. MT Gear Shift Lever

A: REMOVAL

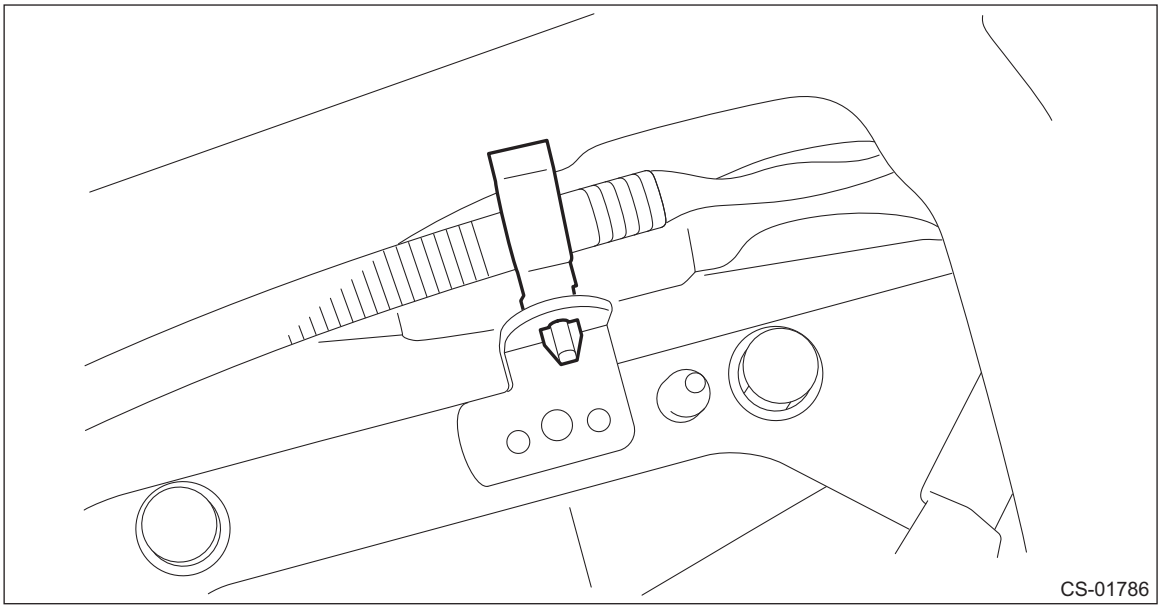
1) Disconnect the ground terminal from battery.
2) Remove the gear shift knob by turning it counterclockwise.
3) Remove the console box assembly.
4) Remove the cover - shift lever.
5) Remove the panel center LWR LH and RH.
6) Remove the clamp.



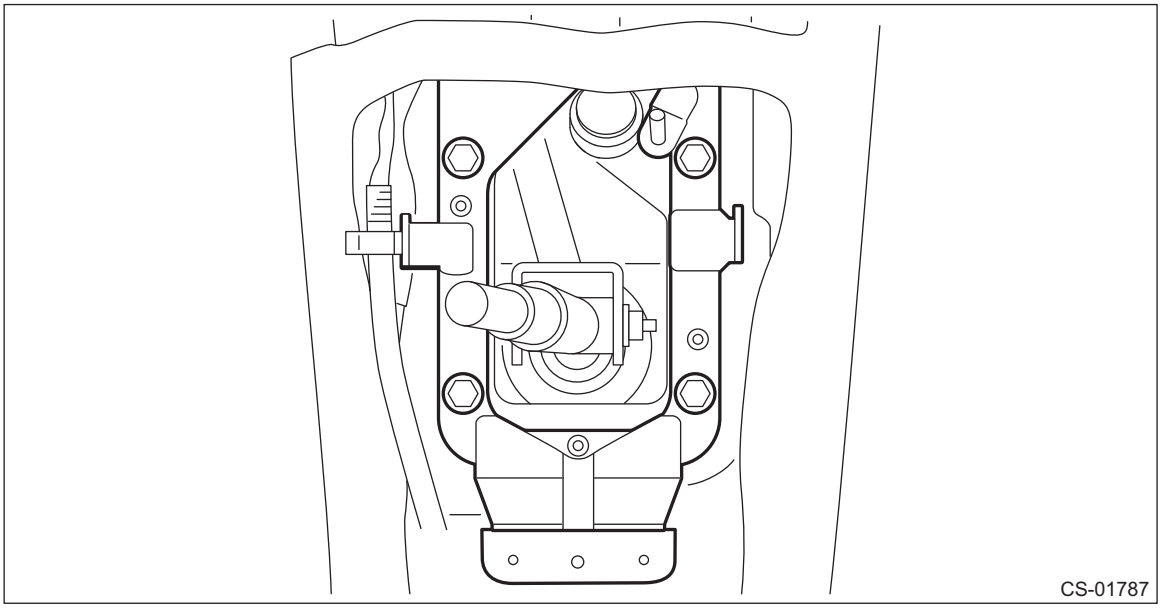
7) Remove the boot and insulator assembly.



8) Remove the harness clamp.



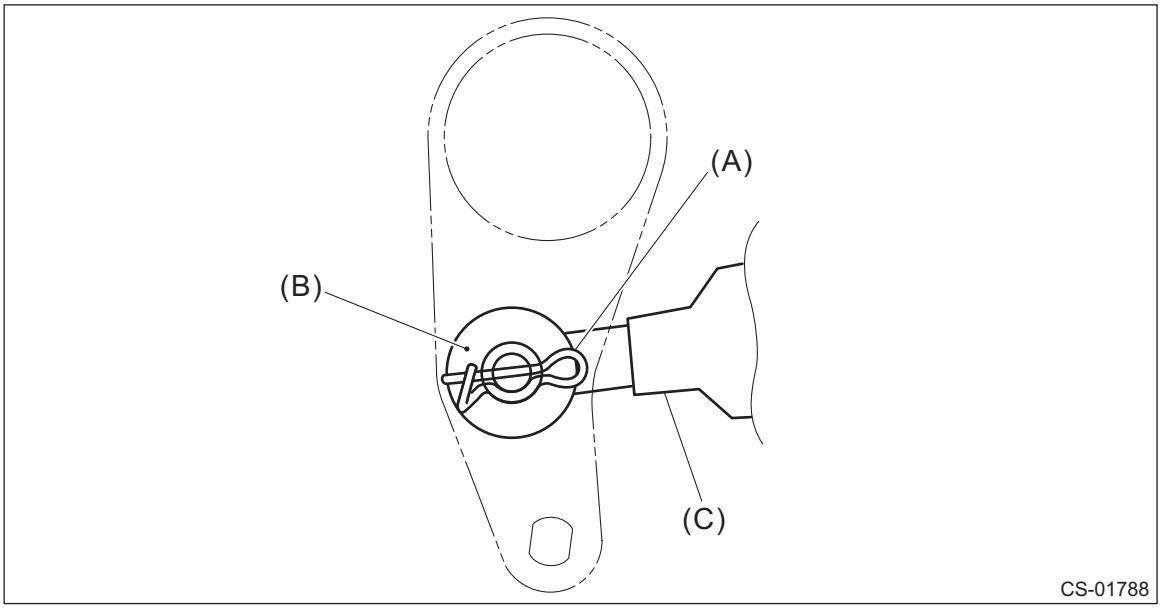
9) Remove the plate COMPL.



10) Lift up the vehicle.
11) Remove the center exhaust pipe (rear).

12) Remove the center exhaust cover.

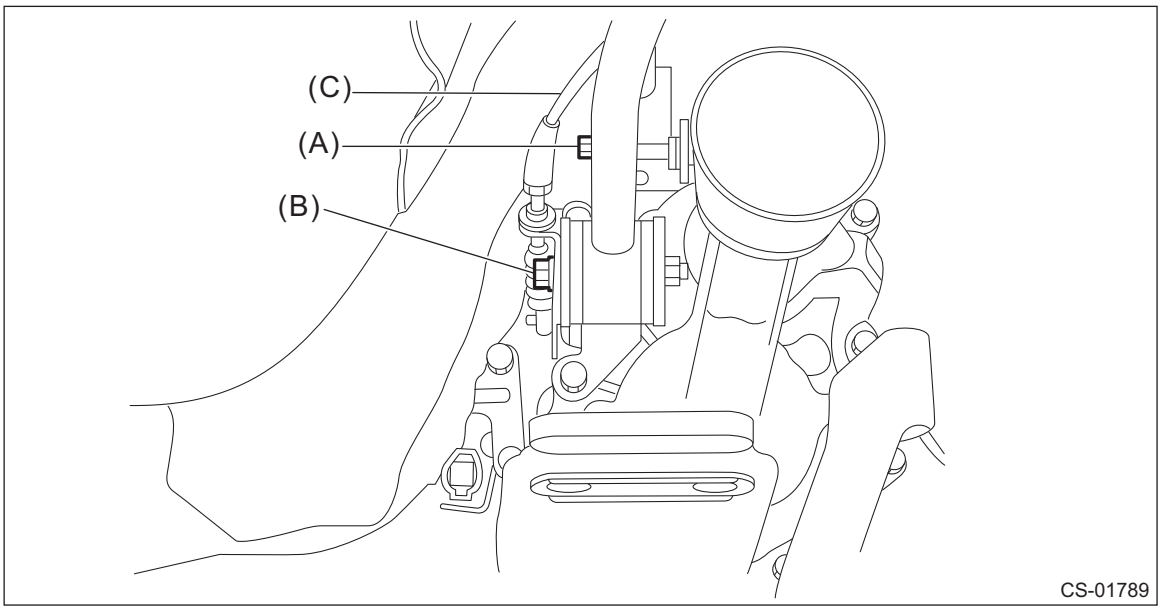
13) Remove the crossmember.
14) Remove the snap pin and washer, and remove the reverse check cable.



(A) Snap pin (B) Washer (C) Reverse check cable

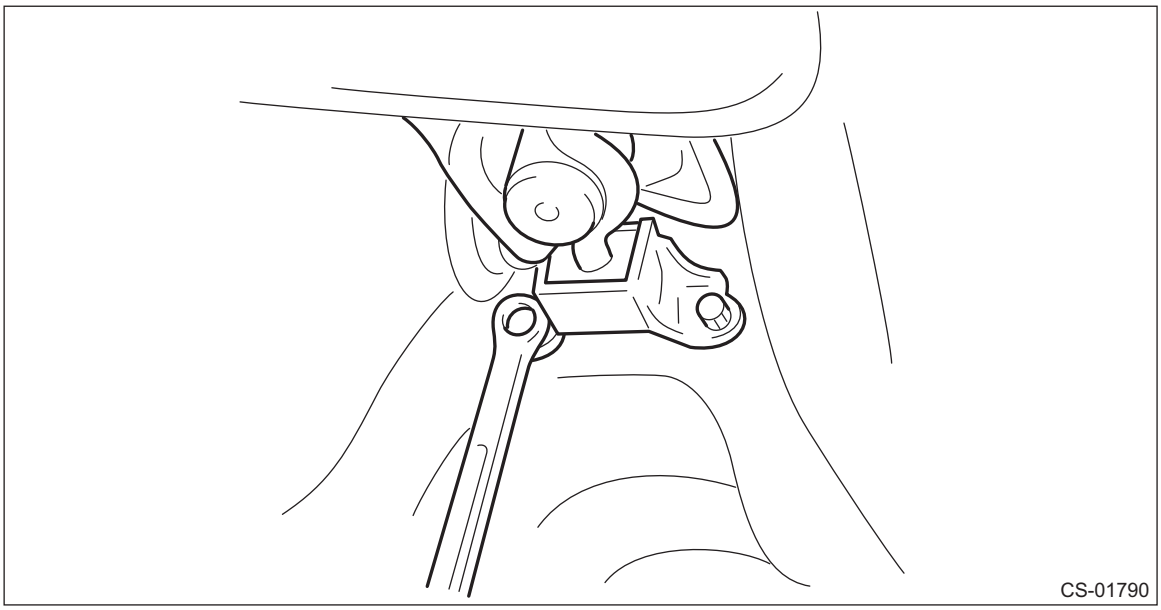
15) Move the transmission to the right side, and remove the joint COMPL, stay bolts and reverse check cable.

NOTE:
If the transmission is not moved aside, the joint COMPL and stay bolts may contact the body and cause damage.



(A) Joint COMPL bolt (B) Stay bolt (C) Reverse check cable

16) Remove the cushion rubber.



17) Remove the gear shift lever.

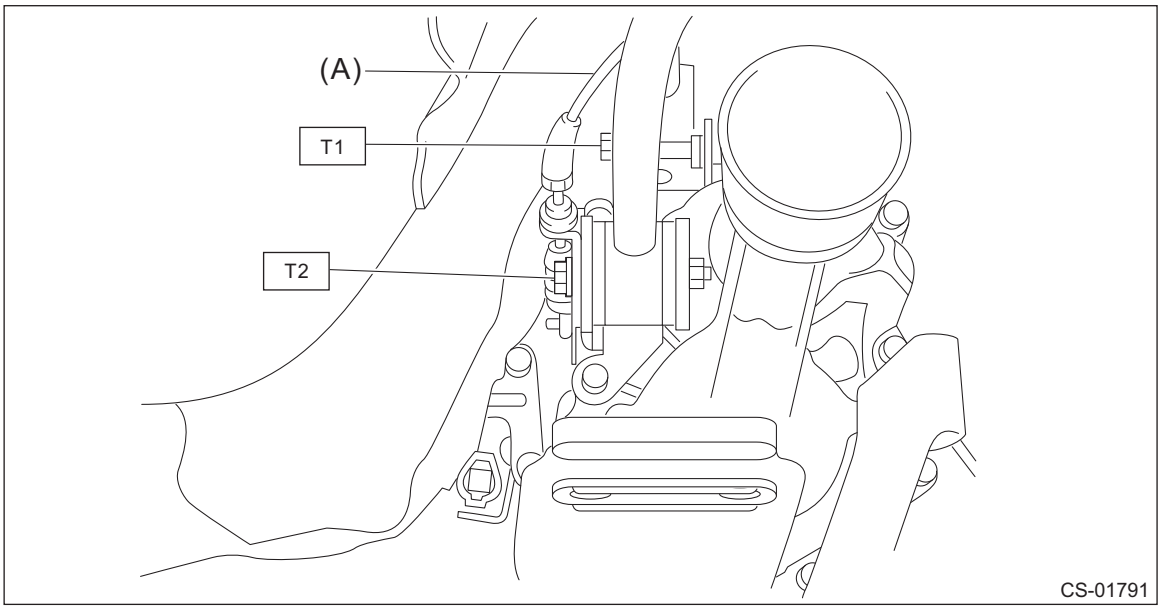
B: INSTALLATION

1) Insert the gear shift lever from the bottom of the vehicle.

NOTE:
After inserting the rod and stay, temporarily put them onto transmission mount.
2) Install the cushion rubber.

Tightening torque:
18 N·m (1.8 kgf-m, 13.3 ft-lb)
3) Move the transmission to the right side of the vehicle, and install the joint COMPL and stay.

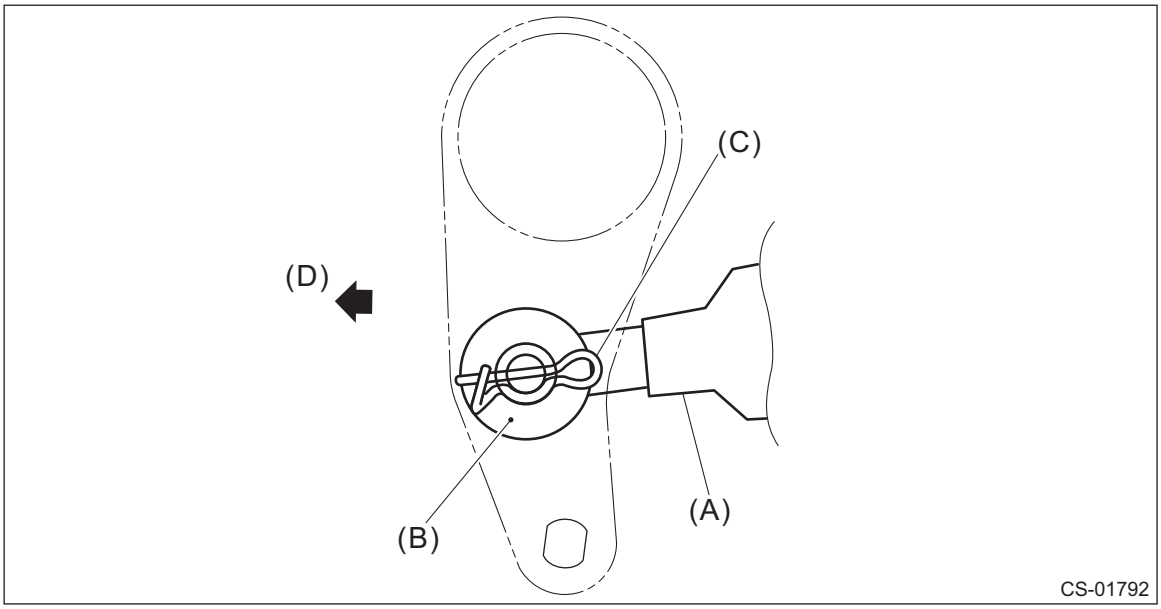
Tightening torque:
T1: 12 N·m (1.2 kgf-m, 8.9 ft-lb)
T2: 32 N·m (3.3 kgf-m, 23.6 ft-lb)



(A) Reverse check cable

4) Install the reverse check cable, washer and snap pin.

NOTE:
Pay attention to the installing direction of the snap ring.

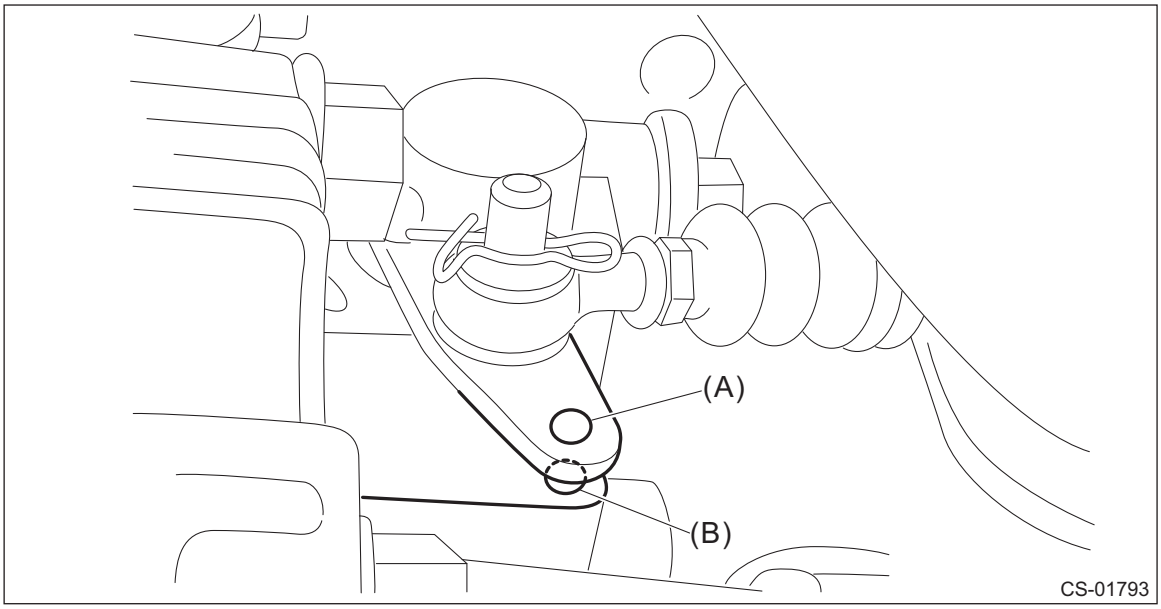


(A) Reverse check cable
(B) Washer
(C) Snap pin
(D) Front side

5) Make sure the hole of extension case is aligned with that of reverse check lever. If the hole positions are not aligned, adjust the reverse check cable.

NOTE:
• Check that the M3 bolt goes through the hole of reverse check lever and can be inserted into the hole of extension case.

- When checking visually, confirm that the gap of hole positions is 0.5 mm (0.02 in) or less.



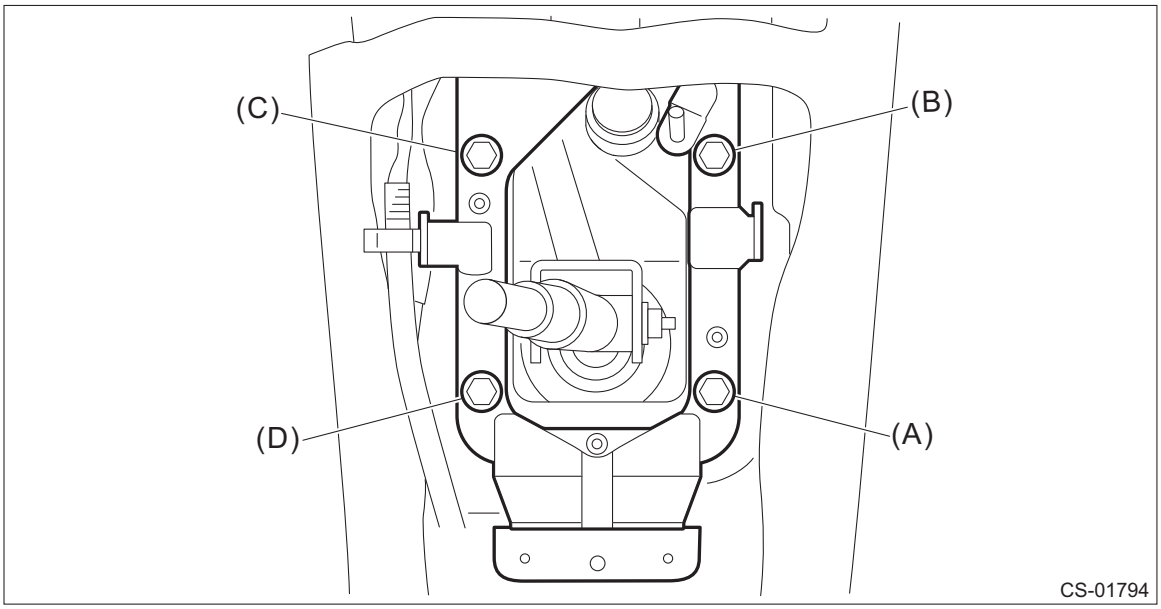
(A) Hole of reverse check lever (B) Hole of extension case

6) Install the crossmember.
7) Install the center exhaust cover.
8) Install the center exhaust pipe (rear).
9) Install the plate COMPL.

NOTE:
Be careful not to twist the inner boot when installing.

Tightening torque:
18 N·m (1.8 kgf-m, 13.3 ft-lb)

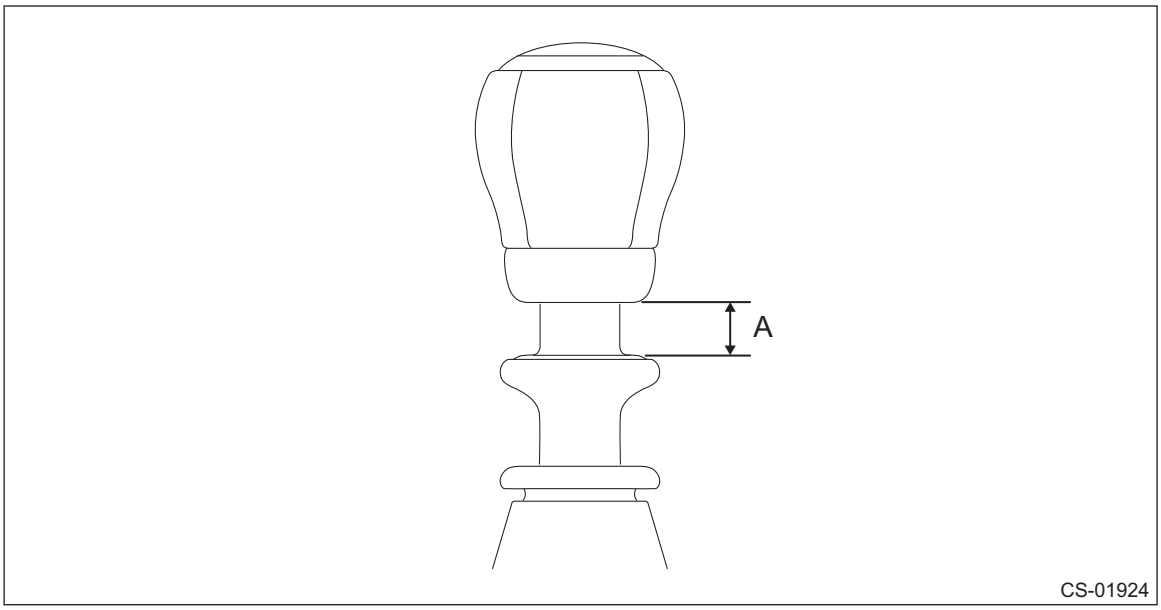
(1) Set the plate COMPL to the vehicle.
(2) Temporarily tighten the bolt (A).
(3) Tighten the bolt (B).
(4) Tighten the bolt (A).
(5) Tighten the bolts (C) and (D).



10) Install the harness clamp to the plate COMPL.

11) Install the boot and insulator assembly, and secure with a clamp.
12) Install the panel center LWR LH and RH.
13) Install the cover - shift lever.
14) Install the console box assembly.
15) Install the gear shift knob by rotating it clockwise from 14 to 18 turns so that the distance (A) from the gear shift knob end surface to the slider end surface becomes 10 mm (0.394 in) or more.

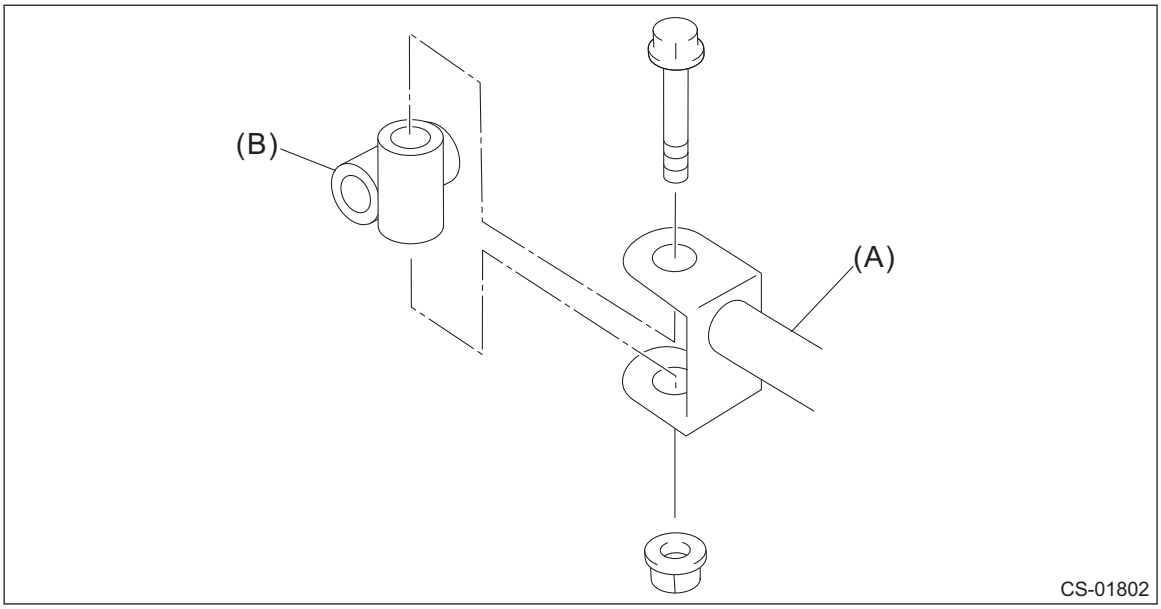
CAUTION:
Do not turn the gear shift knob excessively to prevent it from being damaged.



16) Make sure the gears can be shifted accurately into each gear.
17) Connect the battery ground terminal.

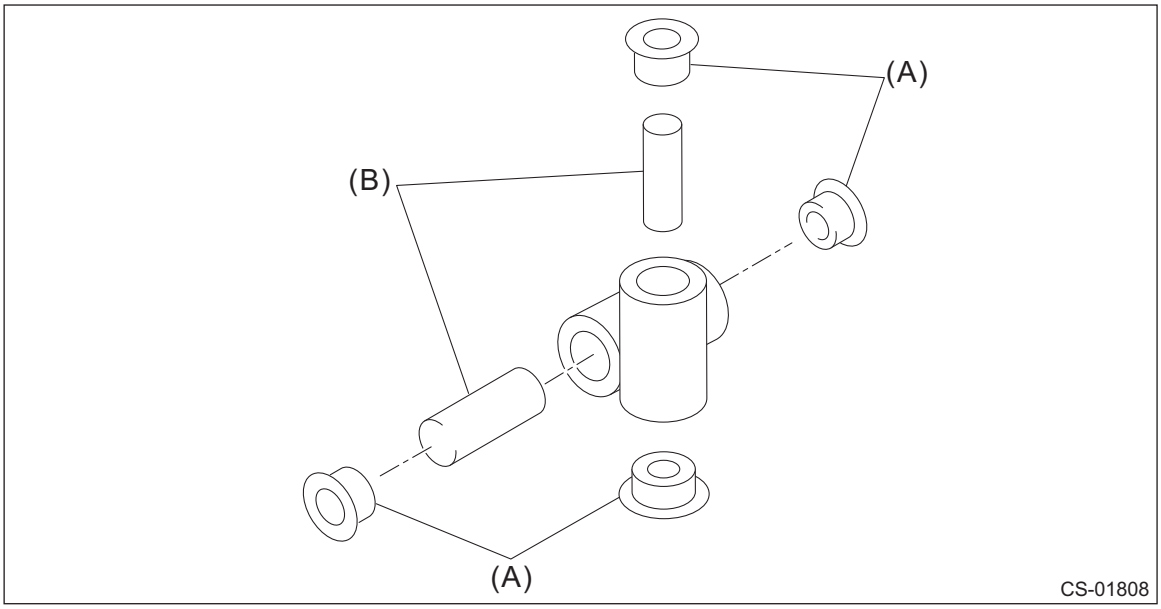
C: DISASSEMBLY

1) Remove the boss from the rod.



(A) Rod (B) Boss

2) Remove the bushing and spacer from the boss.

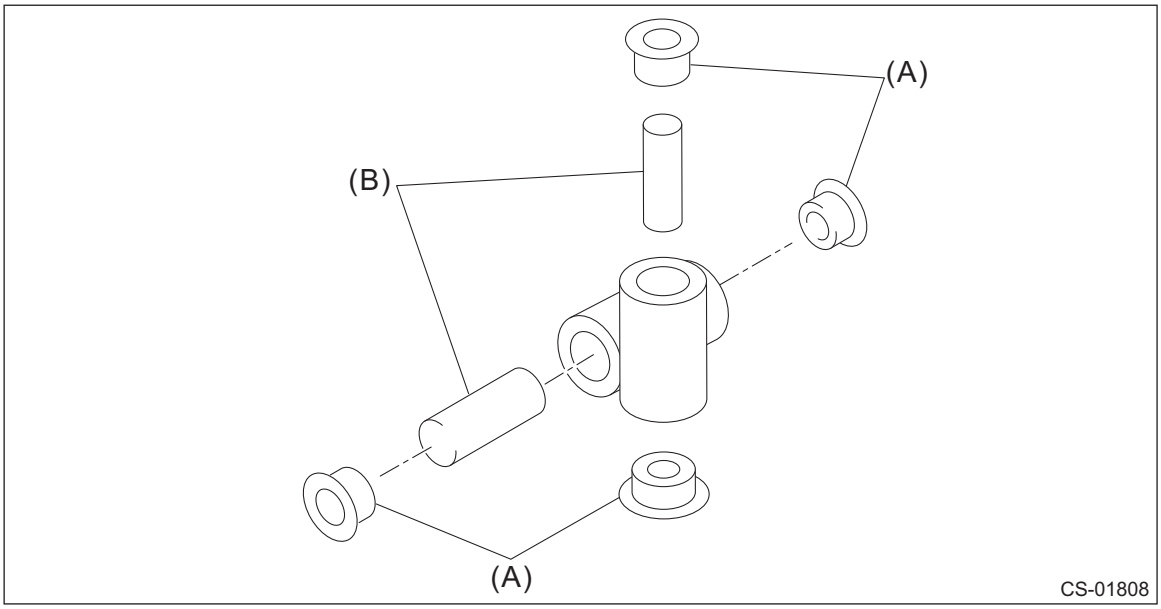


(A) Bushing (B) Spacer

D: ASSEMBLY

NOTE:
- Clean all the parts before assembly.
- Apply NIGTIGHT LTS No. 2 grease or equivalent to each part.

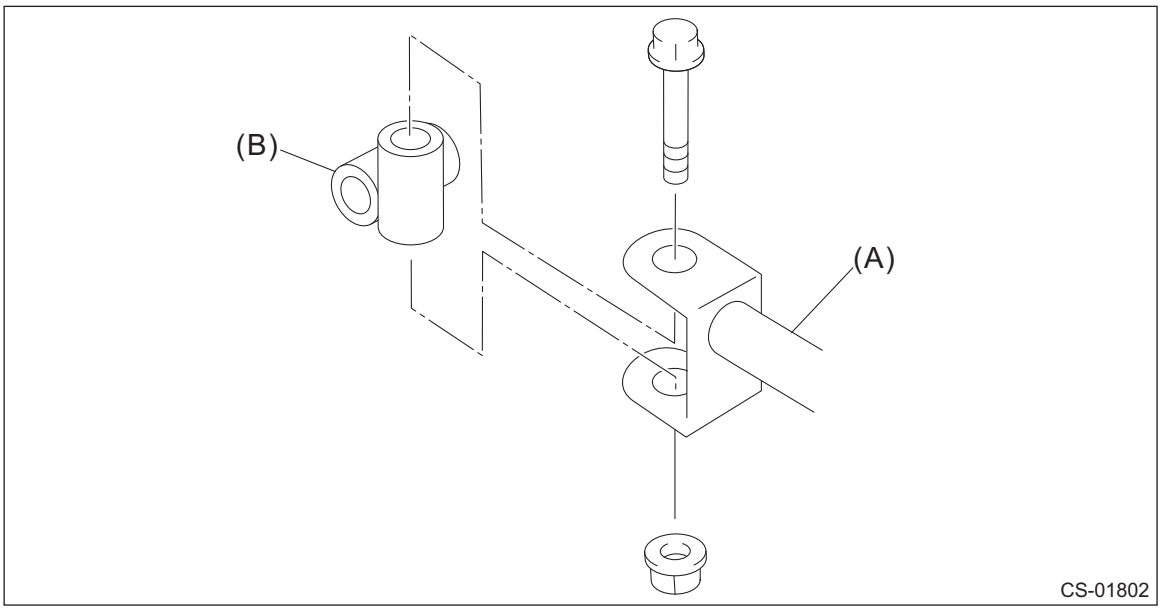
1) Install the bushing and spacer to boss.



(A) Bushing (B) Spacer

2) Install the boss to the rod.

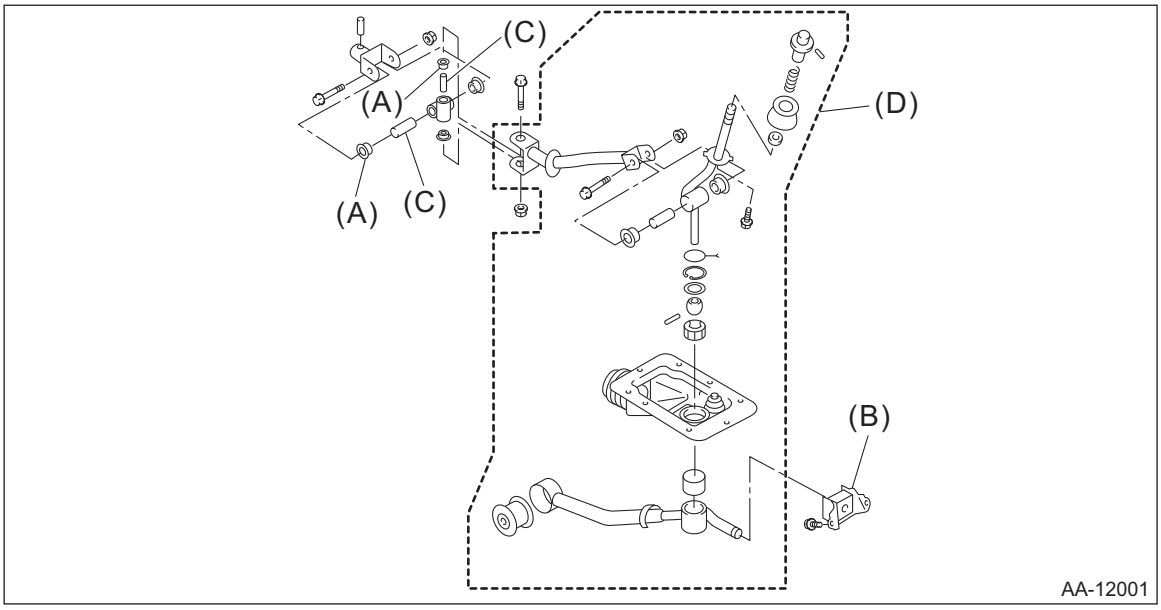
Tightening torque:
12 N·m (1.2 kgf-m, 8.9 ft-lb)



(A) Rod (B) Boss

E: INSPECTION

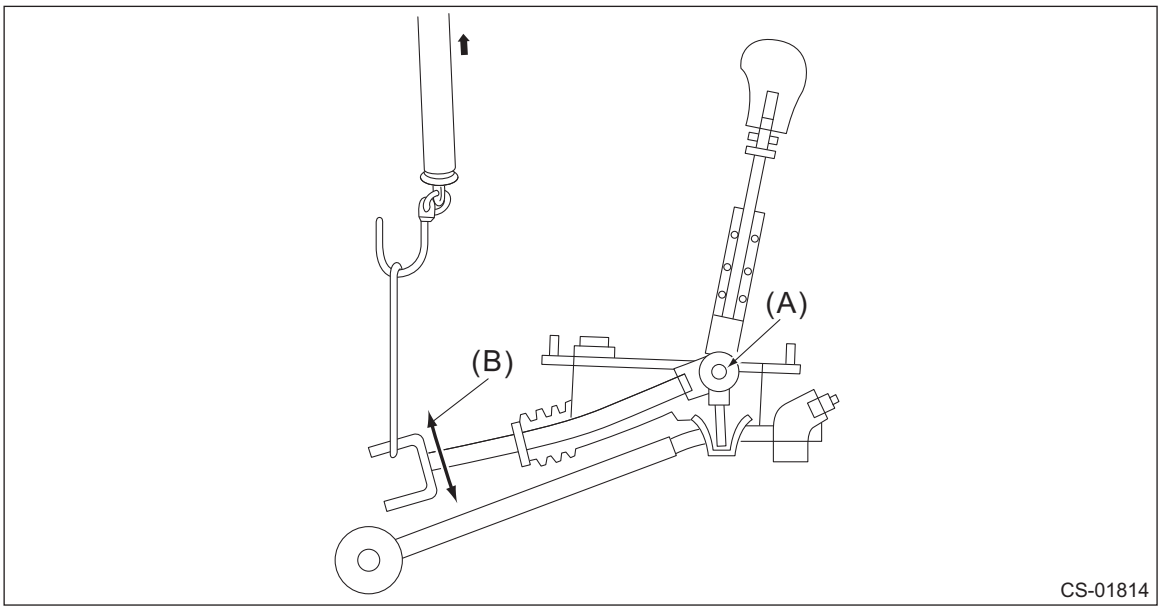
1) Check the parts (bushing, cushion rubber, spacer, boot, stay and rod, etc.) for deformation, damage and wear. If necessary, correct or replace faulty parts. Compare the removed parts with new parts to judge if there are damages or not.



(A) Bushing (C) Spacer (D) Gear shift lever ASSY
(B) Cushion rubber

2) Check the swing torque of rod linked with the gear shift lever.
If the torque exceeds the specifications, replace the bushing or retighten nuts.

Swing torque:
3.7 N (0.38 kgf, 0.83 lbf) or less



(A) Pivot (B) Swing torque

CLUTCH SYSTEM

CL

1. General Description

A: SPECIFICATION

Transmission type			6MT
Clutch cover	Type		Pull type
	Diaphragm set load N (kgf, lbf)		10,000 (1020, 2248)
Clutch disc	Facing material		Woven (non-asbestos)
	O.D. × I.D. × Thickness mm (in)	Clutch cover side	240 × 160 × 3.5 (9.45 × 6.30 × 0.138)
		Flywheel side	240 × 160 × 3.2 (9.45 × 6.30 × 0.126)
	Spline outer diameter mm (in)		25.2 (0.992), (number of teeth: 24)
	Depth of rivet head mm (in)	Clutch cover side	1.65 — 2.25 (0.065 — 0.089)
		Flywheel side	1.35 — 1.95 (0.053 — 0.077)
		Limit of sinking	0.8 (0.031)
	Deflection limit mm (in)		0.7 (0.028) at R = 115 (4.53)
Clutch release lever ratio			1.7
Release bearing			Grease-packed self-aligning
Clutch pedal	Full stroke mm (in)		130 — 135 (5.12 — 5.31)
	Free play mm (in)		4 — 11 (0.16 — 0.43)
Flywheel	Type		Conventional

CHASSIS SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

FRONT SUSPENSION

FS

1. General Description

A: SPECIFICATION

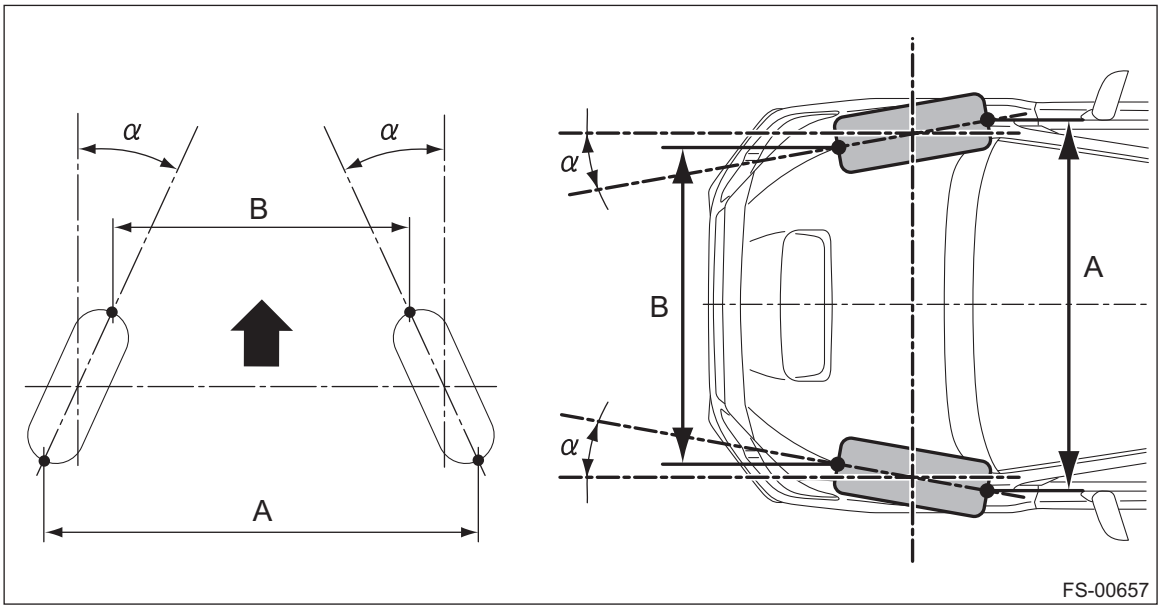
1. FRONT ALIGNMENT (INSPECTION VALUE)

Tire size		265/35R19
Wheel arch height (Tolerance: $^{+12\ mm}_{-24\ mm}$ ($^{+0.47\ in}_{-0.94\ in}$)) mm (in)		359 (14.13)
Camber (tolerance: ±0°30′ Differences between RH and LH: 35′ or less)		–1°05′
Caster (referential value)		6°38′
Steering angle (tolerance: ±1.5°)	Inner wheel	32.0°
	Outer wheel	28.6°
Toe-in mm (in)		OUT 2±3 (OUT 0.08±0.12) Toe angle (sum of both wheels): OUT 0°10′±0°16′
Kingpin angle (referential value)		15°37′

2. REAR ALIGNMENT (INSPECTION VALUE)

Tire size	265/35R19
Wheel arch height (Tolerance: $^{+12\ mm}_{-24\ mm}$ ($^{+0.47\ in}_{-0.94\ in}$)) mm (in)	351 (13.82)
Camber (tolerance: ±0°45′ Differences between RH and LH: 45′ or less)	–1°50′
Toe-in mm (in)	0±3 (0±0.12)
	Toe angle (sum of both wheels): 0°±16′
Thrust angle (tolerance: 0°00′±30′)	0°00′

NOTE:
- Adjust with the value less than the inspection value, taking aging variation into consideration.
- Front toe-in, rear toe-in and front camber can be adjusted. Adjust if the value of toe-in or camber exceeds the tolerance range of the specification chart.
- Other items except for front toe-in, rear toe-in and front camber that are described in the specification chart cannot be adjusted.
- If other items exceed the tolerance range of the specification chart, check the suspension parts and connections for deformation. If defective, replace with new parts.

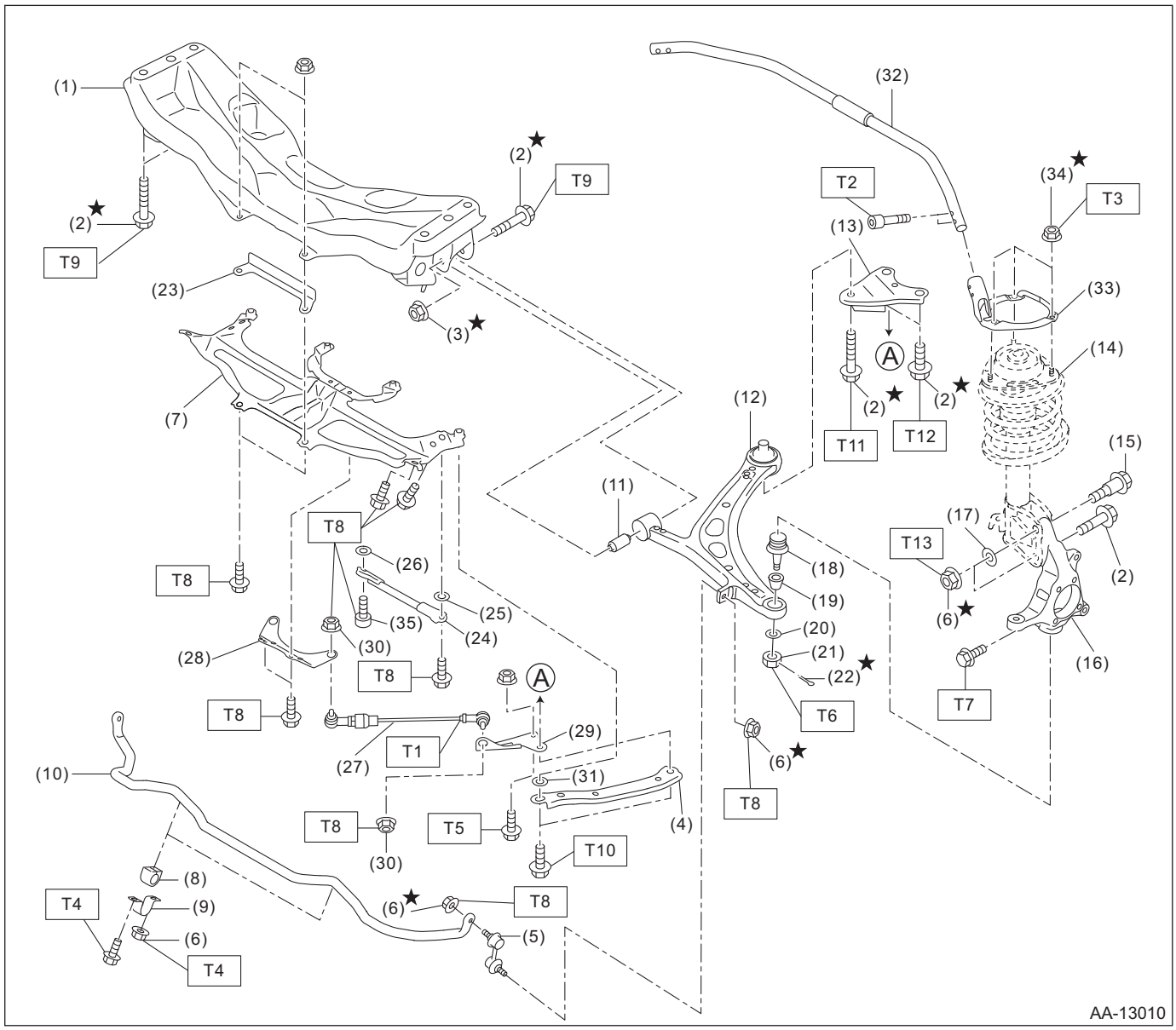


A – B = Positive: Toe-in, Negative: Toe-out

α = ***Individual toe angles***

B: COMPONENT

1. FRONT SUSPENSION



(1) Front crossmember COMPL
(2) Flange bolt
(3) Self-locking nut
(4) Front support
(5) Stabilizer link
(6) Flange nut A
(7) Front crossmember support
(8) Bushing - stabilizer
(9) Clamp - stabilizer bushing
(10) Front stabilizer
(11) Bushing front - front arm
(12) Front arm ASSY
(13) Front arm rear plate
(14) Front strut ASSY
(15) Adjusting bolt
(16) Front axle housing
(17) Adjusting washer
(18) Ball joint
(19) Boss - transverse link
(20) Washer A
(21) Castle nut
(22) Cotter pin
(23) Support crossmember front
(24) Support arm front
(25) Spacer
(26) Washer B (for LH only)
(27) Flexible draw stiffener - front
(28) Front bracket
(29) Rear bracket
(30) Flange nut B
(31) Washer C
(32) Strut tower bar
(33) Strut tower bar bracket
(34) Flange nut C
(35) Hexagon socket head cap screw

Tightening torque: N·m (kgf-m, ft-lb)	
T1:	*6 (0.6, 4.4)*
T2:	*15 (1.5, 11.1)*
T3:	*20 (2.0, 14.8)*
T4:	*25 (2.5, 18.4)*
T5:	*33 (3.4, 24.3)*
T6:	*39 (4, 28.8)*
T7:	*50 (5.1, 36.9)*
T8:	*60 (6.1, 44.3)*
T9:	*95 (9.7, 70.1)*
T10:	*100 (10.2, 73.8)*
T11:	*140 (14.3, 103.3)*
T12:	*150 (15.3, 110.6)*
T13:	*155 (15.8, 114.3)*

C: CAUTION

- When performing any work, always wear work clothes, a work cap and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
- When disposing of strut COMPL - front, be sure to bleed the oil or gas out completely. Also, do not expose to flames or fire.
- When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
- Use SUBARU genuine grease, the recommended or equivalent. Do not mix grease etc. of different grades or manufacturers.
- Do not secure a part in a vise directly. Place cushioning materials such as wood pieces, blocks, aluminum plates, or waste cloth between the part and the vise.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
- When the suspension-related components have been removed, installed or replaced, perform adjustment of the VDC sensor midpoint setting mode.
- For parts which are not reusable, always use new parts. Other parts should be replaced with new parts as required.
- When handling oil or fuel, adhere to the following to prevent unexpected accident.
  - Be careful with fire.
  - Prepare a container to catch grease or oil, etc. If any grease or oil spills, wipe it off and clean immediately to prevent from penetrating into floor or flowing outside.
  - Follow all government and local regulations concerning disposal of refuse when disposing.
- Be sure that the surface of brake disc or brake pad is free from grease or oil.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground terminal from battery.
- Some vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 STSSM4	—	SUBARU SELECT MONITOR 4	Used for setting of each function and trouble-shooting for electrical system. NOTE: For detailed operation procedures of Subaru Select Monitor 4, refer to “Application help”.

2. GENERAL TOOL

TOOL NAME	REMARKS
DST-i	Used together with Subaru Select Monitor 4.
Alignment gauge	Used for measuring wheel alignment.
Alignment gauge adapter	Used for measuring wheel alignment.
Turning radius gauge	Used for measuring wheel alignment.
Toe-in gauge	Used for toe-in measurement.

2. Wheel Alignment

A: INSPECTION

Check the following items before performing the wheel alignment measurement.
- Tire inflation pressure
- Uneven wear of RH and LH tires, or difference of sizes
- Tire runout
- Excessive play and wear of ball joint
- Excessive play and wear of tie-rod end
- Excessive play of wheel bearing
- Right and left wheel base imbalance
- Deformation and excessive play of steering link
- Deformation and excessive play of suspension parts

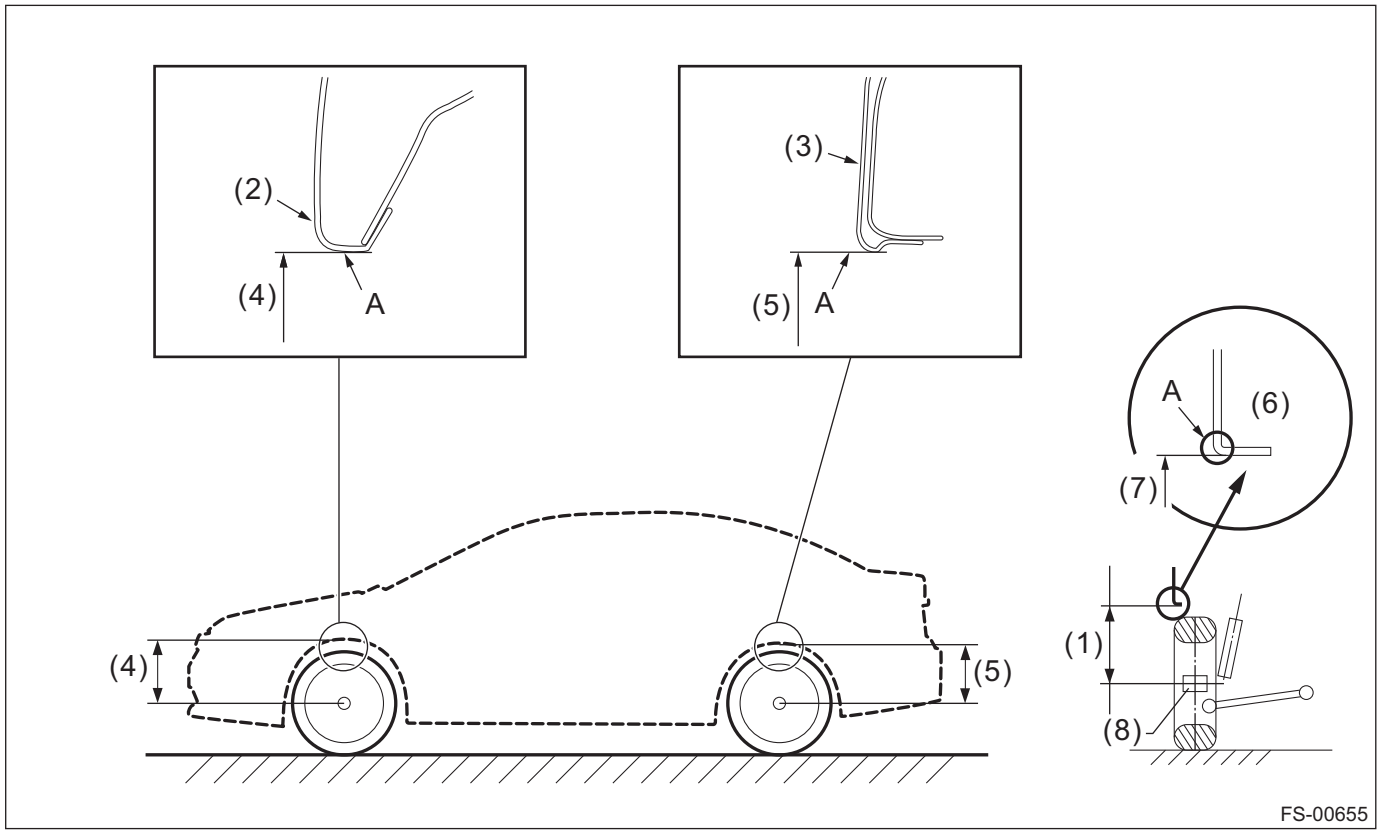
Check, adjust and measure the wheel alignment in accordance with the following procedures.

1	Wheel arch height (front and rear wheels)	Inspection: <Ref. to FS-7, WHEEL ARCH HEIGHT, INSPECTION, Wheel Alignment.>
↓		
2	Camber (front wheel)	Inspection: <Ref. to FS-8, CAMBER, INSPECTION, Wheel Alignment.> Adjustment: <Ref. to FS-11, FRONT CAMBER, ADJUSTMENT, Wheel Alignment.>
	Camber (rear wheel)	Inspection: <Ref. to FS-13, REAR WHEEL TOE-IN, ADJUSTMENT, Wheel Alignment.> NOTE: Rear camber cannot be adjusted. If the value exceeds the lateral tolerance range, check the suspension parts and connections for deformation. If defective, replace with new parts.
↓		
3	Caster (front wheel)	Inspection: <Ref. to FS-9, CASTER, INSPECTION, Wheel Alignment.>
↓		
4	Adjustment of difference between right and left steering angles	Inspection: <Ref. to FS-9, STEERING ANGLE, INSPECTION, Wheel Alignment.> Adjustment: <Ref. to FS-13, ADJUSTMENT OF DIFFERENCE BETWEEN RIGHT AND LEFT STEERING ANGLES, ADJUSTMENT, Wheel Alignment.>
↓		
5	Front wheel toe-in	Inspection: <Ref. to FS-10, FRONT WHEEL TOE-IN, INSPECTION, Wheel Alignment.> Adjustment: <Ref. to FS-13, FRONT WHEEL TOE-IN, ADJUSTMENT, Wheel Alignment.>
↓		
6	Rear wheel toe-in	Inspection: <Ref. to FS-10, REAR WHEEL TOE-IN, INSPECTION, Wheel Alignment.> Adjustment: <Ref. to FS-13, REAR WHEEL TOE-IN, ADJUSTMENT, Wheel Alignment.>
↓		
7	Thrust angle	Inspection: <Ref. to FS-10, THRUST ANGLE, INSPECTION, Wheel Alignment.> Adjustment: <Ref. to FS-15, THRUST ANGLE, ADJUSTMENT, Wheel Alignment.>

1. WHEEL ARCH HEIGHT

1) Park the vehicle on a level surface.
2) Empty the vehicle so that it is at “curb weight”.

NOTE:
Empty the trunk or luggage room, load the spare tire, jack and service tools, and fill up the fuel tank.
3) Set the steering wheel in a straight-ahead position, and stabilize the suspension by moving the vehicle in a straight line for 5 m (16 ft) or more.
4) Suspend a thread from the wheel arch (point “A” in the figure below) and affix at a position directly above the center of wheel.
5) Measure the distance between the point “A” and the center of wheel.



(1) Wheel arch height
(2) Front fender
(3) Rear quarter
(4) Front wheel arch height
(5) Rear wheel arch height
(6) Flange bend line
(7) Point of measurement
(8) End of spindle

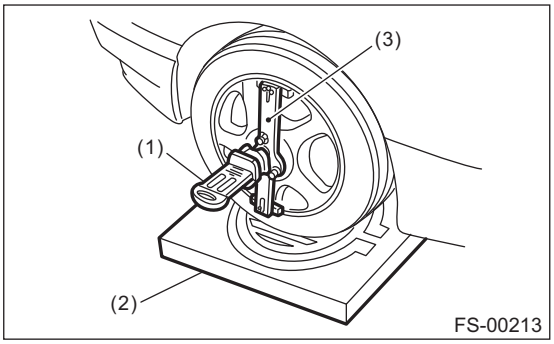
Tire size	Wheel arch height specification mm (in) (Tolerance: $^{+12\ mm}_{-24\ mm}$ ($^{+0.47\ in}_{-0.94\ in}$))	
	Front	Rear
265/35R19	359 (14.13)	351 (13.82)

2. CAMBER

1) Place the front wheel on the turning radius gauge.

NOTE:
Make sure the ground contact surfaces of the front and rear wheels are at the same height.

2) Set the adapter into the center of wheel, and then set the wheel alignment gauge.



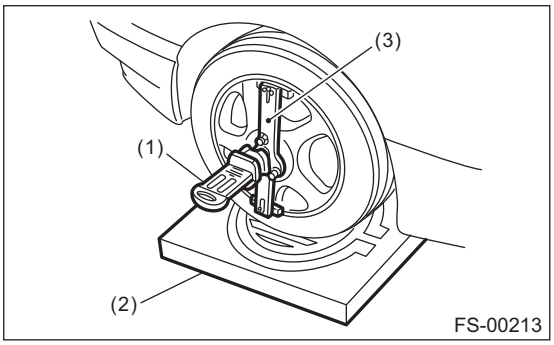
(1) Alignment gauge
(2) Turning radius gauge
(3) Adapter

3) Measure the camber angle in accordance with the operation manual for wheel alignment gauge.

Tire size	Front camber (difference between RH and LH 45′ or less)	Rear camber (difference between RH and LH 45′ or less)
265/35R19	–1°05′±0°30′	–1°50′±0°45′

3. CASTER

1) Place the front wheel on the turning radius gauge. Make sure the ground contact surfaces of the front and rear wheels are at the same height.
2) Set the adapter into the center of wheel, and then set the wheel alignment gauge.



(1) Alignment gauge
(2) Turning radius gauge
(3) Adapter

3) Measure the caster angle in accordance with the operation manual for wheel alignment gauge.

Tire size	Caster
265/35R19	6°38′

4. STEERING ANGLE

1) Place the vehicle on turning radius gauge.
2) While depressing the brake pedal, turn the steering wheel fully to the left and right.
3) With the steering wheel held at each fully turned position, measure both the inner and outer wheel steering angles.

Tire size	Inner wheel	Outer wheel
265/35R19	32.0°±1.5°	28.6°±1.5°

5. FRONT WHEEL TOE-IN

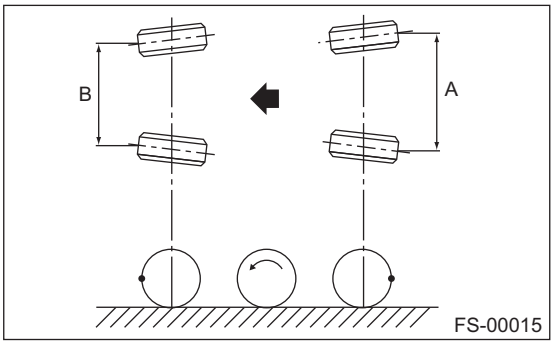
Toe-in: Inspection value
OUT 2±3 mm (OUT 0.08±0.12 in)

1) Set the toe-in gauge in the position at wheel axis center height behind the right and left front tires.
2) Place a mark at the center of both left and right tires, and measure distance “A” between the marks.
3) Move the vehicle forward to rotate the tires 180°.

NOTE:
Be sure to rotate the tires in the forward direction.

4) Measure the distance “B” between the left and right marks.
Find toe-in using the following calculation:

A – B = Toe-in



6. REAR WHEEL TOE-IN

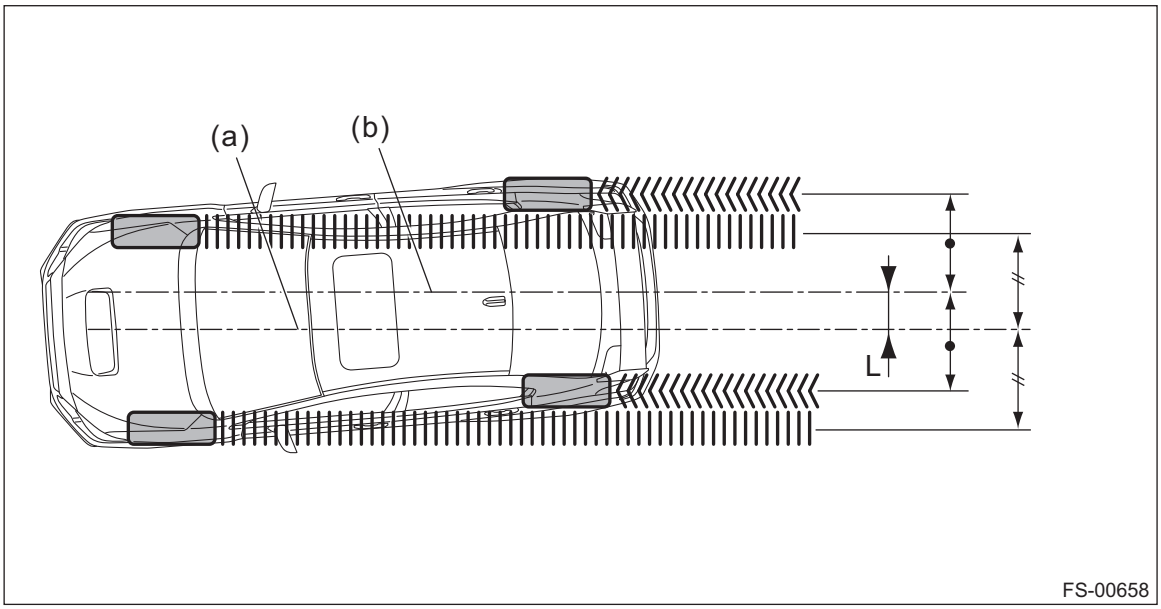
Refer to the FRONT WHEEL TOE-IN for rear toe-in inspection procedures. <Ref. to FS-10, FRONT WHEEL TOE-IN, INSPECTION, Wheel Alignment.>

Toe-in: Inspection value
0±3 mm (0±0.12 in)

7. THRUST ANGLE

1) Park the vehicle on a level surface.
2) Move the vehicle 3 — 4 meters (10 — 13 feet) straight forward.
3) Draw the center of loci for both the front and rear axles.
4) Measure distance “L” between the center lines of the axle loci.

Thrust angle: Inspection value
0°±30′
Less than 30′ when "L" is 23 mm (0.9 in) or less



(a) Center line of loci (front axle) (b) Center line of loci (rear axle)

B: ADJUSTMENT

CAUTION:
When the wheel alignment has been adjusted, perform the following adjustment.

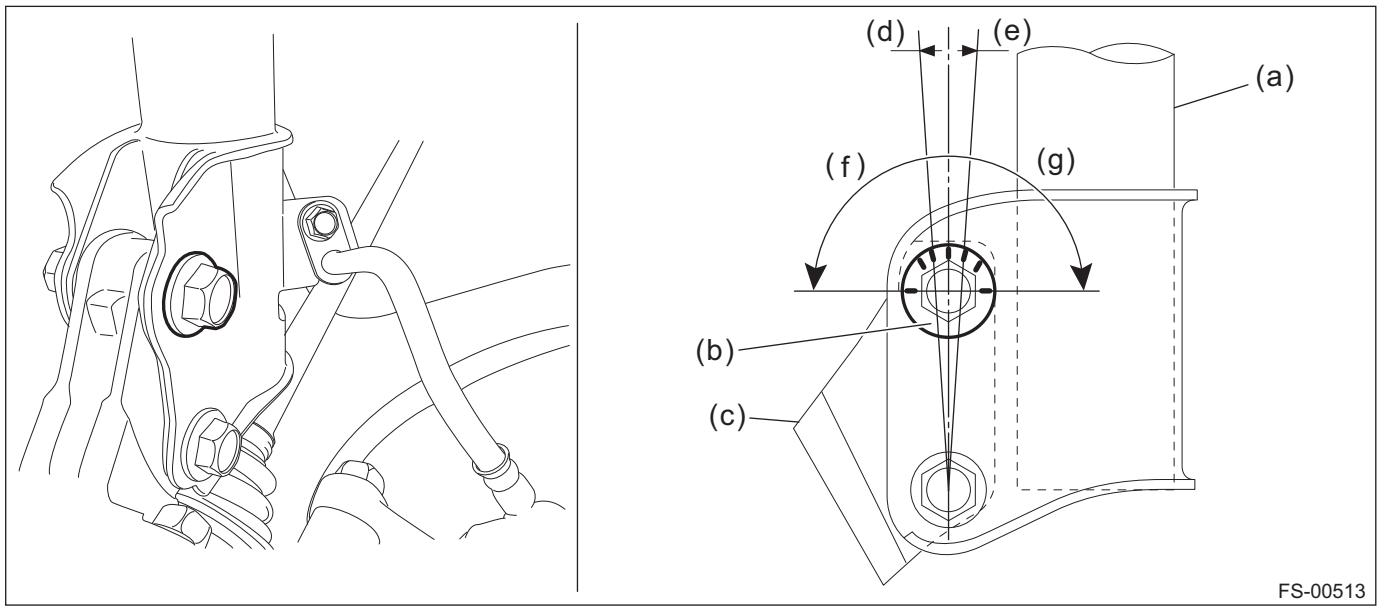
1. FRONT CAMBER

1) Adjust the camber angle to the following value.

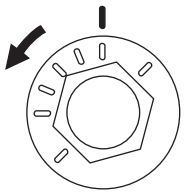
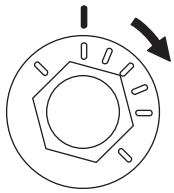
Tire size	Camber (difference between RH and LH 35′ or less)
265/35R19	–1°05′±0°30′

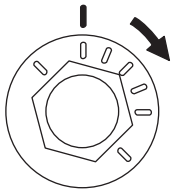
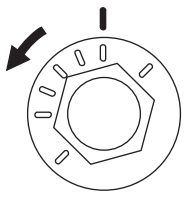
2) Loosen the two flange nuts while holding the strut bolts.
3) Turn the camber adjusting bolt so that the camber is set at specification.

NOTE:
Moving the adjusting bolt by one scale changes the camber by approximately 0°15′.



(a) Strut ASSY
(b) Adjusting bolt
(c) Front axle housing
(d) Outer direction
(e) Inner direction
(f) Camber is increased.
(g) Camber is decreased.

To increase camber.	
Rotate the left side counterclockwise.	Rotate the right side clockwise.
 FS-00352	 FS-00353

To decrease camber.	
Rotate the left side clockwise.	Rotate the right side counterclockwise.
 FS-00353	 FS-00352

4) Tighten two new flange nuts.

Tightening torque:
155 N·m (15.8 kgf-m, 114.3 ft-lb)

NOTE:
While holding the adjusting bolt side, tighten the nut side.

2. ADJUSTMENT OF DIFFERENCE BETWEEN RIGHT AND LEFT STEERING ANGLES

1) Operate the steering system from lock to lock and stop operating it at the center position from lock to lock, and then install the steering wheel in the straight-ahead position.

NOTE:
Using of the steering wheel angle sensor output values shown on Subaru Select Monitor will facilitate your work.

2) Before adjusting toe-in, be sure to adjust the steering wheel in the straight-ahead position (steering angle sensor output: 0 deg).

3. FRONT WHEEL TOE-IN

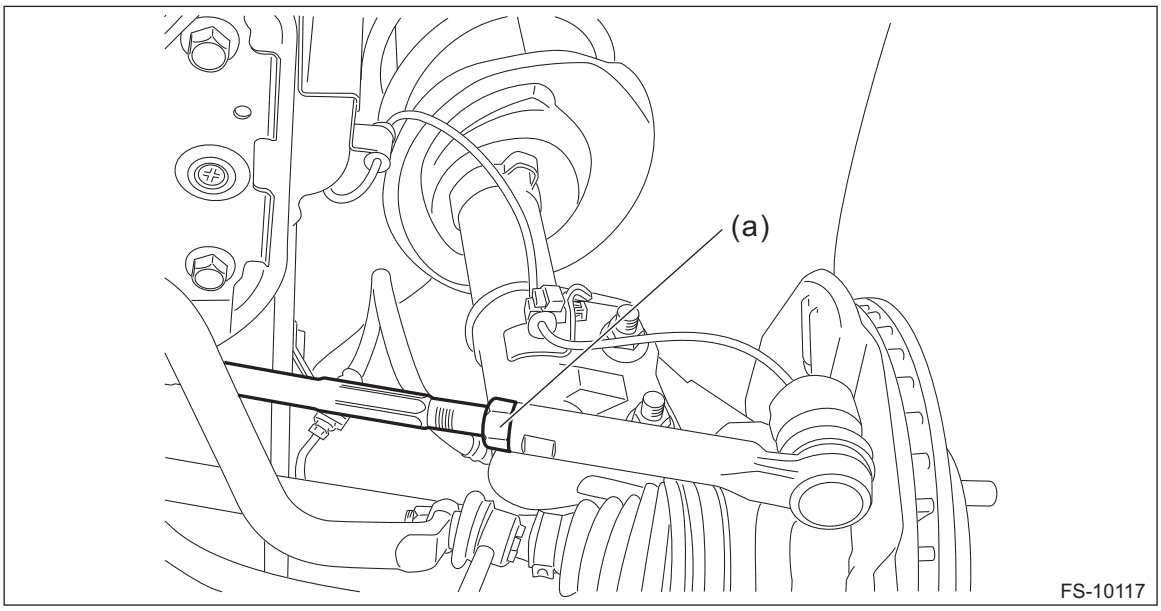
When adjusting the toe-in, adjust it to the following value.

Toe-in: Adjustment value
OUT 2±2 mm (OUT 0.08±0.08 in)

1) Check that the left and right wheel steering angles are within specification.
2) Loosen the left and right side steering tie-rod lock nuts (a).
3) Turn the left and right tie-rods by equal amounts until the toe-in is at the specification.

NOTE:
Both the left and right tie-rods are right-hand threaded. To increase toe-in, turn both tie-rods clockwise by equal amount (viewing from the inside of vehicle).

4) Tighten the tie-rod lock nut (a).



Tightening torque:
85 N·m (8.7 kgf-m, 62.7 ft-lb)

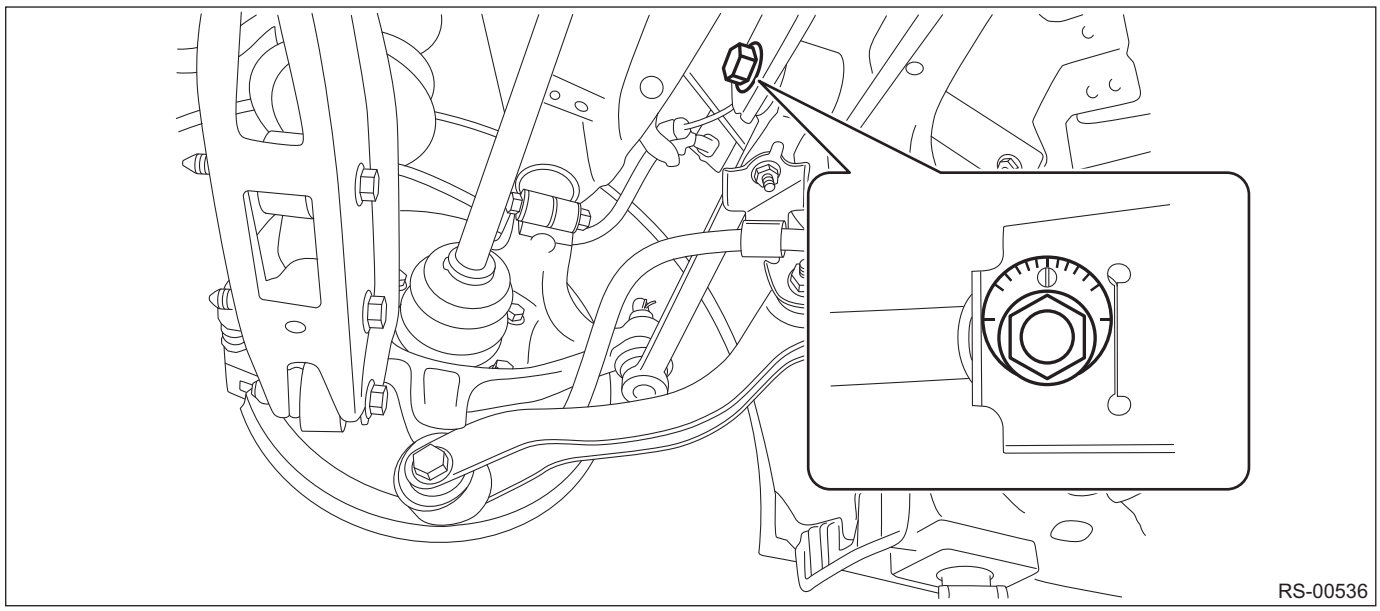
5) Check and correct the tie-rod boot if twisted.

4. REAR WHEEL TOE-IN

When adjusting, adjust it to the following value.

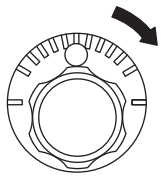
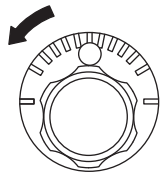
Toe-in: Adjustment value
0±2 mm (0±0.08 in)

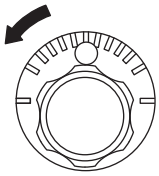
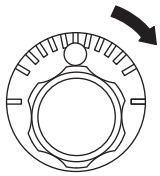
1) Loosen the self-locking nut after holding the bolt head section of lateral link assembly - front.



2) Turn the adjusting bolt until toe-in is within the specification.

NOTE:
When the left and right wheels are adjusted for toe-in at the same time, the movement of one scale graduation changes toe-in by approx. 6.0 mm (0.24 in).

To increase toe-in.	
Rotate the left side clockwise.	Rotate the right side counterclockwise.
 FS-00018	 FS-00019

To decrease toe-in.	
Rotate the left side counterclockwise.	Rotate the right side clockwise.
 FS-00019	 FS-00018

3) Attach and tighten a new self-locking nut.

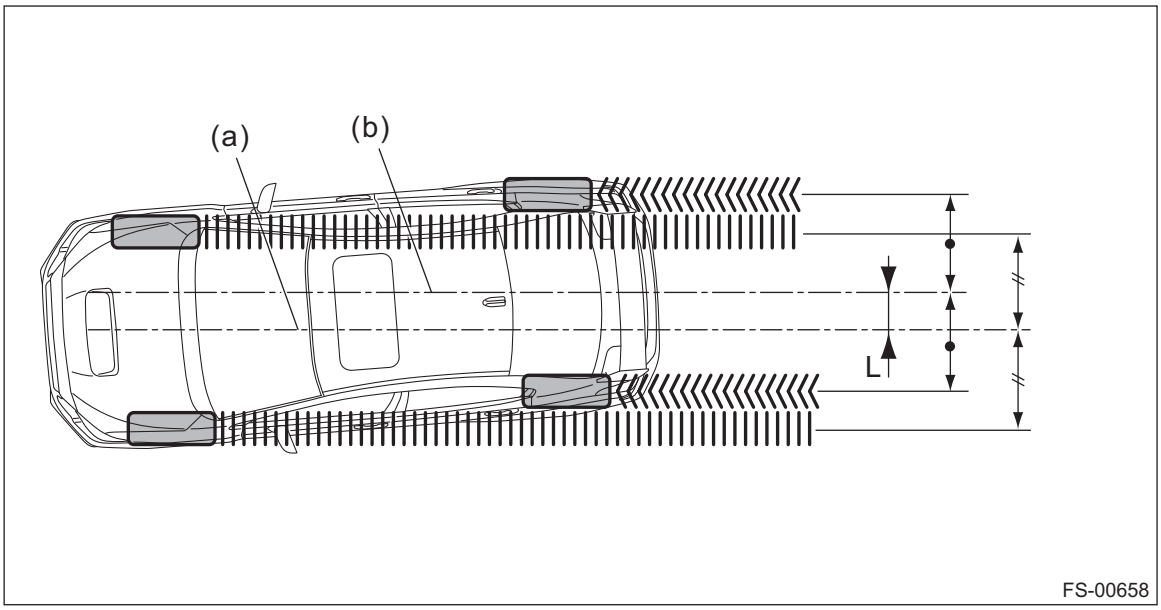
Tightening torque:
100 N·m (10.2 kgf-m, 73.8 ft-lb)

NOTE:
While holding the adjusting bolt side, tighten the nut side.

5. THRUST ANGLE

When adjusting, adjust it to the following value.

Thrust angle: Adjustment value
0°±20′
Less than 20′ when "L" is 15 mm (0.6 in) or less

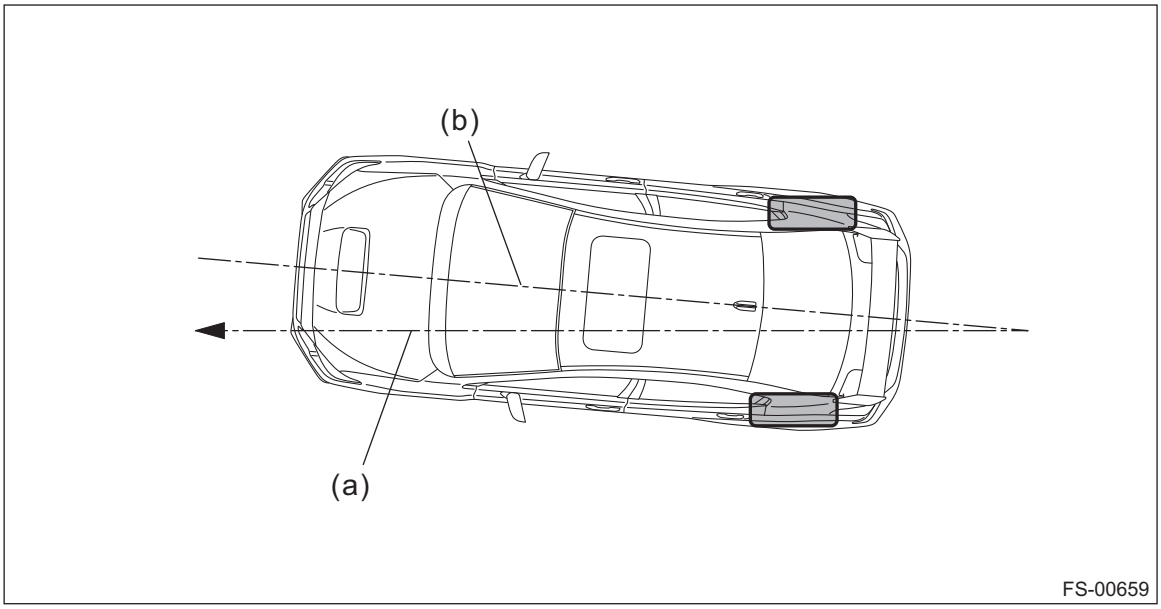


(a) Center line of loci (front axle) (b) Center line of loci (rear axle)

1) Make thrust angle adjustments by turning the toe-in adjusting bolts of the rear suspension equally in the same direction.
2) When one rear wheel is adjusted in a toe-in direction, adjust the other rear wheel equally in toe-out direction, in order to make the thrust angle adjustment.
3) When the left and right adjusting bolts are turned by one graduation, the thrust angle will change approx. 15′. ("L" is approx. 11 mm (0.43 in).)

NOTE:
Thrust angle is a mean value of left and right wheel toe angles in relation to the vehicle body center line.

Vehicle is driven straight in the thrust angle direction while slanting in the oblique direction depending on the degree of the mean thrust angle.



(a) Thrust angle (b) Body center line

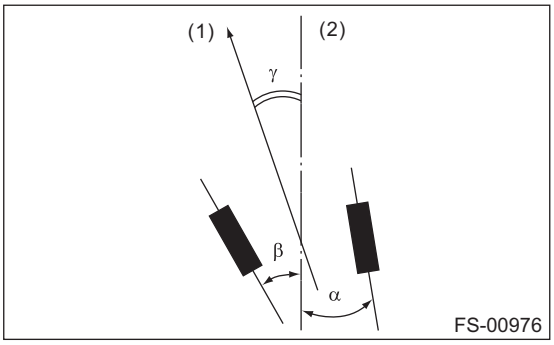
Thrust angle:

$\gamma = (\alpha - \beta)/2$

α: Rear RH wheel toe-in angle

β: Rear LH wheel toe-in angle

Substitute only the positive toe-in values from each wheel into α and β in the calculation.

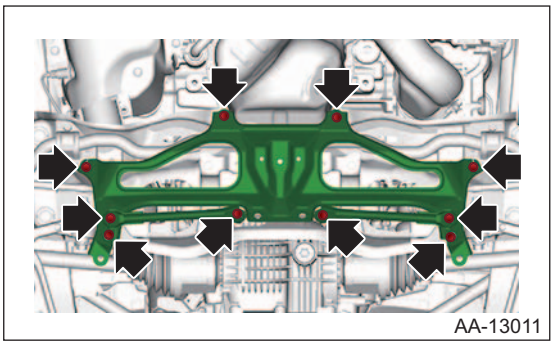


(1) Front
(2) Body center line

3. Front Crossmember Support Plate

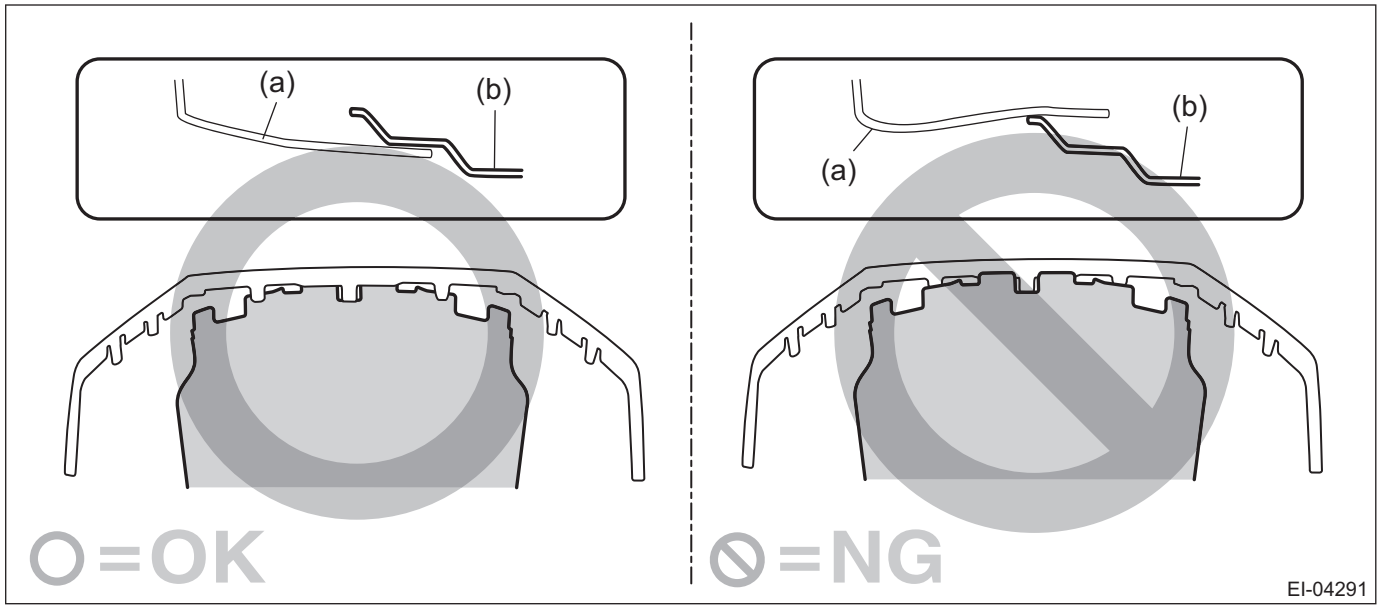
A: REMOVAL

1) Lift up the vehicle.
2) Remove the under cover - front.
3) Remove the front support.
4) Remove the flexible draw stiffener - front.
5) Remove the bolt, and remove the front crossmember support, support crossmember front and the support arm front.



B: INSTALLATION

CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Install the under cover - front so that the front end of the under cover (b) comes inside the bumper face - front (a).**



1) Install the front crossmember support, support crossmember front and the support arm front.

Tightening torque:
60 N·m (6.1 kgf-m, 44.3 ft-lb)
2) Install the flexible draw stiffener - front.

Tightening torque:
60 N·m (6.1 kgf-m, 44.3 ft-lb)
3) Install the front support.

Tightening torque:
100 N·m (10.2 kgf-m, 73.8 ft-lb)
4) Install the under cover - front.

5) Lower the vehicle.

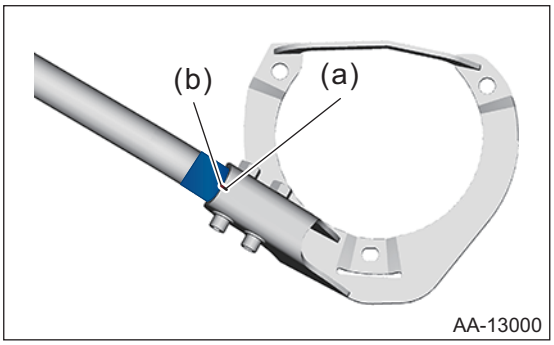
4. Strut Tower Bar Front

A: REMOVAL

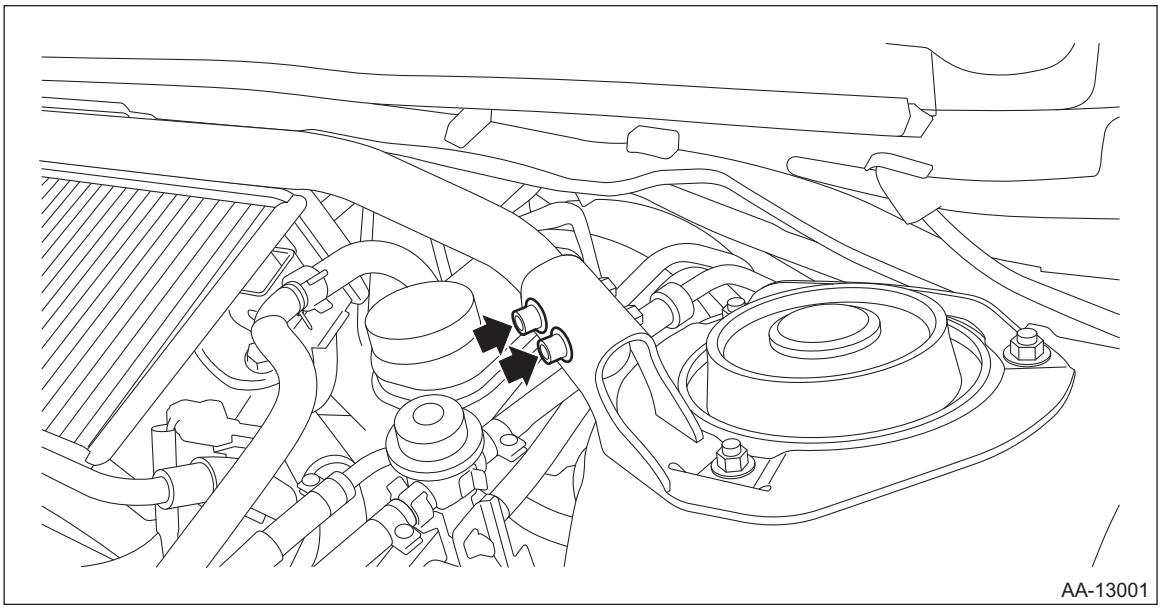
CAUTION:
Do not apply an overload to the rubber boot with the strut tower bar bended to its maximum. Pillow balls are contained inside the rubber boot, and therefore bending the strut tower bar excessively may damage the pillow balls.

1. WHEN THE STRUT TOWER BAR BRACKET IS NOT REMOVED FROM THE VEHICLE

1) Attach a tape to the strut tower bar along the end face of the strut tower bar bracket LH and RH.
2) Make an alignment mark (b) on the tape according to the alignment mark (a) on the strut tower bar bracket LH. For the strut tower bar bracket RH side, make alignment marks in the same manner.

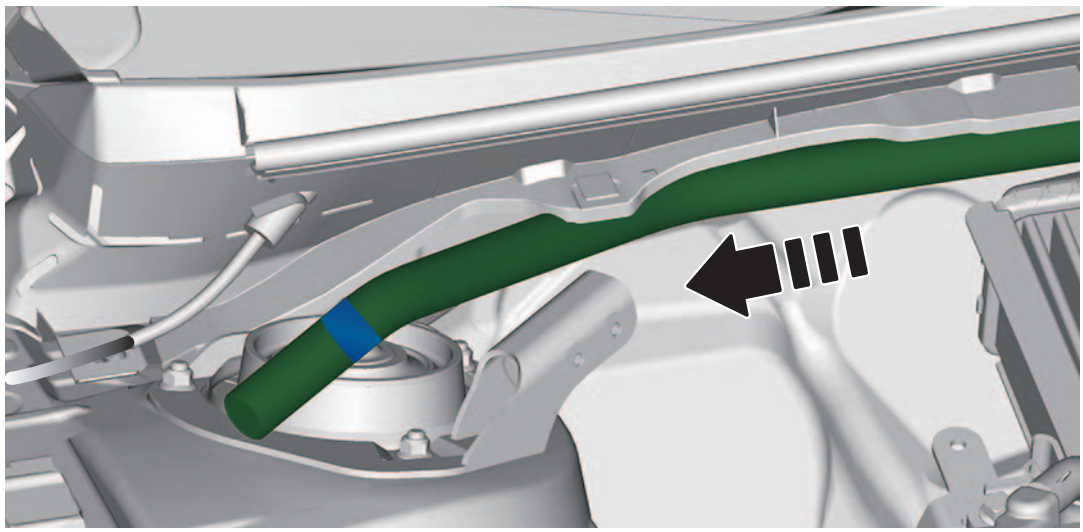


3) Remove the bolts which hold the strut tower bar to the strut tower bar bracket LH and RH.



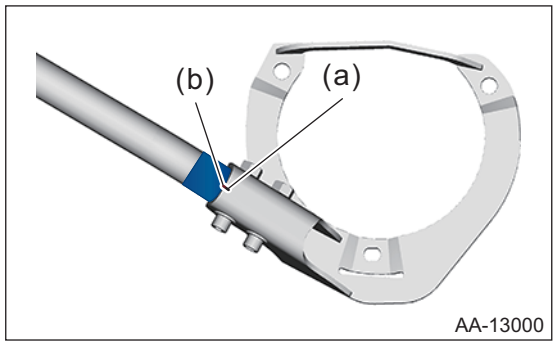
4) Remove the strut tower bar toward the VDC control module side through the back side of the intercooler.

WARNING:
Take care not to contact to the fuel pipe. The fuel pipe may be damaged, resulting in fuel leakage.


AA-13057

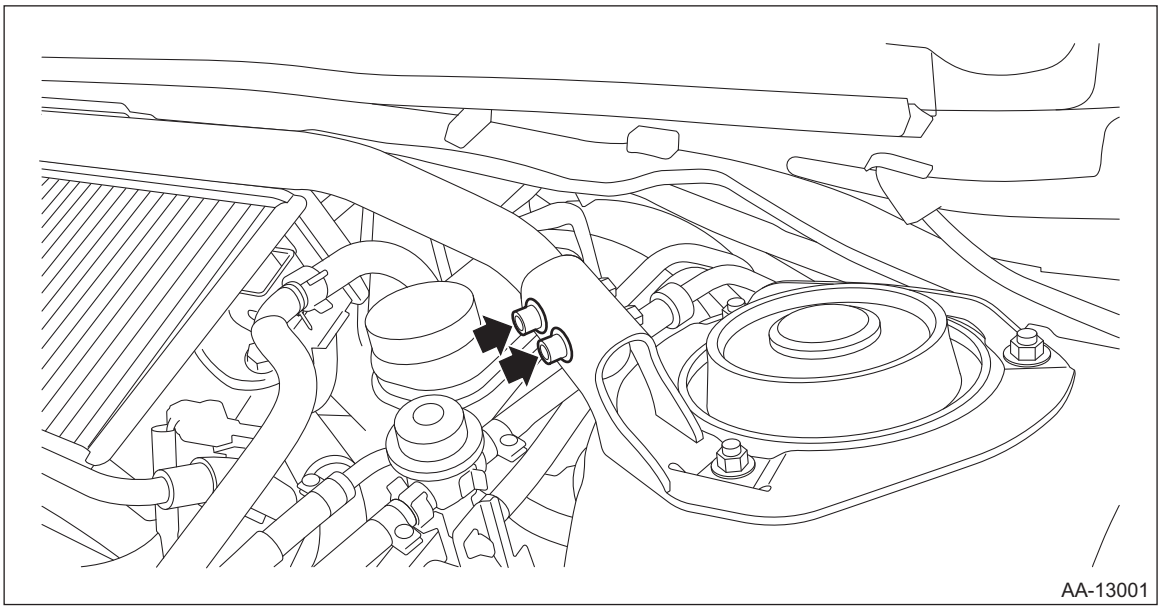
2. WHEN THE STRUT TOWER BAR BRACKET IS REMOVED FROM THE VEHICLE

1) Attach a tape to the strut tower bar along the end face of the strut tower bar bracket LH.
2) Make an alignment mark (b) on the tape according to the alignment mark (a) on the strut tower bar bracket LH.

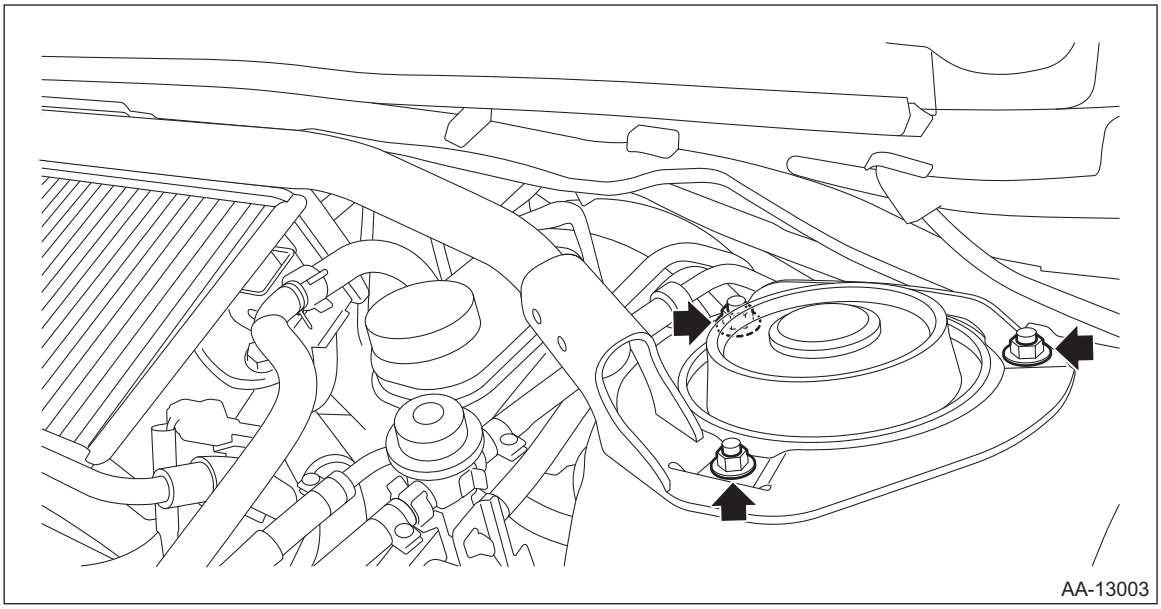


AA-13000

3) Remove the bolts which hold the strut tower bar to the strut tower bar bracket LH.

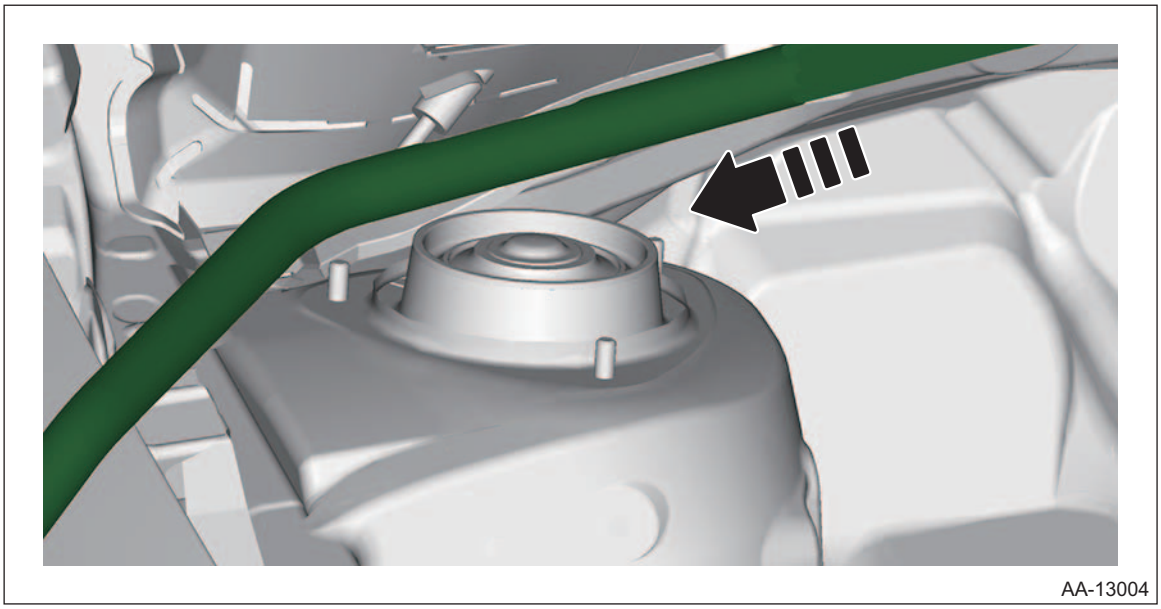

AA-13001

4) Remove the flange nuts which hold the strut tower bar brackets LH and RH to the strut mount.

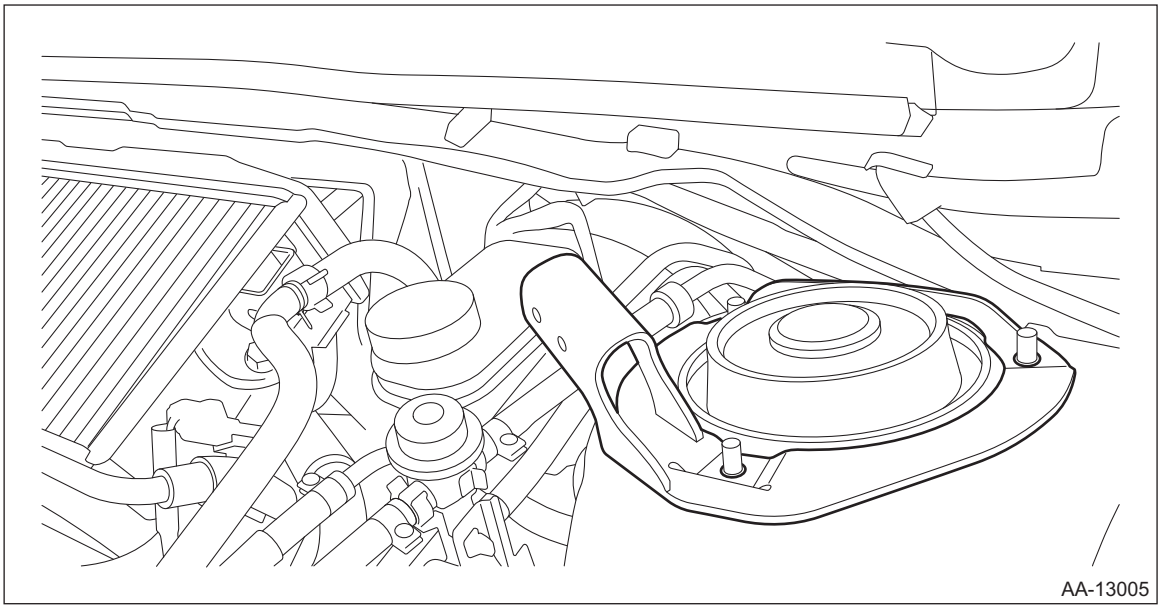


5) Remove the strut tower bar toward the VDC control module side through the back side of the intercooler.

WARNING:
Take care not to contact to the fuel pipe. The fuel pipe may be damaged, resulting in fuel leakage.



6) Remove the strut tower bar bracket LH from the strut mount.



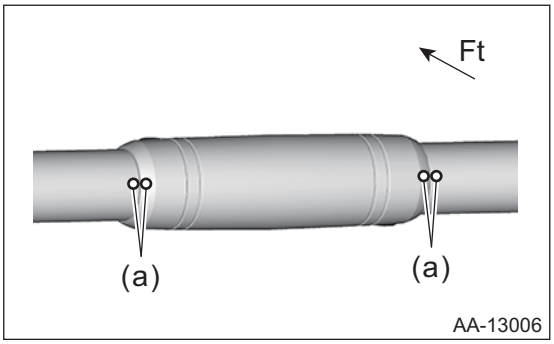
B: INSTALLATION

CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Do not apply an overload to the rubber boot with the strut tower bar bended to its maximum. Pillow balls are contained inside the rubber boot, and therefore bending the strut tower bar excessively may damage the pillow balls.**

1. WHEN THE STRUT TOWER BAR BRACKET IS NOT REMOVED FROM THE VEHICLE

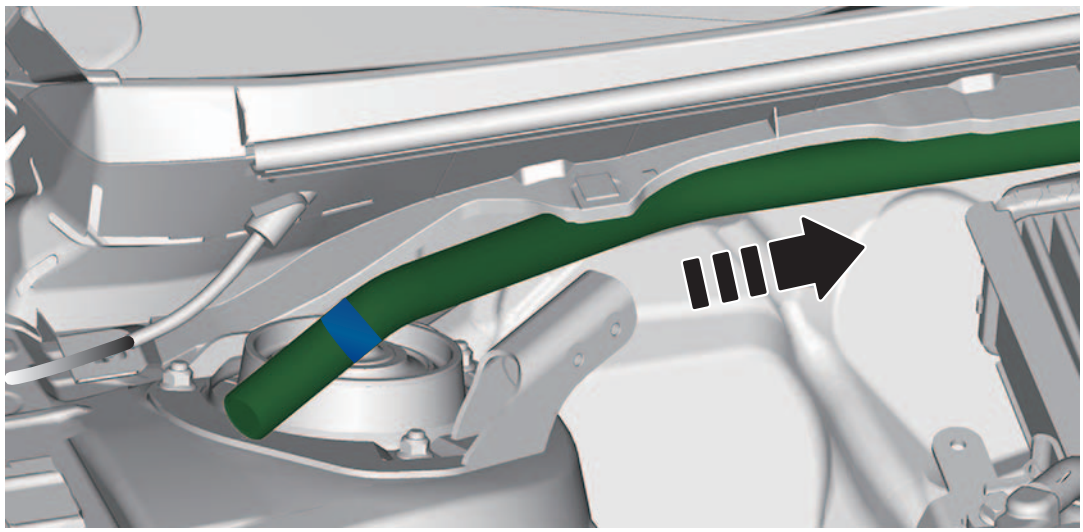
1) Make sure that the alignment marks (a) on both ends (rear side) of the rubber boot at the strut tower bar center position are aligned with those on the strut tower bar.

NOTE:
If they are not aligned, rotate the rubber boot to align the alignment marks (a) on both ends (rear side) of the rubber boot and on the strut tower bar.

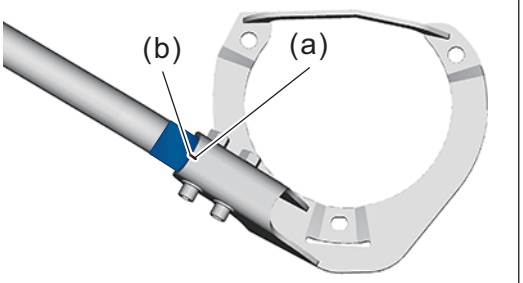


2) Install the strut tower bar from the VDC control module side so that it goes through the back side of the intercooler.

WARNING:
Take care not to contact to the fuel pipe. The fuel pipe may be damaged, resulting in fuel leakage.


AA-13002

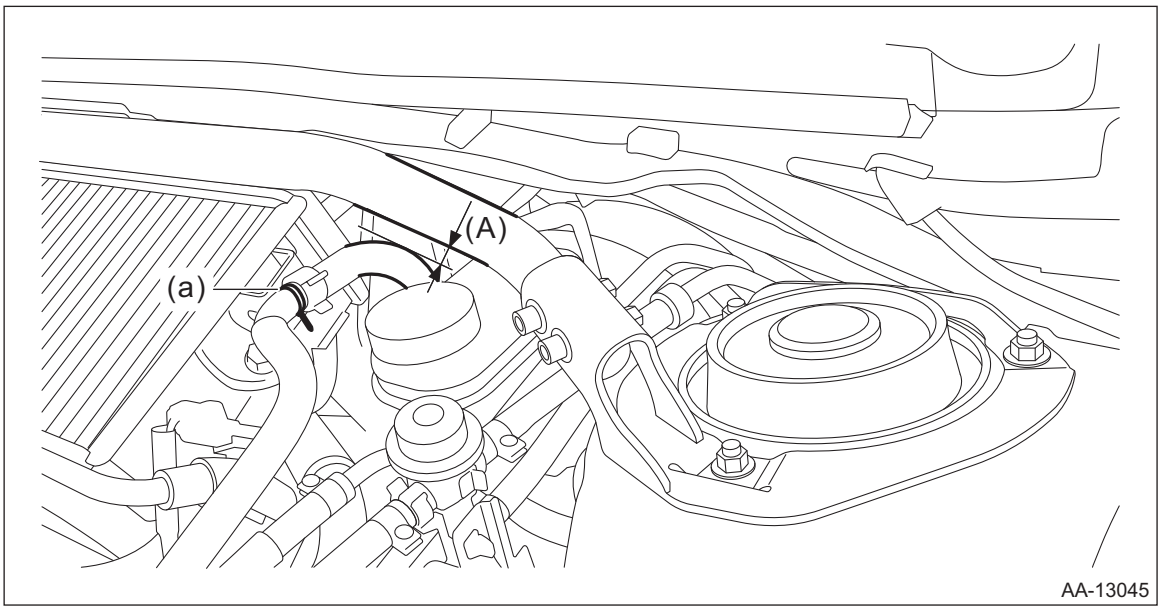
3) Align the alignment marks (a) and (b) on the strut tower bar and the strut tower bar brackets LH and RH, and temporarily tighten with bolts.



AA-13000

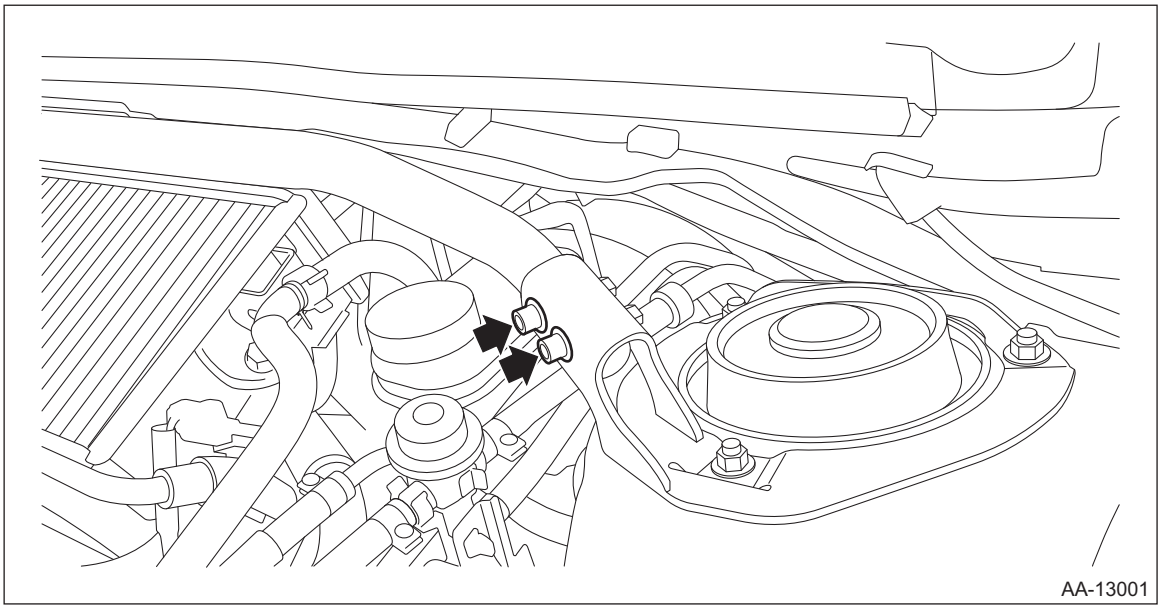
4) Confirm that the clearance (A) between the strut tower bar and the vacuum hose is 15 mm (0.591 in) or more, and fix the vacuum hose with tie-wrap (a).

NOTE:
Use HellermannTyton GalvaLok GL150 or equivalent tie-wraps.



5) Tighten the bolts which hold the strut tower bar to the strut tower bar brackets LH and RH.

Tightening torque:
15 N·m (1.5 kgf-m, 11.1 ft-lb)

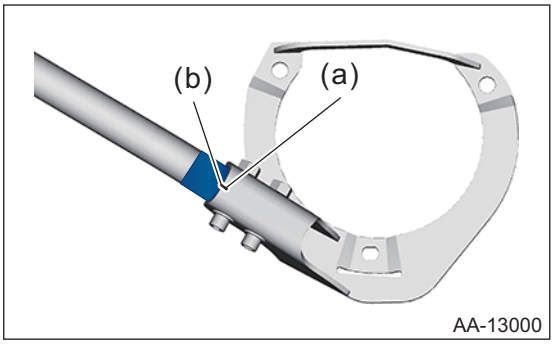


6) Peel off the tape for position alignment from the strut tower bar.

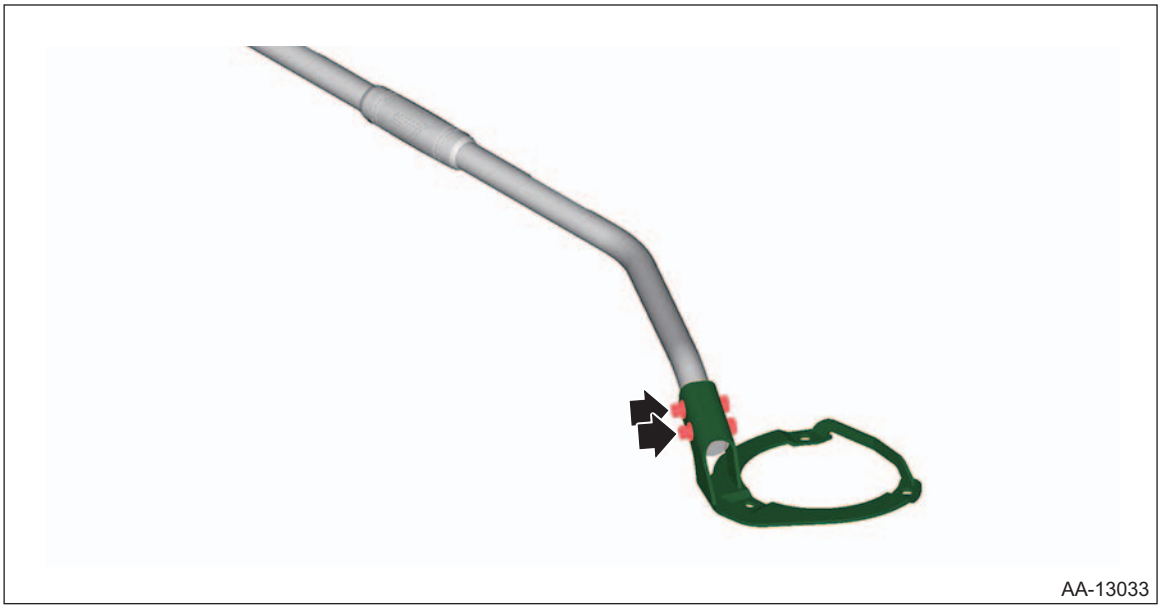
2. WHEN REMOVING THE STRUT TOWER BAR BRACKET FROM THE VEHICLE / WHEN REPLACING TO A NEW STRUT TOWER BAR

1) Attach a tape to the strut tower bar along the end face of the strut tower bar bracket LH. (Only when replacing with a new strut tower bar)

2) Make an alignment mark (b) on the tape according to the alignment mark (a) on the strut tower bar bracket LH. (Only when replacing with a new strut tower bar)

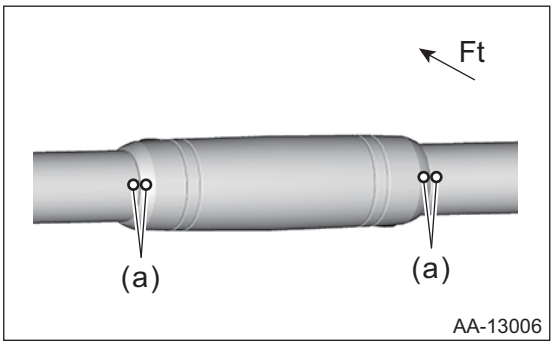


3) Remove the strut tower bar bracket LH from the strut tower bar assembly. (Only when replacing with a new strut tower bar)

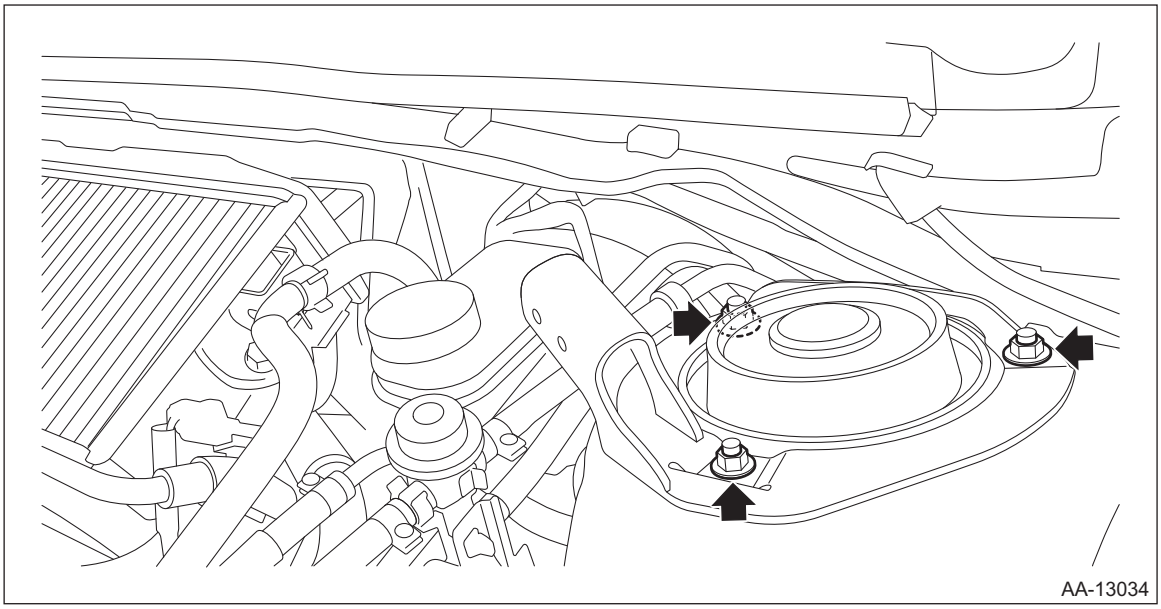


4) Make sure that the alignment marks (a) on both ends (rear side) of the rubber boot at the strut tower bar center position are aligned with those on the strut tower bar.

NOTE:
If they are not aligned, rotate the rubber boot to align the alignment marks (a) on both ends (rear side) of the rubber boot and on the strut tower bar.

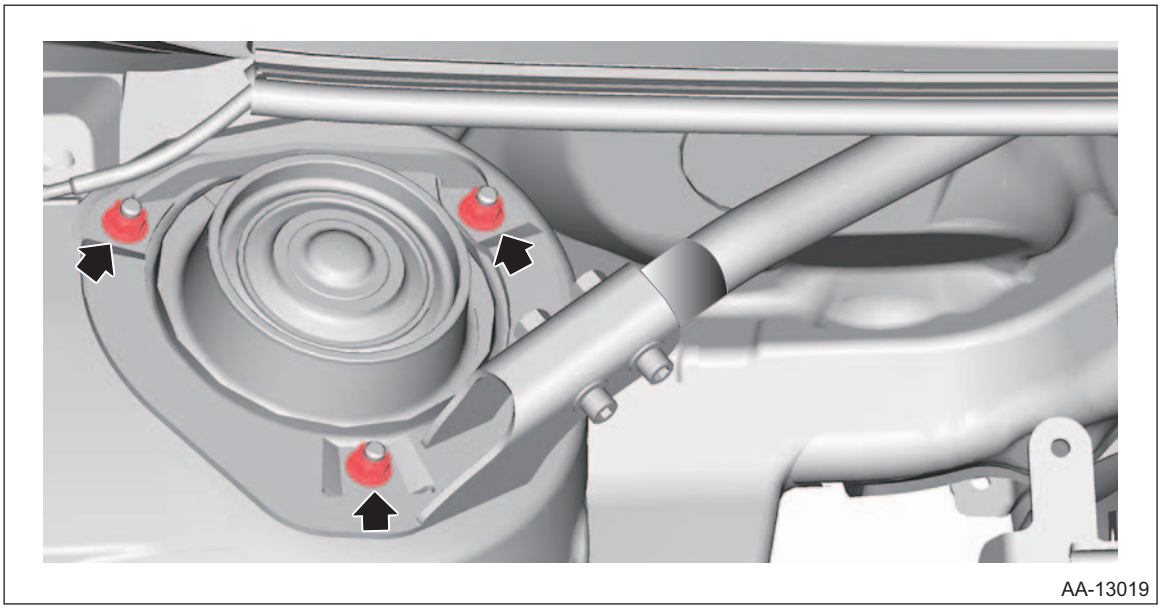


5) Install the strut tower bar bracket LH to the strut mount, and temporarily tighten the new flange nut.

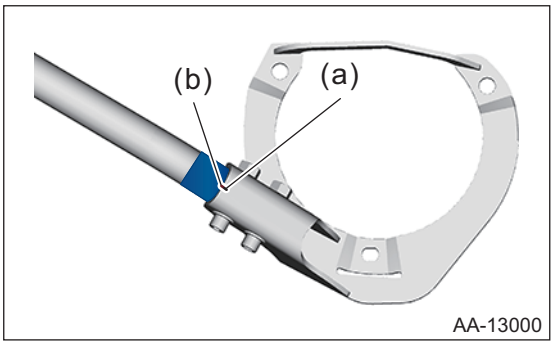


6) Install the strut tower bar and the strut tower bar bracket RH from the VDC control module side so that it goes through the back side of the intercooler, and temporarily tighten the new flange nut.

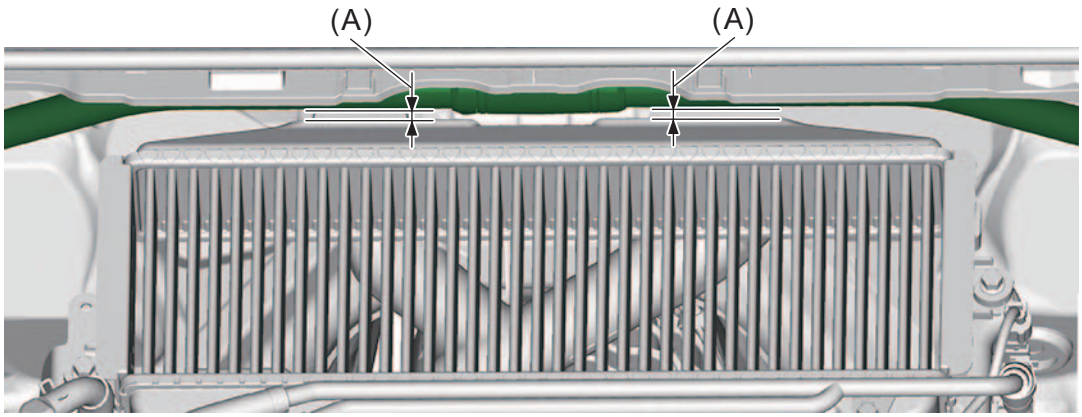
WARNING:
Take care not to contact to the fuel pipe. The fuel pipe may be damaged, resulting in fuel leakage.



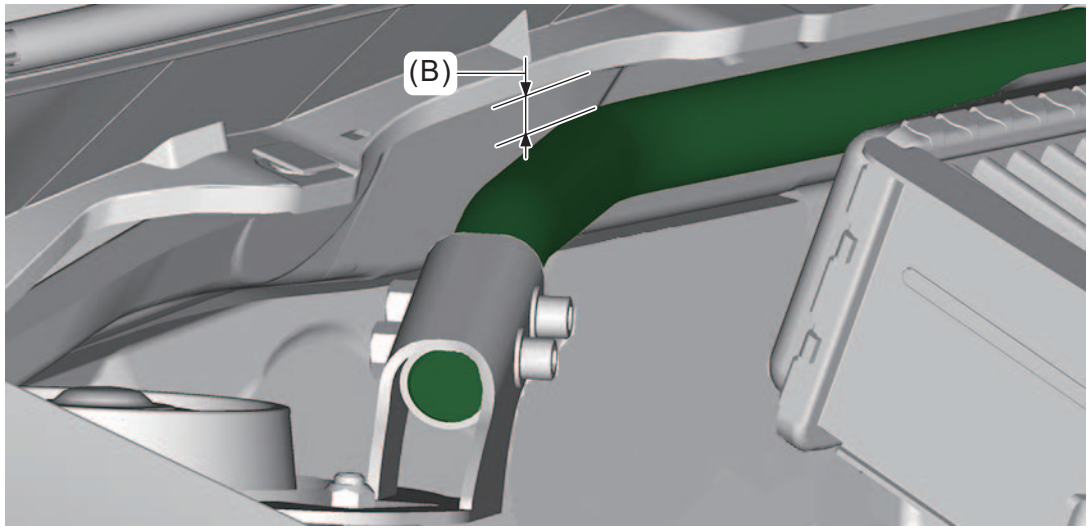
7) Align the alignment marks (a) and (b) on the strut tower bar and the strut tower bar bracket LH, and temporarily tighten with bolts.



8) Confirm that the clearance (A) between the strut tower bar assembly and the intercooler and the clearance (B) between the strut tower bar assembly and the cowl panel are secured.

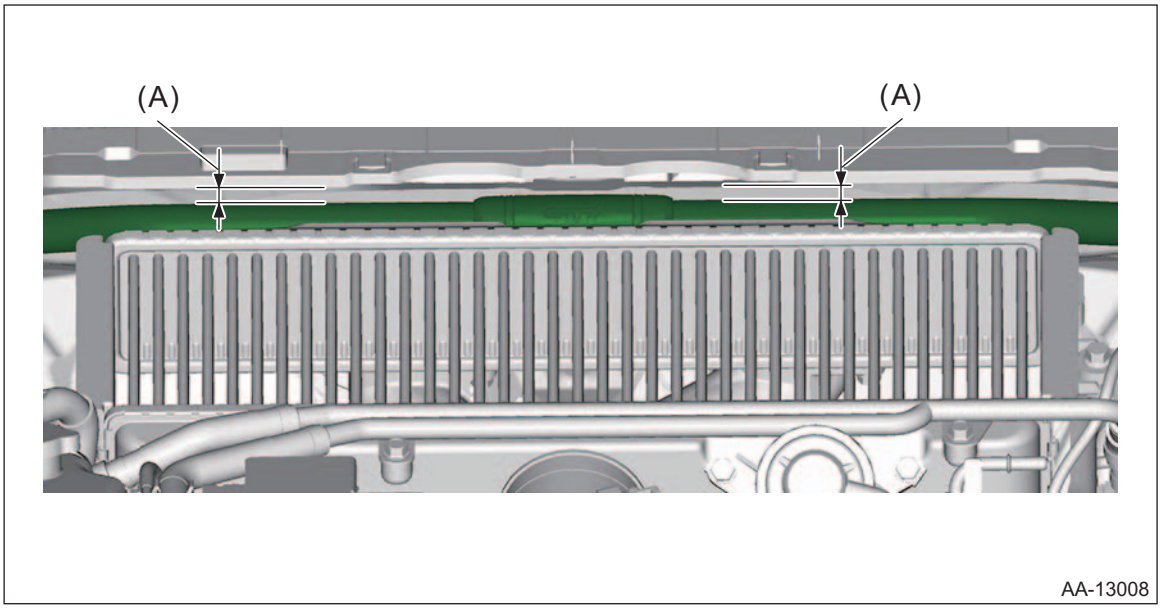


AA-13035



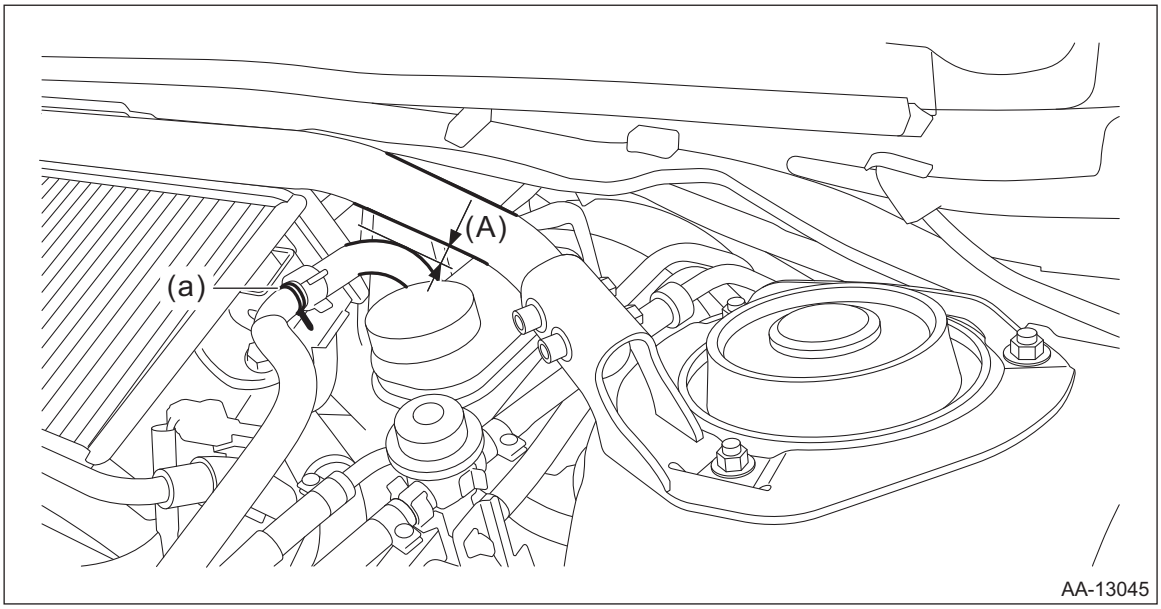
AA-13007

9) Confirm that the clearance (A) between the strut tower bar assembly and the bulkhead is secured equally on both the left and right sides.



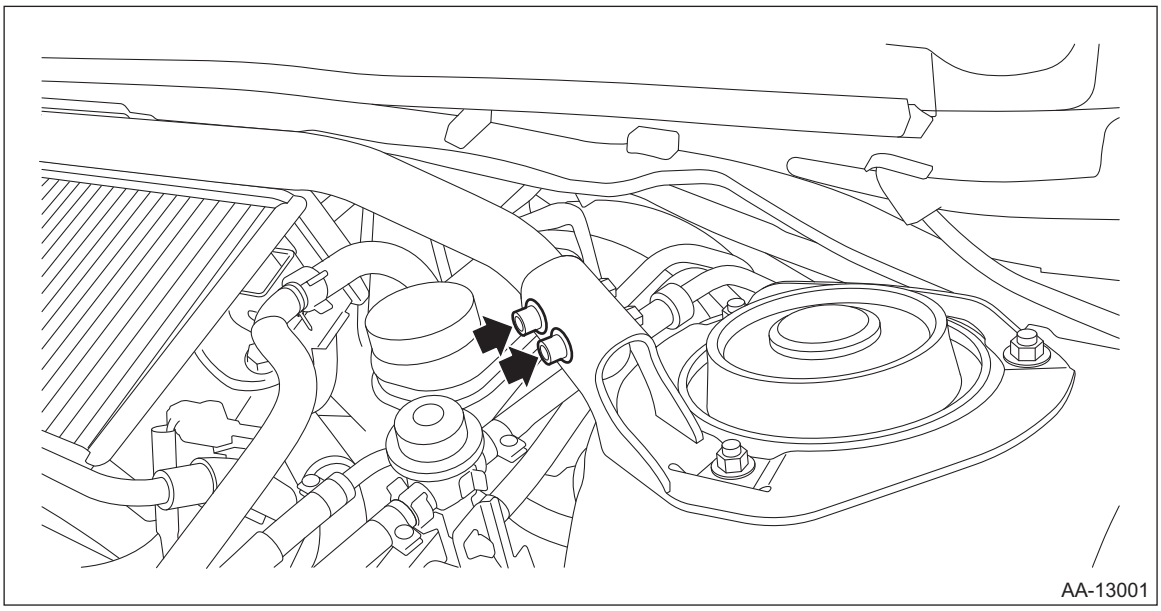
10) Confirm that the clearance (A) between the strut tower bar and the vacuum hose is 15 mm (0.591 in) or more, and fix the vacuum hose with tie-wrap (a).

NOTE:
Use HellermannTyton GalvaLok GL150 or equivalent tie-wraps.



11) Tighten the bolts which hold the strut tower bar to the strut tower bar bracket LH.

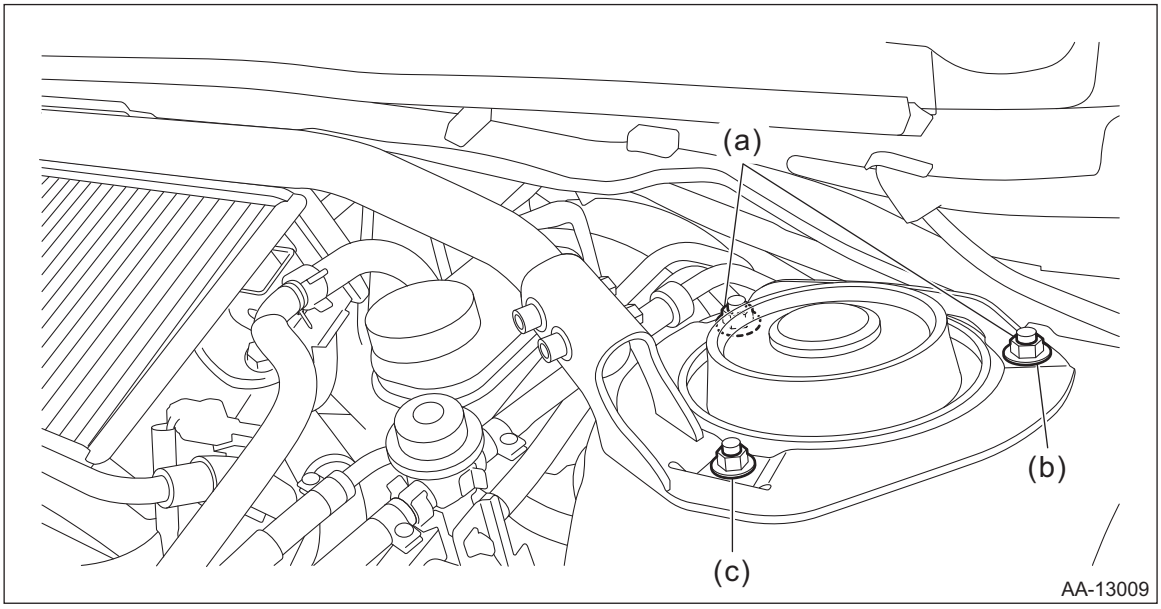
Tightening torque:
15 N·m (1.5 kgf-m, 11.1 ft-lb)



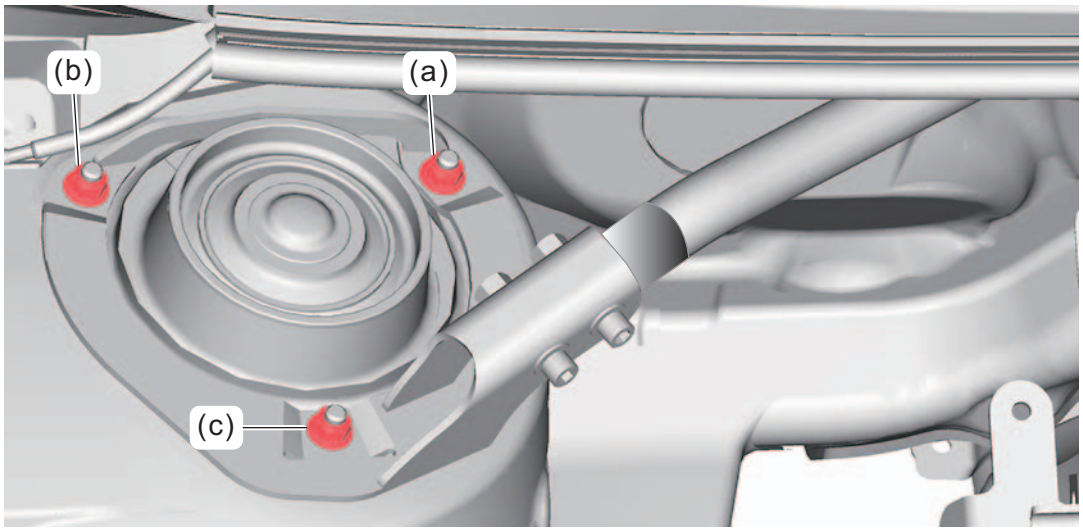
12) Tighten the flange nuts of the strut tower bar bracket in the alphabetical order as shown in the figure.

Tightening torque:
20 N·m (2.0 kgf-m, 14.8 ft-lb)

- LH side



- RH side



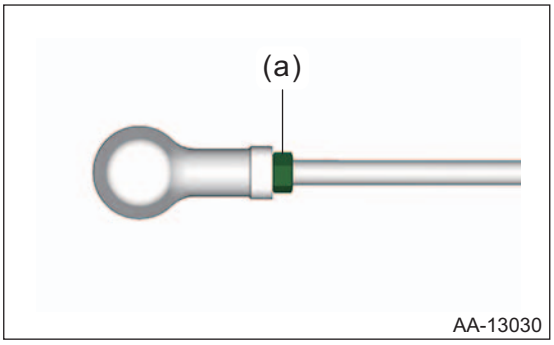
13) Peel off the tape for position alignment from the strut tower bar.

5. Front Flexible Draw Stiffener

A: REMOVAL

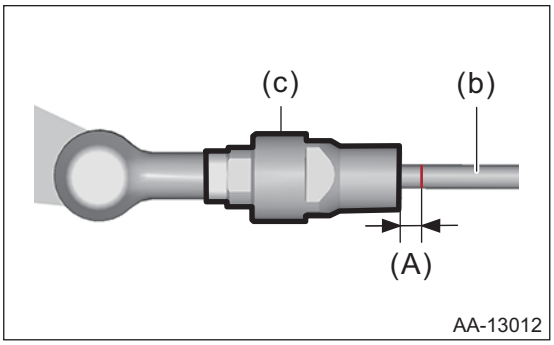
CAUTION:
Be careful not to damage the boot of the link ball.

1) Lift up the vehicle.
2) Loosen the lock nut (a).

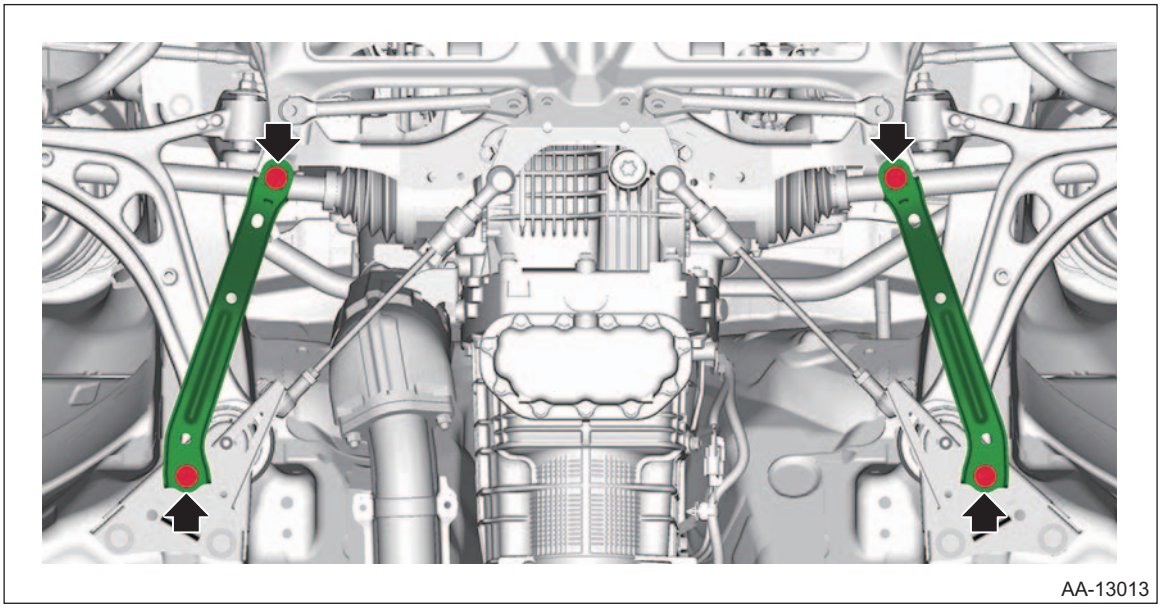


3) Rotate the rod (b) to adjust until the adjustment scale position (A) becomes 0 mm.

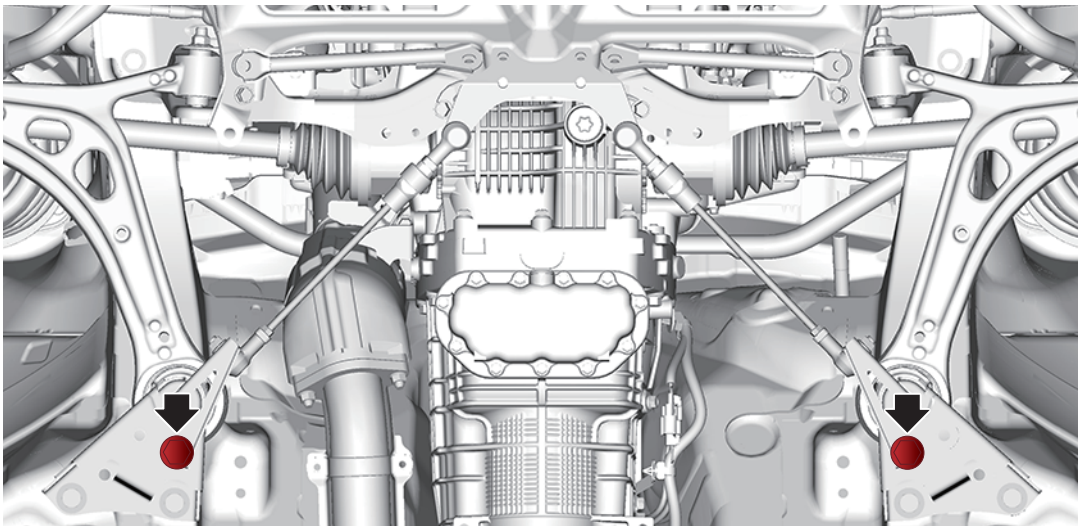
CAUTION:
Do not disassemble or further tighten the section (c) shown in the figure.



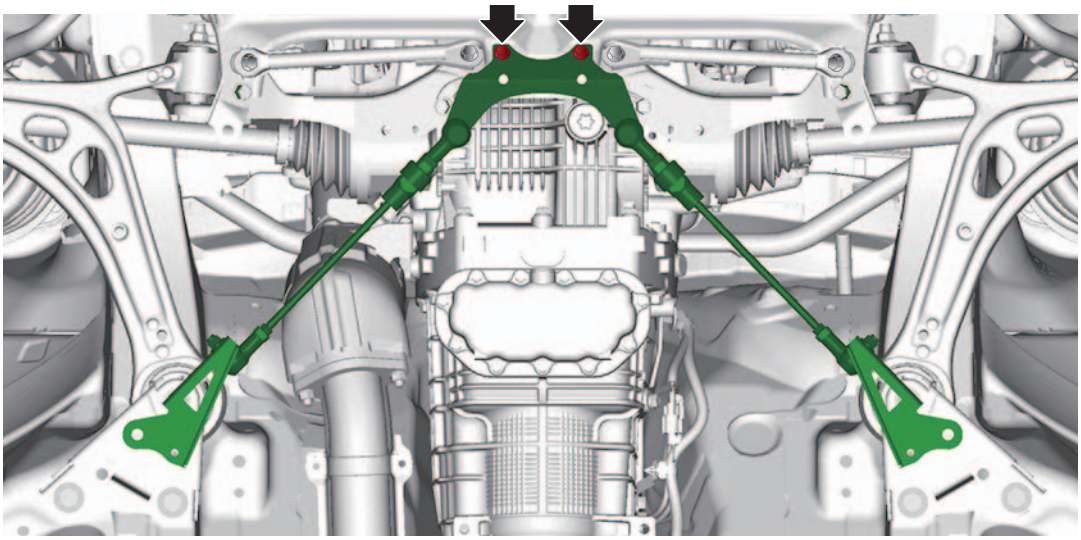
4) Remove the front support.



5) Remove the rear bracket.


AA-13014

6) Remove the front bracket, and remove the flexible draw stiffener - front and the front/rear brackets as a unit.


AA-13015

B: INSTALLATION

CAUTION:
Be careful not to damage the boot of the link ball.

1) Install the front bracket.

Tightening torque:
60 N·m (6.1 kgf-m, 44.3 ft-lb)

2) Install the rear bracket.

NOTE:
If the bolt mounting hole positions are not aligned, adjust the overall length of the flexible draw stiffener - front.

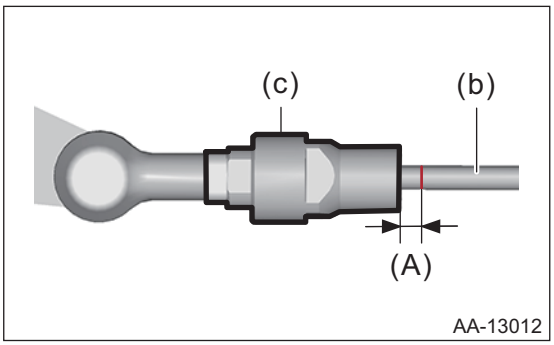
Tightening torque:
33 N·m (3.4 kgf-m, 24.3 ft-lb)

3) Install the front support.

Tightening torque:
100 N·m (10.2 kgf-m, 73.8 ft-lb)

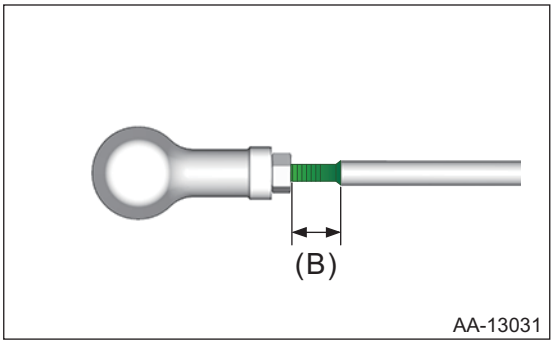
4) Rotate the rod (b) to adjust until the adjustment scale position (A) becomes 2.5 — 3 mm (0.098 — 0.118 in).

CAUTION:
Do not disassemble or further tighten the section (c) shown in the figure.



5) Check that the exposed length (B) of the threaded portion for adjustment is in a range from 1 to 14 mm (0.039 to 0.551 in).

CAUTION:
If the exposed length (B) of the threaded portion for adjustment is not within specification, re-adjust the adjustment scale position. Using with the values exceeding the specification may damage the threaded portion.



6) Tighten the lock nut.

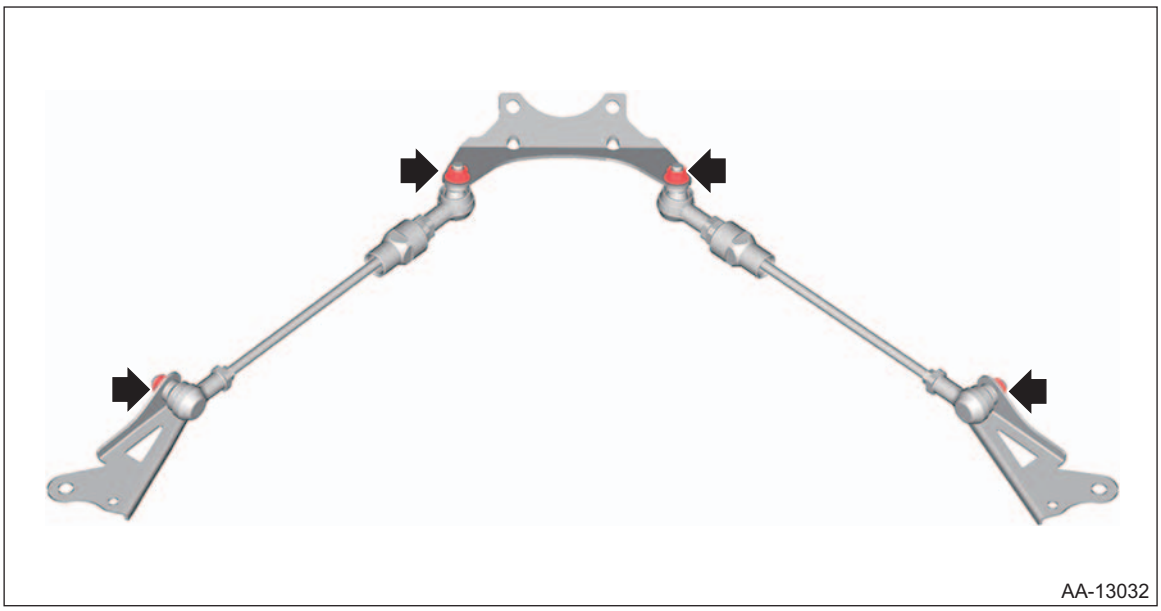
Tightening torque:
6 N·m (0.6 kgf-m, 4.4 ft-lb)

7) Lower the vehicle.

C: DISASSEMBLY

CAUTION:
Be careful not to damage the boot of the link ball.

Remove the front and rear brackets from the flexible draw stiffener - front.



D: ASSEMBLY

CAUTION:
Be careful not to damage the boot of the link ball.
Install the front and rear brackets to the flexible draw stiffener - front.

Tightening torque:
60 N·m (6.1 kgf-m, 44.3 ft-lb)

REAR SUSPENSION

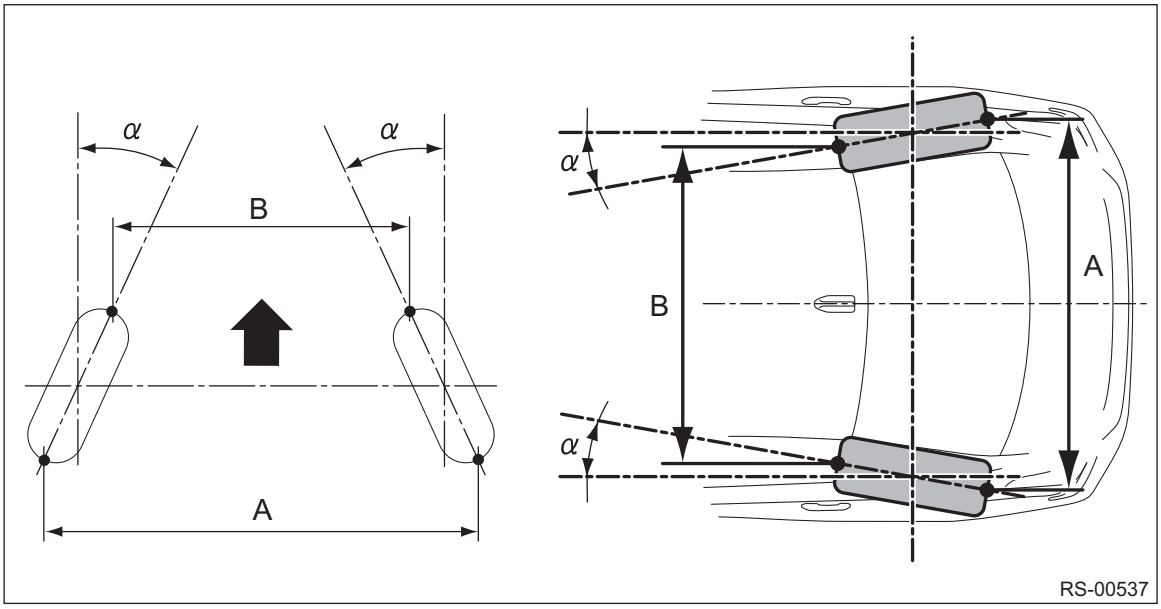
RS

1. General Description

A: SPECIFICATION

Tire size		265/35R19
Wheel arch height (Tolerance: $^{+12\ mm}_{-24\ mm}$ ($^{+0.47\ in}_{-0.94\ in}$))	mm (in)	351 (13.82)
Camber (tolerance: ±0°45′ Differences between RH and LH: 45′ or less)		–1°50′
Toe-in	mm (in)	0±3 (0±0.12)
		Toe angle (sum of both wheels): 0°±16′
Thrust angle (tolerance: 0°00′±30′)		0°00′

NOTE:
- Adjust with the value less than the inspection value, taking aging variation into consideration.
- Front toe-in, rear toe-in and front camber can be adjusted. Adjust if the value of toe-in or camber exceeds the tolerance range of the specification chart.
- Other items except for front toe-in, rear toe-in and front camber that are described in the specification chart cannot be adjusted.
- If other items exceed the tolerance range of the specification chart, check the suspension parts and connections for deformation. If defective, replace with new parts.

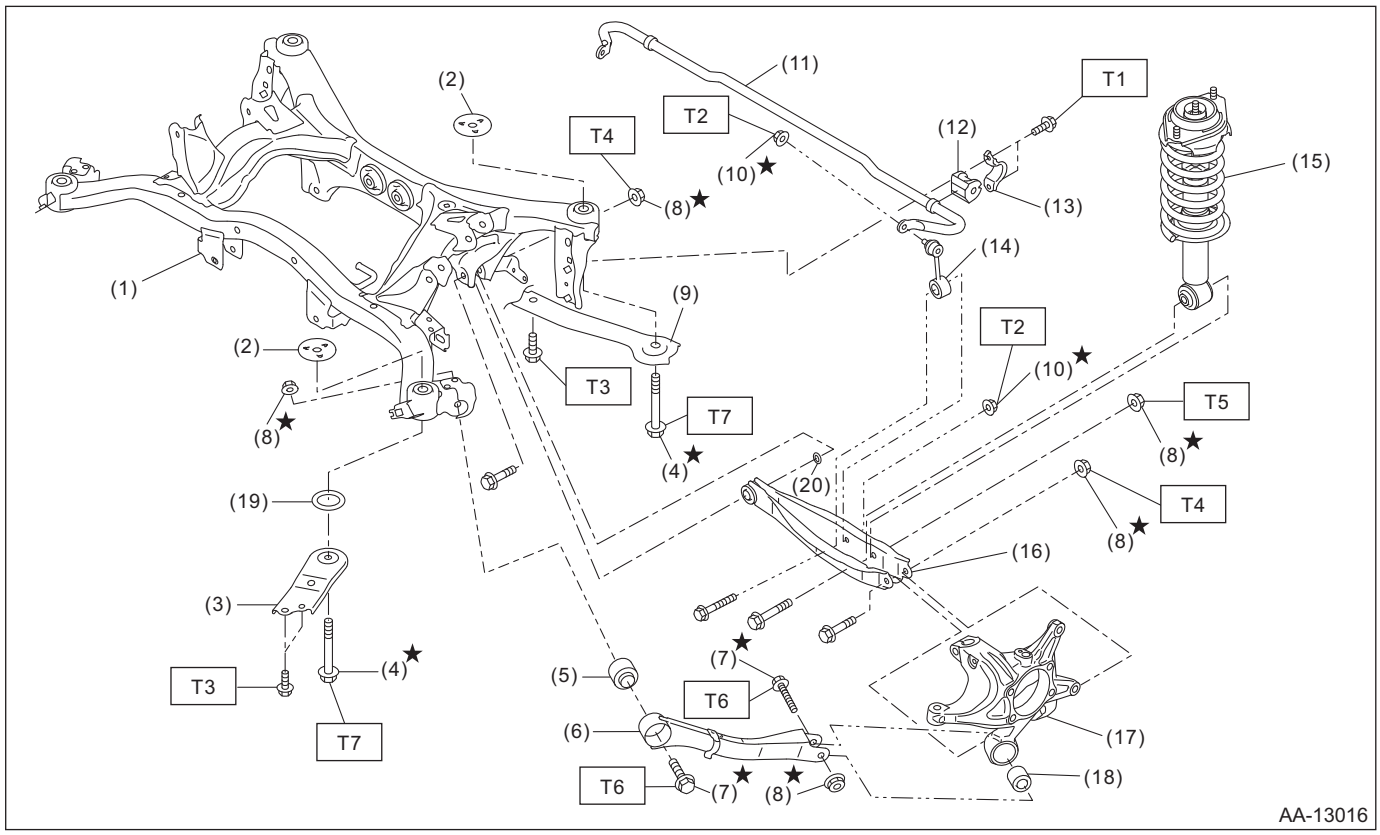


A – B = Positive: Toe-in, Negative: Toe-out

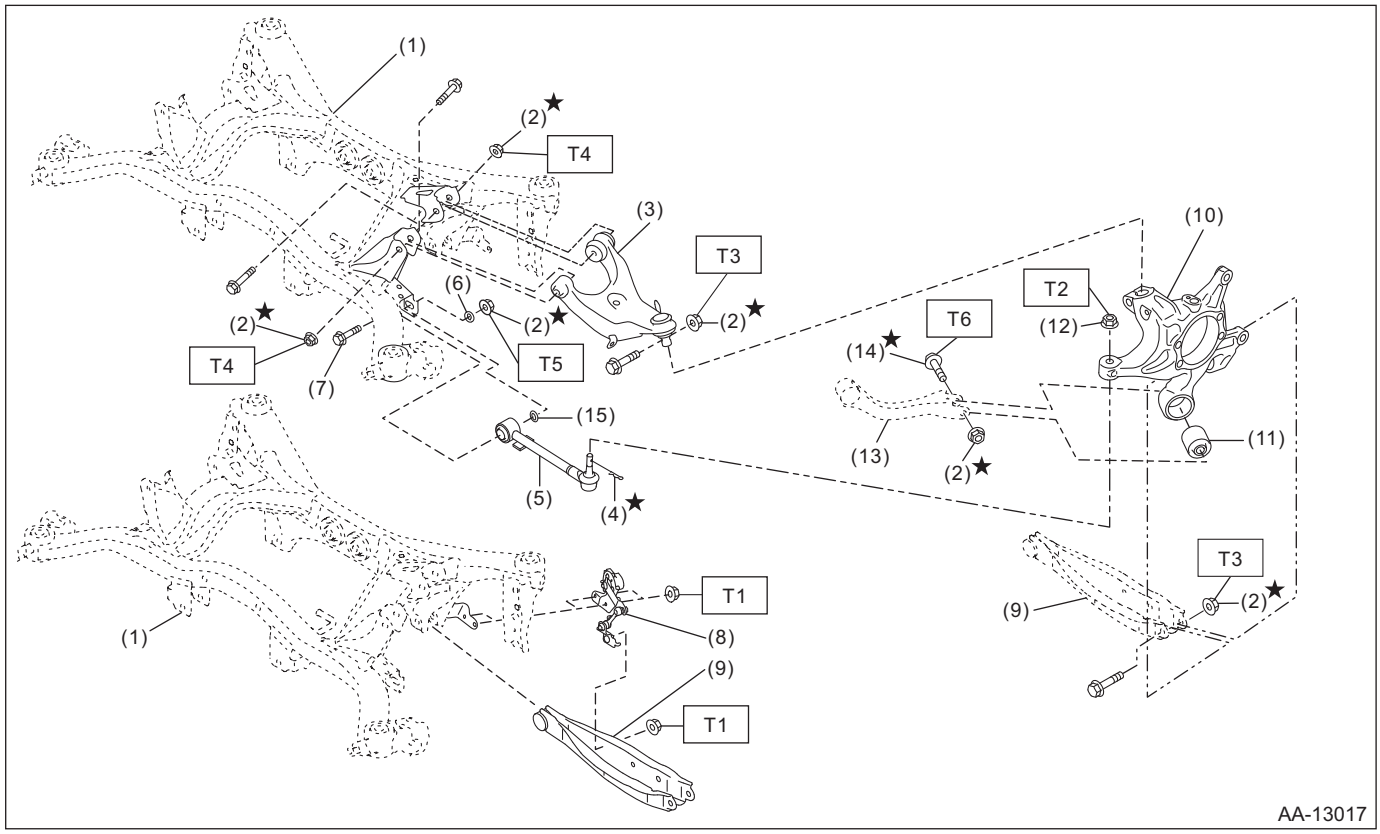
α = Individual toe angles

B: COMPONENT

1. REAR SUSPENSION



(1)	Rear sub frame ASSY	(11)	Rear stabilizer	***Tightening torque: N·m (kgf-m, ft-lb)***	
(2)	Stopper UPR	(12)	Bushing - stabilizer	***T1:***	***30 (3.1, 22.1)***
(3)	Support - sub frame	(13)	Clamp - stabilizer bushing	***T2:***	***38 (3.9, 28)***
(4)	Flange bolt A	(14)	Stabilizer link	***T3:***	***70 (7.1, 51.6)***
(5)	Bushing A - trailing link	(15)	Rear shock absorber ASSY	***T4:***	***80 (8.2, 59)***
(6)	Trailing link	(16)	Rear lateral link ASSY	***T5:***	***90 (9.2, 66.4)***
(7)	Flange bolt B	(17)	Rear axle housing	***T6:***	***110 (11.2, 81.1)***
(8)	Self-locking nut	(18)	Bushing B - rear axle housing	***T7:***	***145 (14.8, 106.9)***
(9)	Rear support sub frame	(19)	Rear sub frame stopper lower		
(10)	Flange nut	(20)	Washer B		

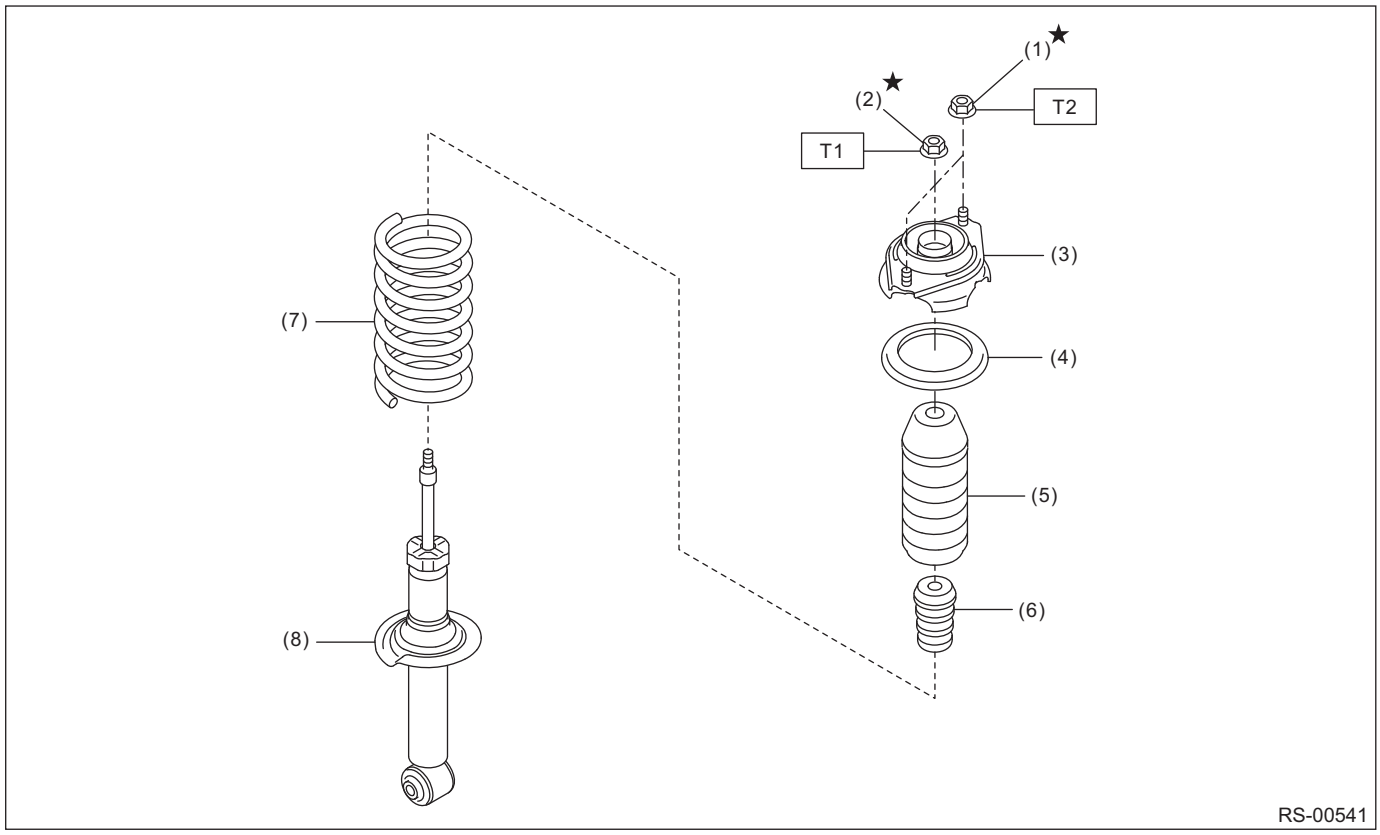


(1) Rear sub frame ASSY
(2) Self-locking nut
(3) Rear upper arm ASSY
(4) Snap pin
(5) Lateral link ASSY - front
(6) Adjusting washer
(7) Adjusting bolt
(8) Sensor ASSY - headlight beam leveler
(9) Lateral link ASSY - rear
(10) Rear axle housing
(11) Bushing B - rear axle housing
(12) Flange nut
(13) Trailing link
(14) Flange bolt
(15) Washer A

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7.5 (0.8, 5.5)
T2: 60 (6.1, 44.3)
T3: 80 (8.2, 59)
T4: 90 (9.2, 66.4)
T5: 100 (10.2, 73.8)
T6: 110 (11.2, 81.1)

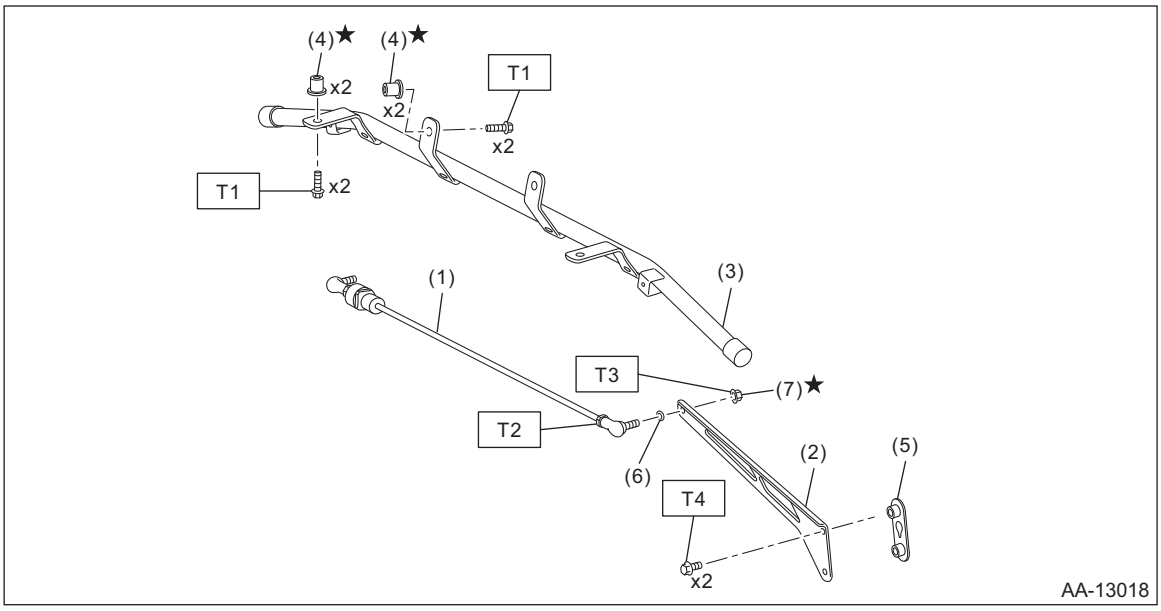
2. REAR SHOCK ABSORBER



(1) Flange nut
(2) Self-locking nut
(3) Shock mount - rear
(4) Rubber seat - shock UPR
(5) Dust cover - rear shock
(6) Helper - rear
(7) Coil spring - rear
(8) Shock absorber COMPL - rear

Tightening torque: N·m (kgf-m, ft-lb)
T1: 25 (2.5, 18.4)
T2: 35 (3.6, 25.8)

3. REAR FLEXIBLE DRAW STIFFENER



(1)	Flexible draw stiffener - rear	(6)	Washer
(2)	Flexible draw stiffener - rear bracket	(7)	Flange nut
(3)	Flexible draw stiffener - rear guard		
(4)	Well nut		
(5)	Nut plate		

Tightening torque: N·m (kgf-m, ft-lb)
T1: 5 (0.5, 3.7)
T2: 6 (0.6, 4.4)
T3: 20 (2.0, 14.8)
T4: 30 (3.1, 22.1)

C: CAUTION

• When performing any work, always wear work clothes, a work cap and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
• When disposing of shock absorbers, be sure to bleed the oil or gas out completely. Also, do not expose to flames or fire.
• When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
• Use SUBARU genuine grease, the recommended or equivalent. Do not mix grease etc. of different grades or manufacturers.
• Do not secure a part in a vise directly. Place cushioning materials such as wood blocks, aluminum plates, or waste cloth between the part and the vise.
• Be sure to tighten fasteners including bolts and nuts to the specified torque.
• Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
• When the suspension-related components have been removed or replaced, perform “VSC(VDC) Centering Mode” of the VDC.
• For parts which are not reusable, always use new parts. Other parts should be replaced with new parts as required.
• When handling oil or fuel, adhere to the following to prevent unexpected accident.
  – Be careful with fire.
  – Prepare a container to catch grease or oil, etc. If any grease or oil spills, wipe it off and clean immediately to prevent from penetrating into floor or flowing outside.
  – Follow all government and local regulations concerning disposal of refuse when disposing.
• Be sure that the surface of brake disc or brake pad is free from grease or oil.
• Before disconnecting connectors of sensors or units, be sure to disconnect the ground terminal from battery.
• Some vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.

D: PREPARATION TOOL

1. GENERAL TOOL

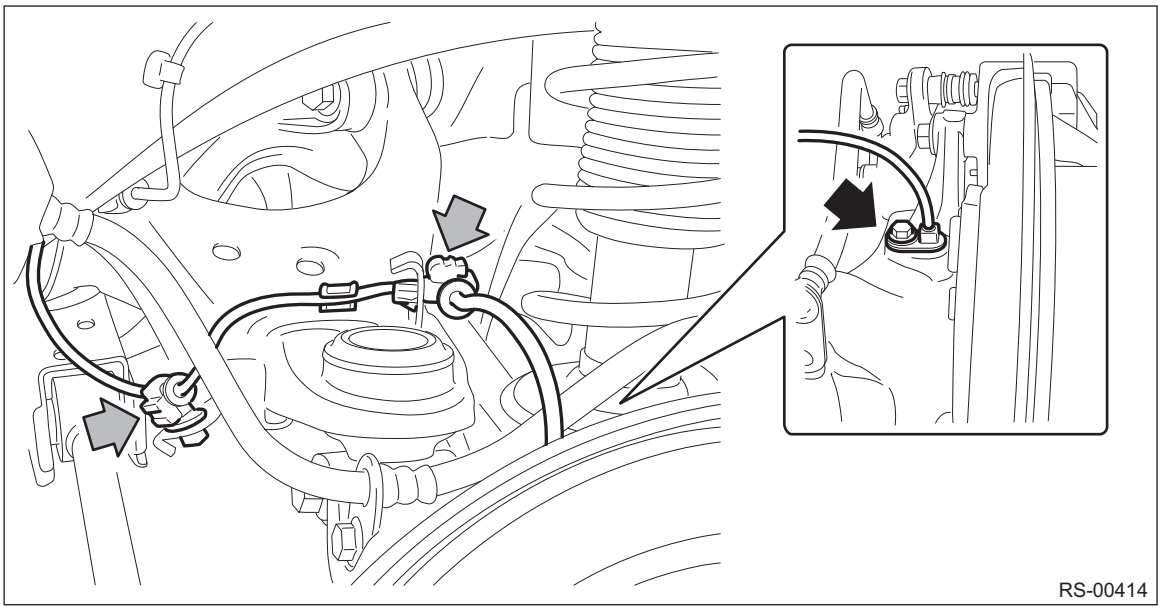
TOOL NAME	REMARKS
Alignment tester	Used for measuring wheel alignment.
Toe-in gauge	Used for toe-in measurement.
Jack	Used for removing and installing suspension.
Bearing puller	Used for removing bushings.
Tie-rod ball joint puller	Used for disconnecting the lateral link assembly - front.

2. Rear Sub Frame

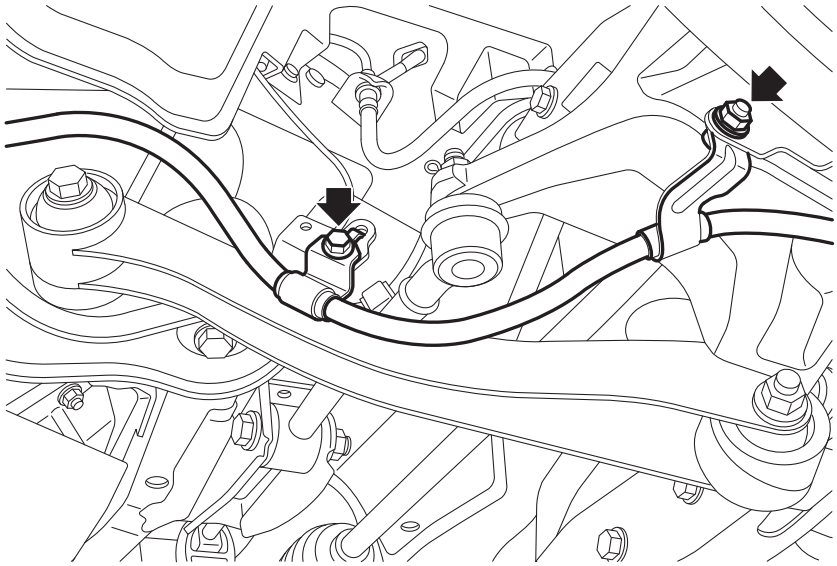
A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Lift up the vehicle, and then remove the rear wheels.
3) Remove the rear exhaust pipe.
4) Remove the propeller shaft assembly.
5) Remove the clip and bolt on the harness clamp, and remove the rear ABS wheel speed sensor.

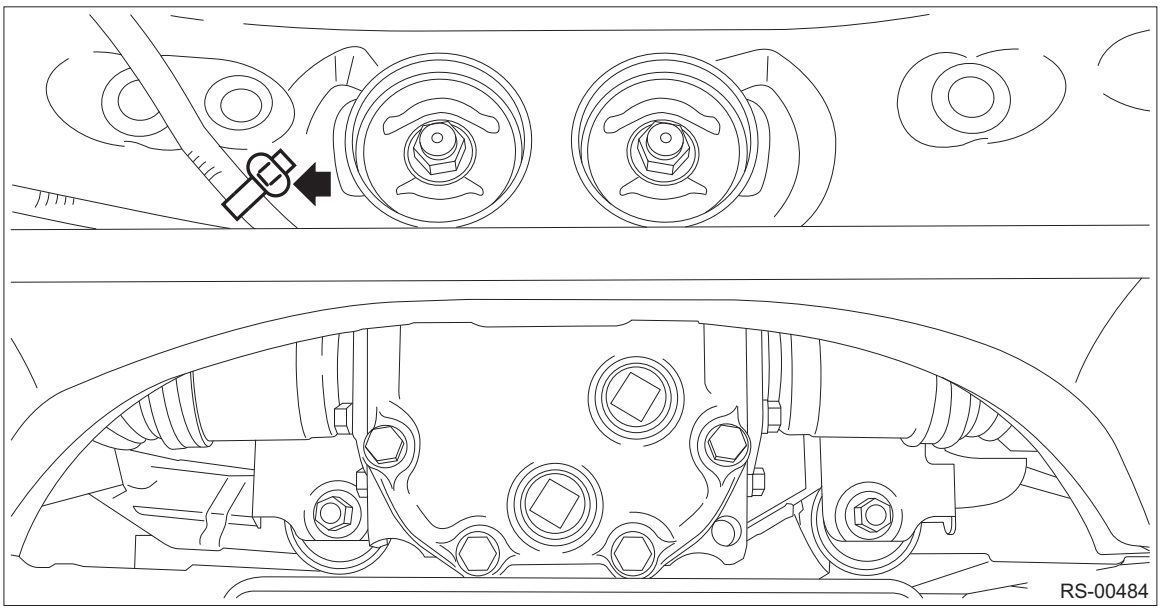
CAUTION:
- **Be careful not to damage the sensor.**
- **Do not apply excessive force to the sensor harness.**


RS-00414

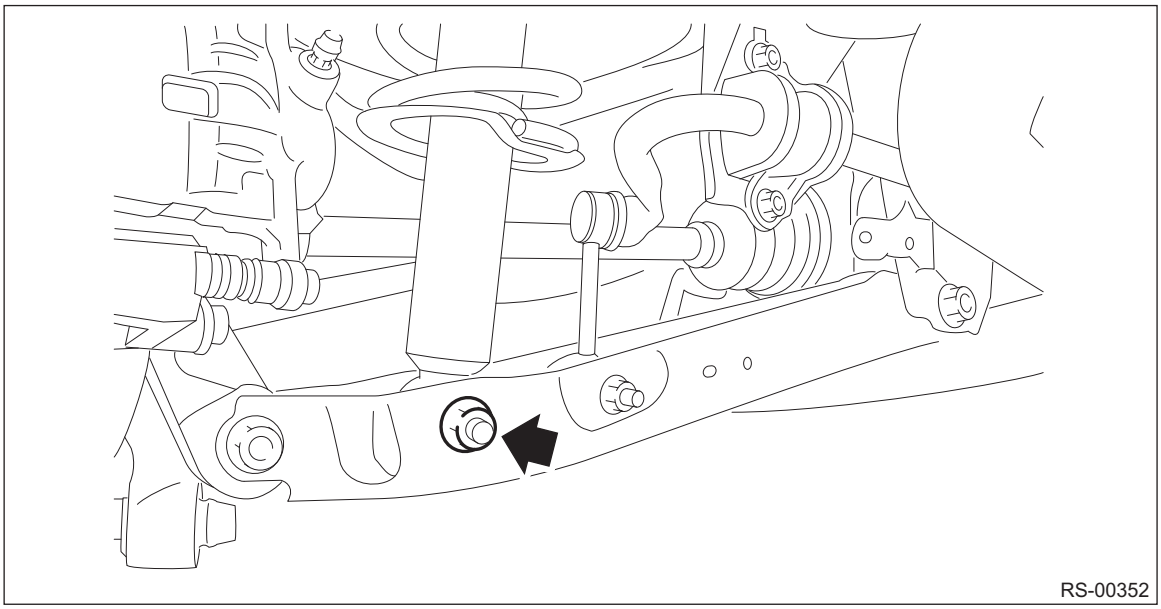
6) Remove the disc brake assembly - rear.
7) Remove the cable assembly - parking brake and the parking brake shoe.


AA-13049

8) Remove the clamp of the sub rear harness.



9) Remove the sensor assembly - headlight beam leveler.
10) Remove the fuel tank protector.
11) Remove the rear sub frame assembly.
(1) Remove the bolts and nuts from the lower side of rear shock absorber assembly.

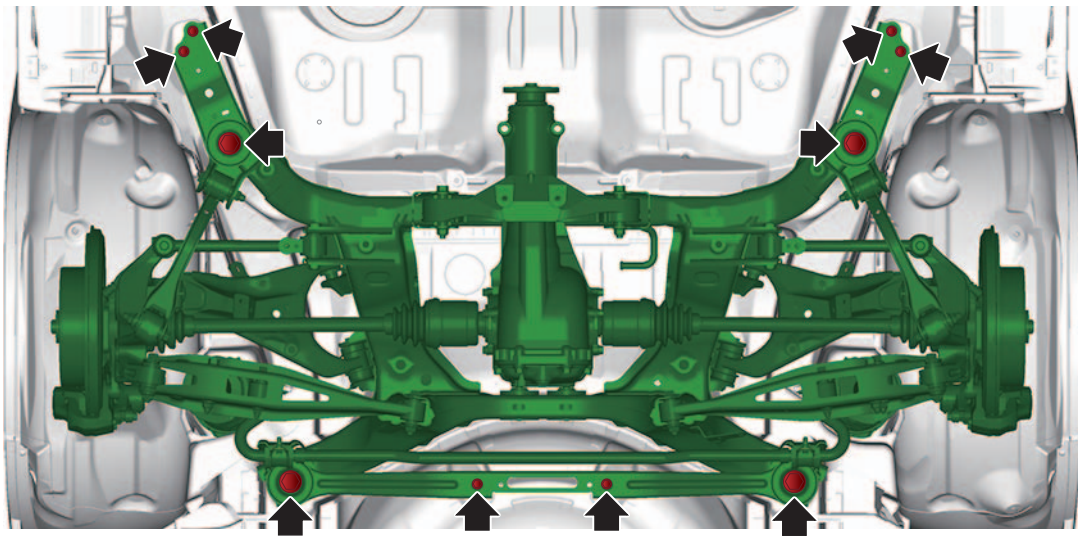


(2) Support the rear sub frame assembly using a transmission jack.

CAUTION:
The rear sub frame assembly is heavy. Make sure that it is horizontally-supported.

(3) Remove the bolts, and remove the left and right supports - sub frame, rear sub frame stopper lower, and the rear support sub frame.
(4) Remove the rear sub frame assembly.

CAUTION:
While checking there is no dragging of harness and wire, lower it slowly with a transmission jack.


AA-13021

12) As necessary, remove each part from the rear sub frame assembly.

B: INSTALLATION

CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Always tighten the bushing in the state where the vehicle is at curb weight and the wheels are in full contact with the ground.**
- **During the installation, make sure that the marking of ABS wheel speed sensor harness does not twist.**

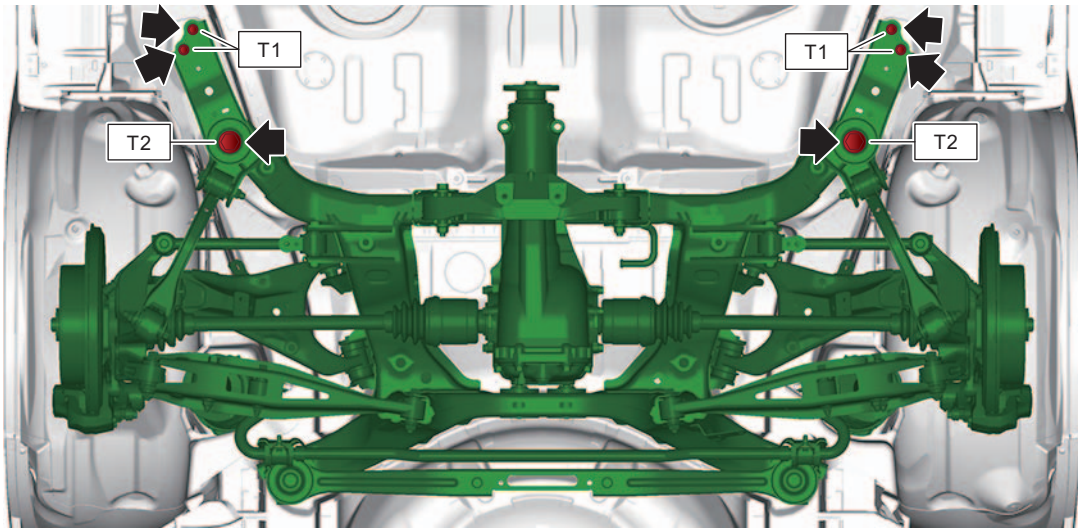
1) Check the removed parts for wear, damage and crack, and repair or replace them if faulty.
2) Install each part to the rear sub frame assembly.

Tightening torque:
Refer to "COMPONENT" of "General Description" for the tightening torque.

3) Install the rear sub frame assembly.
   (1) Lift the rear sub frame assembly using a transmission jack.
   (2) Install the right and left supports - sub frame and the rear sub frame stopper lower.

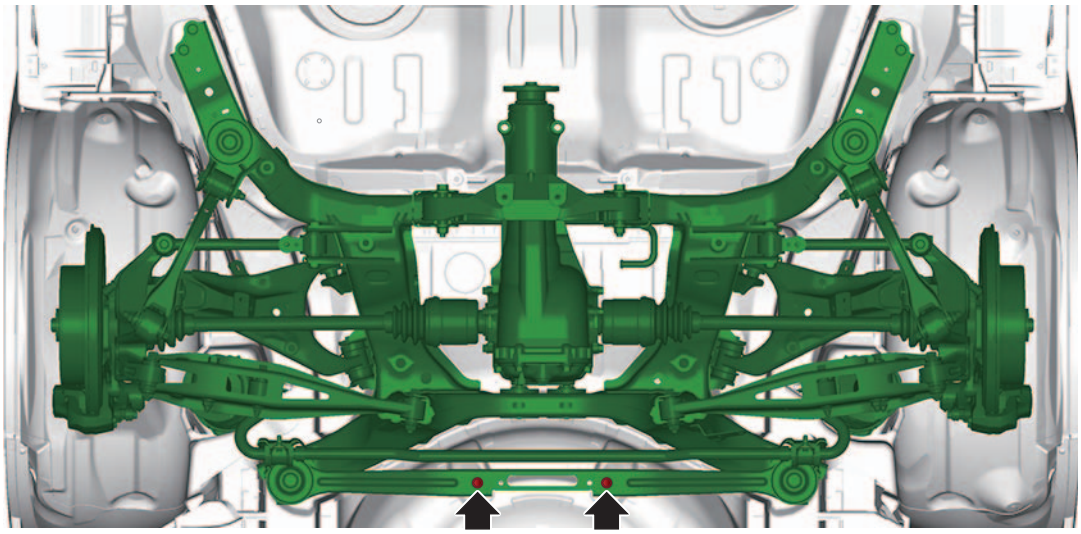
CAUTION:
- **The rear sub frame assembly is heavy. Make sure that it is horizontally-supported.**
- **While checking there is no dragging of harness and wire, raise it slowly with a transmission jack.**

Tightening torque:
T1: 70 N·m (7.1 kgf-m, 51.6 ft-lb)
T2: 145 N·m (14.8 kgf-m, 106.9 ft-lb)

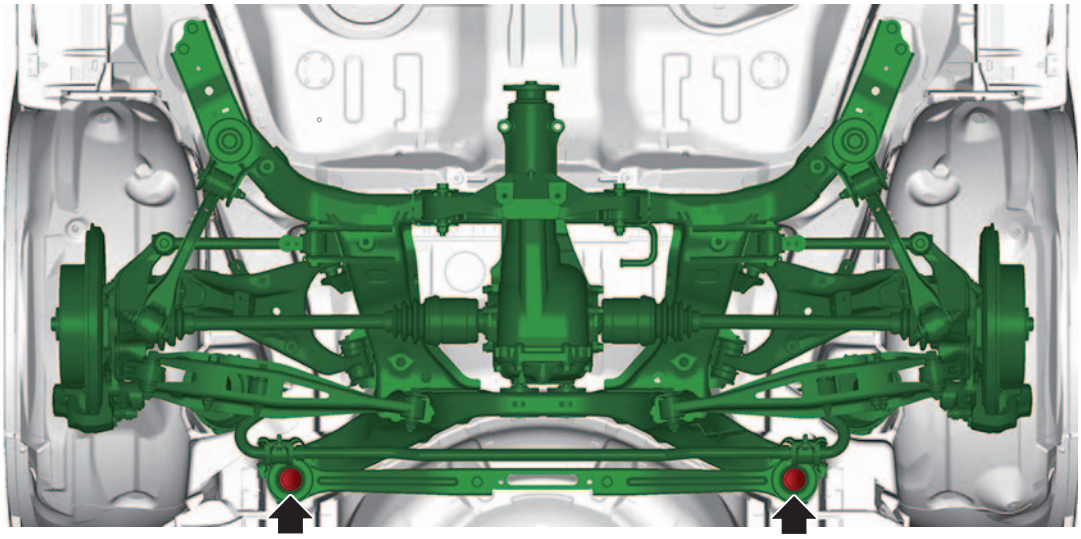


AA-13020

(3) Temporarily tighten the bolts on the body side of the rear support sub frame.


AA-13022

(4) Temporarily tighten the bolts on the rear sub frame side of the rear support sub frame.



(5) Tighten the bolts on the body side.

Tightening torque:
70 N·m (7.1 kgf-m, 51.6 ft-lb)

(6) Tighten the bolts on the rear sub frame side.

Tightening torque:
145 N·m (14.8 kgf-m, 106.9 ft-lb)

4) Install the bolts and nuts on the lower side of rear shock absorber assembly.

Tightening torque:
90 N·m (9.2 kgf-m, 66.4 ft-lb)

5) Install the fuel tank protector.
6) Install the sensor assembly - headlight beam leveler.

CAUTION:
Do not apply impact to the sensor assembly - headlight beam leveler or forcibly move the arm. Doing so may cause sensor damage and malfunction.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

7) Install the clamp of the sub rear harness.
8) Install the cable assembly - parking brake.

Tightening torque:
18 N·m (1.8 kgf-m, 13.3 ft-lb)

9) Install the brake hose bracket and the disc brake assembly - rear.

Tightening torque:
Brake hose bracket: 33 N·m (3.4 kgf-m, 24.3 ft-lb)
Disc brake assembly - rear: 73 N·m (7.4 kgf-m, 53.8 ft-lb)

10) Install the rear ABS wheel speed sensor.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

11) Install the propeller shaft assembly.
12) Install the rear exhaust pipe.
13) Install the rear wheels and lower the vehicle.

Tightening torque:
120 N·m (12.2 kgf-m, 88.5 ft-lb)

14) Inspect the wheel alignment and adjust if necessary.

CAUTION:
When the wheel alignment has been adjusted, perform adjustment of the VDC sensor midpoint setting mode.

15) Connect the battery ground terminal.
16) Perform reinitialization of the auto headlight beam leveler system.

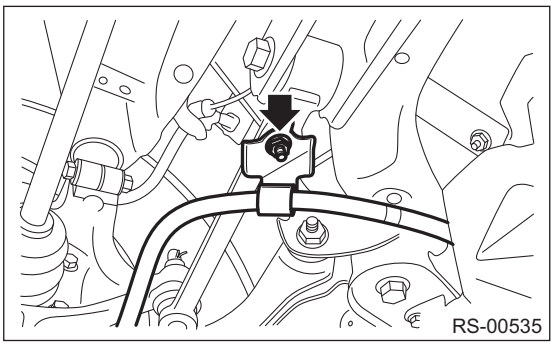
C: INSPECTION

Check the removed parts for wear, damage and crack, and repair or replace them if faulty.

3. Front Lateral Link

A: REMOVAL

1) Lift up the vehicle, and then remove the rear wheels.
2) Remove the trailing link.
3) Remove the nuts, and remove the cable assembly - parking brake.

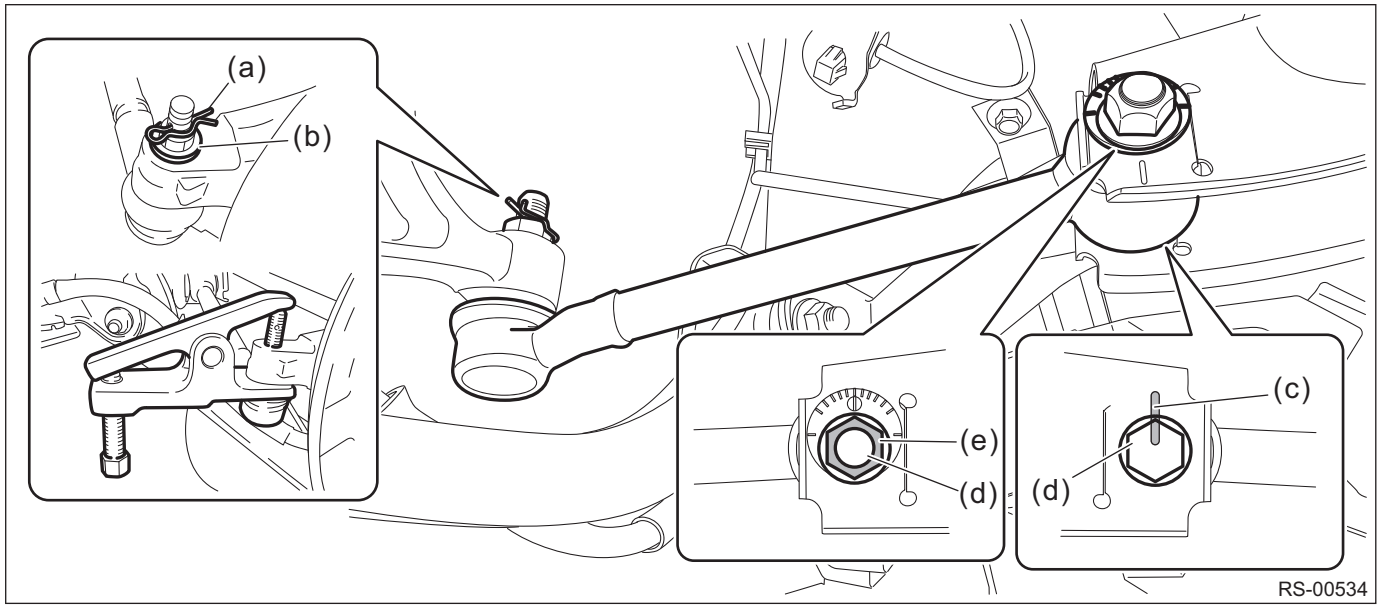


4) Remove the lateral link assembly - front.
   (1) Remove the snap pin (a) and nut (b).
   (2) Disconnect the rear axle housing and the ball joint.

Preparation tool:
Tie-rod ball joint puller

   (3) Scribe alignment marks (c) on the adjusting bolt for lateral link assembly - front and on the rear sub frame assembly.
   (4) Remove the adjusting bolt (d), and remove the lateral link assembly - front and the washer A.

CAUTION:
When removing the adjusting bolt (d), make sure to fix the bolt head in place when loosening the nut (e).



B: INSTALLATION

CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Always tighten the bushing in the state where the vehicle is at curb weight and the wheels are in full contact with the ground.**

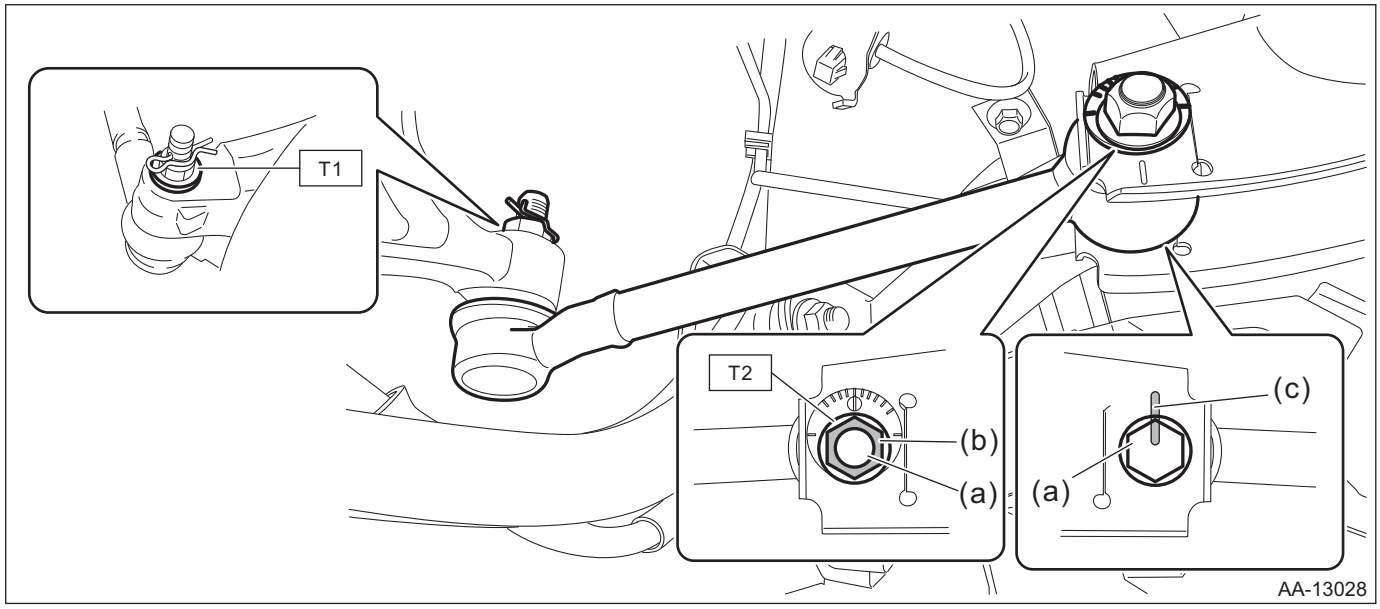
1) Before installation, inspect the following items and replace any faulty part with a new one.
- Visually check the lateral link assembly - front for damage and deformation.

- Check the pillow ball bushing for looseness.
- Visually check the boot on the ball joint for abnormal cracks, fatigue or damage.

2) Install the lateral link assembly - front.

CAUTION:
• When installing the lateral link assembly - front, install the washer A on the nut side of the pillow ball bushing.
• When installing the adjusting bolt (a), make sure to fix the bolt head in place and tighten the nut side (b).
• Align alignment marks (c) on the adjusting bolt for lateral link assembly - front and on the rear sub frame assembly.

Tightening torque:
T1: 60 N·m (6.1 kgf-m, 44.3 ft-lb)
T2: 100 N·m (10.2 kgf-m, 73.8 ft-lb)



3) Install the nuts, and install the cable assembly - parking brake.

Tightening torque:
18 N·m (1.8 kgf-m, 13.3 ft-lb)

4) Install the trailing link.

Tightening torque:
110 N·m (11.2 kgf-m, 81.1 ft-lb)

5) Install the rear wheels and lower the vehicle.

Tightening torque:
120 N·m (12.2 kgf-m, 88.5 ft-lb)

6) Inspect the wheel alignment and adjust if necessary.

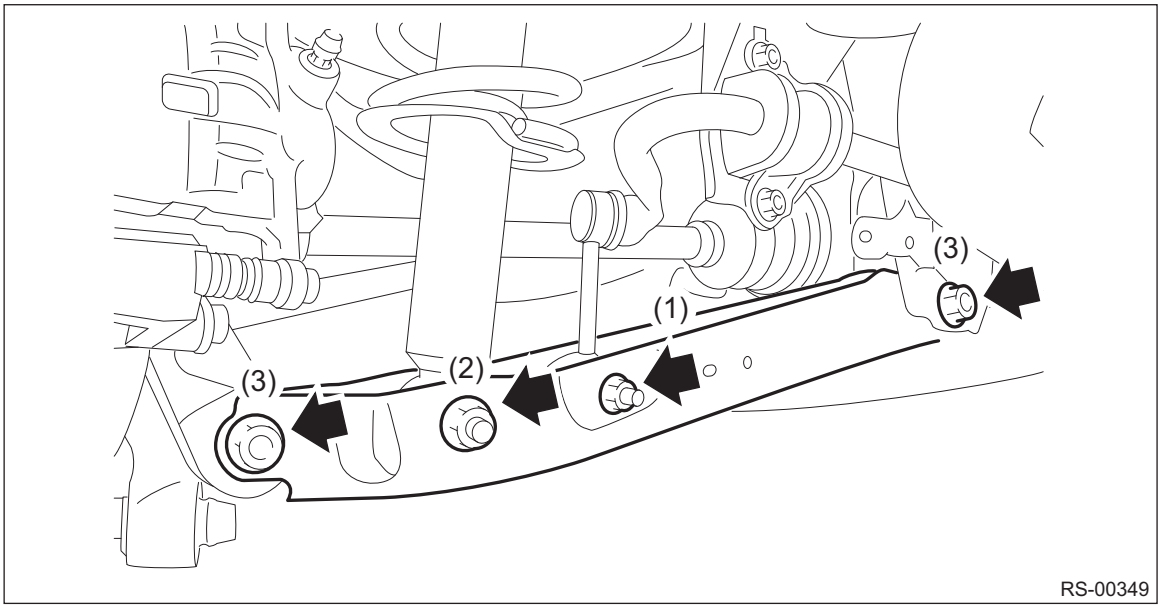
CAUTION:
When the wheel alignment has been adjusted, perform adjustment of the VDC sensor midpoint setting mode.

7) Perform reinitialization of the auto headlight beam leveler system.

4. Rear Lateral Link

A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Lift up the vehicle, and then remove the rear wheels.
3) Remove the sensor assembly - headlight beam leveler.
4) Remove the lateral link assembly - rear.
   (1) Remove the nut and disconnect the rear stabilizer link.
   (2) Remove the bolts and nuts, and remove the lower side of rear shock absorber assembly.
   (3) Remove the bolts and nuts, and remove the lateral link assembly - rear and the washer A.



B: INSTALLATION

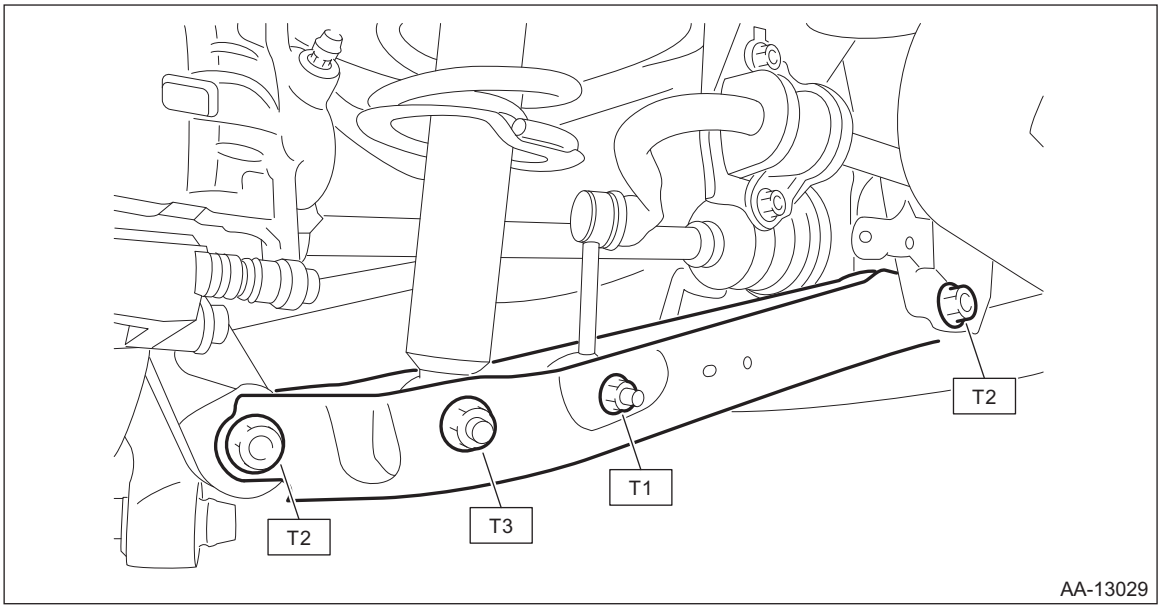
CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Always tighten the bushing in the state where the vehicle is at curb weight and the wheels are in full contact with the ground.**

1) Before installation, inspect the following items and replace any faulty part with a new one.
- Visually check the lateral link assembly - rear for damage and deformation.
- Visually check the bushing for abnormal cracks, fatigue or damage.

2) Install the lateral link assembly - rear.

CAUTION:
When installing the lateral link assembly - rear, install the washer B on the nut side of the pillow ball bushing.

Tightening torque:
T1: 38 N·m (3.9 kgf-m, 28 ft-lb)
T2: 80 N·m (8.2 kgf-m, 59 ft-lb)
T3: 90 N·m (9.2 kgf-m, 66.4 ft-lb)



3) Install the sensor assembly - headlight beam leveler.

CAUTION:
Do not apply impact to the sensor assembly - headlight beam leveler or forcibly move the arm. Doing so may cause sensor damage and malfunction.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)
4) Install the rear wheels and lower the vehicle.

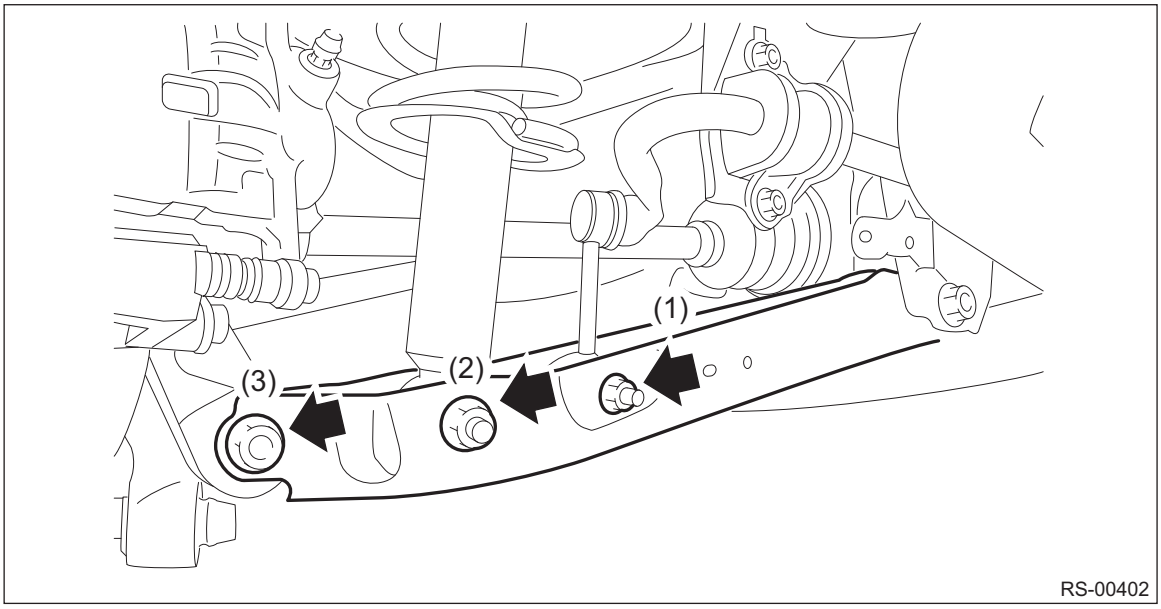
Tightening torque:
120 N·m (12.2 kgf-m, 88.5 ft-lb)
5) Connect the battery ground terminal.
6) Inspect the wheel alignment and adjust if necessary.

CAUTION:
When the wheel alignment has been adjusted, perform adjustment of the VDC sensor midpoint setting mode.
7) Perform reinitialization of the auto headlight beam leveler system.

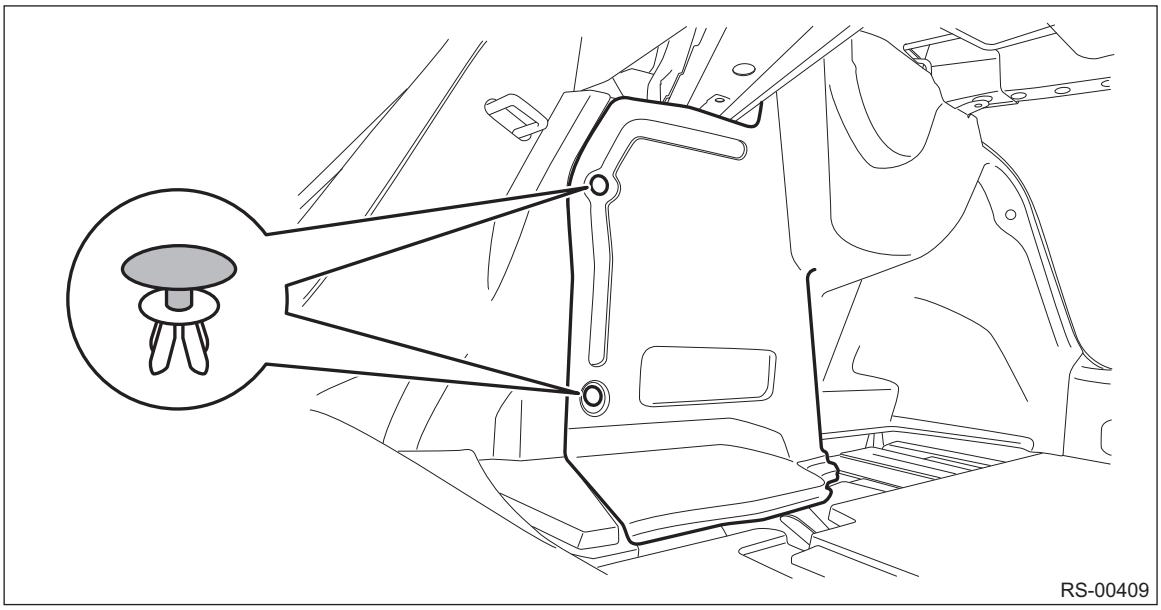
5. Rear Shock Absorber

A: REMOVAL

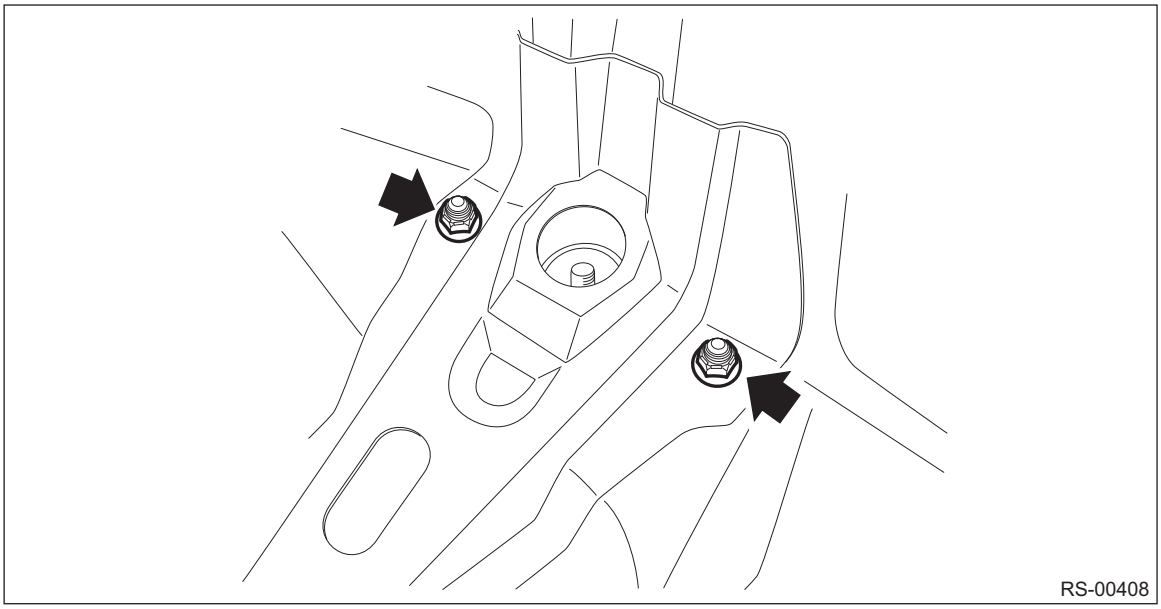
1) Disconnect the ground terminal from battery.
2) Lift up the vehicle, and then remove the rear wheels.
3) Remove the sensor assembly - headlight beam leveler.
4) Remove the bolts and nuts, and lower the lateral link assembly - rear.
   (1) Remove the nut and disconnect the rear stabilizer link.
   (2) Remove the bolts from the lower side of rear shock absorber assembly.
   (3) Disconnect the rear axle housing from the lateral link assembly - rear.



5) Take out the mat - trunk.
6) Tilt the rear seat backrest forward.
7) Remove the clips, and turn over the trim panel - trunk side.



8) Remove the nuts on the upper side of rear shock absorber assembly.



9) Lower the lateral link assembly - rear, and remove the rear shock absorber assembly.

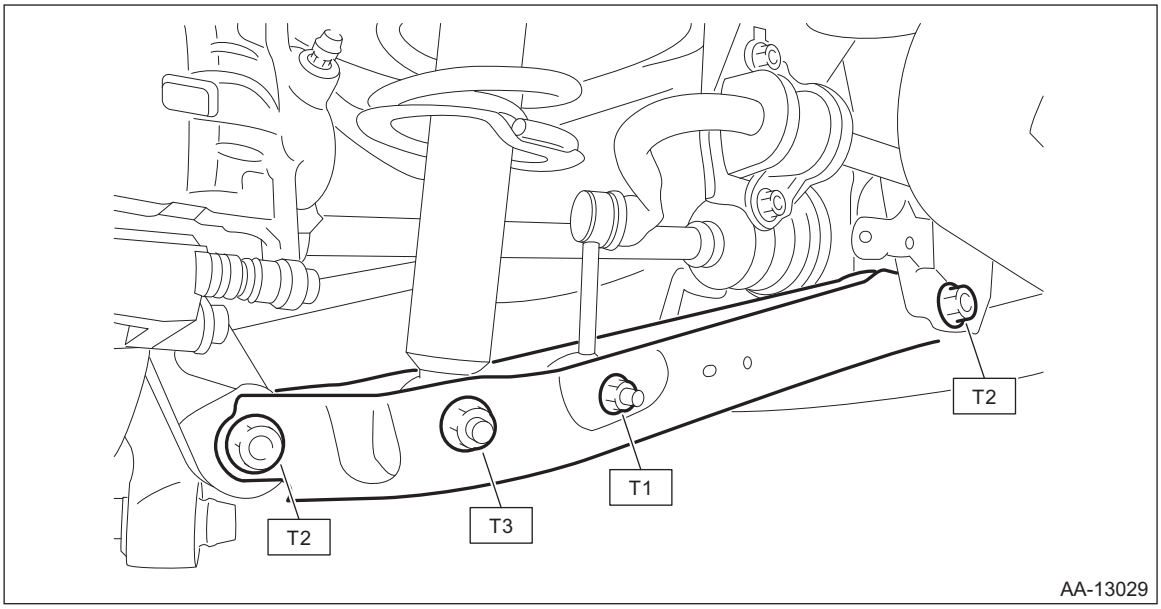
B: INSTALLATION

CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Always tighten the bushing in the state where the vehicle is at curb weight and the wheels are in full contact with the ground.**

1) Install the rear shock absorber assembly.
   (1) Lower the lateral link assembly - rear, and place the rear shock absorber assembly inside.
   (2) Lower the lateral link assembly - rear, and install the upper side of rear shock absorber assembly.

Tightening torque:
35 N·m (3.6 kgf-m, 25.8 ft-lb)
   (3) Install the bolts on the lower side of rear shock absorber assembly.
   (4) Install the lateral link assembly - rear and the stabilizer link.

Tightening torque:
T1: 38 N·m (3.9 kgf-m, 28 ft-lb)
T2: 80 N·m (8.2 kgf-m, 59 ft-lb)
T3: 90 N·m (9.2 kgf-m, 66.4 ft-lb)

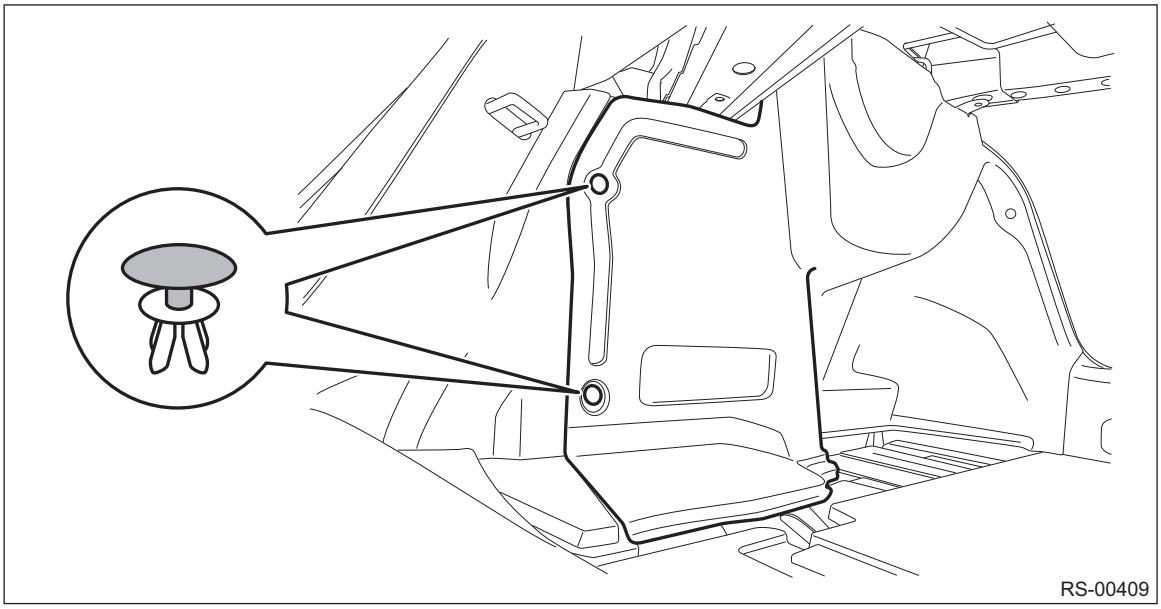


(5) Install the sensor assembly - headlight beam leveler.

CAUTION:
Do not apply impact to the sensor assembly - headlight beam leveler or forcibly move the arm. Doing so may cause sensor damage and malfunction.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

2) Install the clips, and install the trim panel - trunk side.



3) Install the mat - trunk, and return the rear seat backrest to the lock position.
4) Install the rear wheels and lower the vehicle.

Tightening torque:
120 N·m (12.2 kgf-m, 88.5 ft-lb)

5) Inspect the wheel alignment and adjust if necessary.

CAUTION:
When the wheel alignment has been adjusted, perform adjustment of the VDC sensor midpoint setting mode.
6) Connect the battery ground terminal.
7) Perform reinitialization of the auto headlight beam leveler system.

C: INSPECTION

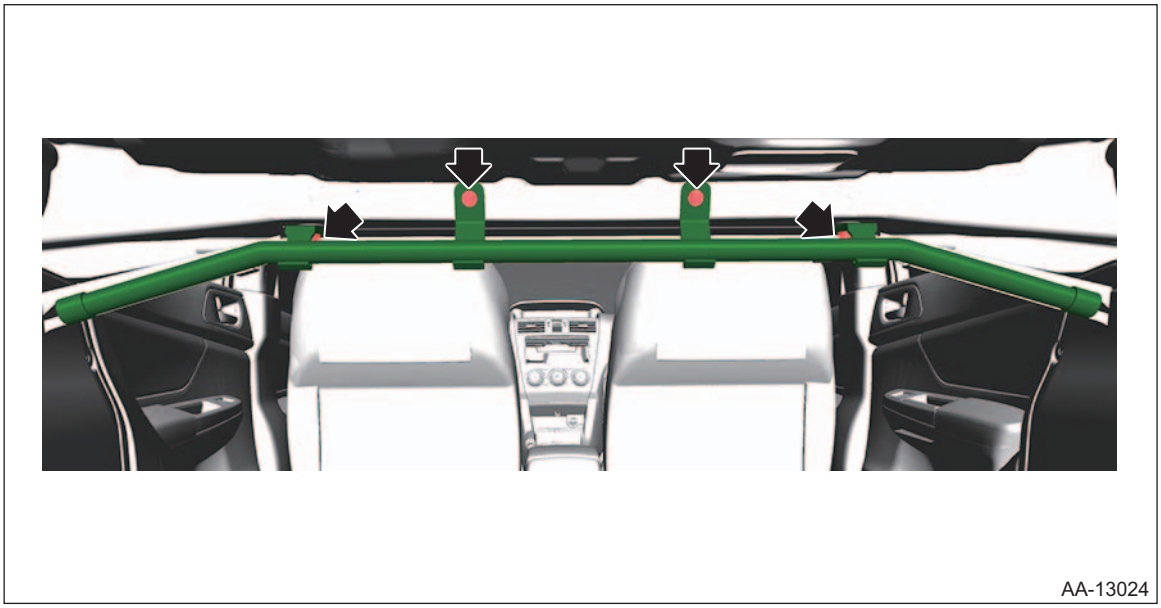
Refer to “Front Strut” in “FRONT SUSPENSION” section for inspection procedures.

6. Rear Flexible Draw Stiffener

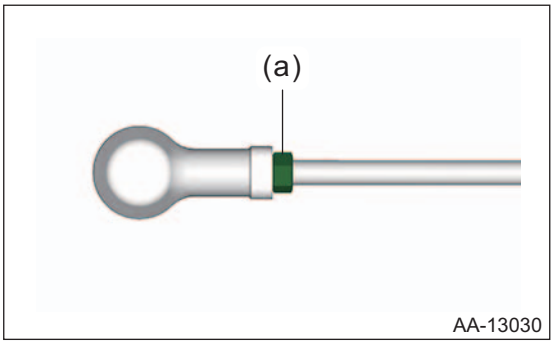
A: REMOVAL

CAUTION:
Be careful not to damage the boot of the link ball.

1) Disconnect the ground terminal from battery.
2) Tilt the rear seat backrest forward.
3) Remove the mat - trunk.
4) Remove the trim panel - trunk rear.
5) Remove the trim panel - trunk side.
6) Disconnect the connector of the rear antenna assembly - interior.
7) Remove the bolts, and then remove the flexible draw stiffener - rear guard.

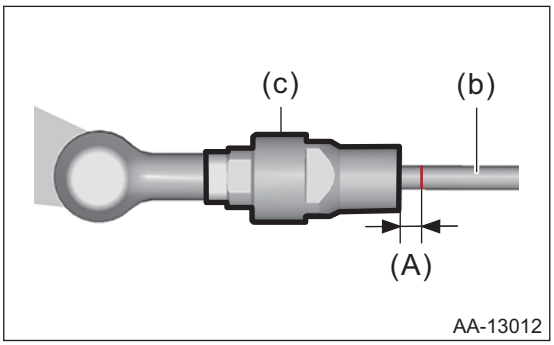


8) Loosen the lock nut (a).

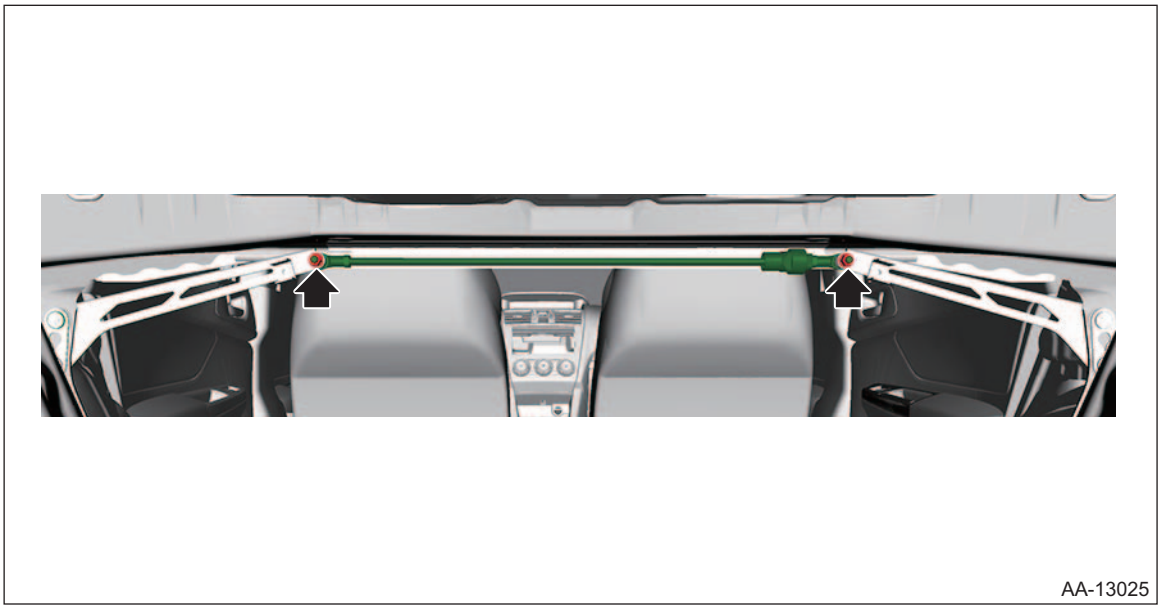


9) Rotate the rod (b) to adjust until the adjustment scale position (A) becomes 0 mm.

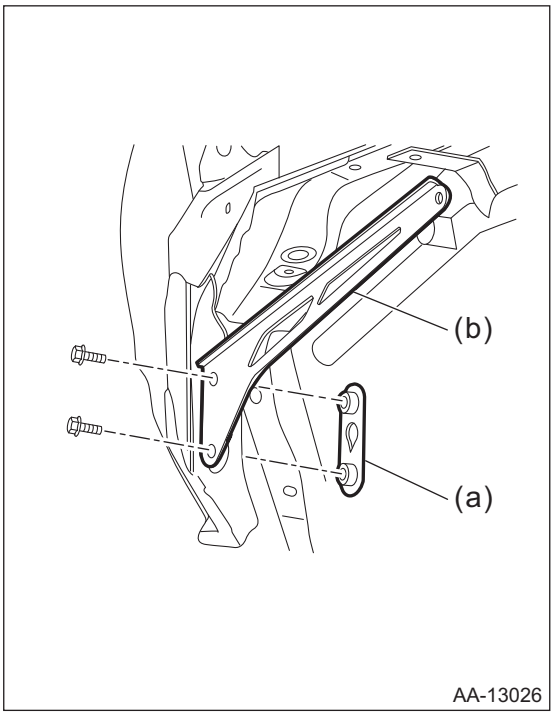
CAUTION:
Do not disassemble or further tighten the section (c) shown in the figure.



10) Remove the nuts, and then remove the flexible draw stiffener - rear.



11) Remove the nut plate (a) and the flexible draw stiffener - rear bracket (b).

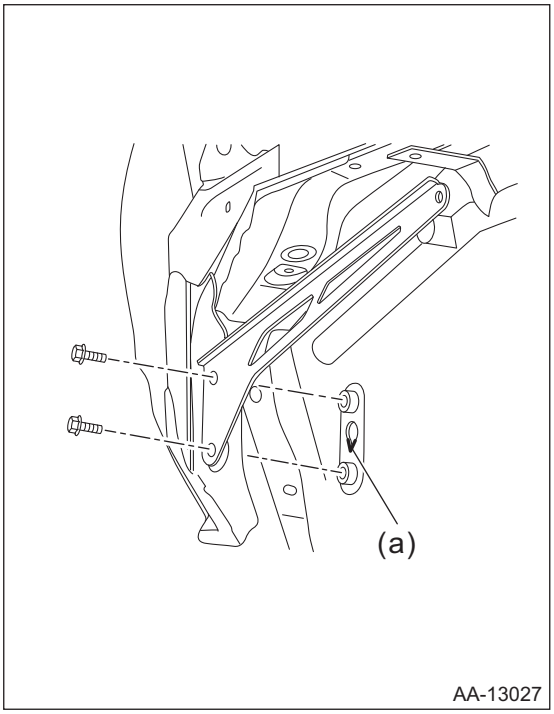


B: INSTALLATION

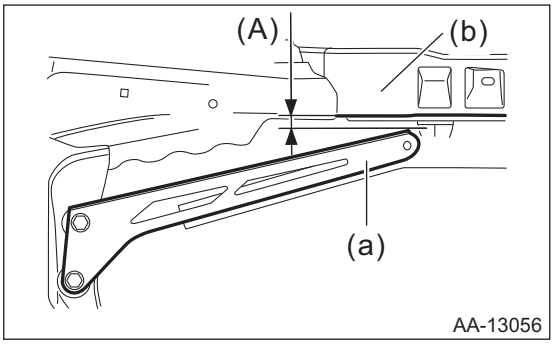
CAUTION:
- **For parts which are not reusable, always use new parts.**
- **Be careful not to damage the boot of the link ball.**

NOTE:
For work procedures of installing a new trim panel - trunk side, refer to “Trunk Room Trim” of “EXTERIOR/ INTERIOR TRIM” section.
1) Install the nut plate and the flexible draw stiffener - rear bracket, and temporarily tighten the bolts.

NOTE:
Install the nut plate with its cutout portion (a) facing the lower side.



2) Adjust the gap (A) between the flexible draw stiffener - rear bracket (a) and the body (b) to be 8 — 12 mm (0.315 — 0.472 in).

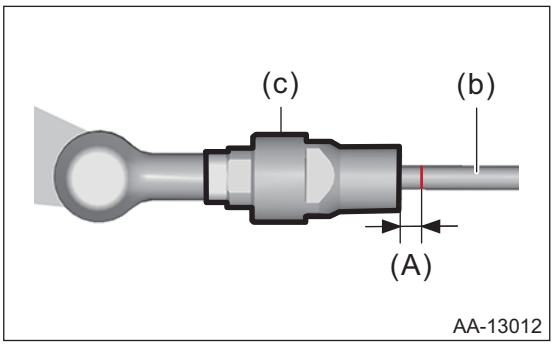


3) Tighten the bolts temporarily tightened in step 1).

Tightening torque:
30 N·m (3.1 kgf-m, 22.1 ft-lb)
4) Install the flexible draw stiffener - rear.

Tightening torque:
20 N·m (2.0 kgf-m, 14.8 ft-lb)
5) Rotate the rod (b) to adjust until the adjustment scale position (A) becomes 4.5 — 5 mm (0.177 — 0.197 in).

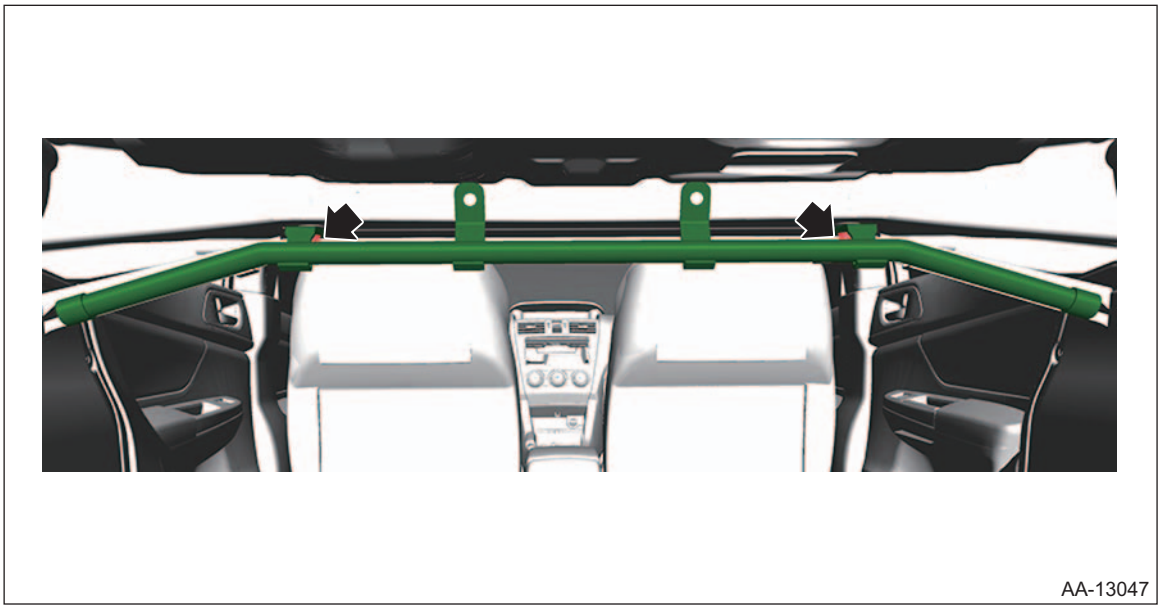
CAUTION:
Do not disassemble or further tighten the section (c) shown in the figure.



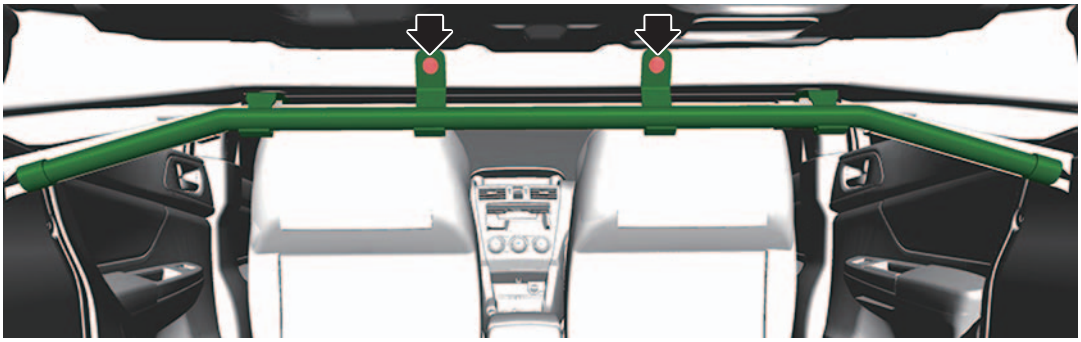
6) Tighten the lock nut.

Tightening torque:
6 N·m (0.6 kgf-m, 4.4 ft-lb)

7) Install the flexible draw stiffener - rear guard.
(1) Temporarily tighten the bolts at 2 locations on the outer side (lower side) of the vehicle.



(2) Temporarily tighten the bolts at 2 locations on the inner side (rear side) of the vehicle.



(3) Tighten at 4 locations equally, a little at a time, to apply the torque evenly.

Tightening torque:
5 N·m (0.5 kgf-m, 3.7 ft-lb)

(4) Further tighten all the bolts.

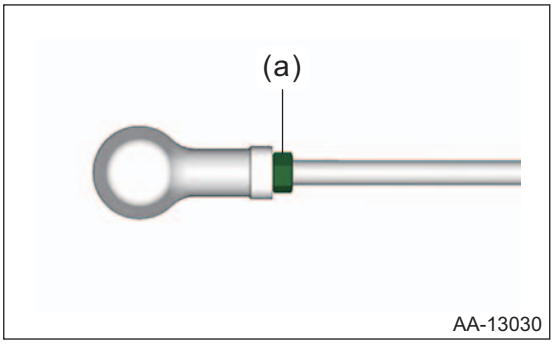
Tightening torque:
3 N·m (0.3 kgf-m, 2.2 ft-lb)

8) Connect the connector of the rear antenna assembly - interior.
9) Install the trim panel - trunk side.
10) Install the trim panel - trunk rear.
11) Install the mat - trunk.
12) Return the rear seat backrest to the lock position.
13) Connect the battery ground terminal.

C: ADJUSTMENT

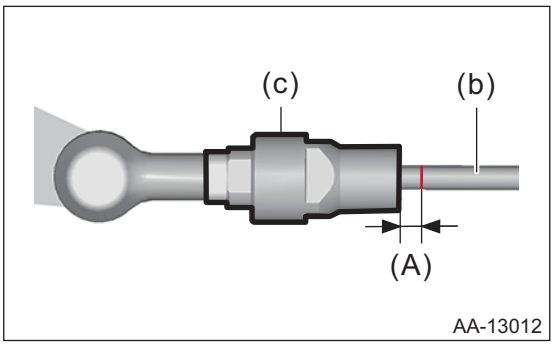
CAUTION:
Be careful not to damage the boot of the link ball.

1) Loosen the lock nut (a).



2) Rotate the rod (b) to adjust until the adjustment scale position (A) becomes 4.5 — 5 mm (0.177 — 0.197 in).

CAUTION:
Do not disassemble or further tighten the section (c) shown in the figure.



3) Tighten the lock nut.

Tightening torque:
6 N·m (0.6 kgf-m, 4.4 ft-lb)

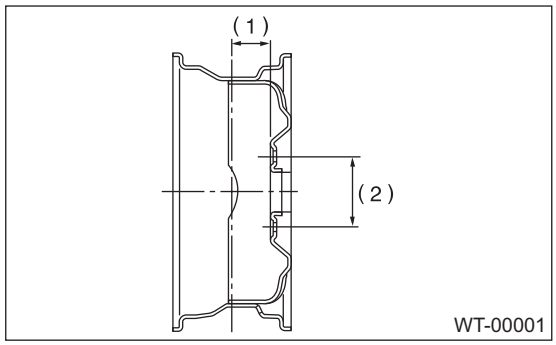
WHEEL AND TIRE SYSTEM

WT

1. General Description

A: SPECIFICATION

1. NOTE



(1) Inset
(2) P.C.D.

NOTE:
Size and inflation pressure of the standard equipment tire and other appropriate tires for equipment are described on the “Tire inflation pressure” label attached to the body side of the driver’s door.

2. STANDARD EQUIPMENT TIRE & WHEEL

Tire size	Wheel size	Inset mm (in)	P.C.D. mm (in)	Tire inflation pressure kPa (kgf/cm^2, psi)	
				Front wheel	Rear wheel
265/35R19 94Y	19 × 9J	48 (1.89)	114.3 (4.5)	230 (2.3, 33)	220 (2.2, 32)

3. SERVICE DATA

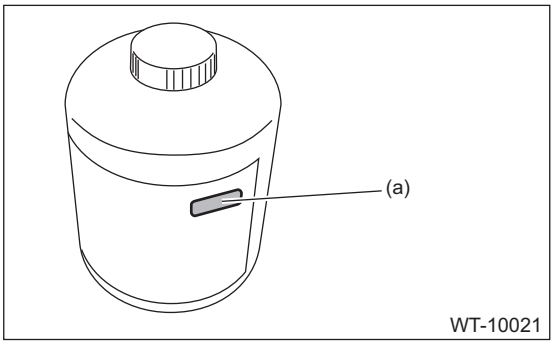
Part	Axial runout	Radial runout
Alloy wheel	1 mm (0.039 in)	

Wheel balancing	Standard	Service limit
Dynamic unbalance	5 g (0.18 oz) or less	

2. Tire Repair Kit

A: NOTE

- Refer to the owner's manual for the tire puncture repair.
- Replace the expired sealant with a new part.
- The expiration date of a tire puncture repair sealant is shown on the label of the sealant bottle. The expired sealant is not included in the warranty.



(a) Label

B: REPLACEMENT

1. CLEARING THE TIRE PUNCTURE REPAIR SEALANT

CAUTION:
- **Do not dispose the tire filled with repair sealant.**
- **Expired sealant, recovered sealant, or empty bottles and hoses of sealant used for repair work, contains ethylene glycol that is to be treated as industrial waste. Take appropriate measures to these materials at the time of disposal.**
- **Perform this operation in a well-ventilated space.**
- **During the operation, use appropriate protection tools to prevent the sealant from adhering to eyes, skin and clothes.**
- **After work, wash hands, face etc. well to wash away the sealant completely.**
- **If the sealant enters the mouth or eyes, wash it away with plenty of water, and consult a doctor.**

1) Using a tire changer, remove the tire from the wheel.

NOTE:
Cover the tire changer and floor with cloth, and work while being careful not to spill the sealant.

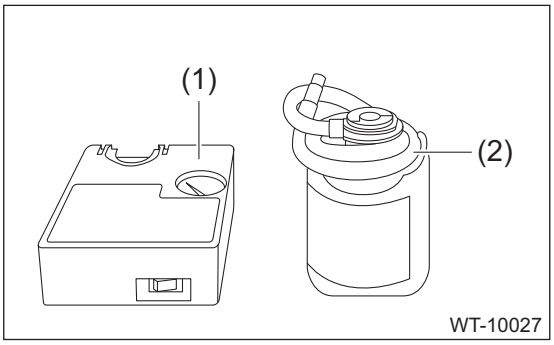
2) Clear the sealant remaining inside the tire.

3) Wipe off the sealant adhered to the wheel, inside the tire, tire changer and on the floor with cloth carefully.

CAUTION:
- **Completely wipe off the sealant in the mating surface of wheel rim and bead.**
- **Do not use the tire repaired with the tire puncture repair kit.**
- **Wheel can be reused even after repaired by using the tire puncture repair kit. However, replace the tire valve and transmitter with new parts.**

2. REPLACEMENT OF TIRE PUNCTURE REPAIR KIT

CAUTION:
After using the puncture repair kit, replace the repair sealant and the speed limit seal.



(1) Compressor
(2) Repair sealant bottle

Set the new tire puncture repair kit at the specified position of the vehicle.

BRAKE

BR

1. General Description

A: SPECIFICATION

NOTE:
Refer to “PARKING BRAKE” for parking brake specifications.

1. FRONT DISC BRAKE

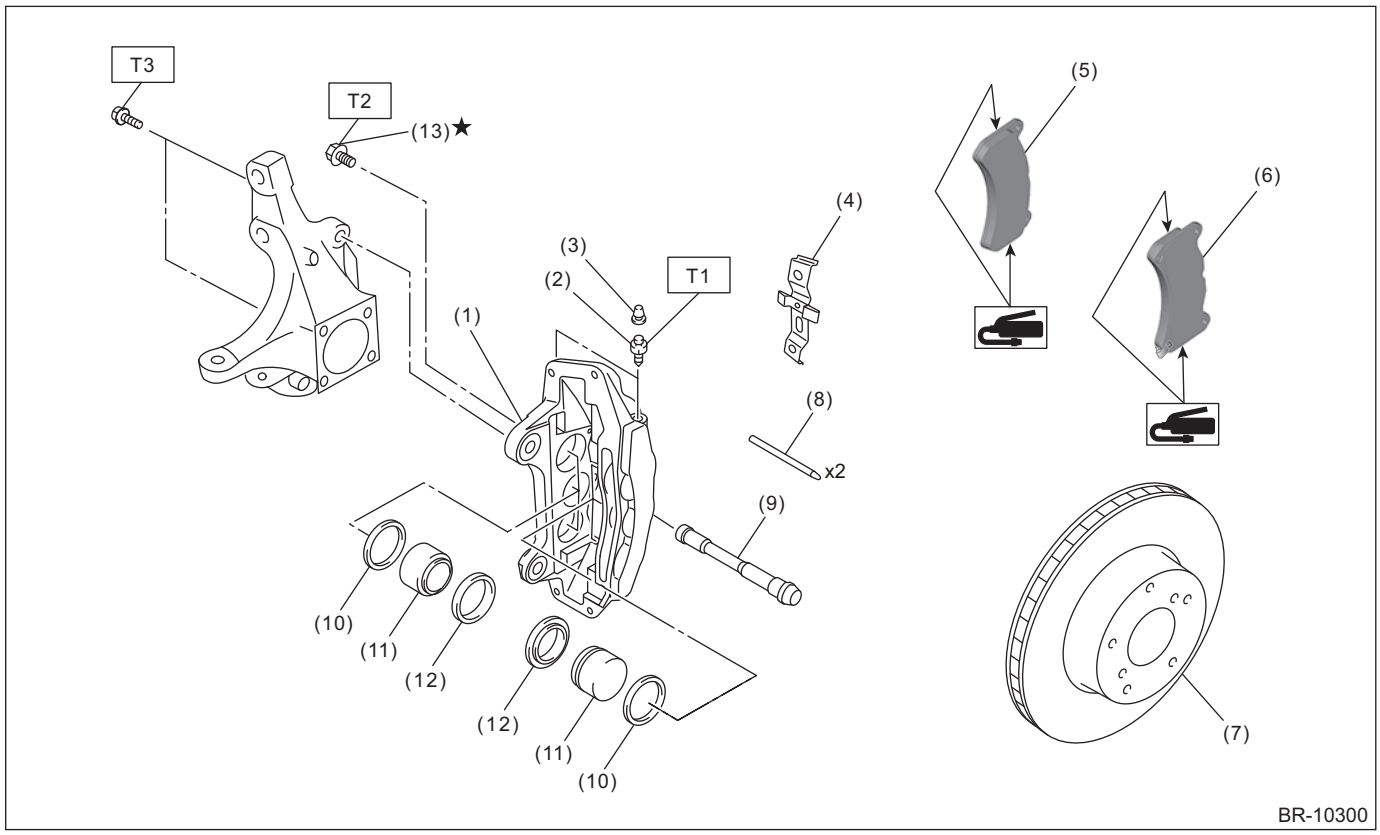
Item			Specification
Size			18-inch
Type			Opposed 6-POT piston type Ventilated disc (Brembo)
Effective cylinder diameter		mm (in)	30 × 2,34 × 2, 38 × 2 (1.181 × 2, 1.339 × 2, 1.496 × 2)
Pad size (Length × Width × Thickness)		mm (in)	162 × 55 × 9.5 (6.378 × 2.165 × 0.37)
Pad thickness	mm (in)	Standard	9.5 (0.37)
		Limit	2 (0.08)
Effective disc diameter		mm (in)	280 (11.02)
Rotor size (O.D. × Thickness)		mm (in)	340 × 30 (13.39 × 1.18)
Disc thickness	mm (in)	Standard	30 (1.18)
		Limit	28 (1.1)
Disc runout	mm (in)	Standard	—
		Limit	0.075 (0.003)
Clearance adjustment			Automatic adjustment

2. REAR DISC BRAKE

Item			Specification
Size			18-inch
Type			Opposed 2-POT piston type Ventilated disc (Brembo)
Effective cylinder diameter		mm (in)	40 × 2 (1.575 × 2)
Pad size (Length × Width × Thickness)		mm (in)	100 × 52.5 × 10.2 (3.937 × 2.067 × 0.402)
Pad thickness	mm (in)	Standard	10.2 (0.402)
		Limit	2.5 (0.10)
Effective disc diameter		mm (in)	276 (10.87)
Rotor size (O.D. × Thickness)		mm (in)	326 × 20 (12.83 × 0.79)
Disc thickness	mm (in)	Standard	20 (0.79)
		Limit	18 (0.71)
Disc runout	mm (in)	Standard	—
		Limit	0.07 (0.0028)
Clearance adjustment			Automatic adjustment

B: COMPONENT

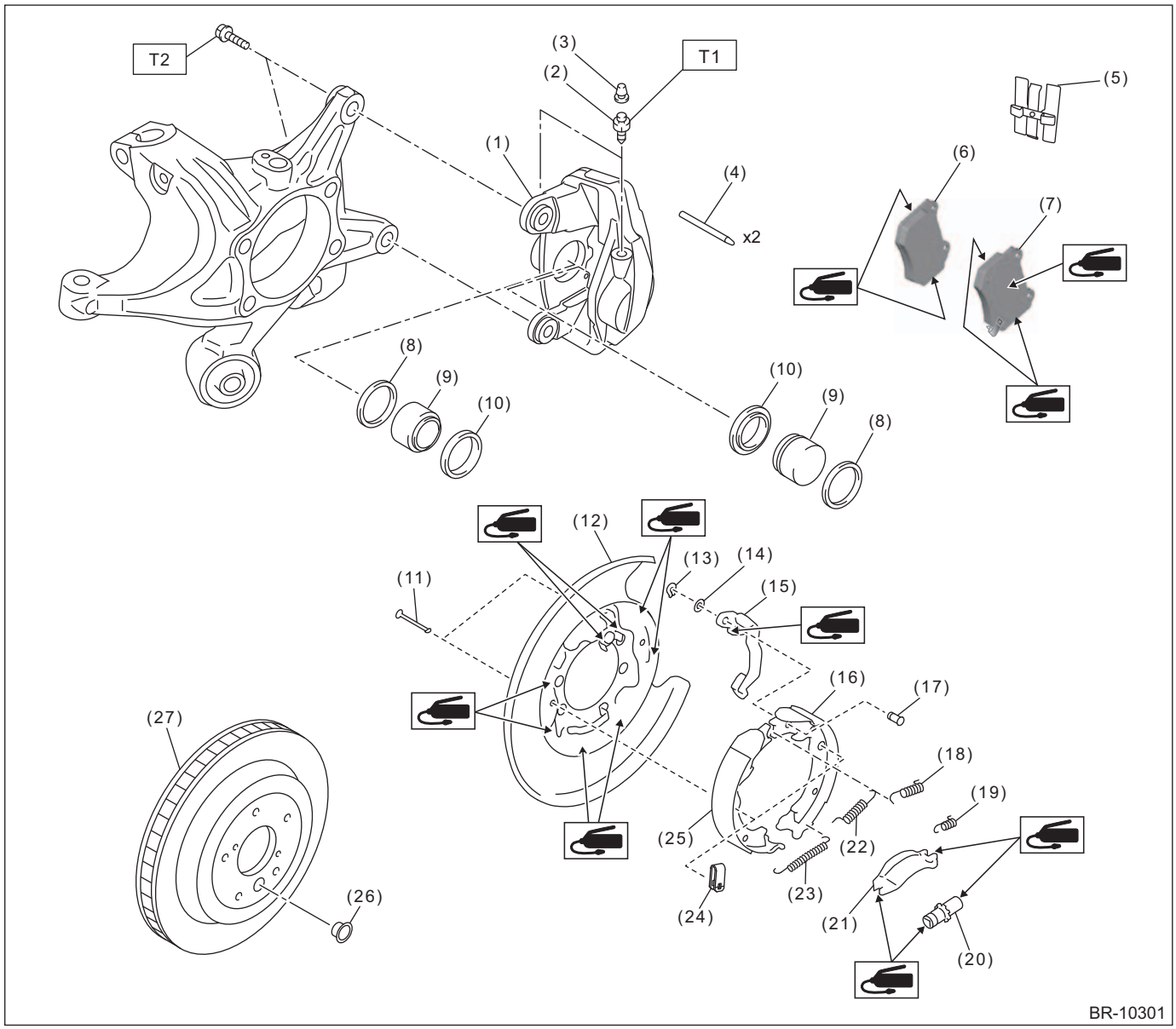
1. FRONT DISC BRAKE



(1) Caliper body
(2) Bleeder - screw
(3) Cap - bleeder
(4) Cross spring
(5) Pad - disc brake front inner
(6) Pad - disc brake front outer
(7) Disc rotor (ventilated type)
(8) Pin - disc brake
(9) Pad clip nut
(10) Piston seal
(11) Piston - disc brake
(12) Piston boot
(13) Pad clip bolt

Tightening torque: N·m (kgf-m, ft-lb)
T1: 20 (2, 14.8)
T2: 30 (3.1, 22.1)
T3: 120 (12.2, 88.5)

2. REAR DISC BRAKE (DRUM IN DISC TYPE)



(1) Caliper body
(2) Bleeder - screw
(3) Cap - bleeder
(4) Pin - disc brake
(5) Cross spring
(6) Pad - disc brake rear inner
(7) Pad - disc brake rear outer
(8) Piston seal
(9) Piston - disc brake
(10) Piston boot
(11) Pin - shoe hold-down
(12) Back plate - rear brake
(13) Retainer - rear brake
(14) Spring washer - rear brake
(15) Parking lever - rear
(16) Parking brake shoe (secondary)
(17) Pin - parking lever
(18) Spring - secondary shoe return
(19) Spring - strut
(20) Adjuster ASSY - rear brake
(21) Spring - strut
(22) Spring - primary shoe return
(23) Spring - adjuster
(24) Spring - shoe clamp
(25) Parking brake shoe (primary)
(26) Adjusting hole cover
(27) Disc rotor (solid type)

Tightening torque: N·m (kgf-m, ft-lb)	
T1:	*18.5 (1.9, 13.6)*
T2:	*73 (7.4, 53.8)*

C: CAUTION

• When performing any work, always wear work clothes, a work cap and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.

• When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
• Some vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.
• Use SUBARU genuine grease, the recommended or equivalent. Do not mix grease etc. of different grades or manufacturers.
• Be sure to tighten fasteners including bolts and nuts to the specified torque.
• Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
• Apply grease onto sliding or revolving surfaces before installation.
• Be sure that the surface of brake disc, brake pad or brake shoe is free from grease or oil.
• Remove contamination including dirt and corrosion before removal, installation, disassembly or assembly.

D: PREPARATION TOOL

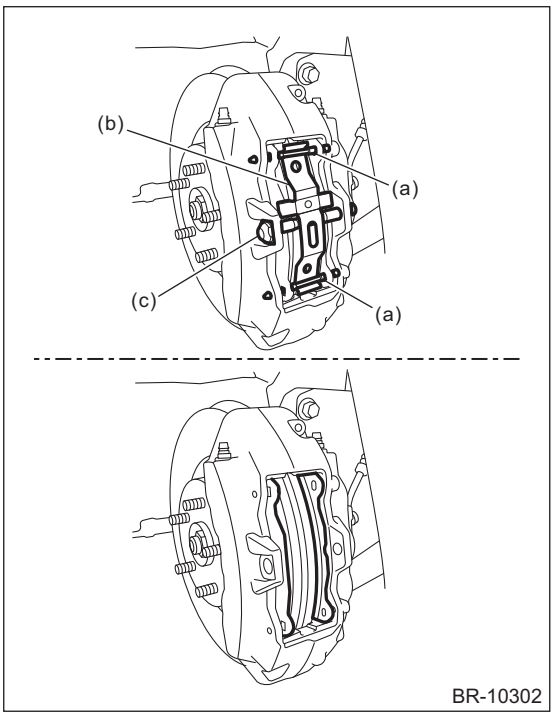
1. GENERAL TOOL

TOOL NAME	REMARKS
Disc brake piston tool	Used for pushing back the piston.

2. Front Brake Pad

A: REMOVAL

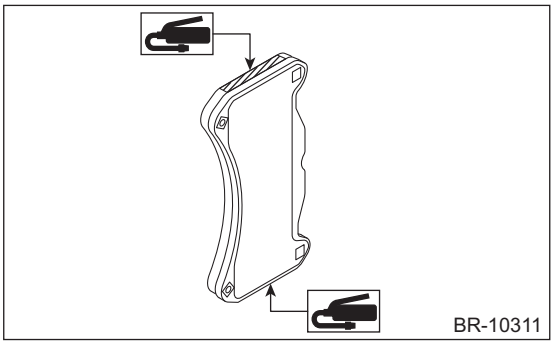
1) Lift up the vehicle, and then remove the front wheels.
2) Remove the pad - disc brake front.
   (1) Remove the pin - disc brake (a), cross spring (b) and pad clip bolt (c).
   (2) Remove the pad - disc brake front.



B: INSTALLATION

NOTE:
Before installation, remove mud and foreign matter from the caliper body and the support front disk brake.
1) Apply a thin coat of grease to the side surface of the pad - disc brake front.

Preparation items:
Grease: An item contained in the pad kit or equivalent



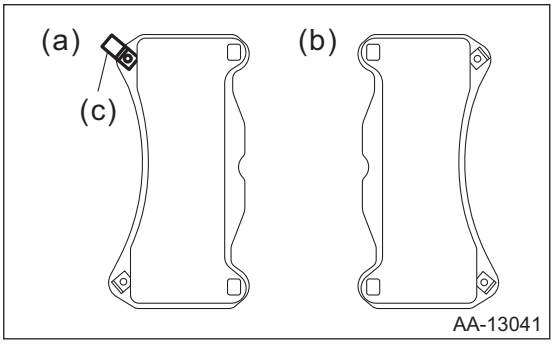
2) Press back the piston disc brake with a tool as needed.

CAUTION:
When pressing back the piston disc brake, the clearance between pad disc brake and brake disc becomes large, which makes the brake pedal effort softer. After the installation of front wheel, be sure to perform the adjustment of the clearance and the pedal effort by depressing the brake pedal several times.

Preparation tool:
Disc brake piston tool

3) Install the pad - disc brake front.

NOTE:
Install the parts with the pad wear indicator facing upward.



(a) Pad - disc brake front outer
(b) Pad - disc brake front inner
(c) Pad wear indicator

4) Install the pad clip bolt.

Tightening torque:
30 N·m (3.1 kgf-m, 22.1 ft-lb)

5) Install the cross spring.
6) Install the pin - disc brake.
7) Install the front wheels.

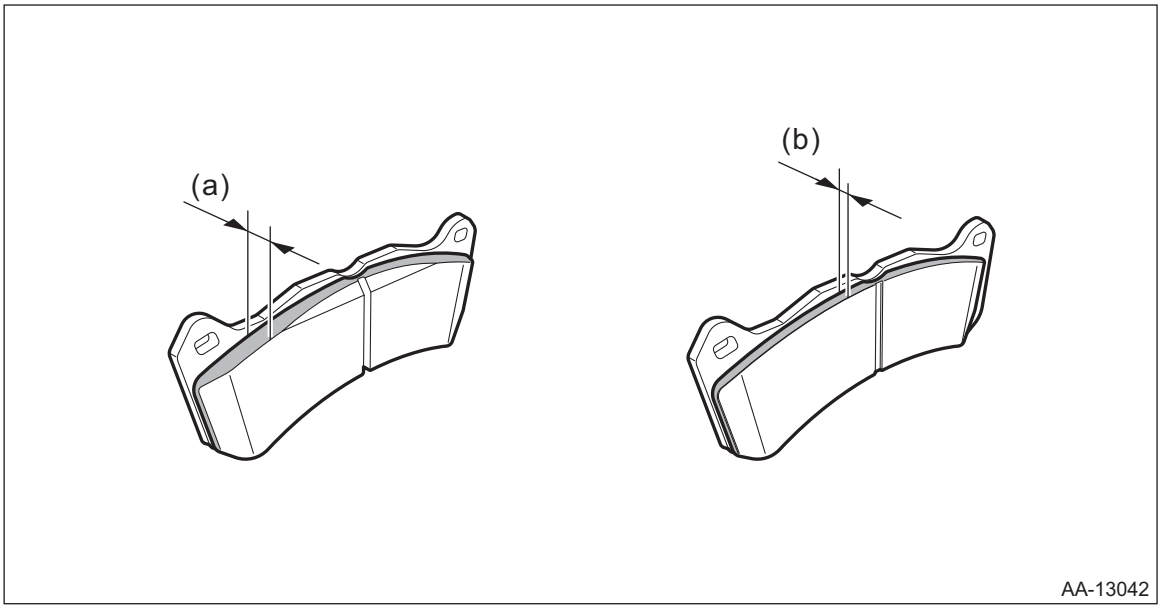
Tightening torque:
120 N·m (12.2 kgf-m, 88.5 ft-lb)

C: INSPECTION

1) Check the thickness (A) of the pad - disc brake front.

NOTE:
- Always replace the pads of both wheels and both sides as a set.
- Replace pad clips if they are twisted or worn.
- Replace the pad if there is oil or grease on it.

• Wear indicators are installed on the pad - disc brake front outer, and a squeaking sound is heard if the pad is worn to the limit.



	Standard (a)	Wear limit (b)
Pad thickness	9.5 mm (0.37 in)	2 mm (0.08 in)

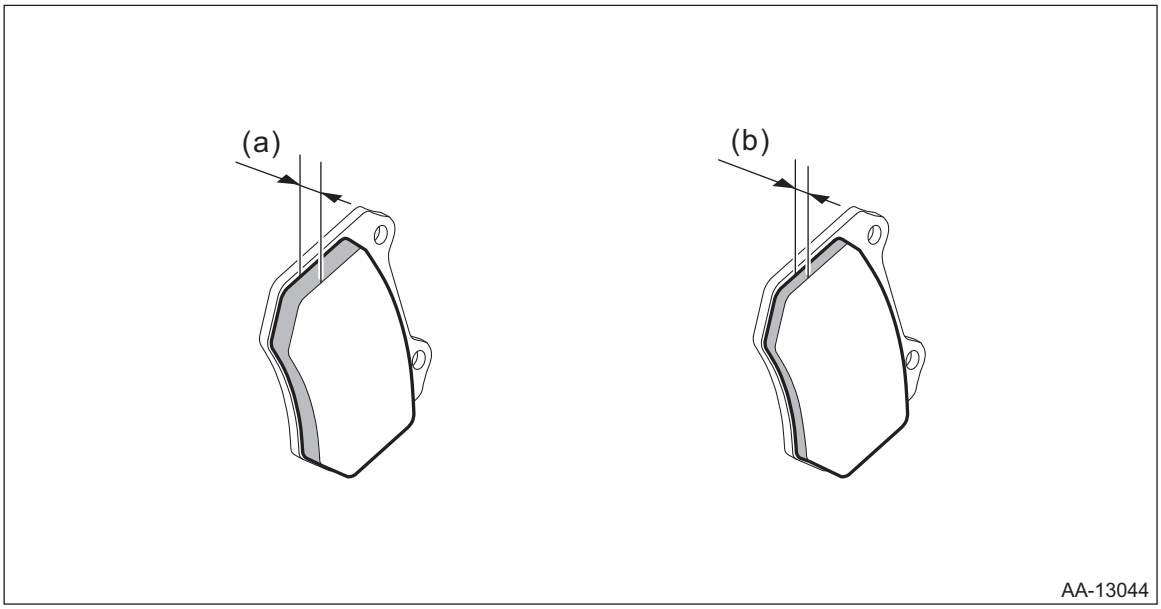
2) If the wear limit is exceeded in the inspection, replace the pad - disc brake front.

3. Rear Brake Pad

A: INSPECTION

1) Check the thickness of the pad - disc brake rear.

NOTE:
- Always replace the pads of both wheels and both sides as a set.
- Replace pad clips if they are twisted or worn.
- Replace the pad if there is oil or grease on it.
- Wear indicators are installed on the pad - disc brake rear outer, and a squeaking sound is heard if the pad is worn to the limit.



	Standard (a)	Wear limit (b)
Pad thickness	10.2 mm (0.402 in)	2.5 mm (0.10 in)

2) If the wear limit is exceeded in the inspection, replace the brake pad.

POWER ASSISTED SYSTEM (POWER STEERING)

PS

1. General Description

A: SPECIFICATION

Whole system	Minimum turning radius: m (ft)		6.2 (20.34)
	Steering angle	Inner wheel	32.0°±1.5°
		Outer wheel	28.6°±1.5°
	Steering wheel diameter: mm (in)		369 (14.53)
	Lock-to-lock revolution number		2.3
Gearbox	Type		Rack & pinion type Integral type
	Backlash		0 (automatic adjusting)
	Valve type		Rotary valve
Power steering pump	Type		Vane pump
	Oil tank		Installed on body
	Specific discharge rate: cm^3 (cu in)/rev.		8.5 (0.519)
	Relief pressure: kPa (kgf/cm^2, psi)		8,300 — 9,000 (85 — 92, 1,203 — 1,305)
	Hydraulic fluid control		Engine speed sensitive
	Operation flow rate: L (US qt, Imp qt)		1,000 r/min: 7.5 (7.9, 6.6) 3,000 r/min: 7.3 (7.7, 6.4)
	Revolution speed range: r/min		560 — 9,600
	Direction of rotation		Clockwise
Power steering fluid	Description		SUBARU ATF or ATF DEXRON III
	Capacity: L (US qt, Imp qt)		Oil tank: 0.2 (0.2, 0.2)
			Whole system: 0.7 (0.7, 0.6)

Steering wheel

Free play:	mm (in)	17 (0.67)

Column assembly - steering

Clearance: Between steering wheel and cover assembly - column	mm (in)	4 — 6 (0.16 — 0.24)

Steering gearbox

Sliding resistance:	N (kgf, lbf)	343 (35, 77) or less Difference between right and left sliding resistance: 20% or less
Rack shaft play in radial direction: mm (in)	Right-turn steering	Both amplitudes: 0.4 (0.016) or less
	Left-turn steering	Play in the horizontal direction: 0.6 (0.024) or less (both amplitudes) Play in the vertical direction: 0.4 (0.016) or less (both amplitudes)
Input shaft play: mm (in)	In radial direction	Both amplitudes: 0.26 (0.0102) or less
	In axial direction	Without play
Rotational resistance:	N (kgf, lbf)	Maximum allowable value: 21 (2.14, 4.7) or less Difference between right and left rotating resistance: 20% or less

Power steering oil pump

Pulley shaft	Lateral play: mm (in)	0.2 (0.008) or less
	Axial play: mm (in)	0.9 (0.035) or less

Pulley	Groove runout: mm (in)	1 (0.039) or less
	Rotational resistance: N (kgf, lbf)	9.22 (0.94, 2.07) or less
Regular pressure (unloaded): kPa (kgf/cm^2, psi)		981 (10, 142) or less

Steering effort (with power steering assist)

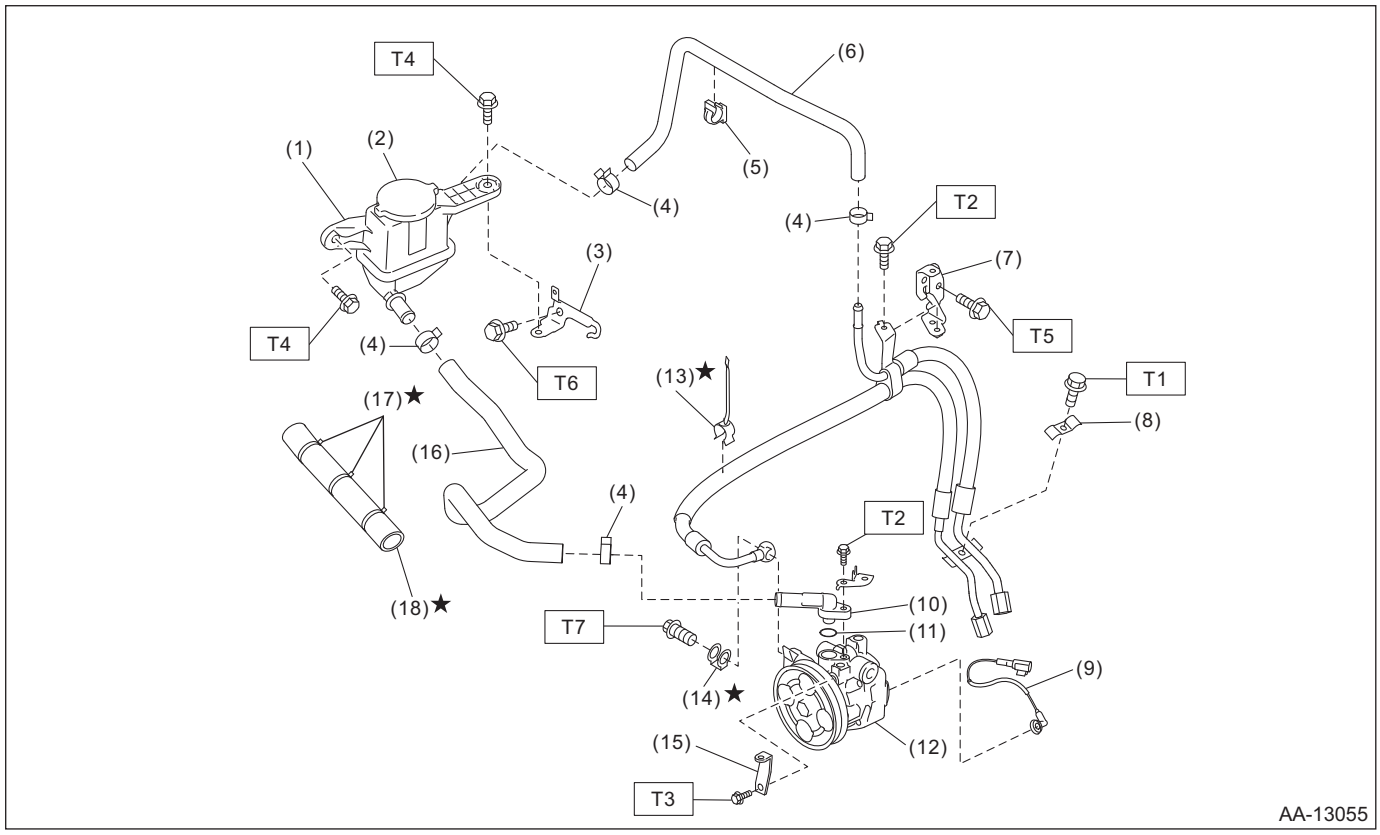
At standstill on paved road with engine idling:	N (kgf, lbf)	31 (3.16, 7) or less
At standstill on paved road with engine stalled:	N (kgf, lbf)	294.2 (29.9, 66.2) or less

Recommended power steering fluid

SUBARU ATF or ATF DEXRON III

B: COMPONENT

1. HOSE AND TANK



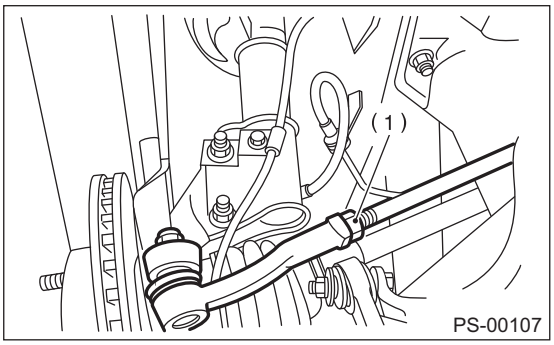
(1) Reservoir tank
(2) Cap
(3) Tank bracket
(4) Clip
(5) Hose clip
(6) Return hose
(7) Bracket - hose
(8) Clamp E
(9) Switch - harness
(10) Suction connector
(11) O-ring
(12) Oil pump
(13) Clip band
(14) Eyebolt gasket
(15) Bracket - belt cover
(16) Hose - suction
(17) Tie-wrap
(18) Protective cover

Tightening torque: N·m (kgf-m, ft-lb)
T1: 7.5 (0.8, 5.5)
T2: 10 (1, 7.4)
T3: 11 (1.1, 8.1)
T4: 13 (1.3, 9.6)
T5: 18 (1.8, 13.3)
T6: 33 (3.4, 24.3)
T7: 40 (4.1, 29.5)

2. Steering Gearbox

A: ADJUSTMENT

1) Adjust the front toe-in.



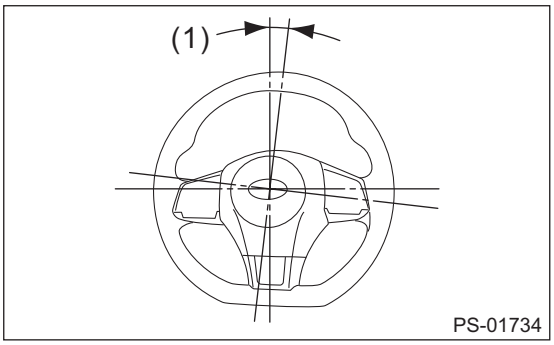
(1) Lock nut

2) Check the steering angle of the wheels.

Standard of steering angle:

Inner wheel	Outer wheel
32.0°±1.5°	28.6°±1.5°

3) If the steering wheel spokes are not horizontal when wheels are set in the straight ahead position, or error is more than 5° on the periphery of the steering wheel, correctly re-install the steering wheel.



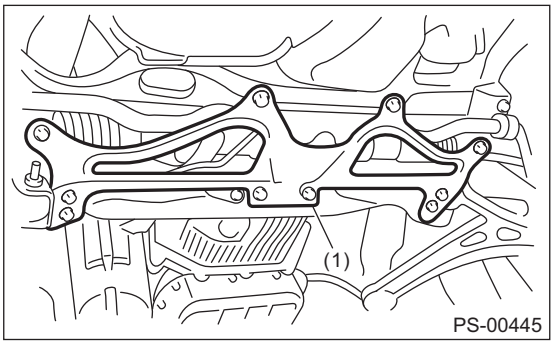
(1) 5° or less

4) If the steering wheel spokes are not horizontal with vehicle set in the straight ahead position after this adjustment, correct it by turning the right and left tie-rods in the opposite direction from each other by the same angle.

3. Pipe Assembly

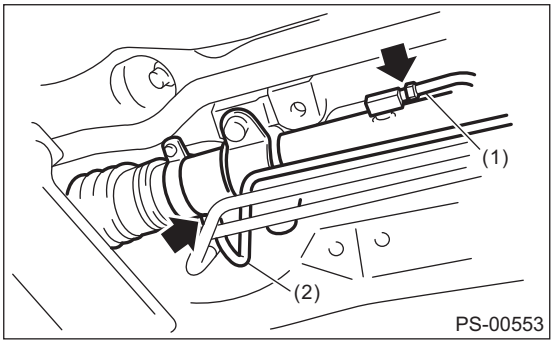
A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Remove the under cover.
3) Lift up the vehicle, and remove the front crossmember support plate.



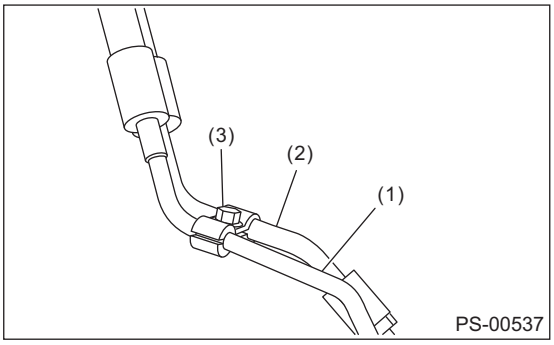
(1) Front crossmember support plate

4) Remove the one pipe joint at the center of the gearbox, and connect the vinyl hose to the pipe and the joint. Discharge the fluid by turning the steering wheel fully clockwise and counterclockwise. Discharge the fluid similarly from other pipes.



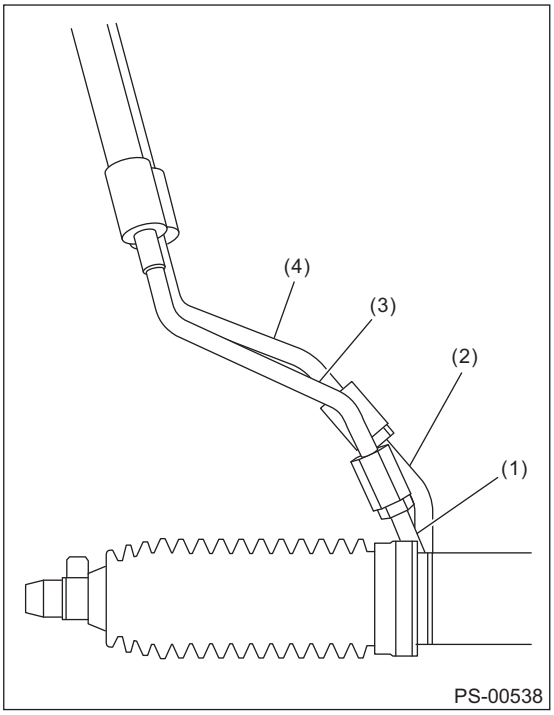
(1) Pipe A
(2) Pipe B

5) Remove the clamp E from return hose and pressure hose.



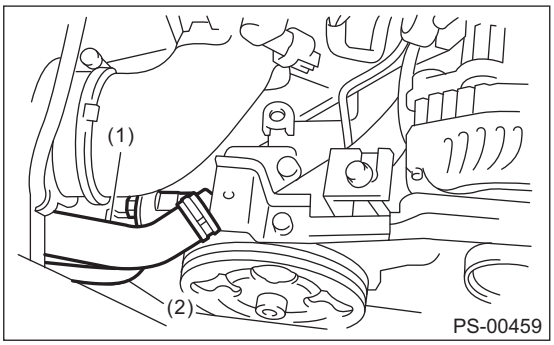
(1) Pressure hose
(2) Return hose
(3) Clamp E

6) Disconnect the return hose from return pipe and disconnect the pressure hose from feed pipe.



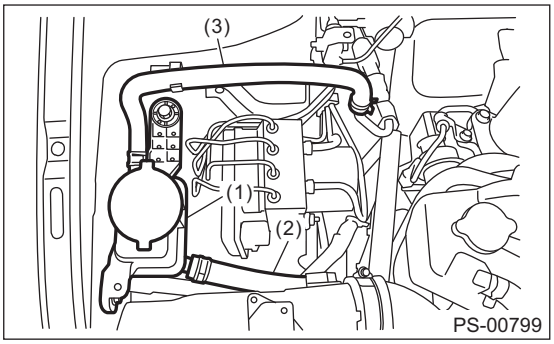
(1) Feed pipe
(2) Return pipe
(3) Pressure hose
(4) Return hose

7) Remove the air intake duct.
8) Disconnect the suction hose and pressure hose from oil pump.



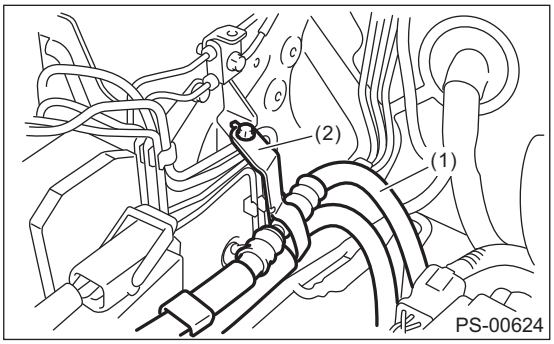
(1) Suction hose
(2) Pressure hose

9) Disconnect the suction hose and return hose from the reservoir tank.



(1) Reservoir tank
(2) Suction hose
(3) Return hose

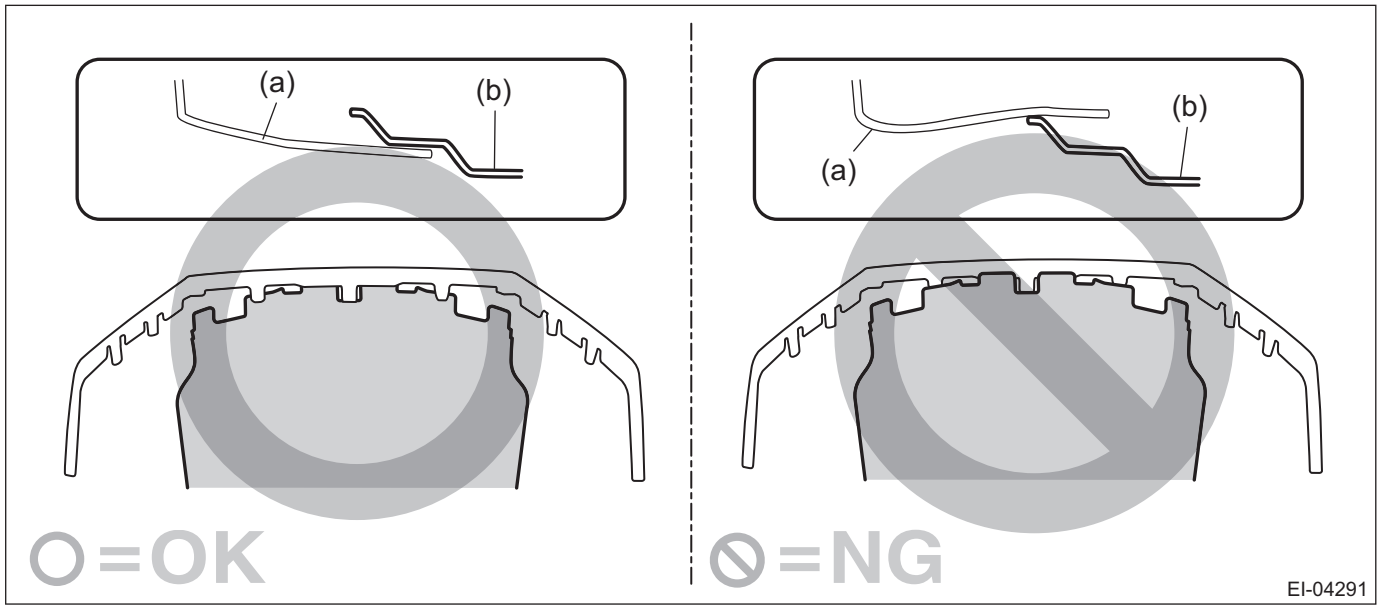
10) Remove the hose bracket and take out the hose assembly from vehicle.



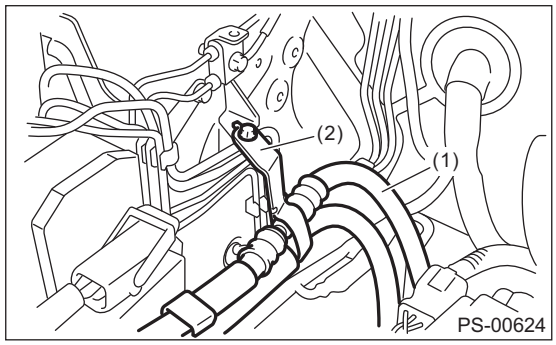
(1) Hose ASSY
(2) Hose bracket

B: INSTALLATION

CAUTION:
Install the under cover - front so that the front end of the under cover (b) comes inside the bumper face - front (a).



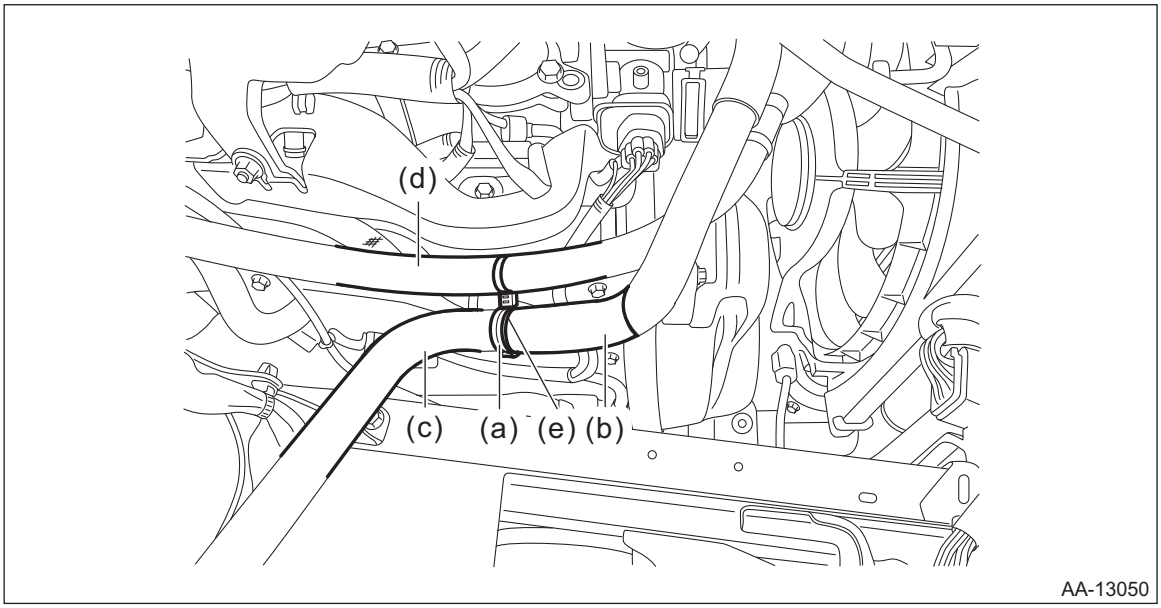
NOTE:
When installing a new suction hose, perform the following steps 2) through 4).
1) Temporarily tighten the hose bracket bolt.



(1) Hose ASSY
(2) Hose bracket

2) Install a new clip band (a) to the pressure hose (d) and suction hose (c).

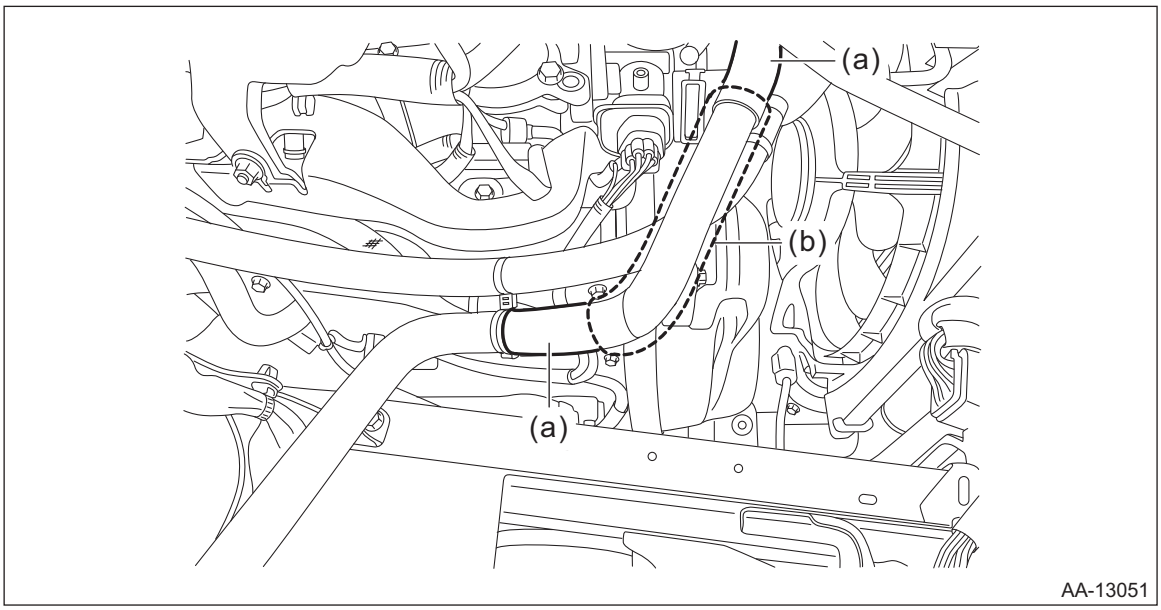
CAUTION:
Align the installation position of the clip band (a) with the protector edge (e) of the suction hose (c).



(a) Clip band
(b) Protector
(c) Suction hose
(d) Pressure hose
(e) Protector edge

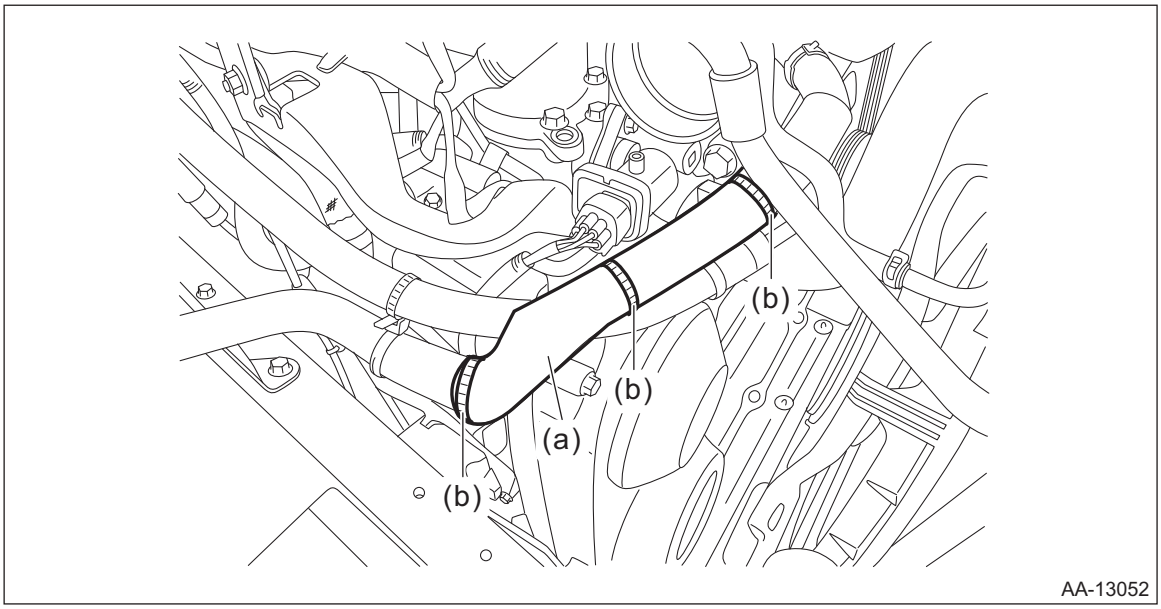
3) Wrap the protective cover to the area (b) shown in the figure so that it covers the area between the suction hose protectors (a).

NOTE:
Set the protective cover so that the slit faces downward.



(a) Protector
(b) Area wrapped by the protective cover

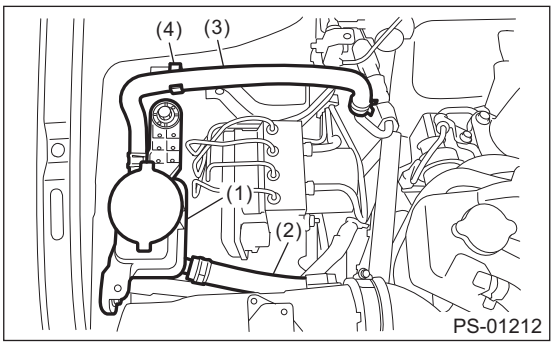
4) Attach a tie-wrap to the position (b) shown in the figure and fix the protective cover (a).



(a) Protective cover
(b) Tie-wrap

5) Connect the suction hose and return hose to the reservoir tank.

CAUTION:
Firmly insert the plastic clip of return hose to the bracket.



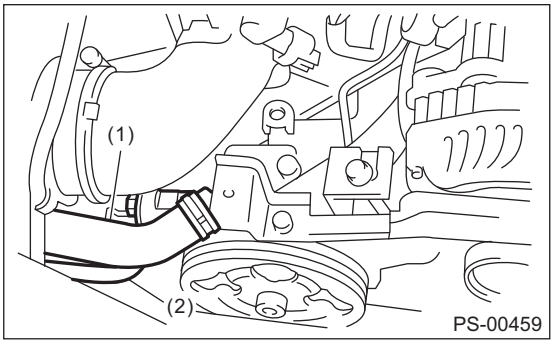
(1) Reservoir tank
(2) Suction hose
(3) Return hose
(4) Plastic clip

6) Tighten the hose bracket bolt.

Tightening torque:
18 N·m (1.8 kgf-m, 13.3 ft-lb)

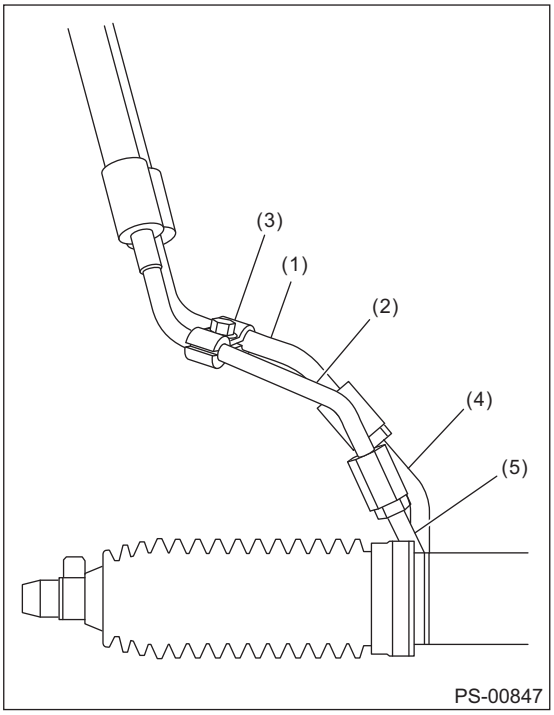
7) Connect the suction hose and pressure hose to the oil pump. Tighten the eyebolt of pressure hose.

Tightening torque:
40 N·m (4.1 kgf-m, 29.5 ft-lb)



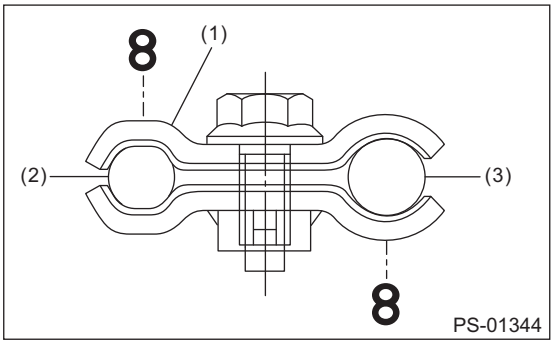
(1) Suction hose
(2) Pressure hose

8) Temporarily connect the pressure hose to feed pipe and return hose to return pipe. Temporarily tighten the bolt of clamp E.



(1) Return hose
(2) Pressure hose
(3) Clamp E
(4) Return pipe
(5) Feed pipe

NOTE:
Make sure that the character “8” on each clamp is positioned on the opposite side, as shown in the figure.



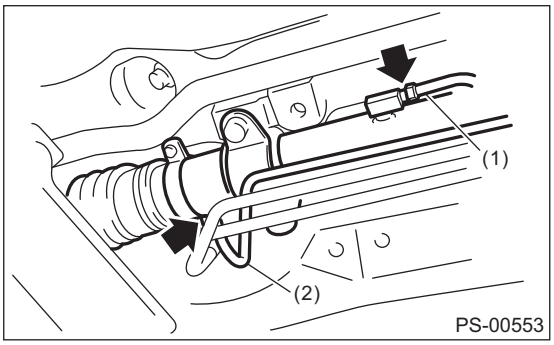
(1) Clamp E
(2) Pressure hose
(3) Return hose

9) Tighten clamp E.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)
10) Tighten the pressure hose to feed pipe and return hose to return pipe.

Tightening torque:
15 N·m (1.5 kgf-m, 11.1 ft-lb)
11) Connect pipes A and B to the four pipe joints of the gearbox.

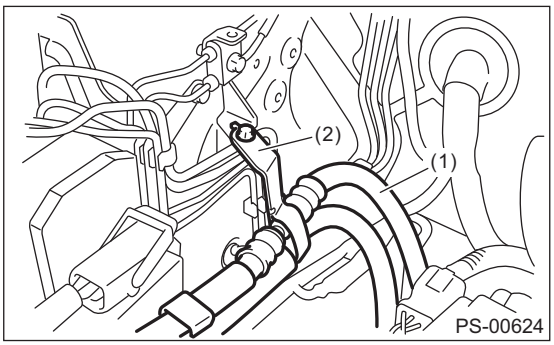
Tightening torque:
Cylinder side: 27 N·m (2.8 kgf-m, 19.9 ft-lb)
Gear housing side: 17 N·m (1.7 kgf-m, 12.5 ft-lb)



(1) Pipe A
(2) Pipe B

12) Install the front crossmember support plate and jack-up plate.
13) Install the under cover.
14) Lower the vehicle.
15) Tighten the bolts which hold the hose bracket.

Tightening torque:
10 N·m (1 kgf-m, 7.4 ft-lb)



(1) Hose ASSY
(2) Hose bracket

16) Install the air intake duct.
17) Connect the battery ground terminal.
18) Fill with the specified fluid.

CAUTION:
Never start the engine before filling with fluid; otherwise the vane pump may become seized.
19) Finally, check the clearance between pipes or hoses as shown in the figure indicated in “General Diagnostic Table”.

BODY SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

INSTRUMENTATION/DRIVER INFO

IDI

1. General Description

A: SPECIFICATION

1. COMBINATION METER ASSEMBLY

Meter, display	Operation method, display method	Drive control	When checking the indicator needle operation/needle reading operation
Speedometer	Stepping motor type	Combination meter	—
Tachometer			
Engine coolant temperature gauge			
Fuel gauge			
ABS warning light	LED	Combination meter	On/Off
Driver's seat belt warning light			
Door warning light			
Tire pressure warning light			
AWD warning light			
Hill start assist OFF indicator light / hill start assist warning light			
VDC warning light / VDC operation indicator light			
VDC OFF indicator light			
VDC traction mode indicator light			
High beam indicator light			
Front fog light indicator light			
Lighting indicator light			
Malfunction indicator light			
Airbag warning light			
REV indicator light			
Oil pressure warning light			
Charge warning light			
Rear differential oil temperature warning light			
Intercooler water spray warning light			
Parking brake / brake fluid level warning light / vacuum pump warning light			
Meter illumination back light			Light ON
Fuel level warning light			On/Off (area near the E mark is illuminated)
Turn signal indicator light		Turn signal and hazard unit	Turns on or off according to module control
Security indicator light		Body integrated unit	

Meter, display	Operation method, display method	Drive control	When checking the indicator needle operation/needle reading operation
ODO indicator	TFT	Combination meter	—
Trip indicator			
ECO gauge			
SI-DRIVE mode indicator			
Information (intervention) display			
Warning and indicator display • Door partially latched • Engine oil level • BSD/RCTA • BSD/RCTA OFF • Washer fluid level • Low ambient temperature • High Beam Assist • Access key • RAB • RAB OFF • SRH OFF			
DCCD mode indicator			

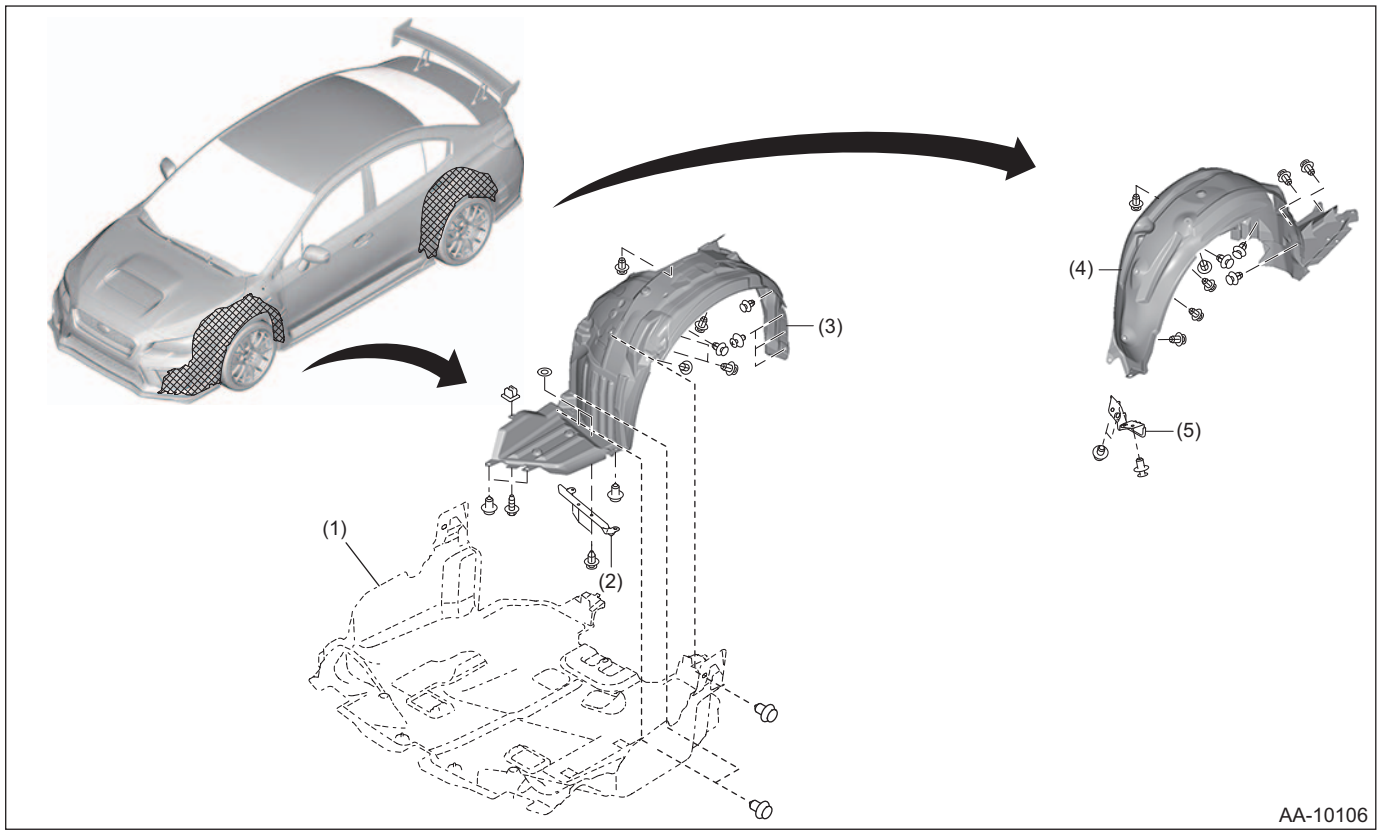
EXTERIOR/INTERIOR TRIM

EI

1. General Description

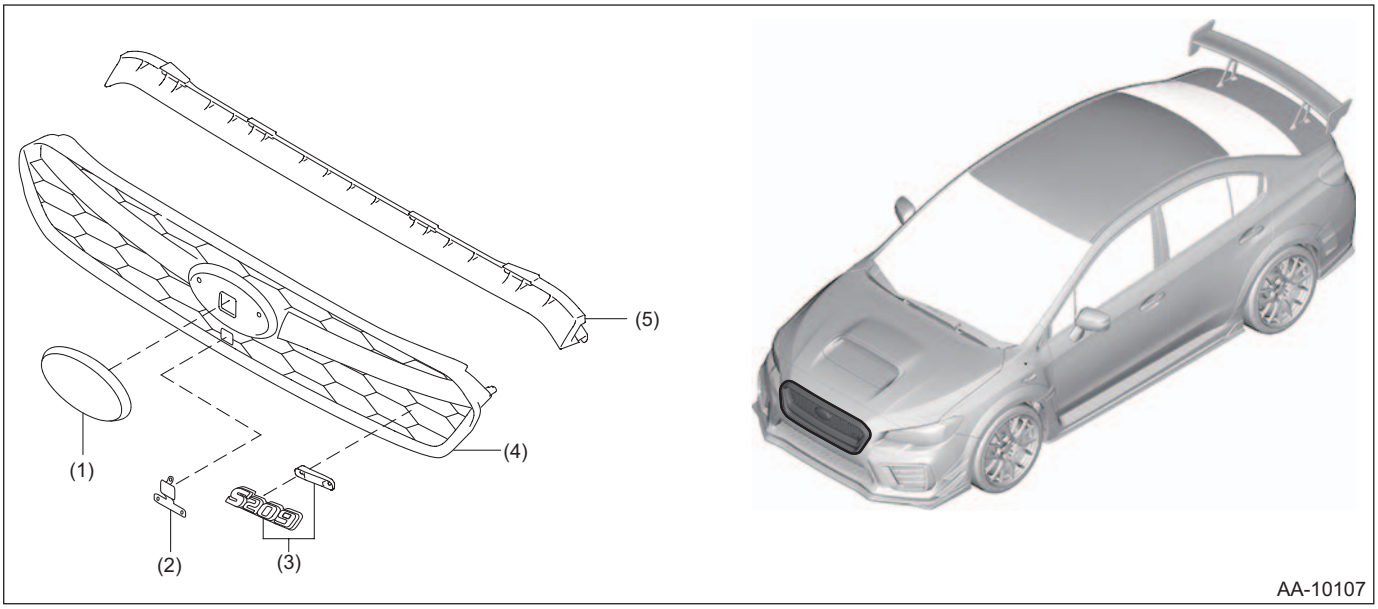
A: COMPONENT

1. MUD GUARD



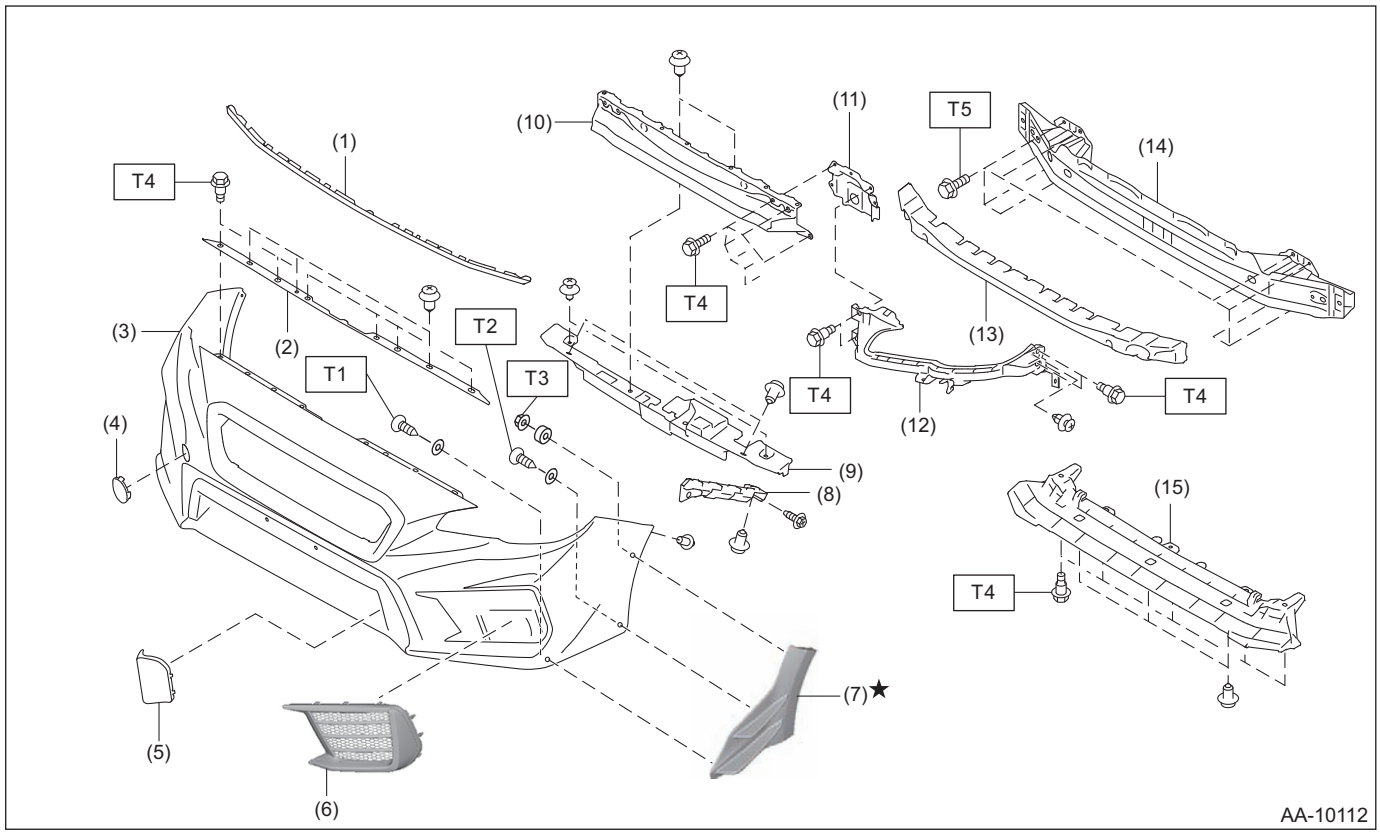
(1) Under cover - front
(2) Plate air flap - front
(3) Mud guard - front
(4) Mud guard - rear
(5) Plate air flap - rear

2. FRONT GRILLE



(1) Front grille emblem
(2) Cover - grille front
(3) Ornament
(4) Front grille ASSY
(5) Spacer grille - front

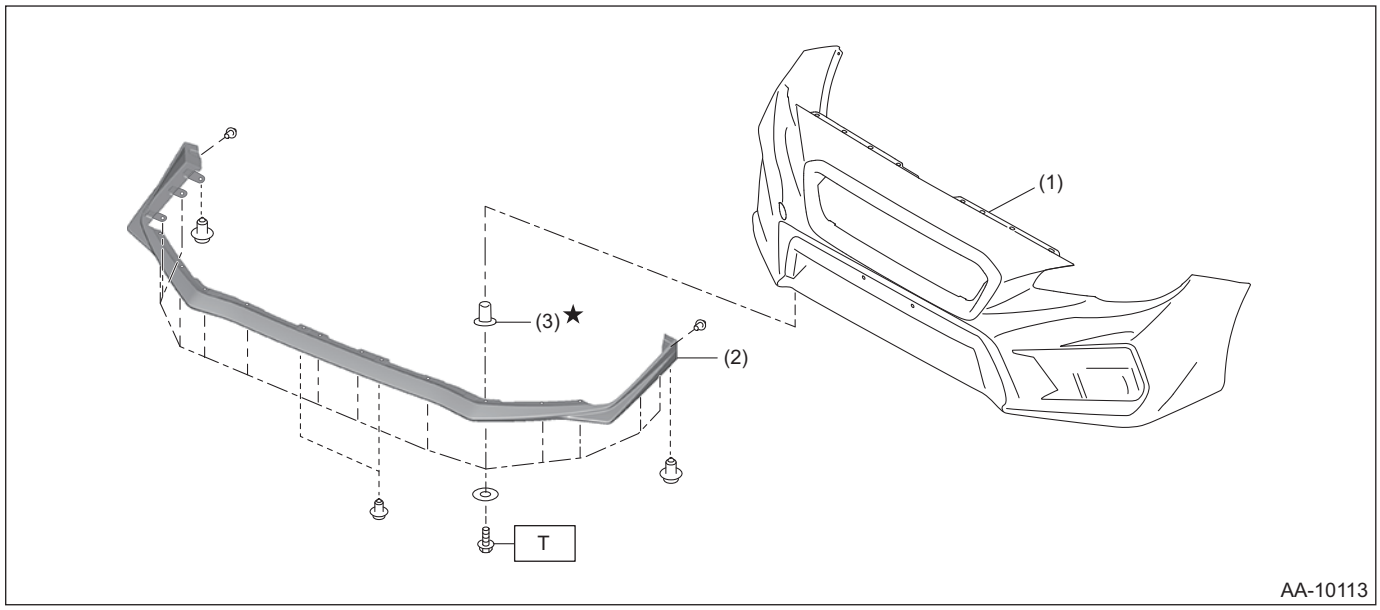
3. FRONT BUMPER



(1) Sealing bumper - front
(2) Plate UPR - front
(3) Bumper face - front
(4) Cover hook - front
(5) Cover intake - front
(6) Bumper side bezel
(7) Front bumper extension
(8) Bracket - front bumper side
(9) Cover UPR - front
(10) Energy absorber plate - front
(11) Bracket UPR - COMPL
(12) Bracket - front bumper corner
(13) Energy absorber foam
(14) Bumper beam COMPL - front
(15) Bracket center lower - front

Tightening torque: N·m (kgf-m, ft-lb)
T1: 1.5 (0.15, 1.11)
T2: 2.0 (0.2, 1.48)
T3: 4.5 (0.46, 3.32)
T4: 7.5 (0.8, 5.5)
T5: 32 (3.3, 23.6)

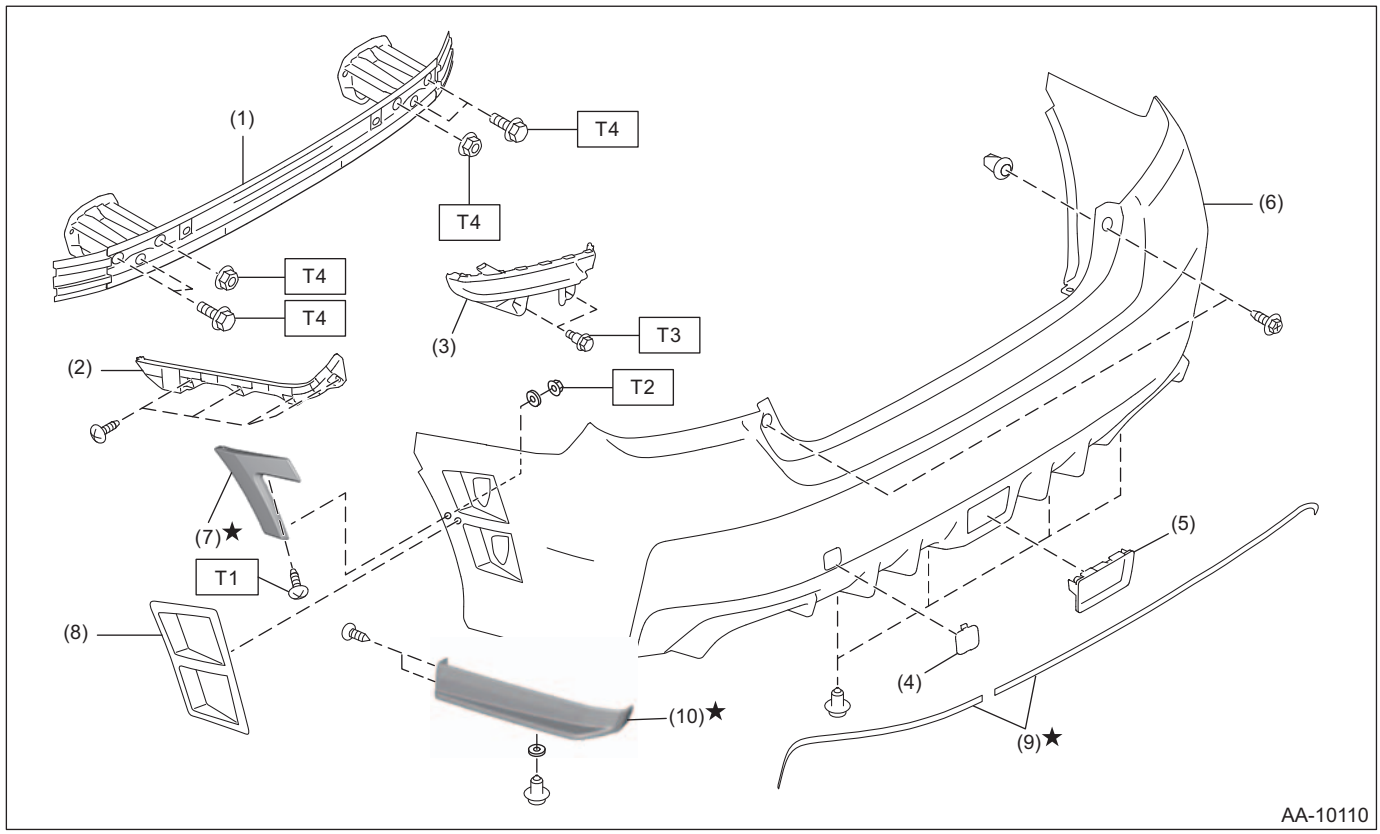
4. FRONT UNDER SPOILER



(1) Bumper face - front
(2) Front under spoiler
(3) Well nut

Tightening torque: N·m (kgf-m, ft-lb)
T: 1.0 (0.1, 0.7)

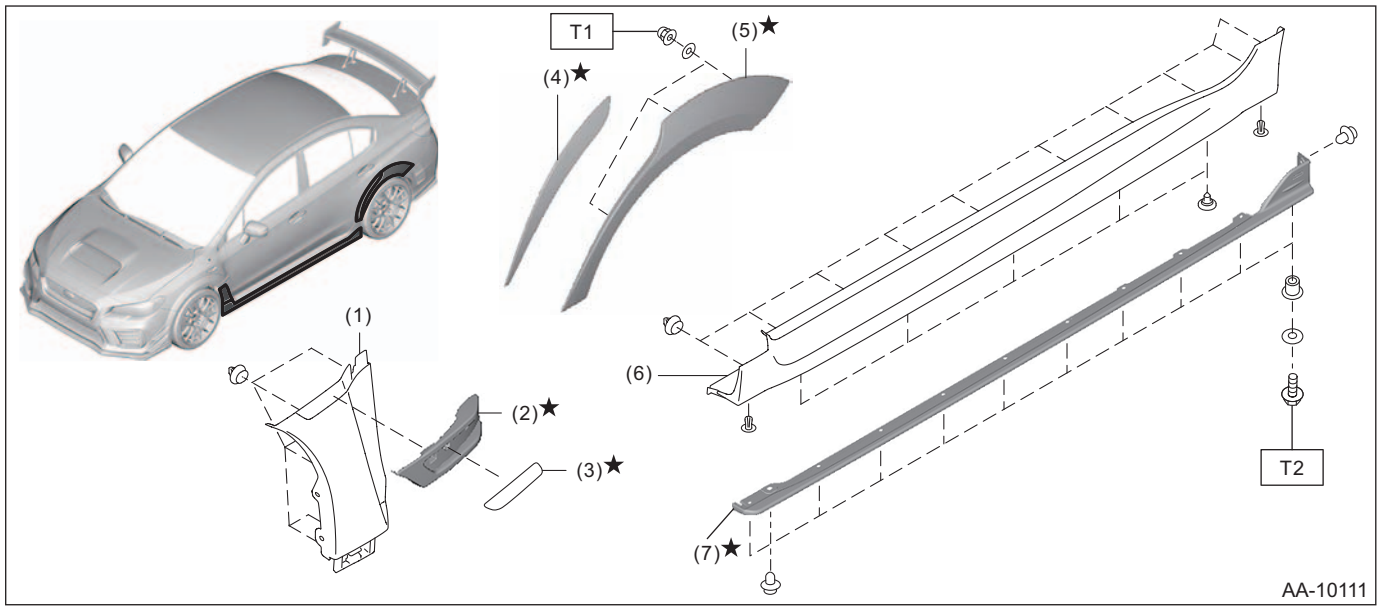
5. REAR BUMPER



(1) Bumper beam COMPL - rear
(2) Bracket - rear bumper side
(3) Bracket - rear bumper corner
(4) Cover - rear bumper A
(5) Cover - rear bumper B
(6) Bumper face - rear
(7) Rear bumper extension
(8) Cover - outlet
(9) Rear bumper stripe
(10) Rear quarter spoiler

Tightening torque: N·m (kgf-m, ft-lb)
T1: 2.0 (0.2, 1.48)
T2: 3.5 (0.4, 2.6)
T3: 7.5 (0.8, 5.5)
T4: 70 (7.1, 51.6)

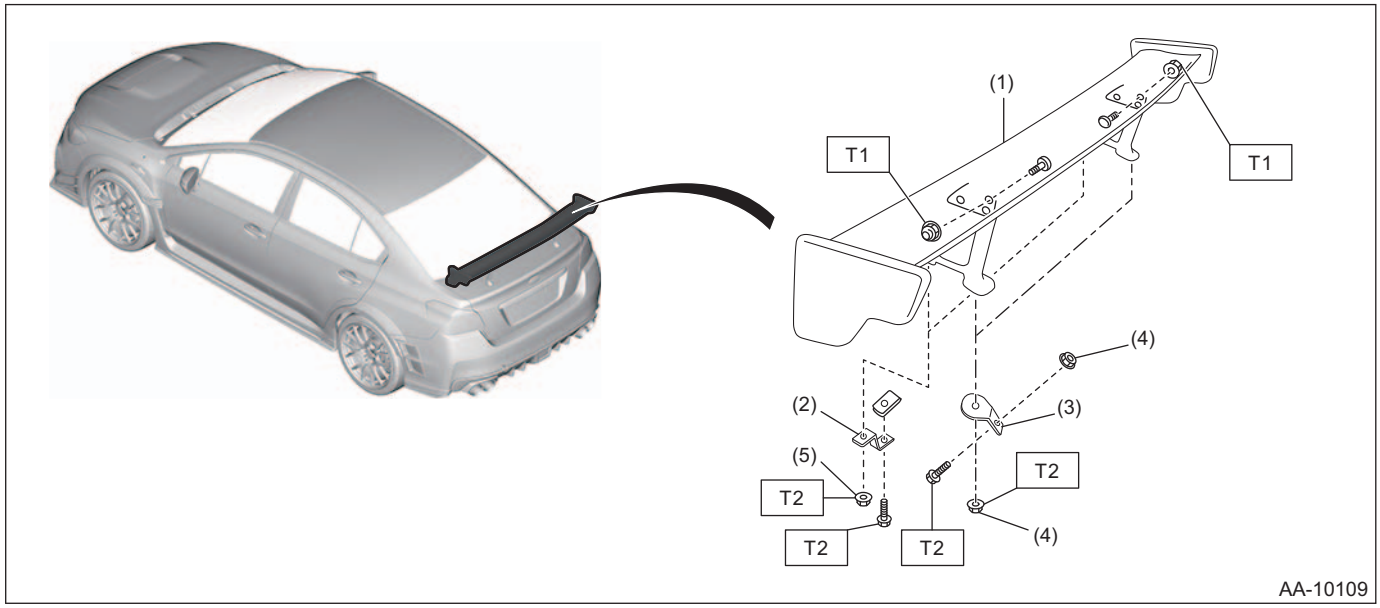
6. SIDE GARNISH & SIDE SPOILER



(1)	Garnish ASSY - fender	(5)	Rear quarter garnish	***Tightening torque: N·m (kgf-m, ft-lb)***
(2)	Molding garnish	(6)	Spoiler ASSY - side	***T1: 0.35 (0.04, 0.26)***
(3)	S209 emblem	(7)	Side under spoiler	***T2: 1.0 (0.1, 0.7)***
(4)	Rear door garnish			

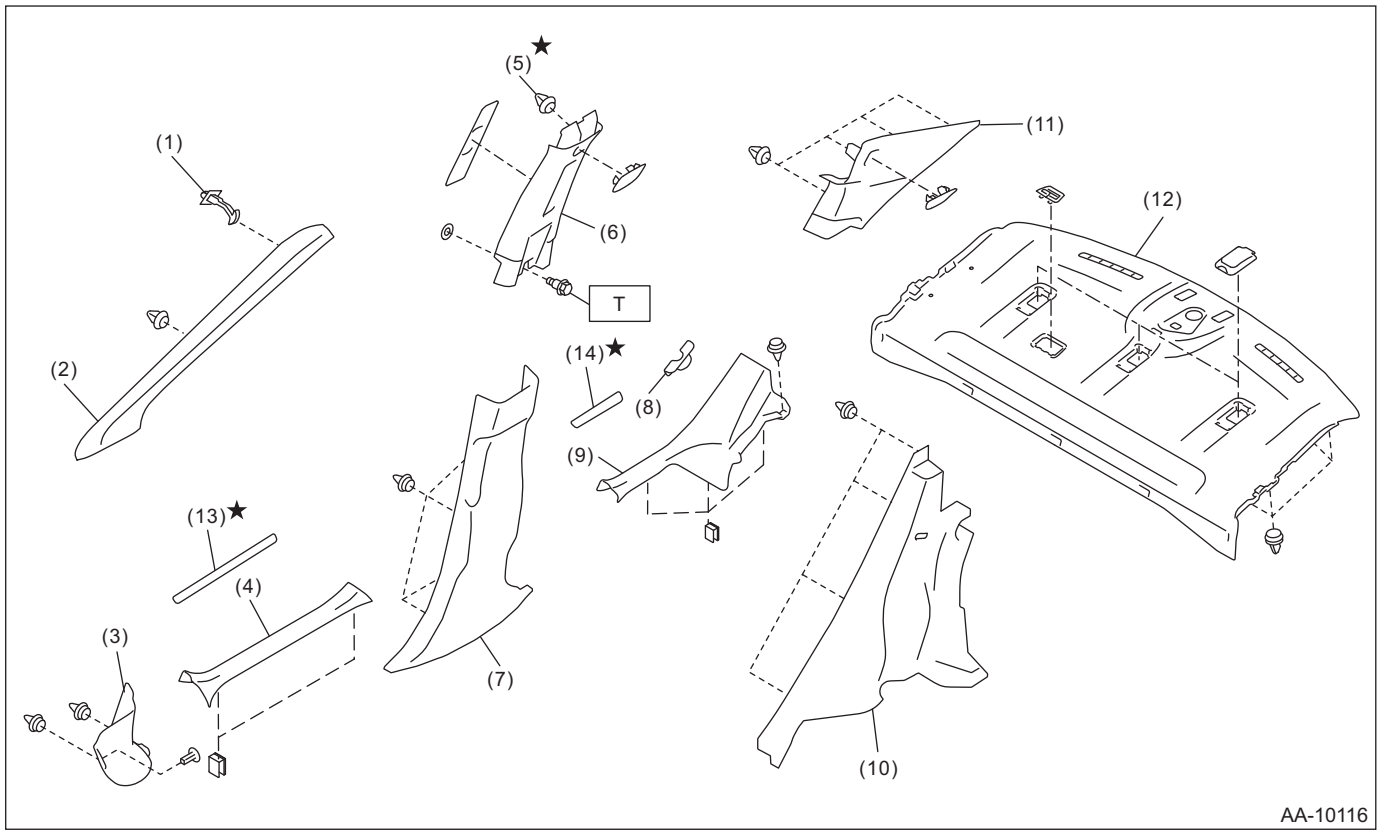
7. REAR SPOILER

CAUTION:
During angle adjustment, do not loosen the bolt and nut on the front side of angle adjustment type rear spoiler. The angle adjustment can be made by removing the bolt and nut on the back side.



(1)	Rear spoiler ASSY	(4)	Nut (large flange)	***Tightening torque: N·m (kgf-m, ft-lb)***
(2)	Rear spoiler reinforcement - front	(5)	Nut (small flange)	***T1: 3.0 (0.3, 2.2)***
(3)	Rear spoiler reinforcement - rear			***T2: 7.5 (0.8, 5.5)***

8. INNER TRIM



(1) Tether clip
(2) Trim panel - front pillar UPR
(3) Cover side sill - front
(4) Cover side sill - front INN
(5) Clip
(6) Trim panel - center pillar UPR
(7) Trim panel - center pillar LWR
(8) Cover - catcher
(9) Cover side sill - rear INN
(10) Trim panel - rear pillar LWR
(11) Trim panel - rear pillar UPR
(12) Trim panel ASSY - rear shelf
(13) Side sill plate - front
(14) Side sill plate - rear

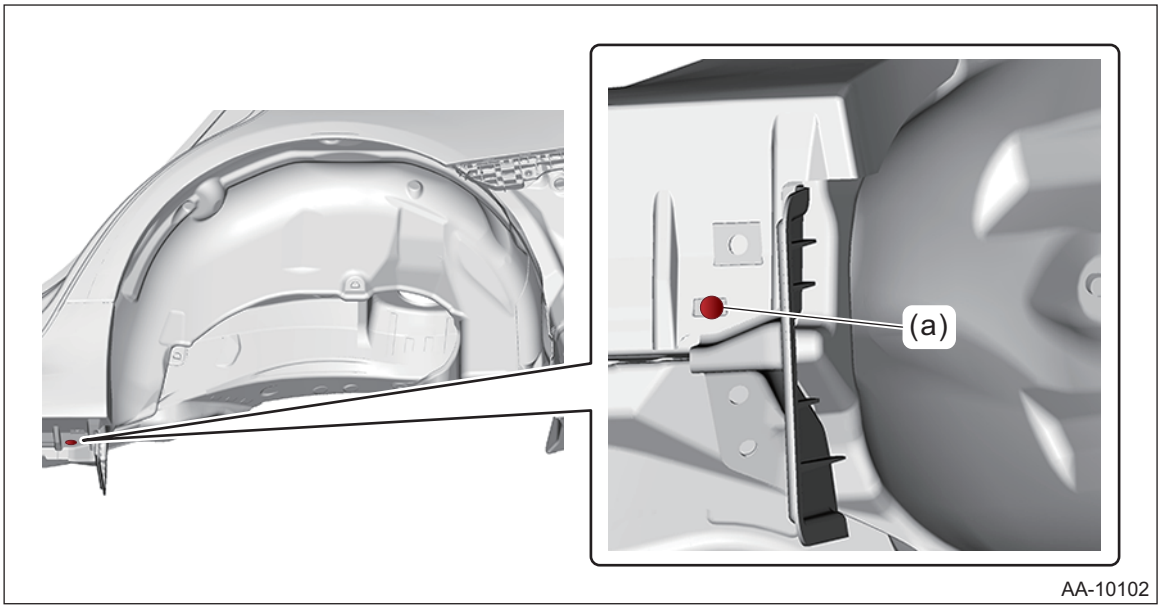
Tightening torque: N·m (kgf-m, ft-lb)
T: 7.5 (0.8, 5.5)

2. Mud Guard

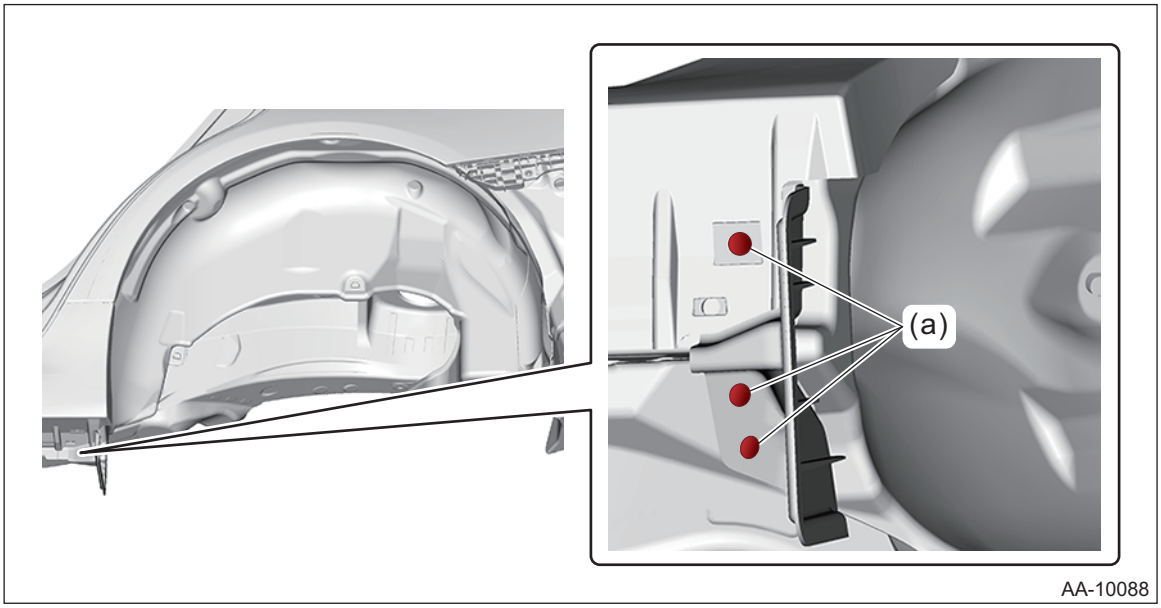
A: REMOVAL

1. MUD GUARD - REAR

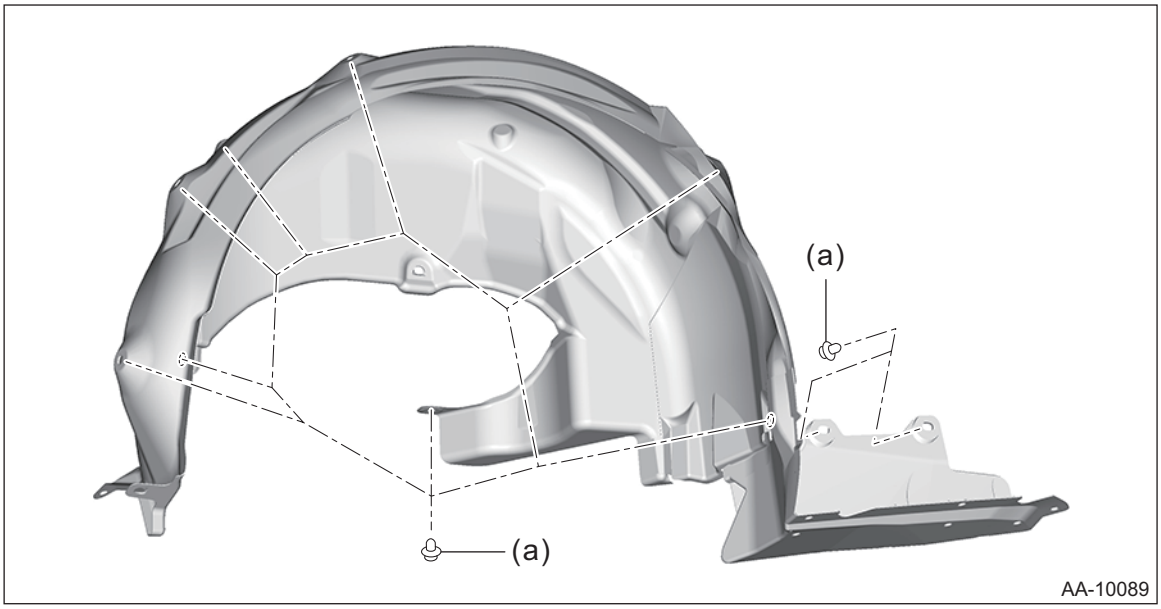
1) Disconnect the ground terminal from battery.
2) Remove the rear tires.
3) Remove the bumper face - rear.
4) Remove the mud guard - rear.
   (1) Release the clip (a) of the spoiler assembly - side.



   (2) Release the clip (a) of the plate air flap - rear.



(3) Remove the clip (a), then remove the mud guard - rear.



B: INSTALLATION

1. MUD GUARD - REAR

NOTE:
• When using a new reinforce wheel apron, perform the work described in step 1).
• Left and right reinforce wheel aprons differ in shape. However, procedures for the right side can be performed in the same way as for the left side.

1) Perform the work for installing the mud guard - rear.
(1) Disconnect the ground terminal from battery.
(2) Remove the bumper face - rear.
(3) Remove the muffler.
(4) Remove the mud guard - rear.
(5) Cover the area around the reinforce wheel apron with blanket, etc.

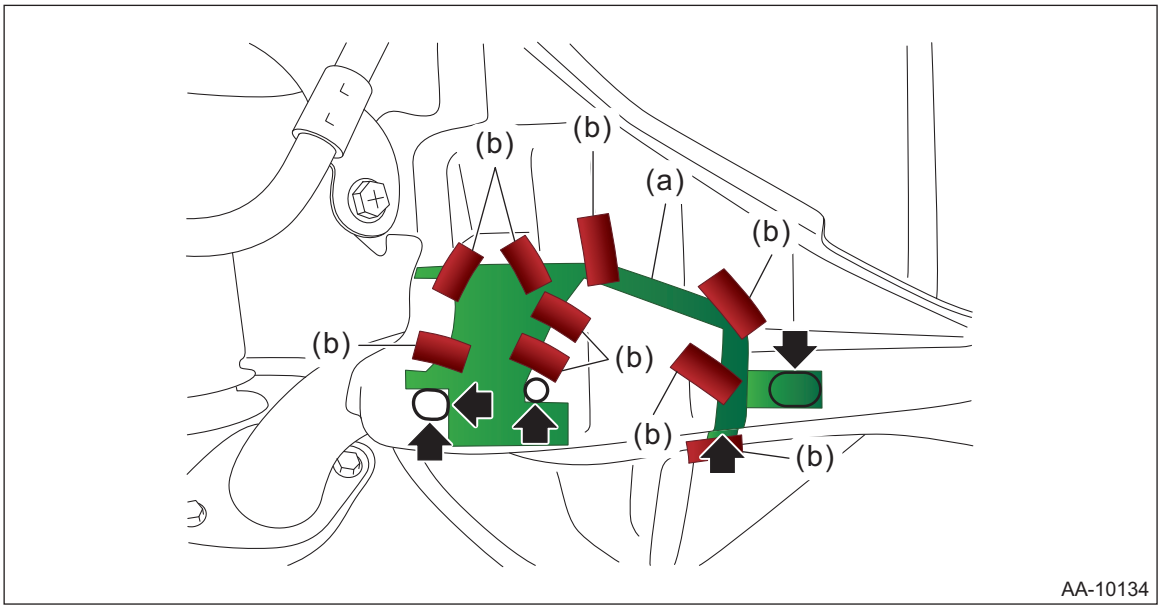
CAUTION:
Use a blanket to protect the suspension, brake and the peripheral parts.

(6) Print out and cut the pattern papers named as “REINF WHEL APPON PATTERN”.

CAUTION:
Confirm that the pattern paper is printed out with accurate size.

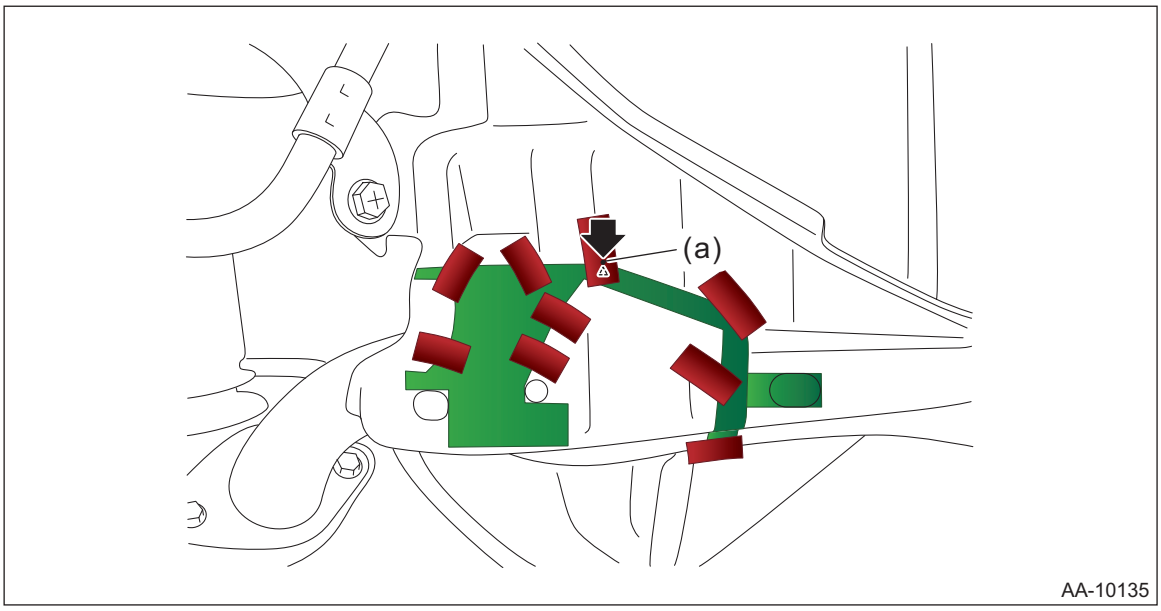
(7) Press the pattern paper (a) against the reinforce wheel apron, and attach masking tapes (b).

NOTE:
Align the pattern paper (a) to the holes and trim lines on the vehicle shown in the figure, and attach masking tapes (b).

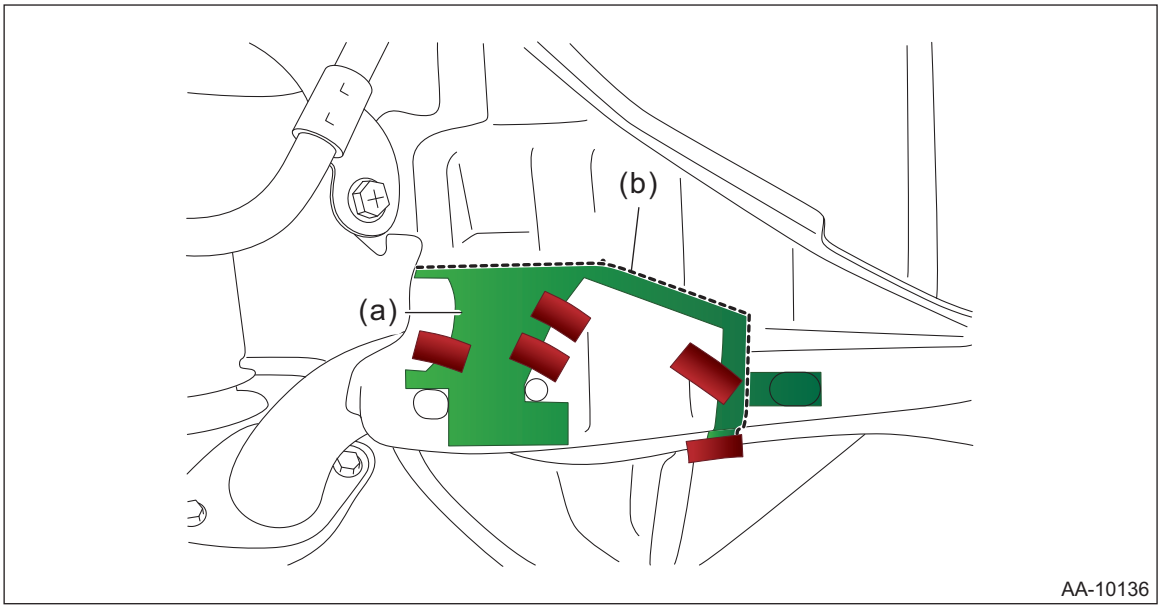


(a) Pattern paper LH (b) Masking tape

(8) Stamp a mark with a punch at the position (a) shown in the figure.

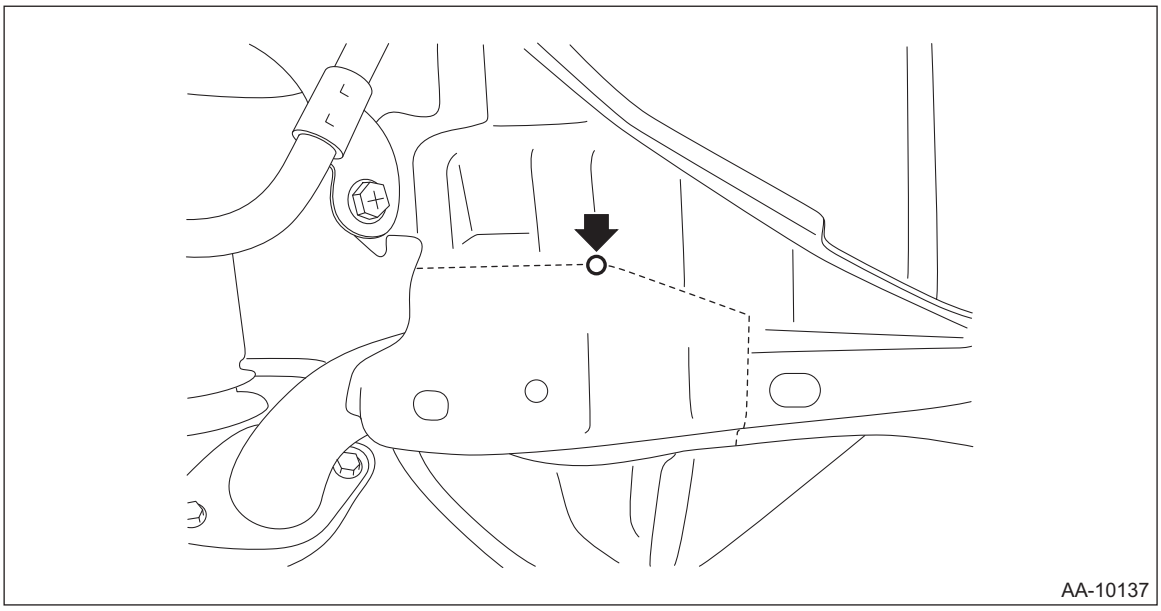


(9) Put markings with white marker pen, etc. along the outer boundary of the pattern paper (a).

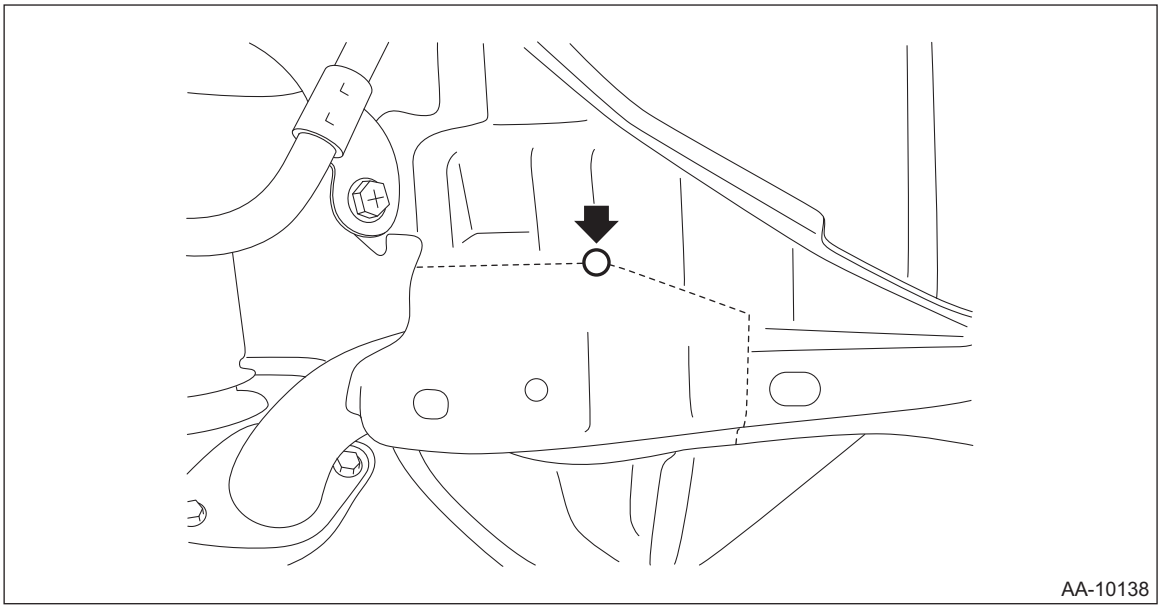


(a) Pattern paper LH (b) Marking position

(10) Remove the pattern paper.
(11) Using a drill, make a pilot hole of 3 mm (0.12 in) diameter at the position marked in step (9), and then make a pilot hole of 6 mm (0.24 in) diameter.

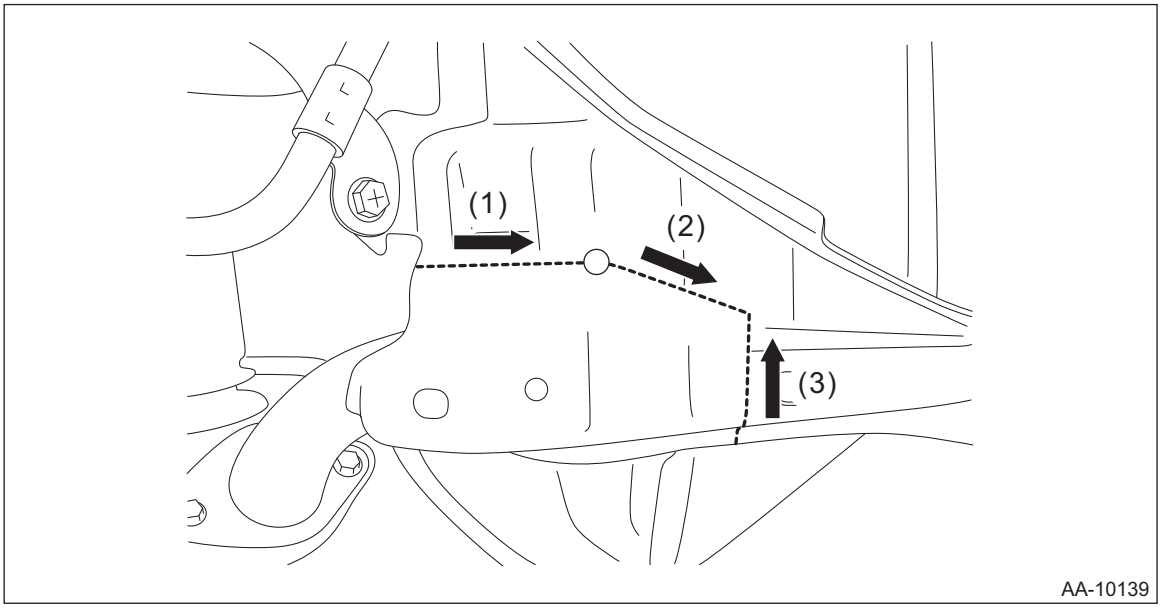


(12) Make a hole of 10 mm (0.39 in) to the position where the pilot hole is created using a drill.



(13) By using an air saw in the numerical order shown in the figure, cut the reinforce wheel apron along the marking.

CAUTION:
- **Always wear protective goggles when performing a cutting operation.**
- **Be sure to use an air sow to avoid the risk of fire ignition.**



(14) Smoothen the cut section of the reinforce wheel apron with a sandpaper.

CAUTION:
Remove any burrs on the cut section to avoid damaging the vehicle.

(15) Clean and degrease the cut section of the reinforce wheel apron completely.

NOTE:
Clean the scratched area.

(16) Apply EPICON primer or equivalent to the cut section and its peripheral area of the reinforce wheel apron.

(17) Dry the EPICON primer or equivalent well.

(18) Apply NOX-RUST (7703WJ) or equivalent to the cut section of the reinforce wheel apron (vehicle front/rear face and end face) and to the scratched area.

(19) If the NOX-RUST (7703WJ) or equivalent is spilled, wipe it off and clean the area.

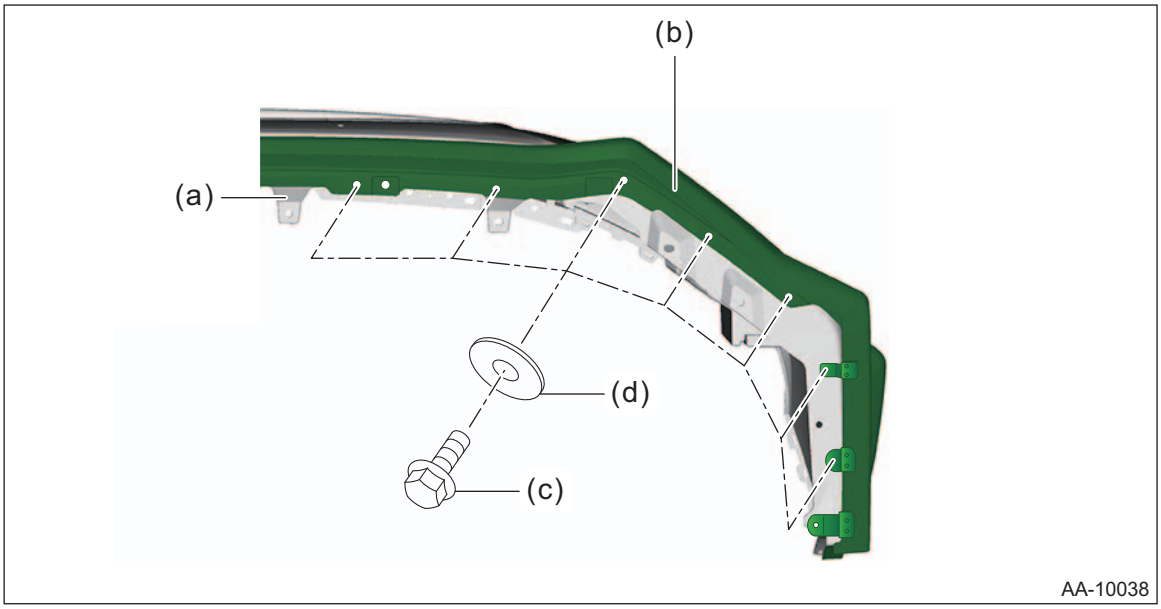
2) Install the mud guard - rear in the reverse order of removal.

3. Front Bumper

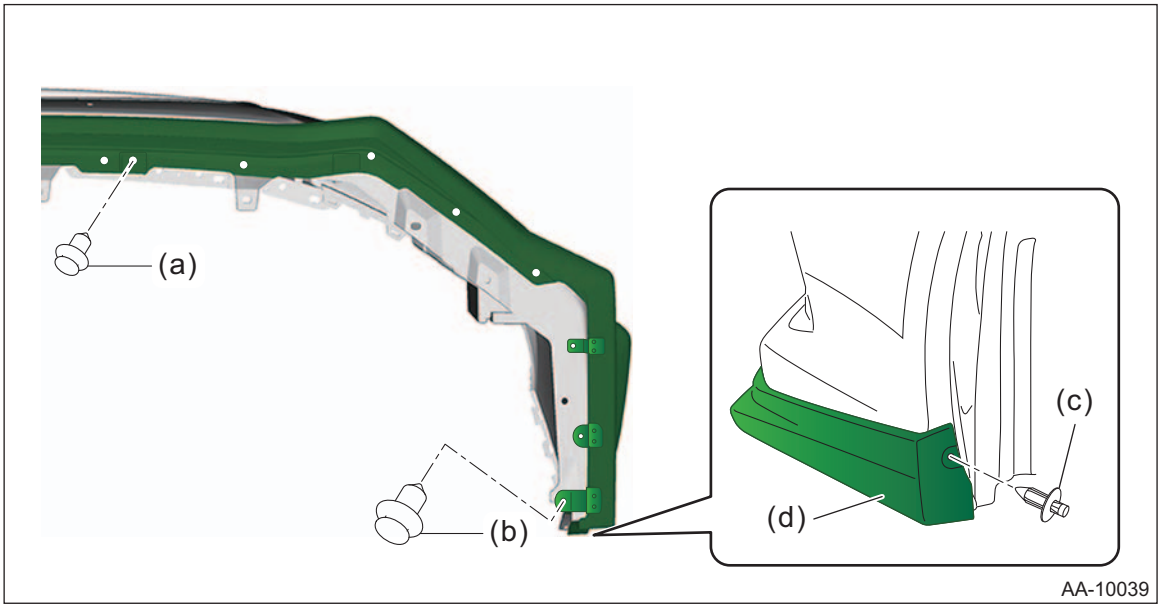
A: REMOVAL

1. FRONT UNDER SPOILER

NOTE:
Perform the procedures for the right side in the same way as for the left side.
1) Remove the front under spoiler.
(1) Remove the bolts (c) and washers (d) securing the front under spoiler (b) from the bumper face - front (a).



(2) Remove the clips (a), (b) and (c), and then remove the front under spoiler (d).



B: INSTALLATION

1. FRONT UNDER SPOILER

Install the front under spoiler in the reverse order of removal.

Tightening torque:
1.0 N·m (0.1 kgf-m, 0.7 ft-lb)

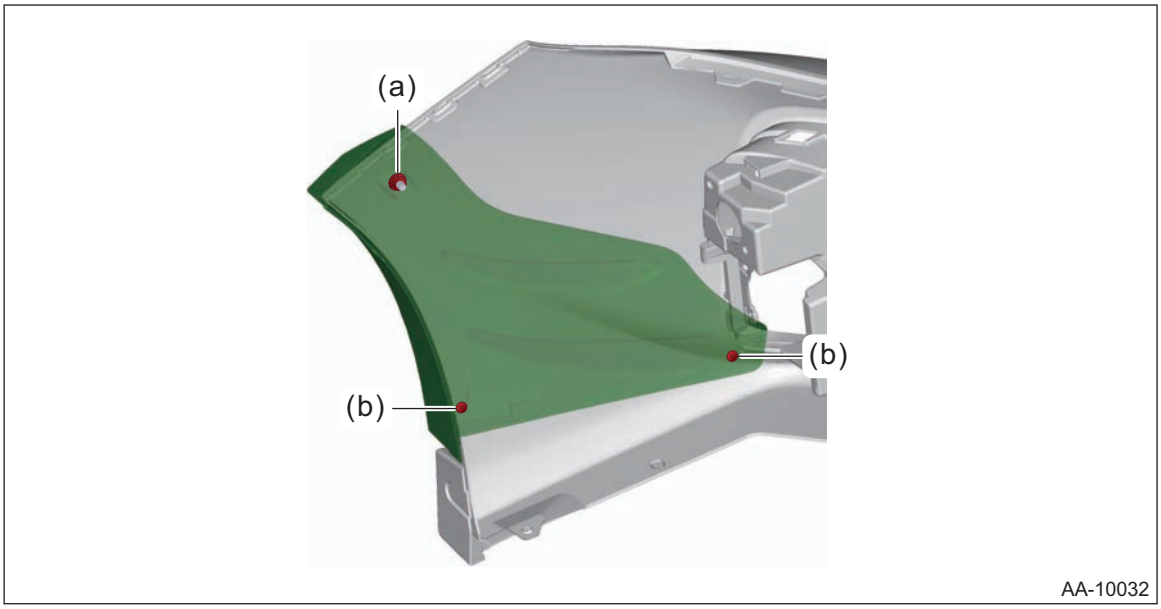
C: DISASSEMBLY

1. FRONT BUMPER EXTENSION

1) Remove the front bumper extension.

CAUTION:
Do not reuse the front bumper extension.

(1) Remove the nuts (a) and screws (b).



(2) Remove the double-sided tape, and remove the front bumper extension.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.

D: ASSEMBLY

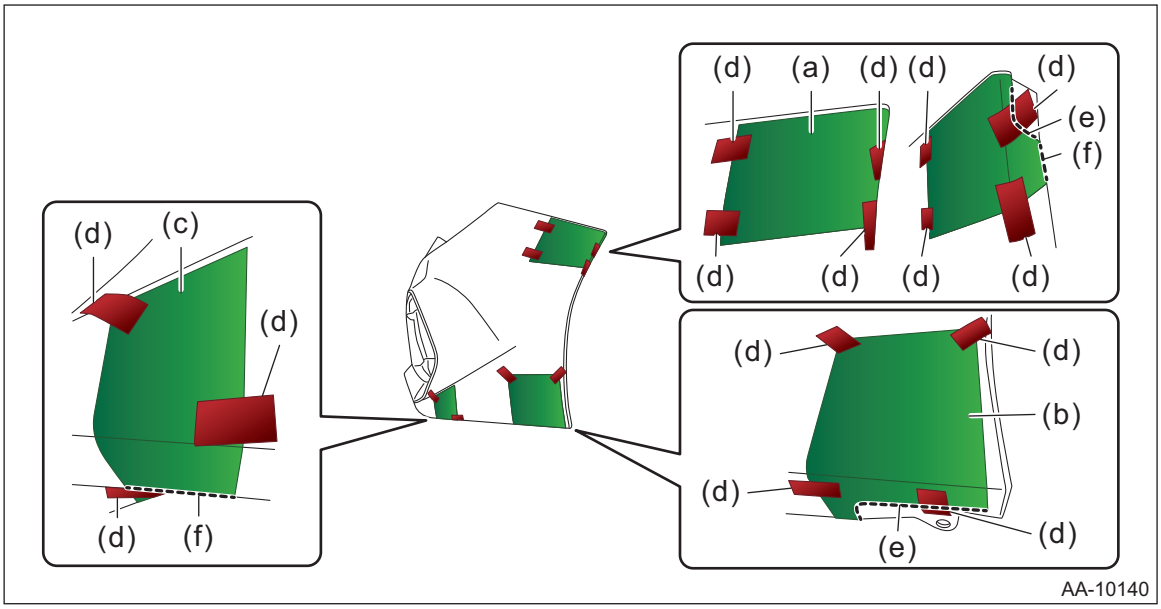
NOTE:
- When installing a new bumper face - front, perform the following steps.
- Perform the procedures for the right side in the same way as for the left side.

1) Perform the work for installing the front bumper extension.

(1) Print out and cut the pattern papers named as “FR BMPR EXT, Patern paper LH”.

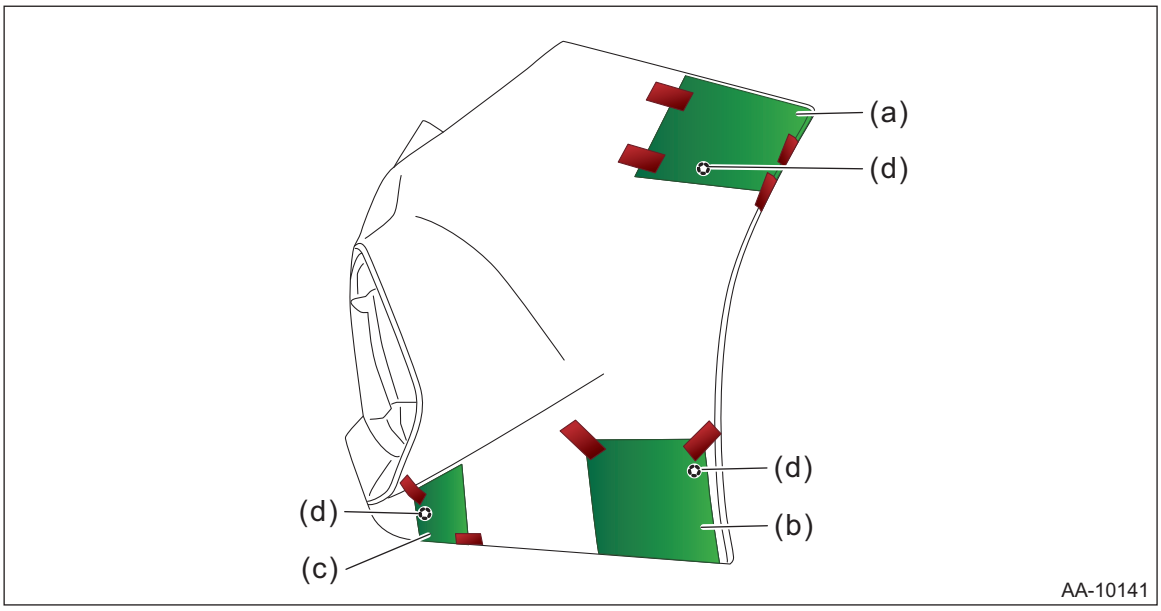
CAUTION:
Confirm that the pattern paper is printed out with accurate size.

(2) Attach the pattern papers (a), (b) and (c) to the bumper face - front.



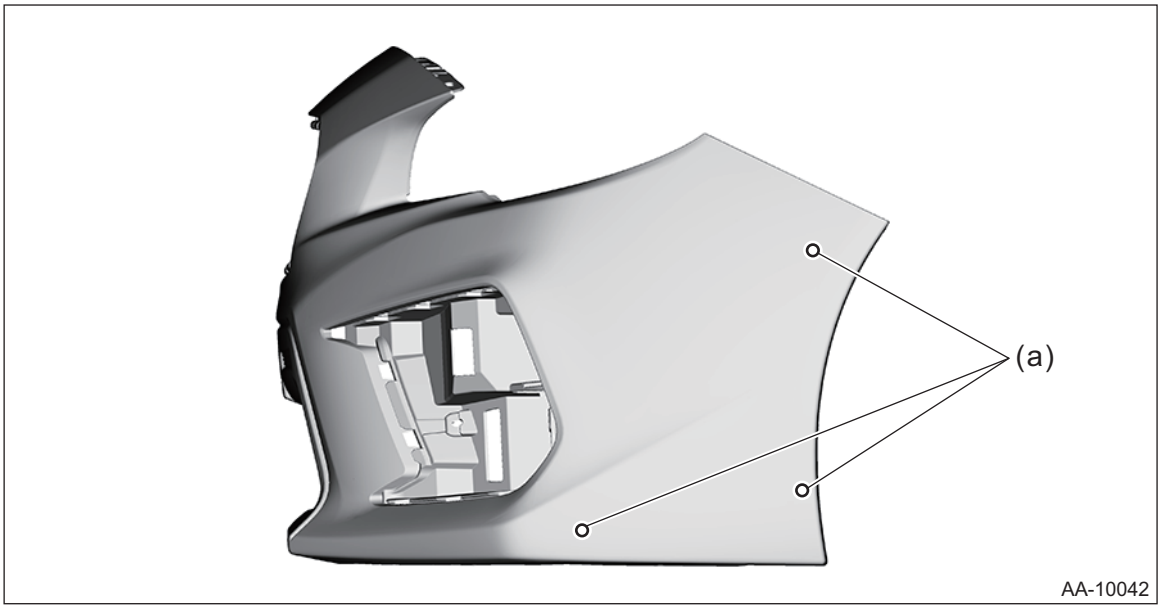
(a) Pattern paper FR BMP EXT ①
(b) Pattern paper FR BMP EXT ②
(c) Pattern paper FR BMP EXT ③
(d) Masking tape
(e) Alignment position for convex angle
(f) Alignment position for trim line

(3) Make mark-off lines for drilling holes (d) at 3 locations according to the pattern papers (a), (b) and (c).



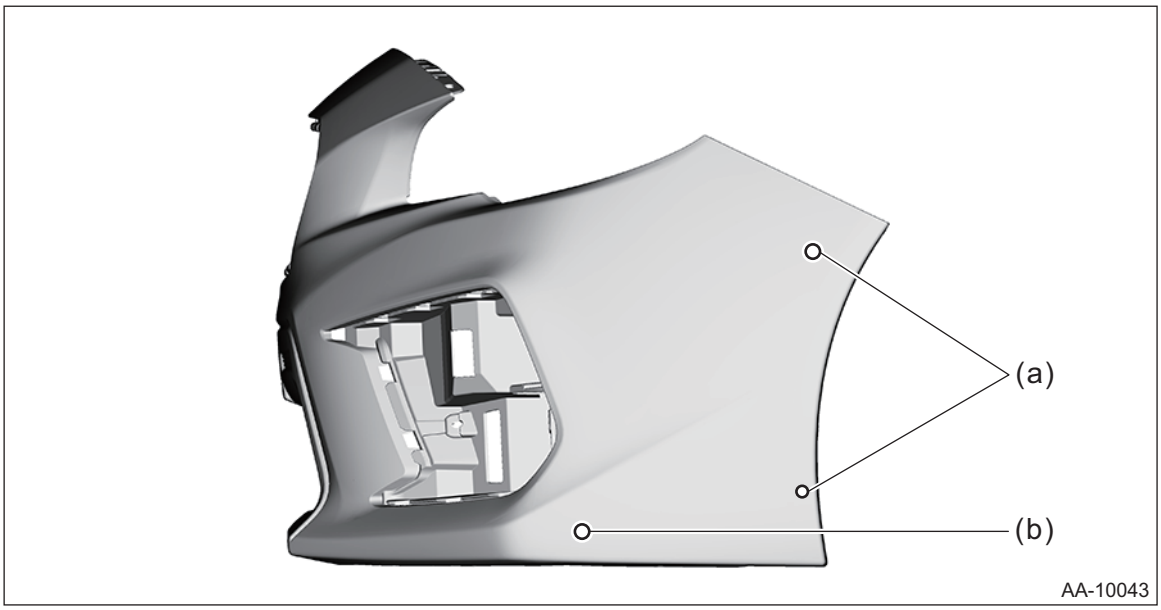
(a) Pattern paper FR BMP EXT ①
(b) Pattern paper FR BMP EXT ②
(c) Pattern paper FR BMP EXT ③
(d) Mark-off line position

(4) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (a) using a drill, and then make a pilot hole of 6 mm (0.24 in) diameter.



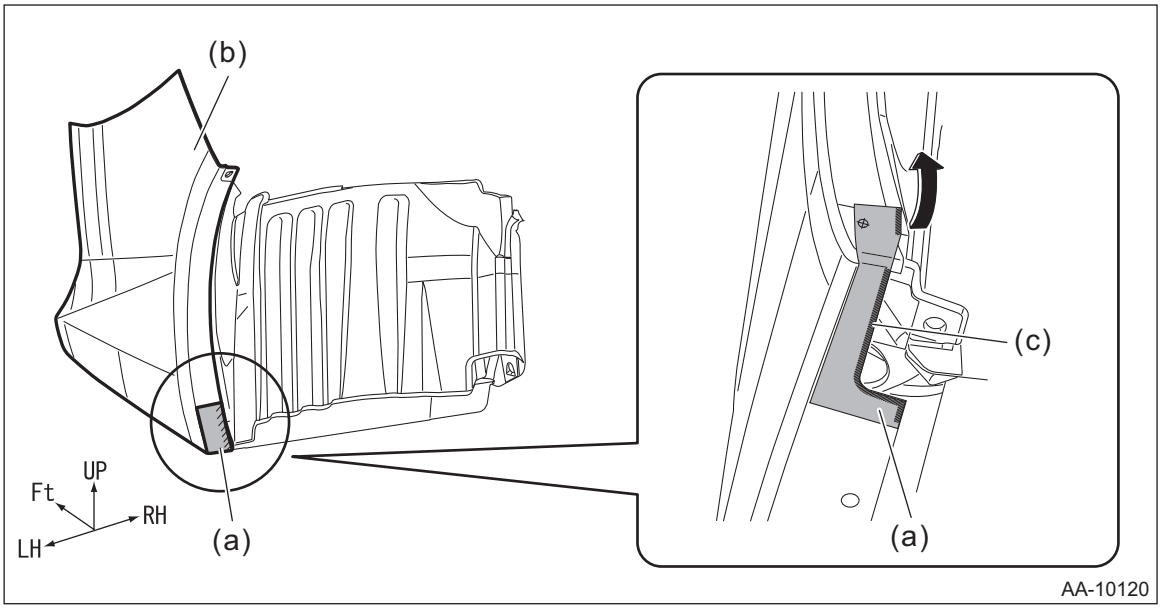
(5) Make a hole of 10 mm (0.39 in) diameter (a) and a hole of 12 mm (0.47 in) diameter (b) at the locations shown in the figure.

CAUTION:
Be sure to make a hole of a specified diameter. The front bumper extension may not be installed if the hole diameter is large.

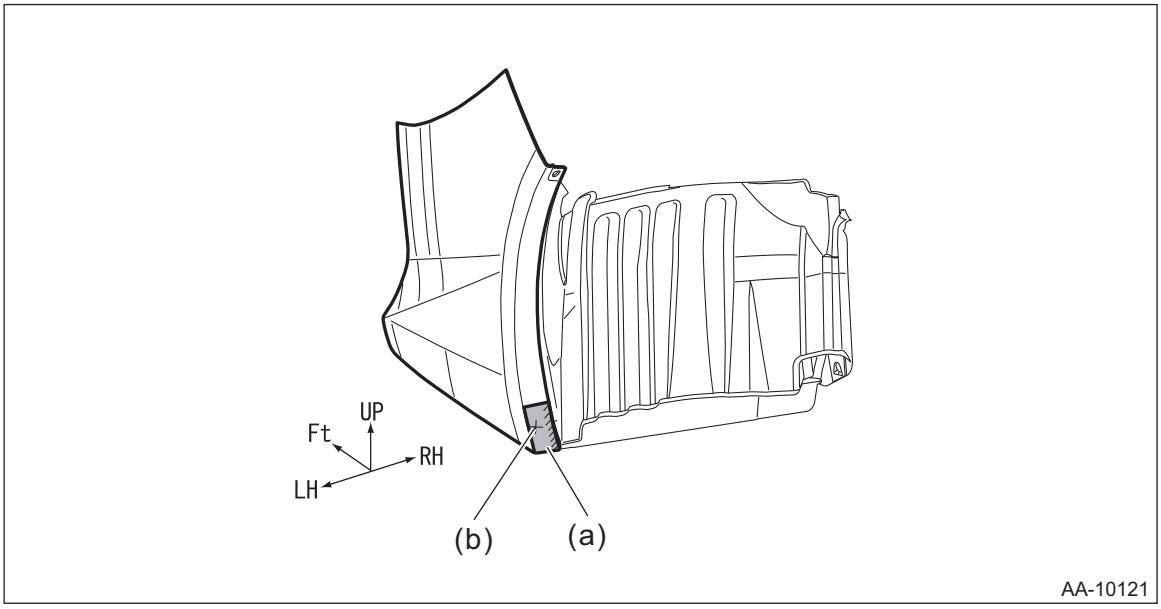


2) Perform the work for installing the front under spoiler.
(1) Attach the pattern paper (a) along the parting line (c) of the bumper face - front (b).

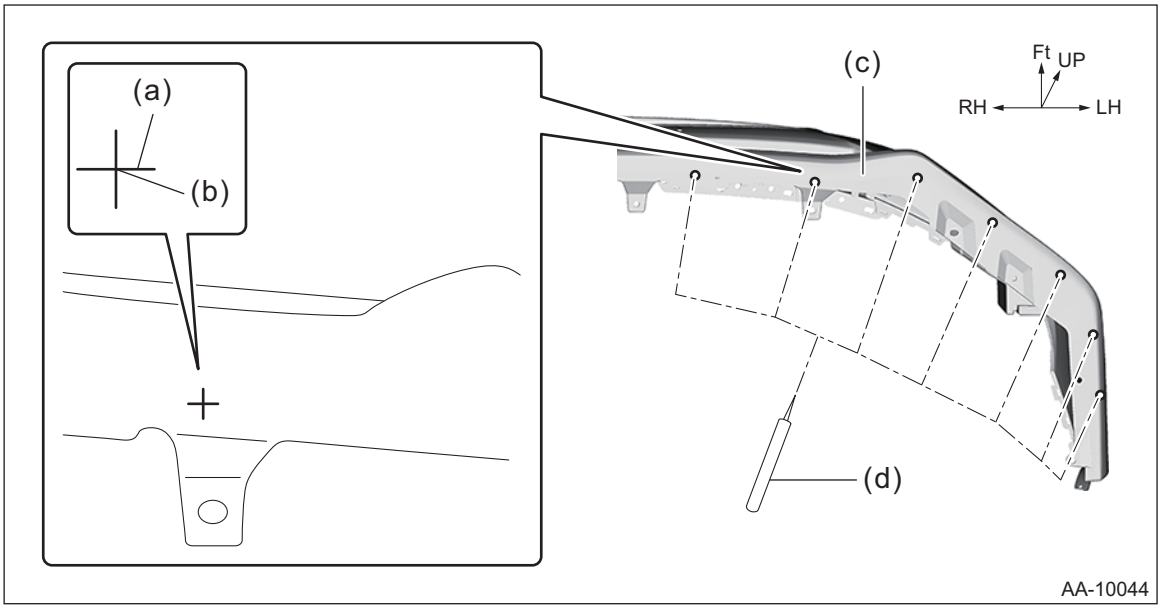
(2) Attach the pattern paper (a) while bending it toward the arrow directions.



(3) Make a mark-off line for drilling hole (b) according to the pattern paper (a).



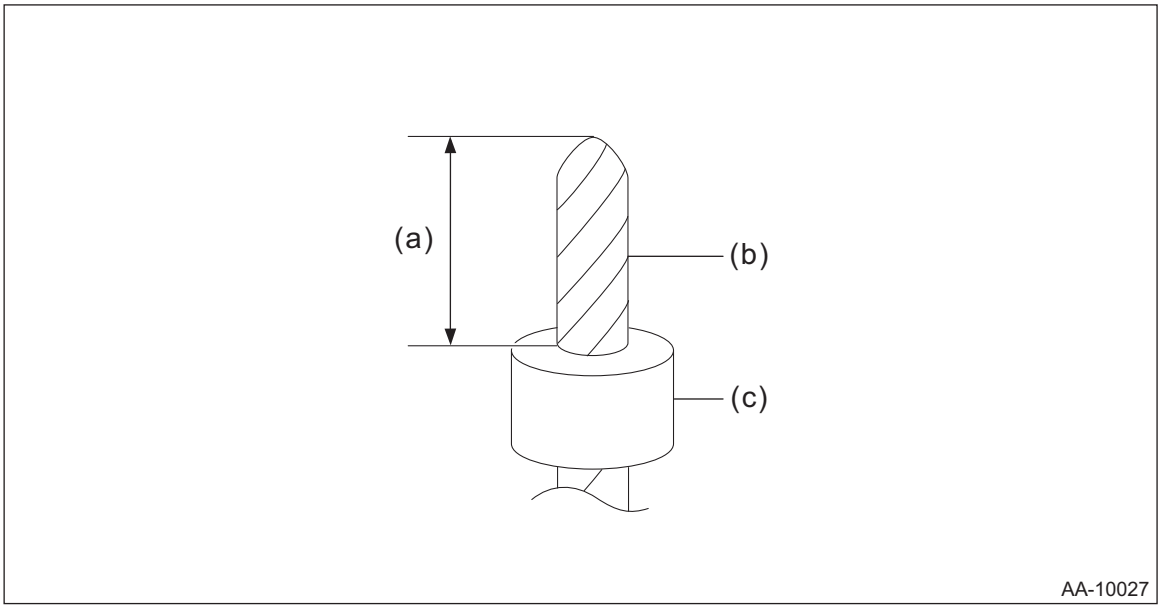
(4) Make mark-off lines for drilling holes (b) at 7 locations shown in the figure using a straight pick (d) or similar.



(a) Bumper mark-off line (5 mm (0.2 in))
(b) Mark-off line position
(c) Bumper face - front
(d) Straight pick

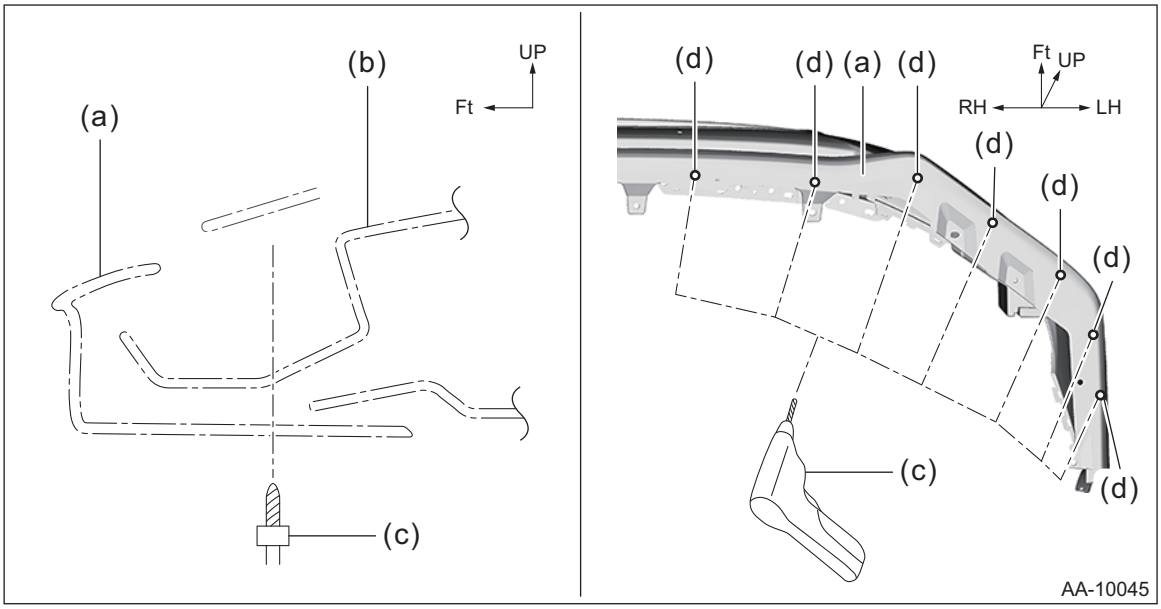
(5) Prepare a stopper by wrapping a cloth adhesive tape, etc. around the drill bit at the position 5 mm (0.2 in) from the tip end.

CAUTION:
Be sure to prepare a stopper; otherwise, the drill may interfere with the bumper face - front and cause damage.



(a) 5 mm (0.2 in)
(b) Drill bit
(c) Adhesive tape

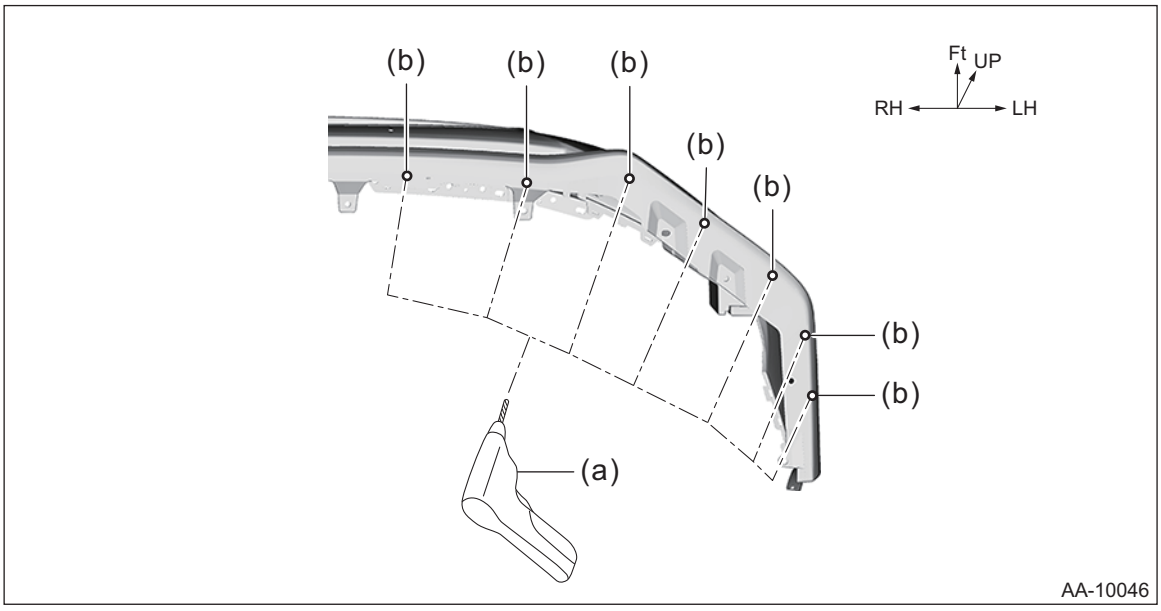
(6) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (d) using a drill (c), and then make a pilot hole of 7 mm (0.28 in) diameter.



(a) Bumper face - front
(b) Inner parts
(c) Drill
(d) Mark-off line position

(7) Make a hole of 9.5 mm (0.37 in) at the position (b) where the pilot hole is created using a drill (a).

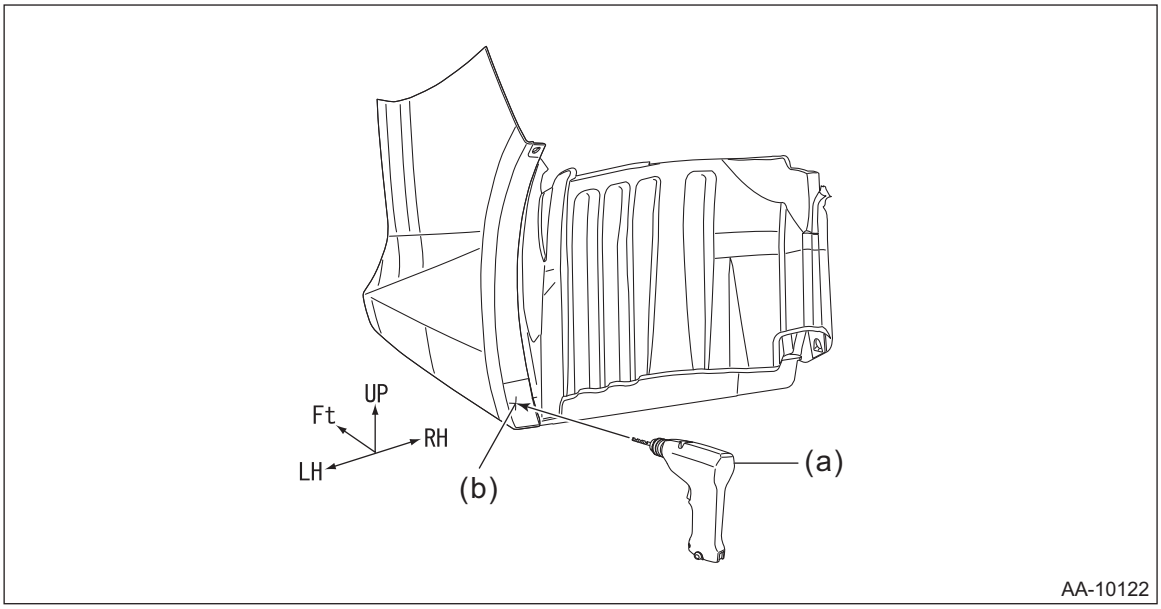
CAUTION:
Be sure to make a hole of a specified diameter. The front under spoiler may not be installed if the hole diameter is large.



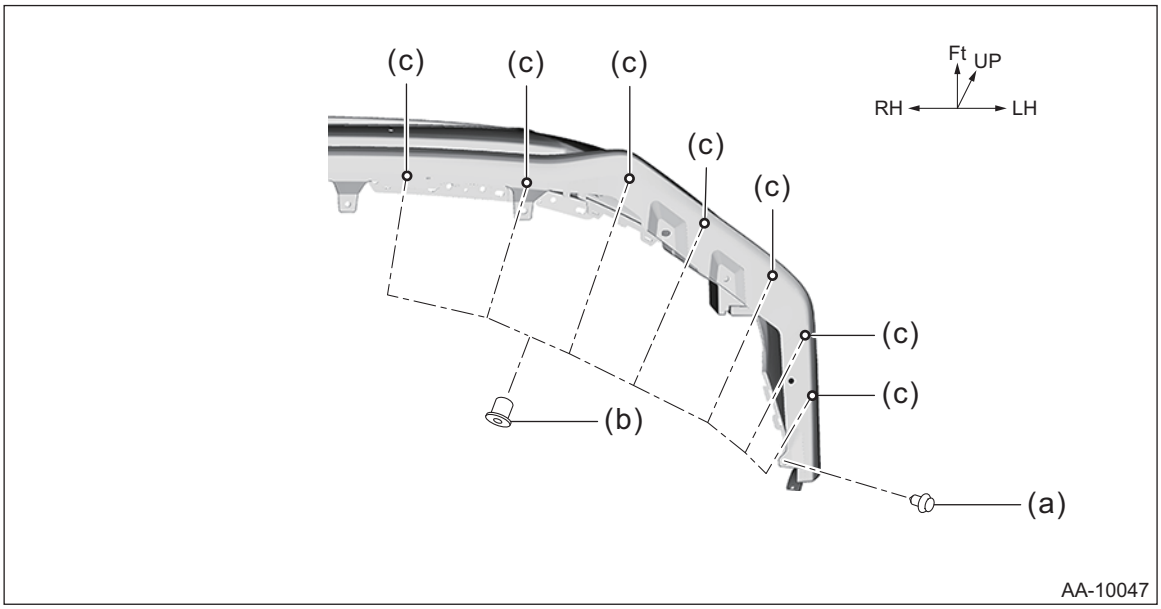
(8) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (b) using a drill (a), and then make a hole of 6 mm (0.24 in) diameter.

CAUTION:
- **Operate the steering wheel so that the drill does not interfere with tires.**

• Be sure to make a hole of a specified diameter. The front under spoiler may not be installed if the hole diameter is large.



(9) Remove the clip (a) on vehicle, and insert the well nuts (b) to the hole positions (c) on lower side of the bumper face - front.



3) Install the front bumper extension.

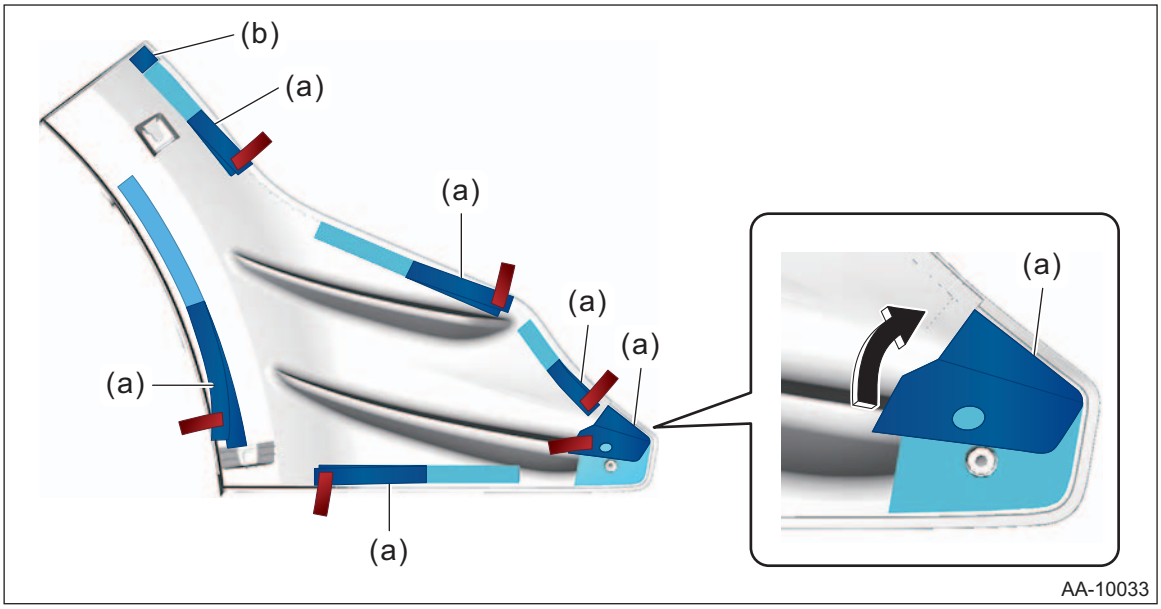
(1) Clean and degrease the front bumper extension attachment area on the bumper face - front.

NOTE:

• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.

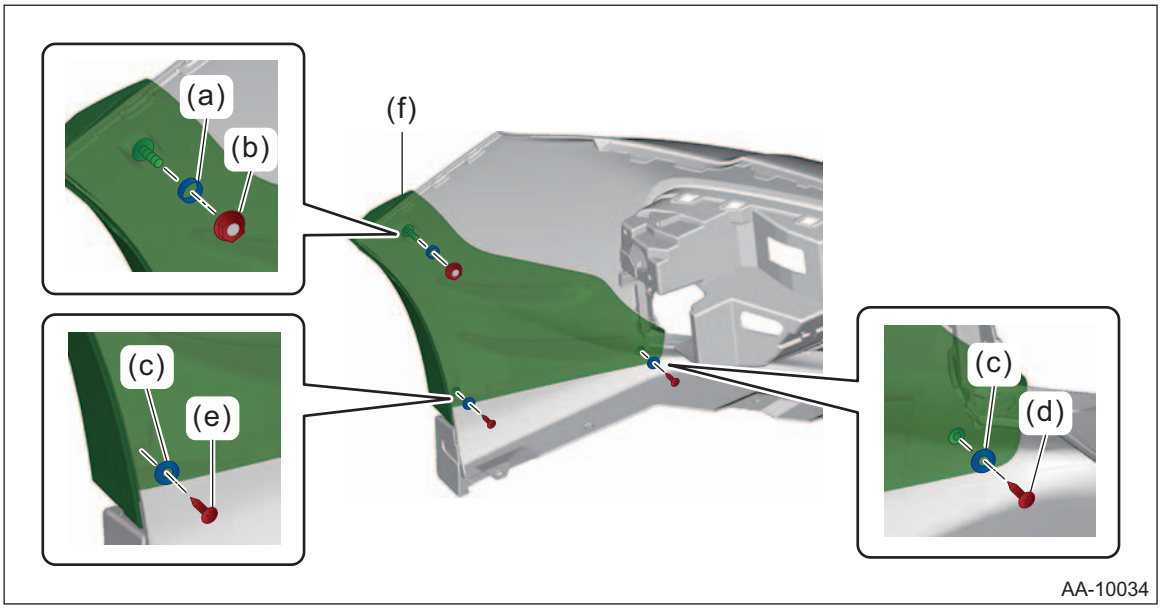
• Heating a particular small area will cause deformation of the parts.

(2) Peel off the backing sheet (a) on the front bumper extension by 38.5 mm (1.52 in), and then remove the whole backing sheet (b).



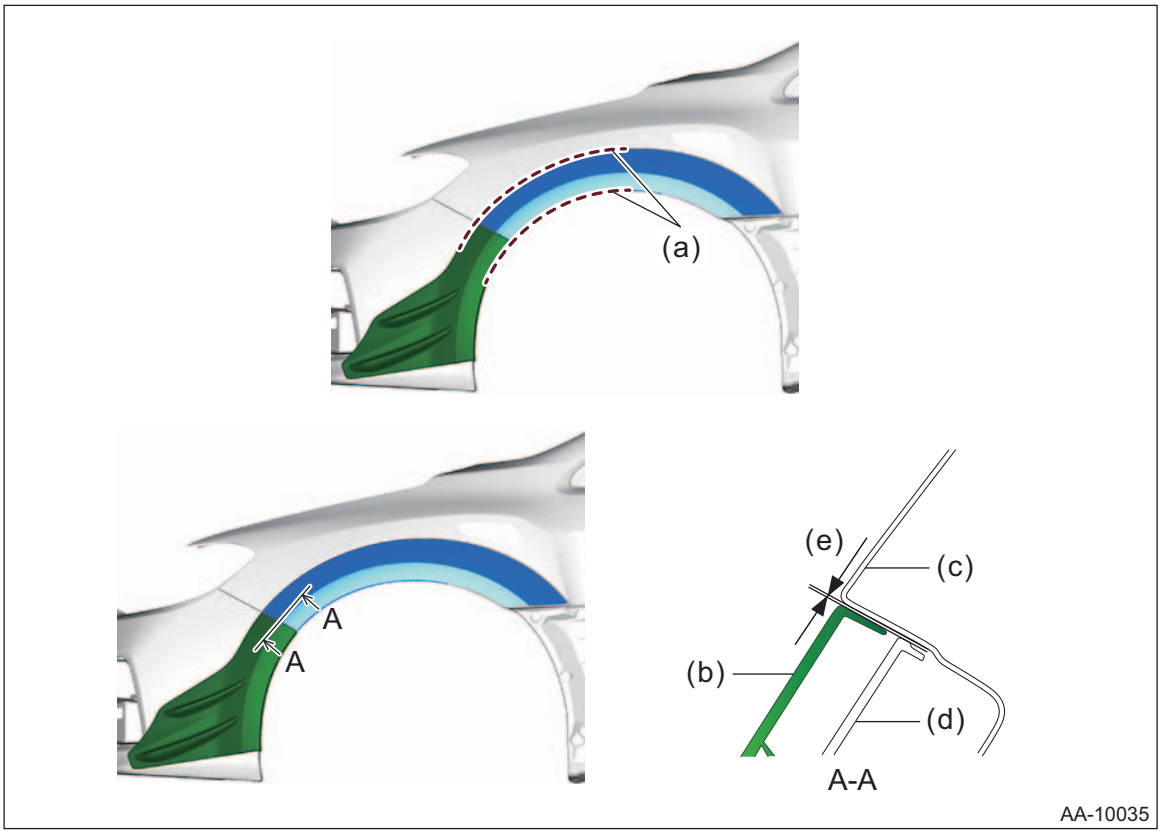
(3) Set the front bumper extension (f) to the bumper face - front, and temporarily install it with nut (b) and screws (d) and (e).

CAUTION:
Screws are different in length. Be sure to check the length before installation.



(a)	Collar	(c)	Washer	(e)	Screw (M4 × 12)
(b)	Nut	(d)	Screw (M4 × 8)	(f)	Front bumper extension

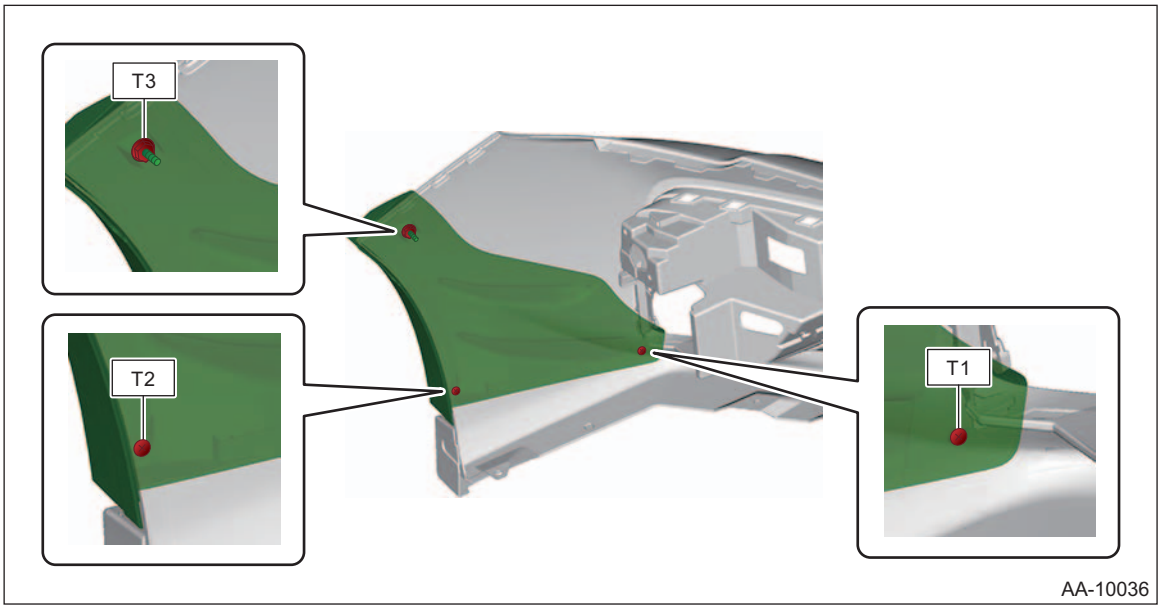
(4) Remove the mud guard - front.
(5) Install the bumper face - front to the vehicle.
(6) Align the arch section of the front bumper extension to the position shown as dotted line (a).



(a) Dotted line
(b) Front bumper extension
(c) Front fender
(d) Bumper face - front
(e) 0.8 mm (0.03 in)

(7) Peel off the backing sheet, and press-fit the front bumper extension.
(8) Tighten the nuts and screws.

Tightening torque:
T1: 1.5 N·m (0.15 kgf-m, 1.11 ft-lb)
T2: 2.0 N·m (0.2 kgf-m, 1.48 ft-lb)
T3: 4.5 N·m (0.46 kgf-m, 3.32 ft-lb)

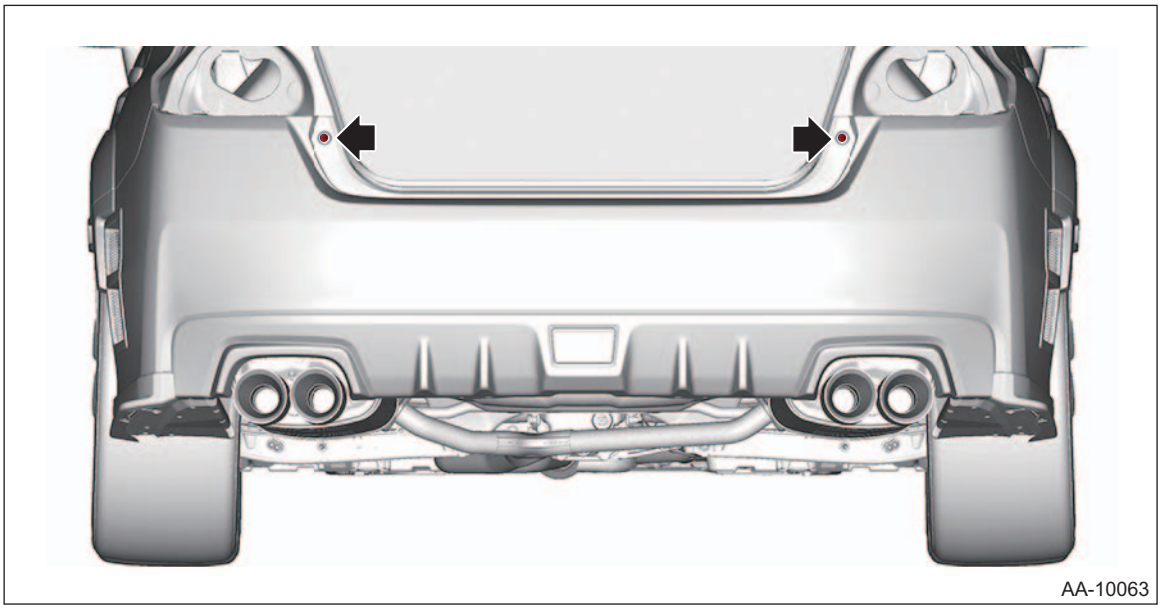


(9) Install the mud guard - front.

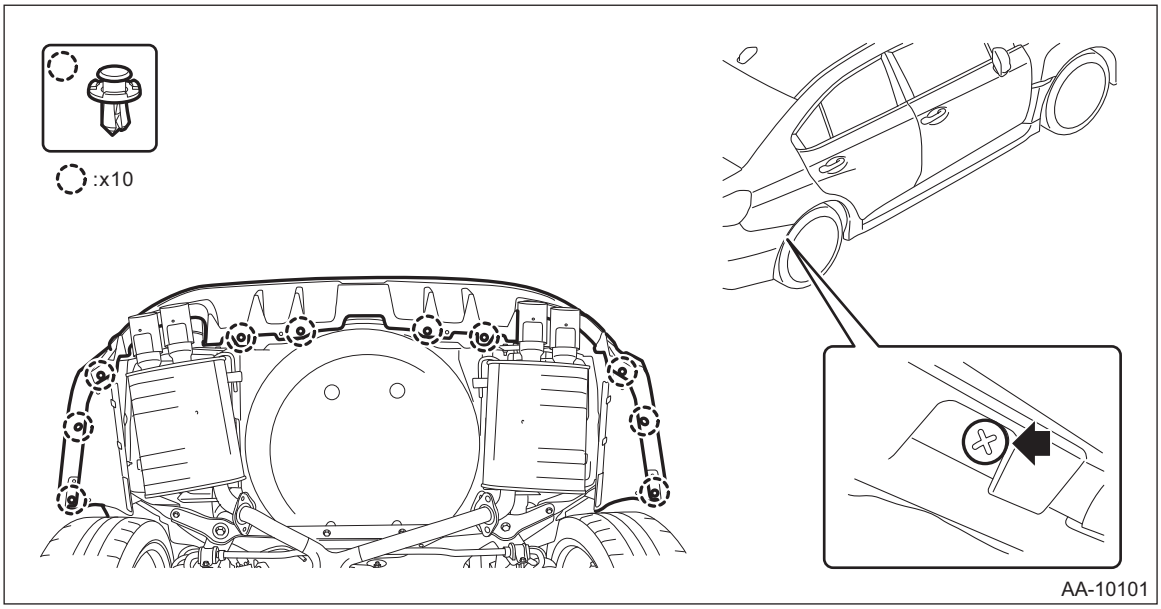
4. Rear Bumper

A: REMOVAL

1) Disconnect the ground terminal from battery.
2) Remove the mat - trunk.
3) Remove the trim panel - trunk rear.
4) Remove the light assembly - rear combination.
5) Remove the bumper face - rear.
   (1) Remove the screws on the bumper face - rear.

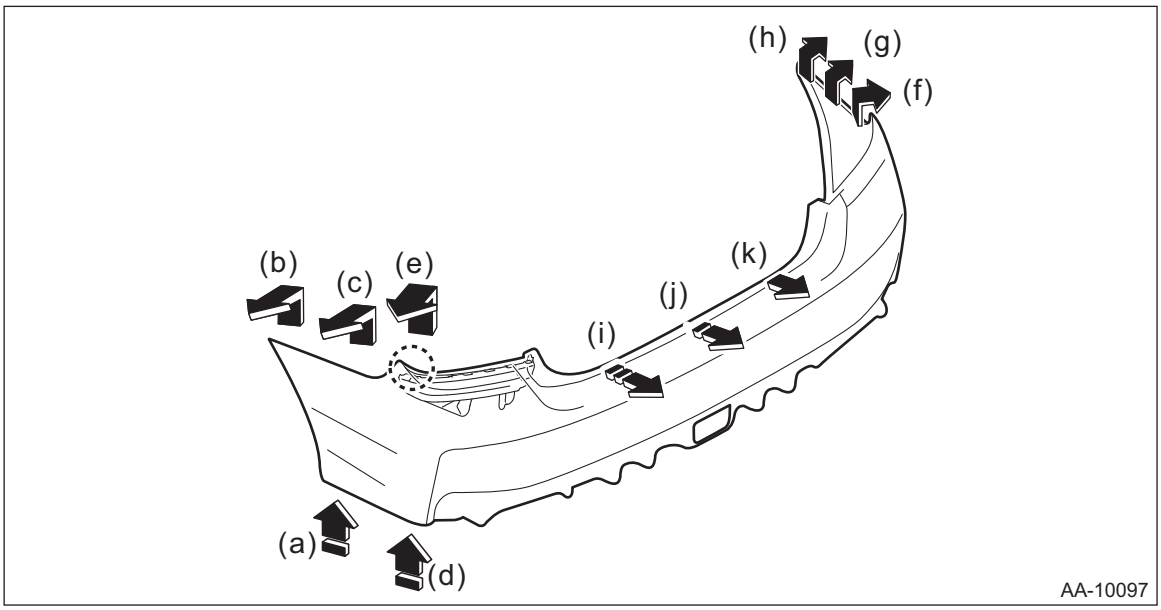


   (2) Remove the screws in the wheel house.
   (3) Remove the clips at the lower side of the bumper face - rear.



   (4) Detach (b) and (c) while pulling up (a) of the bumper face - rear.
   (5) Detach (e) while pulling up (d) of the bumper face - rear.
   (6) Perform the same procedures when detaching (f) to (h) on the opposite side.
   (7) Detach in order from (i) to (k) by carefully pulling toward you while pulling up the center of bumper face - rear.

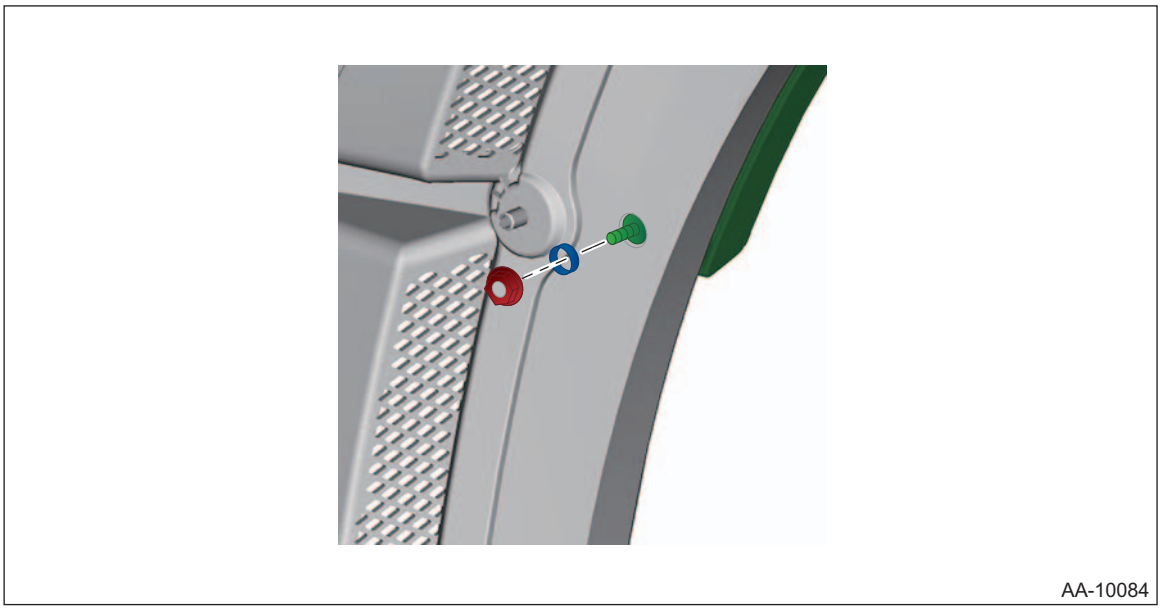
CAUTION:
Pulling with excessive force may damage the bracket.



6) Remove the rear bumper extension.

CAUTION:
Do not reuse the rear bumper extension.

(1) Remove the nut.



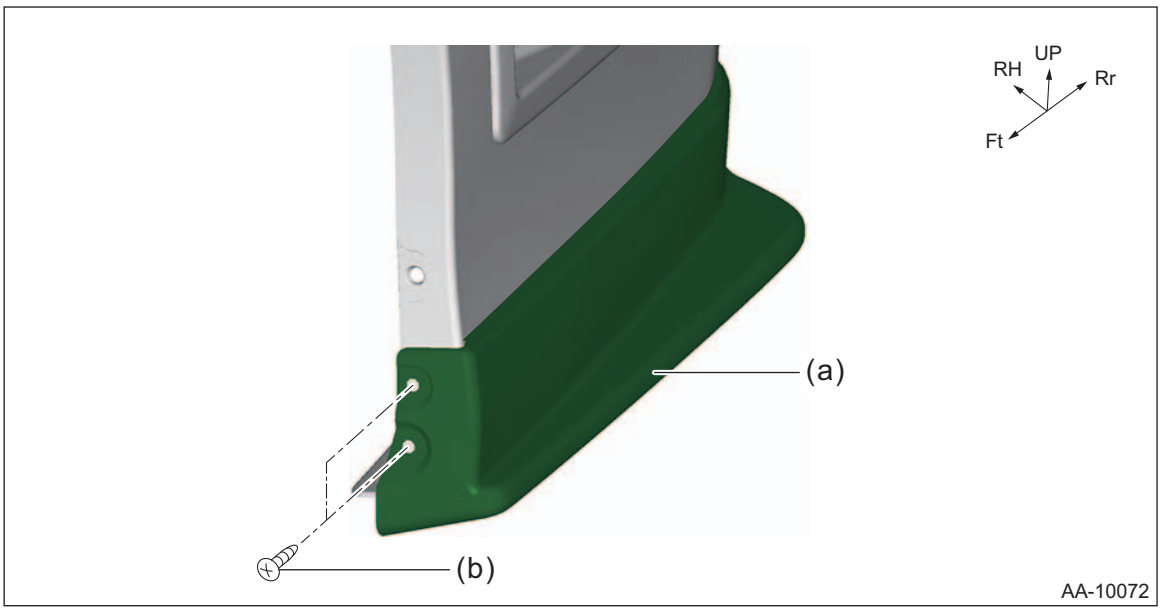
(2) Remove the double-sided tape, and remove the rear bumper extension.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.

7) Remove the rear quarter spoiler.

CAUTION:
Do not reuse the rear quarter spoiler.

(1) Remove screws (b) of the rear quarter spoiler (a).



(2) Remove the double-sided tape, and remove the rear quarter spoiler.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.

B: INSTALLATION

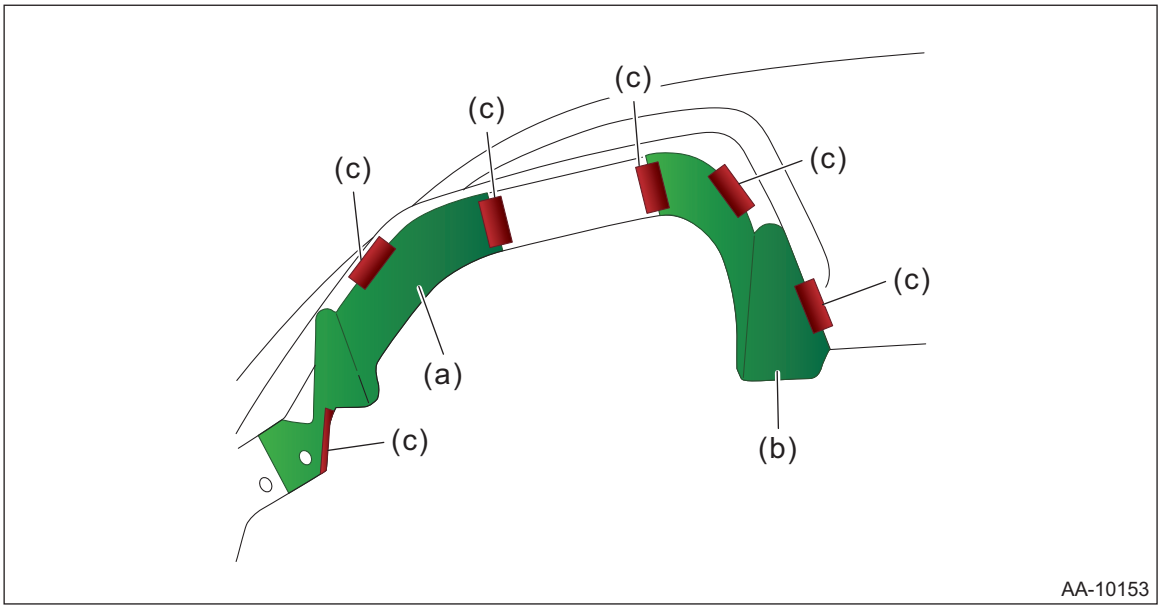
NOTE:
- When installing a new bumper face - rear, perform the following steps.
- Perform the procedures for the right side in the same way as for the left side.

1) Perform the work for installing the muffler.

(1) Print out and cut the pattern papers named as “Pattern for rear bumper out”.

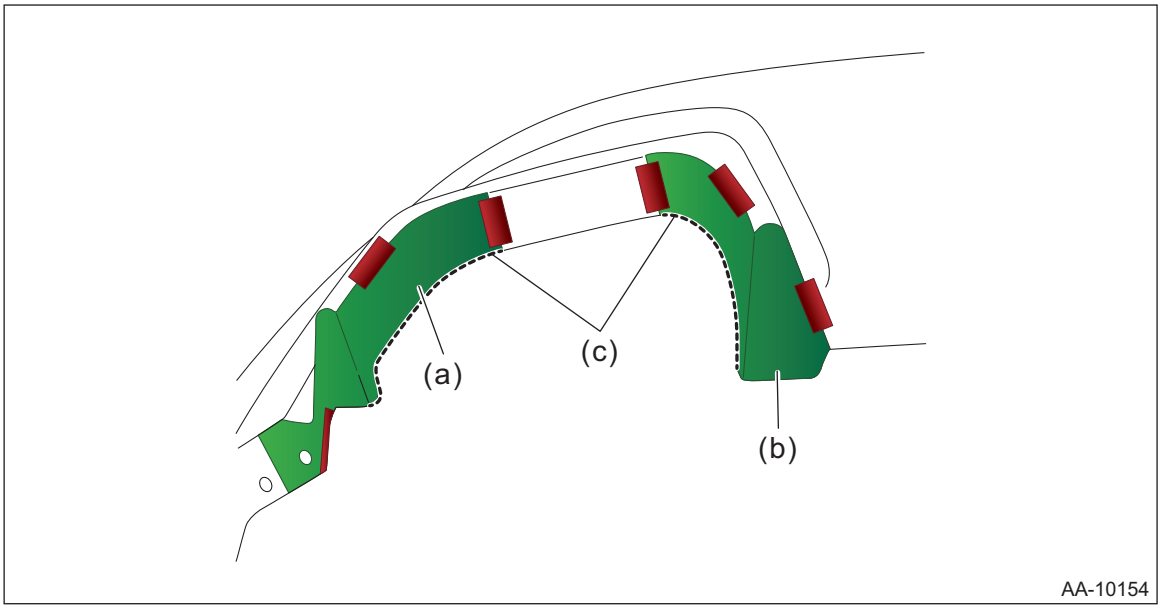
CAUTION:
Confirm that the pattern paper is printed out with accurate size.

(2) Attach the pattern papers (a) and (b) to the bumper face - rear.



(a) Pattern paper LH OUT (b) Pattern paper LH IN (c) Masking tape

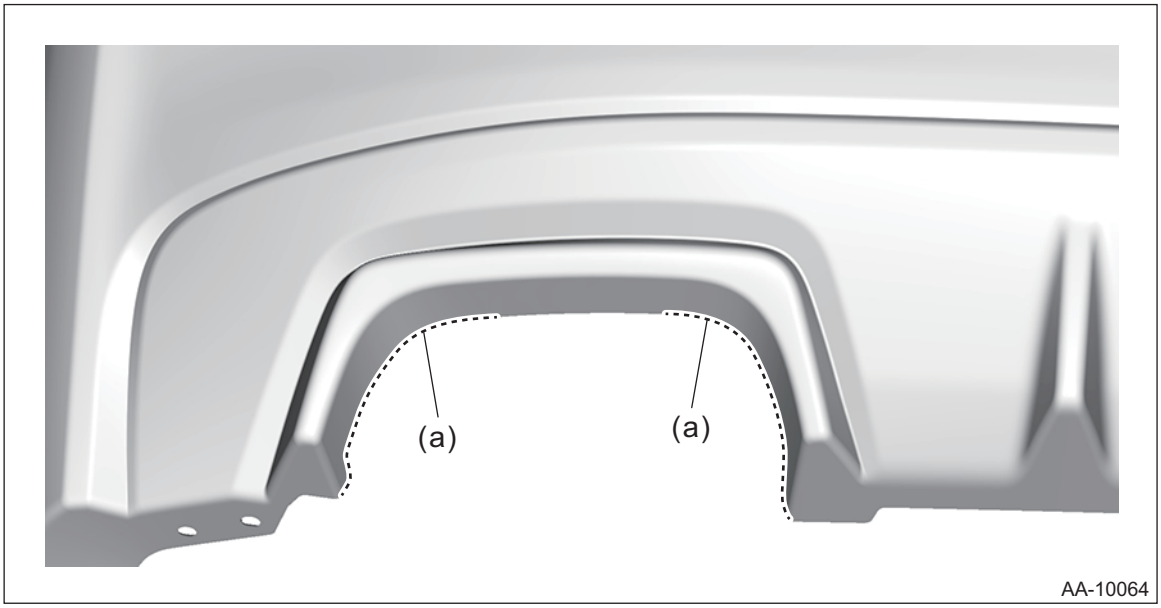
(3) Make a mark-off line (c) according to pattern papers (a) and (b).



(a) Pattern paper LH OUT (b) Pattern paper LH IN (c) Mark-off line

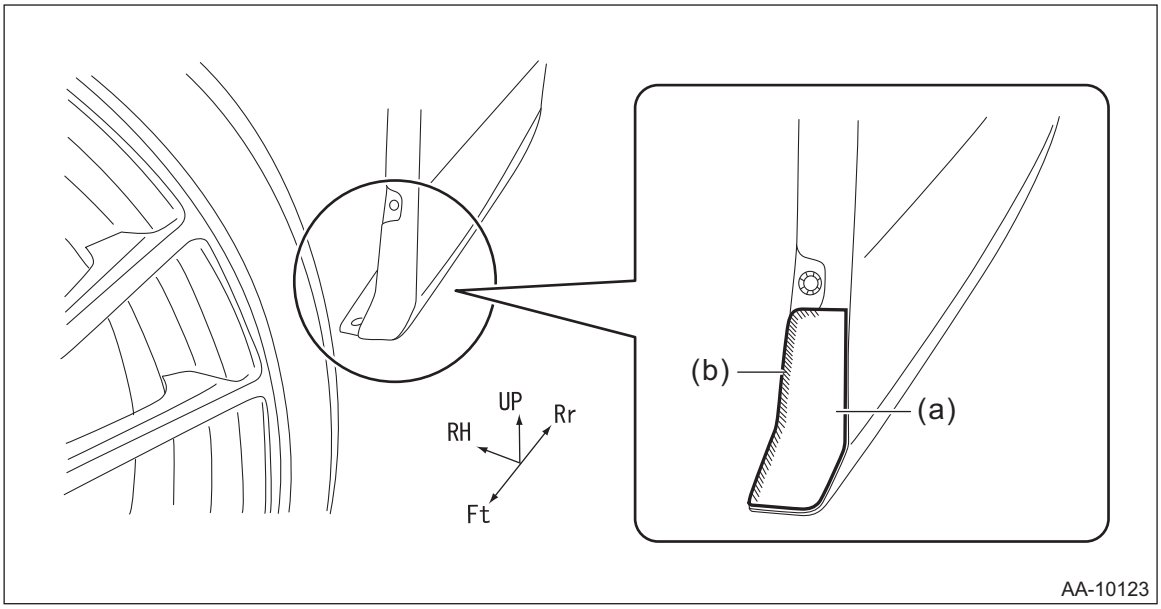
(4) Cut the lower part of the bumper face - rear along the mark-off line.

CAUTION:
Remove any burrs on the cut sections (a) to avoid damaging the vehicle.

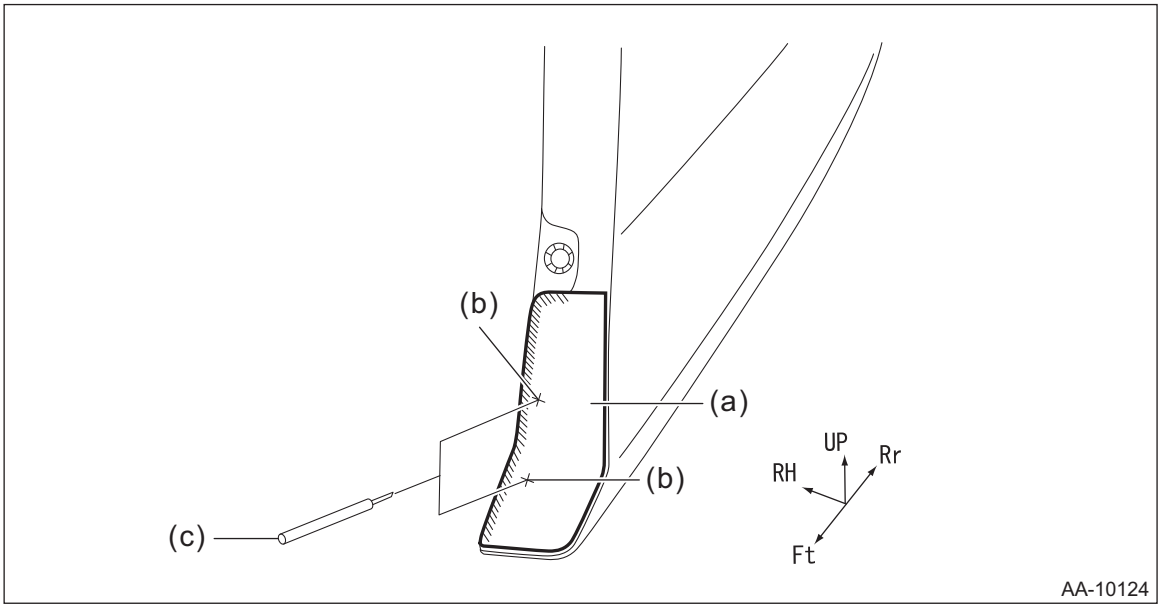


2) Perform the work for installing the rear quarter spoiler.

(1) Attach the pattern paper (a) so that it fits the fender arch shape mating surface (b).

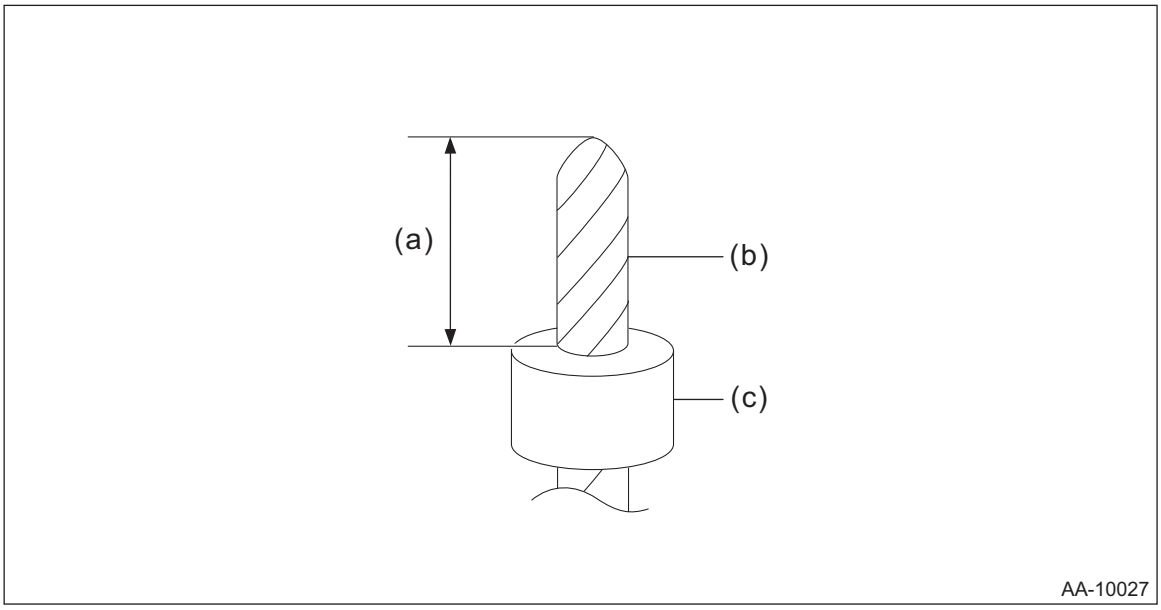


(2) Using a straight pick (c) or similar, make mark-off lines for drilling holes (b) at 2 locations according to the pattern paper (a).



(3) Prepare a stopper by wrapping a cloth adhesive tape, etc. around the drill bit at the position 5 mm (0.2 in) from the tip end.

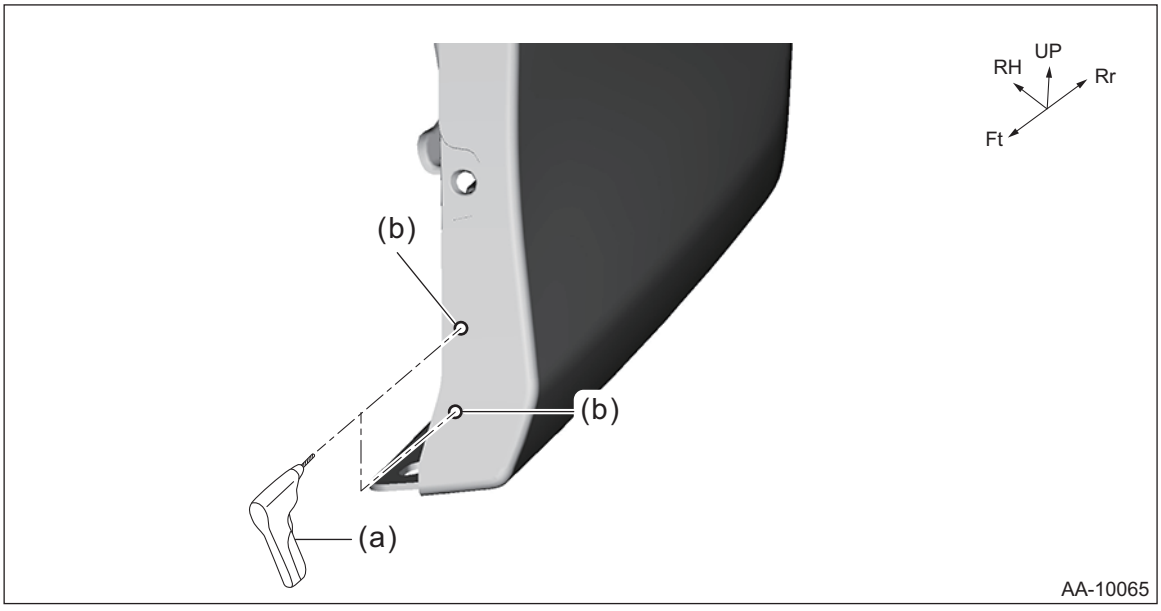
CAUTION:
Be sure to prepare a stopper; otherwise, the drill may interfere with the bumper face - rear and cause damage.



(a) 5 mm (0.2 in) (b) Drill bit (c) Adhesive tape

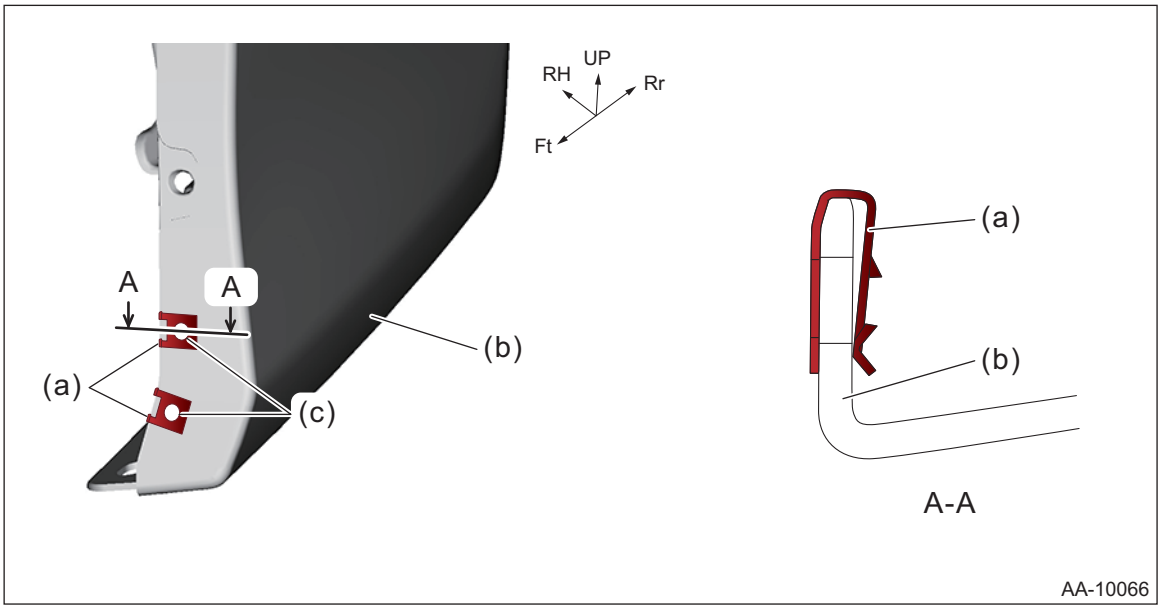
(4) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (b) using a drill (a), and then make a hole of 6 mm (0.24 in) diameter.

CAUTION:
Be sure to make a hole of a specified diameter. The rear quarter spoiler may not be installed if the hole diameter is large.



(5) Insert a J nut (a) to the hole (c) created.

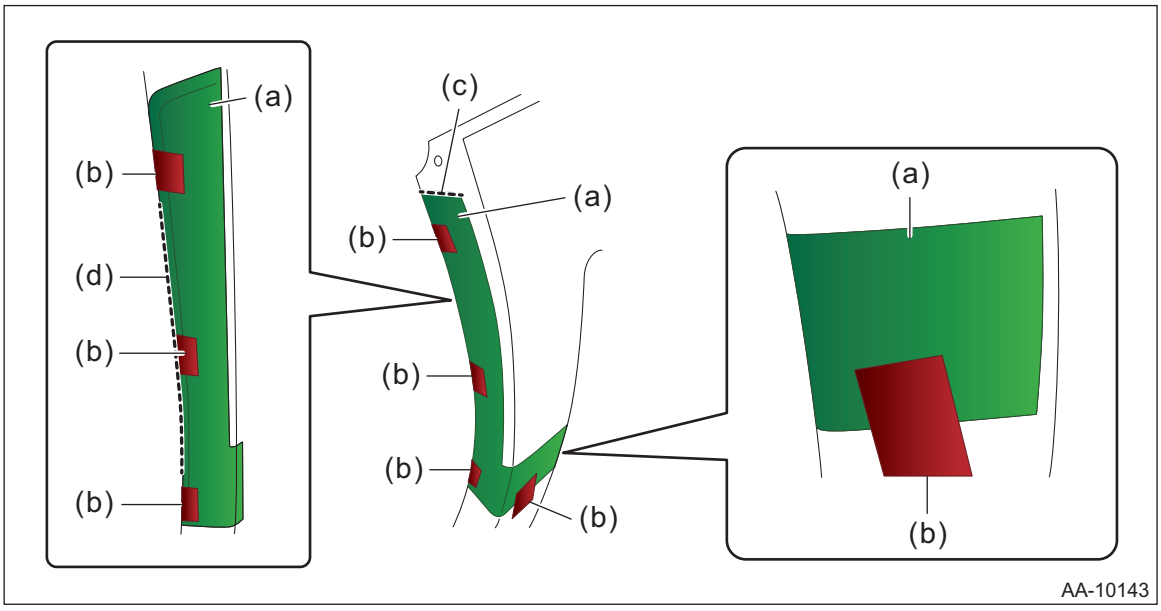
CAUTION:
Be sure to confirm the direction of installation. If the installation direction is not correct, the rear quarter spoiler may not be installed.



(a) J nut
(b) Bumper face - rear
(c) Hole position

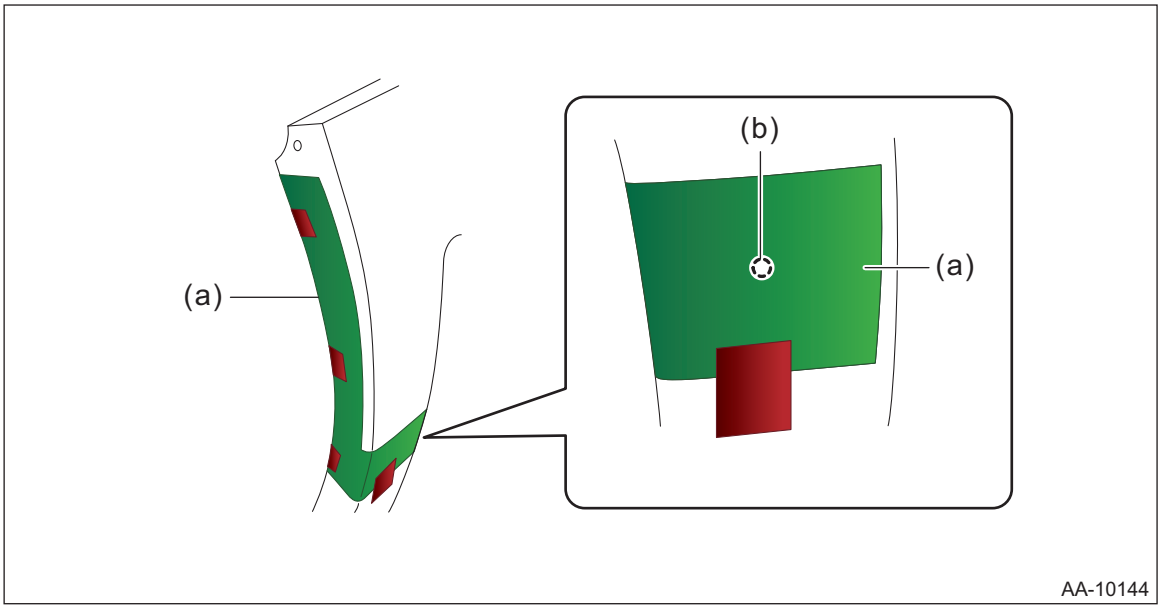
3) Perform the work for installing the rear bumper extension.
(1) Print out and cut the pattern papers named as “RR BMPR EXT, Patern paper LH”.

CAUTION:
Confirm that the pattern paper is printed out with accurate size.
(2) Press the pattern paper (a) against the bumper face - rear, and attach masking tapes (b).



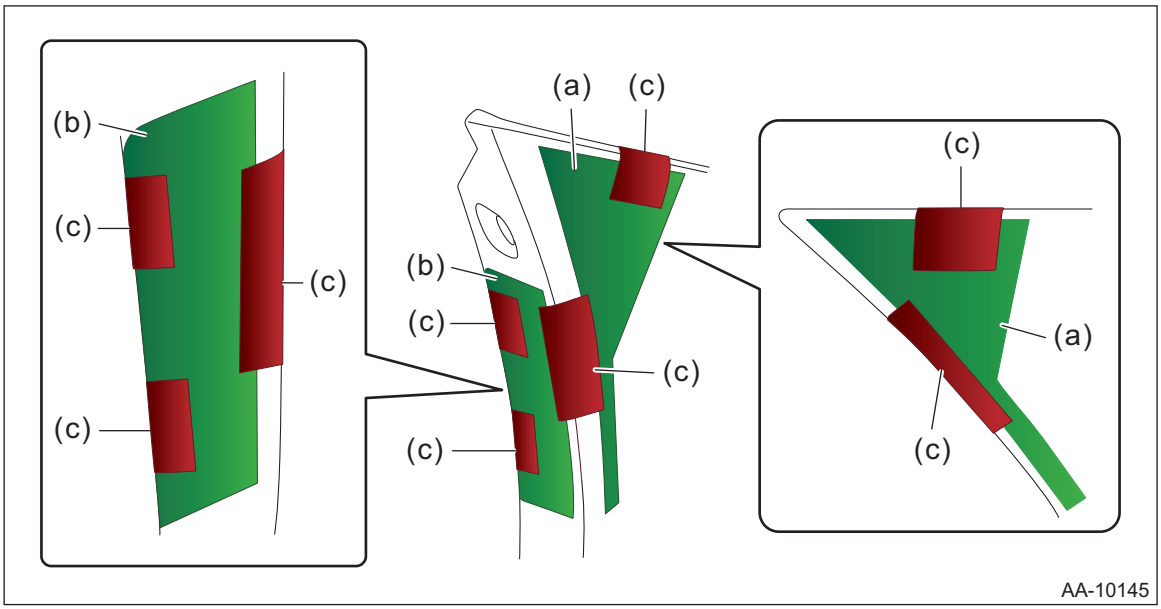
(a) Pattern paper RR BMP EXT (1)
(b) Masking tape
(c) Alignment position for convex angle
(d) Alignment position for trim line

(3) Make a mark-off line for drilling hole (b) according to the pattern paper (a).



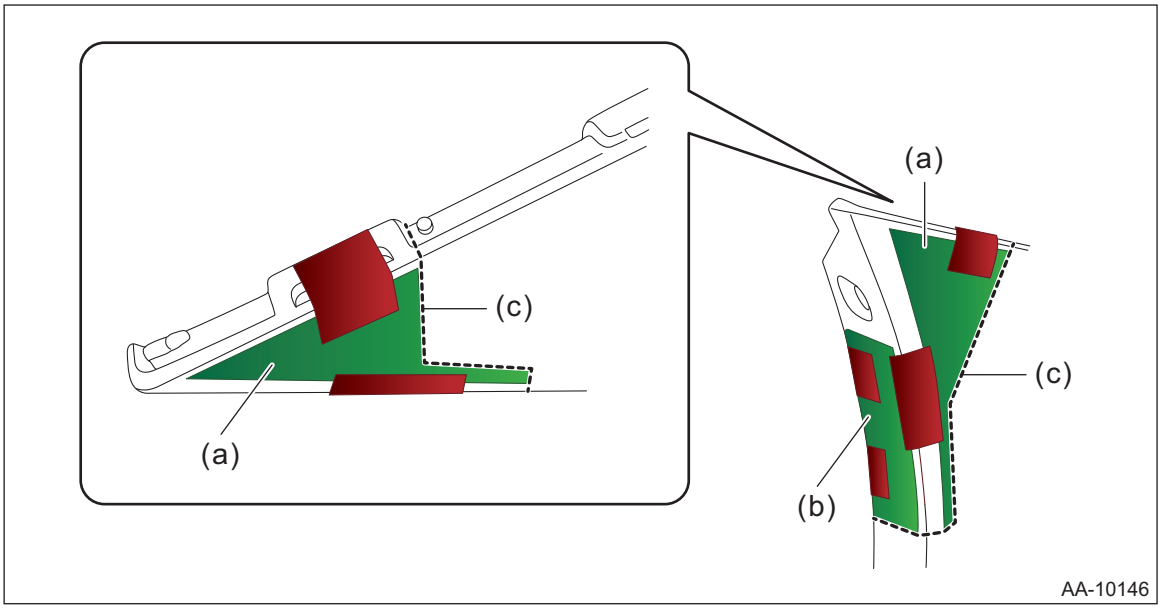
(a) Pattern paper RR BMP EXT (1) (b) Mark-off line position

(4) Press the pattern papers (a) and (b) against the bumper face - rear, and attach masking tapes (c).



(a) Pattern paper RR BMP EXT (2) (b) Pattern paper RR BMP EXT (3) (c) Masking tape

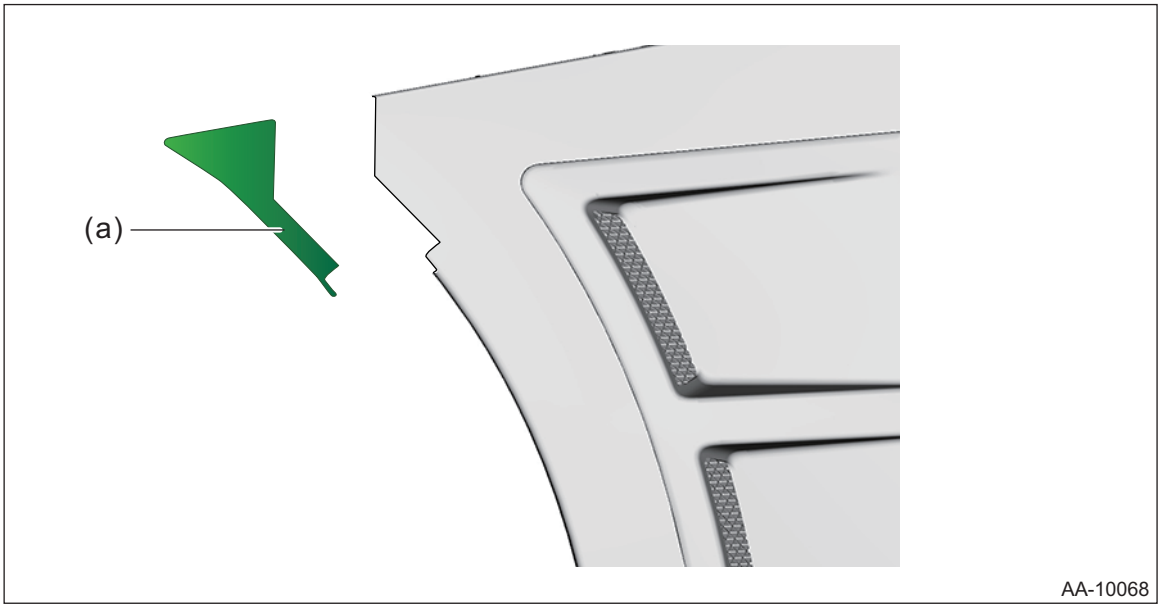
(5) Make a mark-off line for drilling (c) according to pattern papers (a) and (b).



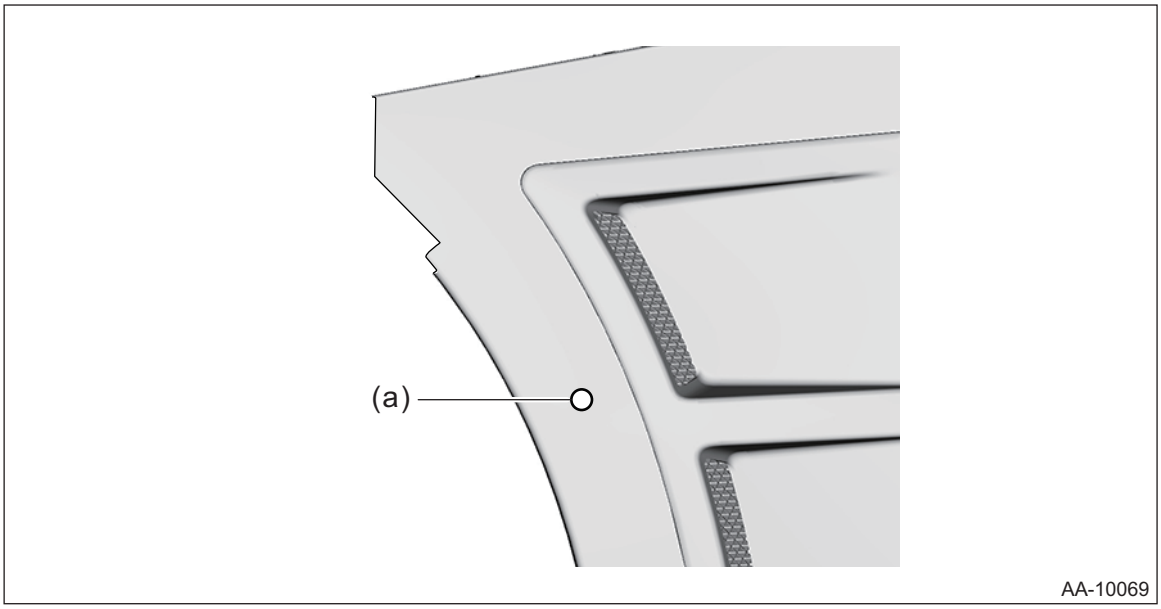
(a) Pattern paper RR BMP EXT (2) (b) Pattern paper RR BMP EXT (3) (c) Mark-off line

(6) Cut the end part (a) of the bumper face - rear shown in the figure.

CAUTION:
Remove any burrs on the cut section to avoid damaging the vehicle.

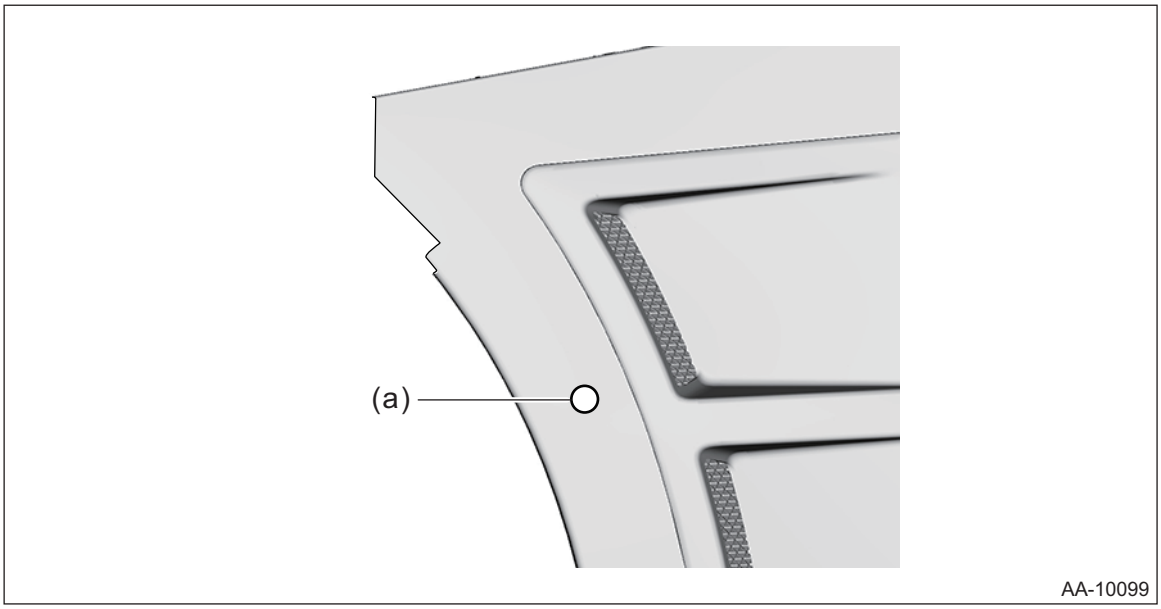


(7) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (a) using a drill, and then make a pilot hole of 6 mm (0.24 in) diameter.



(8) Make a hole of 12 mm (0.47 in) diameter at the position (a) where the pilot hole is created using a drill.

CAUTION:
Be sure to make a hole of a specified diameter. The rear bumper extension may not be installed if the hole diameter is large.

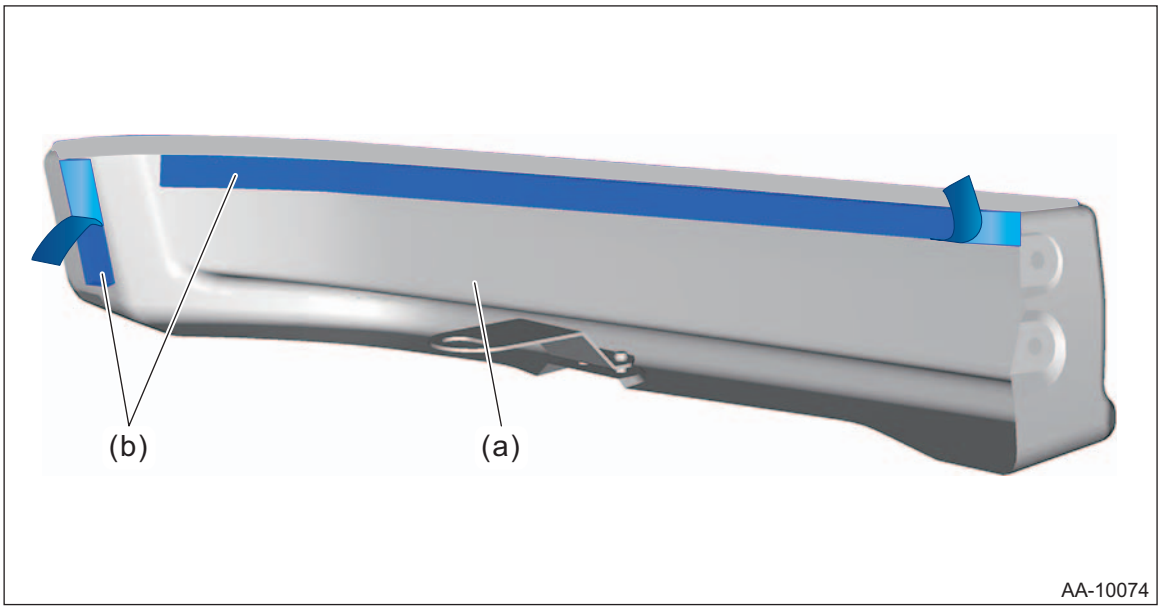


4) Install the bumper face - rear.
5) Clean and degrease the rear quarter spoiler attachment area (a) on the bumper face - rear.

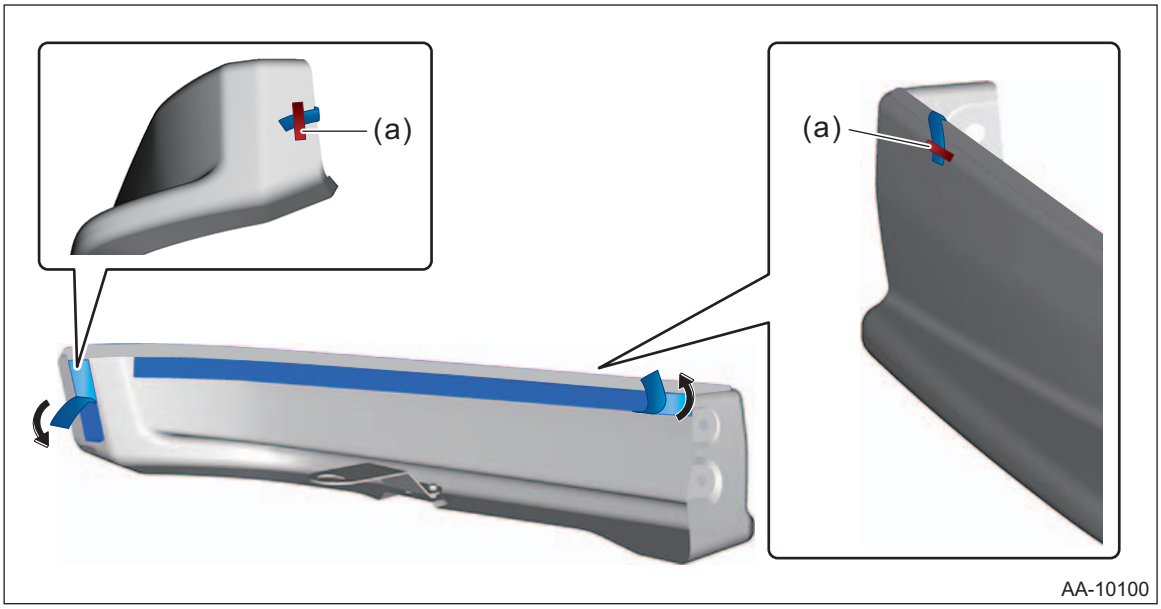
NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.

- Heating a particular small area will cause deformation of the parts.

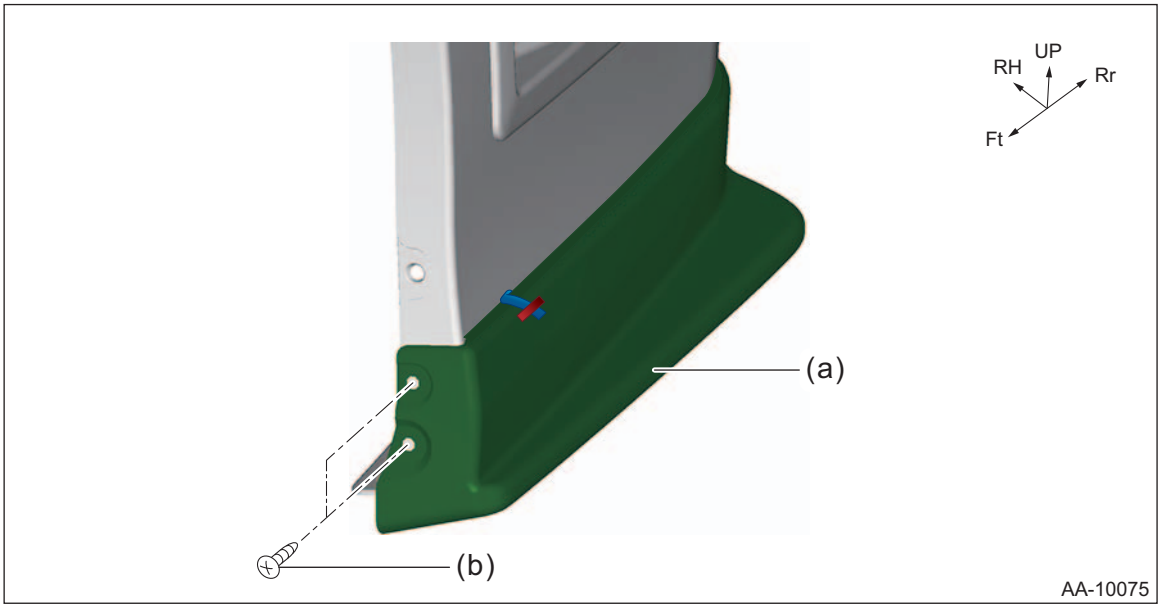
6) Install the rear quarter spoiler.
   (1) Peel off 38.5 mm (1.52 in) of the backing sheet (b) on the rear quarter spoiler (a).



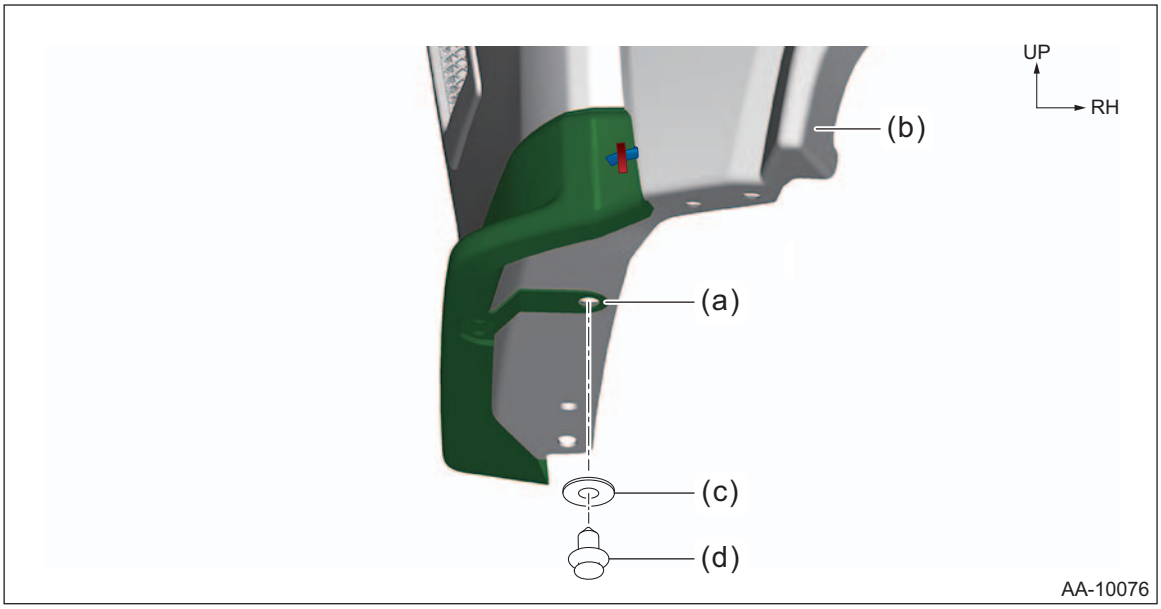
(2) Attach the backing sheet that was peeled off by 38.5 mm (1.52 in) to the front side with masking tape (a).



(3) Temporarily install the rear quarter spoiler (a) with screws (b).



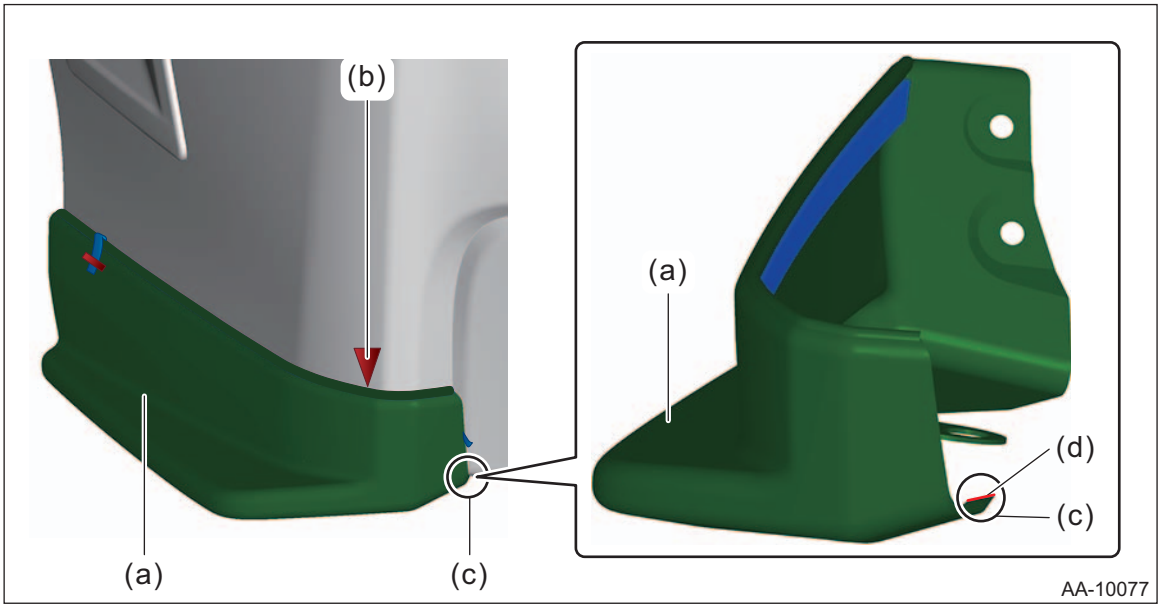
(4) Install the washer (c) and the clip (d).



(a) Rear quarter spoiler
(b) Bumper face - rear
(c) Washer
(d) Clip

(5) Adjust the position of rear quarter spoiler end according to the bumper face - rear.

NOTE:
A marking with a masking tape, etc. will make the position adjustment easier.

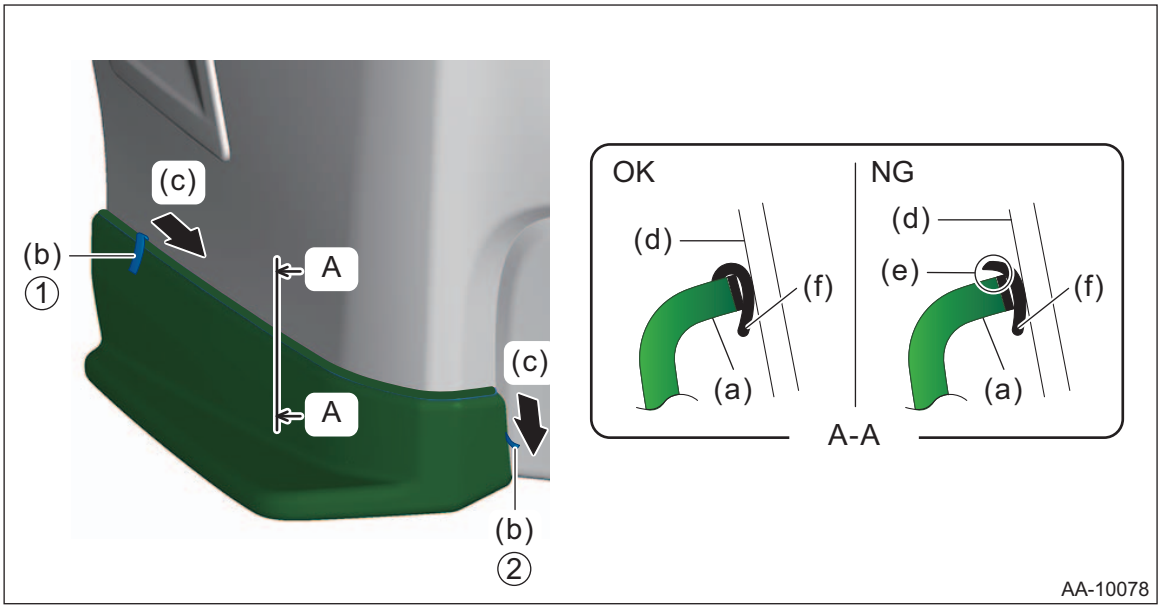


(a) Rear quarter spoiler
(b) Masking tape
(c) Make the end part abutted
(d) Abutted section

(6) Peel off the backing sheet (b) on the rear quarter spoiler in the direction of the arrow (c), in numerical order as shown in the figure.

CAUTION:
- **Be careful not to cut off the backing sheet (b) while peeling it off.**

- **Confirm that the molding (f) of the rear quarter spoiler (a) is not caught in and deformed.**



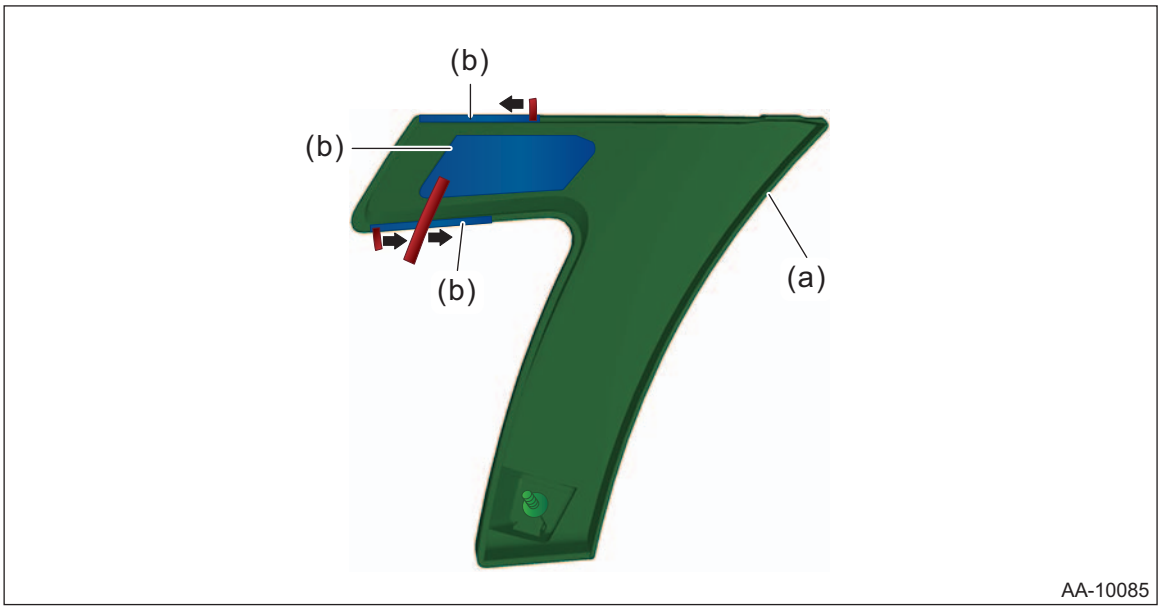
(a)	Rear quarter spoiler	(c)	Direction of peeling off the backing paper	(e)	Opening
(b)	Backing sheet	(d)	Bumper face - rear	(f)	Molding

(7) Press-fit the rear quarter spoiler.
(8) Tighten the screws temporarily installed in step (3).

7) Remove the bumper face - rear.
8) Clean and degrease the rear bumper extension attachment area on the bumper face - rear.

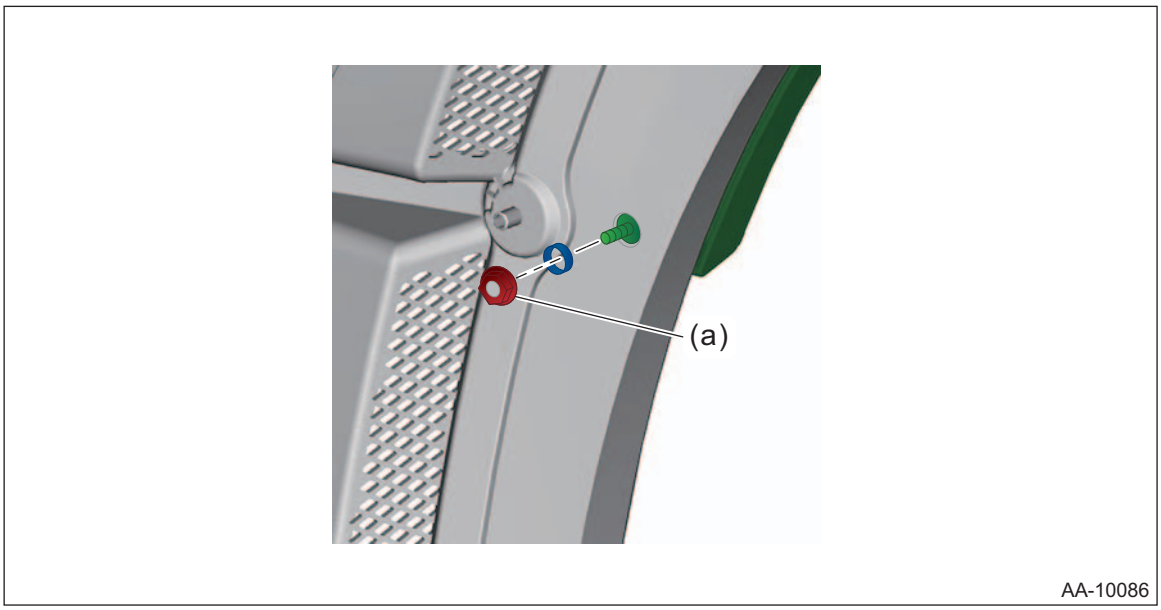
NOTE:
- When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
- Heating a particular small area will cause deformation of the parts.

9) Install the rear bumper extension.
(1) Peel off 38.5 mm (1.52 in) of the backing sheets (b) on the rear bumper extension (a).



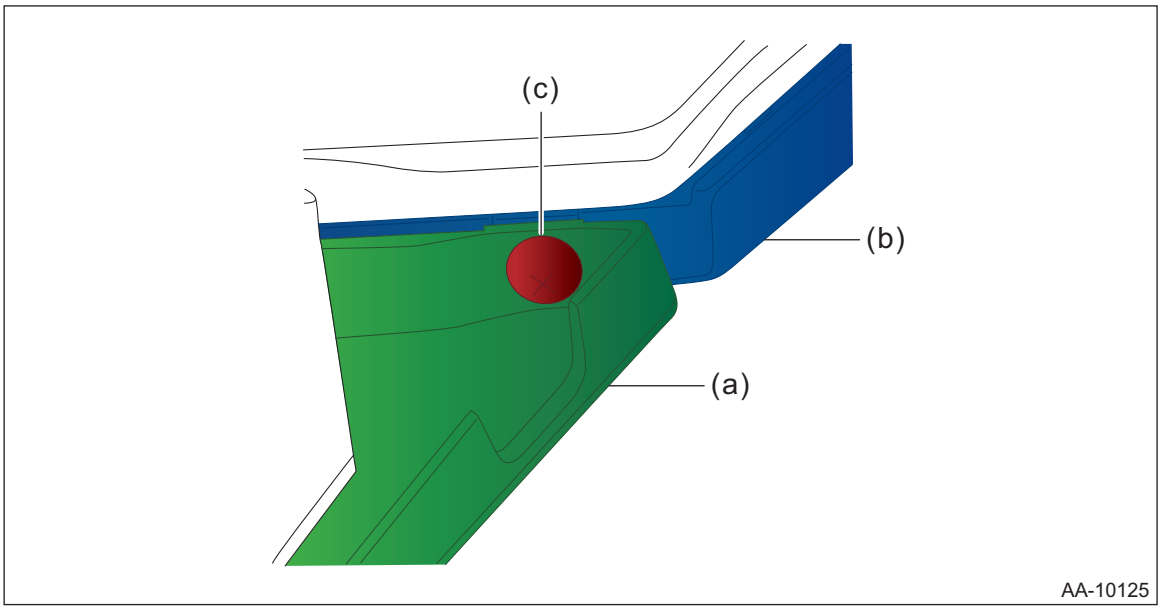
(2) Install the rear bumper extension with nut (a).

Tightening torque:
3.5 N·m (0.4 kgf-m, 2.6 ft-lb)

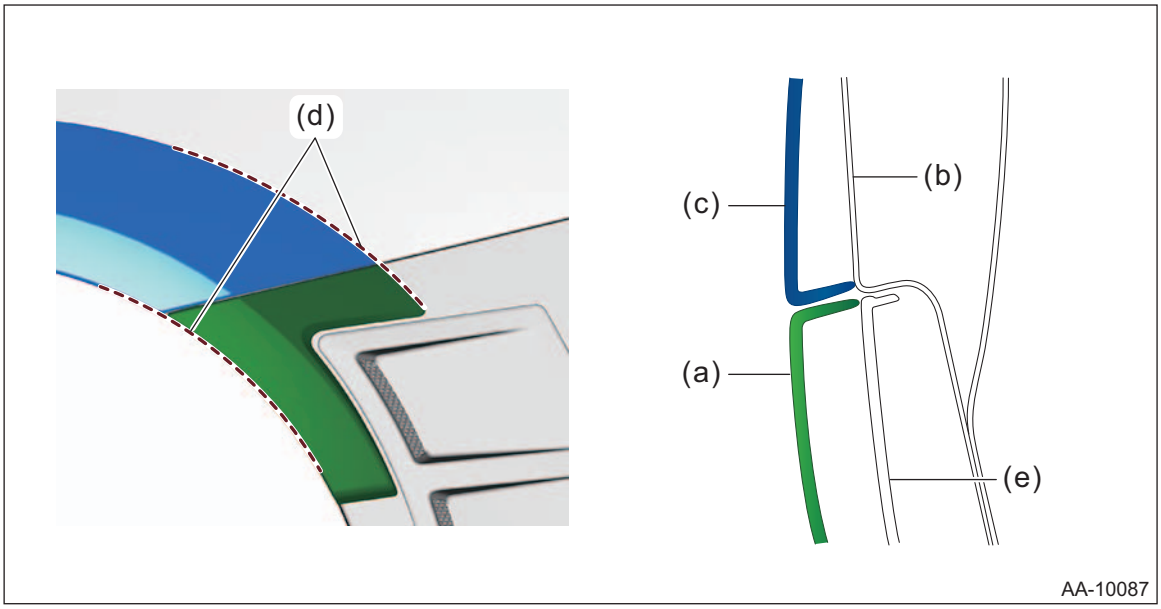


(3) Install the bumper face - rear to the vehicle.
(4) Temporarily install the rear bumper extension (a) and the rear quarter garnish (b) with screws (c).

NOTE:
Confirm the position of arch sections on the rear quarter garnish and the rear bumper extension.



(5) Align the arch section of the rear bumper extension to the position shown as dotted line (d).



(a) Rear bumper extension
(b) Rear quarter outer
(c) Rear quarter garnish
(d) Dotted line
(e) Bumper face - rear

(6) Peel off the backing sheet, and press-fit the rear bumper extension.
(7) Tighten the screws temporarily installed in step (4).

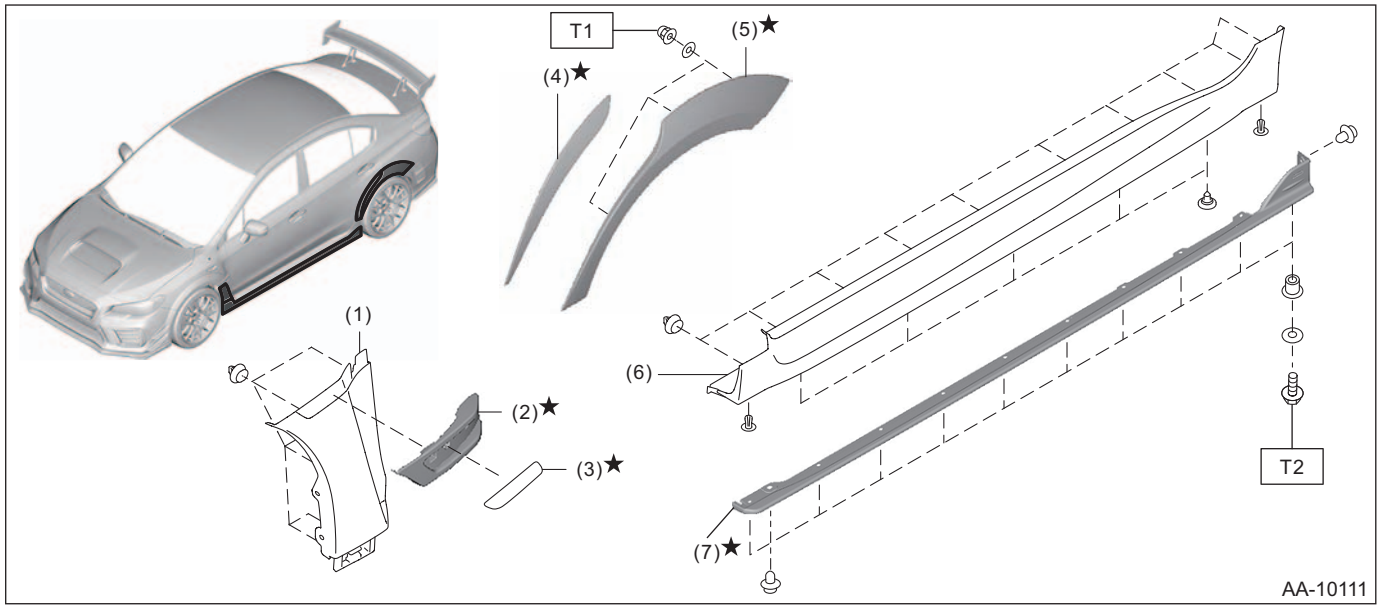
Tightening torque:
2.0 N·m (0.2 kgf-m, 1.48 ft-lb)

10) Install the bumper face - rear in the reverse order of removal.

Tightening torque:
Screw in the wheel house: 2.0 N·m (0.2 kgf-m, 1.48 ft-lb)

5. Side Garnish & Side Spoiler

A: REMOVAL



(1) Garnish ASSY - fender
(2) Molding garnish
(3) S209 emblem
(4) Rear door garnish
(5) Rear quarter garnish
(6) Spoiler ASSY - side
(7) Side under spoiler

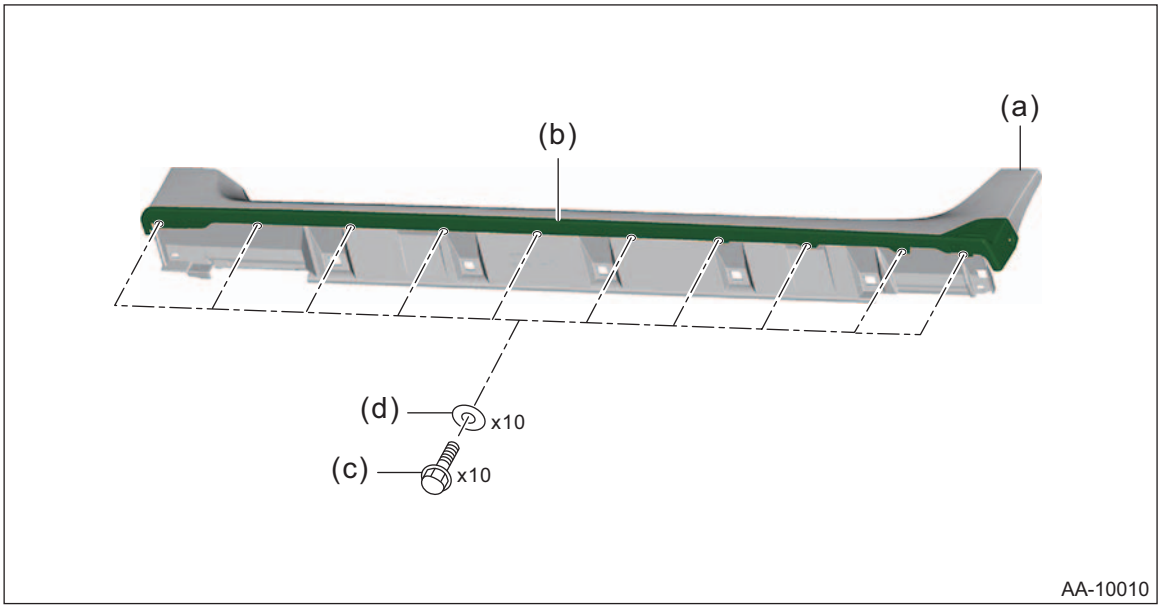
Tightening torque: N·m (kgf-m, ft-lb)
T1: 0.35 (0.04, 0.26)
T2: 1.0 (0.1, 0.7)

1. SIDE UNDER SPOILER

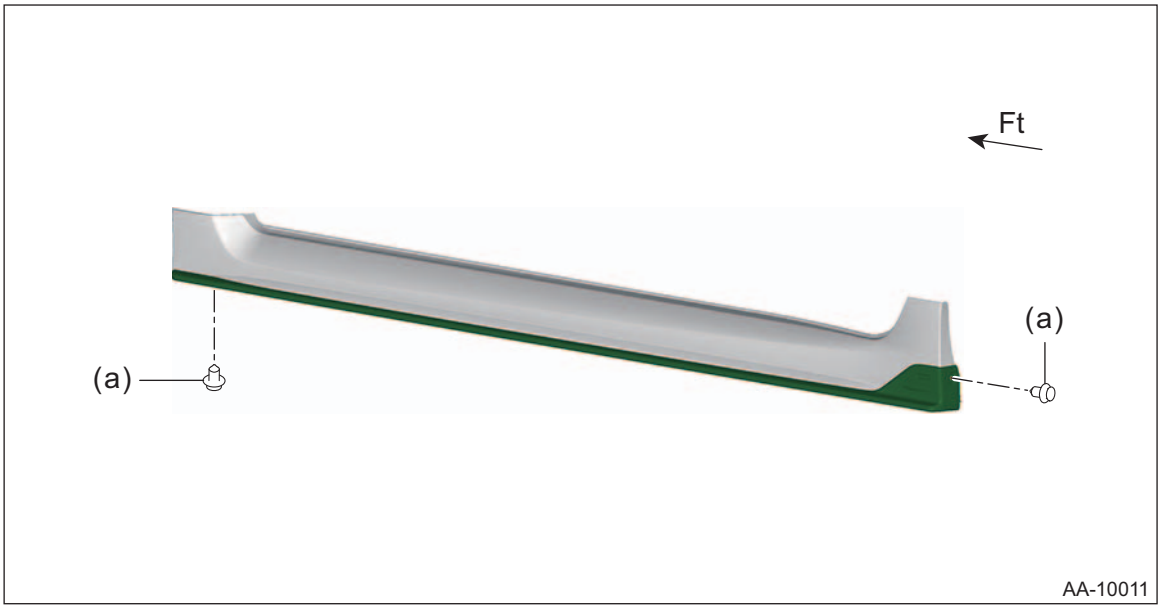
1) Remove the side under spoiler from the spoiler assembly - side.

CAUTION:
Do not reuse the side under spoiler.

(1) Remove the bolts (c) and washers (d) securing the side under spoiler (b) from the spoiler assembly - side (a).



(2) Remove the clips (a).



(3) Remove the double-sided tape, and remove the side under spoiler.

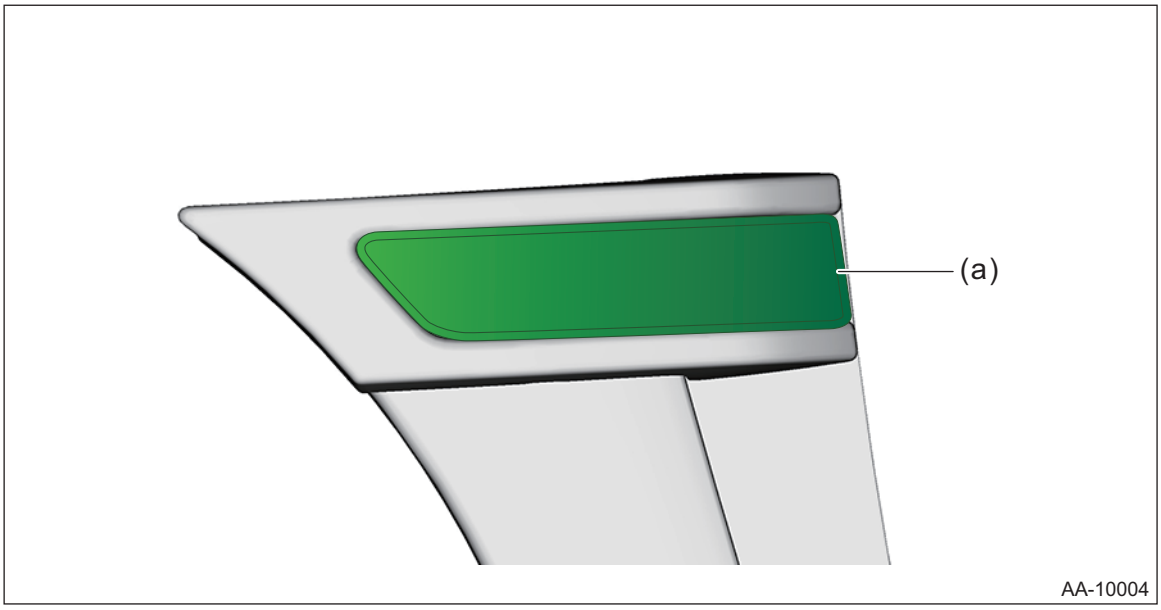
NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.

2. MOLDING WITH S209 LOGO

1) Remove the spoiler assembly - side from the vehicle.
2) Remove the garnish assembly - fender from the front fender.
3) Remove the double-sided tape, and remove the S209 emblem (a).

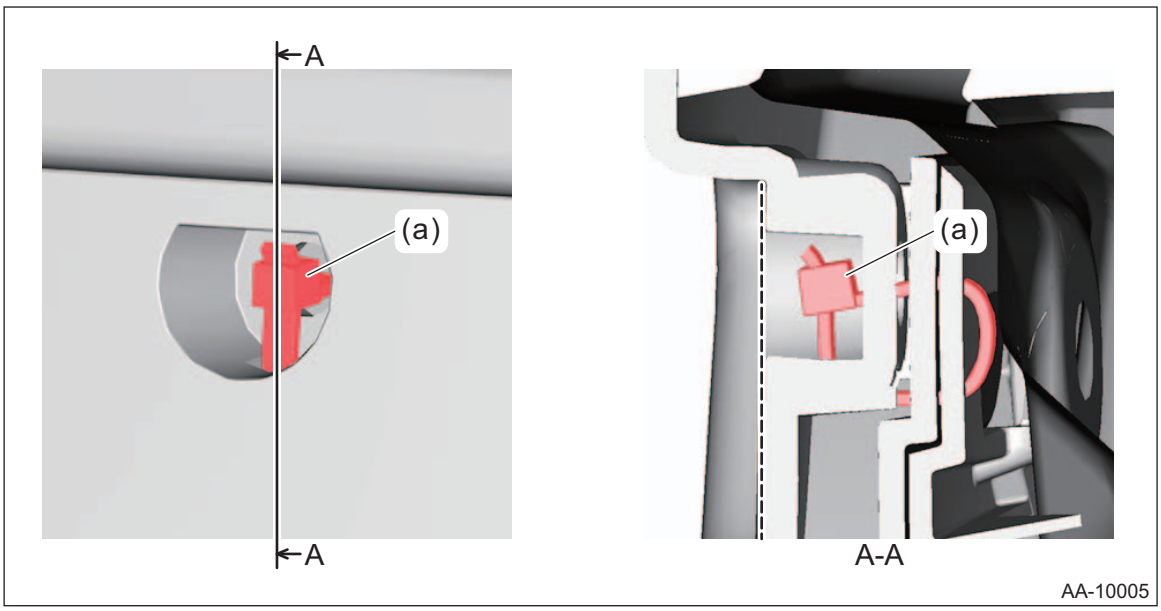
CAUTION:
Do not reuse the S209 emblem.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.



4) Remove the molding garnish.

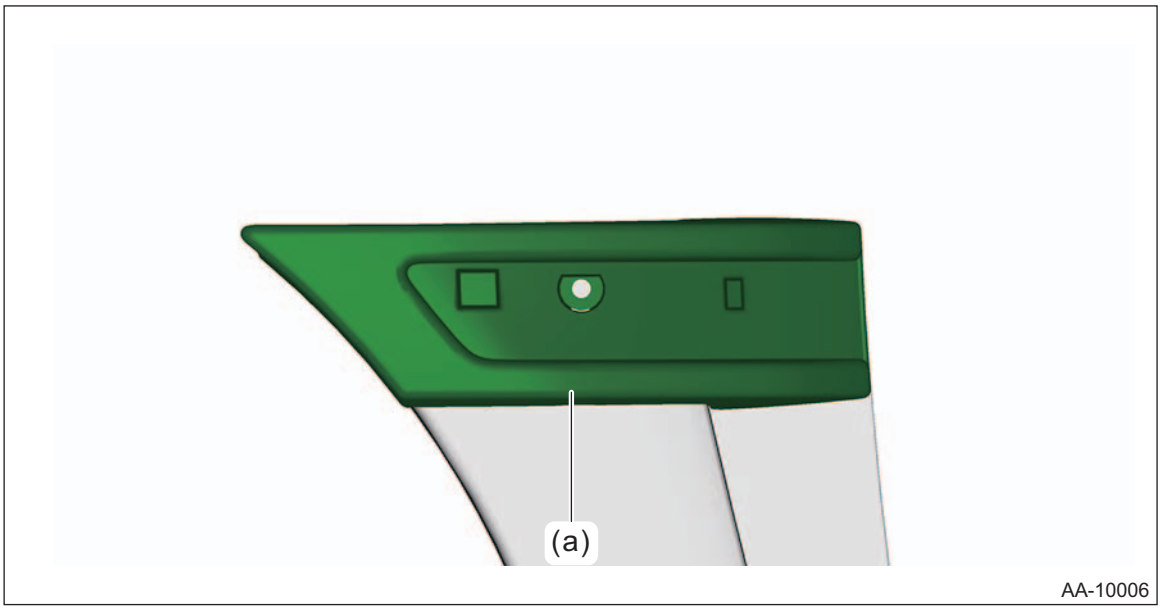
(1) Disconnect the tie-wrap (a).



(2) Remove the double-sided tape, and remove the molding garnish (a).

CAUTION:
Do not reuse the molding garnish.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.

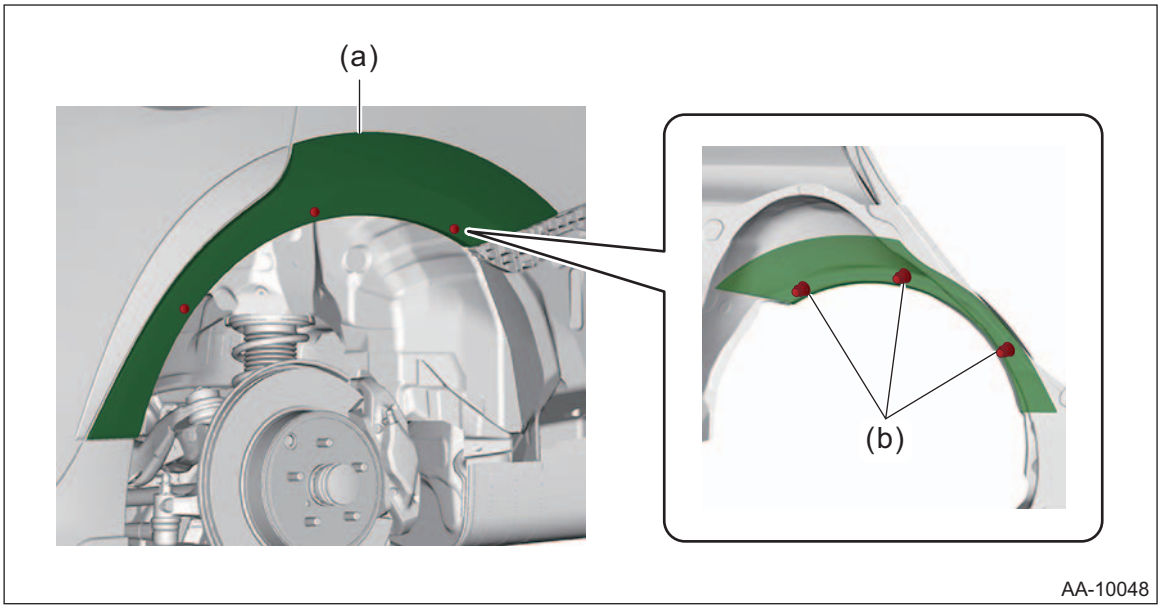


3. REAR QUARTER GARNISH

1) Disconnect the ground terminal from battery.
2) Remove the rear tires.
3) Remove the bumper face - rear.
4) Remove the mud guard - rear.
5) Remove the rear quarter garnish.

CAUTION:
Do not reuse the rear quarter garnish.

(1) Remove the hexagon cap nut and washer (b) from the rear quarter garnish (a).



(2) Remove the double-sided tape, and remove the rear quarter garnish.

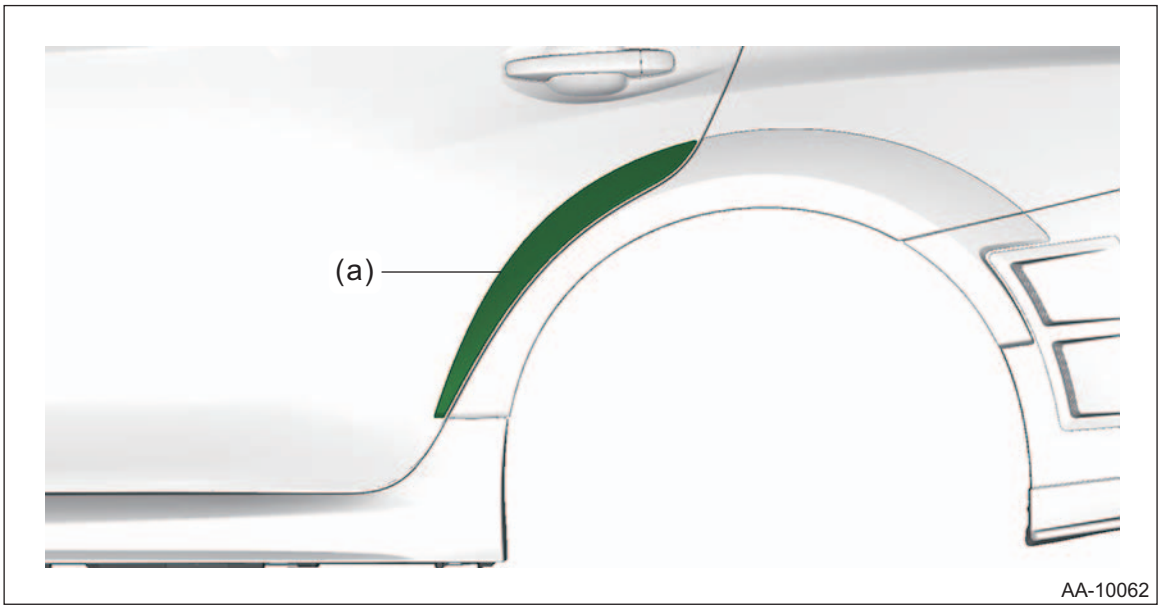
NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.

4. REAR DOOR GARNISH

1) Remove the double-sided tape, and remove the rear door garnish (a).

CAUTION:
Do not reuse the rear door garnish.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.



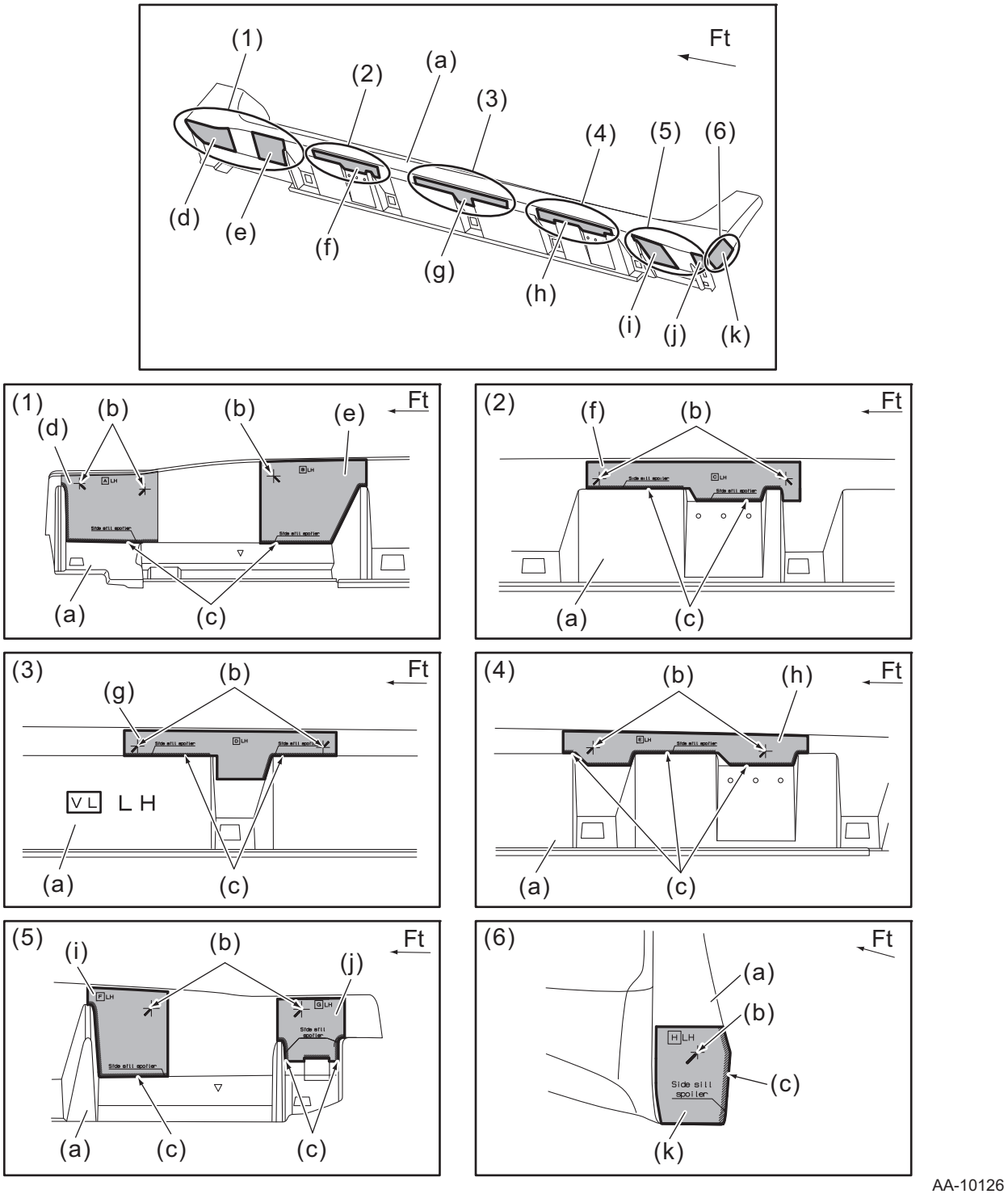
B: INSTALLATION

1. SIDE UNDER SPOILER

1) Perform the work for installing the side under spoiler.

NOTE:
When installing a new spoiler assembly - side, perform the following steps.

(1) Attach the pattern papers (d) through (k) to the spoiler assembly - side (a) along the shape-matching positions (c).
(2) Using a straight pick or similar, make mark-off lines for drilling holes (b) according to the pattern papers (d) through (k).

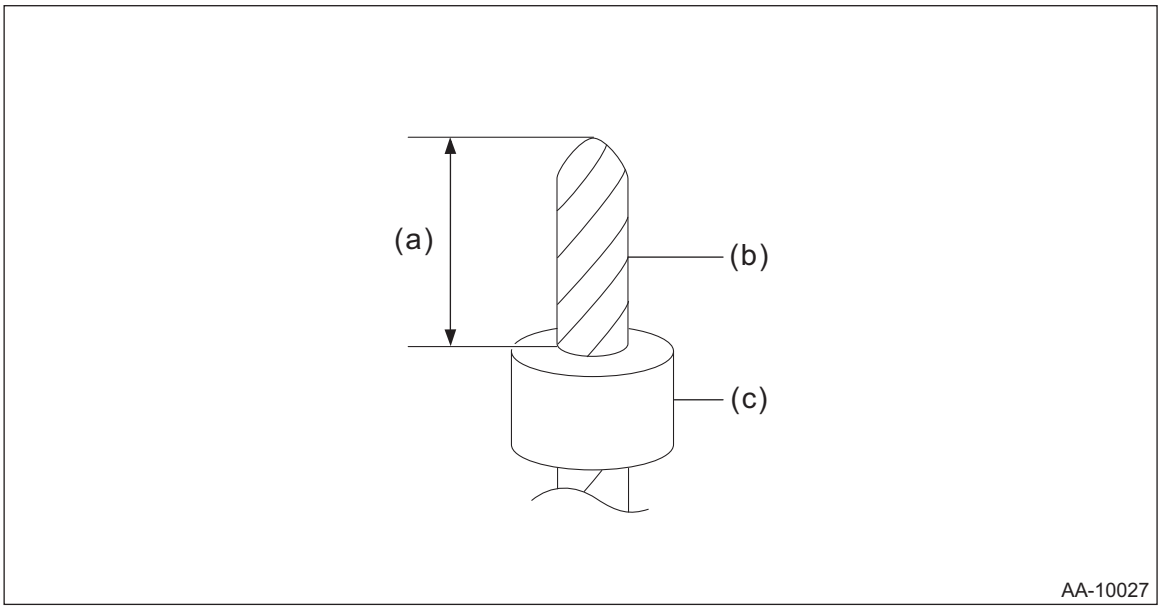


AA-10126

(a) Spoiler ASSY - side
(b) Mark-off line position
(c) Shape-matching position
(d) Pattern paper A
(e) Pattern paper B
(f) Pattern paper C
(g) Pattern paper D
(h) Pattern paper E
(i) Pattern paper F
(j) Pattern paper G
(k) Pattern paper H

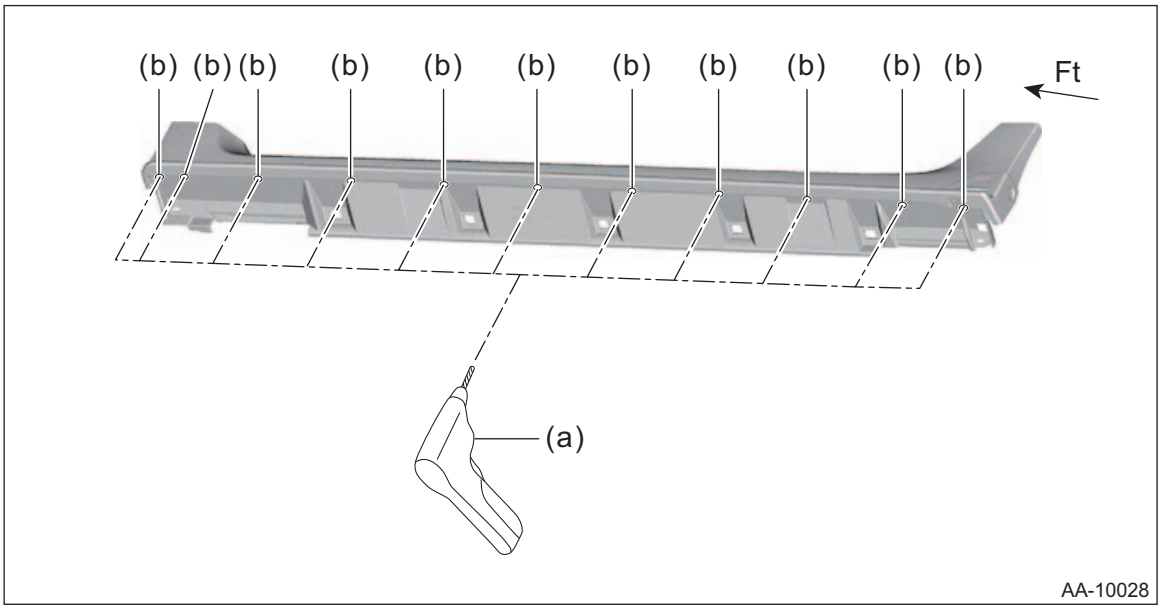
(3) Prepare a stopper by wrapping a cloth adhesive tape, etc. around the drill bit at the position 5 mm (0.2 in) from the tip end.

CAUTION:
Be sure to prepare a stopper; otherwise, the drill may interfere with the spoiler assembly - side and cause damage.



(a) 5 mm (0.2 in) (b) Drill bit (c) Adhesive tape

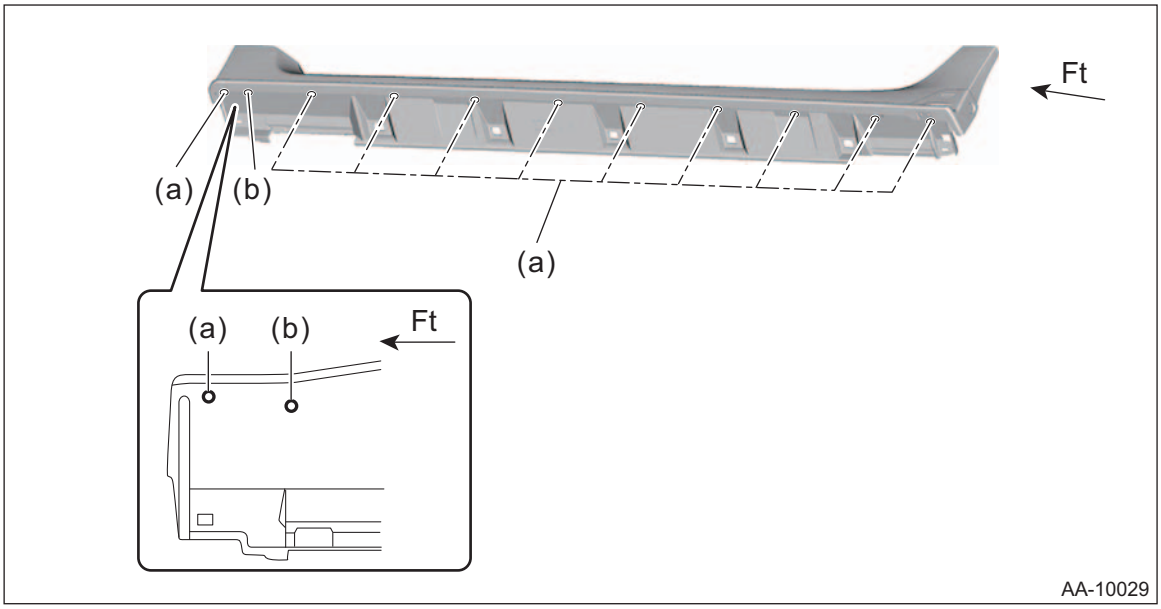
(4) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (b) using a drill (a), and then make a pilot hole of 6 mm (0.24 in) diameter.



(5) Make a hole of 9.5 mm (0.37 in) diameter (a) and a hole of 10 mm (0.39 in) diameter (b) at the locations shown in the figure below.

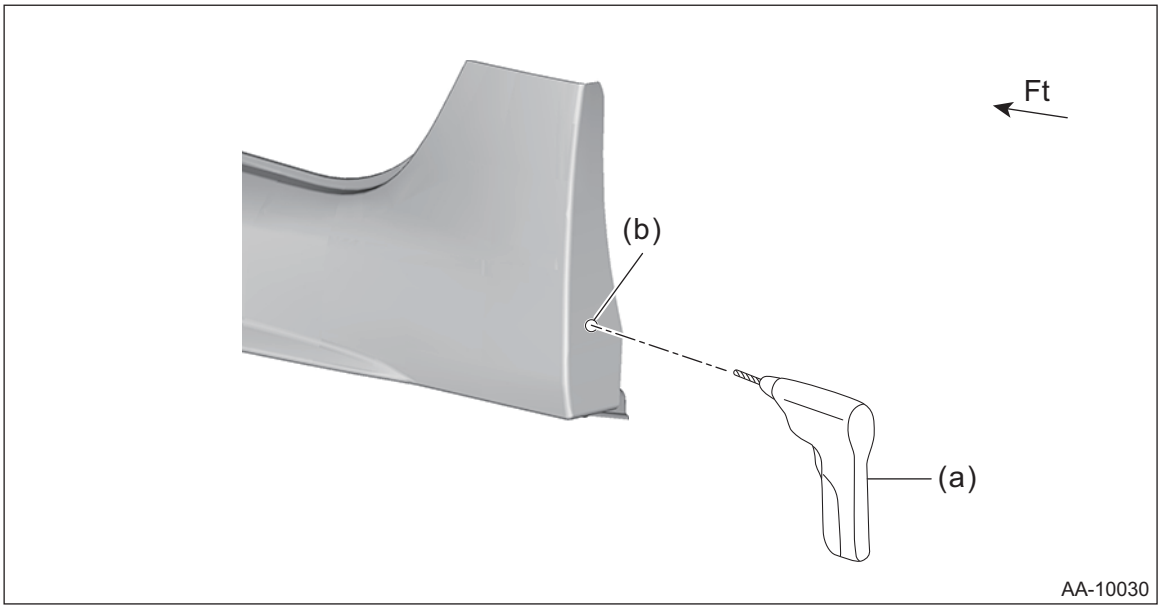
CAUTION:
• Be sure to make a hole of a specified diameter. The side under spoiler may not be installed if the hole diameter is large.

- **Remove any burrs on the spoiler assembly - side to avoid damaging the vehicle, and clean the part.**

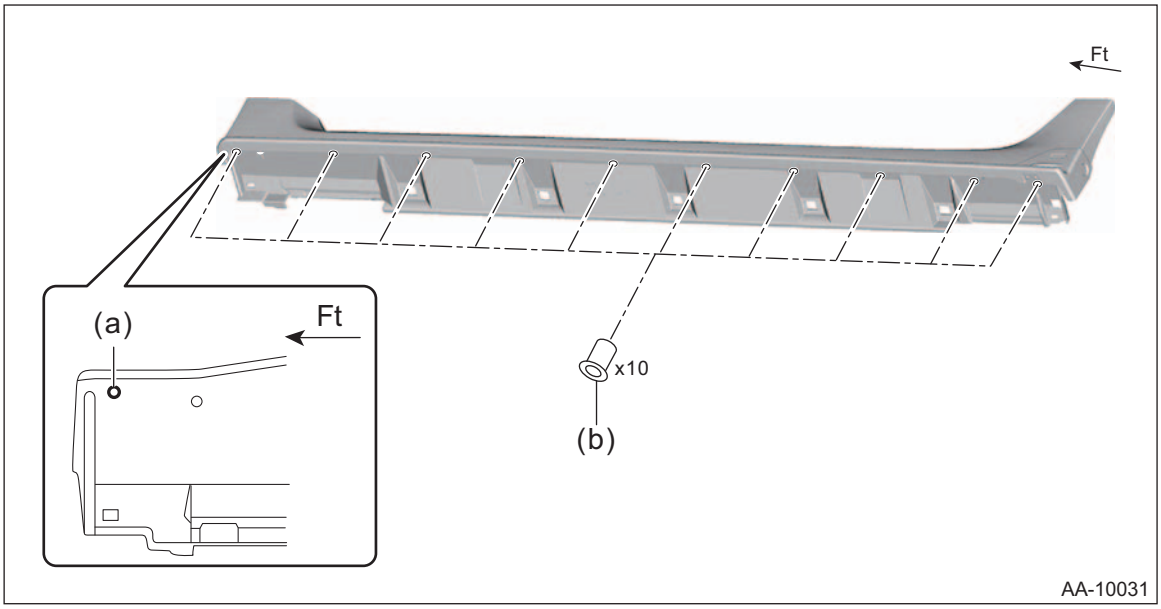


(6) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (b) using a drill (a), and then make a hole of 6 mm (0.24 in) diameter.

CAUTION:
Be sure to make a hole of a specified diameter. The side under spoiler may not be installed if the hole diameter is large.



(7) Insert the well nut (b) at the position (a) shown in the figure.



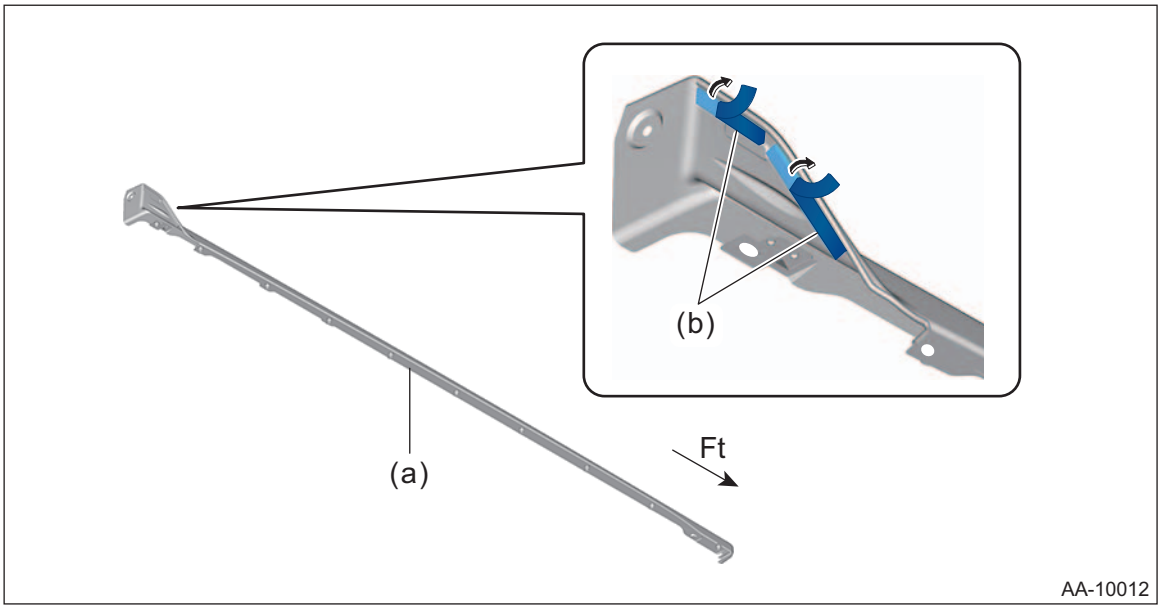
2) Clean and degrease the side under spoiler attachment area on the spoiler assembly - side.

NOTE:

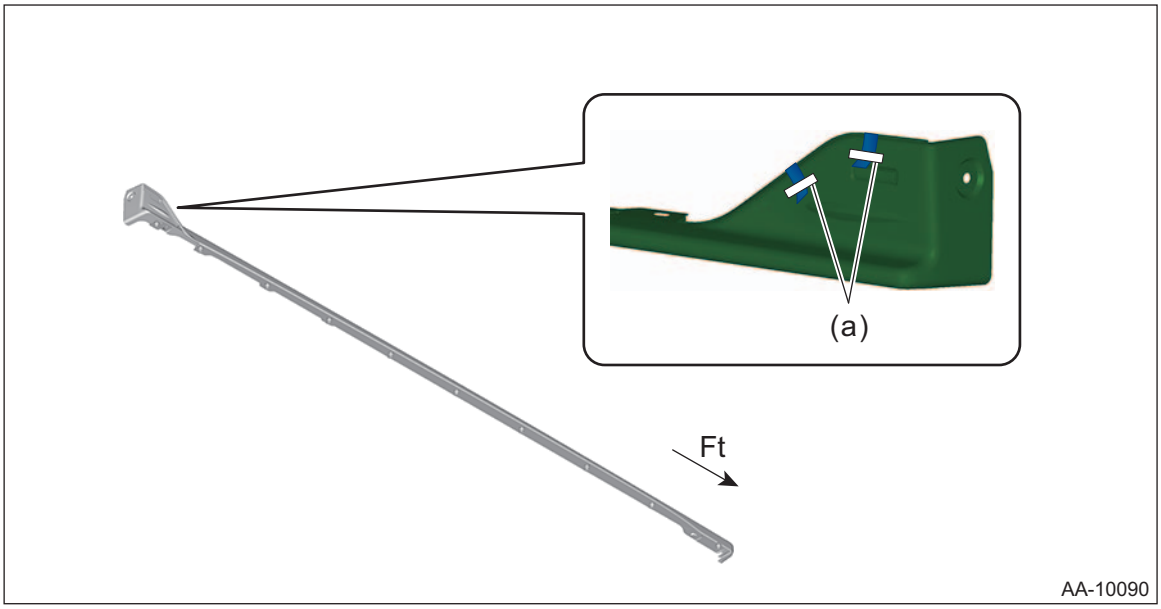
- When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
- Heating a particular small area will cause deformation of the parts.

3) Install the side under spoiler to the spoiler assembly - side.

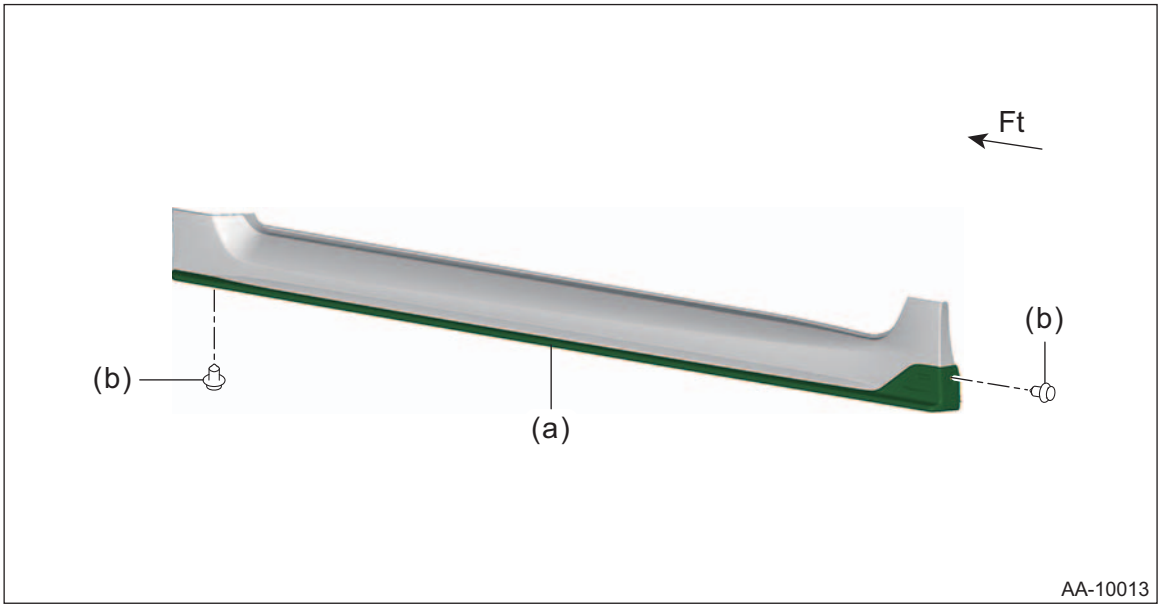
(1) Peel off 38.5 mm (1.52 in) of the backing sheet (b) on the side under spoiler (a) in the direction of the arrow.



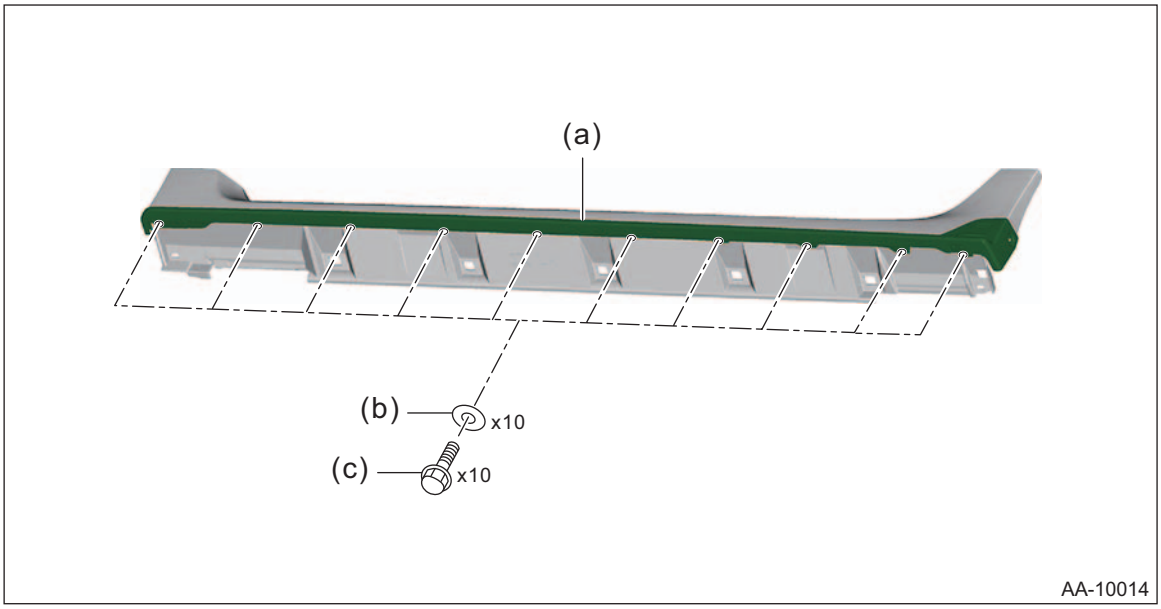
(2) Attach the backing sheet that was peeled off by 38.5 mm (1.52 in) to the front side with masking tape (a).



(3) Temporarily install the side under spoiler (a) with clips (b).

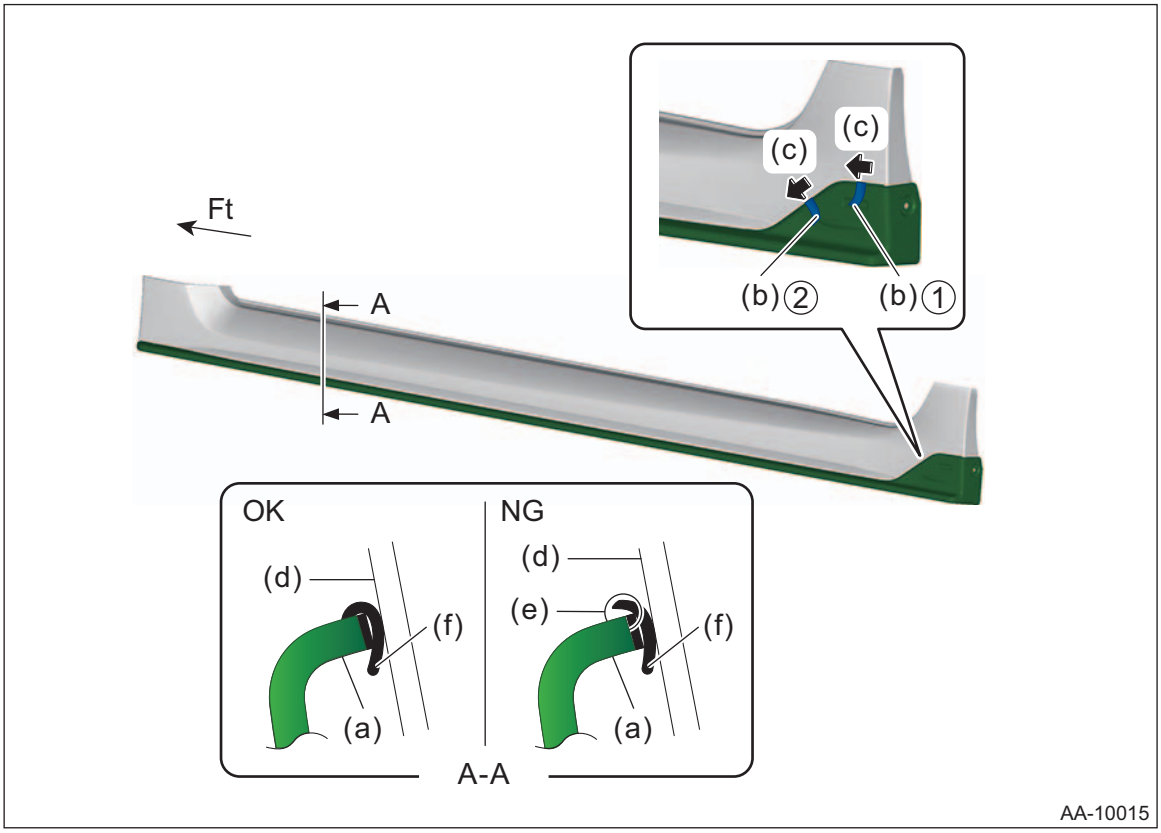


(4) Temporarily install the side under spoiler (a) with washer (b) and bolt (c).



(5) Peel off the backing sheet (b) on the side under spoiler (a) in the direction of the arrow (c), in numerical order as shown in the figure.

CAUTION:
- **Be careful not to cut off the backing sheet while peeling it off.**
- **Confirm that the molding of the side under spoiler is not caught in and deformed.**



(a)	Side under spoiler	(c)	Direction of peeling off the backing paper	(e)	Opening
(b)	Backing sheet	(d)	Spoiler ASSY - side	(f)	Molding

(6) Press-fit the side under spoiler.

(7) Tighten the bolts temporarily installed in step (4).

Tightening torque:
1.0 N·m (0.1 kgf-m, 0.7 ft-lb)

4) Install the spoiler assembly - side in the reverse order of removal.

2. MOLDING WITH S209 LOGO

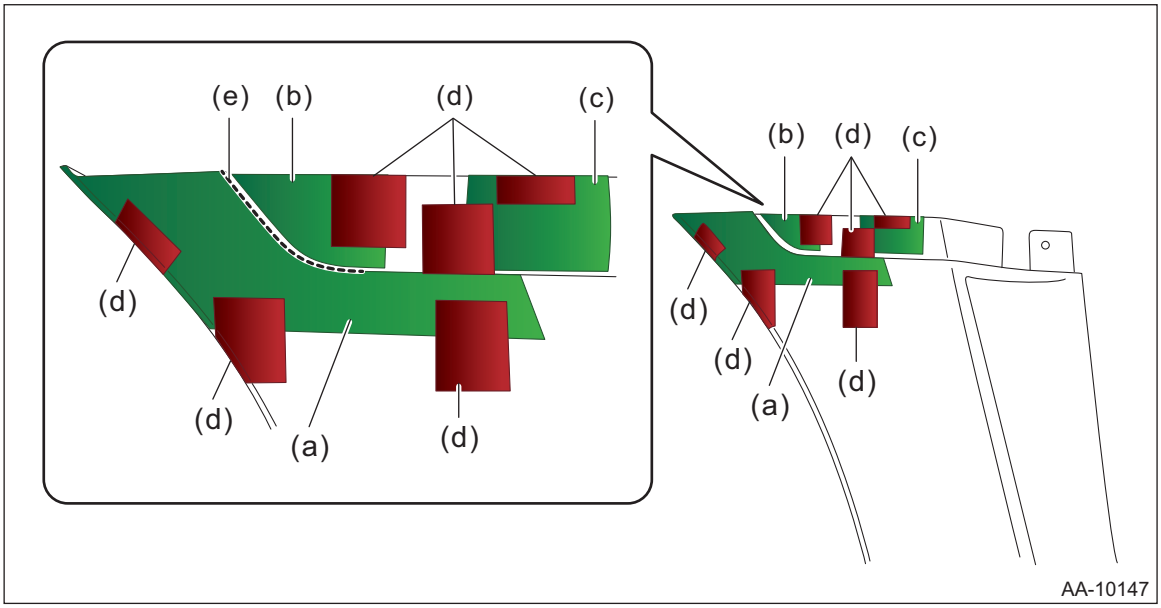
1) Perform the work for installing the molding with S209 logo.

NOTE:
When installing a new garnish assembly - fender, perform the following steps.

(1) Print out and cut the pattern papers named as “FENDER MOL, Patern paper LH”.

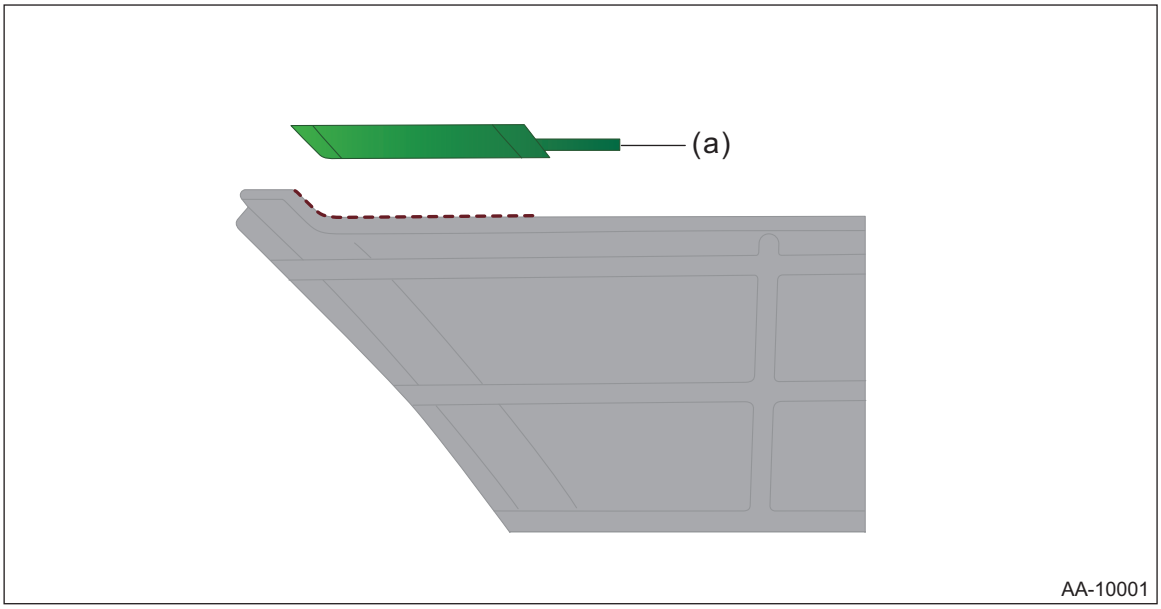
CAUTION:
Confirm that the pattern paper is printed out with accurate size.

(2) Press the pattern papers (a), (b) and (c) against the garnish assembly - fender, and attach masking tapes (d).

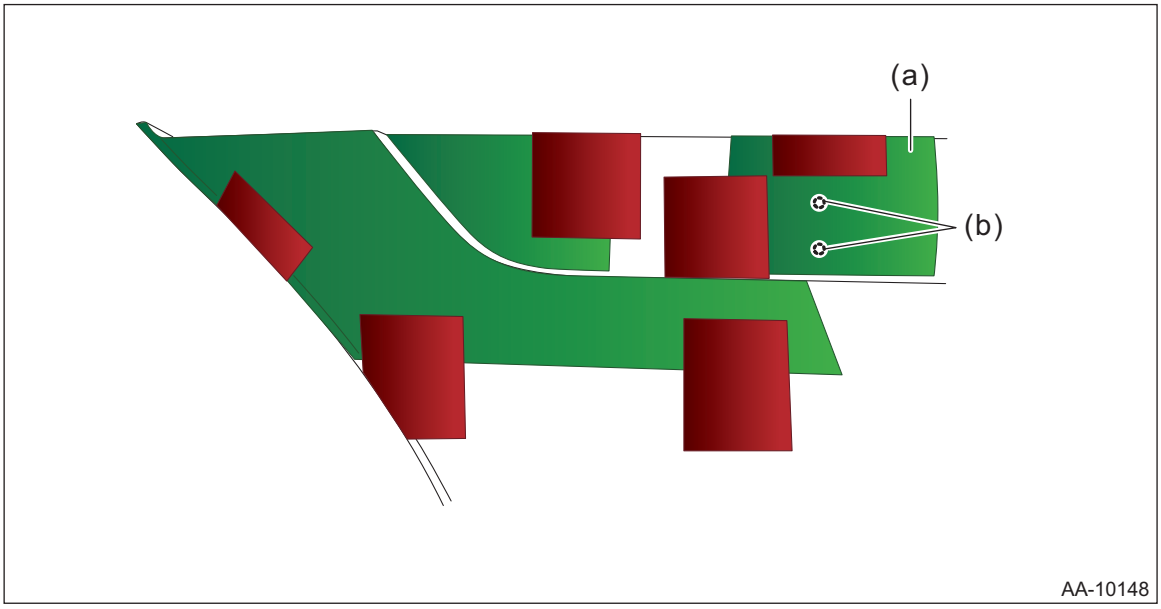


(a) Pattern paper FR MLDG (1): LH
(b) Pattern paper FR MLDG (2): LH
(c) Pattern paper FR MLDG (3): LH
(d) Masking tape
(e) Alignment position for convex angle

(3) Cut the upper part (a) of the garnish assembly - fender shown in the figure.

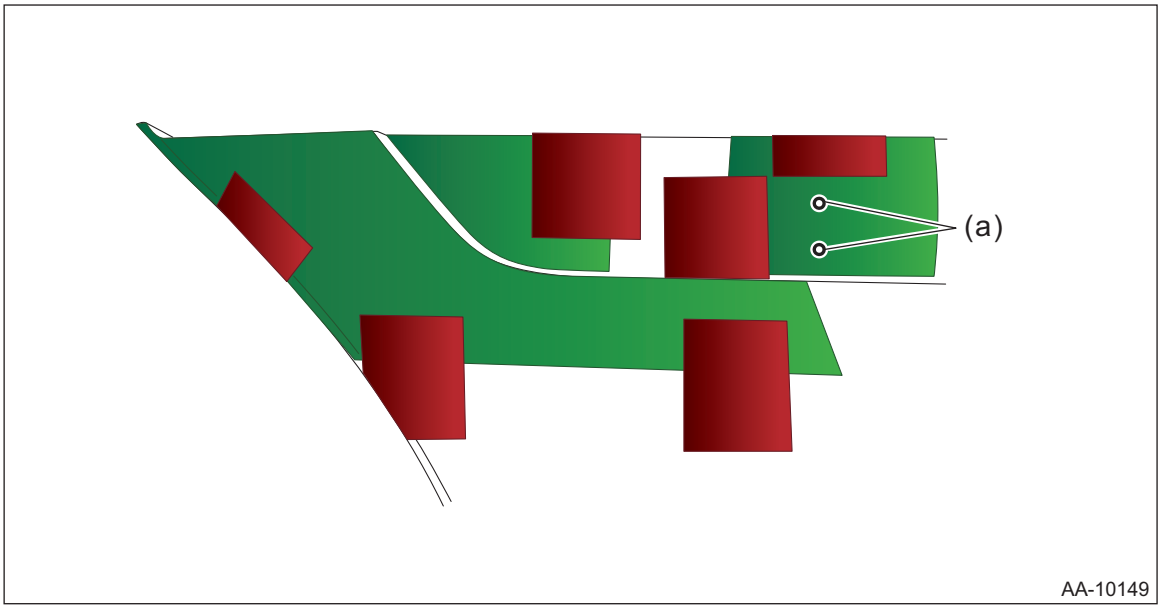


(4) Make mark-off lines for drilling holes (b) at 2 locations according to the pattern paper (a).



(a) Pattern paper FR MLDG (3): LH (b) Mark-off line position

(5) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (a) using a drill, and then make a hole of 5 mm (0.2 in) diameter.

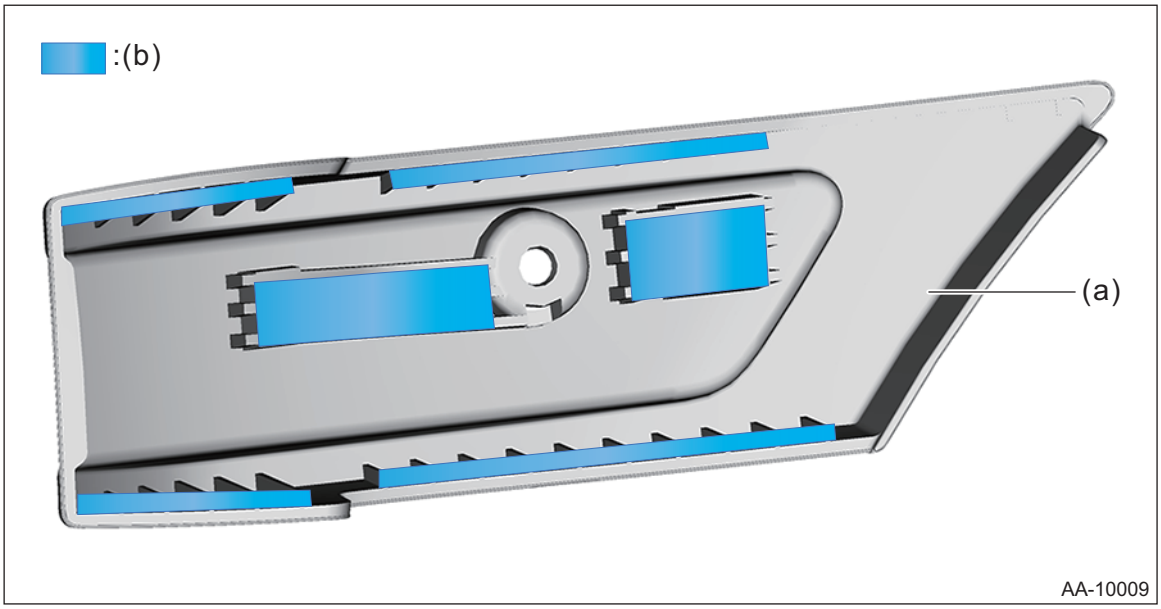


2) Clean and degrease the molding garnish attachment area on the garnish assembly - fender.

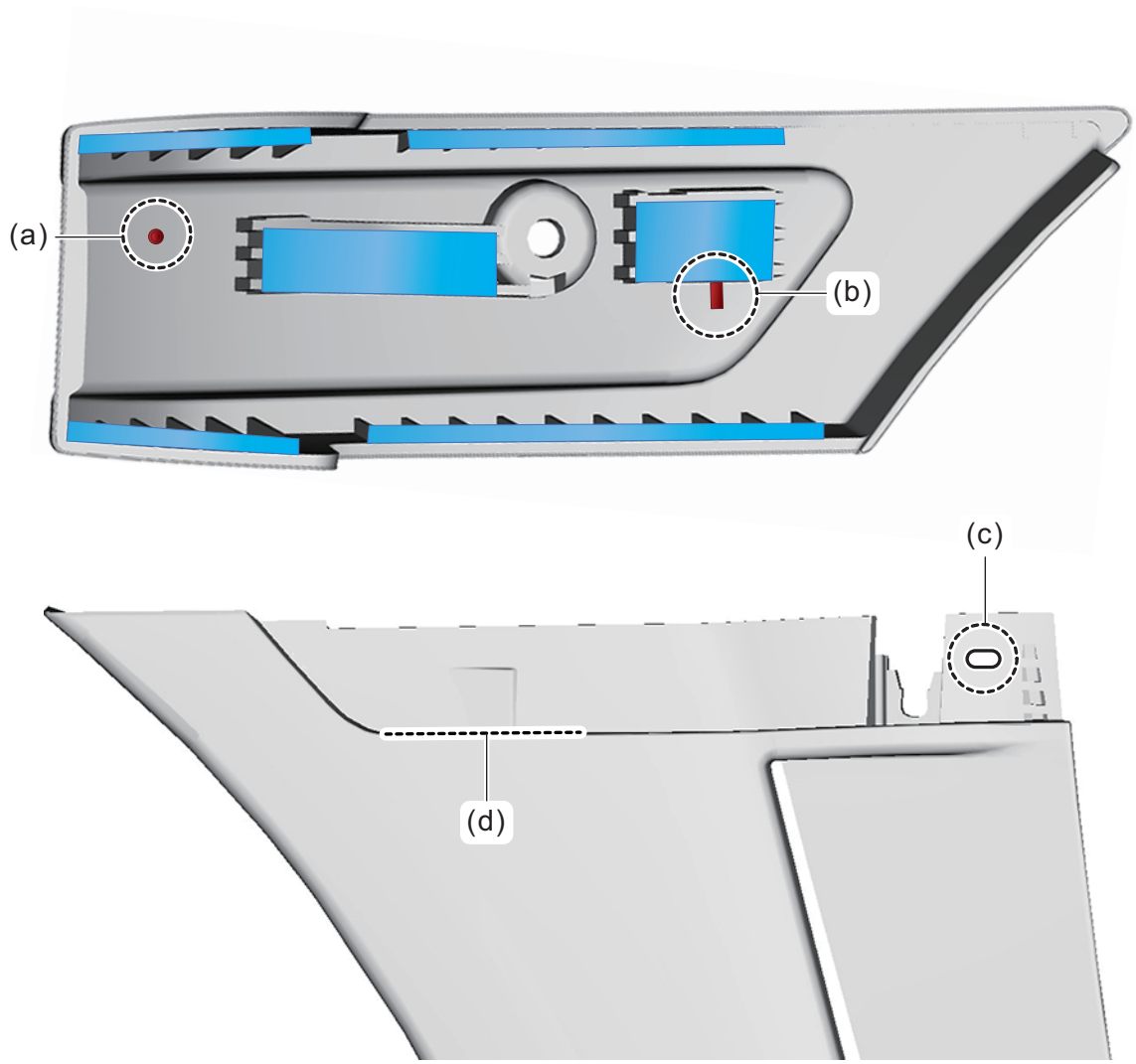
NOTE:
- When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
- Heating a particular small area will cause deformation of the parts.

3) Install the molding garnish.

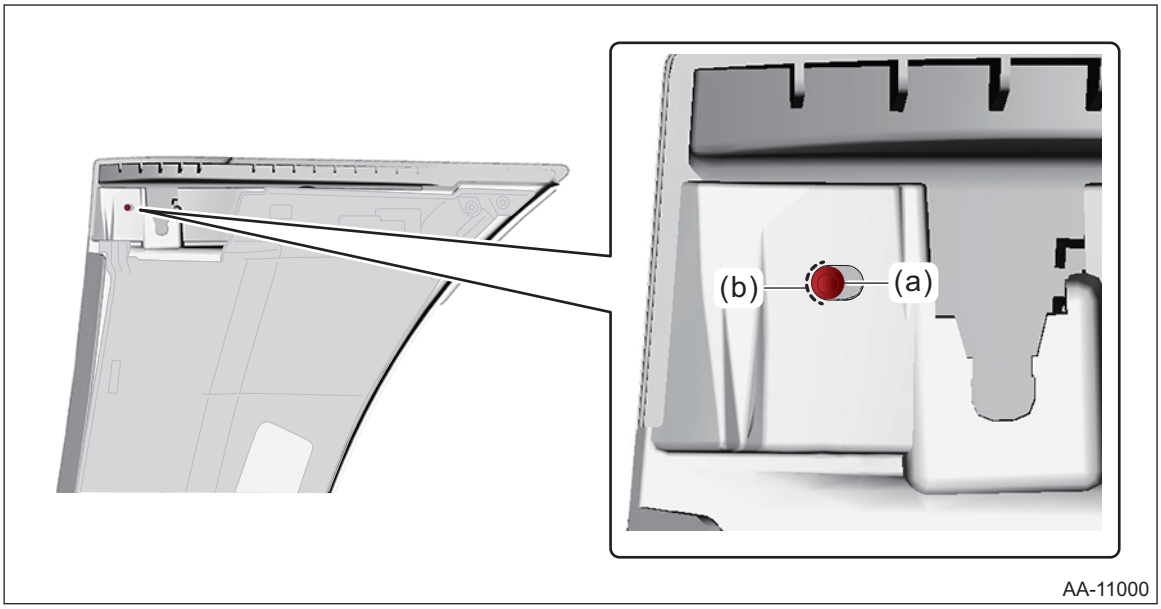
(1) Peel off the backing sheet (b) on the molding garnish (a).



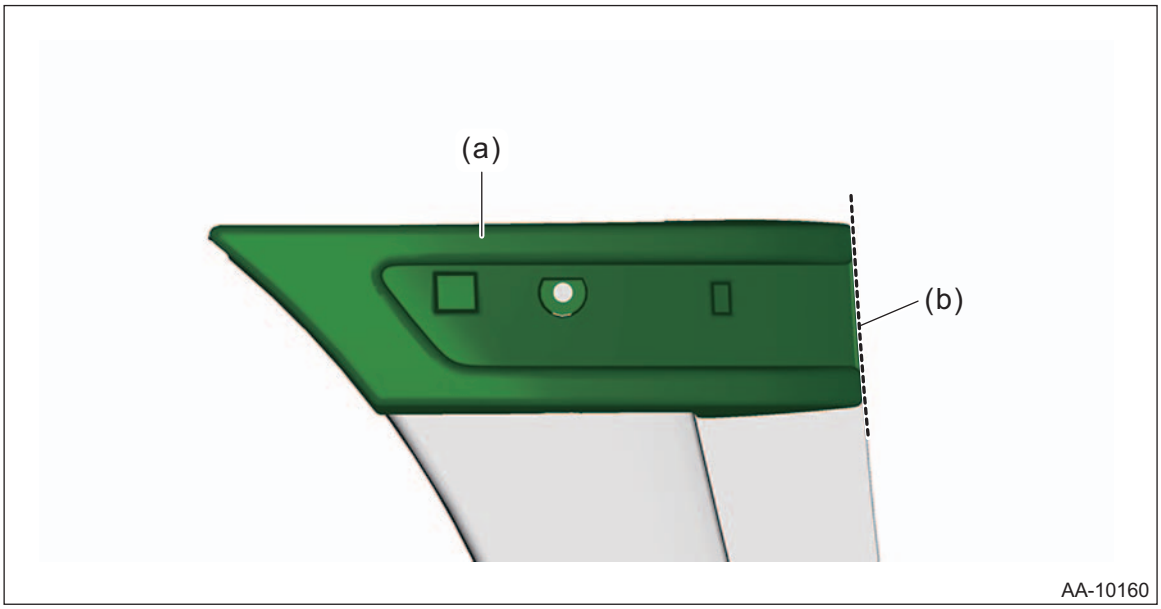
(2) Align the guide pin (a) of molding garnish and the lower end of guide flange (b) with the oval hole (c) of garnish assembly - fender and the flange portion (d).



(3) Push the guide pin (a) of molding garnish against the rear end (b) of the oval hole of garnish assembly - fender.

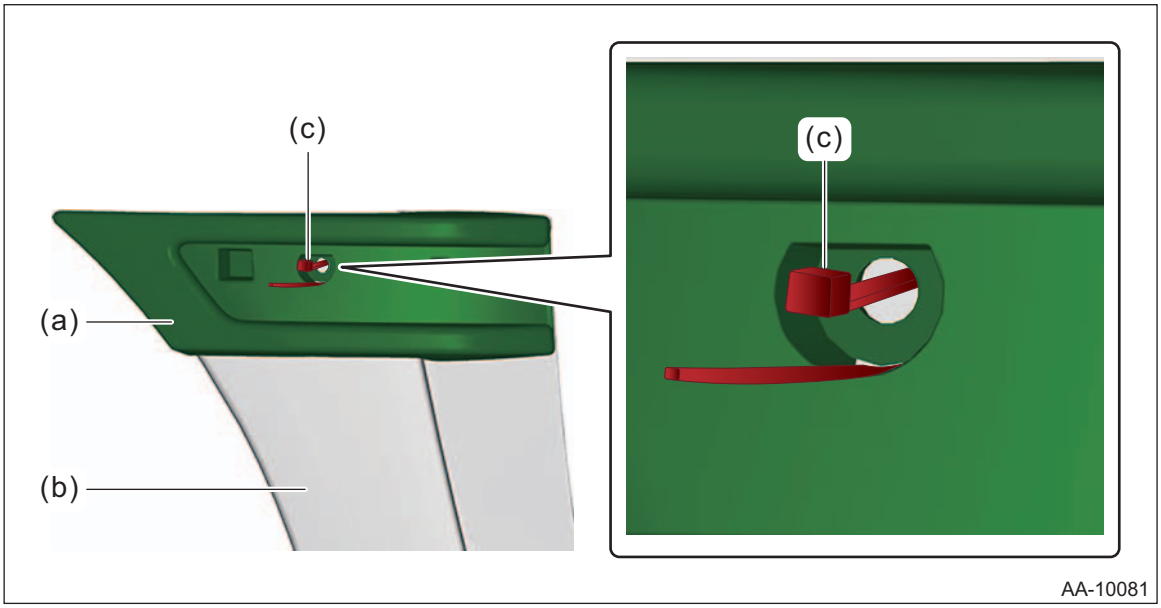


(4) Align the molding garnish (a) to the rear edge of the garnish assembly - fender (b), and press-fit the parts.



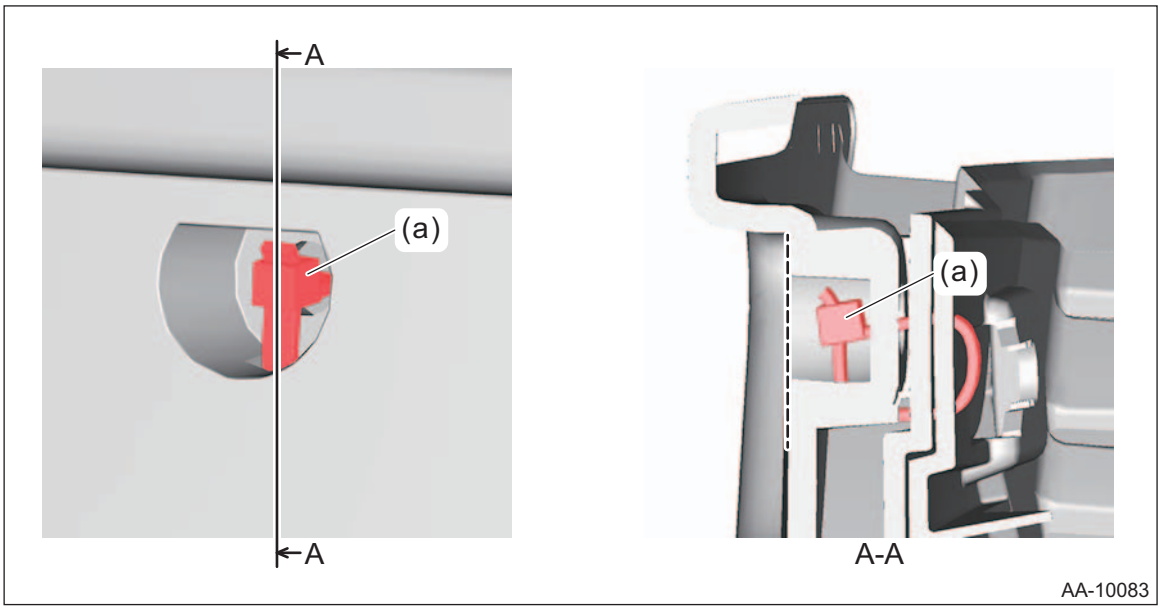
(5) Pass the tie-wrap (c) of the garnish assembly - fender (b) to the molding garnish (a).

CAUTION:
Be careful not to let the tie-wrap come off.



(6) Tighten the tie-wrap (a), and cut the excess part.

CAUTION:
Cut it so that the tie-wrap does not come out from the emblem application position.



4) Install the garnish assembly - fender on the front fender.

CAUTION:
Confirm that there are no cracks on the vehicle body installation clips or deformations on the garnish assembly - fender.

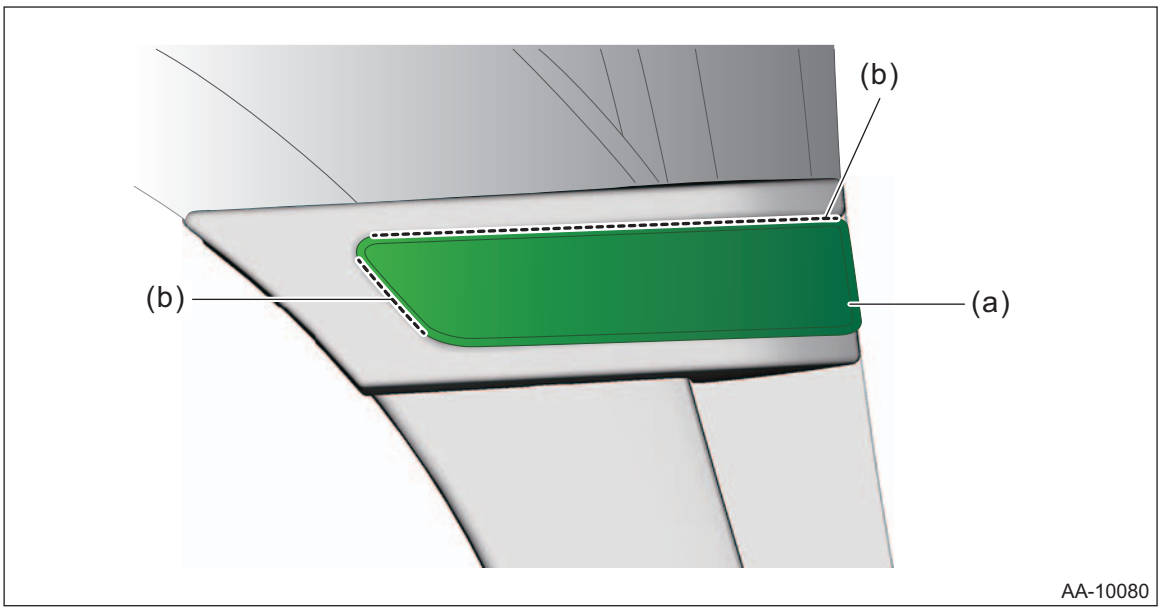
5) Install the S209 emblem.

(1) Clean and degrease the S209 emblem attachment area on the molding garnish.

NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
• Heating a particular small area will cause deformation of the parts.

(2) Peel off the backing sheet of the S209 emblem.

(3) Attach the S209 emblem (a) while aligning it to the position shown as dotted line (b).



(4) Press-fit the S209 emblem.

3. REAR QUARTER GARNISH

1) Perform the work for installing the rear quarter garnish.

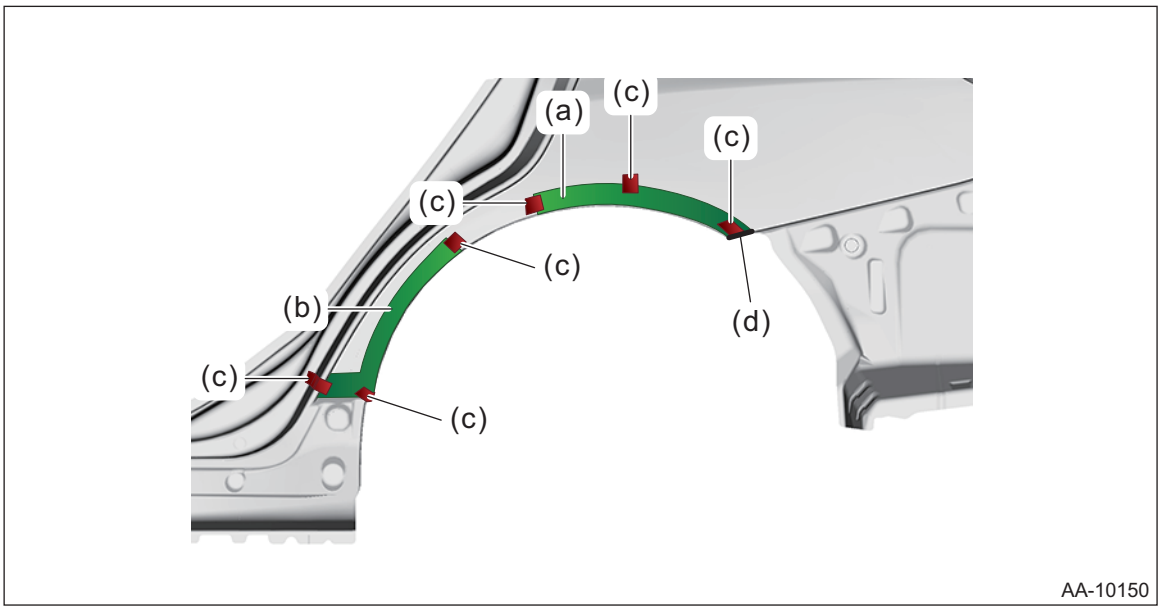
NOTE:
When using a new rear quarter outer, perform the following procedures.

(1) Disconnect the ground terminal from battery.
(2) Remove the rear tires.
(3) Remove the bumper face - rear.
(4) Remove the mud guard - rear.
(5) Remove the spoiler assembly - side.
(6) Print out and cut the pattern papers named as “RQ GARN, Patern paper LH”.

CAUTION:
Confirm that the pattern paper is printed out with accurate size.

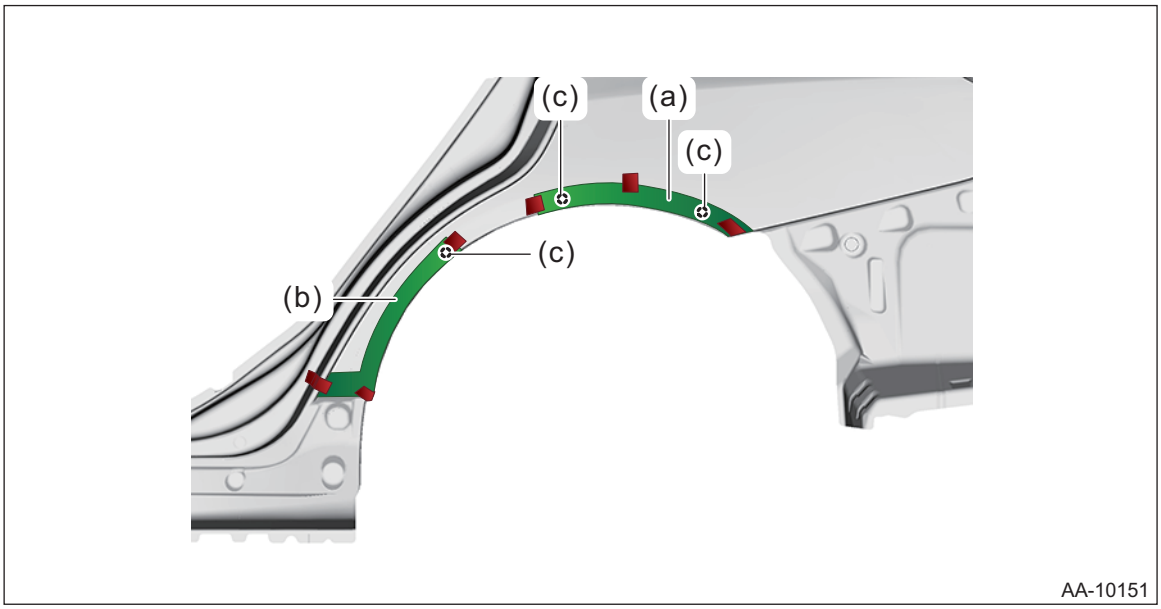
(7) Press the pattern papers (a) and (b) against the rear quarter outer, and attach masking tapes (c).

CAUTION:
Attach the pattern paper along the arch section.



(a) Pattern paper RQ GARN ①
(c) Masking tape
(d) Alignment position for radius curve end
(b) Pattern paper RQ GARN ②

(8) Make mark-off lines for drilling holes (c) at 3 locations according to the pattern papers (a) and (b).

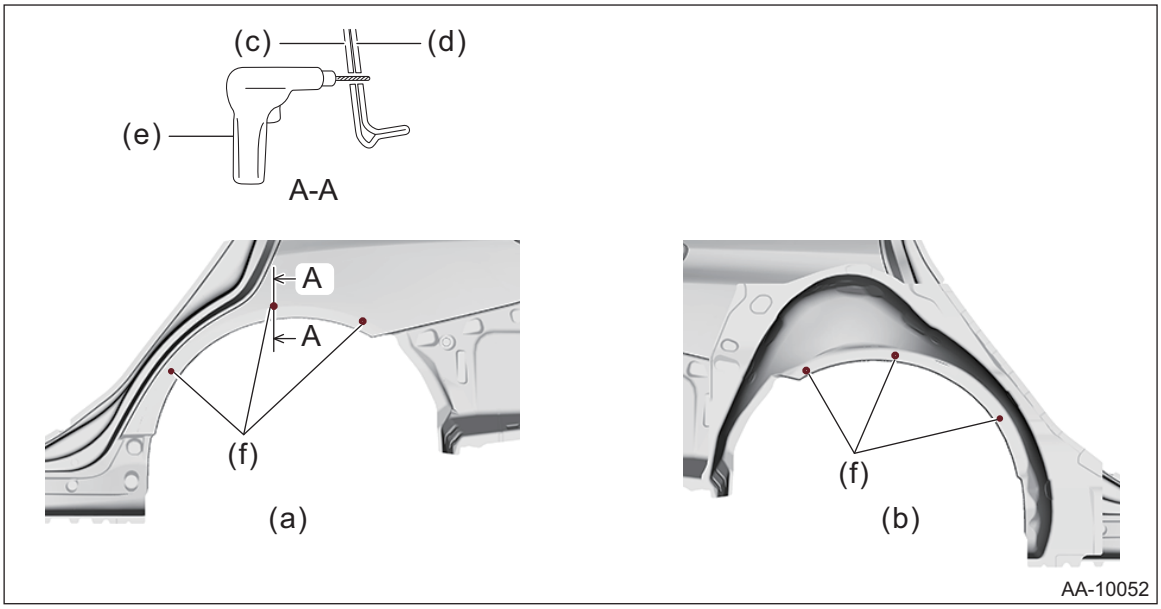


(a) Pattern paper RQ GARN ①
(b) Pattern paper RQ GARN ②
(c) Mark-off line position

(9) Remove the pattern paper.
(10) Make a pilot hole of 3 mm (0.12 in) diameter at the mark-off line position (f) using a drill (e), and then make a pilot hole of 6 mm (0.24 in) diameter. Finally, make a hole of 9.5 mm (0.37 in) diameter.

CAUTION:
• Be sure to make a hole of a specified diameter. The rear quarter garnish may not be installed if the hole diameter is large.

- **When drilling a hole, make a through-hole to the rear quarter outer and the arch rear inner.**

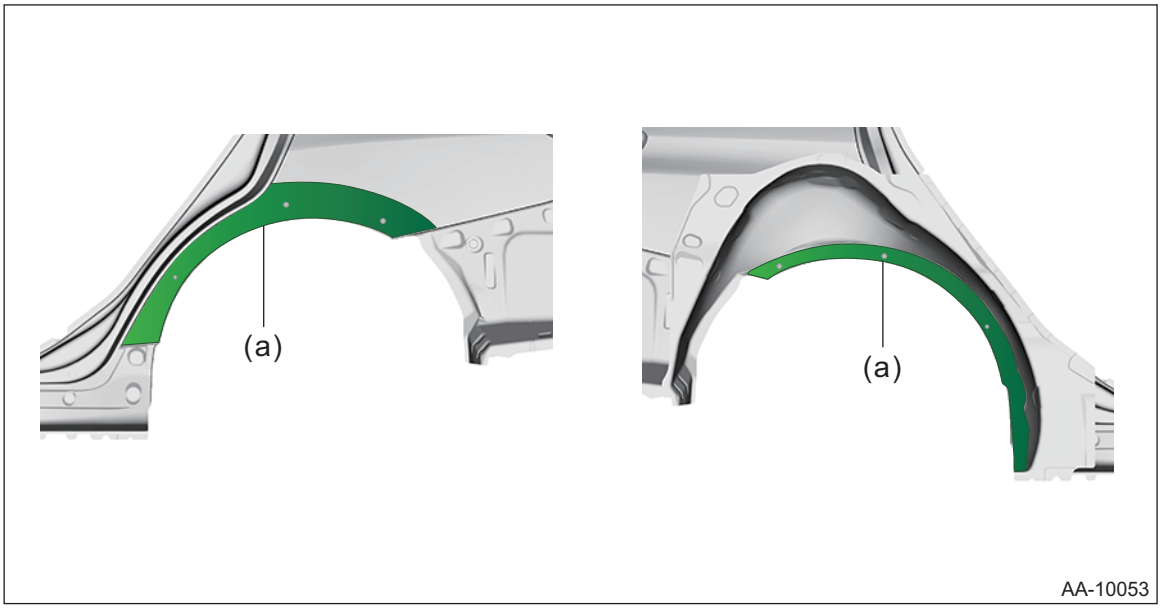


(a)	Outer side	(c)	Rear quarter outer	(e)	Drill
(b)	Inner side	(d)	Arch rear inner	(f)	Mark-off line position

(11) Smoothen the area around the drilled hole with a sandpaper.

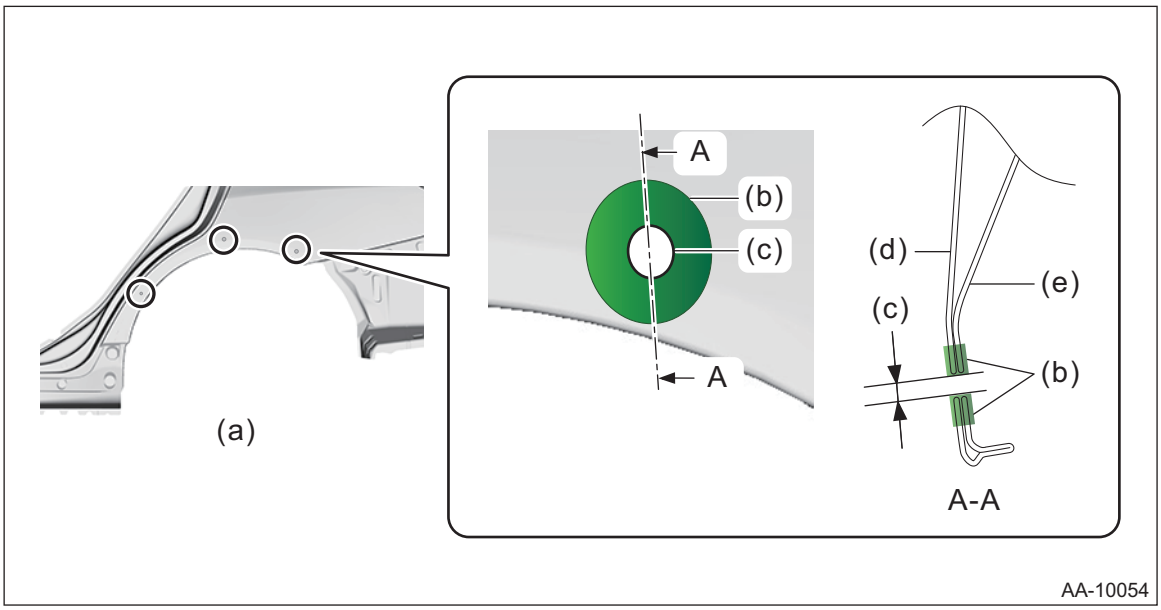
CAUTION:
Remove any burrs on the rear quarter outer and the arch rear inner to avoid damaging the vehicle.

(12) Clean and degrease the peripheral area around the drilled hole (a) completely, using cloth with degreasing agent.



(13) Apply EPICON primer or equivalent to the drilled hole edge and its peripheral area.

CAUTION:
Apply EPICON primer or equivalent to the scratched area using a brush.



(a) Rear quarter outer side
(b) EPICON primer application area
(c) Hole of 9.5 mm (0.37 in) diameter
(d) Rear quarter outer
(e) Arch rear inner

(14) Dry the EPICON primer or equivalent well.

CAUTION:
Confirm that there are no cracks on the EPICON primer or equivalent.

(15) Apply NOX-RUST (7703WJ) or equivalent to the drilled hole edge on the rear quarter outer side.

CAUTION:
Apply sufficient amount of the NOX-RUST (7703WJ) or equivalent to an extent that the color of the EPICON primer or equivalent cannot be seen.

(16) If the NOX-RUST (7703WJ) or equivalent is spilled, wipe it off.

2) Clean and degrease the rear quarter garnish attachment area on the rear quarter outer.

NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
• Heating a particular small area will cause deformation of the parts.

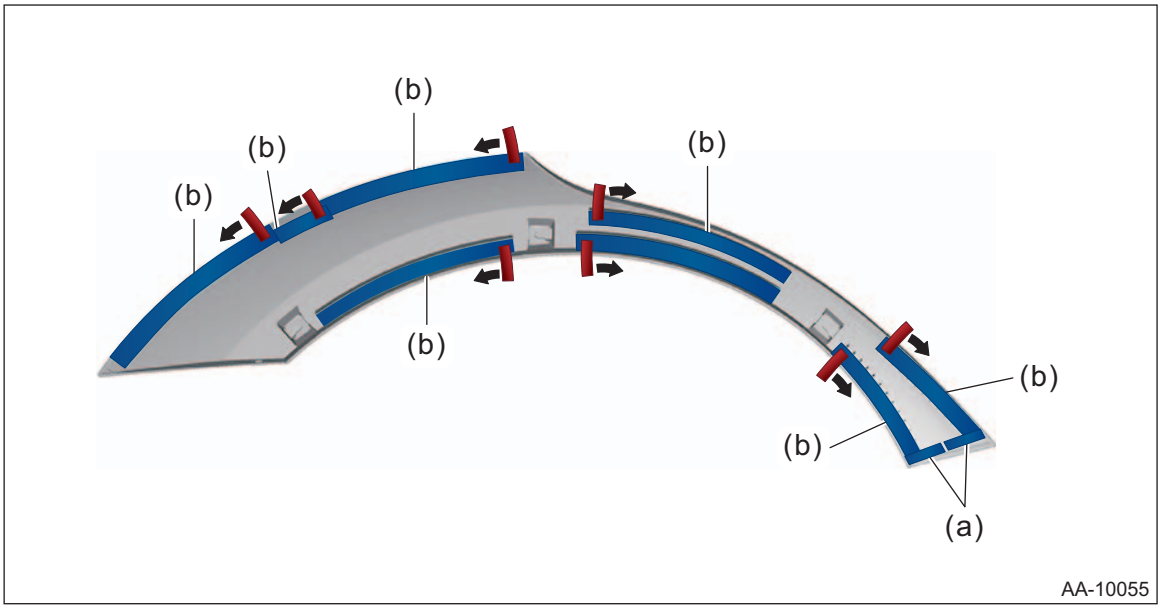
3) Install the rear quarter garnish.

(1) Attach a masking tape to the bolt tip.

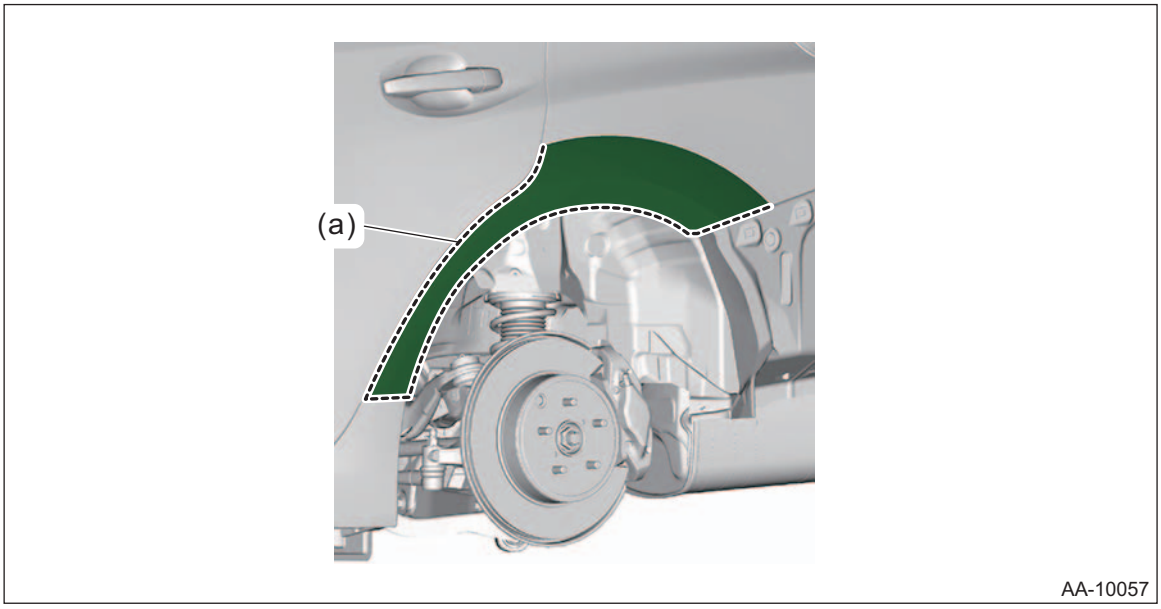
CAUTION:
Be sure to protect as instructed; otherwise the bolt tip may be damaged.

(2) Peel off the backing sheet (a) on the rear quarter garnish.

(3) Peel off 38.5 mm (1.52 in) of the backing sheet (b) on the rear quarter garnish.

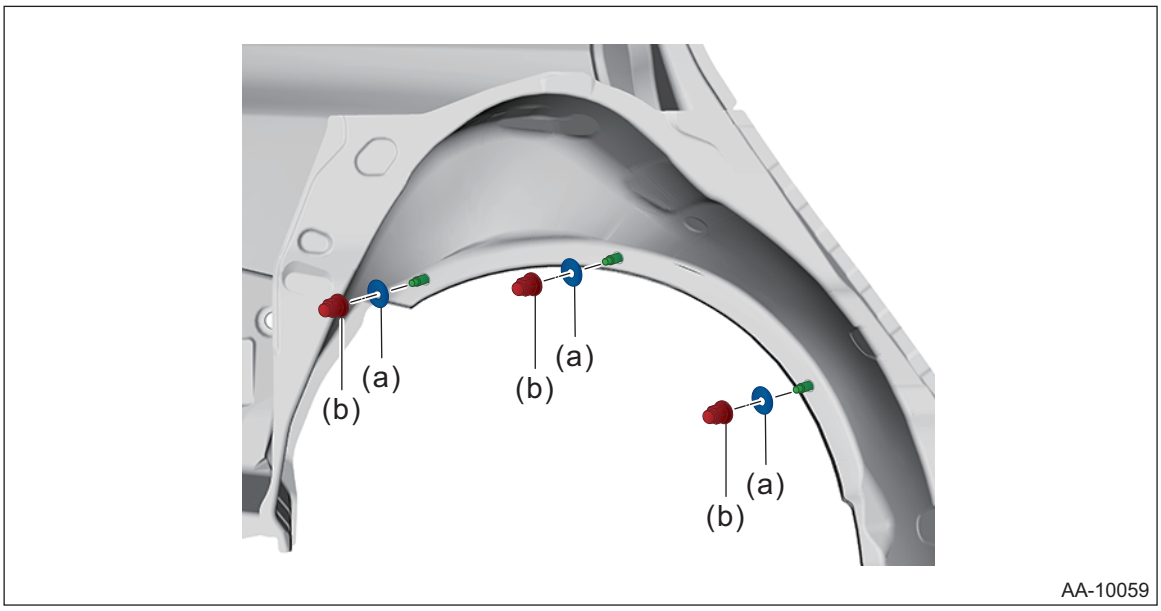


(4) Temporarily install the rear quarter garnish while aligning its line to the line (a) of the rear quarter outer.

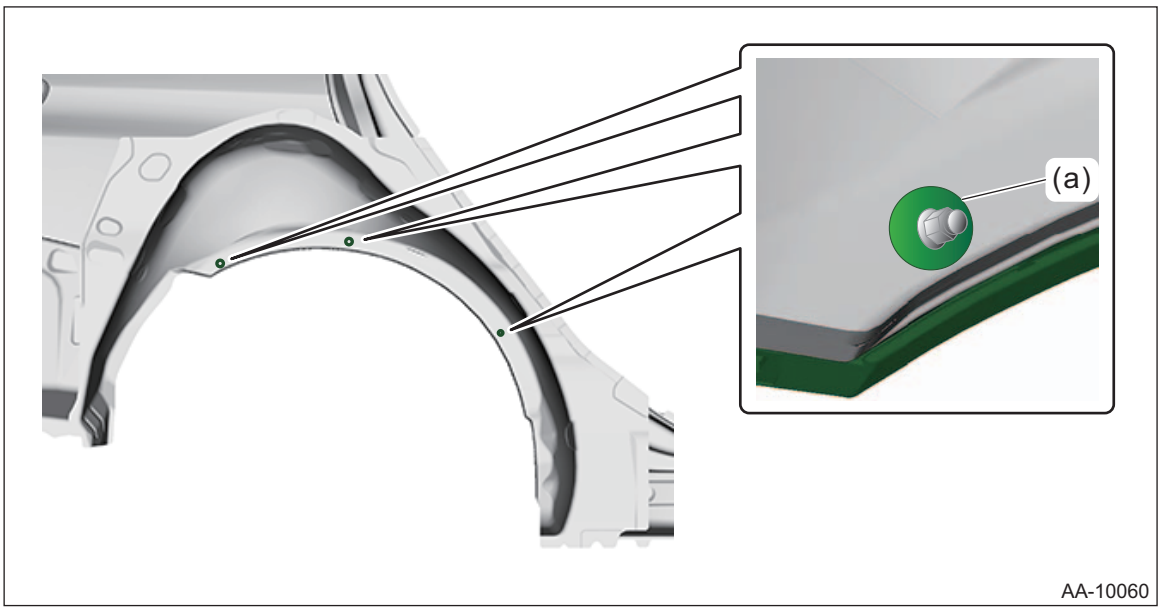


(5) Peel off the backing sheet, and press-fit to the rear quarter outer.
(6) Remove the masking tape of the bolt tip temporarily attached in step (1).
(7) Apply LOCTITE 263 or equivalent to the threads of the hexagon cap nut (b).
(8) Install the washer (a) and the hexagon cap nut (b) from the arch rear inner side.

Tightening torque:
0.35 N·m (0.04 kgf-m, 0.26 ft-lb)



(9) Apply NOX-RUST (7703WJ) or equivalent to the peripheral area of nut installation (a) shown in the figure.



(10) If the NOX-RUST (7703WJ) or equivalent is spilled, wipe it off and clean the area.
(11) Install the spoiler assembly - side.
(12) Install the mud guard - rear.
(13) Install the bumper face - rear.
(14) Install the rear tires.
(15) Connect the battery ground terminal.

4. REAR DOOR GARNISH

NOTE:
Install the rear door garnish with the rear quarter garnish installed to the vehicle.
1) Clean and degrease the rear door garnish attachment area on the rear door panel.

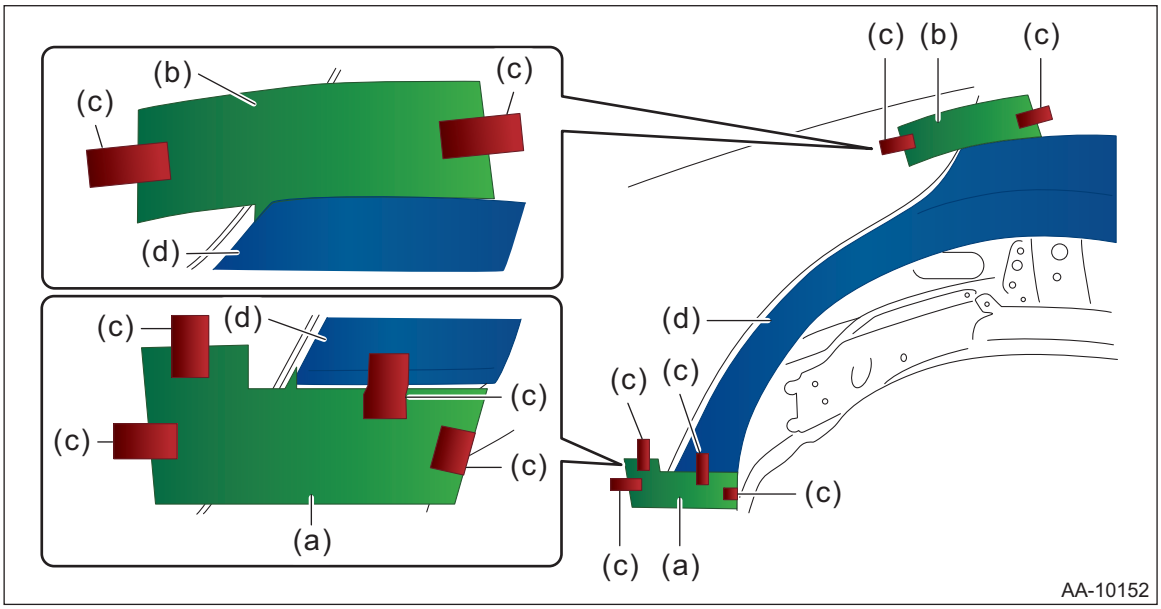
NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.

- Heating a particular small area will cause deformation of the parts.

2) Install the rear door garnish.
(1) Print out and cut the pattern papers named as “RR DOOR GARN Patern paper LH”.

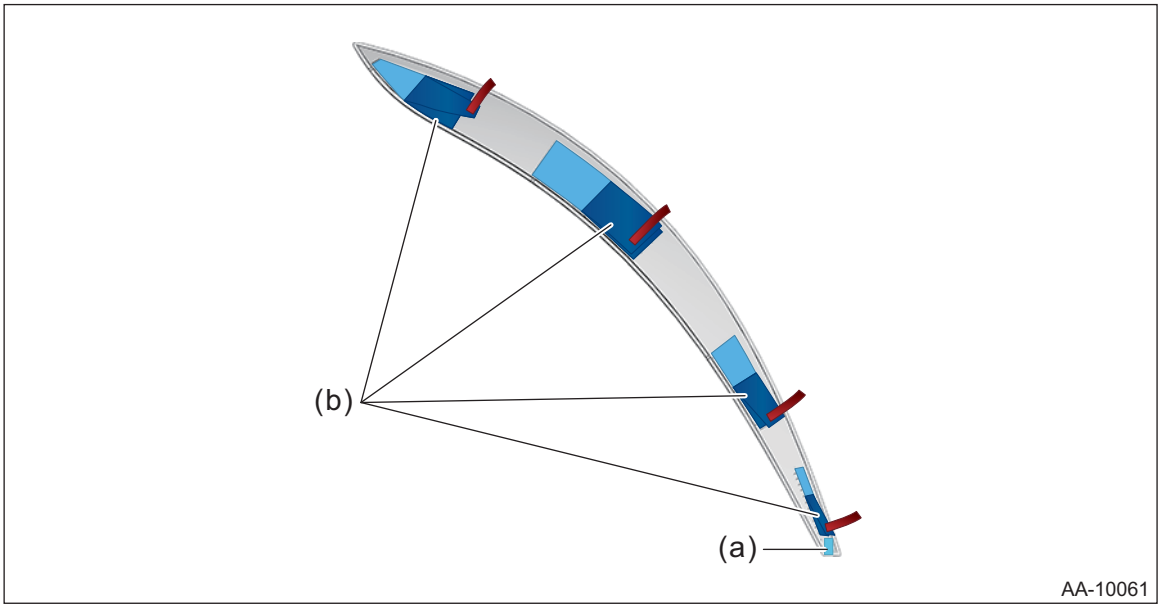
CAUTION:
Confirm that the pattern paper is printed out with accurate size.

(2) Press the pattern papers (a) and (b) against the rear door panel, and attach masking tapes (c).



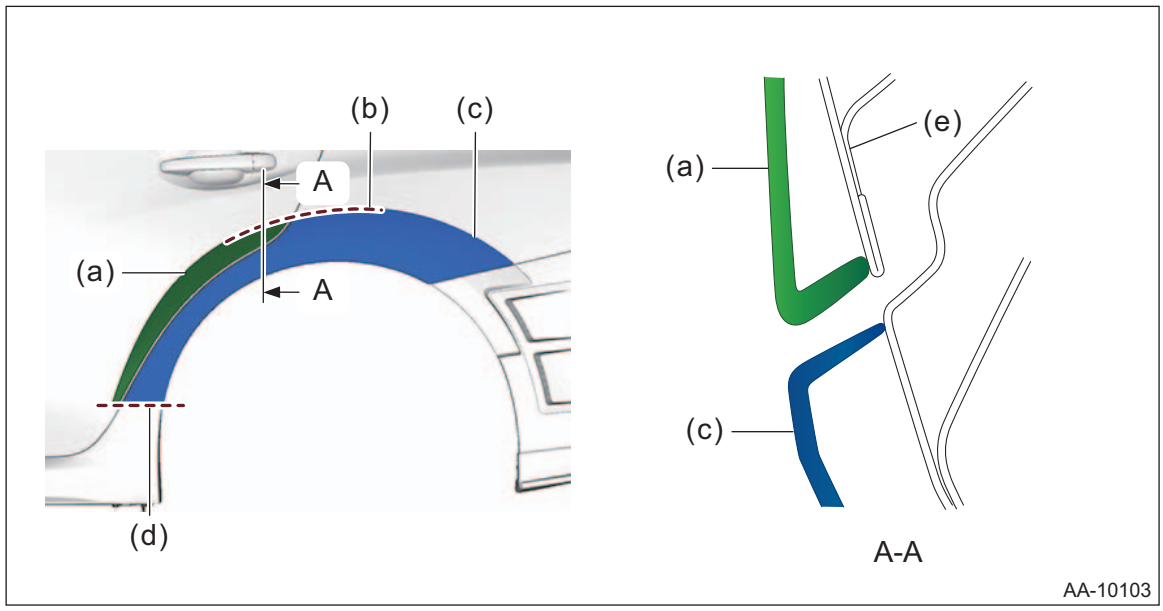
(a) Pattern paper RR DOOR GARN ①
(b) Pattern paper RR DOOR GARN ②
(c) Masking tape
(d) Rear quarter garnish

(3) Peel off the backing sheet (a) on the rear door garnish.
(4) Peel off 38.5 mm (1.52 in) of the backing sheet (b) on the rear door garnish.



(5) Attach the rear door garnish (a) while aligning it to the position shown as dotted lines (b) and (d).

CAUTION:
Confirm that there are no contact of the rear door garnish and the rear quarter garnish when opening/closing the rear door; otherwise, the related parts may be damaged.



(a) Rear door garnish
(b) Upper end alignment position
(c) Rear quarter garnish
(d) Lower end alignment position
(e) Rear door panel

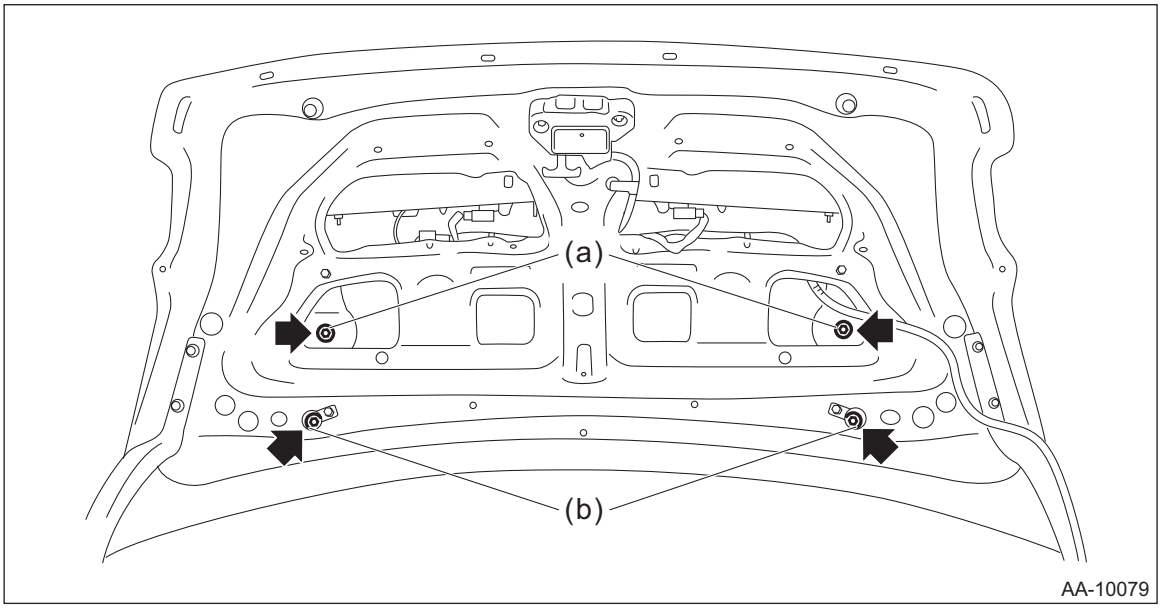
(6) Peel off the backing sheet on the rear door garnish.
(7) Press-fit the rear door garnish.

6. Rear Spoiler

A: REMOVAL

1) Remove the trim panel - trunk lid.
2) Remove the nuts (a) and (b), and then remove the rear spoiler assembly.

CAUTION:
- **When removing the nut, be careful not to drop the nut inside the trunk lid panel.**
- **When removing the nut, be careful not to allow the rear spoiler to fall off.**
- **Be careful not to damage the vehicle body during removal and installation.**
- **Be careful that the reactive force of trunk lid increases when the rear spoiler is removed.**



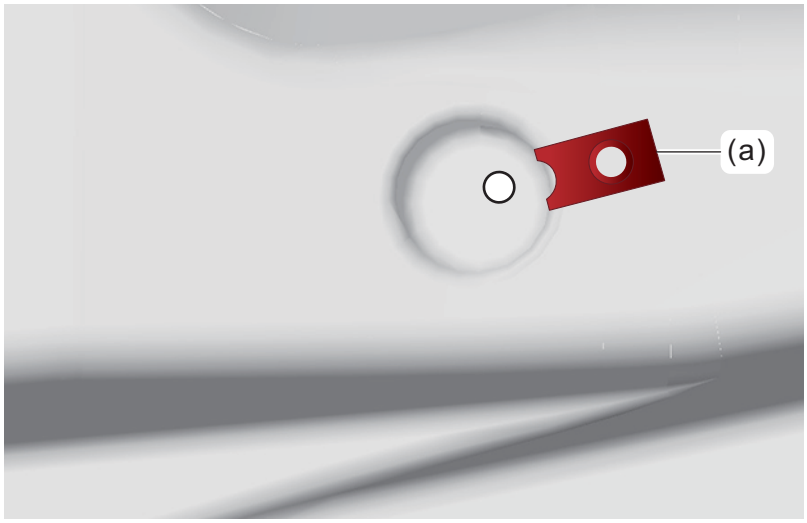
(a) Nut (large flange) (b) Nut (small flange)

B: INSTALLATION

1) Clean the installation surfaces of the trunk lid and the spoiler.

CAUTION:
Make sure that there is a gasket attached on the clip of the spoiler assembly or garnish assembly. If a gasket is not attached, water leakage may occur.

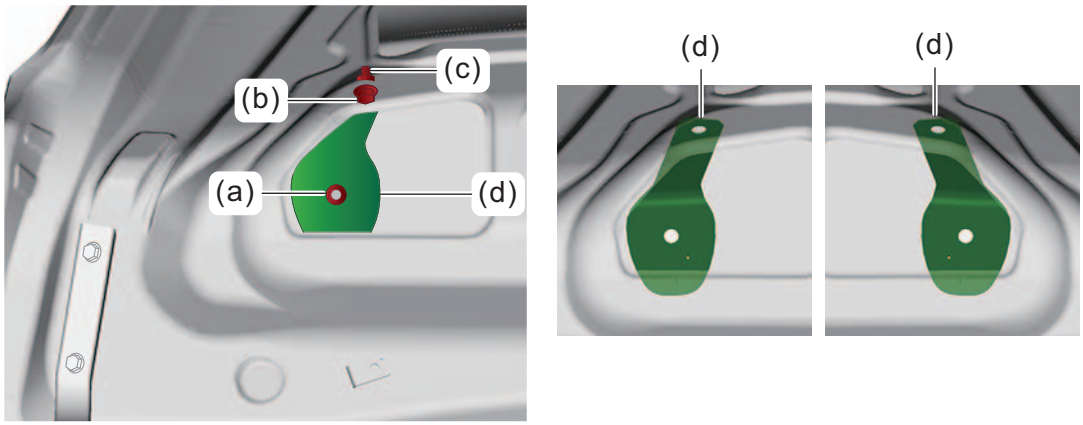
2) Install the spring nut (a) to the trunk lid inner panel.



AA-10021

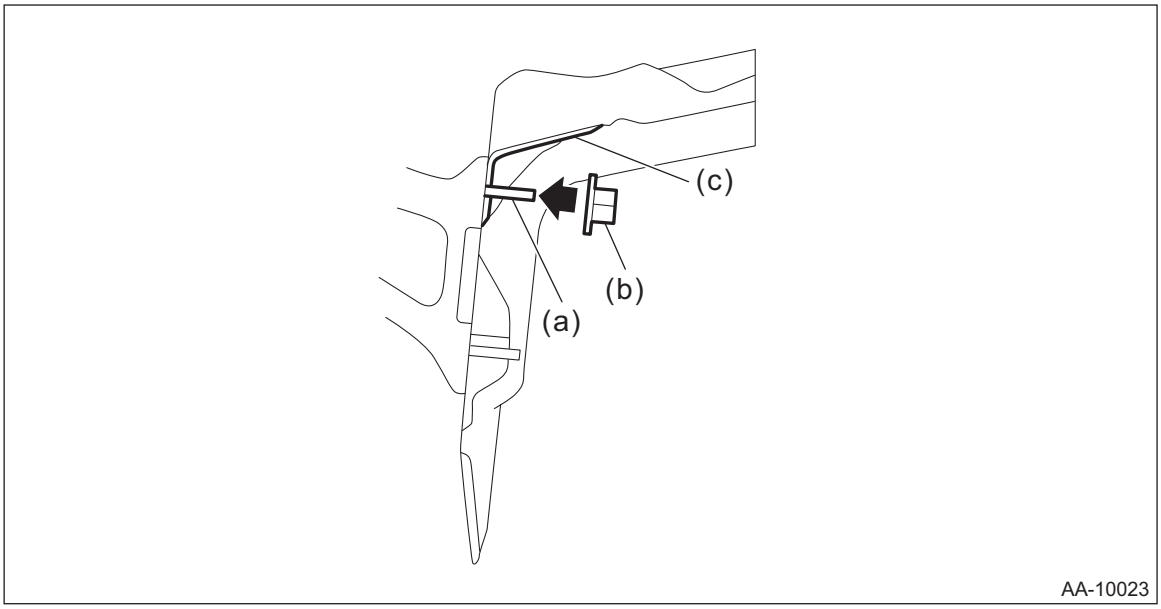
3) Temporarily attach the reinforcement rear (d) with bolt (b) and nut (c), while aligning the center position with the trunk lid outer panel hole (a).

NOTE:
Left and right parts of the reinforcement rear differ in shape.



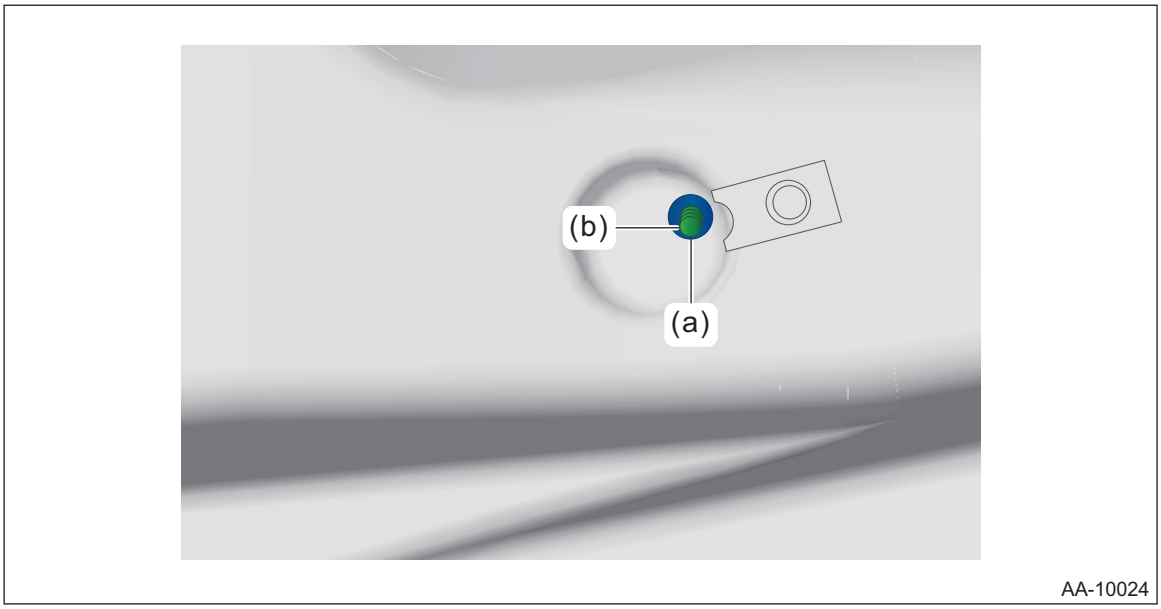
AA-10022

4) Set the rear spoiler assembly to the trunk lid, and install the nut (b) to the upper side stud bolt (a) to temporarily install the reinforcement rear (c).



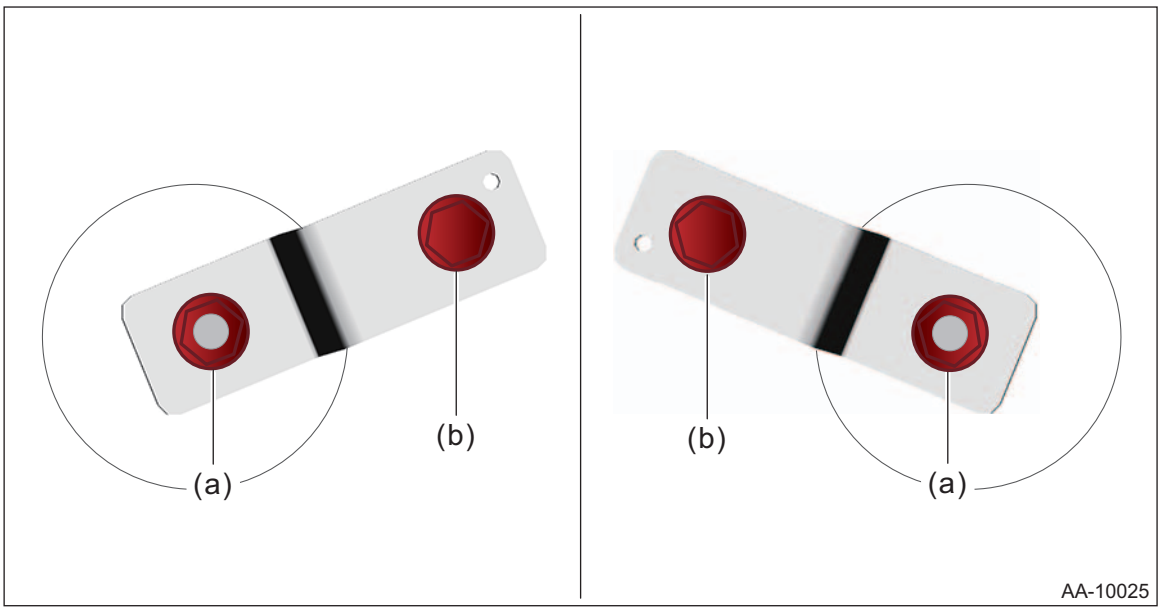
5) Adjust so that the center of the bolt (b) is aligned to the center of a 10 mm (0.39 in) diameter (a) on the lower side.

NOTE:
Align the center positions on the left and right sides at the same time.



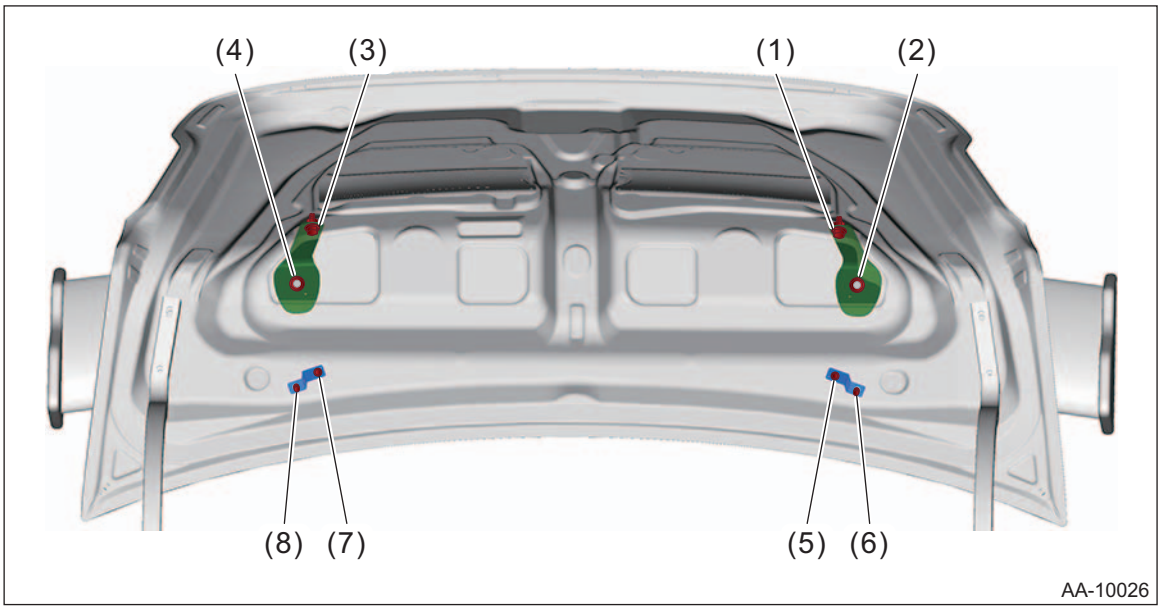
6) Tighten the nuts temporarily installed in step 4) to temporarily fix the rear spoiler assembly.

7) Set the reinforcement front, and install it temporarily with nut (a) and bolt (b).



8) Tighten the bolts and nuts in the numerical order shown in the figure below.

Tightening torque:
7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



9) Install the trim panel - trunk lid.

7. Lower Inner Trim

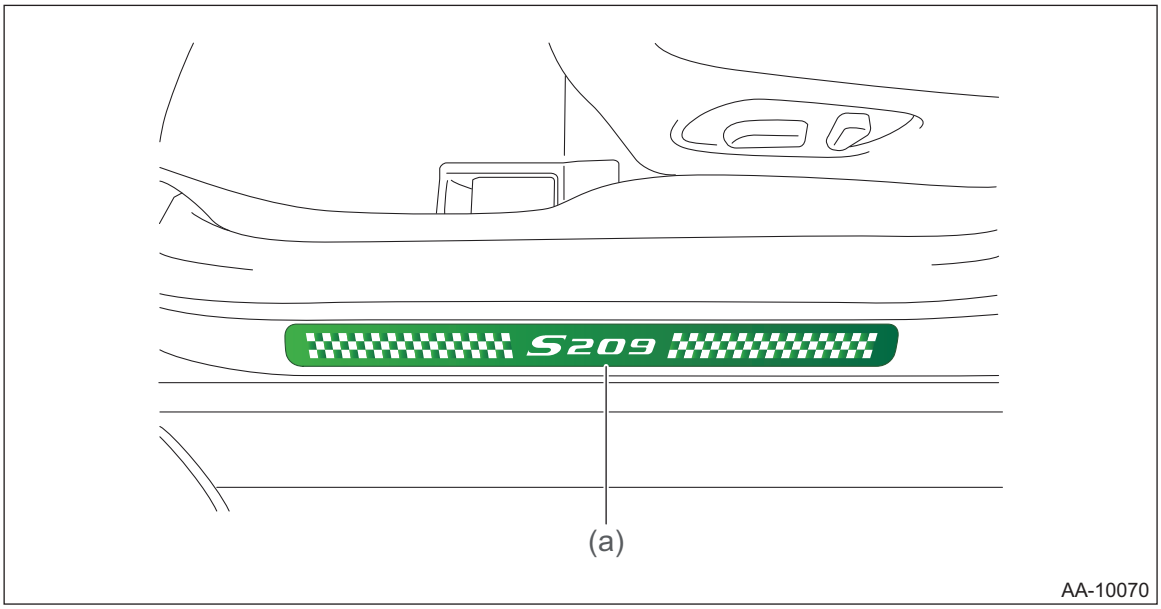
A: REMOVAL

1. SIDE SILL PLATE

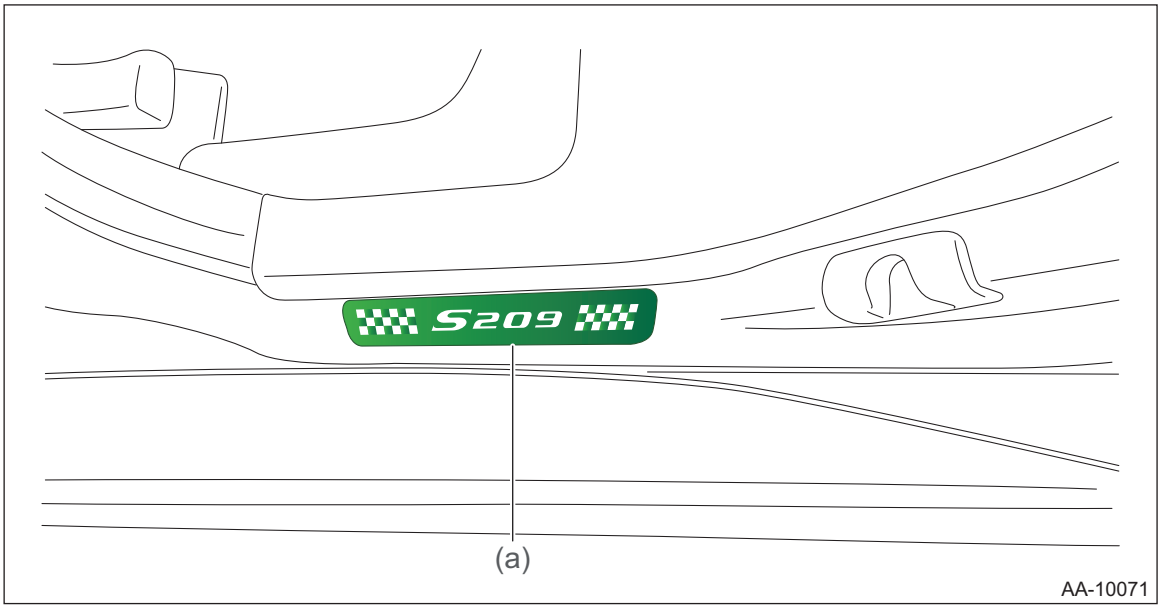
Remove the double-sided tape, and remove the side sill plate (a).

CAUTION:
Do not reuse the side sill plate.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.
Front



Rear



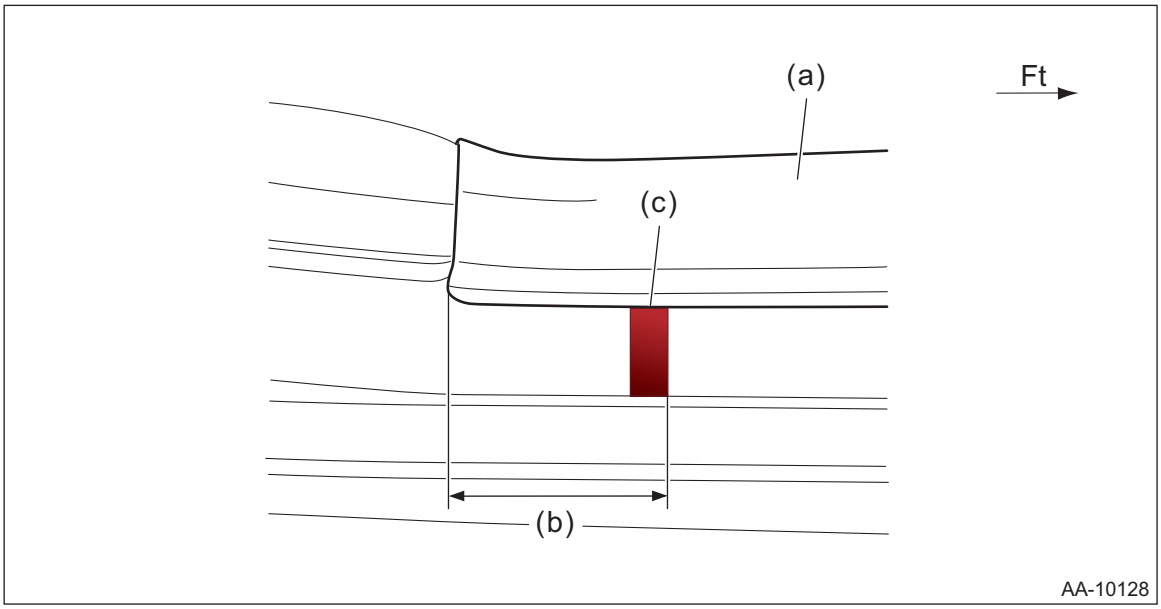
B: INSTALLATION

1. SIDE SILL PLATE

1) Clean and degrease the side sill plate attachment area on the panel - side outer.

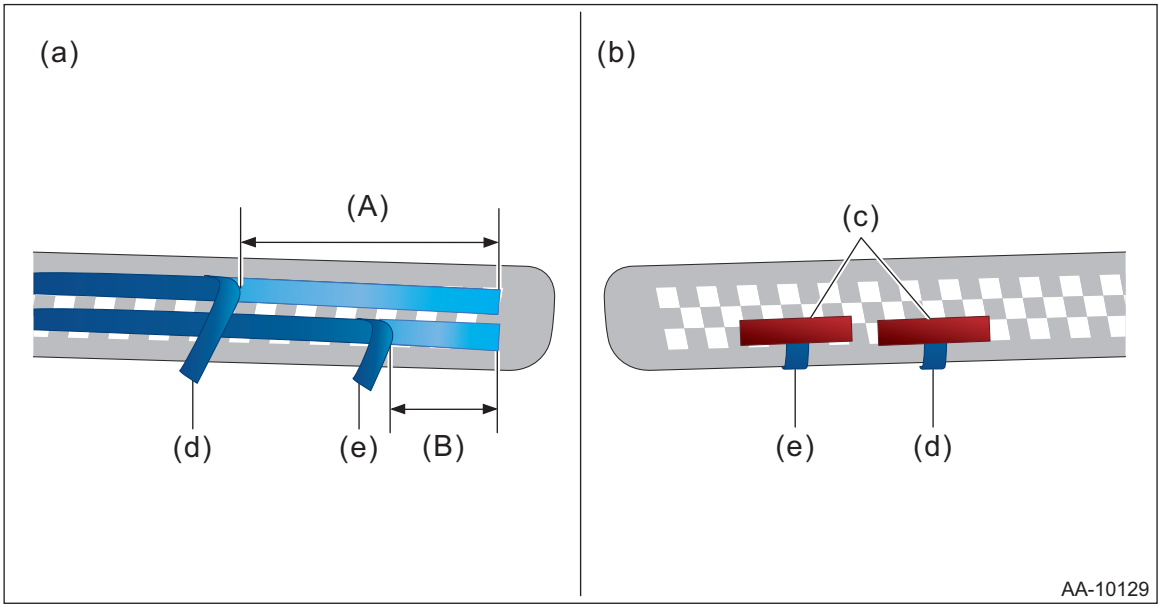
NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
• Heating a particular small area will cause deformation of the parts.

2) Attach the side sill plate - front.
(1) Apply masking tape (c) to a position at 100 mm (3.94 in) (b) away from the rear end of the cover side sill - front INN (a) toward the front side of the vehicle.



(2) Attach the backing sheet (d) on vehicle inside and the backing sheet (e) on vehicle outside to the front side with masking tape (c).

NOTE:
To facilitate the work, peel off approx. 80 mm (3.15 in) of the backing sheet (d) on vehicle inside and attach it to the front side. And then peel off approx. 50 mm (1.97 in) of the backing sheet (e) on vehicle outside and attach it to the front side.

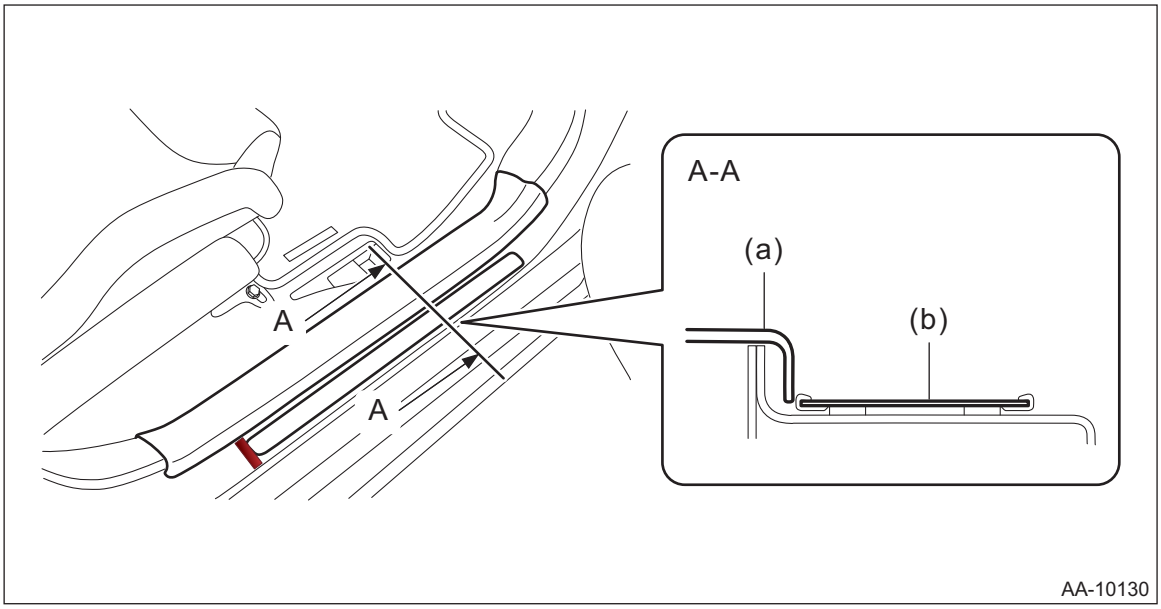


(A) 80 mm (3.15 in)
(B) 50 mm (1.97 in)

(a) Back side
(b) Front side
(c) Masking tape
(d) Backing sheet on vehicle inside
(e) Backing sheet on vehicle outside

(3) Align the side sill plate - front to the position of the masking tape applied in step (1).

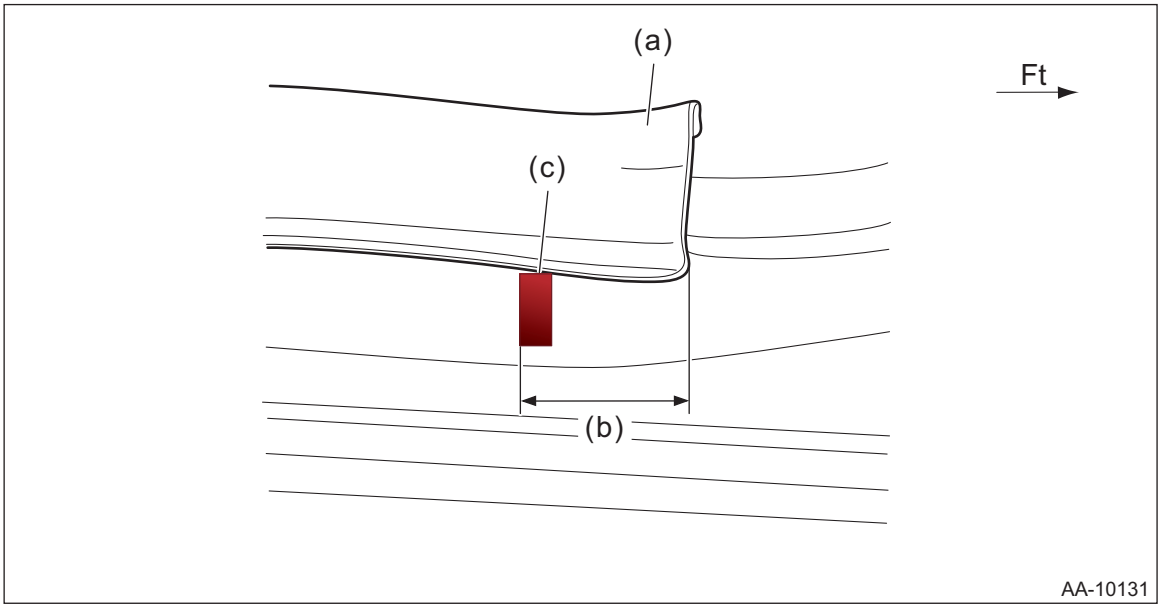
CAUTION:
- **Make sure there are no gaps between the side sill plate - front and the cover side sill - front INN.**
- **If there is a gap, adjust the application position of the side sill plate - front to the left or right direction.**



(a) Cover side sill - front INN (b) Side sill plate - front

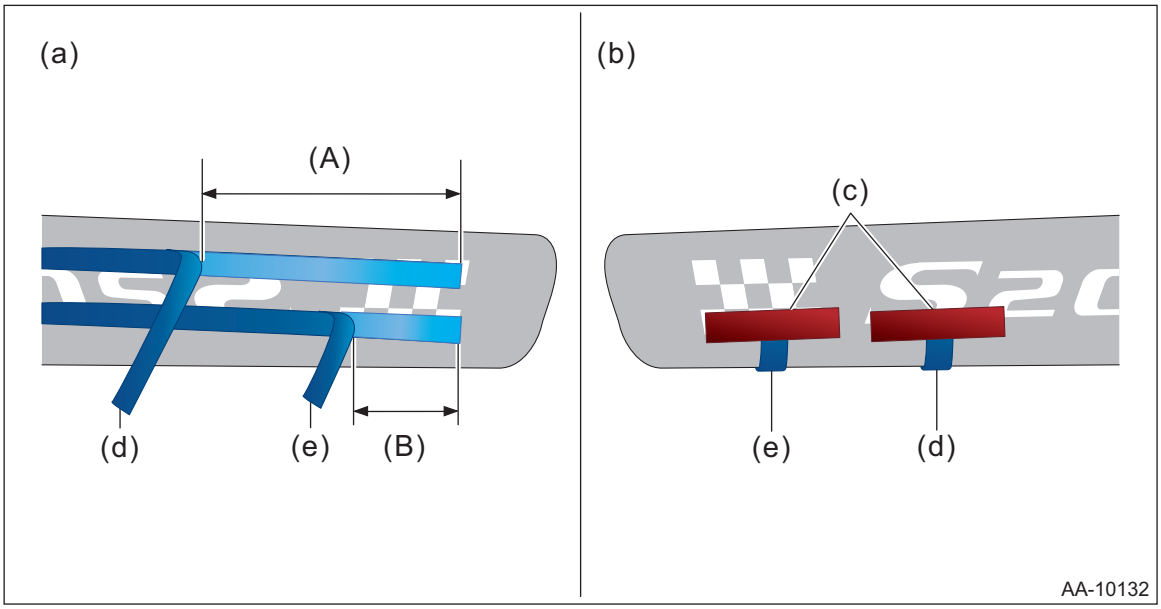
(4) Peel off the backing sheet on vehicle inside of the side sill plate - front.
(5) Press-fit the side sill plate - front.
(6) Peel off the backing sheet on vehicle outside of the side sill plate - front.
(7) Press-fit the side sill plate - front.

3) Attach the side sill plate - rear.
(1) Apply masking tape (c) to a position at 65 mm (2.56 in) (b) away from the rear end of the cover side sill - rear INN (a) toward the front side of the vehicle.



(2) Attach the backing sheet (d) on vehicle inside and the backing sheet (e) on vehicle outside to the front side with masking tape (c).

NOTE:
To facilitate the work, peel off approx. 80 mm (3.15 in) of the backing sheet (d) on vehicle inside and attach it to the front side. And then peel off approx. 50 mm (1.97 in) of the backing sheet (e) on vehicle outside and attach it to the front side.

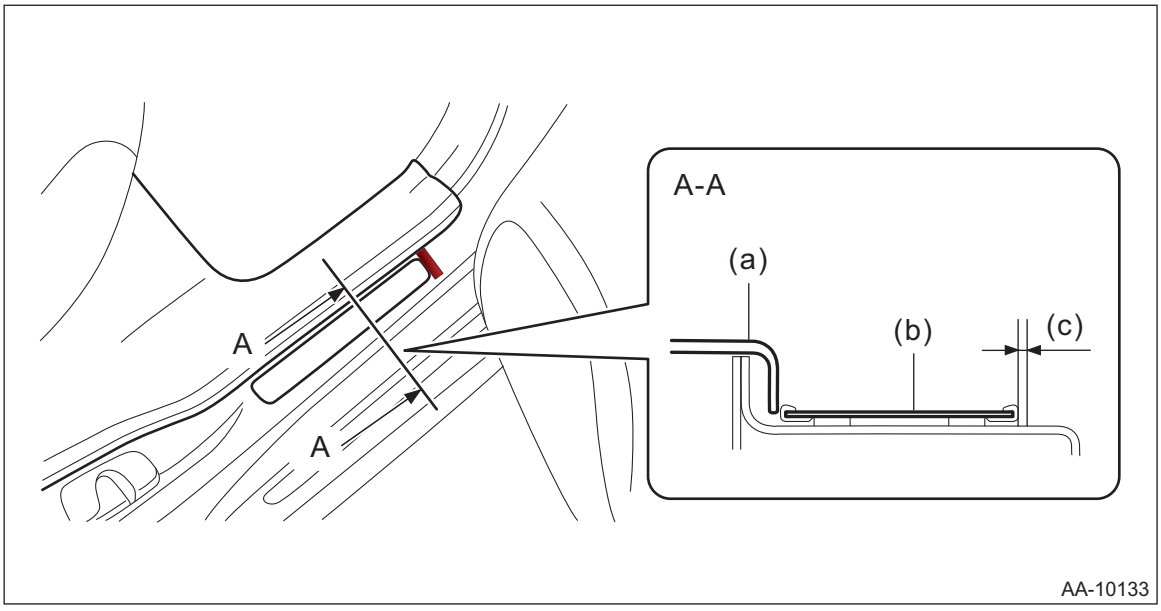


(A) 80 mm (3.15 in)
(B) 50 mm (1.97 in)

(a) Back side
(b) Front side
(c) Masking tape
(d) Backing sheet on vehicle inside
(e) Backing sheet on vehicle outside

(3) Align the side sill plate - rear to the position of the masking tape applied in step (1).

CAUTION:
- **Make sure there are no gaps between the side sill plate - rear and the cover side sill - rear INN.**
- **If there is a gap, adjust the application position of the side sill plate - rear to the left or right direction.**



(a) Cover side sill - rear INN
(b) Side sill plate - rear
(c) 3.5 mm (0.14 in)

(4) Peel off the backing sheet on vehicle inside of the side sill plate - rear.

(5) Press-fit the side sill plate - rear.
(6) Peel off the backing sheet on vehicle outside of the side sill plate - rear.
(7) Press-fit the side sill plate - rear.

4) Remove the masking tape, and peel off the protection seal of the side sill plate.

8. Trunk Room Trim

A: REMOVAL

1) Remove the trim panel - trunk lid.
2) Tilt the rear seat backrest forward.
3) Remove the mat - trunk.
4) Remove the trim panel - trunk rear.
5) Remove the trim panel - trunk side.

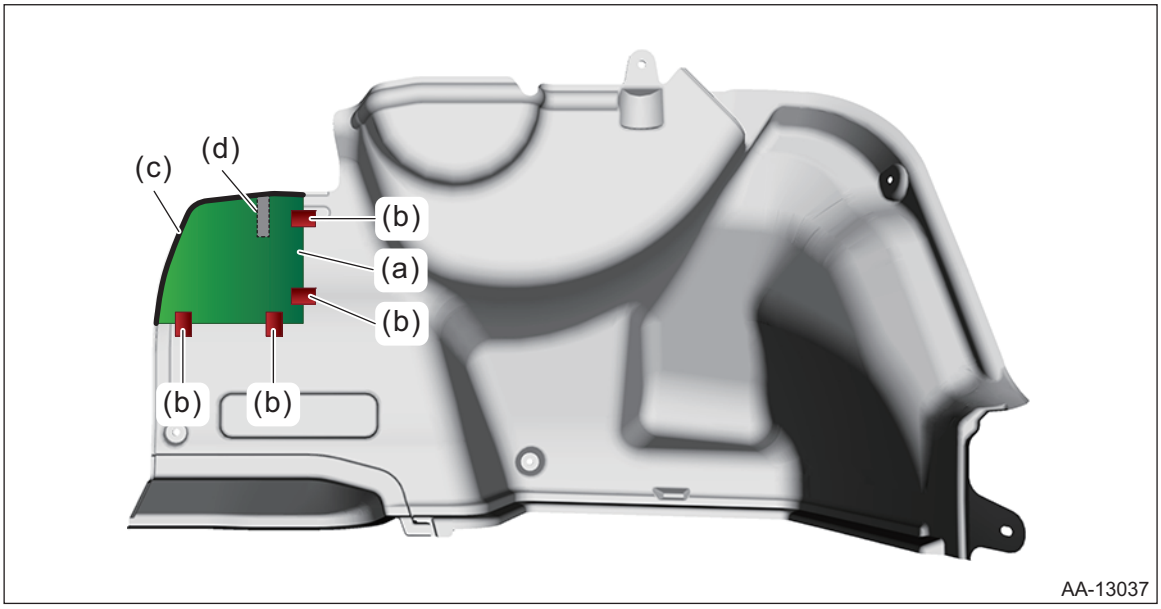
B: INSTALLATION

NOTE:
- When installing a new trim panel - trunk side, perform the work described in step 1).
- Left and right parts of the trim panel - trunk side differ in shape. However, procedures for the left side can be performed in the same way as for the right side.

1) Perform the work for installing the flexible draw stiffener - rear.
   (1) Print out and cut the pattern papers named as “Patern paper for a trim”.

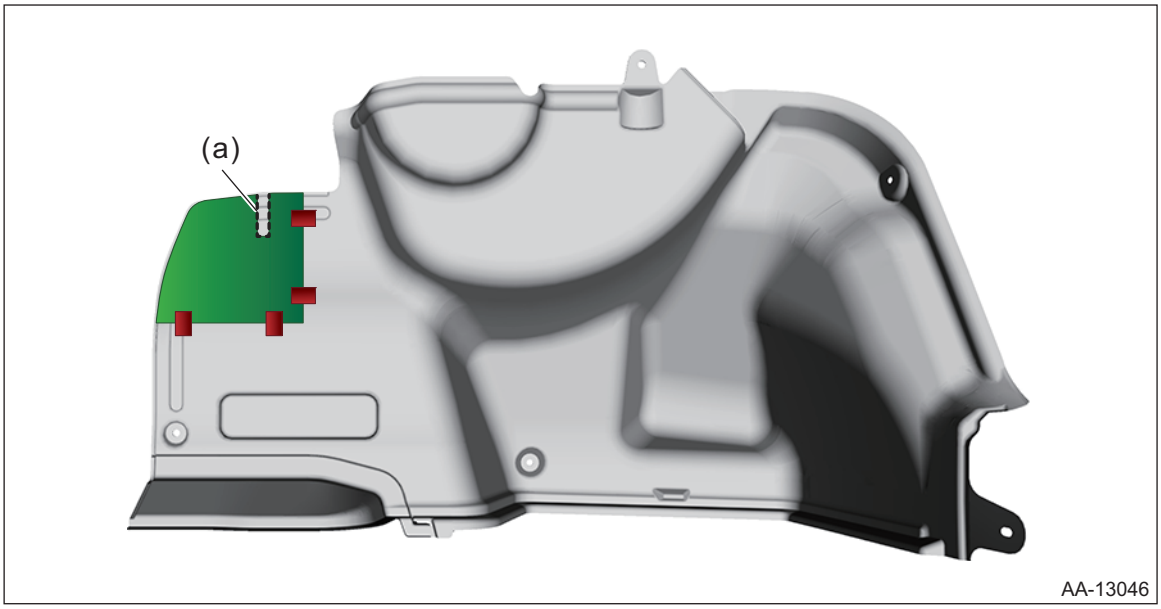
CAUTION:
Confirm that the pattern paper is printed out with accurate size.
   (2) Press the pattern paper (a) against the trim panel - trunk side, and attach masking tapes (b).

NOTE:
Align the pattern paper (a) to the trim line (c) shown in the figure, and attach masking tapes (b).



(a) Pattern paper, right side
(b) Masking tape
(c) Trim line
(d) Cutting plane line

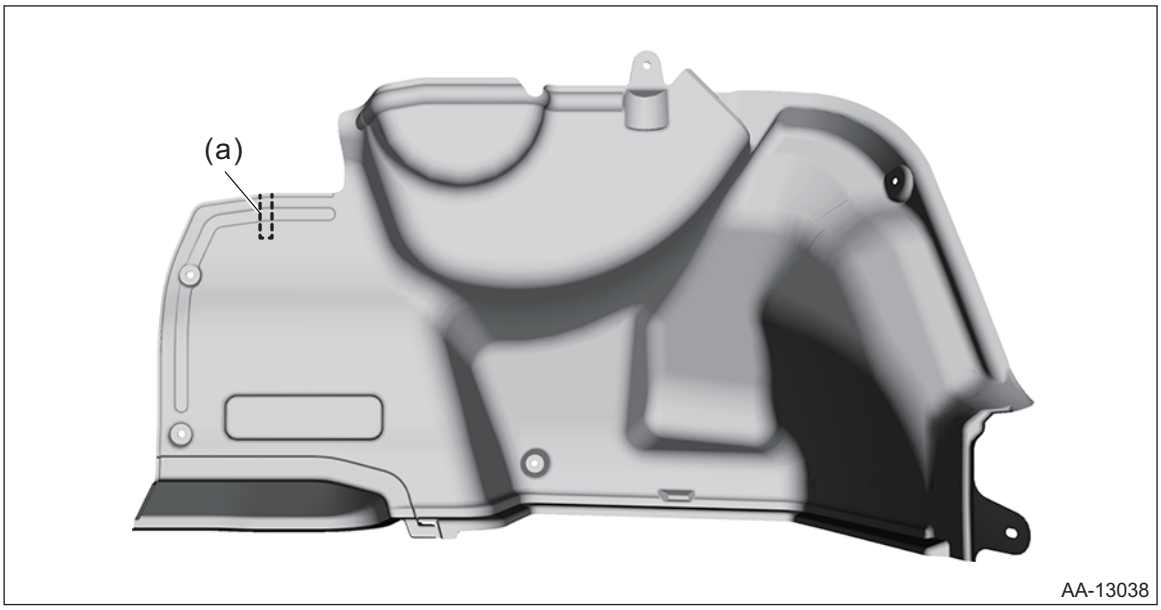
(3) Make a mark-off line according to the cutting plane line (a).



(a) Cutting plane line

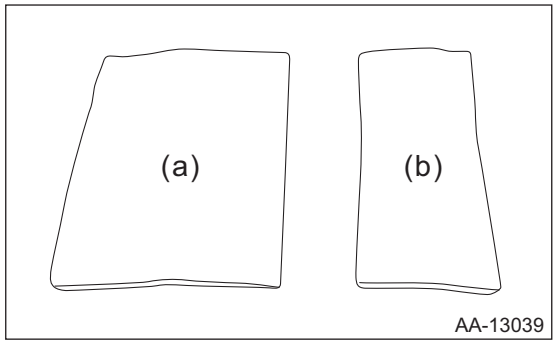
(4) Remove the pattern paper.
(5) Cut the trim panel - trunk side along the mark-off line (a).

CAUTION:
Be careful not to cut the sound proofing material on the back side of the trim panel - trunk side.



(a) Mark-off line

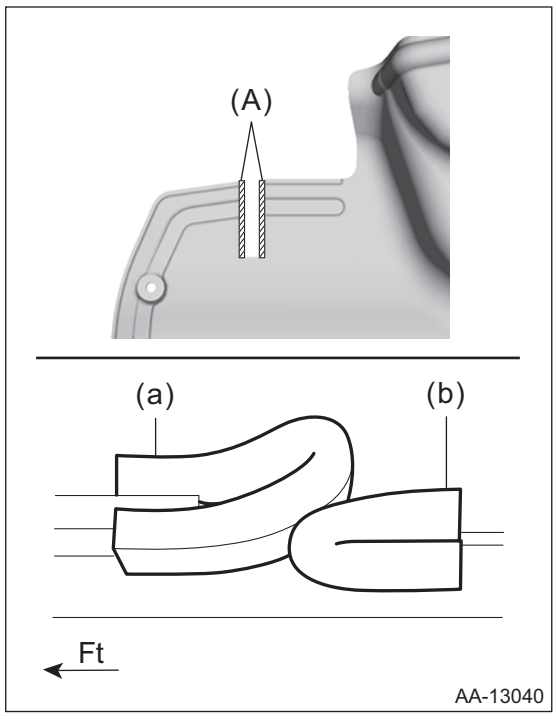
(6) Cut the EPT sealer (5.0t) to 70 mm × 50 mm (2.756 in × 1.969 in) (a) and to 70 mm × 30 mm (2.756 in × 1.181 in) (b).



(a) 70 mm × 50 mm (2.756 in × 1.969 in)
(b) 70 mm × 30 mm (2.756 in × 1.181 in)

(7) Attach the EPT sealers (a) and (b) created in the step (6) to the cut sections of the trim panel - trunk side.

NOTE:
Margin (A) for the EPT sealer is 3 mm (0.118 mm).



(A) 3 mm (0.118 in)

(a) 70 mm × 50 mm (2.756 in × 1.969 in)
(b) 70 mm × 30 mm (2.756 in × 1.181 in)

2) Install the trim panel - trunk side.
3) Install the trim panel - trunk rear.
4) Install the mat - trunk.
5) Return the rear seat backrest to the lock position.
6) Install the trim panel - trunk lid.

EXTERIOR BODY PANELS

EB

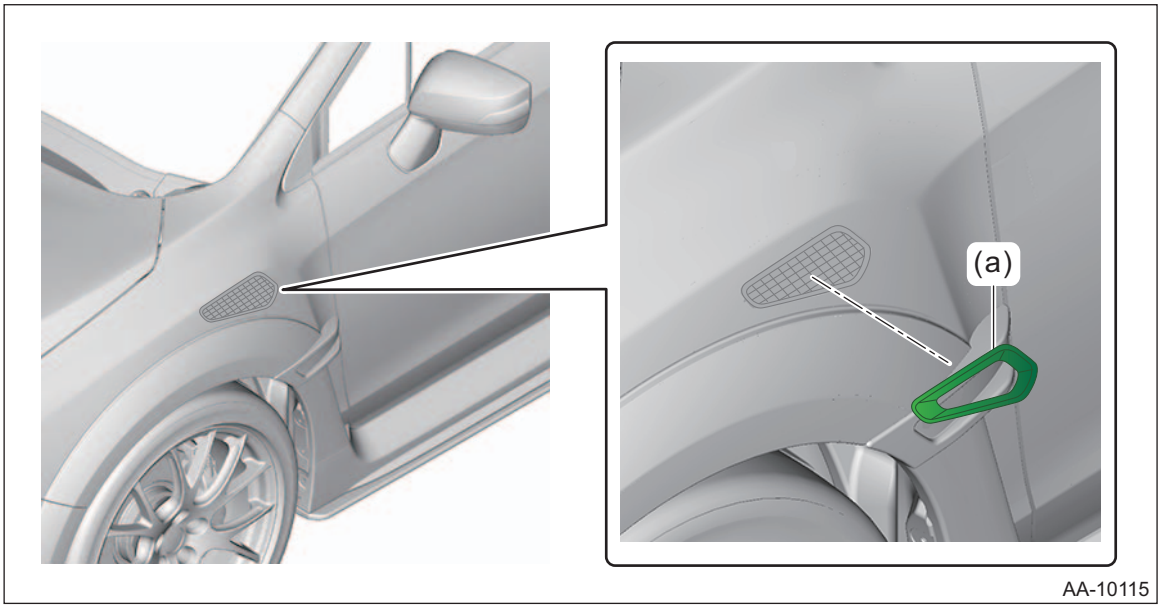
1. Front Fender

A: REMOVAL

1. FRONT FENDER AIR OUTLET

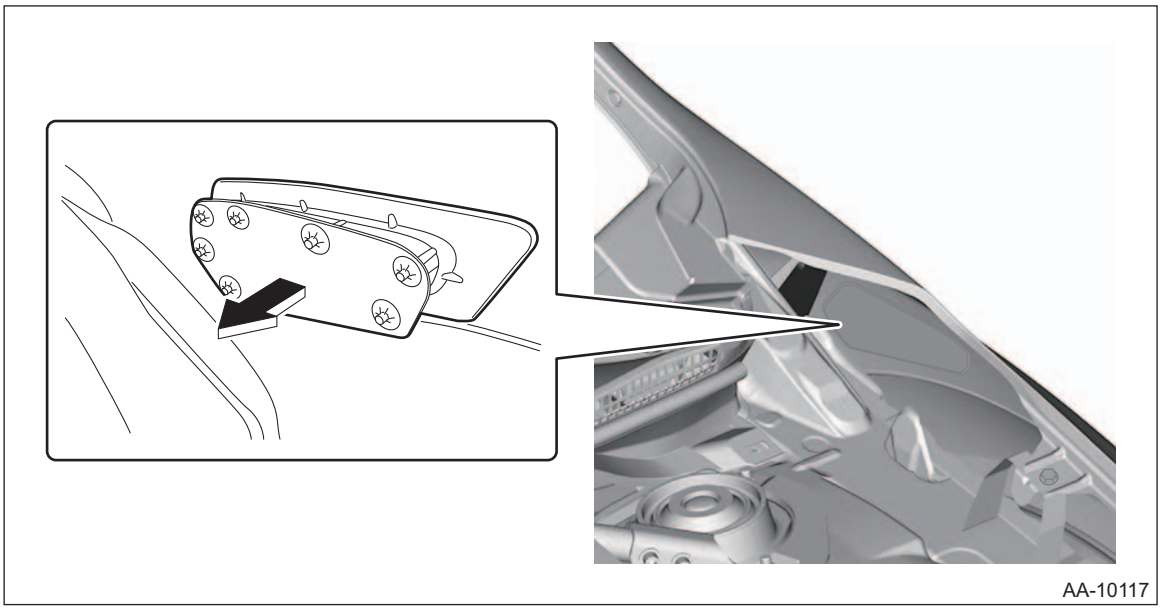
CAUTION:
Do not reuse the front fender air outlet.
1) Remove the cover - front fender.
2) Remove the double-sided tape, and remove the front fender air outlet outer (a).

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.



3) Remove the double-sided tape, and pull out the front fender air outlet inner.

NOTE:
If the double-sided tape is difficult to remove, warm it with a hairdryer, etc. to make the removal easier.



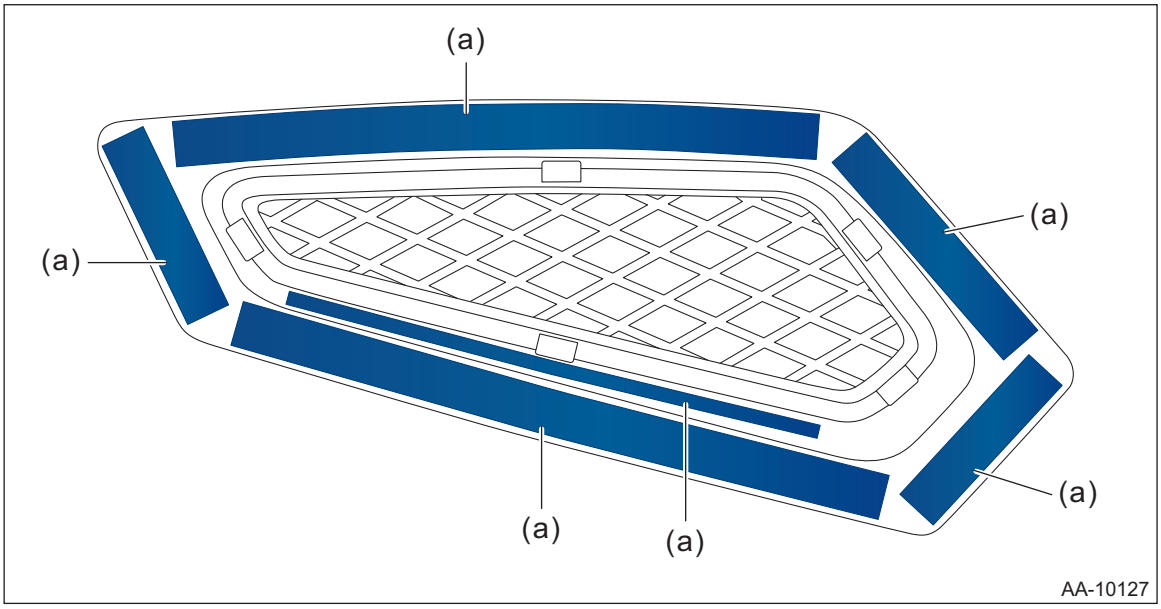
B: INSTALLATION

1. FRONT FENDER AIR OUTLET

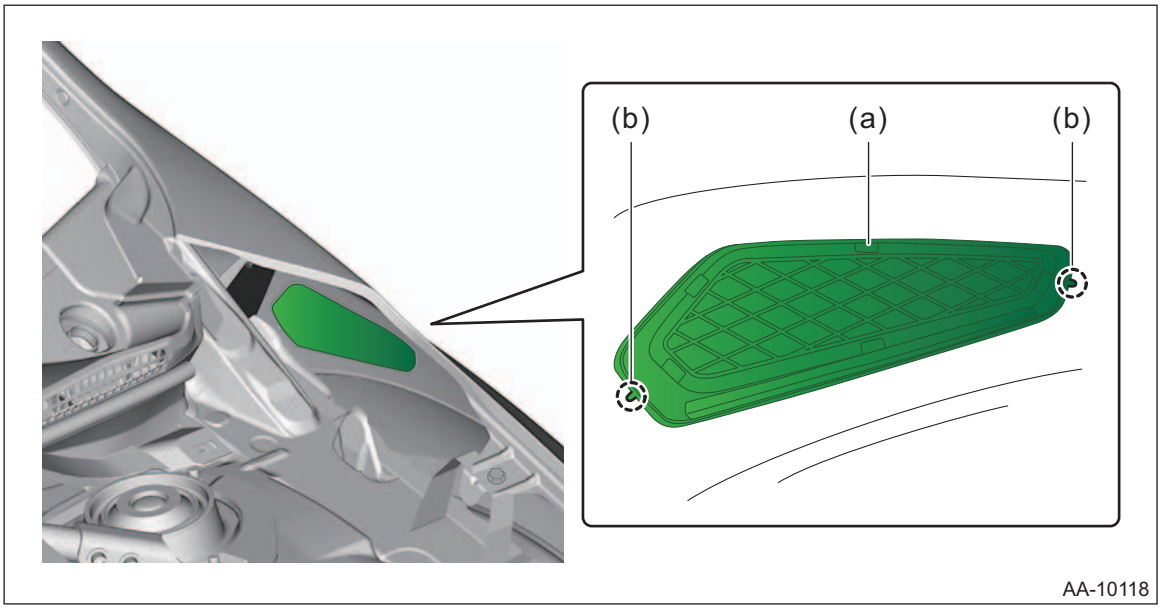
1) Clean and degrease the front fender air outlet attachment area on the front fender.

NOTE:
• When the ambient temperature is 15°C (59°F) or less, heat the entire part of double-sided tape and the attachment area to approx. between 25°C and 40°C (77°F and 104°F) using a heat light, etc.
• Heating a particular small area will cause deformation of the parts.

2) Install the front fender air outlet.
(1) Peel off the backing sheet (a) on the front fender air outlet inner.

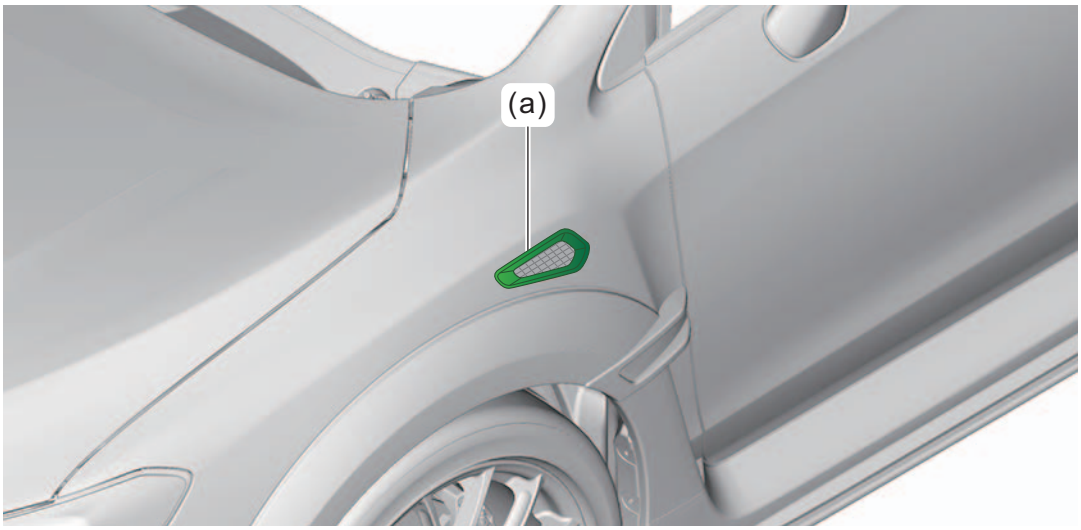


(2) Attach the front fender air outlet inner (a) while aligning it to the cutout position (b).



(3) Press-fit the front fender air outlet inner.

(4) Install the front fender air outlet outer (a).



(5) Press-fit the front fender air outlet outer.

3) Install the cover - front fender.

WIRING SYSTEM SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

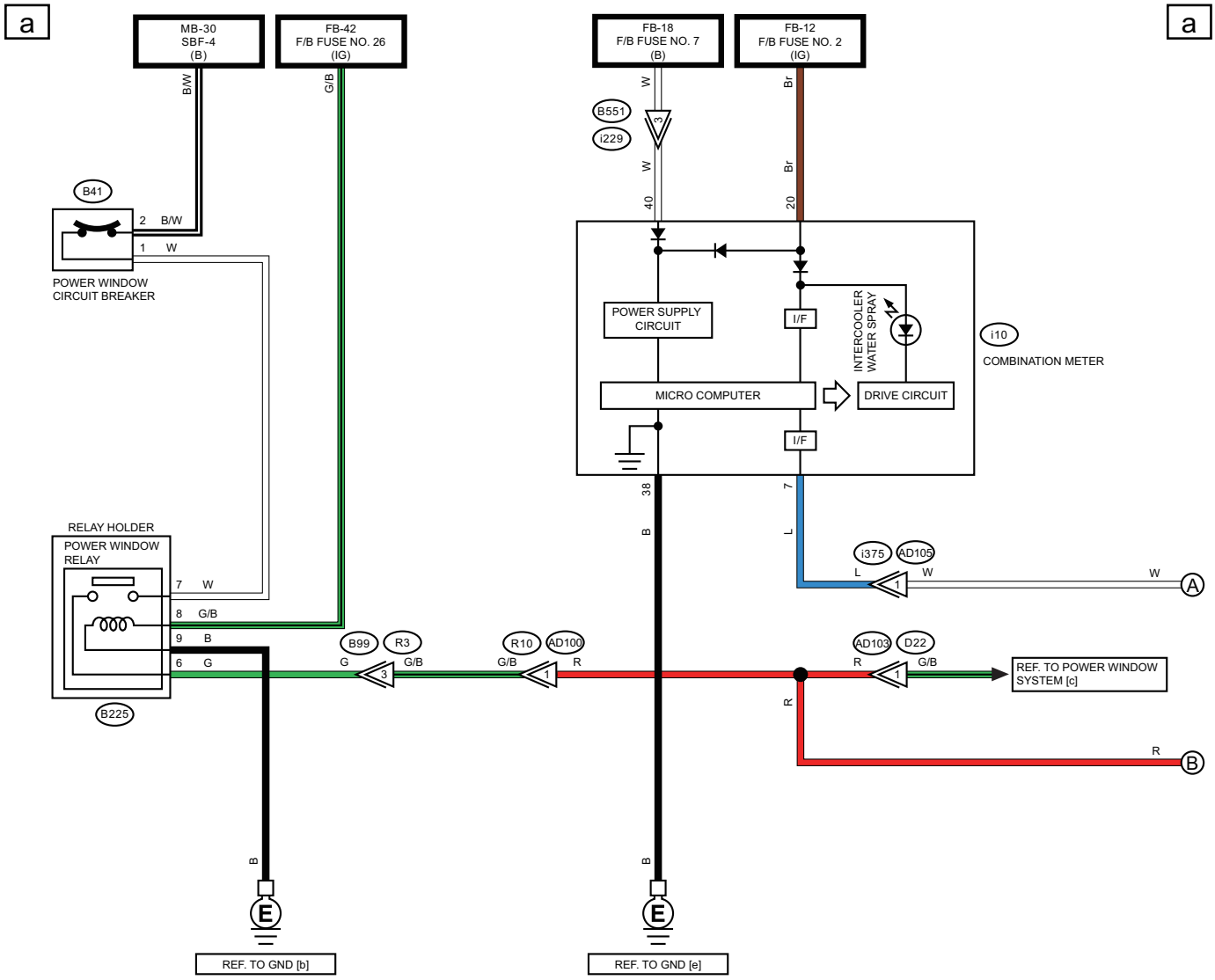
All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

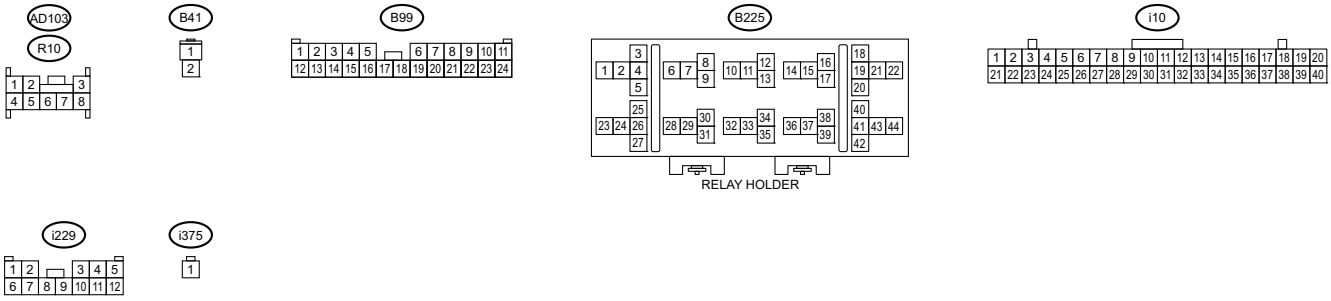
WIRING SYSTEM

WI

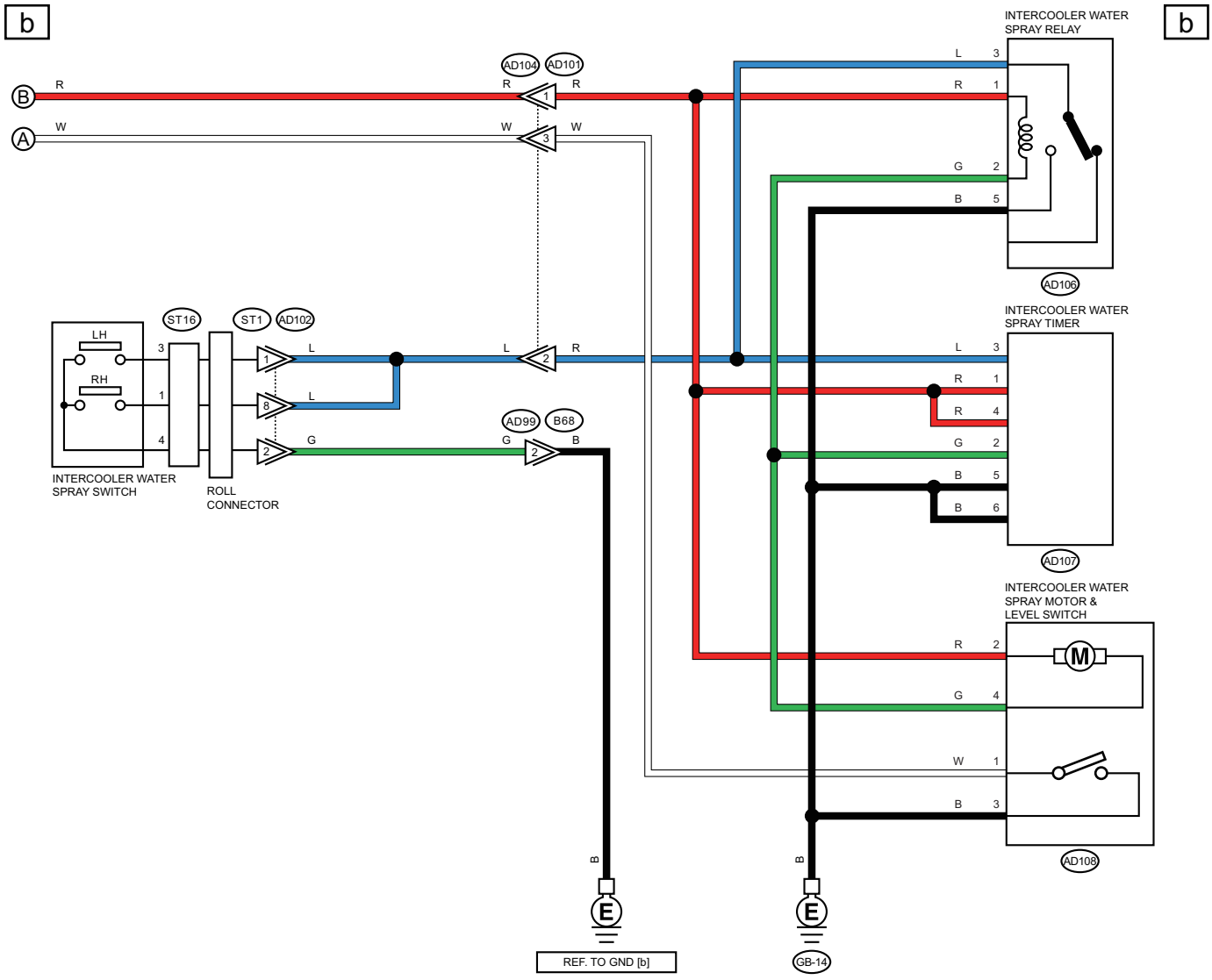
1. Intercooler Water Spray System

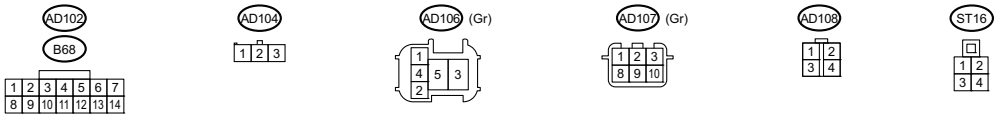
A: WIRING DIAGRAM





WI-86700


b
b
INTERCOOLER WATER SPRAY RELAY
INTERCOOLER WATER SPRAY TIMER
INTERCOOLER WATER SPRAY MOTOR & LEVEL SWITCH
INTERCOOLER WATER SPRAY SWITCH
ROLL CONNECTOR
LH
RH
AD104
AD101
AD102
ST16
ST1
AD99
B68
AD106
AD107
AD108
REF. TO GND [b]
GB-14


AD102
B68
AD104
AD106 (Gr)
AD107 (Gr)
AD108
ST16

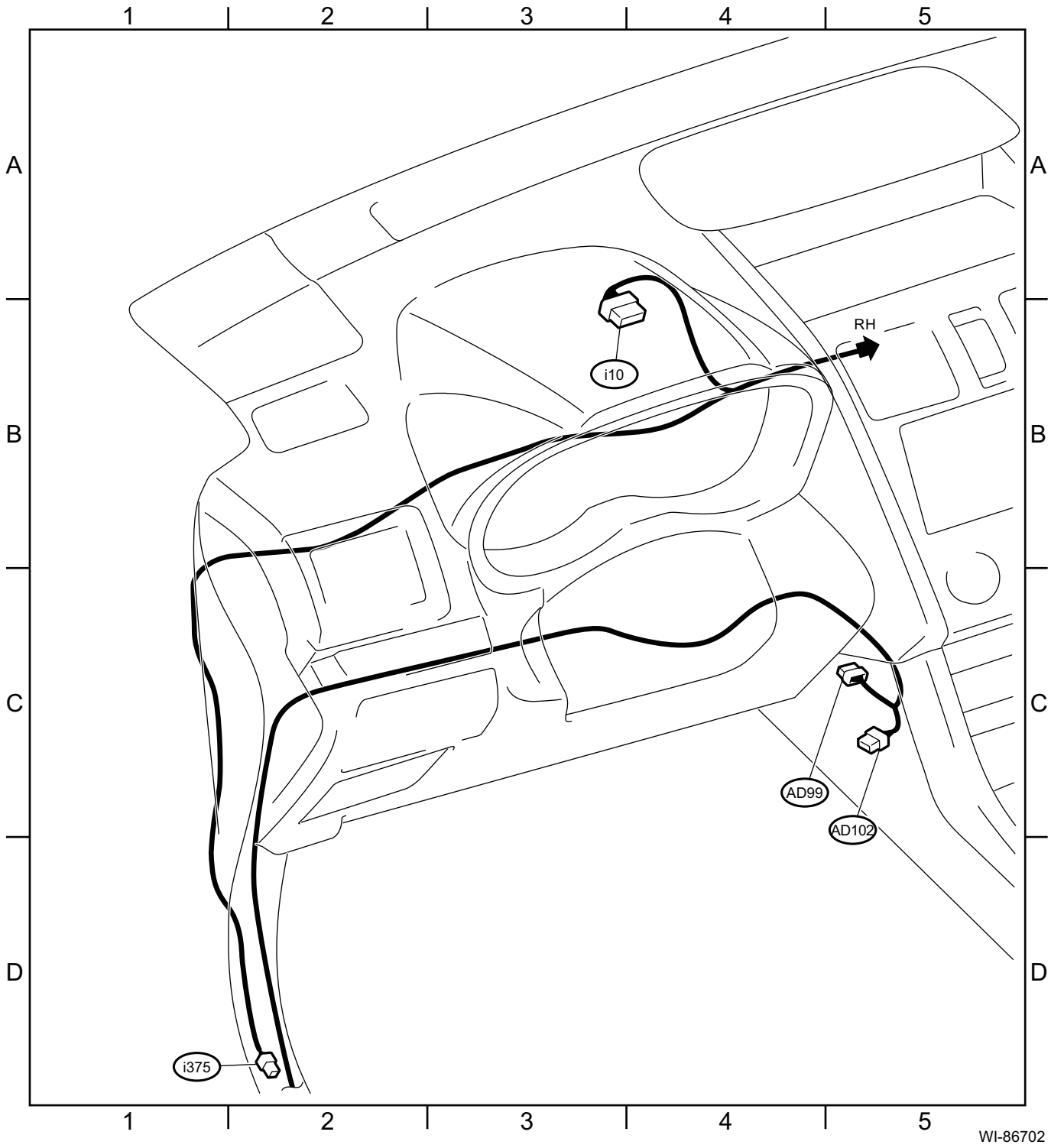
WI-86701

2. Instrument Panel Wiring Harness LH

A: LOCATION

Connector				Connecting to	
No.	Pole	Color	Area	No.	Description
AD99	14	★	C-5	B68	Bulkhead wiring harness
AD102	14	★	C-5	ST1	Roll connector
i10	40	★	B-3		Combination meter
i375	1	★	D-2	AD105	Adapter cord (intercooler water spray)

Instrument Panel Wiring Harness LH

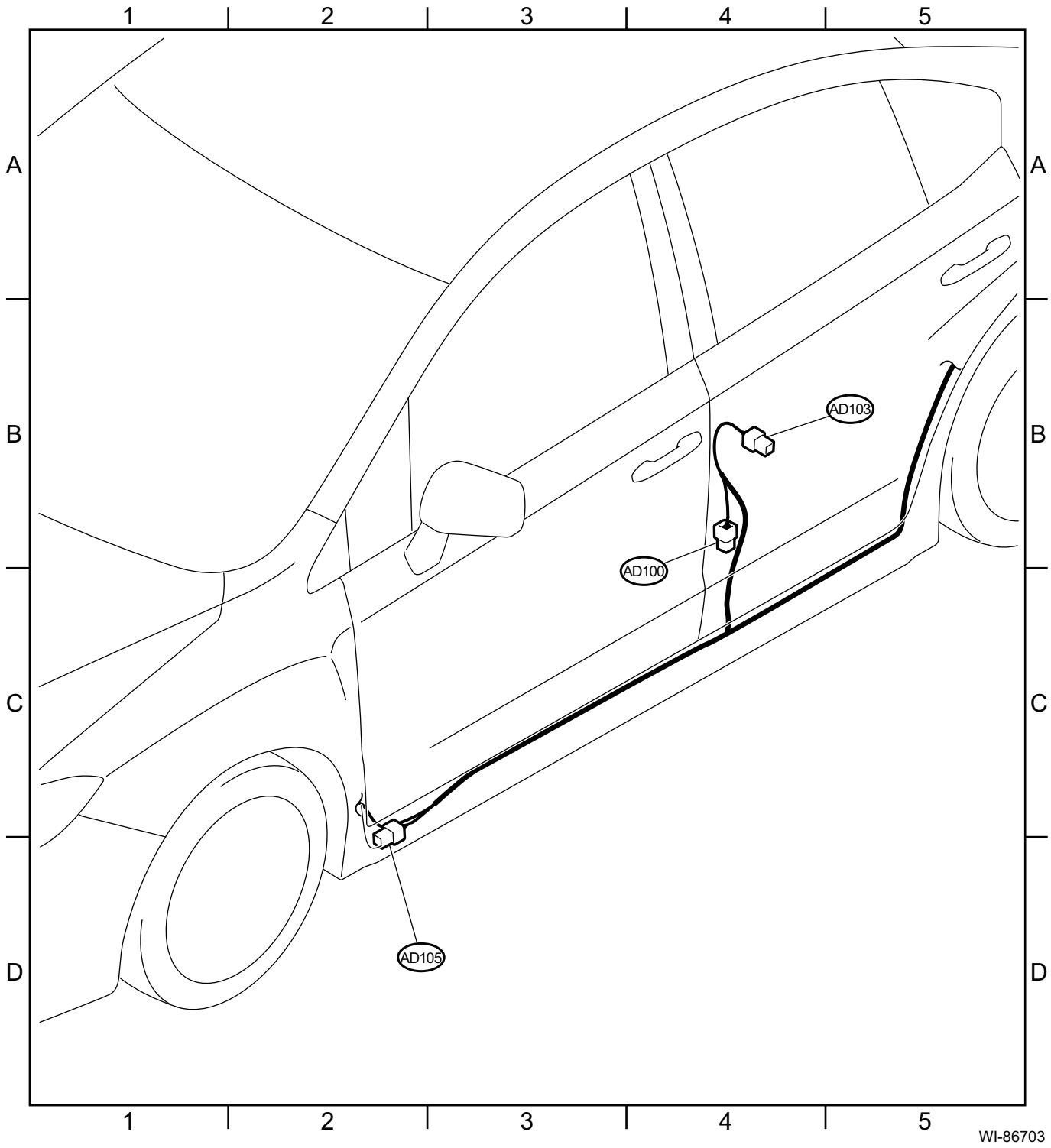


3. Rear Wiring Harness LH

A: LOCATION

Connector				Connecting to	
No.	Pole	Color	Area	No.	Description
AD100	8	★	B-4	R10	Rear wiring harness LH
AD103	8	★	B-4	D22	Rear door cord LH
AD105	1	★	C-2	i375	Instrumenta panel wiring harness

Rear Wiring Harness LH

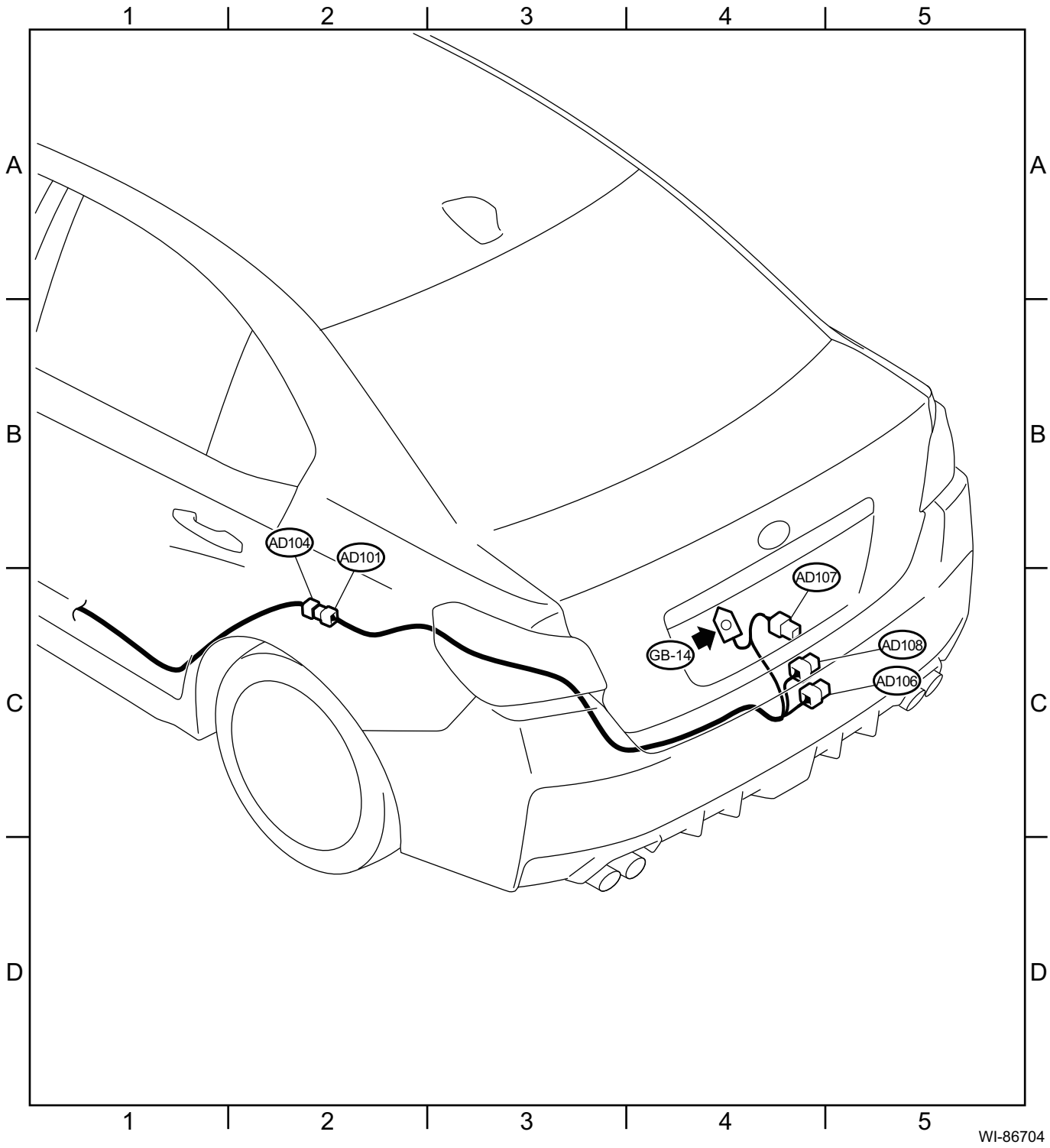


4. Rear Wiring Harness and Trunk Lid Cord

A: LOCATION

Connector				Connecting to	
No.	Pole	Color	Area	No.	Description
AD101	3	★	C-2	AD104	Adapter cord (intercooler water spray)
AD104	3	★	C-2	AD101	
AD106	5	Gr	C-4		Intercooler water spray relay
AD107	6	Gr	C-4		Intercooler water spray timer
AD108	4	★	C-4		Intercooler water spray motor & level switch

Rear Wiring Harness and Trunk Lid Cord



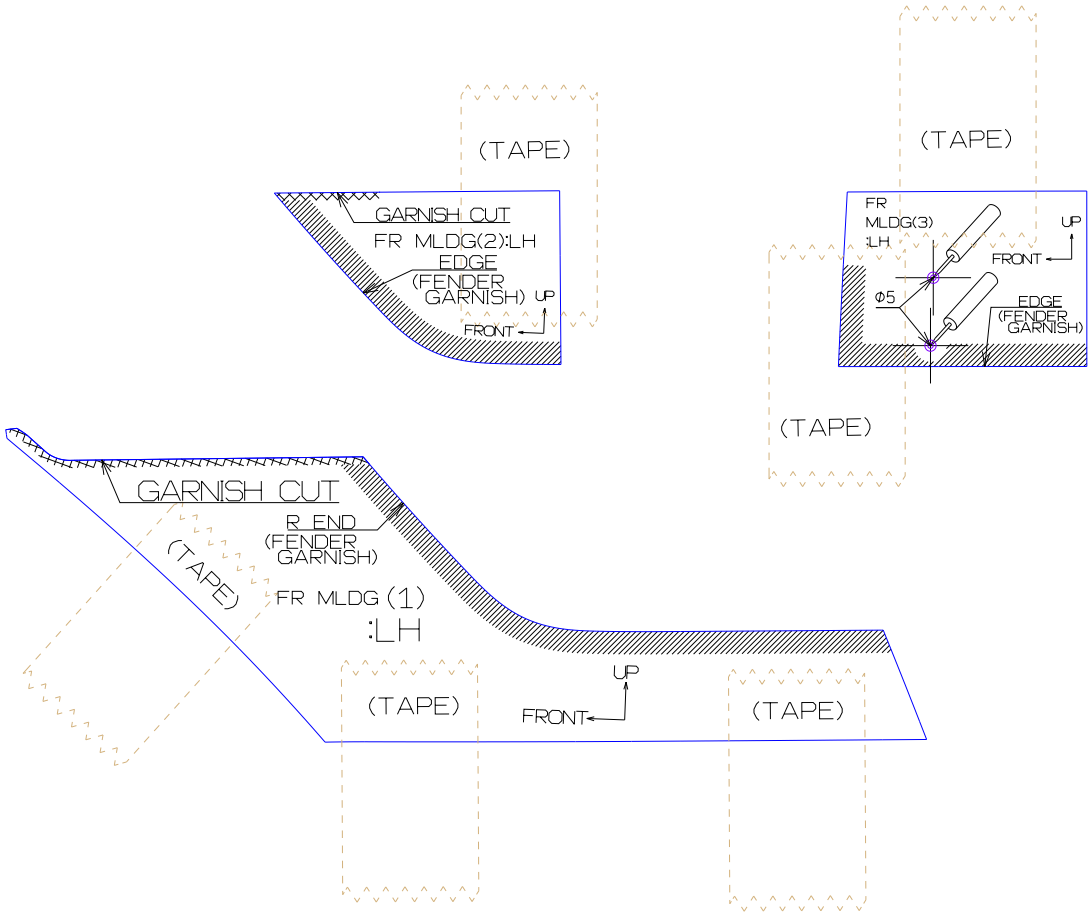
PATTERN PAPER SECTION

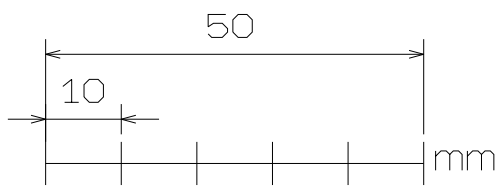
This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.
This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

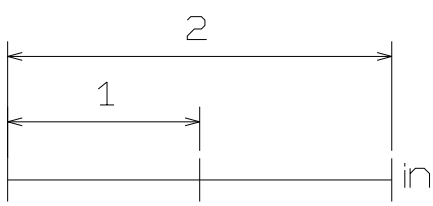
All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.
For information on sections that remain unchanged, refer to 19MY WRX STI service manual.

FENDER MOL, Patern paper LH

(Processing of fender garnish)



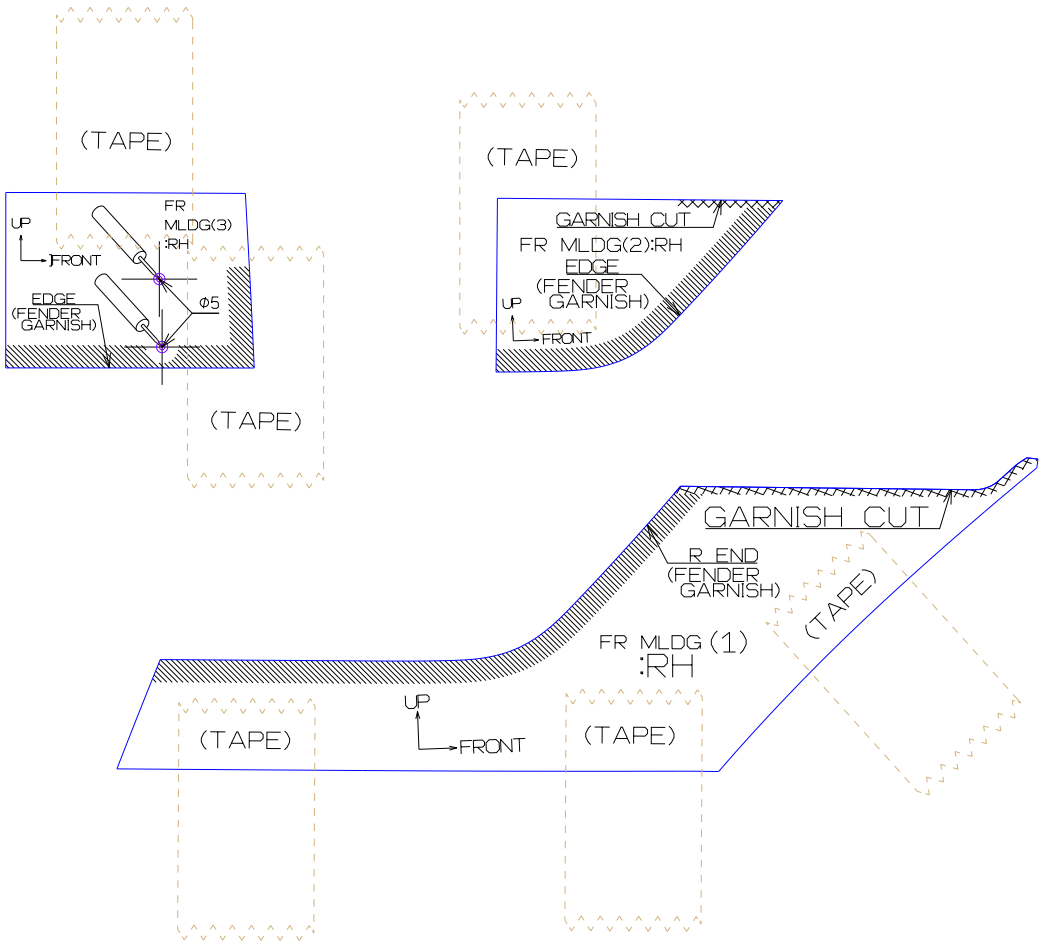


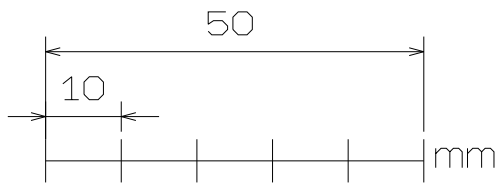


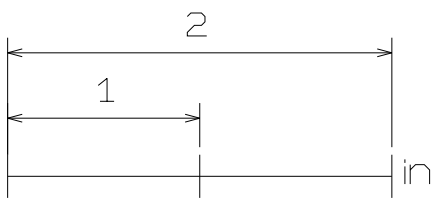
Tool : · drill φ5mm
· belt sander
· file

FENDER MOL, Patern paper RH

(Processing of fender garnish)





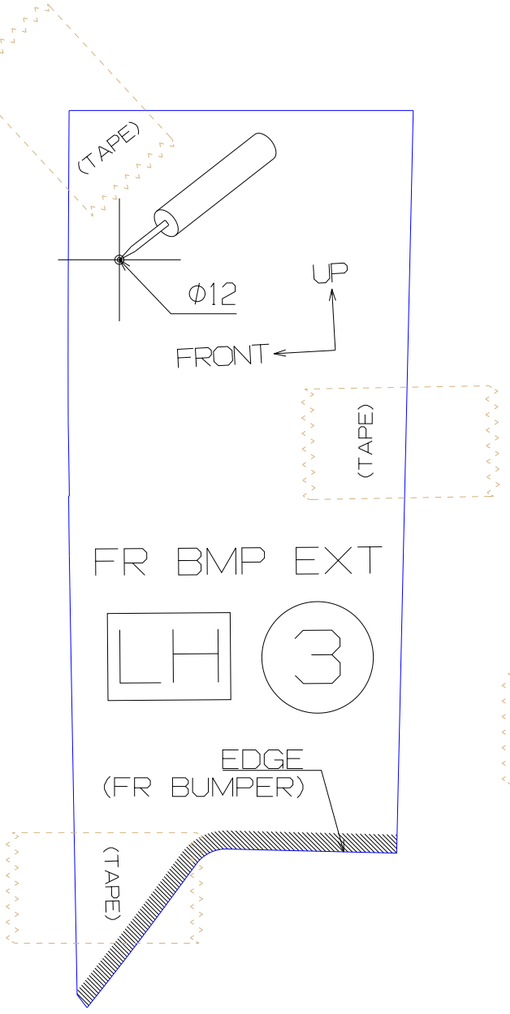


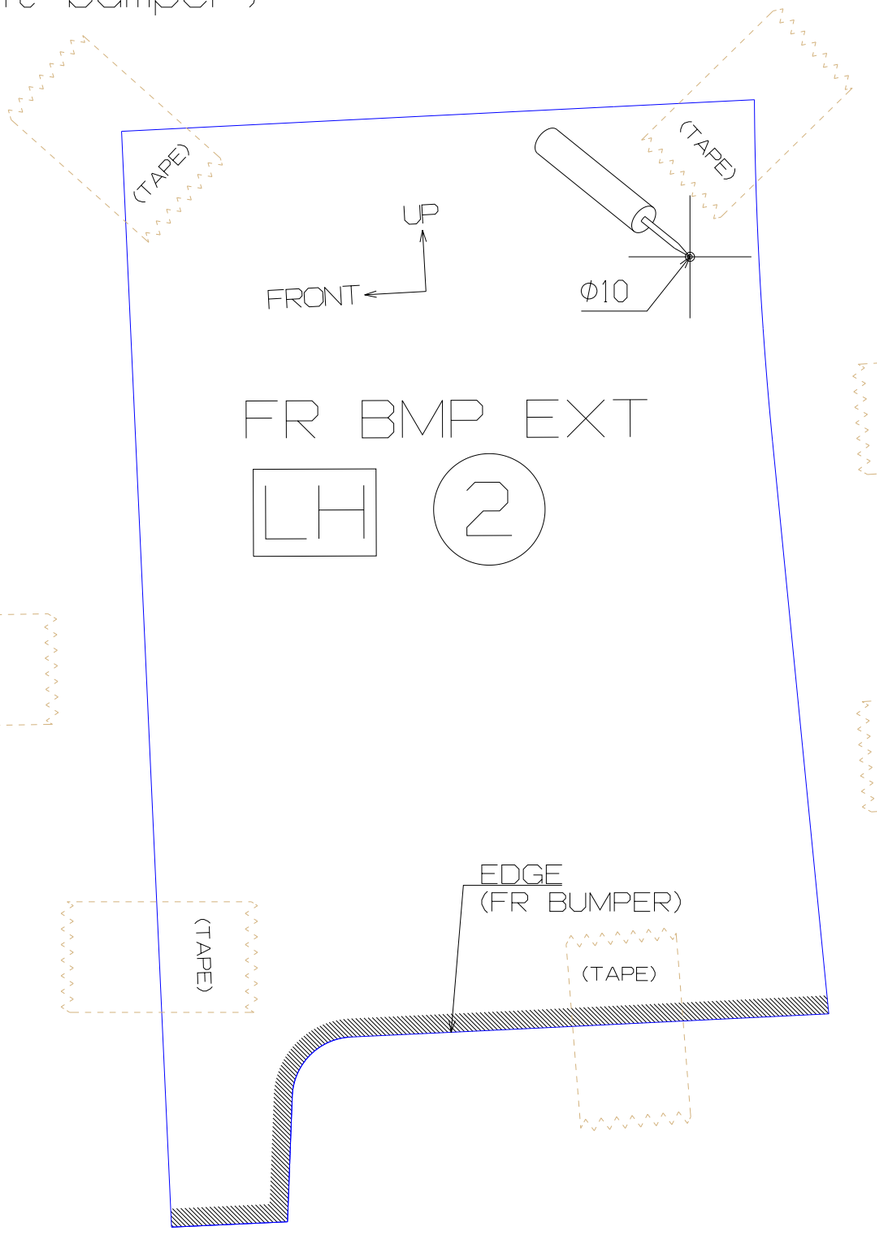
Tool : · drill φ5mm
· belt sander
· file

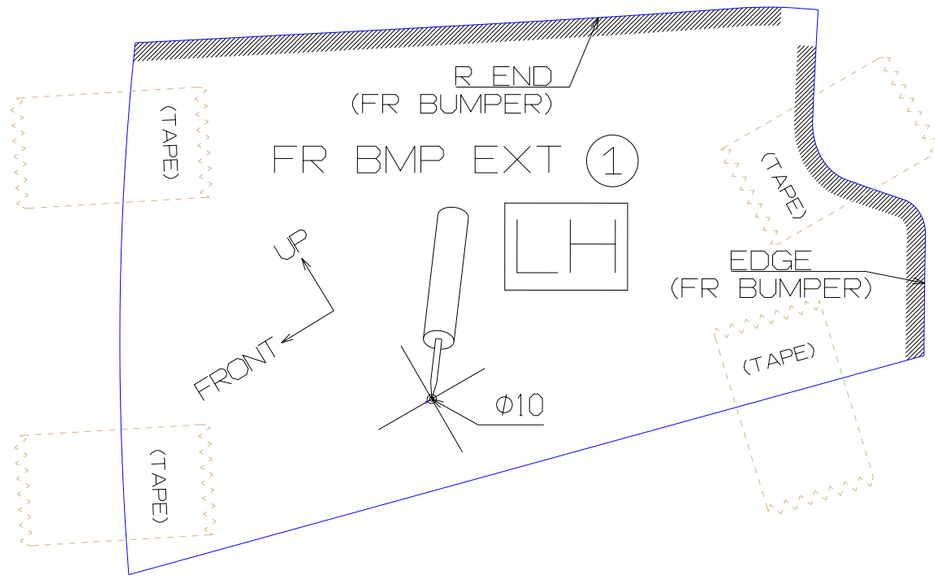
FR BMPR EXT, Patern paper LH

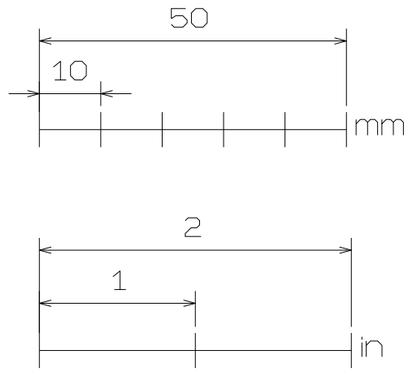
(Processing of front bumper)

φ10mm : φ3 → φ6 → φ10
φ12mm : φ3 → φ6 → φ12









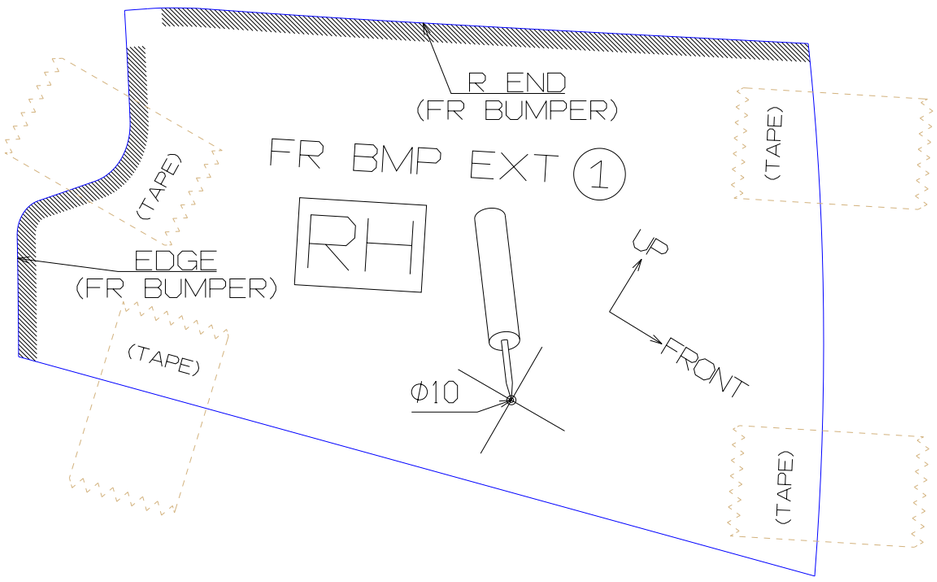
Tool : drill φ3mm
φ6mm
φ10mm
φ12mm

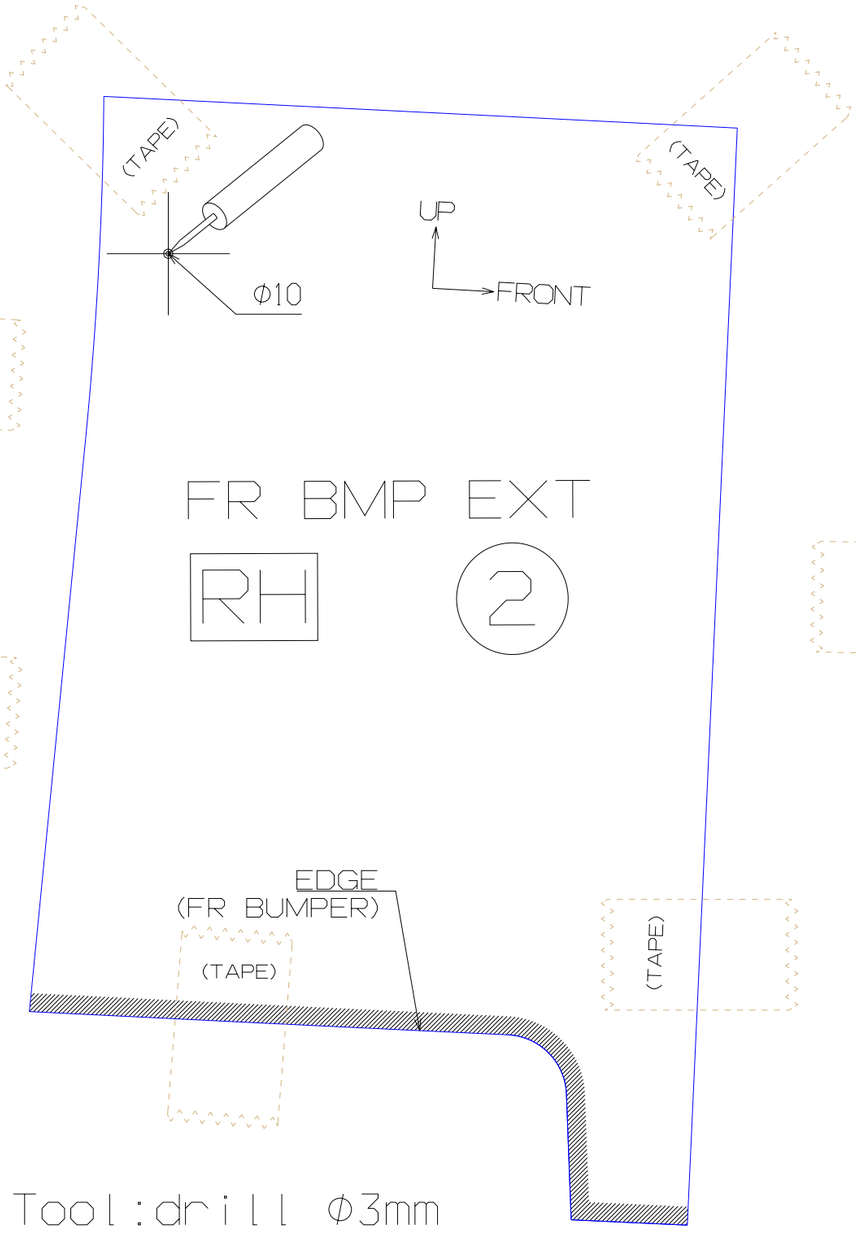
FR BMPR EXT, Patern paper RH

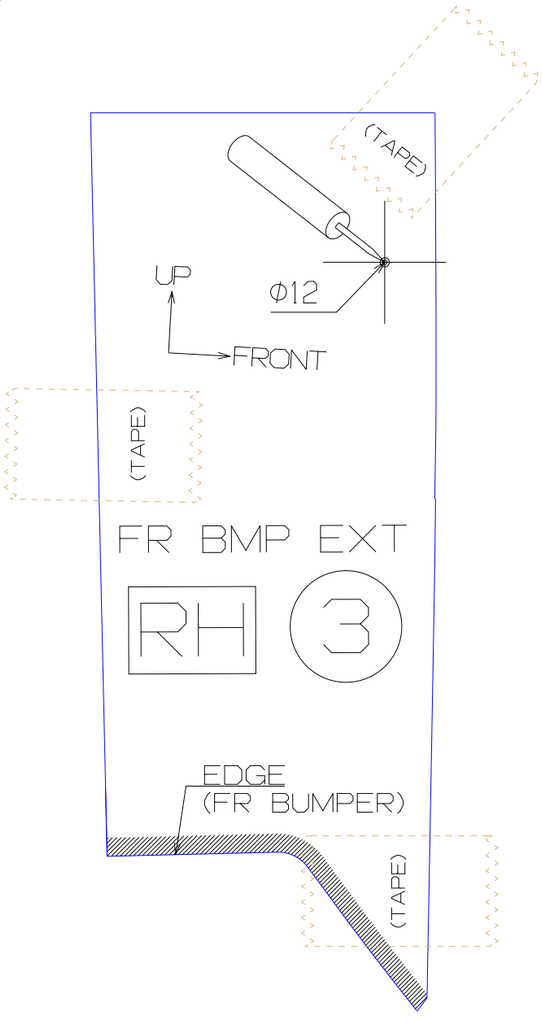
(Processing of front bumper)

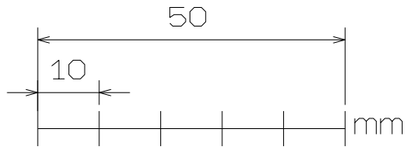
φ10mm :φ3 → φ6 → φ10

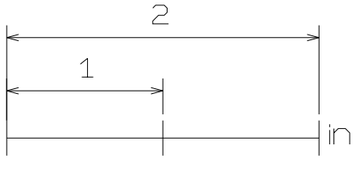
φ12mm :φ3 → φ6 → φ12







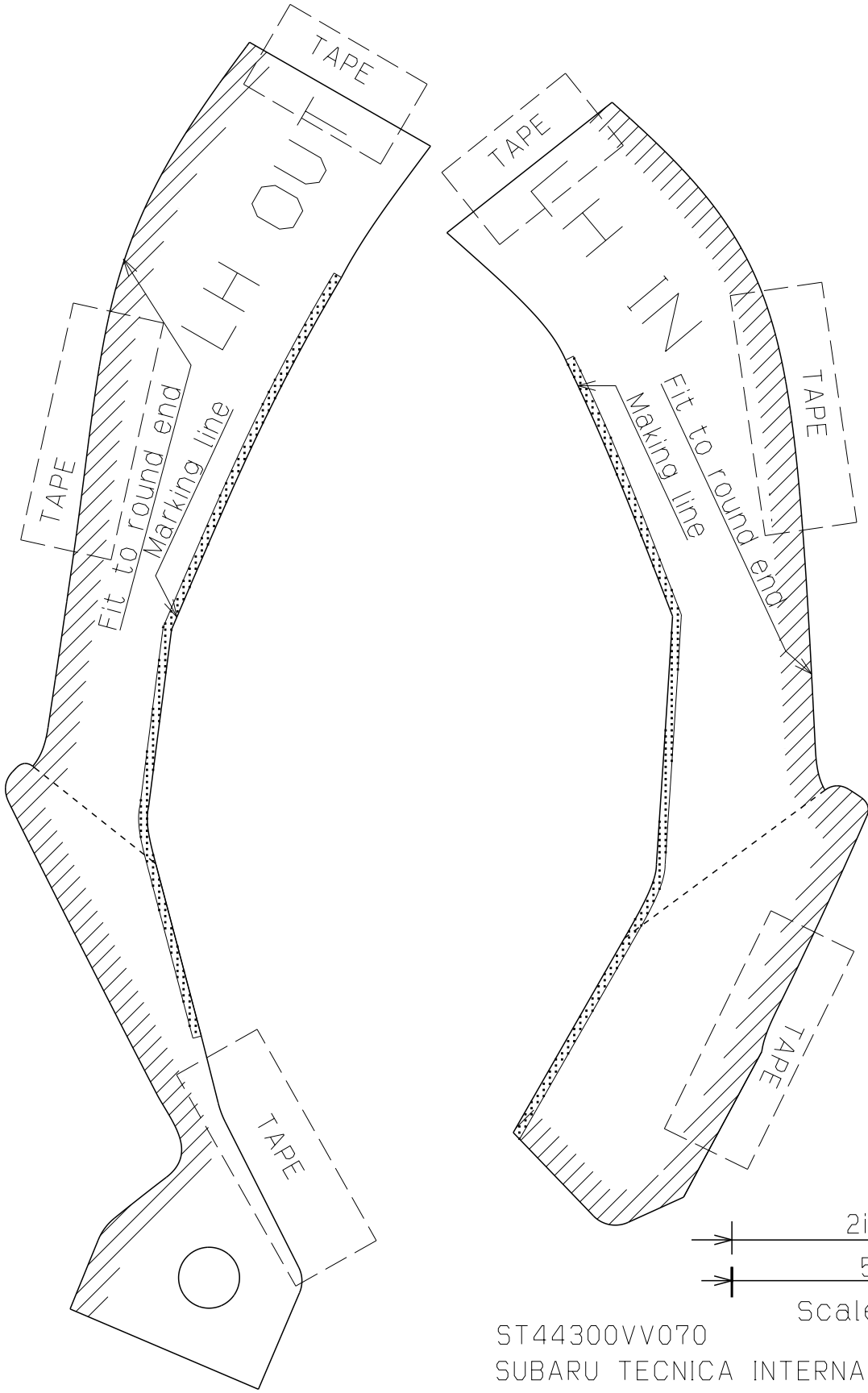




Tool : drill φ3mm
φ6mm
φ10mm
φ12mm

Pattern for rear bumper cut

When printing,please scale up or down
to fit the dimensions of the scale check.
Please cut along the edge of the outer line.

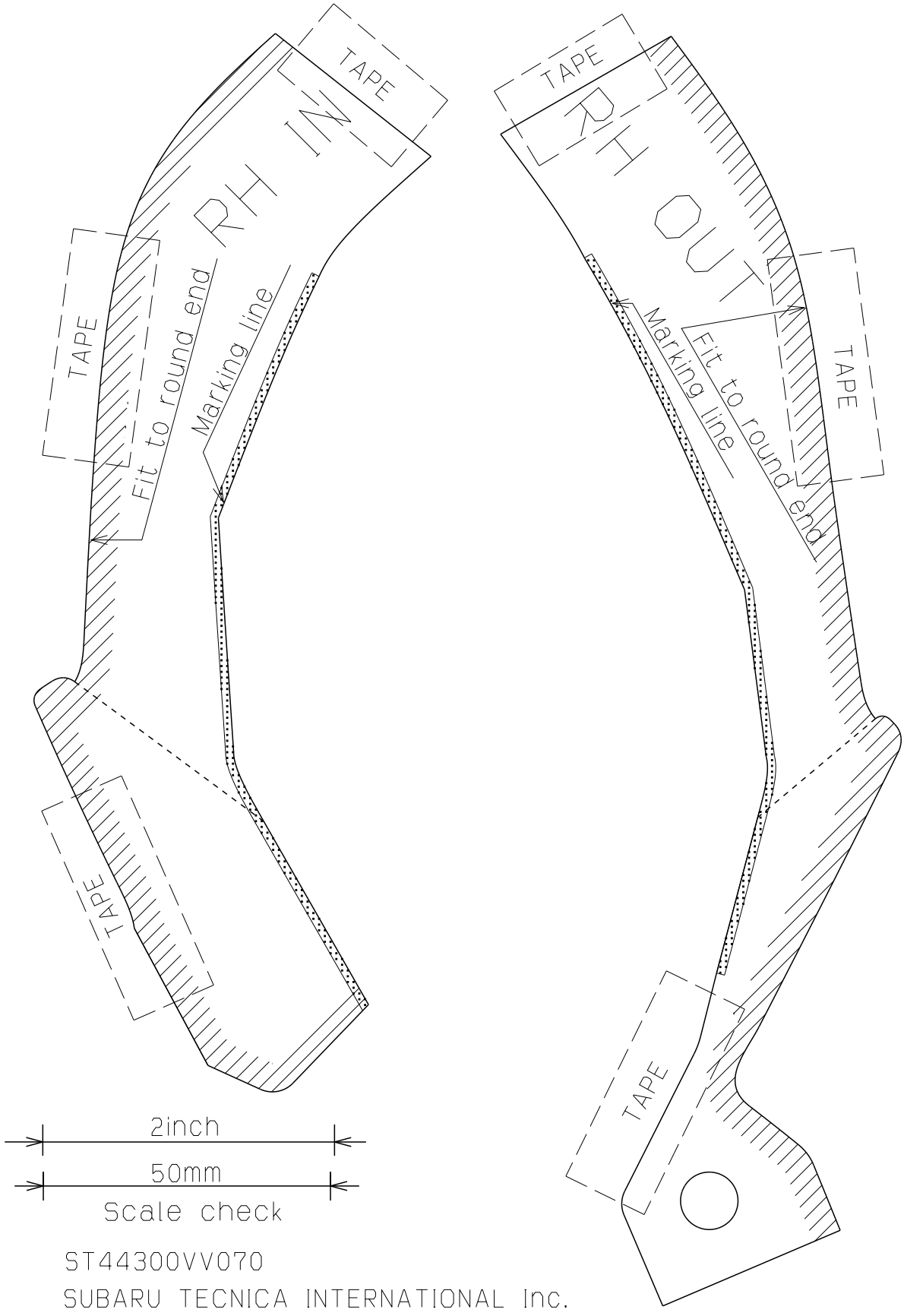


2inch
50mm
Scale check

ST44300VV070
SUBARU TECNICA INTERNATIONAL Inc.

Pattern for rear bumper cut

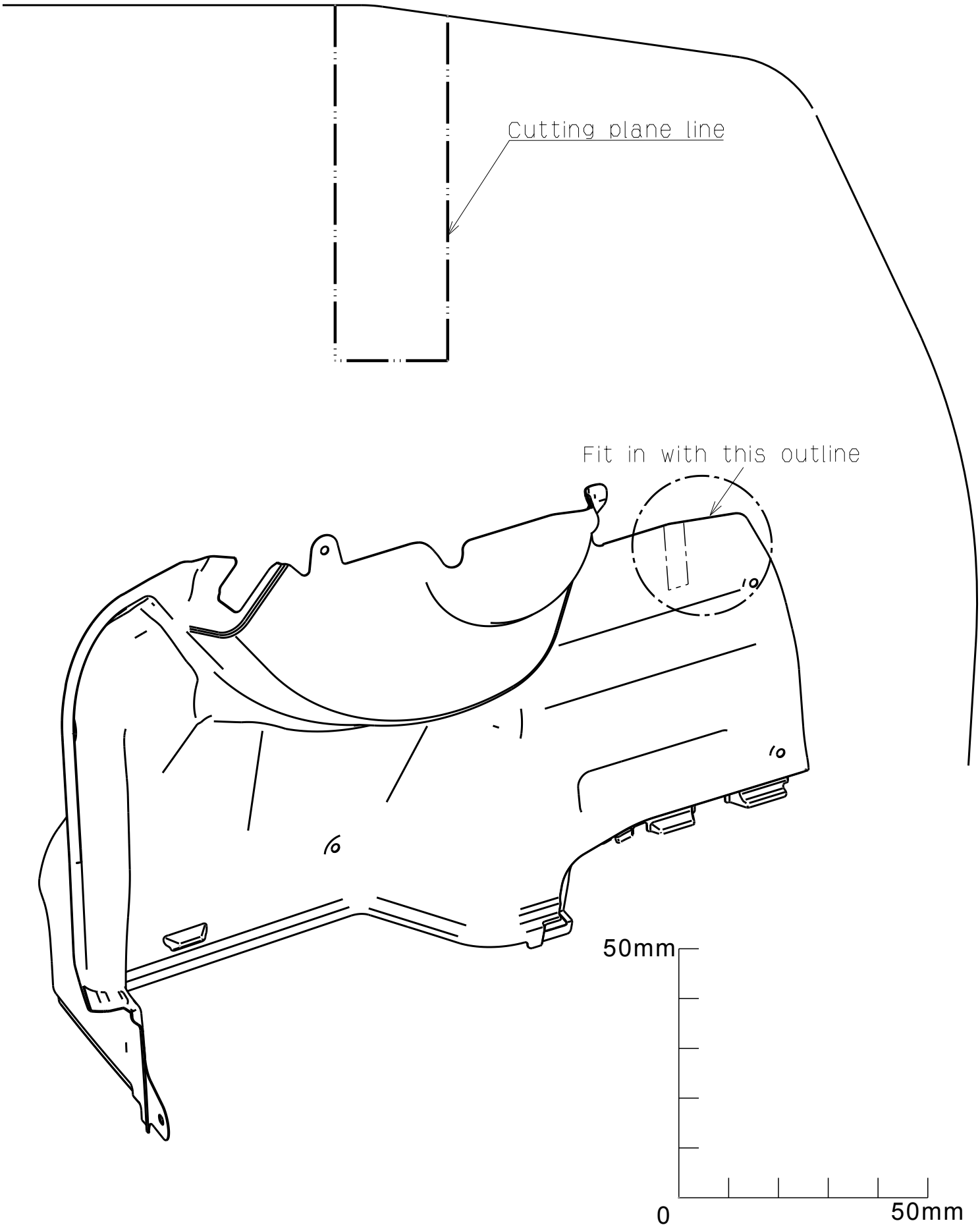
when printing,please scale up or down
to fit the dimensions of the scale check.
Please cut along the edge of the outer line.



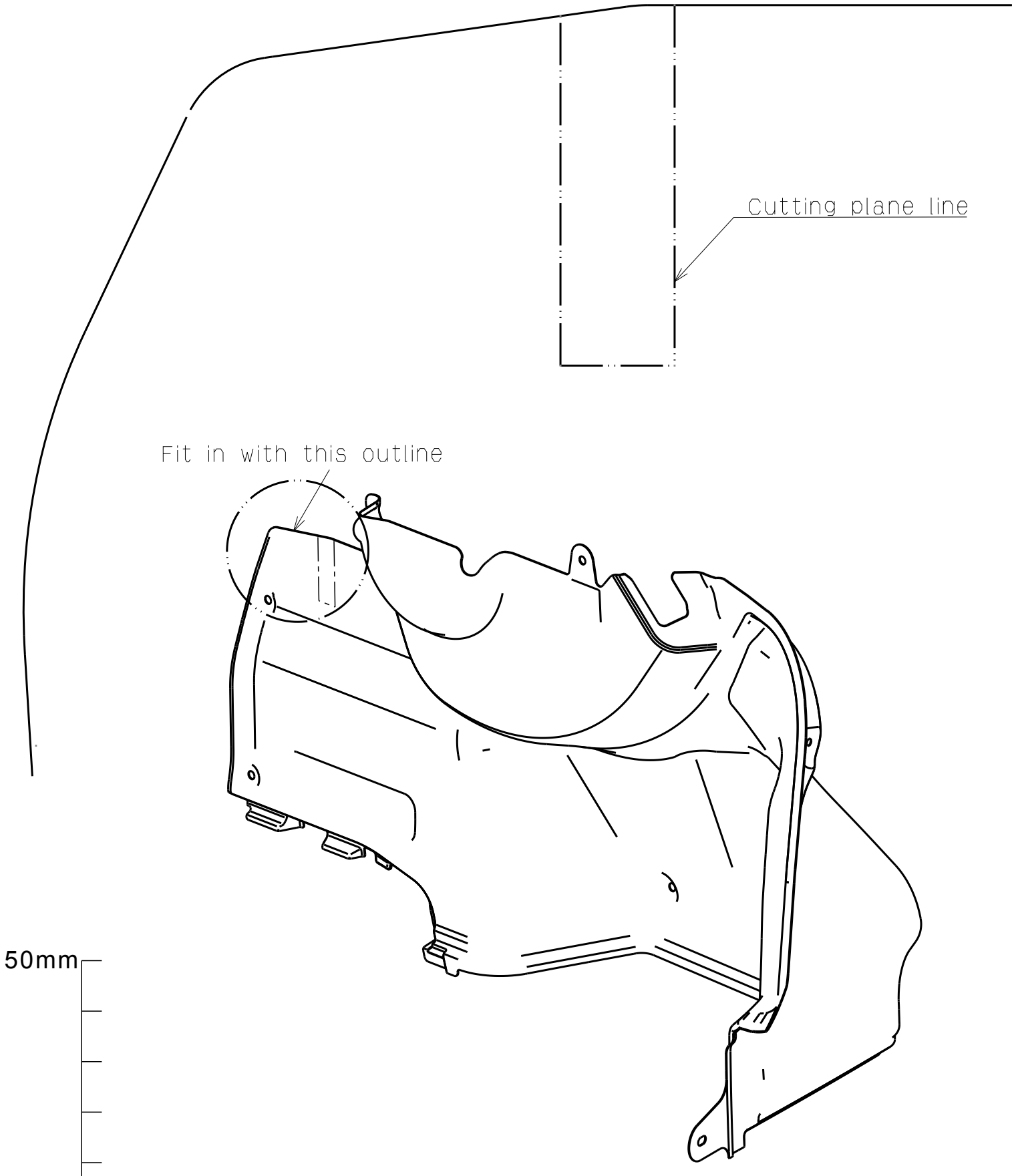
ST44300VV070

SUBARU TECNICA INTERNATIONAL Inc.

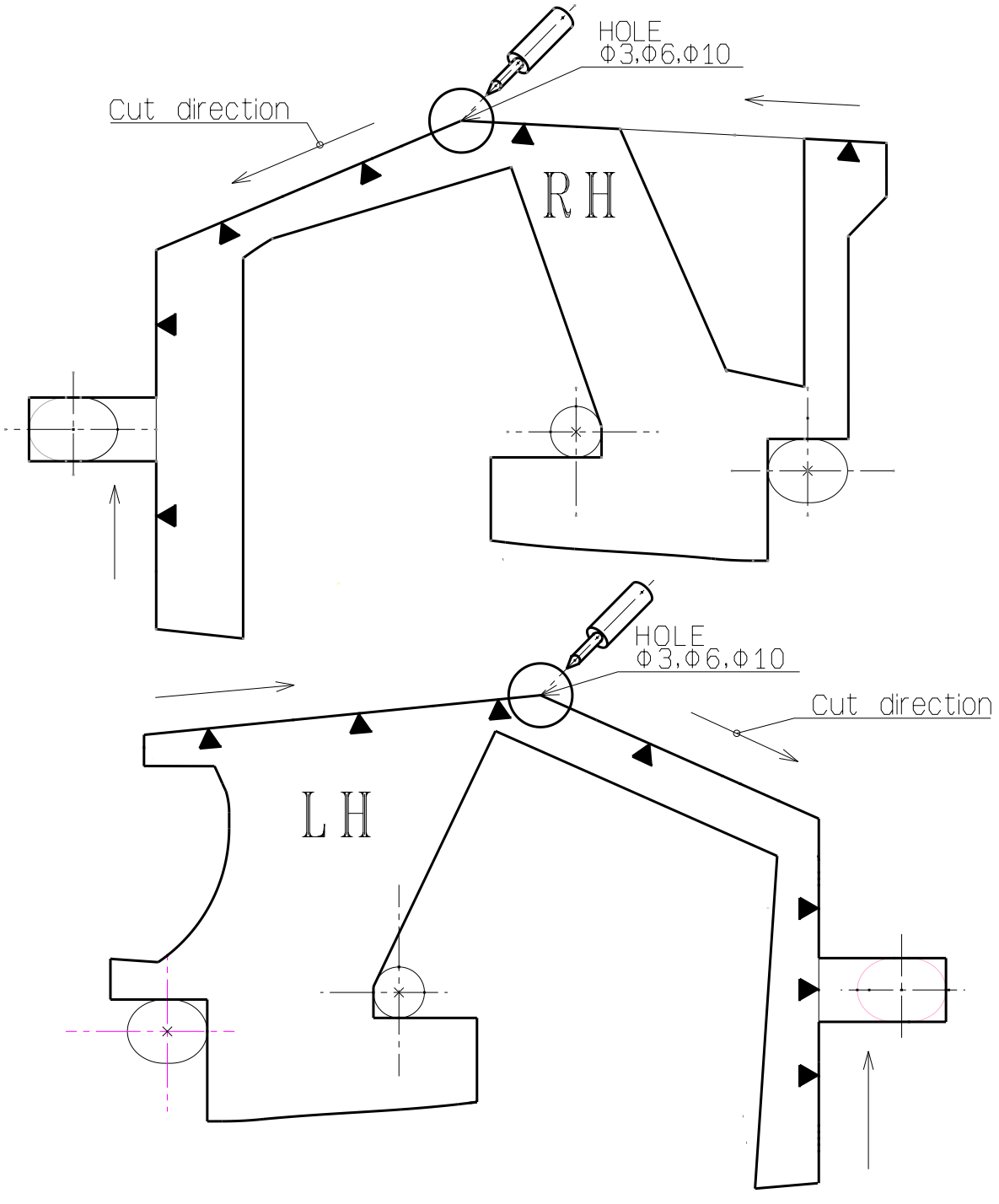
〈Left side〉
Patern paper for a trim

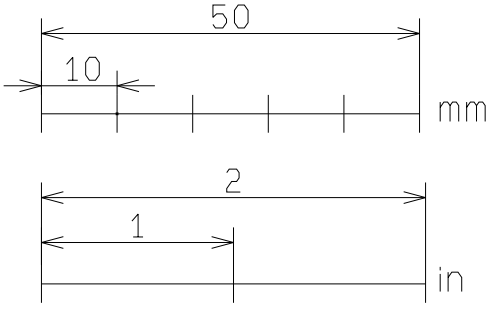


〈Right side〉
Patern paper for a trim



REINF WHEL APPON PATTERN





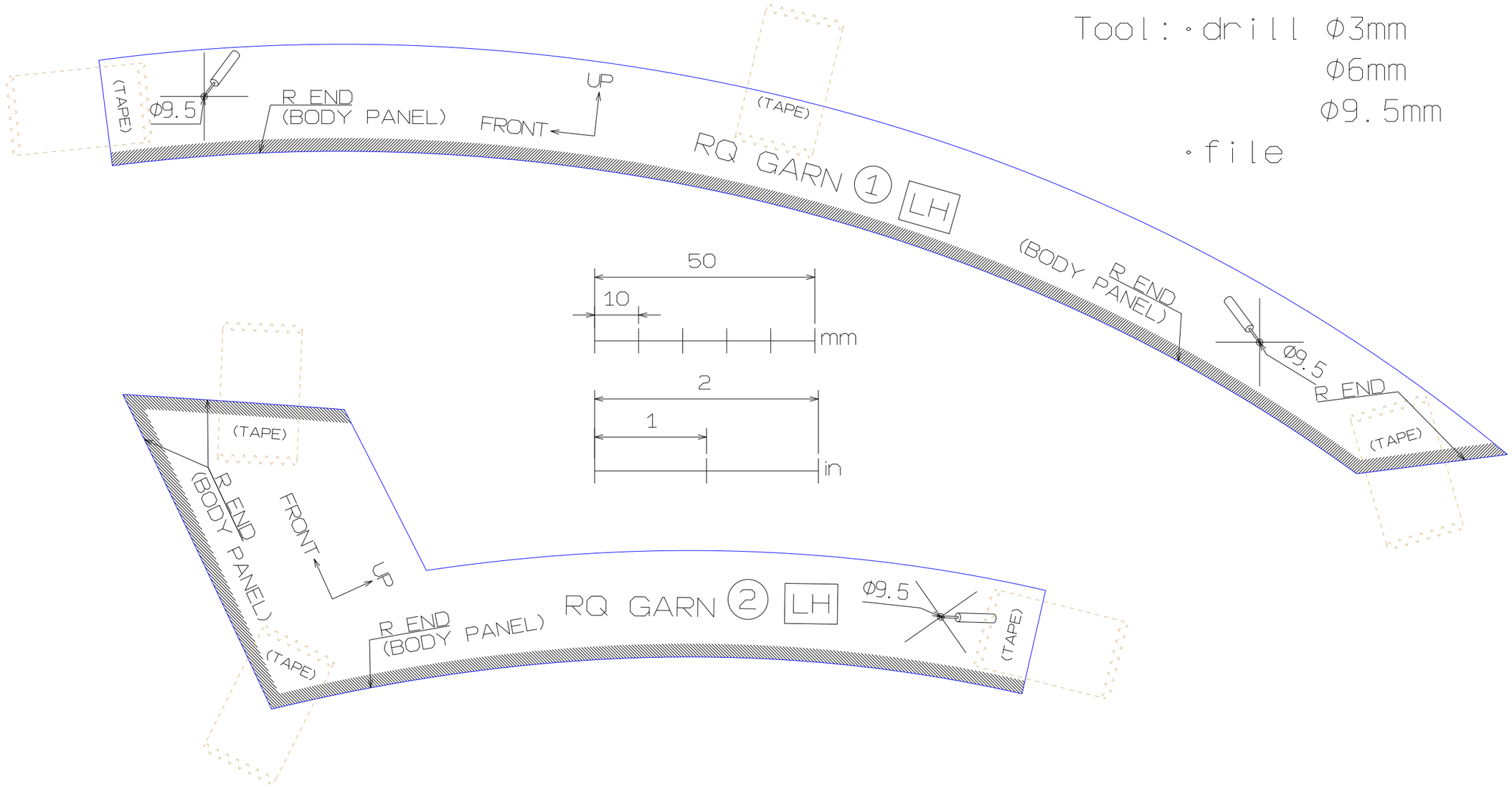
Tool:
- drill Φ3,Φ6,Φ10
- punch
- air saw
- belt sander
- file

RQ GARN, Patern paper LH

(Processing of side panel outer)

φ9.5mm :φ3 ⟶ φ6⟶φ9.5

Tool: ・drill φ3mm
φ6mm
φ9.5mm
・file

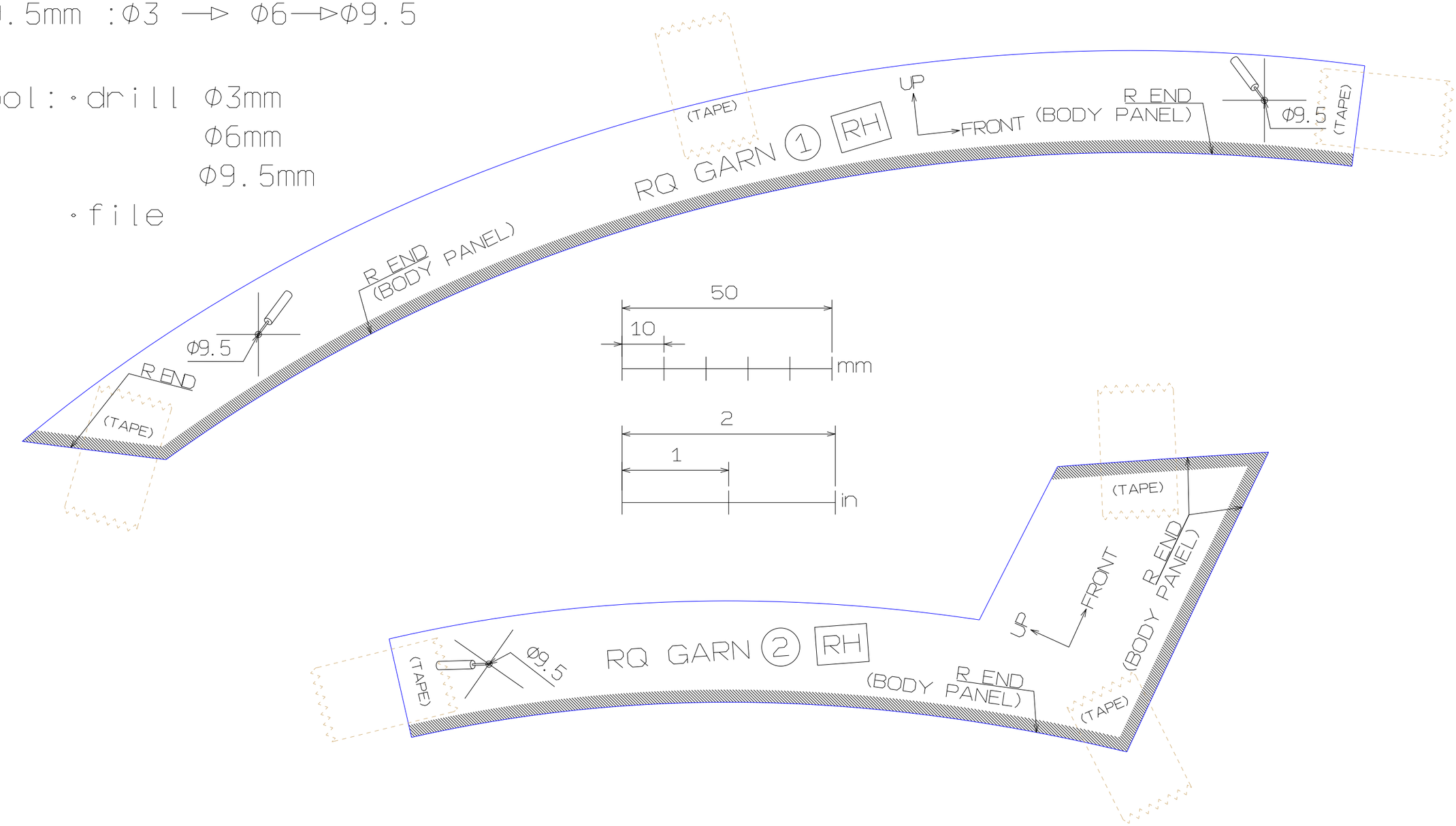


RQ GARN, Patern paper RH

(Processing of side panel outer)

φ9.5mm :φ3 ⟶ φ6⟶φ9.5

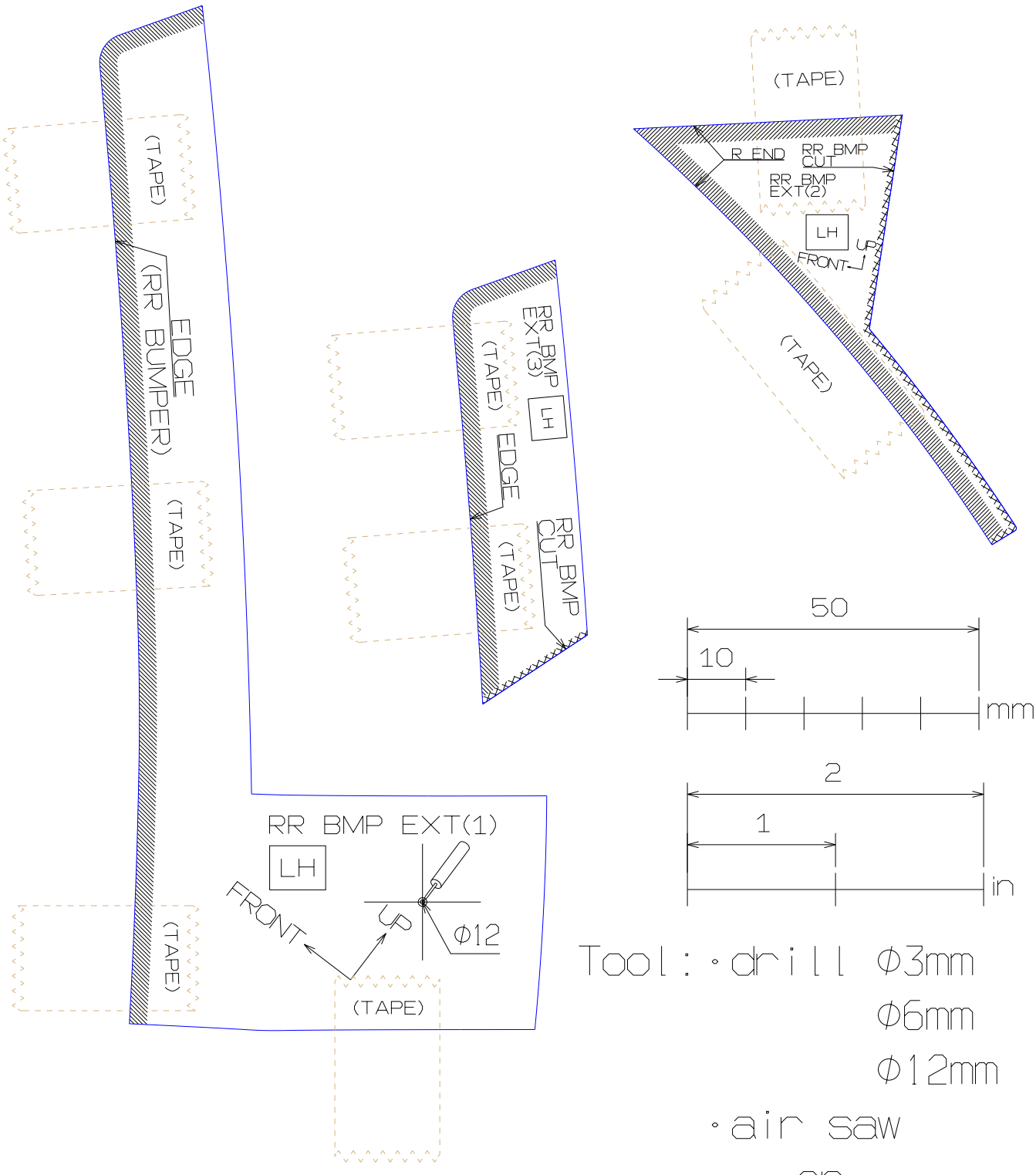
Tool: ・drill φ3mm
φ6mm
φ9.5mm
・file



RR BMPR EXT, Patern paper LH

(Processing of rear bumper)

φ12mm : φ3 → φ6 → φ12

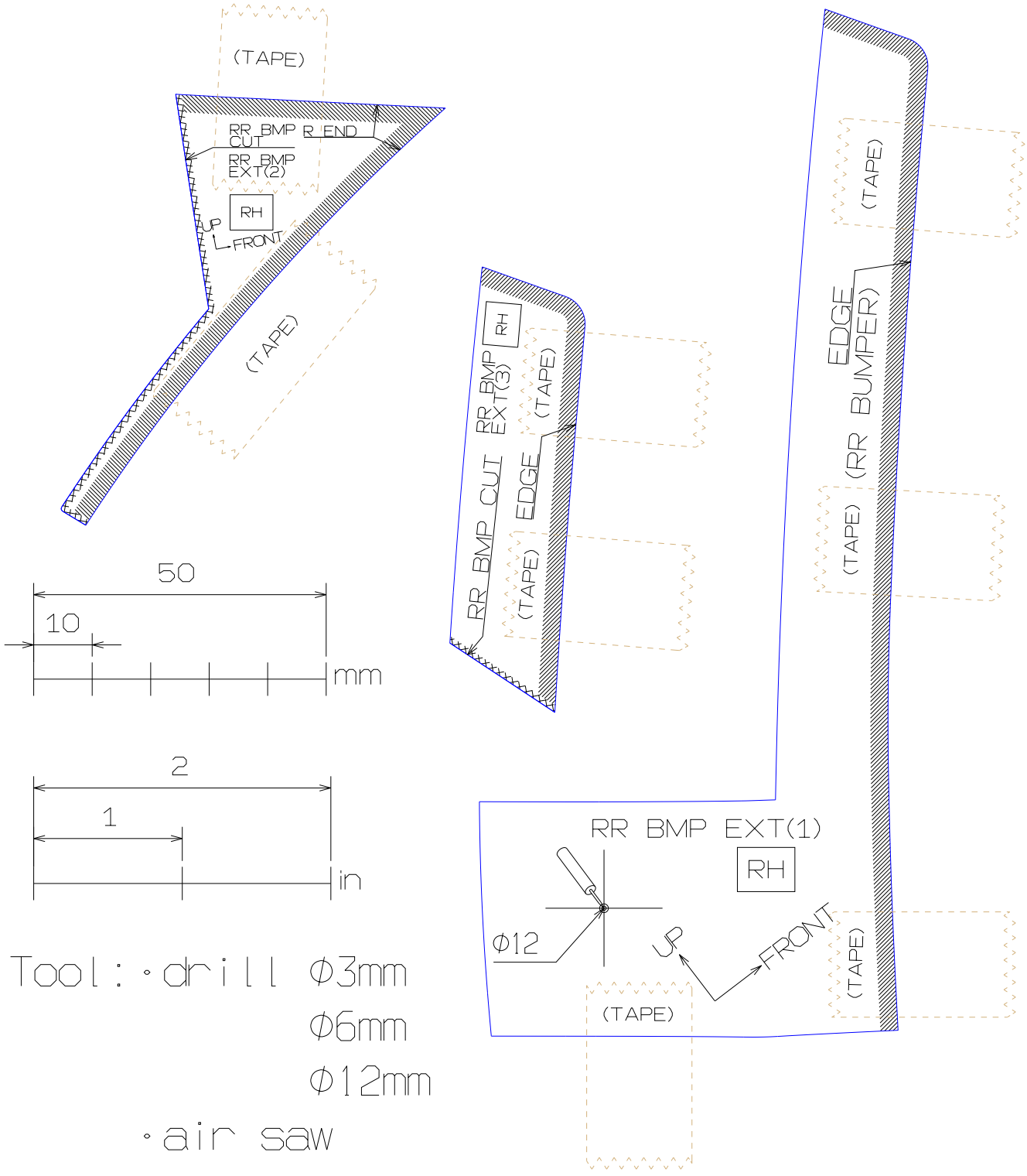


Tool : ・drill φ3mm
φ6mm
φ12mm
・air saw
or
belt sander
・file

RR BMPR EXT, Patern paper RH

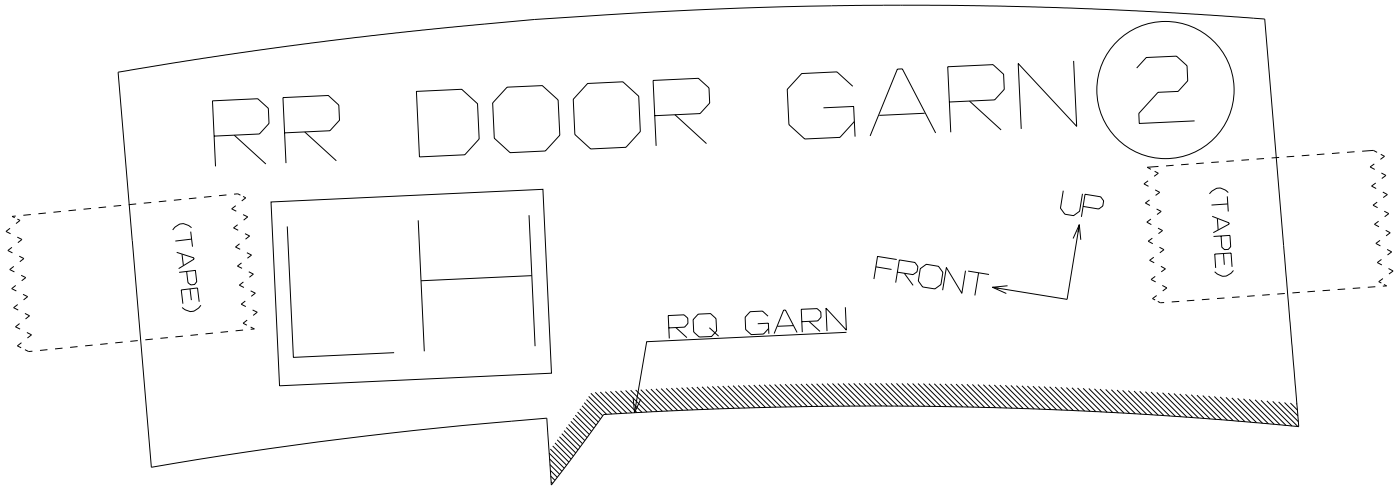
(Processing of rear bumper)

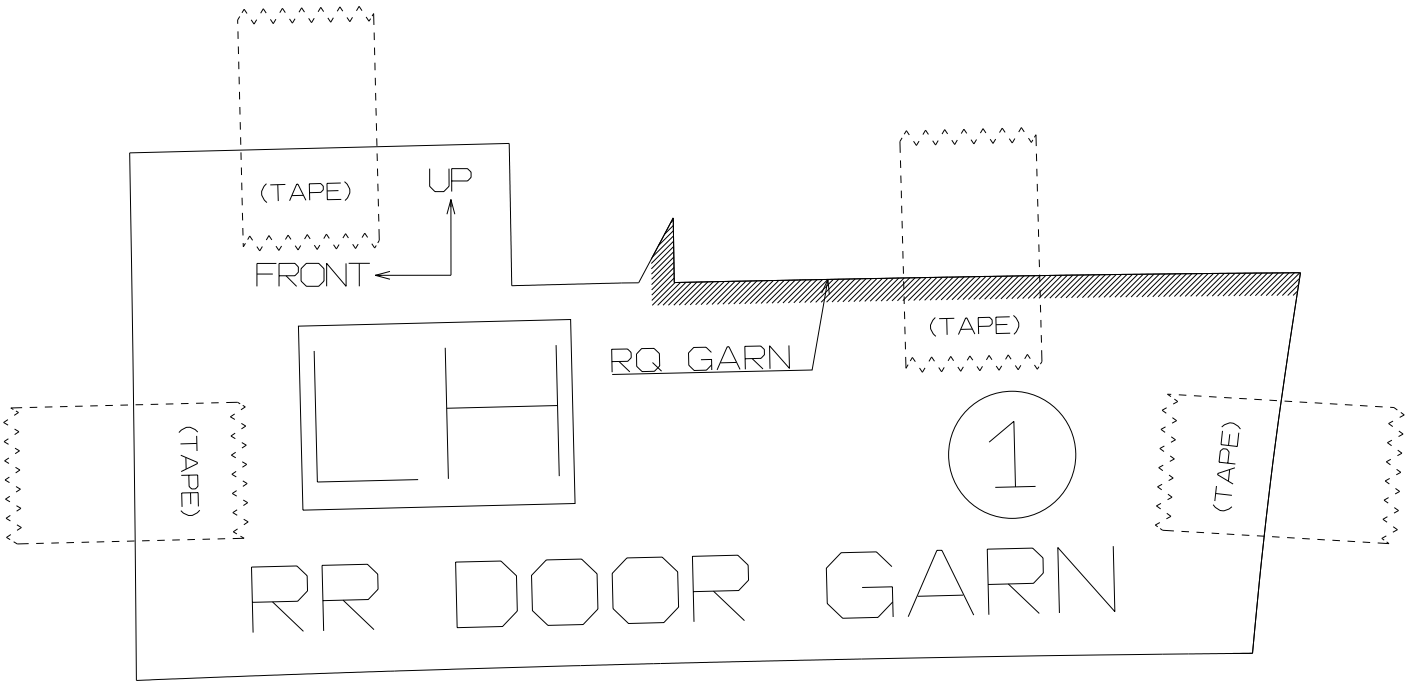
φ12mm : φ3 → φ6 → φ12

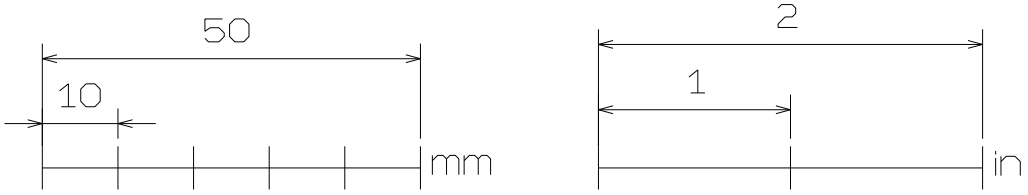


Tool : ・drill φ3mm
φ6mm
φ12mm
・air saw
or
belt sander
・file

RR DOOR GARN, Patern paper LH







RR DOOR GARN, Patern paper RH