

1. Foreword

A: FOREWORD

These manuals are used when performing maintenance, repair or diagnosis of SUBARU TRIBECA.

Applicable model:

2011MY WX*****

The manuals contain the latest information at the time of publication. Changes in the specifications, methods, etc. may be made without notice.

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1. STRUCTURE

Each section consists of SCT that are broken down into SC that are divided into sections for each component. The specification, maintenance and other information for the components are included, and the diagnostic information has also been added where necessary.

2. CONTENTS

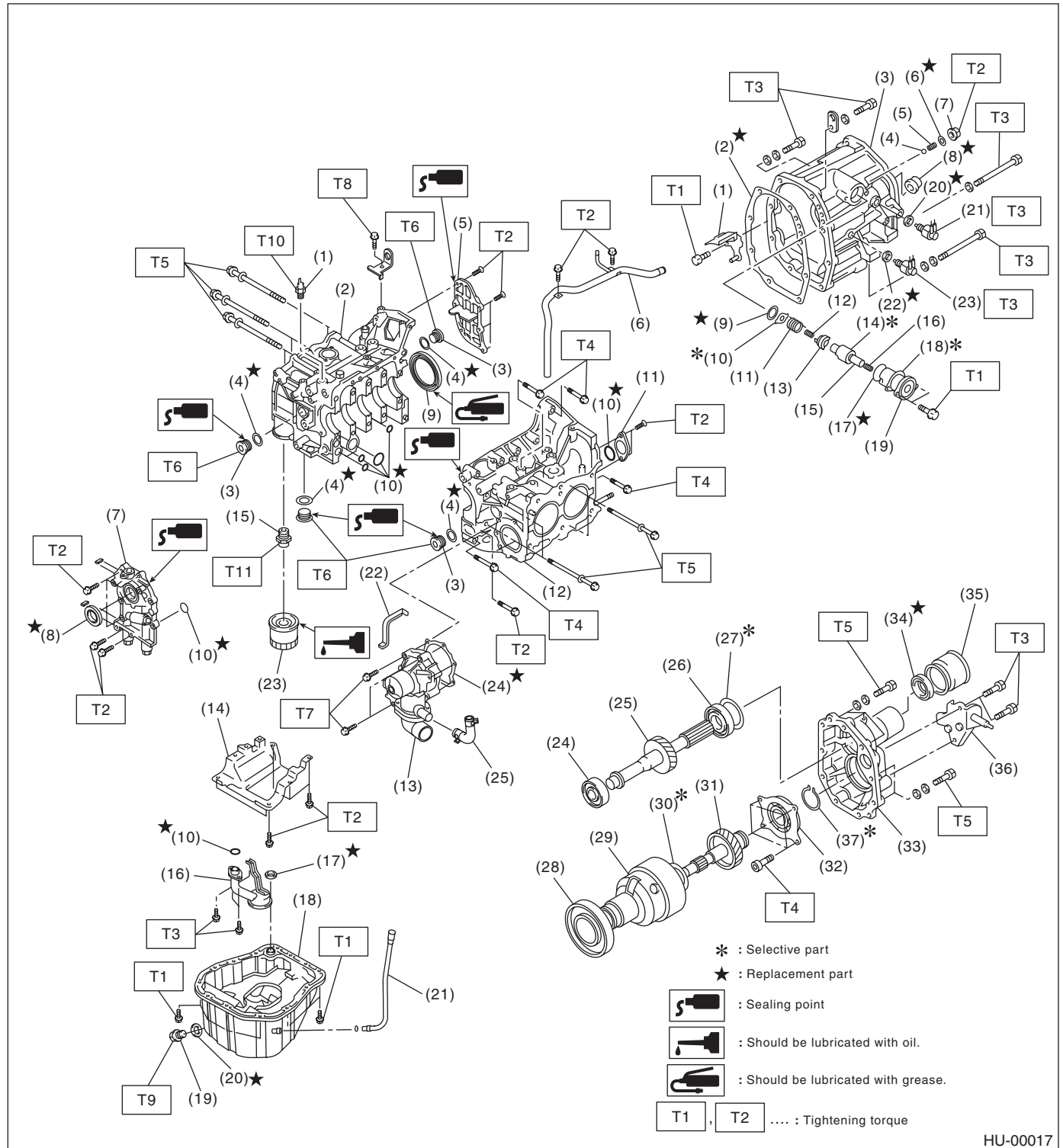
The first page has an index with tabs.

3. COMPONENT

Illustrations are provided for each component. The information necessary for repair work (tightening torque, grease up points, etc.) is described on these illustrations. Information is described using symbol.

To order parts, refer to parts catalogue.

Example:



HU-00017

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4. DEFINITIONS OF “NOTE”, “CAUTION” AND “WARNING”

- **NOTE:**

Describes additional information to make works easier.

- **CAUTION:**

Describes prohibited matters to prevent vehicle or parts damage, or matters that requires special attention during work.

- **WARNING:**

Describes matters that may cause serious damage to the operator or other person, or that may cause damage or accident.

5. SPECIFICATION

If necessary, specifications are also included.

6. INSPECTION

Inspections to be carried out before and after maintenance are included.

7. MAINTENANCE

- Maintenance instructions for serviceable parts describe work area and detailed step with illustration. It also describes the use of special tool, tightening torque, caution for each procedure.
- If many serviceable parts are included in one service procedure, appropriate reference is provided for each parts.

Example:

15.Main Shaft (A)

A: REMOVAL (B)

1) Remove the manual transmission assembly from vehicle. <Ref. to MT-33, REMOVAL, Manual Transmission Assembly.> (C)

11) Tighten the lock nuts to the specified torque using ST1 and ST2.

NOTE: (D)

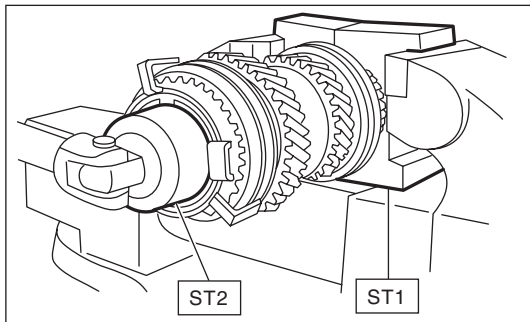
Secure the lock nuts in two places after tightening.

ST1 498937000 TRANSMISSION HOLDER

ST2 499987003 (E) SOCKET WRENCH (35) (F)

Tightening torque:

118 N·m (12.0 kgf-m, 86.8 ft-lb) (G)



HU-00020

(A) Component

(B) Process

(C) Reference

(D) Cautions

(E) Tool number of special tool

(F) Name of special tool

(G) Tightening torque

(H) Illustration

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8. DIAGNOSIS

Tables showing a step-by-step process make it easy to conduct diagnosis.

9. SI UNITS

Measurements in these manuals are according to the SI units. Metric and yard/pound measurements are also included.

Example:

Tightening torque:

44 N·m (4.5 kgf-m, 33 ft-lb)

Item	SI units	Conventional unit	Remarks
Force	N (Newton)	kgf	1 kgf = 9.80655 N
Mass (Weight)	kg, g	kg, g	
Capacity	ℓ, mℓ or cm ³	ℓ or cc	1 cc = 1 cm ³ = 1 mℓ
Torque	N·m	kgf-m, kgf-cm	1 kgf-m = 9.80655 N·m
Rotating speed	rpm	rpm	
Pressure	kPa (kilopascal)	kgf/cm ²	1 kgf/cm ² = 98.0655 kPa
		mmHg	1 mmHg = 0.133322 kPa
Power	W	PS	1 PS = 0.735499 kW
Calorie	W·h	cal	1 kcal = 1.16279 W·h
Fuel consumption rate	g/kW·h	g/PS·h	1 g/PS·h = 1.3596 g/kW·h

The figure used in these manuals are described in the SI units and conventional units are described in ().

10.EXPLANATION OF TERMINOLOGY

AAI	: Air Assist Injection	H/L	: Headlight
A/B	: Airbag	H/U	: Hydraulic Unit
ABS	: Anti-lock Brake System	I/F	: Interface
A/C	: Air Conditioner	I/O	: Input/Output
ACC	: Accessory	IG	: Ignition
A/F	: Air Fuel Ratio	INT	: Intermittent
ALT	: Generator	ISC	: Idle Speed Control
ASSY	: Assembly	LCD	: Liquid Crystal Display
AT	: Automatic Transmission	LH	: LH (Left Hand)
ATF	: Automatic Transmission Fluid	LSD	: Limited Slip Differential
AUX	: Auxiliary	M/B	: Main Fuse & Relay Box
AUX	: Auxiliary Storage Unit	MFI	: Multi-Point Fuel Injection
AWD	: All Wheel Drive	MT	: Manual Transmission
BATT	: Battery	NA	: Natural Aspiration
CAN	: Controller Area Network	OP	: Option Parts
CD	: Compact Disc	P/W	: Power Window
CPU	: Central Processing Unit	PCV	: Positive Crankcase Ventilation
DOHC	: Double Overhead Camshaft	PTJ	: Pillow Tripod Joint
DOJ	: Double Offset Joint	RH	: RH (Right Hand)
DTC	: Diagnostic Trouble Code	ROM	: Read Only Memory
DVD	: Digital Versatile Disc	Rr	: Rear
EBJ	: High-efficiency Compact Ball Fixed Joint	SOHC	: Single Overhead Camshaft
ECM	: Engine Control Module	SRS	: Supplemental Restraint System
EDJ	: High-efficiency Compact Double Offset Joint	SSM	: Subaru Select Monitor
EGR	: Exhaust Gas Recirculation	ST	: Special Tool
EX	: Exhaust	SW	: Switch
F/B	: Fuse & Joint Box	TCS	: Traction Control System
Ft	: Front	TCM	: Transmission Control Module
FWD	: Front Wheel Drive	TPMS	: Tire Pressure Monitoring System
GPS	: Global Positioning System	VDC	: Vehicle Dynamics Control
HI	: High	VTD	: Variable Torque Distribution
HID	: High Intensity Discharge		

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SPECIFICATIONS

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TRIBECA

SPECIFICATIONS

1. TRIBECA

A: DIMENSION

Overall length		mm (in)	4,865 (191.5)
Overall width		mm (in)	1,878 (73.9)
Overall height (at C.W.)		mm (in)	Models without roof rail: 1,695 (66.7) Models with roof rail: 1,730 (68.1)
Compartment	Length	mm (in)	2,495 (98.2)
	Width	mm (in)	1,475 (58.1)
	Height	mm (in)	1,390 (54.7)
Wheelbase		mm (in)	2,745 (108.1)
Tread	Front	mm (in)	1,575 (62.0)
	Rear	mm (in)	1,575 (62.0)
Minimum road clearance		mm (in)	211 (8.3)

B: ENGINE

Engine type	Horizontally opposed, liquid cooled, 6-cylinder, 4-stroke gasoline engine		
Valve arrangement	Overhead camshaft		
Bore × stroke	mm (in)	92.0 × 91.0 (3.622 × 3.583)	
Displacement	cm ³ (cu in)	3,630 (221.5)	
Compression ratio	10.5		
Ignition order	1 — 6 — 3 — 2 — 5 — 4		
Idle speed at Park or Neutral position	rpm	700	
Maximum output	kW (HP)/rpm	191 (256)/6,000	
Maximum torque	N·m (kgf-m, ft-lb)/rpm	335 (34.2, 247)/4,400	

C: ELECTRICAL

Ignition timing (at idling)	BTDC	15°
Spark plug	Type and manufacturer	NGK: SILFR6C11
Generator	12 V — 130 A	
Battery	Type and capacity (5HR)	12 V — 52 AH (75D23L)
	CCA	490 A

D: TRANSMISSION

Transmission type	5AT		
Clutch type	TCC		
Gear ratio	1st	3.540	
	2nd	2.264	
	3rd	1.471	
	4th	1.000	
	5th	0.834	
	Reverse	2.370	
Reduction gear (Front)	1st reduction	Type of gear	Helical
		Gear ratio	1.000
	Final reduction	Type of gear	Hypoid
		Gear ratio	3.583
Reduction gear (Rear)	Final reduction	Type of gear	Hypoid
		Gear ratio	3.583

5AT: Electronically controlled fully-automatic, 5-forward speeds and 1-reverse
TCC: Torque Converter Clutch

E: STEERING

Type		Rack & pinion
Turns, lock to lock		3.44
Minimum turning diameter	m (ft)	
	Curb to curb	11.4 (37.4)
	Wall to wall	12.2 (40.0)

F: SUSPENSION

Front	Macpherson strut type suspension
Rear	Double-wishbone type suspension

G: BRAKE

Service brake system	Dual circuit hydraulic with vacuum suspended power unit
Front	Ventilated disc brake
Rear	Ventilated disc brake
Parking brake	Mechanical on rear brakes

H: TIRE

Wheel size	18 × 8JJ
Tire size	P255/55 R18 104H
Type	Tubeless, Steel belted radial

I: CAPACITY

Fuel tank		ℓ (US gal, Imp gal)	64 (16.9, 14.1)
Engine oil	Total capacity (at overhaul)	ℓ (US qt, Imp qt)	7.8 (8.2, 6.9)
	Filling amount of engine oil ℓ (US qt, Imp qt)	When replacing engine oil and oil filter	6.5 (6.9, 5.7)
		When replacing engine oil only	6.3 (6.7, 5.5)
	ATF		ℓ (US qt, Imp qt)
Front differential gear oil		ℓ (US qt, Imp qt)	1.3 — 1.5 (1.4 — 1.6, 1.1 — 1.3)
Rear differential gear oil		ℓ (US qt, Imp qt)	0.8 (0.8, 0.7)
Power steering fluid		ℓ (US qt, Imp qt)	0.9 (0.95, 0.79)
Engine coolant		ℓ (US qt, Imp qt)	7.6 (8.0, 6.7)

TRIBECA

SPECIFICATIONS

J: WEIGHT

Model			BASE							
Destination code			C0						C4	
OP code			AK	CE	OM	ON	PM	PN	DJ	LJ
Curb weight (C.W.)	Front	kg (lb)	1,037 (2,287)	1,042 (2,298)	1,046 (2,306)	1,048 (2,311)	1,048 (2,311)	1,050 (2,315)	1,048 (2,311)	1,048 (2,311)
	Rear	kg (lb)	863 (1,903)	872 (1,923)	885 (1,951)	886 (1,954)	888 (1,958)	889 (1,960)	877 (1,934)	877 (1,934)
	Total	kg (lb)	1,900 (4,190)	1,914 (4,220)	1,931 (4,258)	1,934 (4,264)	1,936 (4,269)	1,939 (4,275)	1,925 (4,245)	1,925 (4,245)
Gross axle weight ratio (G.A.W.)	Front	kg (lb)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)
	Rear	kg (lb)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)
Gross vehicle weight (G.V.W.)			kg (lb)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)
Option	Leather seat		—	—	○	○	○	○	○	○
	Driver seat memory sheet		—	—	○	○	○	○	○	○
	Seat heater		○	○	○	○	○	○	○	○
	Sunroof + roof rail		—	○	—	—	—	—	—	○
	Sunroof + roof rail (silver paint)		—	—	○	○	○	○	○	—
	HID headlight		—	—	○	○	○	○	○	○
	Home link		—	○	○	○	○	○	—	—
	Rear seat entertainment		—	—	—	—	○	○	○	○
	7-spoke aluminum wheel		—	—	○	○	○	○	—	—
	Navigation system		—	—	—	○	—	○	—	—
	Rear view camera + navigation display		○	○	○	○	○	○	○	○
	Rear view camera + inner mirror with rear view display		—	—	—	—	—	—	—	—
	High grade audio & speakers		—	—	—	—	—	—	○	○
	Satellite-compatible+high grade audio & speakers		—	○	—	—	—	—	—	—
	HK-type audio & speakers		—	—	○	○	○	○	—	—
	HK-type audio & speakers+XM		—	—	—	—	—	—	—	—
	Rear cooler		○	○	○	○	○	○	○	○

Model		BASE							
Destination code		U4							
OP code		AL	EU	EV	FV	NC	OU	OV	PV
Curb weight (C.W.)	Front kg (lb)	1,033 (2,278)	1,044 (2,302)	1,046 (2,307)	1,049 (2,312)	1,037 (2,286)	1,046 (2,305)	1,048 (2,310)	1,050 (2,315)
	Rear kg (lb)	860 (1,895)	885 (1,951)	887 (1,956)	890 (1,961)	875 (1,928)	885 (1,951)	887 (1,956)	890 (1,961)
	Total kg (lb)	1,893 (4,173)	1,929 (4,253)	1,934 (4,263)	1,939 (4,273)	1,911 (4,214)	1,931 (4,256)	1,935 (4,266)	1,940 (4,276)
Gross axle weight ratio (G.A.W.)	Front kg (lb)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)	1,368 (3,016)
	Rear kg (lb)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)	1,515 (3,340)
Gross vehicle weight (G.V.W.) kg (lb)		2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)	2,586 (5,700)
Option	Leather seat	—	○	○	○	○	○	○	○
	Driver seat memory sheet	—	○	○	○	○	○	○	○
	Seat heater	○	○	○	○	○	○	○	○
	Sunroof + roof rail	—	○	○	○	—	—	—	—
	Sunroof + roof rail (silver paint)	—	—	—	—	—	○	○	○
	HID headlight	—	—	—	—	—	○	○	○
	Home link	—	○	○	○	○	○	○	○
	Rear seat entertainment	—	—	—	○	—	—	—	○
	7-spoke aluminum wheel	—	—	—	—	—	○	○	○
	Navigation system	—	—	○	○	—	—	○	○
	Rear view camera + navigation display	—	—	○	○	—	—	○	○
	Rear view camera + inner mirror with rear view display	—	○	—	—	—	○	—	—
	High grade audio & speakers	—	—	—	—	—	—	—	—
	Satellite-compatible+high grade audio & speakers	—	—	—	—	—	—	—	—
	HK-type audio & speakers	—	—	—	—	—	—	—	—
	HK-type audio & speakers+XM	—	○	○	○	○	○	○	○
	Rear cooler	○	○	○	○	○	○	○	○

*1: For destination code, refer to "ID" section. <Ref. to ID-6, MODEL NUMBER LABEL, IDENTIFICATION, Identification.>

PRECAUTION

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1. Precaution

A: CAUTION

Please clearly understand and adhere to the following general precautions. They must be strictly followed to avoid any injury to the person doing the work or people in the area.

1. VEHICLE DYNAMICS CONTROL (VDC)

Handle the VDC as a total system. Do not disassemble or attempt to repair individual parts. Doing so could prevent the VDC system from operating when needed or cause it to operate incorrectly and result in injury.

2. BRAKE FLUID

If brake fluid gets in your eyes or on your skin, do the following:

- Wash eyes and seek immediate medical attention.
- Wash your skin with soap and then rinse thoroughly with water.

Follow all government regulations concerning disposal of refuse when disposing.

3. RADIATOR FAN

The radiator fan may rotate without warning, even when the engine is not ON. Do not place your hand, cloth, tools or other items near the fan at any time.

4. ROAD TEST

Always conduct road tests in accordance with traffic rules and regulations to avoid bodily injury and interrupting traffic.

5. AIRBAG

To prevent bodily injury from unexpected deployment of airbags and unnecessary maintenance, follow the instructions in this manual when performing maintenance on the airbag components or nearby, around front of the vehicle (radiator panel, front wheel apron, front side frame, bumper, hood, front fender), around side of the vehicle (front door, rear door, center pillar, rear fender, side sill, rear wheel apron), around rear of the vehicle (second seat, rear floor pan) and the airbag wiring harnesses or nearby.

To prevent unexpected deployment, turn the ignition switch to OFF and disconnect the ground cable from battery, then wait at least 60 seconds before starting work.

6. AIRBAG AND SEAT BELT PRETENSIONER DISPOSAL

To prevent bodily injury from unexpected airbag deployment, do not dispose the airbag modules and seat belt pretensioner in the same way as other waste. Follow all government regulations concerning disposal of refuse.

7. AIRBAG MODULE

Carefully observe the following when handling and storing the airbag module to prevent bodily injury from unexpected deployment:

- Do not hold the harnesses or connectors to carry the module.
- Do not face the bag in the direction that it opens towards yourself or other people.
- Do not face the bag in the direction that it opens towards the floor or walls.

8. AIRBAG SPECIAL TOOL

To prevent unexpected deployment, only use special tools.

9. WINDOW

Always wear safety glasses when working around any glass to prevent glass fragments from damaging your eyes.

10. WINDOW ADHESIVE

Always use the recommended or equivalent adhesive when attaching glass to prevent it from coming falling, resulting in accidents and injury.

11. OIL

When handling oil, follow the rules below to prevent unexpected accidents.

- Prepare a container and cloth when performing work which oil possibly spills. If oil spills, wipe it off immediately to prevent from penetrating into floor or flowing out, to protect the environmental.
- Follow all government regulations concerning disposal of refuse when disposing.

12. FUEL

When handling and storing fuel, carefully observe the following to prevent unexpected accidents.

- Be careful of fires.
- Prepare a container and cloth to prevent scattering of fuels when performing work where fuels can be spilled. If the fuel spills, wipe it off immediately to prevent it from penetrating the floor or flowing out, to protect the environmental.
- Follow all government and local regulations concerning disposal of refuse when disposing.

13.ENGINE COOLANT

When handling engine coolant, adhere to the following to prevent from unexpected accident.

- Never remove the radiator cap because of the danger of engine coolant blowing out when the engine coolant is hot.
- Prepare a container and cloth to prevent spraying of engine coolant when performing work in which engine coolant can be spilled. If the fuel spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Follow all government and local regulations concerning disposal of refuse when disposing.

14.AIR CONDITIONER REFRIGERANT

In order to prevent from global warming, avoid releasing air conditioner refrigerant into the atmosphere. Using a refrigerant recovery system, discharge and reuse it.

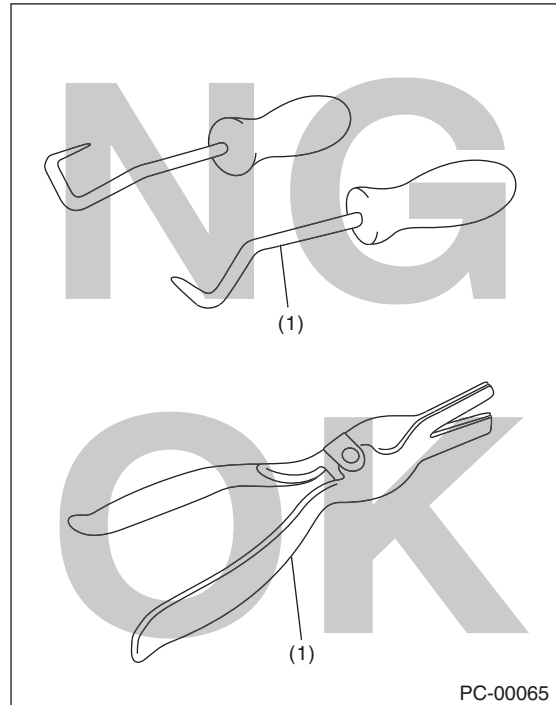
15.REMOVAL AND INSTALLATION OPERATION OF HOSES, ETC.

1. Before the removal and installation operation of hoses, etc.

- If you keep using the damaged or deformed hose, it results bleeds or leakage of the fat adheres or disconnection of the hose. Be careful not to spill fat adheres on exhaust pipes, etc. during maintenance to prevent emitting smoke or causing fires.
- Perform the operation with the hose removed. If the operation is performed without removing the hose, it may damage inner surface of the hose.

2. Removal and installation operation of hoses, etc. during the inspection

- Follow the instructions below when removing hose.
 - Do not use a pointed hose remover (hose plucker) when using a general hose remover. It may damage the pipe surface or the hose.



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(1) Hose remover

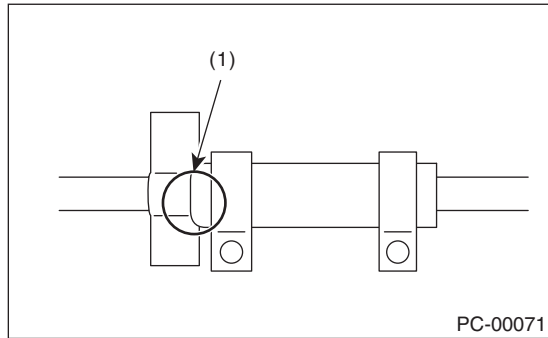
- When draining hose using pliers, be sure to cover the hose with cloth and rotate the hose slightly to extract straight.

Precaution

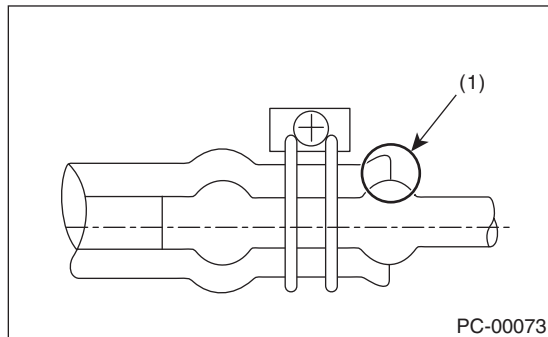
PRECAUTION

- If you keep using the hose, perform the inspection below and replace the hose with a new part if faulty.

- Replace the hose with a new part if it rides over the stay or spool.



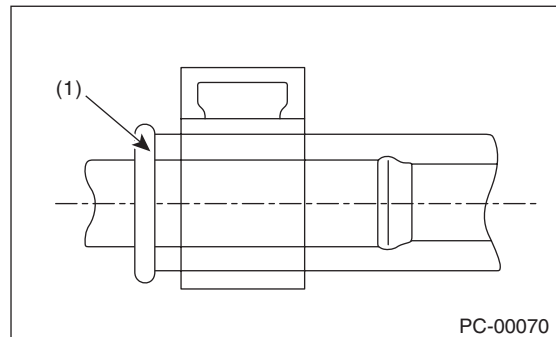
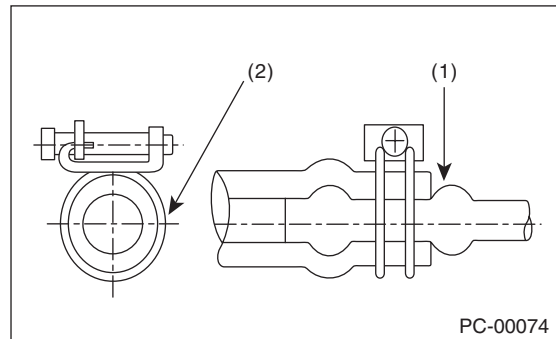
(1) Hose rides over the stay



(1) Hose rides over the spool

- Check if the surface and the inner surface of the hose are damaged, cracked, bend, hardened, softened, swelled, peeled or deformed due to the adherence or the entry of the foreign matter by bending the hose. Replace with the new part if faulty.
- Follow the instructions below during installation.
 - Check carefully for assembling position.
 - Never use lubricants.

- Insert the hose to the specified position (stopper or spool) securely.



- (1) Push against the spool. (Insert the hose and prevent it from becoming wrinkled.)
- (2) Tighten the hose outwards and apply force thoroughly.

- Check if the position, direction and hose layout of the hose clamp are correct. (Check if the position, direction, length and the gap around are correct, or if it is different from the condition before the work)
- After the installation, check that the hose is installed securely and there is no leakage. (Check if it is fixed securely with the clamp)
- For hose clips and hose clamps, perform the inspection below and replace them with a new part if faulty.
 - Check for deformation, rust, damage or foreign matters.
 - For hose clip, check if it works and has clamping force.
 - For hose clamp, check if it can tighten screw, not ovalized or the screw is not damaged.
- For hose pipes, perform the inspection below and replace with a new part if faulty.

Check if the pipe is not damaged, rusted, peeled (peeled plates included), covered with foreign matter, bent, compressed or cracked.
- For the parts below, replaces with a new part when the hose is removed or the installation position is changed.

ATF cooler hose, engine oil cooler hose, power steering suction hose, power steering return hose, fuel hose (delivery/return)

NOTE

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1. Note

A: NOTE

This information will improve the efficiency of maintenance and assure that the finished work is of a good quality.

1. FASTENERS NOTICE

Fasteners are used to prevent the parts from damage, dislocation and play due to looseness. Fasteners must be tightened to the specified torque.

Do not apply paint, lubricant, rust retardant or other substance to the surface around bolts, nuts, etc. Doing so will make it difficult to obtain the correct torque and result in looseness and other problem.

2. STATIC ELECTRICITY DAMAGE

Do not touch the control modules, connectors, logic boards and other such parts when there is a possibility of static electricity. Always use a static electricity prevention cord or touch grounded metal for the elimination of static electricity before conducting work.

3. BATTERY

When removing the battery terminal, always be sure to turn the ignition to OFF to prevent electrical damage of the control module from overcurrent. Be sure to remove the battery ground cable first.

When removing the battery terminal, memories such as the stereo and control unit DTC are erased. Therefore, the content of each memory should be recorded first.

4. SERVICE PARTS

Use genuine parts for maximum performance and maintenance when conducting repairs. Subaru/FHI will not be responsible for poor performance resulting from the use of parts except for genuine parts.

5. PROTECTING VEHICLE UNDER MAINTENANCE

Make sure to attach the fender cover, seat covers, etc. before work.

6. ENSURING SECURITY DURING WORK

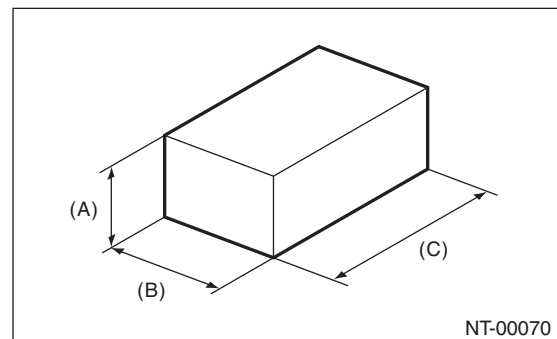
When working in a group of two or more, perform the work with calling each other to ensure mutual safety.

7. LIFT AND JACK

When using a lift or shop jack to raise a vehicle or using rigid rack to support a vehicle, always follow instructions concerning jack-up points and weight limits to prevent the vehicle from falling, which could result in injury. Be especially careful that the vehicle is balanced before raising it. Be sure to set the wheel stoppers when jacking-up only the front or rear side of the vehicle.

NOTE:

- When using a lift, follow its operation manual before work.
- Do not work or leave unattended while the vehicle is supported with jack, support it with rigid racks.
- Be sure to use the rigid racks with rubber attached to cradle to support the vehicle.
- When using a plate lift, use a rubber attachment.

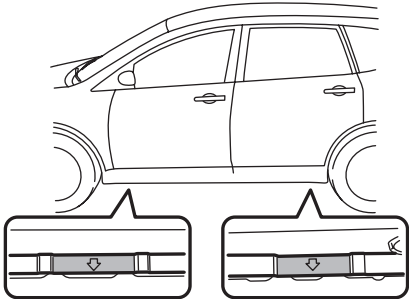


- (A) 80 mm (3.15 in) or more
- (B) 100 — 150 mm (3.94 — 5.91 in)
- (C) 120 — 190 mm (4.72 — 7.48 in)

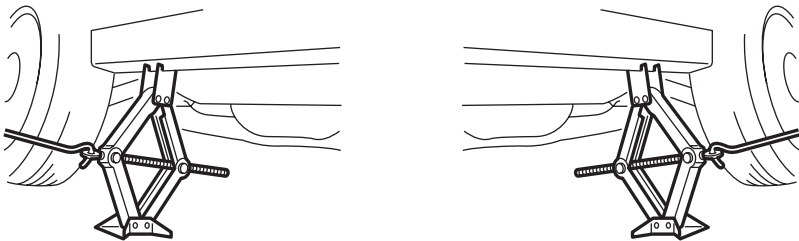
- Align the cushion rubber end of plate lift with the end of rubber attachment. (Portion b) Also, align the protrusion portion of the supporting locations with the end of attachment. (Portion a)

- Do not use the plate lift whose attachment does not reach the supporting locations.

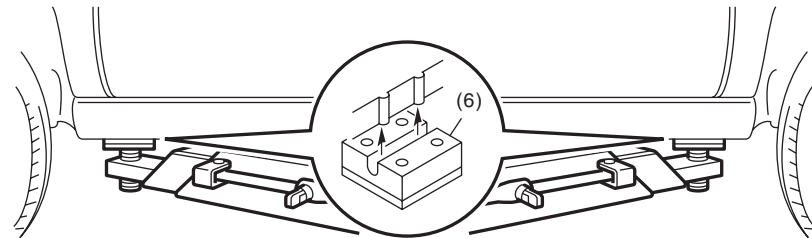
(1)



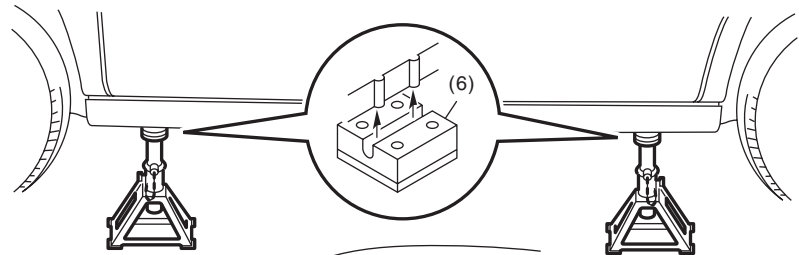
(2)



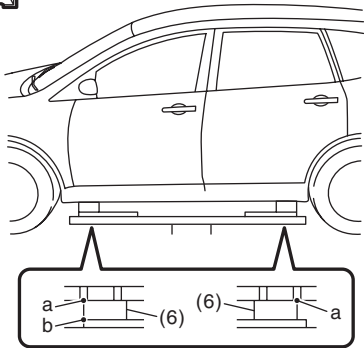
(3)



(4)



(5)



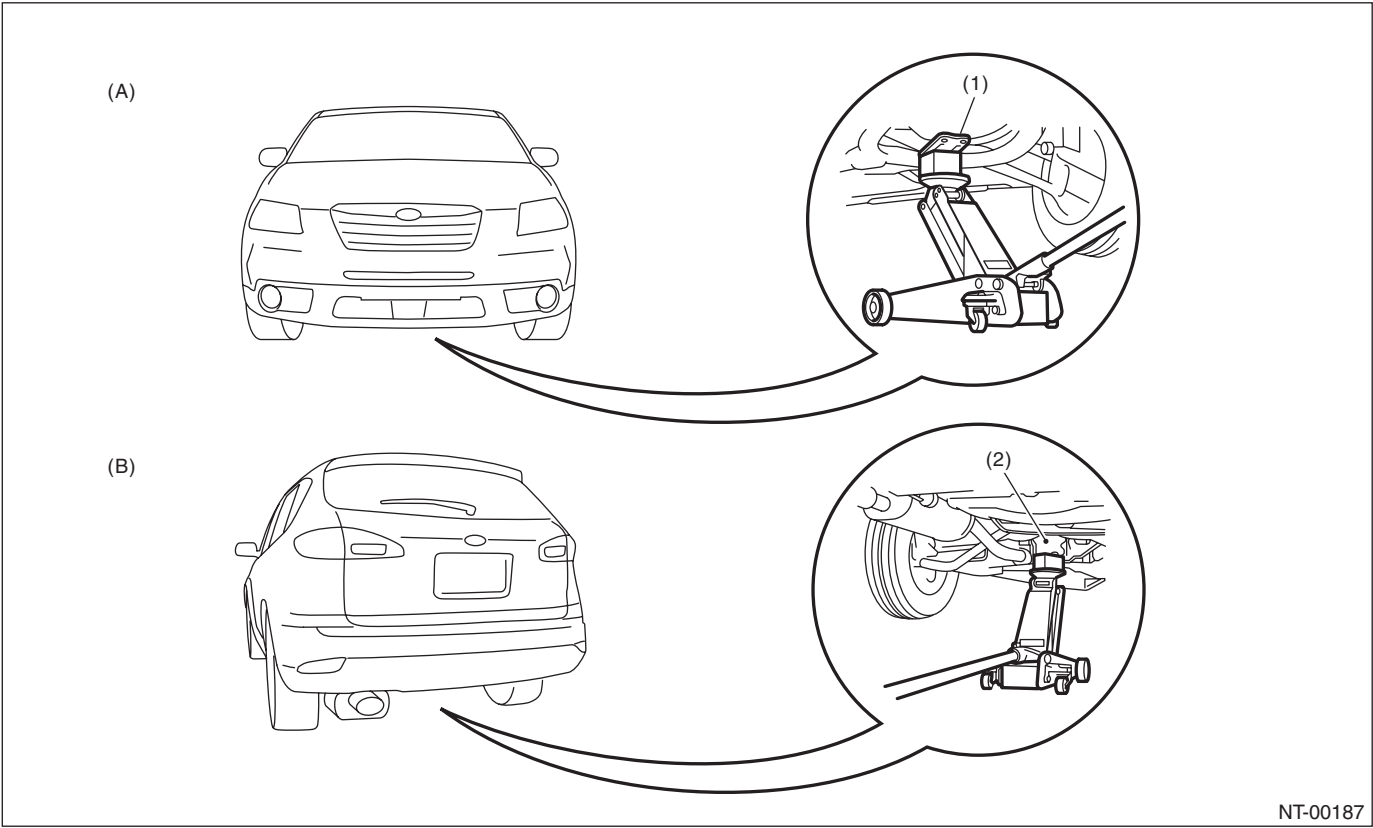
(1) SUPPORT LOCATIONS
(2) Pantograph jack

(3) Swing arm lift
(4) Rigid rack

(5) Plate lift
(6) Attachment

NT-00130

NOTE



(A) Front

(B) Rear

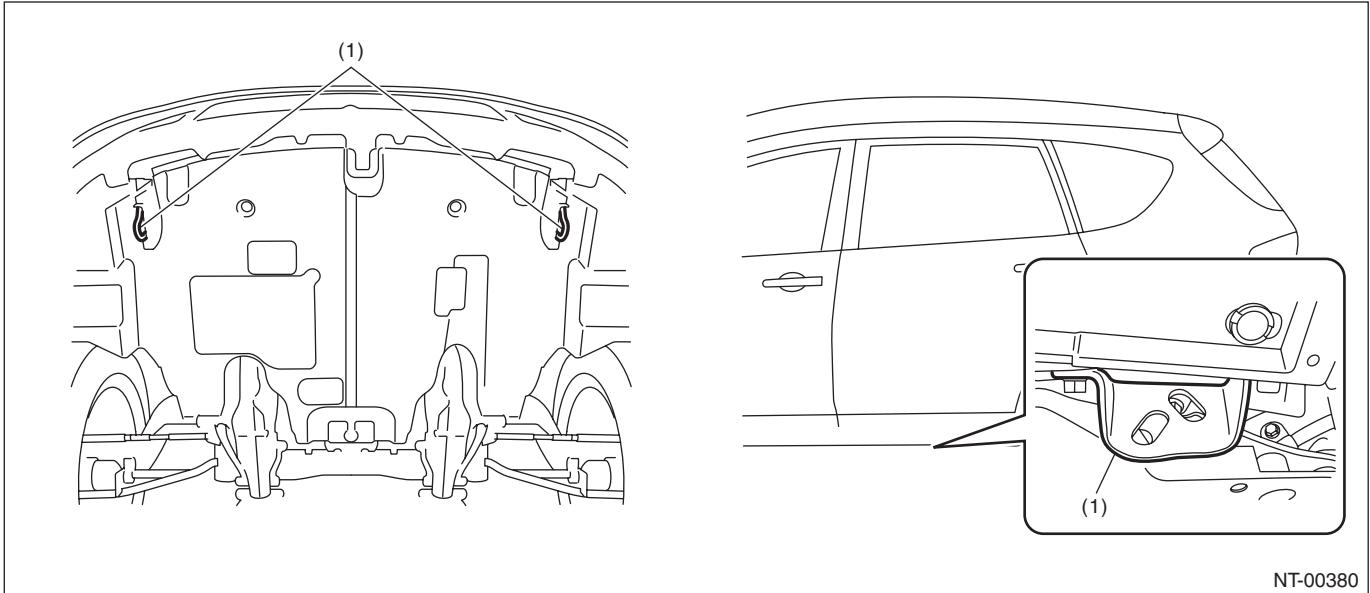
(1) Front crossmember

(2) Rear differential

8. TIE-DOWNS

Tie-downs are used when transporting vehicles and when using the chassis dynamo. Attach tie-down only to the specified locations on the vehicle.

- TIE-DOWN LOCATION



NT-00380

(1) Hook for tie-down

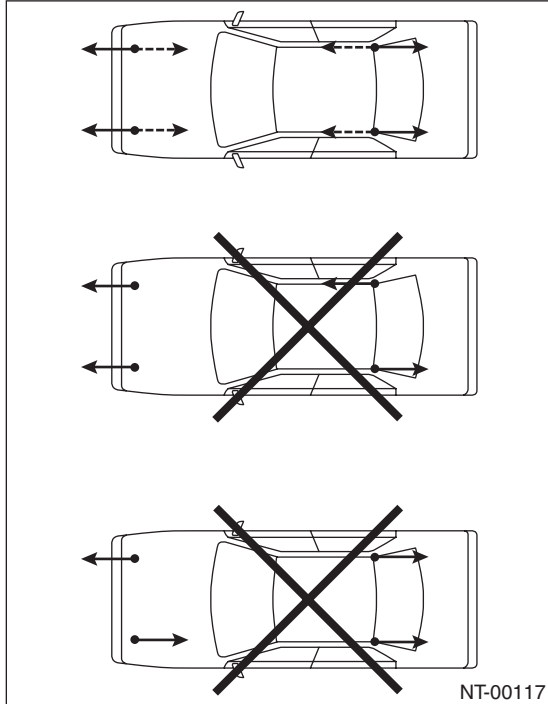
Note

NOTE

• CHAIN DIRECTION AT TIE-DOWN CONDITION

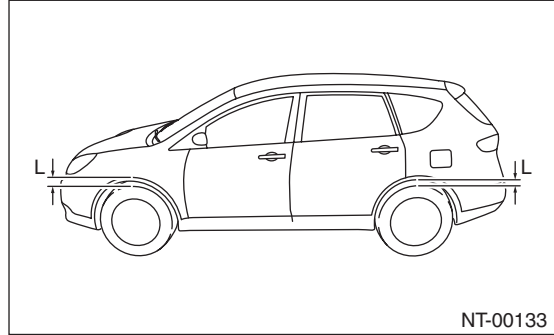
NOTE:

Pull the chains LH and RH in the same direction, but front and rear side in the counter direction. Pull all the chains in a same moment.

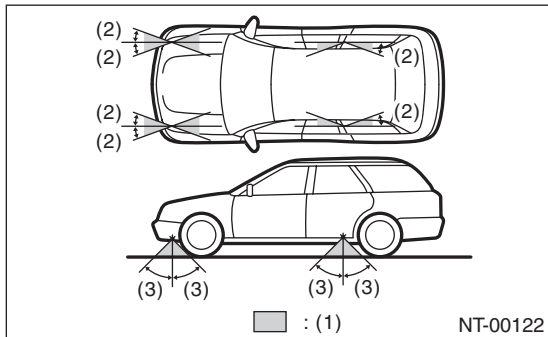


• VEHICLE SINKING VOLUME AT TIE-DOWN CONDITION

Measure the distance between the highest tire point and highest arch point before and after tie-down. Difference of measured values (sinking volume) should be within 50 mm (1.97 in) and make sure to fix the vehicle securely.



• Chain pulling range at tie-down condition



(1) Chain pulling range at tie-down condition

(2) 20°

(3) 45°

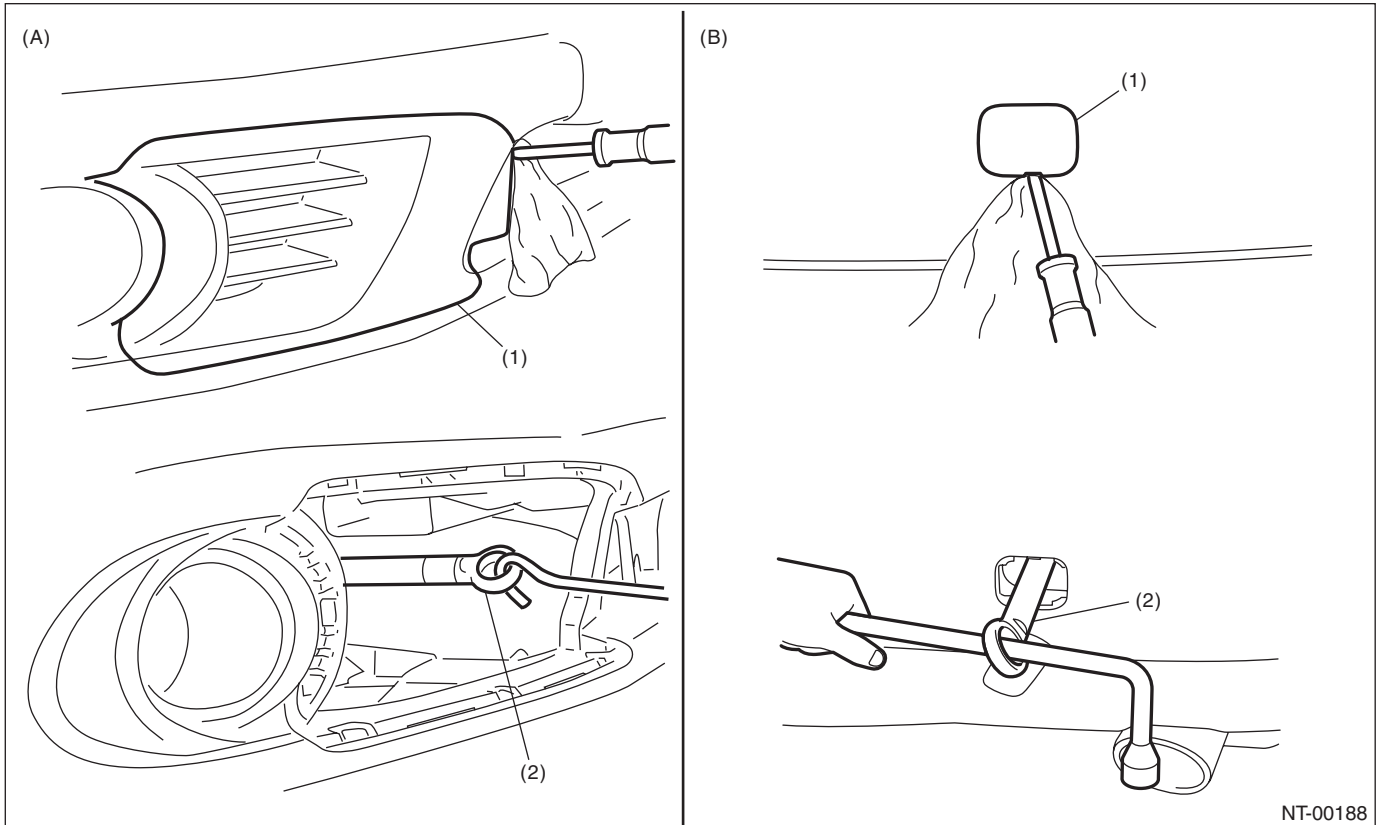
9. TOWING

Avoid towing vehicles except when the vehicle cannot be driven. For models with AWD, AT or VTD, use a loader instead of towing. When towing other vehicles, pay attention to the following to prevent hook or vehicle damage resulting from excessive weight.

- Do not tow other vehicles with a front tie-down hook.
- Make sure the vehicle towing is heavier than the vehicle being towed.
- Remove the hook cover, and then install the hook.

CAUTION:

- Pull the screwdriver which is inserted into the hook cover.
- Do not remove the hook cover holding the slit of the hook cover.



(A) Front

(B) Rear

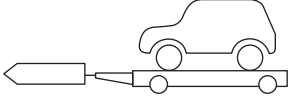
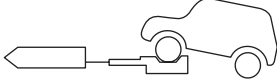
(1) Hook cover

(2) Hook

Note

NOTE

• NOTES

Towing	Precautions	AT
Lifting up four wheels (On a trailer)  NT-00023	Towing the vehicle after lifting up all four wheels is a basic rule for AWD model.	○
Rope  NT-00024	• Check if both front and rear wheels are rotated normally. • Driving speed 30 km/h (19 MPH) or less - Allow driving distance 50 km (31 miles) or less	▲
Raising the front wheels  NT-00025	Prohibition	×
Lifting up the front wheels  NT-00026	• Prohibited, due to damage on bumper, front grille, etc. • Do not raise the vehicle with bumper.	×

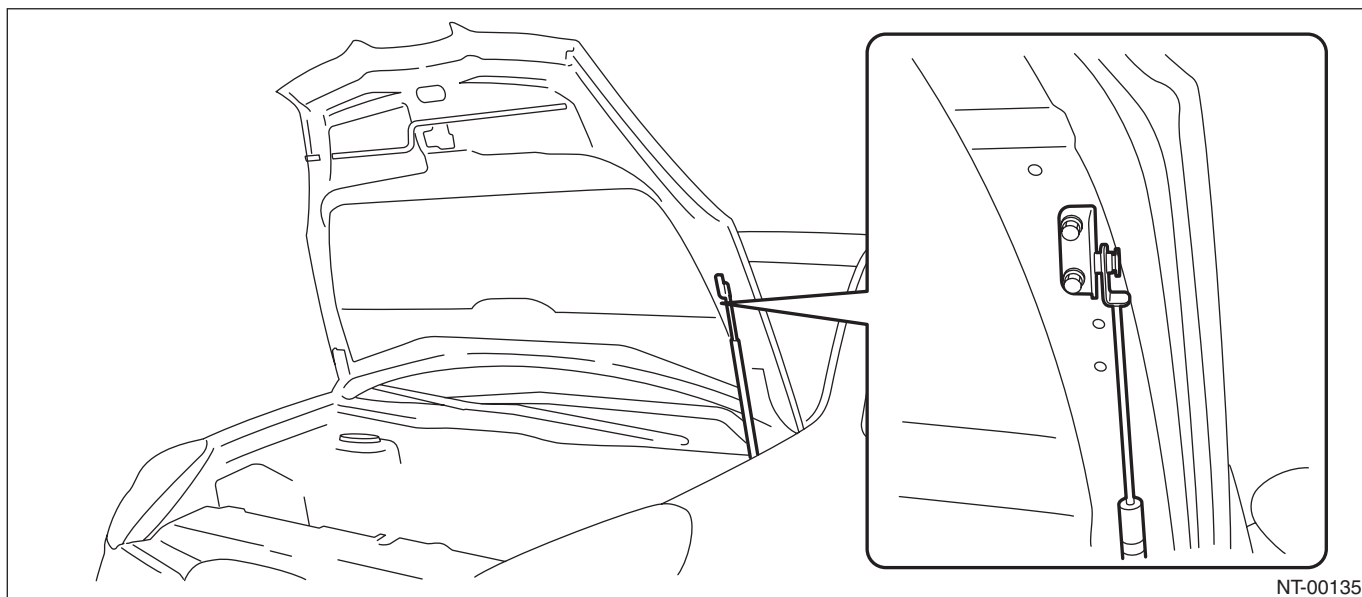
Marked ○ : OK, Marked × : Prohibited, Marked ▲ : Conditionally OK.

CAUTION:

- Check ATF, gear oil and rear differential oil before driving.
- Place the shift lever in “N” position during towing.
- Do not lift up the rear wheels to avoid unsteady rotation.
- Turn the ignition key to “ACC”, then check the steering wheel moves freely.
- Release the parking brake to avoid tire dragging.
- Since the power steering does not work, be careful for the heavy steering effort. (When engine is stopped)
- Since the servo brake does not work, be careful that the brake is not applied effectively. (When engine is stopped)
- In case of the malfunction of internal transmission or drive system, lift up four wheels (on a trailer) for towing.

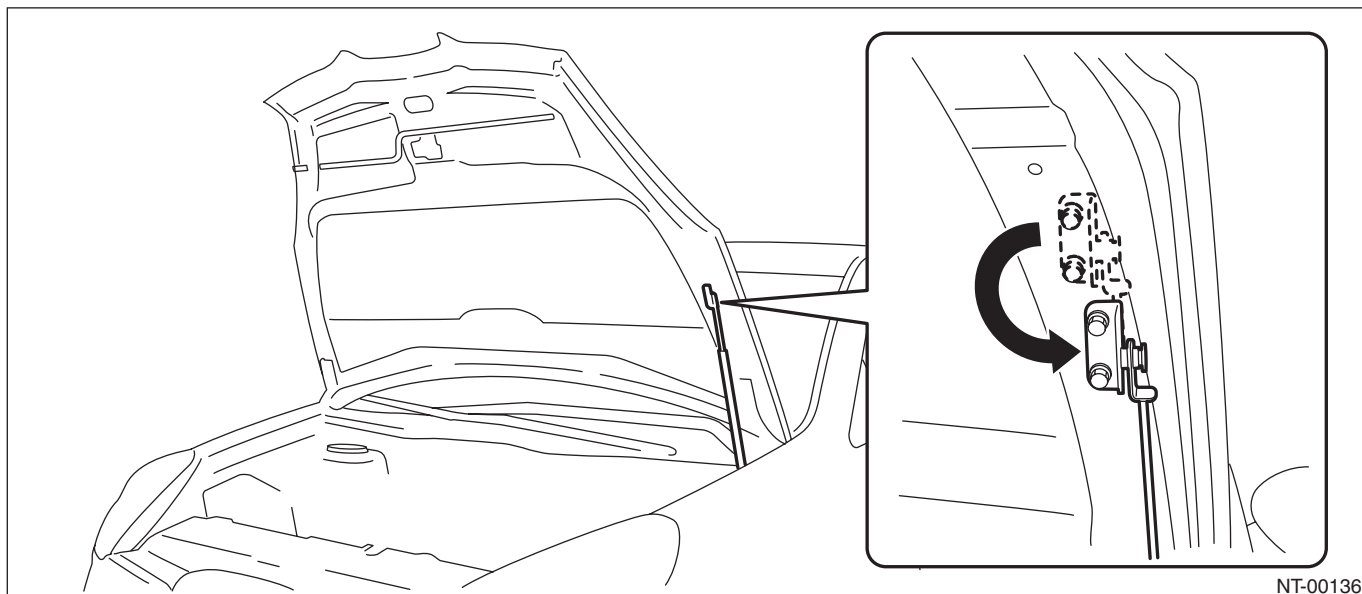
10.FRONT HOOD DAMPER STAY

- AT THE CHECK AND GENERAL MAINTENANCE



- WHEN WIDER HOOD OPENING IS NECESSARY

Set the damper stay below as shown in the figure.



NOTE

11.GENERAL SCAN TOOL

Using general scan tools will greatly improve the efficiency of repairing engine electronic controls. Subaru Select Monitor can be used to diagnose the engine, VDC, airbag and other electronically controlled parts.

12.AWD CIRCUIT MEASURES

Since VTD type is used in the center differential, cut-off of AWD circuit cannot be carried out.

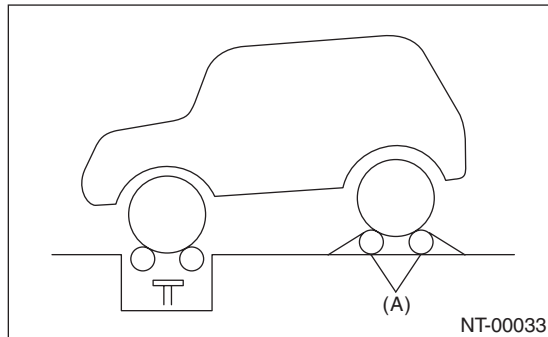
13.SPEEDOMETER TEST

1) Rear wheel free roller system

- (1) Set the free roller on the floor of rear wheel side securely according to the wheel base and rear tread of the vehicle.
- (2) Let the vehicle ride on the tester and free roller gently.

CAUTION:

Fix the vehicle using a pulling metal (chain or wire) to the front and rear towing hooks or tie-down hook to prevent the lateral runout of front wheels and springing out of vehicle.



(A) Free roller

- (3) Set the speedometer tester.
- (4) Conduct the speedometer test work.

CAUTION:

Do not suddenly accelerate or decelerate while working.

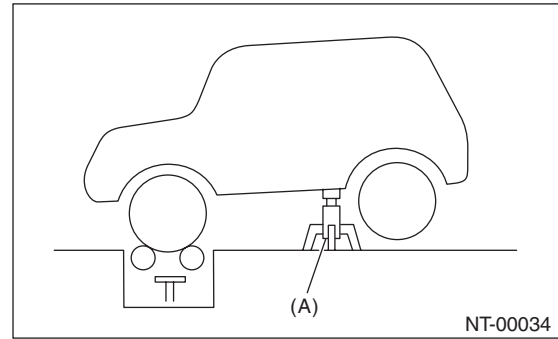
2) Rear wheel jack-up system

- (1) Set the vehicle on speedometer tester.

CAUTION:

Fix the vehicle using a pulling metal (chain or wire) to the front and rear towing hooks or tie-down hook to prevent the lateral runout of front wheels and springing out of vehicle.

- (2) Jack up the rear wheels and set the rigid racks to the specified locations of side sill.



(A) Rigid rack

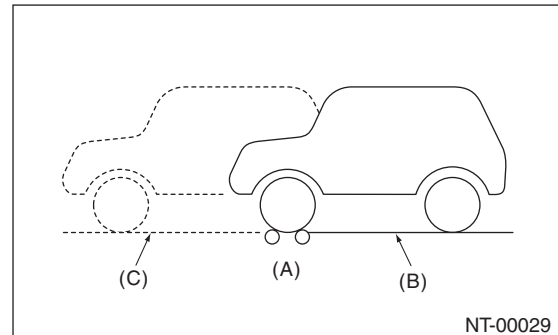
- (3) Conduct the speedometer test work.

CAUTION:

Do not suddenly accelerate or decelerate while working.

14.BRAKE TEST

- 1) Keep the front or rear wheels on the ground during measurement.



- (A) Brake tester
- (B) Position for measuring front wheel
- (C) Position for measuring rear wheel

- 2) When the brake dragging force is large, inspect whether there is dragging in the brake or brake shoe.

Specifications:

	Braking force
Rear wheel total	10% or more of load on front or rear wheels
Difference between right and left wheels	8% or less of load on front or rear wheels
Grand total	50% or more of vehicle weight at the time of test

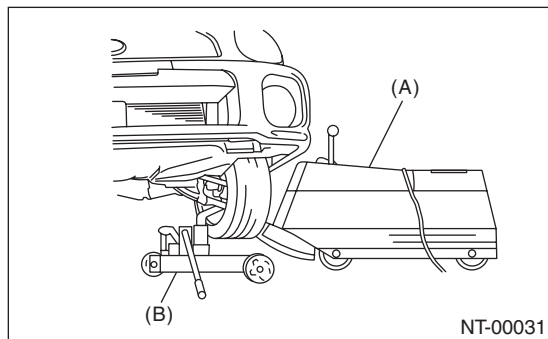
When measurement is difficult to carry out because both of front wheels are locked, check if braking force measurement in this condition conforms to standard grand total.

15.ON THE CAR WHEEL BALANCING

CAUTION:

- Carry out this procedures after measuring the balance of each single tire.
- Set the vehicle so that the front and rear wheels are the same height.
- Release the parking brake during measurement.
- Rotate each wheel by hands, and make sure it rotates without dragging.
- Do not suddenly accelerate or decelerate while working.
- When an error is indicated during engine drive, do not use the motor drive together.

1) Set the rigid rack to the specified locations of side sill, jack up the front or rear two wheels of non-measuring side and set the pickup stands to two wheels of measuring side.



(A) Balancer body

(B) Pickup stand (left and right)

2) For drive wheel, drive the tires with engine for measurement.

3) For non-drive wheel, drive the tires from the on the car wheel balancer for measurement.

NOTE

IDENTIFICATION

ID

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1. Identification	2



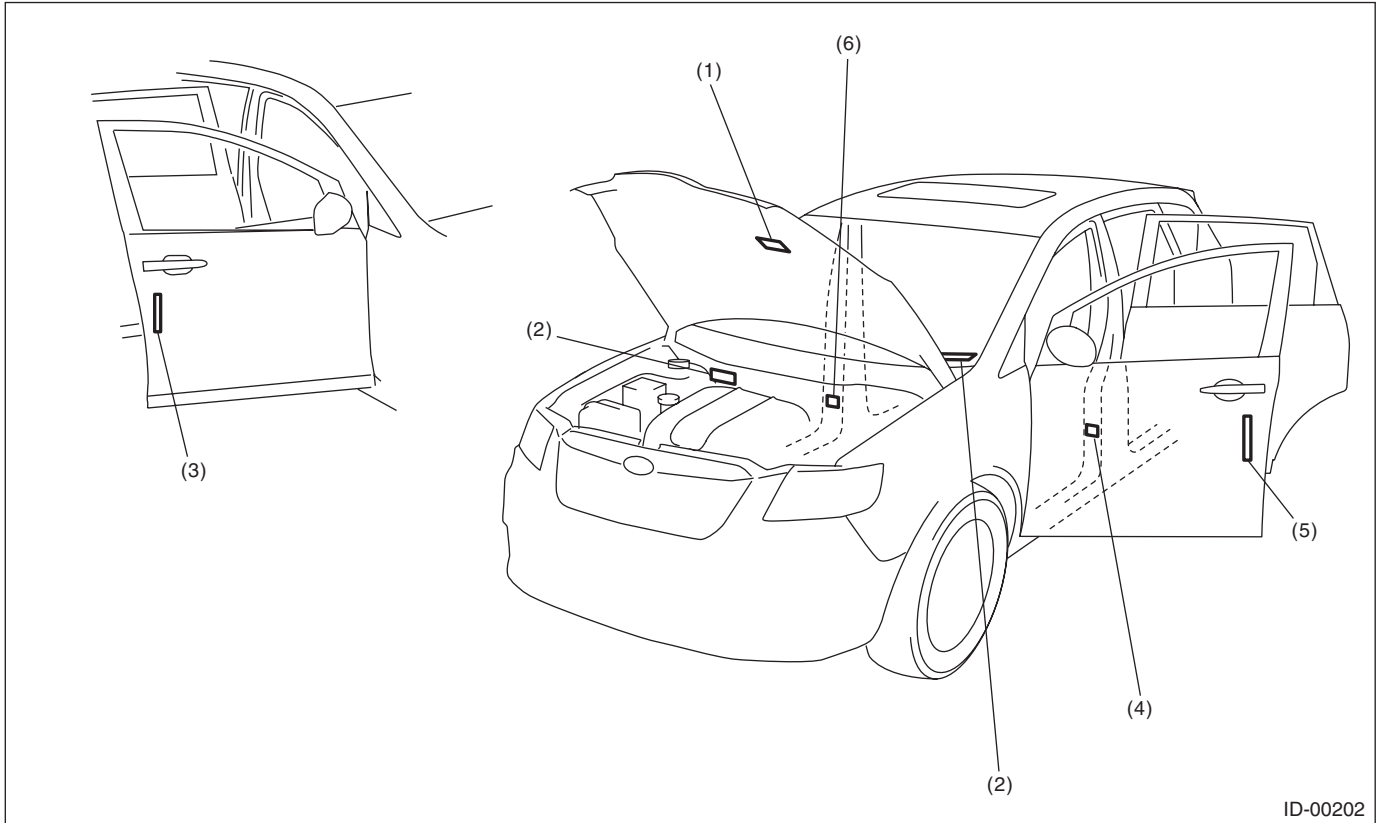
1. Identification

A: IDENTIFICATION

1. IDENTIFICATION NUMBER AND LABEL LOCATIONS

The V.I.N. (Vehicle Identification Numbers) is used to classify the vehicle.

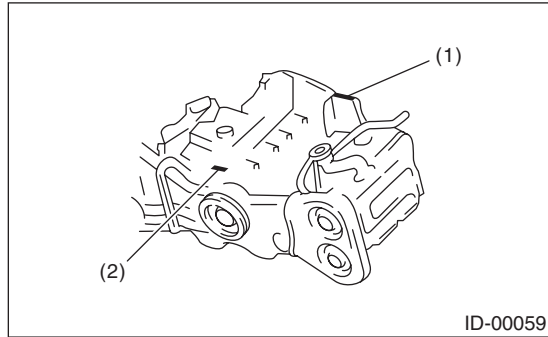
• POSITIONING OF THE PLATE LABEL FOR IDENTIFICATION



ID-00202

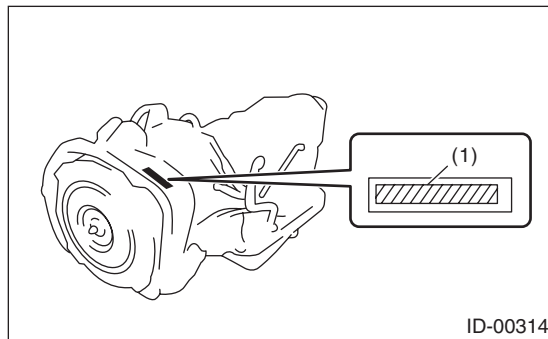
- | | | |
|--|---|------------------------------|
| (1) Emission control label | (3) MODEL NUMBER LABEL | (5) FMVSS label (U.S. model) |
| (2) Vehicle identification number (V.I.N.) | (4) Tire inflation pressure label (Driver's side) | CMVSS label (Canada model) |
| | | (6) Radio noise label |

• ENGINE



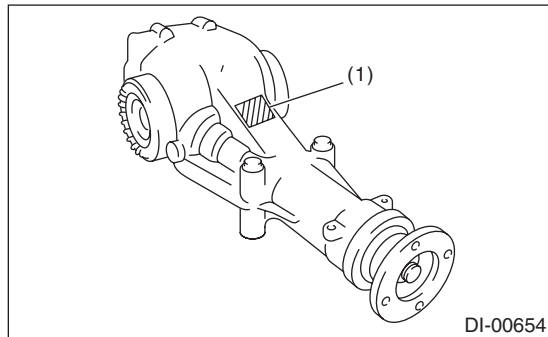
- (1) Engine serial number (punch mark)
- (2) Engine type (casting) crankcase upper side

• AUTOMATIC TRANSMISSION



- (1) Transmission serial number label and AT type label

• REAR DIFFERENTIAL



- (1) Type (paint)

Identification

IDENTIFICATION

• MODEL NUMBER LABEL

FUJI HEAVY INDUSTRIES LTD.			
VIN	*****		
Applied Model	*****	Option Code	****
Modèle Concerné	*****	Code d'option	****
Trim Code	***		
Code de garniture	***		
Color Code	***	Engine Type	*****
Code de couleur	***	Modèle de moteur	*****
Transmission Type	*****		
Modèle de boîtes vitesse	*****		

ID-00374

• FMVSS LABEL (U.S. MODEL)

MFD BY FUJI HEAVY INDUSTRIES LTD.				DATE :	
GVWR :	LB(	KG)			
GAWR : F	LB(	KG) WITH	TIRES.	RIMS. AT	KPA(PSI)COLD
GAWR : R	LB(	KG) WITH	TIRES.	RIMS. AT	KPA(PSI)COLD
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.					
VIN : *****			TYPE : MPV		
					
ASSEMBLED BY SIA INC. MADE IN U. S. A					

ID-00373

• CMVSS LABEL (CANADA MODEL)

MFD BY FUJI HEAVY INDUSTRIES LTD.

DATE :

GVWR/PNBV KG

GAWR/PNBE F KG

GAWR/PNBE R KG

WITH

WITH

TIRES.

TIRES.

RIMS. AT

RIMS. AT

KPA(PSI)COLD

KPA(PSI)COLD

VIN : *****

TYPE : MPV/VTUM





ASSEMBLED BY SIA INC.

MADE IN U. S. A

ICES/NMB-002

ID-00376

Identification

IDENTIFICATION

2. MEANING OF V.I.N.

The meaning of the V.I.N. is as follows:

J4S4WX9FDXB4400001

The starting and ending brackets ([]) are stop marks.

Digits	Code	Meaning	Details
1 — 3	4S4	Manufacturer body area	4S4: MPV
4	W	Car line	W: TRIBECA
5	X	Body type	X: SUV
6	9	Displacement	9: 3.6 L AWD
7	F	Grade	F: 7Pass G: 7Pass Limited H: 7Pass Limited w/NAVI J: 7Pass Limited DVD K: 7Pass Limited w/NAVI & DVD
8	D	Restraint system or GVWR Class	D: Class D (GVWR 5001 to 6000 lb) manual belt + dual airbag + side airbag + curtain airbag
9	X	Check digit	0 — 9 & X
10	B	Model year	B: 2011MY
11	4	Transmission type	4: Full-time AWD 5AT
12 — 17	400001	Serial number	400001 —

3. MODEL NUMBER LABEL

The model number label indicates the type, V.I.N. <Ref. to ID-6, MEANING OF V.I.N., IDENTIFICATION, Identification.>, applied model, option code, trim code, engine type, transmission type and the exterior color code. This information is helpful when placing orders for parts.

WXFFY5U

Digits	Code	Meaning	Details
1	W	Series	W: TRIBECA
2	X	Body type	X: Cross utility vehicle
3	F	Total engine displacement Drive system Suspension system	F: 3.6 L AWD
4	F	Model year	F: 2011MY
5	Y	Destination	Y: U.S.A., Canada
6	5	Grade	5: BASE
7	U	Transmission, fuel feed system	U: DOHC MFI 5AT SS

The engine and transmission type are as follows.

ENGINE

EZ36DBC4LB

Digits	Code	Meaning	Details
1 and 2	EZ	Engine type symbol	EZ: 6 cylinders
3 and 4	36	Displacement	36: 3.6 L
5	D	Fuel feed device	D: MFI non-turbo (DOHC, H6)
6	B	Exhaust regulations	B: For all states
7	C	Mounted transmission	C: D-5AT
8 — 10	4LB	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

Transmission

TG5D9CJDAA

Digits	Code	Meaning	Details
1	T	Transmission	T: Transmission
2	G	Transmission type	G: Full-time AWD AT center differential
3 and 4	5D	Classification	5D: 5AT
5	9	Series	9: TRIBECA
6	C	Transmission specifications	C: Full-time AWD VTD 5AT
7	J	Mounted engine	J: 3.6 L DOHC
8 — 10	DAA	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

REAR DIFFERENTIAL

XB

Code	Reduction gear ratio	LSD
XB	3.583	None

Option

C0AK

Digits	Code	Meaning	Details
1 — 2	C0	Destination	C0: Canada C4: Central and South America U4: USA
3 — 4	AK	Option equipment	Refer to the option list

• 3-digit number

	A	C	D	E	F	L	N	O	P
Leather seat	—	—	○	○	○	○	○	○	○
Driver seat memory sheet	—	—	○	○	○	○	○	○	○
Seat heater	○	○	○	○	○	○	○	○	○
Sunroof + roof rail	—	○	—	○	○	○	—	—	—
Sunroof + roof rail (silver paint)	—	—	○	—	—	—	—	○	○
HID headlight	—	—	○	—	—	○	—	○	○
Home link	—	○	—	○	○	—	○	○	○
Rear seat entertainment	—	—	○	—	○	○	—	—	○
7-spoke aluminum wheel	—	—	—	—	—	—	—	○	○

• 4-digit number

	C	E	J	K	L	M	N	U	V
Navigation system	—	—	—	—	—	—	○	—	○
Rear view camera + navigation display	—	○	○	○	—	○	○	—	○
Rear view camera + inner mirror with rear view display	—	—	—	—	—	—	—	○	—
High grade audio & speakers	—	—	○	—	—	—	—	—	—
Satellite-compatible+high grade audio & speakers	—	○	—	—	—	—	—	—	—
HK-type audio & speakers	—	—	—	—	—	○	○	—	—
HK-type audio & speakers+XM	○	—	—	—	—	—	—	○	○
Rear cooler	○	○	○	○	○	○	○	○	○

Identification

IDENTIFICATION

RECOMMENDED MATERIALS

RM

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1. Recommended Materials	2



Recommended Materials

RECOMMENDED MATERIALS

1. Recommended Materials

A: RECOMMENDED MATERIALS

1. GENERAL

To insure the best performance, always use the specified oil, gasoline, adhesive, sealant, etc. or a substitute of equivalent quality.

2. FUEL

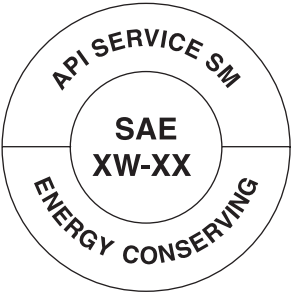
Always use gasoline of the same or higher octane value than specified in the owner's manual. Ignoring the specifications below will result in damage or poor performance of engine and fuel injection system. Use the specified gasoline to correct performance.

Unleaded gasoline

In order to reduce air pollution, use unleaded gasoline for the vehicle equipped with catalytic converter. Using leaded gasoline may damage the catalytic converter.

3. LUBRICANTS

Use the lubricants shown in the table below, or equivalent. See the table below to choose the correct SAE viscosity.

Lubricant	Recommended materials	
	API standard	ILSAC standard
Engine oil Choose oil suitable for the standard from the right.	SN or SM grade "Resource conserving" or "Energy conserving"  RM-00076 Those with the above API service labels	GF-5 or GF-4  RM-00002 Those with the above ILSAC certification mark (Starburst mark)
AT front differential gear oil	GL-5	—
Rear differential gear oil	GL-5	—

Recommended Materials

RECOMMENDED MATERIALS

SAE viscosity No. and applicable temperature								
Engine oil								
(°C)	-30	-20	-10	0	10	20	30	40
(°F)	-22	-4	14	32	50	68	86	104
(1)								
RM-00075								
(1) 5W-30 (synthetic oil)								
Rear differential gear oil and AT front differential gear oil								
(°C)	-30	-20	-10	0	10	20	30	40
(°F)	-22	-4	14	32	50	68	86	104
90 85W 80W 75W-90								
RM-00058								

Recommended Materials

RECOMMENDED MATERIALS

4. FLUID

Use the fluids specified in the table below. Do not mix two different kinds or makes of fluid.

CAUTION:

Be sure to use the recommended or equivalent ATF. Using material except recommended one or substitute would cause trouble.

Fluid	Recommended materials	Alternative	Remarks
Automatic transmission fluid	SUBARU ATF	IDEMITSU: ATF HP	—
Power steering fluid	SUBARU ATF	DEXRON III	—
Brake fluid	FMVSS No. 116 DOT3	DOT4	—

5. COOLANT

Use genuine coolant to protect the engine.

Engine coolant	Recommended materials	Item number	Alternative
Coolant	SUBARU SUPER COOLANT	K0670Y0001	—
Water for dilution	Distilled water	—	Soft water or tap water
Cooling system protective agent	Cooling system conditioner	SOA345001	—

6. REFRIGERANT

Standard air conditioners on Subaru vehicles use HFC134a refrigerant. Do not mix it with other refrigerants. Also, do not use any compressor oil other than DENSO OIL 8.

Air conditioner	Recommended materials	Item number	Alternative
Refrigerant	HFC134a	—	None
Compressor oil	DENSO OIL 8	—	None

7. GREASE

Use grease and supplementary lubricants shown in the table below.

Grease	Application point	Recommended materials	Item number	Alternative
Supplementary lubricants	Oxygen sensor	Spray type lubricant	—	—
Grease	Select lever	NIGHTIGHT LYW No. 2 grease	—	—
	Brake pedal	ESA MIC45-A EQUIV	—	—
	Steering gearbox	VALIANT GREASE M2	003608001	—
	Disc brake (Lock pin, guide pin, piston boot)	NIGLUBE RX-2	000041000	—
	Between brake pad and shim	Molykote AS-880N	K0777YA010	—
	Brake pad clip	Molykote M7439	K0770YA000	—
	Front axle PTJ	NKG302	—	—
	• Front axle EBJ • Rear axle EBJ	NKG814	—	—
	Rear axle DOJ	NKG814	—	—

8. ADHESIVE

Use the adhesives shown in the table below, or equivalent.

Adhesive	Application point	Recommended materials	Item number	Alternative
Adhesive	Windshield, front quarter glass, rear window glass, rear quarter glass, rear gate and body	Dow Automotive's adhesive: ESSEX U-400HV or the equivalent Glass primer: U-401 and U-402 Painted surface primer: U-413	—	—
	Rearview mirror base	REPAIR KIT IN MR	65029FC000	—

Recommended Materials

RECOMMENDED MATERIALS

9. SEAL MATERIAL

Use the seal material shown in the table below, or equivalent.

Seal material	Application point	Recommended materials	Item number	Alternative
Seal material	Converter case	THREE BOND 1215	004403007	DOW CORNING No. 7038
	Transmission oil pan	THREE BOND 1217B	K0877YA020	—
	• Engine oil pressure switch • Cylinder head (Nipple) • Camshaft bowl-shape plug • Rear differential lock nut • PCV valve	THREE BOND 1324	004403042	—
	Steering adjusting screw	THREE BOND 1102	004403006	—
	• Cylinder block • Cam cap • Engine oil pan • Cylinder head gasket (Block, head) • Rocker cover • Oil pan upper • Block (Oil pan upper) • Chain cover (Block, head, cam cap, oil pan upper)	THREE BOND 1217G	K0877Y0100	—
	• Door (Front sealing cover) • Door (Rear sealing cover)	3M Butyl Rubber 8626	—	—

Recommended Materials

RECOMMENDED MATERIALS

PRE-DELIVERY INSPECTION

PI

	Page
1. Pre-delivery Inspection	2



1. Pre-delivery Inspection

A: GENERAL DESCRIPTION

The purposes of the pre-delivery inspection (PDI) are as follows.

- Remove the additional parts used for ensuring the vehicle quality during transportation and restore the vehicle to its normal condition.
- Check the vehicle before delivery is in normal condition.
- Check the vehicle or parts for any damage occurred during transportation or storage.
- Check the vehicle after repair is in normal condition.
- Make sure to provide a complete vehicle to customer.

For above reasons, all SUBARU dealers (dealerships) must carry out the PDIs before delivery of vehicle. Refer to this manual unless otherwise specified.

B: PRE-DELIVERY INSPECTION (PDI) PROCEDURE

Static Checks Just After Vehicle Receipt

Operation	Check point
1. Appearance	1. If the vehicle is covered with protective coating, visually check the vehicle body for damage and dents. If the protective coating has been removed, visually check the body painted area for damage or stains in detail. 2. Visually check the glass and light lenses for any damage, cracks or excessive gaps between body sheet metal. 3. Visually check the plated parts for any damage.
2. Tire	1. Check the tires for damage, defective, and dents on wheels. 2. Check the tire air pressure.
3. Fuse installation	If the vehicle is about to be delivered to customer, attach a back-up fuse.
4. Door lock/unlock and open/close operations	1. Using the key, check the door can be locked or unlocked normally. 2. Open and close all doors to check that there are no defective. 3. Operate the power door lock switch to check that the door (rear gate) is locked and unlocked normally.
5. Child safety lock system	Check the child safety lock system operates normally.
6. Rear gate lock/unlock and open/close operation	1. Check if the rear gate can be unlocked normally through the emergency hole. 2. Open and close the rear gate to see that there are no problems.
7. Fuel lid opener lock release lever	Operate the fuel lid opener to check that the fuel filler lid can be unlocked normally.
8. Accessory	Check that the following accessories are provided. • Owner's manual • Warranty booklet • Maintenance note • Spare key • Security ID plate • Key No. plate • Jack • Tool set • Spare tire
9. Front hood lock release system	Operate the front hood lock release lever to check that the front hood is unlocked normally.
10. Battery	Check the battery terminals for any abnormal conditions such as rust and trace of battery fluid leaks.
11. Brake fluid	Check that the fluid level is normal.
12. Engine oil	Check that the oil level is normal.
13. AT front differential gear oil	Check for leakage of AT front differential gear oil.
14. Engine coolant	Check that the engine coolant level is normal.
15. Window washer fluid	Check that the window washer fluid level is normal.
16. Front hood latch	Check that the front hood is closed and locked normally.
17. Keyless entry system	Check that the keyless entry system operates normally.
18. Alarm system	Check that the alarm system operates normally.
19. Seat	1. Check the seat surfaces for stains or dirt. 2. Check the seat installation conditions and functionality. 3. Check that the occupant detection system for passenger's seat operates normally.
20. Seat belt	1. Check the seat belt installation conditions and functionality. 2. Check the seat belt warning system operates normally.

Pre-delivery Inspection

PRE-DELIVERY INSPECTION

Checks with the Engine Running

Operation	Check point
21. Delivery (test) mode connector	Turn the ignition switch to ON and check that the malfunction indicator light starts blinking.
22. Immobilizer system	1. Check that the engine starts with all keys that are equipped on vehicle. 2. 60 seconds after turning ignition switch from ON to ACC or OFF, or immediately after removing the key, check that the security indicator light is blinking.
23. Starting condition	Start the engine and check that the engine starts smoothly.
24. Exhaust system	Check that the exhaust noise is normal and no leaks are found.
25. Indicator and warning lights	Check that all indicator lights and warning lights operate normally.
26. Heater & ventilation	Check that the heater & ventilation system operates normally.
27. Air conditioner	Check that the air conditioner operates normally.
28. Clock	Check that the clock operates normally.
29. Audio	Check the radio, CD player and AUX for normal operation.
30. Accessory power supply socket	Check that each of the accessory power supply sockets operate normally.
31. Navigation system	1. Check all display functions for normal operation. 2. Check the map disc (DVD) are provided on vehicle. 3. Check that the navigation system operates normally. 4. Check that the rearview camera operates normally.
32. Rear entertainment system	Check that the rear entertainment system operates normally.
33. Lighting system	Check that the lighting system operates normally.
34. Wiper deicer	Check that the wiper deicer operates normally.
35. Illumination control	Check that the illumination control operates normally.
36. Window washer	Check that the window washer system operates normally.
37. Wiper	Check that the wiper system operates normally.
38. Power window	Check that the power window operates normally.
39. Sunroof	Check that the sunroof operates normally.
40. Door mirror	Check that the remote control mirror operates normally.
41. Room mirror (RCD model)	1. Check all display functions for normal operation. 2. Check that the automatic anti-glare function operates normally. 3. Check that the compass function operates normally. 4. Check that the rearview camera operates normally.
42. Rear defogger	Check that the rear defogger system operates normally.

Dynamic Test with the Vehicle Running

Operation	Check point
43. Brake test	Check the foot brake for normal operations.
44. Parking brake	Check the parking brake for normal operations.
45. AT shift control	Check that the AT shift patterns are correct.
46. Cruise control	Check that the cruise control system operates normally.

Checks after Dynamic Test

Operation	Check point
47. ATF level	Check that the ATF level is correct.
48. Power steering fluid level	Check that the power steering fluid level is normal.
49. Fluid leakage	Check for fluid/oil leaks.
50. Water leakage	Spray the vehicle with water and check for water leaks.
51. Appearance 2	1. Remove the protective coat. (If equipped) 2. Check the body paints for damage and stain. 3. Check the plated parts for damage and rust.

1. APPEARANCE CHECK

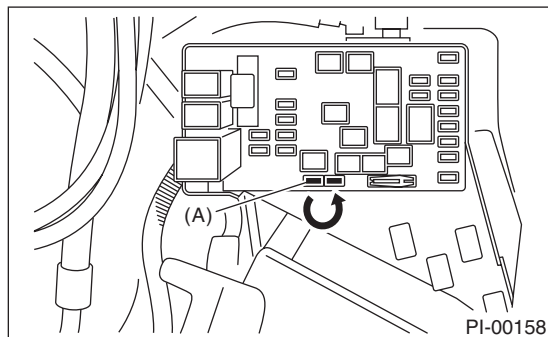
- If the vehicle is covered with protective coating, visually check the vehicle body for damage and dents.
- When the protective coating is removed, visually check the body paints for damage or stains in detail and repair as necessary.
- Visually check the windshield glass, door glasses and light lenses for any damage, cracks or excessive gaps to the body sheet metal and repair as necessary.
- Visually check the plated parts, such as the grilles and door knobs, for damage or loss of gloss and replace the parts as necessary.

2. TIRE CHECK

- Check the tires for damage, defective, and dents on wheels.
- Check and adjust the tire size, spare tire and tire air pressure described on the tire air pressure label (driver's side).

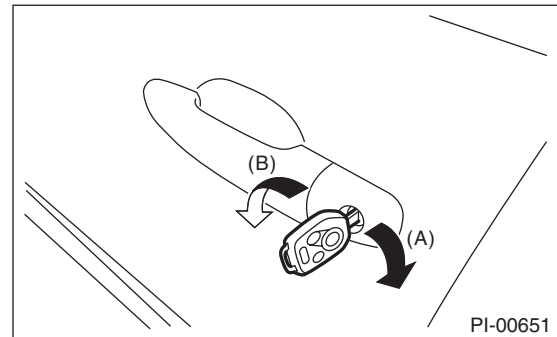
3. FUSE INSTALLATION

Fuses for the back-up circuit have been removed to prevent battery discharge. If the vehicle is about to be delivered to the customer, attach a 20 A fuse (A) as shown in the figure.



4. LOCK/UNLOCK AND OPEN/CLOSE OPERATION CHECKS OF DOORS

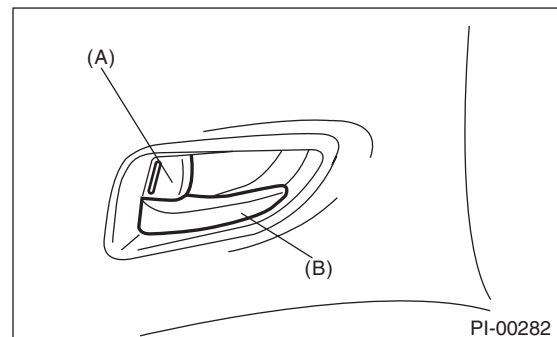
1) Using the key, lock and unlock the door several times to check for normal operation. Open and close the door several times for smooth movement.



(A) Unlock

(B) Lock

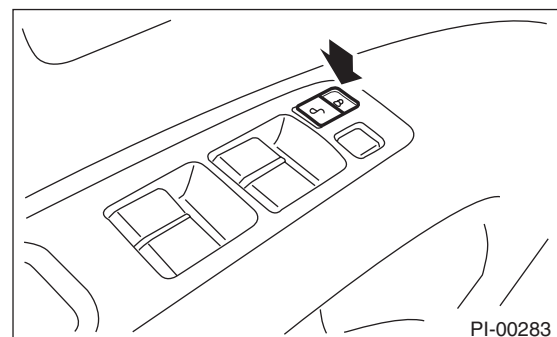
2) Completely close the driver's door, and then check the smooth movement with operating door lock knob from lock to unlock several times. Set the door lock knob (A) to lock position. Then pull the inner remote (B) to ensure that doors will not open. For other doors, place the door lock knob (A) to lock position and then pull the inner remote to ensure that doors will not open.



(A) Door lock knob

(B) Inner remote

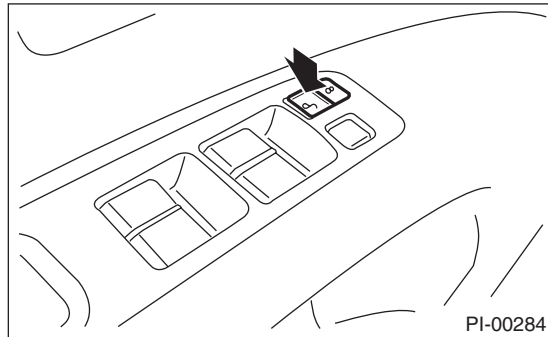
3) Close all the doors, and then press the lock on power door lock switch at driver's side. Check that all doors (including the rear gate) lock.



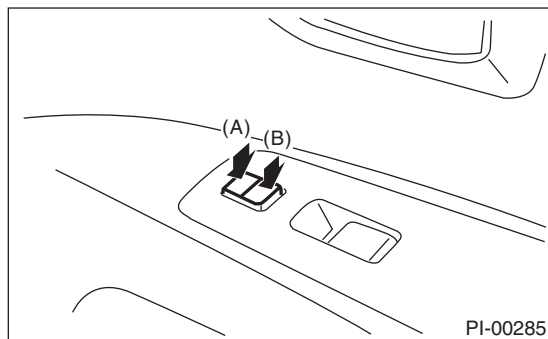
Pre-delivery Inspection

PRE-DELIVERY INSPECTION

4) Press the driver's side power door lock switch to unlock side. Check that all doors including rear gate are unlocked.



5) Check that the passenger's power door lock switch locks and unlocks normally in the same manner.

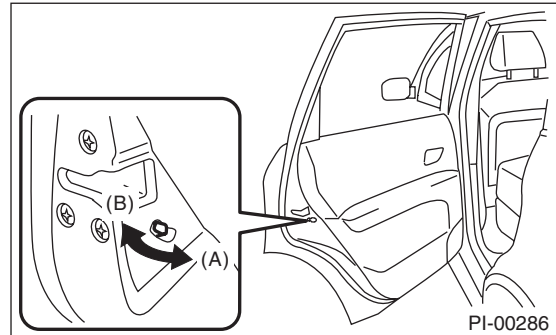


- (A) Lock
- (B) Unlock

6) Insert the key to ignition switch, and open the driver's side door. Press lock on power door lock. Check that the door is not locked.

5. OPERATION CHECK OF CHILD SAFETY LOCK SYSTEM

1) Set the child safety lock on both rear doors to the lock position.



- (A) Lock
- (B) Unlock

2) Close the rear doors completely.

3) Check that the lock levers of the rear doors are in the unlock position. Then, pull inner remote of rear doors to ensure that the doors will not open.

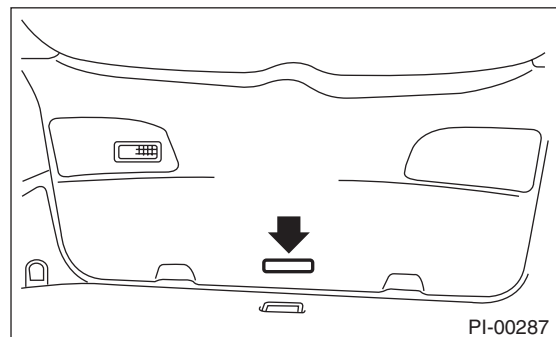
4) Pull the outer handles to ensure that doors will open.

6. LOCK/UNLOCK AND OPEN/CLOSE OPERATION CHECKS OF REAR GATE

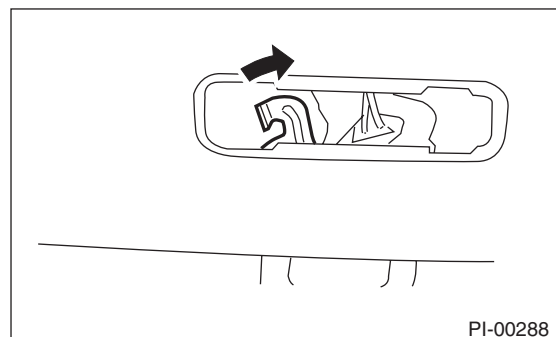
1) Open and close the rear gate several times for smooth movement.

2) Operate the rear gate lever and check that the rear gate opens normally.

(1) Remove the cover inside the rear gate.



(2) Operate the lever to check that it opens normally.



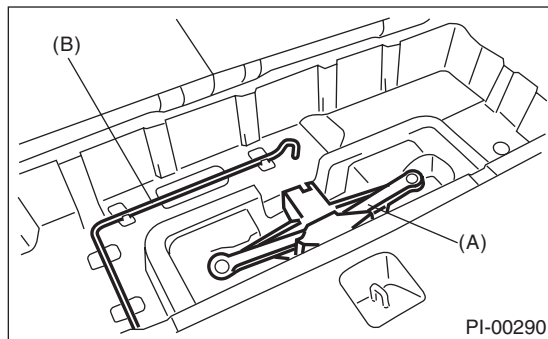
7. OPERATION CHECK OF FUEL LID OPENER LOCK RELEASE LEVER

Operate the fuel lid opener to check that the fuel filler lid is unlocked normally. Check that the filler cap is securely closed.

8. ACCESSORY CHECK

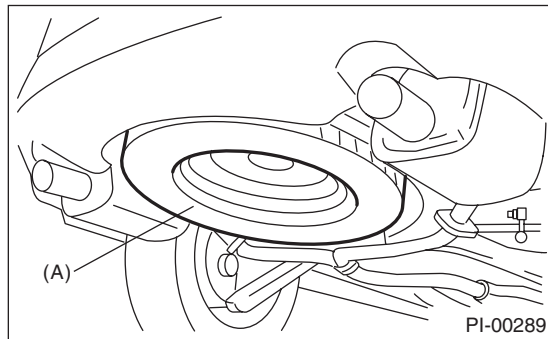
Check that the following accessories are provided.

- Owner's manual
- Warranty booklet
- Maintenance note
- Spare key
- Security ID plate
- Key No. plate
- Jack
- Tool set



- (A) Jack
- (B) Jack handle

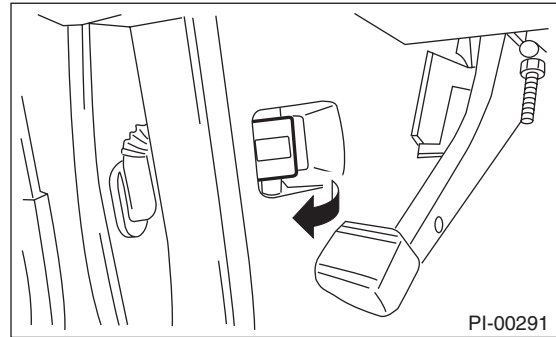
- Spare tire



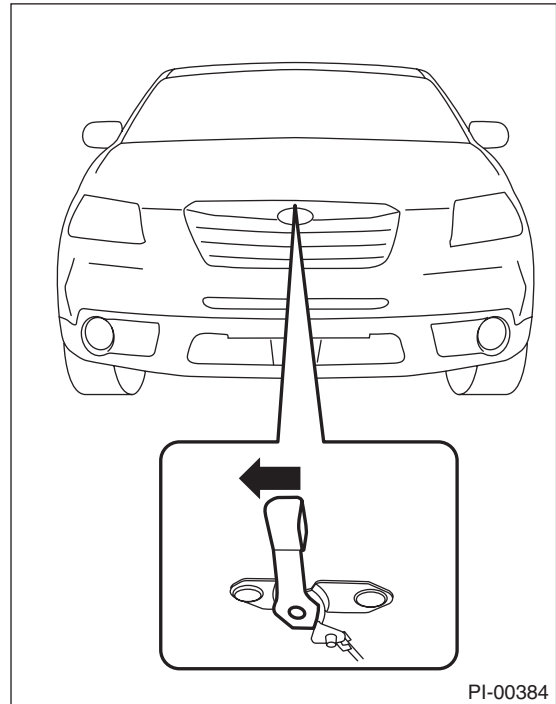
- (A) Spare tire

9. OPERATION CHECK OF FRONT HOOD LOCK RELEASE SYSTEM

Operate the front hood lock release lever to check that the front hood is unlocked normally.

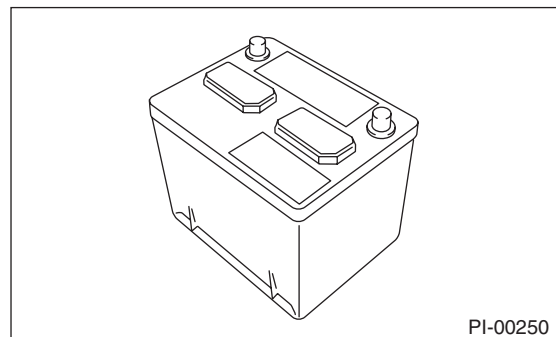


Operate the lever and check that the front hood is opened normally.



10. BATTERY

Check the battery terminals to make sure that there are no rust or corruptions due to fluid leaks.

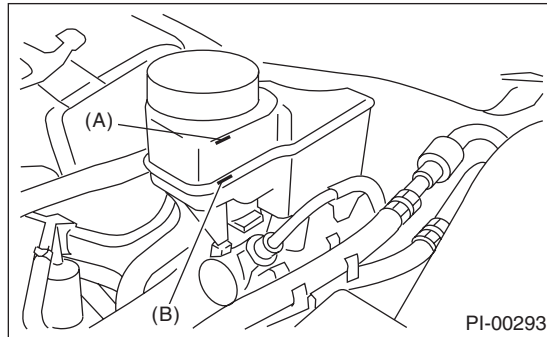


11.BRAKE FLUID

CAUTION:

If the brake fluid is spilt over the exhaust pipe or the under cover, wipe it off with cloth to avoid emitting smoke or causing a fire.

Check that the brake fluid level is normal. If the amount is insufficient, carry out a brake line test to identify brake fluid leaks and check the brake operation. After that, refill the brake fluid tank with the specified type of fluid.



(A) MAX. level

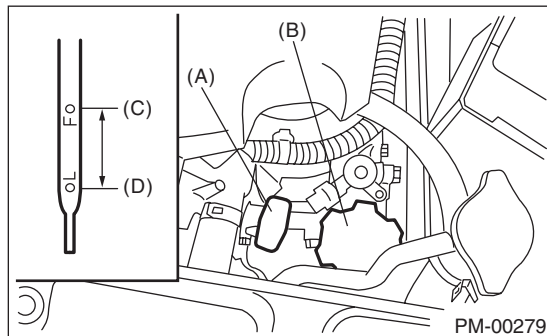
(B) MIN. level

12.ENGINE OIL

CAUTION:

If the engine oil is spilt over exhaust pipe or the under cover, wipe it off with cloth to avoid emitting smoke or causing a fire.

Check the engine oil amount. If the amount of oil is insufficient, check that no leaks are found. Then, add the necessary amount of the specified engine oil.



(A) Oil level gauge

(B) Engine oil filler cap

(C) "F" line

(D) "L" line

13.AT FRONT DIFFERENTIAL GEAR OIL

Check for leakage of AT front differential gear oil.

14.ENGINE COOLANT

CAUTION:

If the coolant is spilt over exhaust pipe, wipe it off with cloth to avoid emitting smoke or causing a fire.

Check that the engine coolant level on the reservoir tank is normal. If the amount of engine coolant is insufficient, check that no leaks are found. Then, add the necessary amount of coolant with the specified concentration.

15.WINDOW WASHER FLUID

Check that the window washer fluid level is normal. If the amount is insufficient, check that no leaks are found. Then, add the necessary amount of washer fluid.

16.FRONT HOOD LATCH CHECK

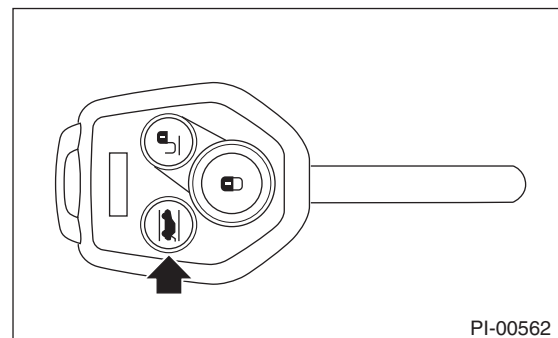
Close the front hood. Check that the front hood is securely latched.

17.KEYLESS ENTRY SYSTEM

NOTE:

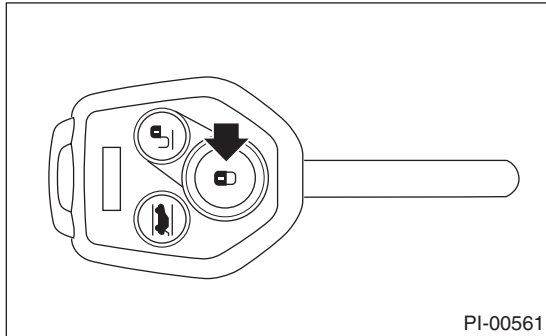
The following inspections show the initial settings. When the settings are different from the initial settings, use Subaru Select Monitor to check the details of each setting for inspections. <Ref. to LAN(diag)-28, OPERATION, Read Current Data.>

- 1) Fully open all the door windows.
- 2) Remove the key from the ignition switch and close all the doors including rear gate.
- 3) Press the rear gate open button for one second or more. Check if the rear gate is unlocked and the hazard light blinks twice and the buzzer sounds twice.



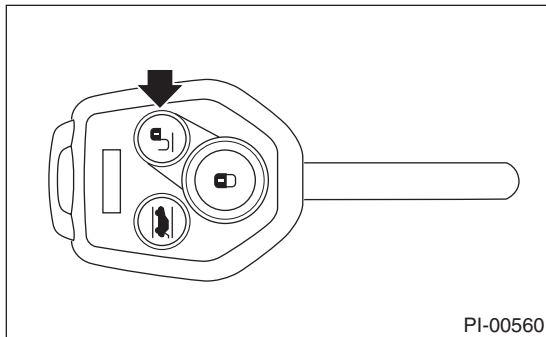
- 4) Press the "LOCK" button on the keyless transmitter with one of the doors (including the rear gate) opened. Check if all doors are locked, hazard light blinks five times and the buzzer sounds five times and warning shows one of the doors (including the rear gate) open.

5) Close all the doors including rear gate. Press the “LOCK” button momentarily on the keyless transmitter. Check that all the doors (including rear gate and trunk) are locked, hazard light blinks once and buzzer sounds once.



6) Press the “UNLOCK” button momentarily on the keyless transmitter. Check that the driver’s door is unlocked and hazard light blinks twice and the buzzer sounds twice.

And press the “UNLOCK” button momentarily again in 5 seconds. Check that all doors (including rear gate) are unlocked.



7) Within a distance of 10 m from a vehicle, press keyless transmitter’s “LOCK” button three times within five seconds. Check that the horn honks once and that the hazard light blinks three times.

8) Move the power door lock switch to the lock position with one of doors (including the rear gate) opened. Next, close all the doors including rear gate. Check if all doors are locked and buzzer sounds once and the hazard light flashes once.

9) Check buzzer operation.

The buzzer sounds when the doors are locked or unlocked. The buzzer can be turned off if desired. Turn the buzzer off or on with following procedure.

(1) Close all the doors including rear gate, then remove the key from ignition key lock.

(2) Press the power door lock switch to lock or unlock and hold it until the operation is finished.

(3) Insert the key into ignition key lock, and insert and remove the key in ignition key lock 5 times in 10 seconds.

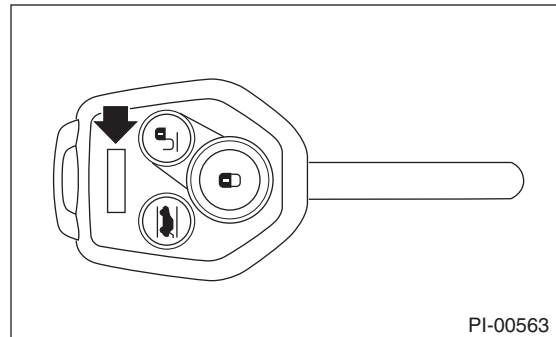
(4) When finished step (3), open and close the driver’s door once within 10 seconds.

NOTE:

When opening and closing of the door is not available within 10 seconds, hazard light blinks once and the change over operation is cancelled. Retry from the step (1).

(5) Hazard light blinks 3 times and the buzzer sound turns ON or OFF.

10) Press the “Panic” button of the keyless transmitter. Check if the alarm condition happens (horn sounds continuously, hazard light blinks, security indicator comes on). Check whether this condition lasts until any button on the keyless transmitter is pressed or lasts for 30 seconds.



18.ALARM SYSTEM

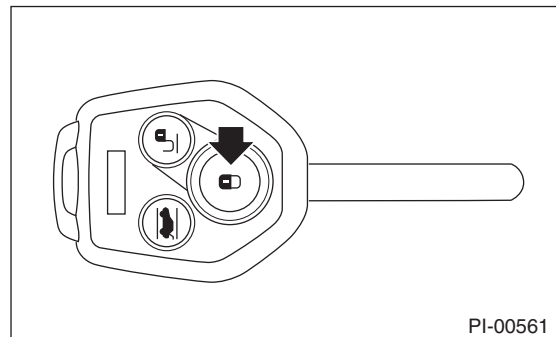
NOTE:

The following inspections show the initial settings. When the settings are different from the initial settings, use Subaru Select Monitor to check the details of each setting for inspections. <Ref. to LAN(diag)-29, OPERATION, Function Setting (Customize).>

1) Fully open all the door windows.

2) Remove the key from the ignition switch and close all the doors including rear gate.

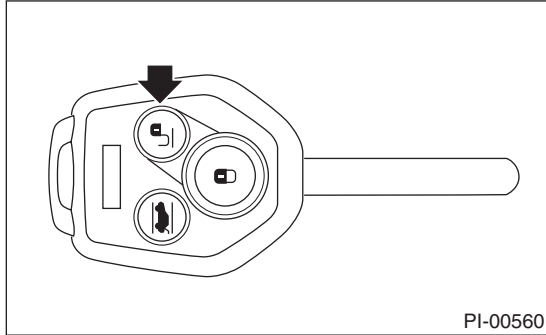
3) Press the “LOCK” button momentarily on the keyless transmitter. All doors are locked, and buzzer sounds once, hazard blinks once, security indicator light blinks faster (five times per two seconds) for 30 seconds and goes slower (twice per two seconds), then the alarm system is in set condition.



Pre-delivery Inspection

PRE-DELIVERY INSPECTION

4) Press the “UNLOCK” button momentarily on the keyless transmitter. When the door of the driver’s seat is unlocked, the buzzer sounds twice, the hazard light flashes twice, the room light turns on and the security indicator light flashes once in three seconds, and the alarm system enters the release mode.



5) Close all the doors including rear gate. Press the “LOCK” button momentarily on the keyless transmitter. When all the doors are locked, buzzer sounds once, hazard blinks once and the alarm system is in set condition in 30 seconds.

6) Unlock a door using the inner lock knob and open the door while the security system is in the set mode. Check if the alarm condition happens (horn sounds continuously, hazard light blinks, security indicator illuminates). Check if this condition lasts for a maximum of three minutes or until the “UNLOCK” button of the keyless transmitter is pressed.

NOTE:

The alarm condition will cease in 30 seconds once the door is closed.

7) When none of above is applicable, perform troubleshooting for the security system.

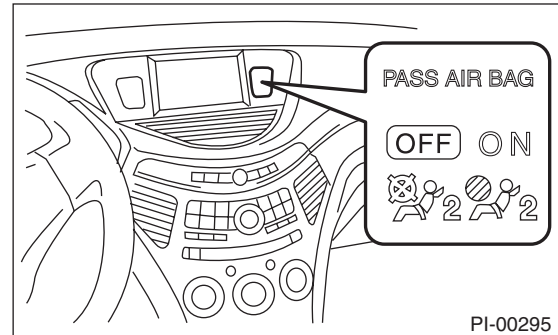
19. SEAT

1) Check the seat surfaces for stains or dirt.
2) Check that each seat provides full functionality in sliding and reclining. Check all available functions of the rear seat such as a trunk-through center armrest.

3) Check the passenger detection system.

(1) Turn the ignition switch to ON.

(2) Check that the ON and OFF passenger side airbag indicator light simultaneously for approximately six seconds, extinguish for two seconds and then only the OFF light lights.



(3) Have a person weighing approximately 70 kg (155 lb) or more sit in the passenger’s seat, and check whether the passenger’s airbag indicator light illuminate or not.

(4) Empty the passenger seat, then check whether the passenger side airbag indicator light turns off.

20. SEAT BELT

1) Check installation condition of seat belt.

2) Pull out the seat belt and then release it. Check that the belt retracts smoothly.

3) Check seat belt warning function.

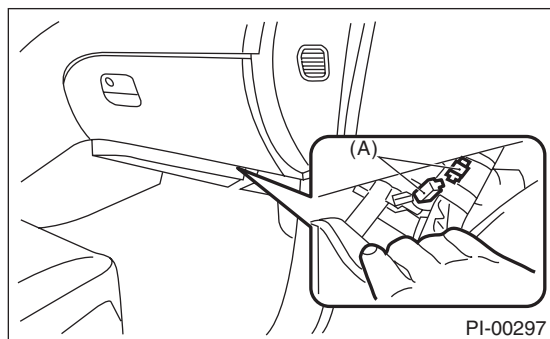
(1) Turn the ignition switch to ON without fastening driver’s and passenger’s seat belts.

(2) Check if the Seat belt warning lights of driver’s and passenger’s side blink for about six seconds and the buzzer beeps intermittently.

(3) Then, check that the seat belt warning light comes on, and flashes in about 15-second cycles. (If the passenger seat is empty, the seat belt warning light for passenger side does not operate.)

21.DELIVERY (TEST) MODE CONNECTOR

Turn the ignition switch to ON and check that the malfunction indicator light starts blinking. If the light blinks, return the ignition key to LOCK. Peel the mat at the back of the glove box lower cover and pull out the delivery (test) mode connector. Then disconnect the delivery (test) mode connector. Then, turn the ignition key to ON again. If the engine malfunction indicator light blinks at that time in spite of the disconnected delivery (test) mode connector, carry out an engine diagnosis.



(A) Delivery (test) mode connector (green)

22.IMMOBILIZER SYSTEM

- 1) Check that the engine starts with all keys that are equipped on vehicle.
- 2) 60 seconds after turning ignition switch from ON to ACC or OFF, or immediately after removing the key, check that the security indicator light is blinking.

NOTE:

If malfunctions occur, refer to "IMMOBILIZER (DIAGNOSIS)". <Ref. to IM(diag)-2, PROCEDURE, Basic Diagnostic Procedure.>

23.STARTING CONDITION

Start the engine and check that the engine starts smoothly. If the battery voltage is low, recharge or replace the battery. If there are any noises when starting, immediately stop the engine and check and repair the abnormal components.

24.EXHAUST SYSTEM

Listen to the exhaust noise to see if no noises are observed. Check for exhaust leaks.

25.INDICATOR AND WARNING LIGHTS

Check that all the indicator and warning lights are off. However, check that either OFF or ON illuminates for PASS AIRBAG OFF and ON indicator.

26.HEATER & VENTILATION

Operate the heater & ventilation system to check for normal airflow outlet control, air inlet control, airflow capacity and heating performance.

27.AIR CONDITIONER

Operate the front and rear cooler. Check that the A/C compressor operates normally and enough cooling is provided.

NOTE:

Idle the engine and operate the air conditioner for 5 minutes to prevent insufficient lubrication of air conditioner system.

28.CLOCK

Check the clock for normal operations and enough accuracy.

29.AUDIO

Check the radio for full functionality, and check the speakers for proper sound and normal noise levels. Check the CD player and AUX operations.

30.ACCESSORY POWER SUPPLY SOCKET

- 1) Check the operation of the rear accessory power supply socket.
- 2) Check operation of the accessory power supply socket in console box.

31.NAVIGATION SYSTEM

- 1) Check all display functions for normal operation.
- 2) Check the map disc (DVD) are provided on vehicle.
- 3) Check that the navigation system operates normally.
- 4) Check that the rear view camera operates normally.

32.REAR ENTERTAINMENT SYSTEM

Check that the rear entertainment system operates normally.

33.LIGHTING SYSTEM

- 1) Check the headlight operations.
- 2) Check the stop light operation.
- 3) Check other lights for normal operations.

34.WIPER DEICER

Check that the wiper deicer operates normally.

35.ILLUMINATION CONTROL

Check that the illumination control operates normally.

36.WINDOW WASHER

- Make sure the nozzle and hose are not clogged.
- Make sure the hose is not bent.
- While the vehicle is at a standstill, make sure that the washer injection position is as shown in the figure.

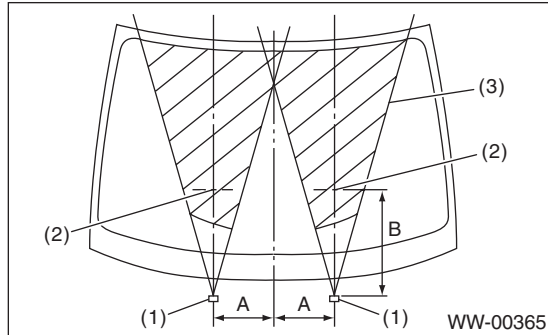
NOTE:

Washer injection position can not be adjusted.

Front injection position:

A: 250 mm (9.84 in)

B: 433 mm (17.0 in)



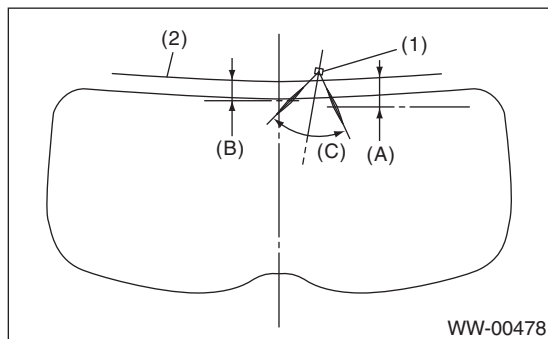
- (1) Nozzle
- (2) Spray center aiming position
- (3) Spray area (shaded area)

Rear injection position:

A: 106 mm (4.17 in)

B: 93 mm (3.66 in)

C: 72°



- (1) Nozzle
- (2) Upper edge of the rear gate glass
- (A) From the upper edge of the rear gate glass to the middle of the washer injection distance
- (B) From the upper edge of the rear gate glass to the middle of the washer injection distance
- (C) 72°

37.WIPER

Check the front and rear wipers for normal operations.

38.POWER WINDOW

Operate the power window switches one by one to check that each of the power windows goes up and down without noises.

39.SUNROOF

Check that the sunroof operates normally.

40.DOOR MIRROR

Check that the remote control mirror operates normally.

41.ROOM MIRROR (RCD MODEL)

- 1) Check all display functions for normal operation.
- 2) Check that the automatic anti-glare function operates normally.
- 3) Check that the compass function operates normally.
- 4) Check that the rearview camera operates normally.
- 5) Perform compass calibration. <Ref. to GW-33, CALIBRATION, ADJUSTMENT, Rearview Mirror (RCD Model).>
- 6) Perform compass zone setting. <Ref. to GW-33, ZONE SETTING, ADJUSTMENT, Rearview Mirror (RCD Model).>

42.REAR DEFOGGER

Press the rear defogger switch and check that the light inside the switch is activated for approx. 15 minutes and the rear defogger is automatically OFF.

43.BRAKE TEST

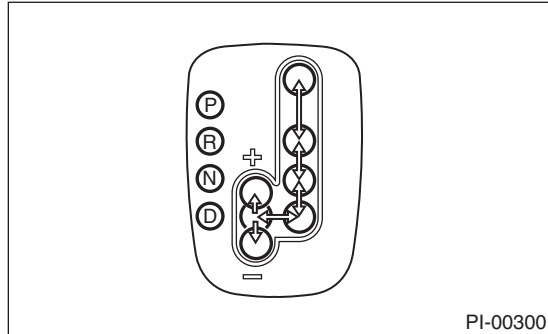
Check the foot brake for normal operations.

44.PARKING BRAKE

Check the parking brake for normal operations. When applying the parking brake pedal with force of 300 N (30.6 kgf, 67.5 lbf), check that the parking brake pedal is at 5 to 6 notches.

45.AT SHIFT CONTROL

- 1) Turn the ignition switch to ON.
- 2) While brake pedal is not depressed, check if the select lever does not move from "P" range.
- 3) While brake pedal is depressed, check if the select lever moves from "P" range.
- 4) Set the select lever to other than "P" range.
- 5) When the ignition switch is turned OFF, check if the key can be removed from the ignition switch.
- 6) Set the AT select lever to each gear position and check the shifting while driving the vehicle.



Selector position	Gear position				
	1st	2nd	3rd	4th	5th
D	OK	OK	OK	OK	OK
SPORT shift	OK	OK	OK	OK	OK

46.CRUISE CONTROL

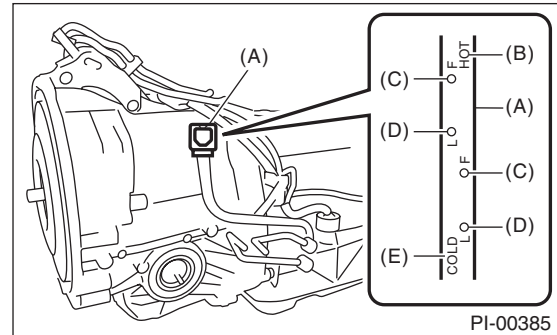
Operate the cruise control system. Check that the system is activated and deactivated correctly.

47.ATF LEVEL

CAUTION:

If the ATF is spilt over exhaust pipe, wipe it off with cloth to avoid emitting smoke or causing a fire.

After selecting all positions (P, R, N, D), set the select lever in "P" range. Idle the engine for 1 or 2 minutes, and measure the ATF level. If the amount is insufficient, check that no leaks are found. Then, add the necessary amount of the specified ATF.



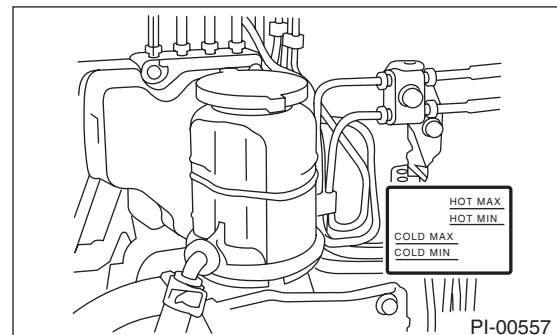
- (A) Level gauge
- (B) ATF level range at "HOT" [70 — 80°C (158 — 176°F)]
- (C) Upper level
- (D) Lower level
- (E) ATF level range at "COLD" [20 — 30°C (68 — 86°F)]

48.POWER STEERING FLUID LEVEL

CAUTION:

If any power steering fluid is spilt over the exhaust pipe, wipe it off with a cloth to avoid emitting smoke or causing a fire.

Check that the power steering fluid level is normal. If the amount is insufficient, check that no leaks are found. Then add the necessary amount of the specified power steering fluid.



49.FLUID LEAK CHECK

Check entire areas of the vehicle for any trace of coolant/oil/fluid leaks.

50. WATER LEAK TEST

Spray the vehicle with water using a hose and check that no water enters the passenger compartment.

- Before performing the water leakage test, remove anything that may obstruct the operation or which must be kept dry.
- Close all the windows and doors securely. Close the front hood before starting the test.
- Spray the vehicle with water using a hose. The rate of water spray must be approx. 20 to 25 ℓ (5.3 — 6.6 US gal, 4.4 — 5.5 Imp gal) per minute.

When spraying water on areas adjacent to the floor and wheel house, increase the pressure. When spraying water on areas other than the floor and wheel house, decrease the pressure. But the force of water must be made strong occasionally by pressing the end of the hose.

NOTE:

Be sure to keep the hose at least 10 cm (3.9 in) away from vehicle.

Check the following areas.

- Front window and body framework mating portion
- Door mating portions
- Glass mating portions
- Rear quarter window mating portions
- Rear window and body framework mating portion
- Around roof drips

If any dampness in the compartments is discovered after the water has been applied, carefully check all the areas that may have possibly contributed to the leak.

51. APPEARANCE CHECK 2

1) When vehicle body is covered with protective film, peel it off.

NOTE:

- Use of steam facilitates peeling off the wrap guard.
- For a vehicle left for a long time or at low temperature, sprinkle some water heated to 50 — 60°C (122 — 140°F) over the vehicle to raise its surface temperature before peeling off the wrap guard. Do not use the water heated to over 60°C (140°F).
- If the adhesive remains exists on the coated surface, soak a flannel rag, etc. with a small amount of coating wax or solvent such as oil benzene and IPA, put the soaked cloth on the remains lightly, and then wipe them off with a flannel rag etc.
- Keep solvent from touching the resin or rubber parts. Do not use coating wax or solvent while the component surface temperature is high due to hot weather etc.

- If the coated surface is swollen out due to seams or moisture, expose the vehicle to the sunlight for a few hours or heat the seam and swollen portions using a dryer etc.

- Dispose of the peeled wrap guard as burnable industrial garbage.

2) Check the whole vehicle body for flaking paint, damage by transportation, corrosion, dirt, cracks or blisters.

NOTE:

- It is better to determine an inspection pattern in order to avoid missing an area, since the total inspection area is wide.

- Do not repair the body paint unless absolutely necessary. Also, if the vehicle is in need of repair to remove scratches or corroded paint, the repair area must be limited to the minimum. Re-painting and spray painting must be avoided as possible.

3) Check each window glass for scratches carefully. Slight damage may be removed by polishing with cerium oxide. (Fill a cup half with cerium oxide, and add warm water to it. Then agitate the content until it turns to wax. Apply this wax to a soft cloth, and polish the glass with it.)

4) Check each portion of the vehicle body and underside components for the formation of rust. If rust is discovered, remove it with sandpaper of #80 to #180 and treat the surface with rust preventive. After this treatment is completed, flush the portion thoroughly, and prepare the surface for repair painting.

5) Check each portion of body and all of the plated parts for deformation or distortion. Also, check each light lens for cracks.

6) Peel the protective tape, vinyl wrapping and identification seal attached to the following places.

- Seats
- Door trim
- Floor carpet
- Side sill
- Front hood lock release lever
- Edge rear
- Rear wiper
- Door mirror
- Front and rear disc brakes

PERIODIC MAINTENANCE SERVICES

PM

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General Description

PERIODIC MAINTENANCE SERVICES

1. General Description

A: GENERAL DESCRIPTION

Be sure to perform periodic maintenance in order to maintain vehicle performance and find problems before they occur.

Schedule

PERIODIC MAINTENANCE SERVICES

2. Schedule

A: MAINTENANCE SCHEDULE 1

		Maintenance interval [Number of months or km (miles), whichever occurs first]																	Remarks
	Months	3	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105	112.5	120	
	× 1,000 km	4.8	12	24	36	48	60	72	81.4	96	108	120	132	144	156	168	180	192	
	× 1,000 miles	3	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	97.5	105	112.5	120	
1	Engine oil	(R)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
2	Engine oil filter	(R)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
3	Spark plug									R								R	
4	V-belt					I				I				I		R			
5	Fuel line					(I)				(I)				(I)				I	Note (1)
6	Air cleaner element					R				R				R				R	Note (2)
7	Cooling system					I				I				I				I	
8	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																	
9	ATF					I				I				I				I	
10	Front & rear differential gear oil					I				I				I				I	
11	Brake line			I		I		I		I		I		I		I		I	
12	Brake fluid					R				R				R				R	
13	Disc brake pad and disc			I		I		I		I		I		I		I		I	
14	Parking brake			I		I		I		I		I		I		I		I	
15	Suspension			I		I		I		I		I		I		I		I	
16	Wheel bearing									(I)								(I)	
17	Axle boots and joints			I		I		I		I		I		I		I		I	
18	Tire rotation		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Note (3)
19	Steering system (power steering)			I		I		I		I		I		I		I		I	
20	SRS airbag system	Inspect every 10 years																	
21	A/C filter	Replace every 15 months or 24,000 km (15,000 miles).																	Note (4)

Symbols used:

R: Replace

I: Inspection

(R): Recommended service for maintaining the better vehicle performance

(I): Inspections recommended for vehicle safety

NOTE:

(1) 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.

(2) When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.

(3) 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 1.8 mm (0.071 in) or less.

(4) When the A/C filter is mounted

Schedule

PERIODIC MAINTENANCE SERVICES

B: MAINTENANCE SCHEDULE 2

Item	Maintenance interval	Repeat short distance drive	Repeat rough/muddy road drive	Extremely cold weather area	Salt or other corrosive used or coastal area	High humidity or mountain area	Repeat towing trailer
Engine oil	3.75 months	R		R			R
	6,000 km						
	3,750 miles						
Engine oil filter	3.75 months	R		R			R
	6,000 km						
	3,750 miles						
Fuel line	7.5 months				I		
	12,000 km						
	7,500 miles						
ATF	15 months						R
	24,000 km						
	15,000 miles						
Front and rear differential gear oil	15 months						R
	24,000 km						
	15,000 miles						
Brake line	7.5 months				I		
	12,000 km						
	7,500 miles						
Brake fluid	15 months					R	
	24,000 km						
	15,000 miles						
Disc brake pad and disc	15 months	I	I		I		I
	24,000 km						
	15,000 miles						
Parking brake	15 months	I	I		I		I
	24,000 km						
	15,000 miles						
Suspension	7.5 months		I	I	I		
	12,000 km						
	7,500 miles						
Axle boots and joints	7.5 months	I	I	I	I		I
	12,000 km						
	7,500 miles						
Steering system (power steering)	7.5 months		I	I	I		
	12,000 km						
	7,500 miles						

3. Engine Oil

A: REPLACEMENT

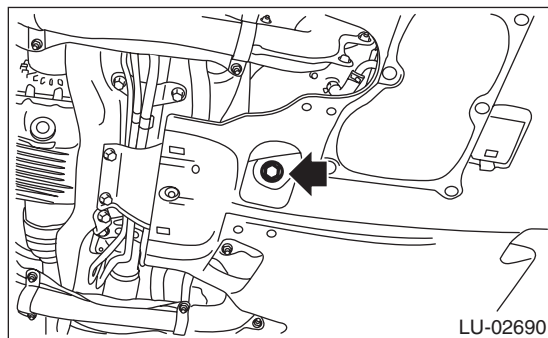
CAUTION:

Be careful not to spill the engine oil on exhaust pipe to prevent it from emitting smoke or fire. If engine oil adheres, wipe it off completely.

- 1) Open the engine oil filler cap for quick draining of engine oil.
- 2) Lift up the vehicle.
- 3) Drain engine oil by loosening the engine oil drain plug.

NOTE:

Prepare the container for draining of engine oil.



- 4) Tighten the engine oil drain plug after draining engine oil.

NOTE:

Use a new drain plug gasket.

Tightening torque:

44 N·m (4.5 kgf-m, 32.5 ft-lb)

- 5) Lower the vehicle.
- 6) Using engine oil of proper quality and viscosity, fill engine oil through the oil filler duct to the "F" line on level gauge. Make sure that the vehicle is parked on a level surface when checking oil level.

Recommended oil:

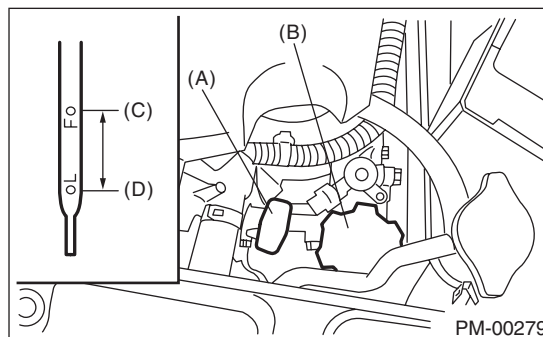
<Ref. to LU(H6DO)-2, SPECIFICATION, General Description.>

Engine oil capacity:

<Ref. to LU(H6DO)-2, SPECIFICATION, General Description.>

- 7) Close the engine oil filler cap.
- 8) Start the engine and warm it up for a time.

- 9) After the engine stops, recheck the oil level. If necessary, add engine oil up to the "F" line on level gauge.



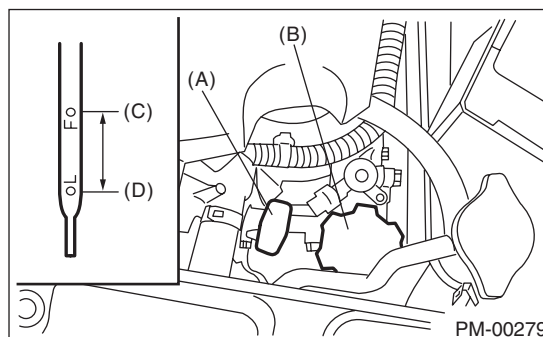
- (A) Oil level gauge
- (B) Engine oil filler cap
- (C) "F" line
- (D) "L" line

B: INSPECTION

- 1) Park the vehicle on a level surface.
- 2) Remove the oil level gauge and wipe it clean.
- 3) Reinsert the level gauge all the way. Be sure that the level gauge is correctly inserted and properly orientated.
- 4) Remove it again and check the reading. If the engine oil level is below "L" line, add oil to bring the level up to "F" line.
- 5) After turning off the engine, wait a few minutes for the oil to return to the oil pan before checking the level.

NOTE:

To prevent overfilling of engine oil, do not add oil above "F" line when the engine is cold.



- (A) Oil level gauge
- (B) Engine oil filler cap
- (C) "F" line
- (D) "L" line

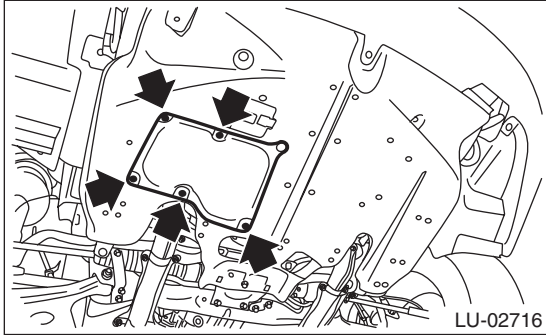
4. Engine Oil Filter

A: REPLACEMENT

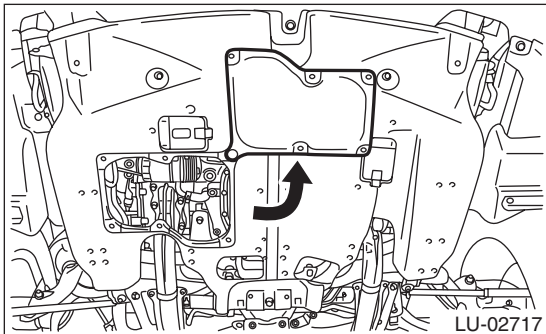
CAUTION:

Be careful not to spill the engine oil on exhaust pipe to prevent it from emitting smoke or fire. If engine oil adheres, wipe it off completely.

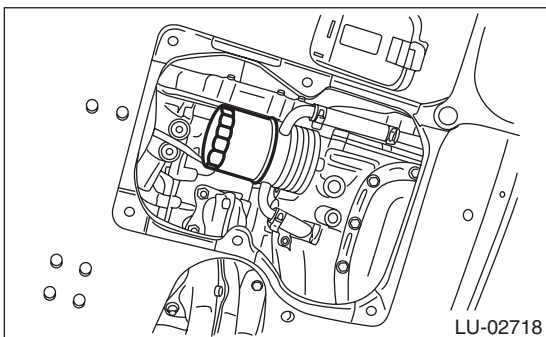
- 1) Lift up the vehicle.
- 2) Drain the engine oil. <Ref. to LU(H6DO)-10, REPLACEMENT, Engine Oil.>
- 3) Remove the service hole cover clip.



- 4) Rotate the service hole cover in the arrow direction.



- 5) Remove the oil filter using ST.
ST 18332AA020 OIL FILTER WRENCH



- 6) Clean the oil filter installation surface of the oil cooler.
- 7) Obtain a new oil filter and apply a thin coat of engine oil to the seal rubber.
- 8) Install the oil filter turning it by hand, being careful not to damage the seal rubber.

- 9) Tighten more (approx. 3/4 turn) after the seal rubber contacts the oil cooler. When using a torque wrench, tighten to 14 N·m (1.4 kgf-m, 10.3 ft-lb).

- 10) Install the service hole cover.

- 11) Lower the vehicle.

- 12) Refill the engine oil. <Ref. to LU(H6DO)-10, INSPECTION, Engine Oil.>

- 13) After installing the oil filter, run the engine and check for oil leakage around seal rubber.

NOTE:

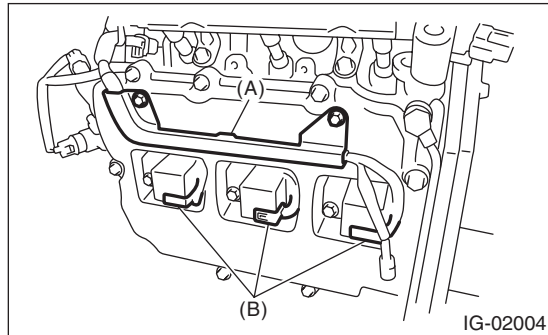
The filter element and filter case are permanently jointed; therefore, interior cleaning is not necessary.

- 14) Check the engine oil level. <Ref. to LU(H6DO)-10, INSPECTION, Engine Oil.>

5. Spark Plug

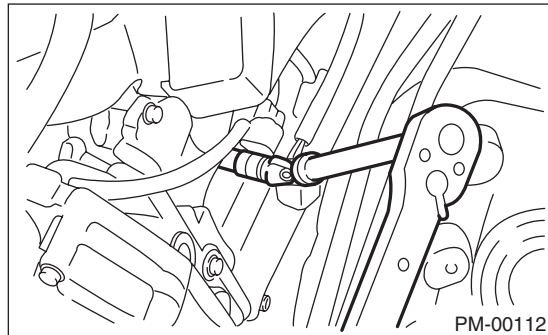
A: REPLACEMENT

- 1) Remove the battery and battery carrier.
- 2) Remove the air cleaner case.
- 3) Detach the connector from ignition coil.
- 4) Remove the ignition coil.



- (A) Bracket
(B) Connector

- 5) Remove the spark plug with a spark plug socket.



- 6) Tighten the new spark plug lightly with hand, and then secure with a spark plug socket to the specified torque.

NOTE:

- Be sure to place the gasket between the cylinder head and spark plug.
- If the torque wrench is not available, tighten the spark plug until gasket contacts cylinder head; then tighten further 1/4 to 1/2 turns.

Recommended spark plug:

NGK: SILFR6C11

Tightening torque:

21 N·m (2.1 kgf-m, 15.5 ft-lb)

- 7) Install the ignition coil.

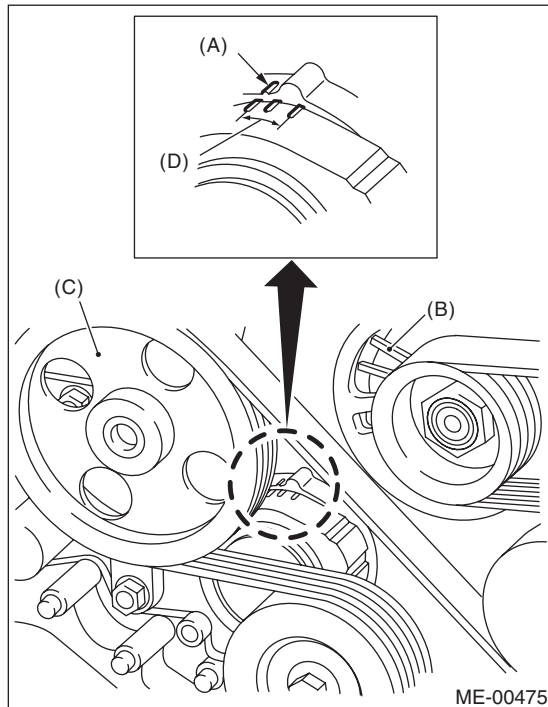
Tightening torque:

16 N·m (1.6 kgf-m, 11.8 ft-lb)

6. V-belt

A: INSPECTION

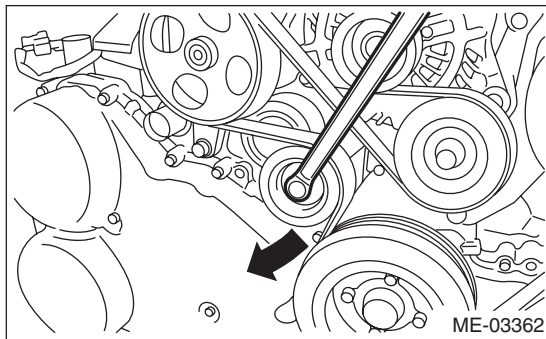
- 1) Replace the belts if cracks, fraying or wear are found.
- 2) Make sure that the V-belt automatic belt tension indicator (A) is within the range of its use limit (D).



- (A) Indicator
- (B) Generator
- (C) Power steering oil pump
- (D) Service limit

B: REPLACEMENT

- 1) Remove the collector cover.
- 2) Install the tool to belt tension adjuster assembly installation bolt.
- 3) Rotate the tool clockwise and loosen the V-belt to remove.



- 4) Install in the reverse order of removal.

7. Fuel Line

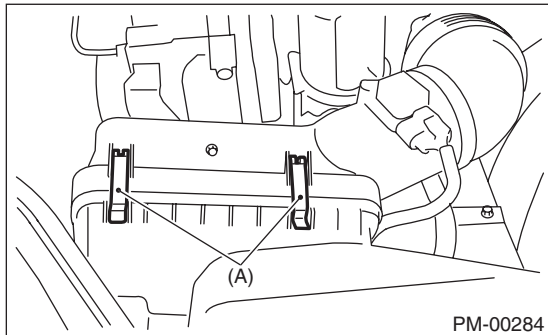
A: INSPECTION

The fuel line is located mostly internally, so check pipes, areas near pipes, and engine compartment piping for rust, hose damage, loose band, etc. If faulty parts are found, repair or replace them. <Ref. to FU(H6DO)-75, Fuel Delivery and Evaporation Lines.>

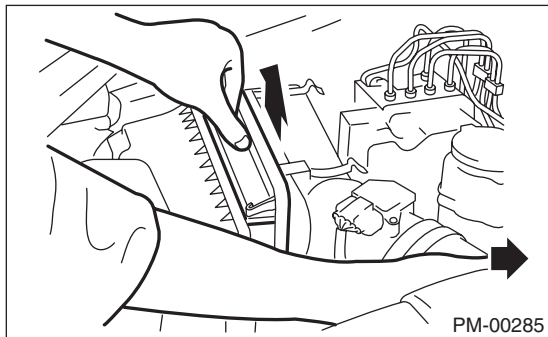
8. Air Cleaner Element

A: REPLACEMENT

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the connector from mass air flow sensor.
- 3) Remove the clips (A) on air cleaner case.



- 4) While pushing the duct toward the back end of the vehicle, remove the air cleaner element.



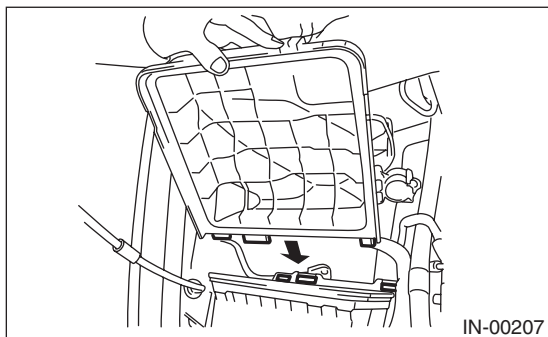
- 5) Check that there are no foreign objects in the clean side.
- 6) Install in the reverse order of removal.

CAUTION:

When replacing the air cleaner element, use SUBARU Genuine air cleaner element according to the engine type. Using other air cleaner element may affect engine performance.

NOTE:

Fasten with a clip after inserting the lower tab of case.



9. Cooling System

A: INSPECTION

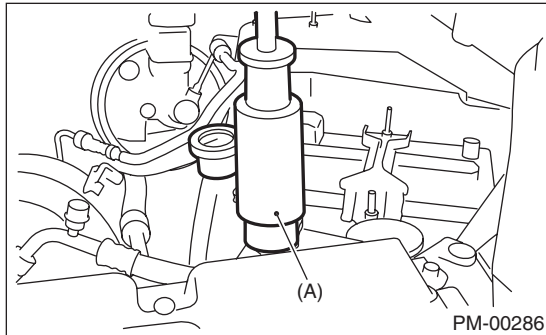
1) To check the radiator for leakage, fill it with engine coolant, and attach the radiator cap tester (A) to the filler neck, and apply pressure. Check the following points:

157 kPa (1.6 kg/cm², 23 psi)

- Hose joints and other connections for leakage
- Each portion of radiator for leakage

NOTE:

- Be particularly careful not to deform the filler neck of radiator when installing and removing the tester and after testing.



- When performing this check, be sure to keep the engine stationary and fill radiator with coolant.
- Wipe off check points before applying pressure.
- Be careful not to spill coolant when detaching tester from radiator.

2) Check the radiator cap valve open pressure using radiator cap tester.

NOTE:

Rust or dirt on the cap may prevent valve from functioning normally. be sure to clean the cap before testing.

Raise the pressure until the needle of gauge stops and see if the pressure can be retained for five to six seconds. The radiator cap is normal if a pressure above the limit value has been maintained for this period. Replace the radiator cap if its valve opens at less than the service limit.

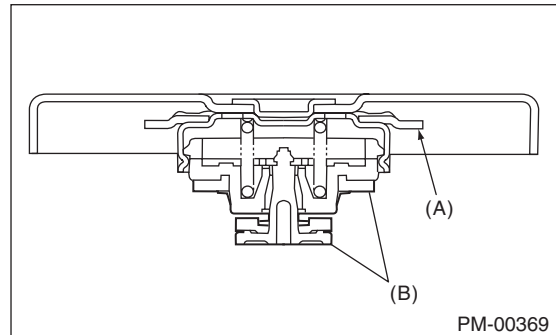
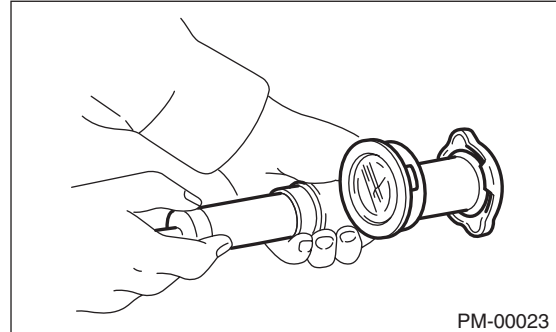
Radiator cap valve open pressure

Standard:

73.6 — 103 kPa (0.8 — 1.1 kg/cm², 11 — 15 psi)

Service limit:

63.6 kPa (0.6 kg/cm², 9.2 psi)



- (A) Check points for deformation
(B) Check points for deformation, damage, rust

3) Start the engine, and then inspect that it does not overheat or it is not cooled excessively. If it overheats or it is cooled excessively, check the cooling system. <Ref. to CO(H6DO)-16, Water Pump.> <Ref. to CO(H6DO)-17, Thermostat.> <Ref. to CO(H6DO)-19, Radiator.> <Ref. to CO(H6DO)-24, Radiator Cap.>

4) Check the radiator fan operates using Subaru Select Monitor, when the coolant temperature exceeds 95°C (203°F). If it does not operate, check the radiator fan system. <Ref. to CO(H6DO)-11, INSPECTION, Radiator Fan System.>

10.Engine Coolant

A: REPLACEMENT

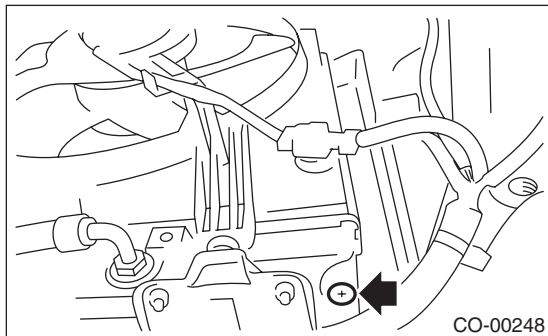
WARNING:

The radiator is of the pressurized type. Do not attempt to open the radiator cap immediately after the engine has been stopped.

CAUTION:

Be careful not to spill the engine coolant on exhaust pipe to prevent it from emitting smoke or fire. If the engine coolant adheres, wipe it off completely.

- 1) Lift up the vehicle.
- 2) Remove the under cover.
- 3) Place a container under radiator drain pipe.
- 4) Remove the radiator drain cock to drain engine coolant into container.



- 5) For quick draining, open the radiator cap.

NOTE:

Be careful not to spill coolant on the floor.

- 6) Drain the coolant from reservoir tank.
- 7) Tighten the radiator drain cock securely after draining coolant.
- 8) Pour cooling system conditioner through the filler neck.

Cooling system protective agent:

Cooling system conditioner (Part No. SOA345001)

- 9) Fill engine coolant into the reservoir tank up to "FULL" level.

Recommended engine coolant:

Refer to "RM" section. <Ref. to RM-4, COOLANT, RECOMMENDED MATERIALS, Recommended Materials.>

Coolant capacity (fill up to "FULL" level):

Refer to the "SPC" section. <Ref. to SPC-3, CAPACITY, TRIBECA.>

NOTE:

The SUBARU Super Coolant contains anti-freeze and anti-rust agents, and is especially made for Subaru engines with an aluminum cylinder block. Always use SUBARU Super Coolant, since other coolant may cause corrosion.

- 10) Close the radiator cap, and start the engine. Race 5 to 6 times at 3,000 rpm or less, then stop the engine. (Complete this operation within 40 seconds.)

- 11) Wait for one minute after the engine stops, then open the radiator cap. If the engine coolant level drops, add engine coolant into radiator up to the filler neck position.

- 12) Perform the procedures 10) and 11) again.

- 13) Install the radiator cap and reservoir tank cap properly.

- 14) Start the engine and operate the heater at maximum hot position and the blower speed setting to "LO".

- 15) Run the engine at 2,000 rpm or less until radiator fan starts and stops.

NOTE:

- Be careful with the engine coolant temperature gauge to prevent overheating.
- If the radiator hose becomes harden with the pressure of engine coolant, air bleeding operation seems to be almost completed.

- 16) Stop the engine and wait until the engine coolant temperature lowers to 30°C (86°F) or less.

- 17) Open the radiator cap. If the engine coolant level drops, add engine coolant into the coolant filler tank up to the filler neck position and the reservoir tank to "FULL" level.

- 18) Install the radiator cap and reservoir tank cap properly.

- 19) Set the heater setting to maximum hot position and the blower speed setting to "LO" and start the engine. Perform racing at 3,000 rpm or less. If the flowing sound is heard from the heater core, repeat the procedures from step 10).

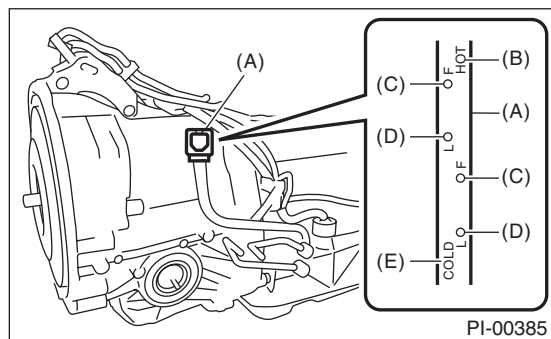
11. Automatic Transmission Fluid

A: INSPECTION

CAUTION:

The level of ATF varies with fluid temperature. Pay attention to the ATF temperature when checking ATF level.

- 1) Raise the ATF temperature by driving a distance of 5 to 10 km (3 to 6 miles). Otherwise, idle the engine to raise ATF temperature to 70 — 80°C (158 — 176°F) on Subaru Select Monitor. <Ref. to 5AT(diag)-16, READ CURRENT DATA, OPERATION, Subaru Select Monitor.>
- 2) Make sure the vehicle is level.
- 3) After selecting all positions (P, R, N, D), shift the select lever in “P” range. Idle the engine for 1 to 2 minutes.
- 4) Remove the oil level gauge and wipe it clean.
- 5) Reinsert the level gauge all the way. Make sure the level gauge is inserted correctly and in the proper orientation.
- 6) Remove the oil level gauge again and make sure that the ATF level is between upper and lower marks of the “HOT” side.



- (A) Level gauge
- (B) ATF level range at “HOT” [70 — 80°C (158 — 176°F)]
- (C) Upper level
- (D) Lower level
- (E) ATF level range at “COLD” [20 — 30°C (68 — 86°F)]

- 7) If the ATF level is below the lower mark, add recommended ATF until the fluid level is between upper and lower marks.

CAUTION:

- Be careful not to exceed the upper level limit.
- If ATF is added to the upper limit mark on “HOT” side when the ATF temperature is less than 70°C (158°F), ATF will overfill and cause the oil to spill out.

- 8) Check the ATF for leaks.

Check for leaks in the transmission. If there are leaks, it is necessary to repair or replace gaskets, oil seals, plugs or other parts.

B: REPLACEMENT

- 1) Lift up the vehicle.
- 2) Remove the ATF drain plug to drain ATF.

CAUTION:

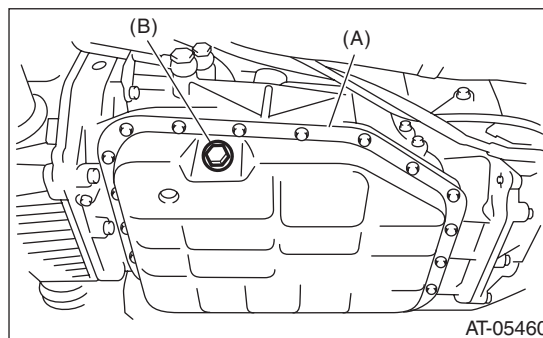
- Directly after the vehicle has been running or the engine has been long idle running, the ATF is hot. Be careful not to burn yourself.
 - Be careful not to spill the ATF on the exhaust pipe to prevent it from emitting smoke or causing fire. If the ATF is spilt, wipe it off completely.
- 3) Check the ATF condition. <Ref. to 5AT-30, CONDITION CHECK, Automatic Transmission Fluid.>
 - 4) Tighten the ATF drain plug to the specified torque.

NOTE:

Use a new gasket.

Tightening torque:

20 N·m (2.0 kgf·m, 14.8 ft·lb)



- (A) Oil pan
- (B) ATF drain plug

- 5) Lower the vehicle.
- 6) Pour ATF through the oil charge pipe.

Recommended ATF:

Refer to “RM” section. <Ref. to RM-4, FLUID, RECOMMENDED MATERIALS, Recommended Materials.>

Capacity:

Fill with the same amount of ATF as drained.

CAUTION:

Be sure to use the recommended or equivalent ATF. Using material except recommended one or substitute would cause trouble.

- 7) Check the level and leaks of the ATF. <Ref. to PM-13, INSPECTION, Automatic Transmission Fluid.>

12. Front & Rear Differential Gear Oil

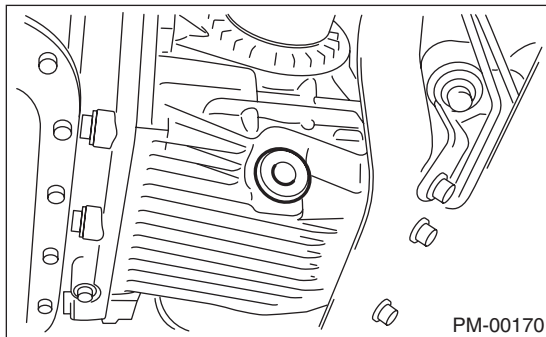
A: REPLACEMENT

1. FRONT DIFFERENTIAL

- 1) Lift up the vehicle.
- 2) Drain the differential gear oil by removing drain plug using TORX® bit T70.

CAUTION:

- Immediately after the vehicle has been running or after idling for a long time, the differential gear oil will be hot. Be careful not to burn yourself.
- Be careful not to spill the differential gear oil on exhaust pipe to prevent it from emitting smoke or fire. If differential gear oil adheres to the exhaust pipe, wipe it off completely using cloth.



- 3) Using the TORX® bit T70, tighten the drain plug to the specified torque.

NOTE:

Use a new gasket.

Tightening torque:

70 N·m (7.1 kgf-m, 51.6 ft-lb)

- 4) Lower the vehicle.
- 5) Fill differential gear oil through the oil level gauge hole up to the upper point of level gauge.

NOTE:

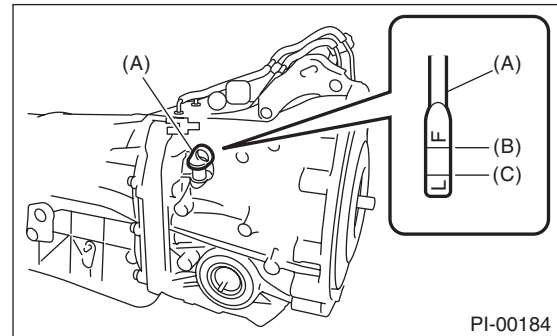
Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

Recommended gear oil:

Refer to "RM" section. <Ref. to RM-2, LUBRICANTS, RECOMMENDED MATERIALS, Recommended Materials.>

Gear oil capacity:

Refer to the "SPC" section. <Ref. to SPC-3, CAPACITY, TRIBECA.>



- (A) Oil level gauge
- (B) Upper level
- (C) Lower level

2. REAR DIFFERENTIAL

- 1) Lift up the vehicle.
- 2) Drain the oil by removing oil drain plug.

CAUTION:

- The differential gear oil will be extremely hot after driving. Be careful not to receive burns.
- Be careful not to spill the differential gear oil on exhaust pipe to prevent it from emitting smoke or fire. If differential gear oil adheres to the exhaust pipe, wipe it off completely using cloth.

- 3) Remove the filler plug for quick draining oil.
- 4) Install the drain plug after draining oil.

NOTE:

Use a new gasket.

Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

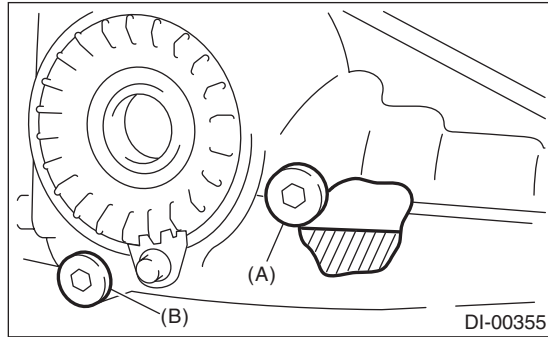
5) Pour oil to the bottom end of filler plug hole.

Recommended gear oil:

Refer to “RM” section. <Ref. to RM-2, LUBRICANTS, RECOMMENDED MATERIALS, Recommended Materials.>

Oil capacity:

Refer to the “SPC” section. <Ref. to SPC-3, CAPACITY, TRIBECA.>



- (A) Filler plug
- (B) Drain plug

NOTE:

Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

6) Install the filler plug.

NOTE:

Use a new gasket.

Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

13.Brake Line

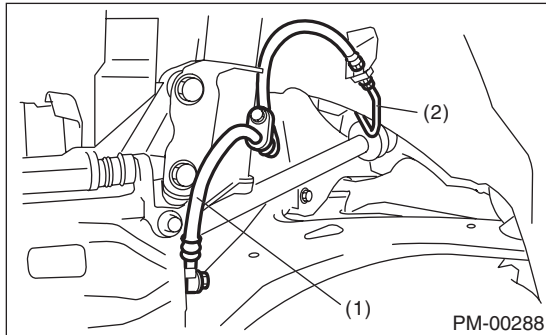
A: INSPECTION

1. BRAKE LINE

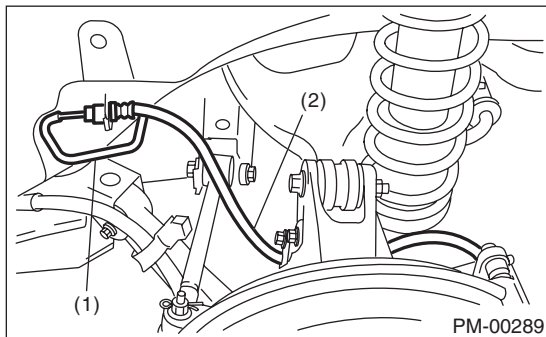
- 1) Check for scratches, swelling, corrosion, traces of fluid leakage on the brake hoses or pipe joints.
- 2) Check the possibility of adjacent parts interfering with brake pipes/hoses during driving, and loose connections/clamps.
- 3) Check any trace of fluid leakage, scratches, etc. on master cylinder, wheel cylinder and pressure control valve.

NOTE:

- When the brake fluid level in the reservoir tank is lower than specified limit, the brake warning light on the combination meter will come on.
- Visually check the brake hose for damage. (Use a mirror where it is difficult to see)



- (1) Front brake hose
- (2) Front brake pipe



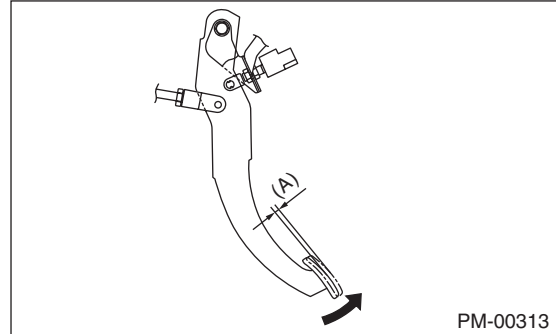
- (1) Rear brake pipe
- (2) Rear brake hose

2. SERVICE BRAKE

- 1) Check the brake pedal free play by pulling up the pedal with a force of less than 10 N (1 kgf, 2 lb).

Brake pedal free play (Pulling up direction of pedal)

0.5 — 2.0 mm (0.02 — 0.08 in)



(A) Pedal free play

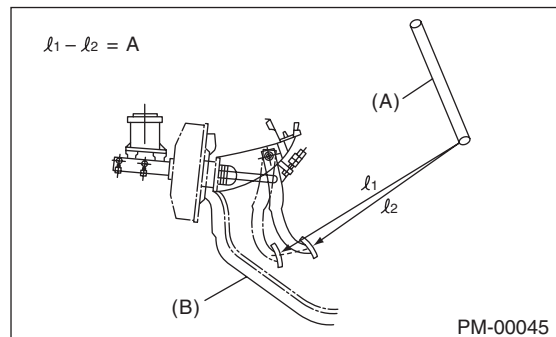
- 2) If the free play is out of specifications above, adjust the brake pedal as follows. <Ref. to BR-37, INSPECTION, Brake Pedal.>

- 3) Check the pedal stroke.

While the engine is idling, depress the brake pedal with a 500 N (51 kgf, 112 lb) load and measure the distance between the brake pedal and steering wheel. With the brake pedal released, measure the distance between pedal and steering wheel again. The difference between the two measured values must be the specified value or less. If the measured value is specification or more, there is possibility of entering air in hydraulic unit.

Brake pedal stroke A:

115 mm (4.5 in)/500 N (51 kgf, 112 lb) or less



- (A) Steering wheel
- (B) Toe board

- 4) Check to see if air is in the hydraulic brake line by the feel of pedal operation. If air appears to exist in the line, bleed it from the system.
- 5) Check for even operation of all brakes, using a brake tester or by driving the vehicle for a short distance on a straight road.

3. BRAKE SERVO SYSTEM

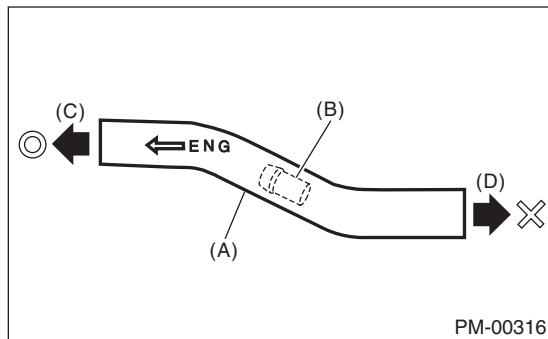
1) With the engine off, depress the brake pedal several times applying the same pedal force. Make sure the travel distance should not change.

2) With the brake pedal depressed, start the engine. Make sure the pedal should move slightly toward the floor.

3) With the brake pedal depressed, stop the engine and keep the pedal depressed for 30 seconds. Make sure the pedal height should not change.

4) A check valve is incorporated into the vacuum hose part. Disconnect the vacuum hose to inspect function of check valve.

Make sure air flows from the booster end to engine end but does not flow in the opposite direction in the check valve.



- (A) Vacuum hose
- (B) Check valve
- (C) Engine side
- (D) Brake booster side

5) Check the vacuum hose for cracks or other damage.

NOTE:

When installing the vacuum hose on the engine and brake booster, do not use soapy water or lubricating oil on their connections.

6) Check the vacuum hose to make sure it is tightly secured.

14.Brake Fluid

A: INSPECTION

1) Check that the amount of brake fluid is between the lines of "MIN" and "MAX". If out of the specified range, refill or drain the fluid. If the fluid level is close to "MIN", check the brake pad for wear and refill the fluid.

2) Check the fluid for discoloration. If the fluid is extremely discolored, replace with the new fluid.

B: REPLACEMENT

CAUTION:

- Do not let brake fluid come into contact with the painted surface of the vehicle body and exhaust pipe. Wash away with water immediately and wipe off if it is spilled by accident.
- Avoid mixing brake fluid of different brands to prevent fluid performance from degrading.
- Be careful not to allow dirt or dust to enter the reservoir tank.

1) Either jack-up the vehicle and place a rigid rack under it, or lift up the vehicle.

2) Remove all the wheels.

3) Drain the brake fluid from master cylinder.

4) Refill the reservoir tank with recommended brake fluid.

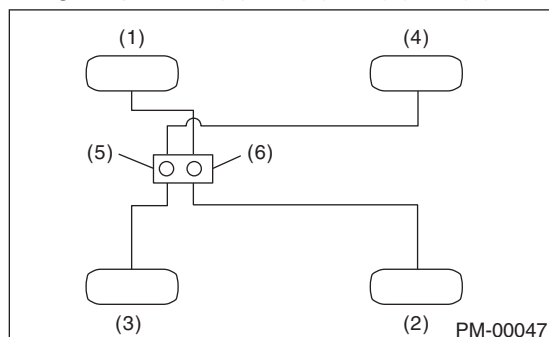
Recommended brake fluid:

Refer to "RM" section. <Ref. to RM-4, FLUID, RECOMMENDED MATERIALS, Recommended Materials.>

NOTE:

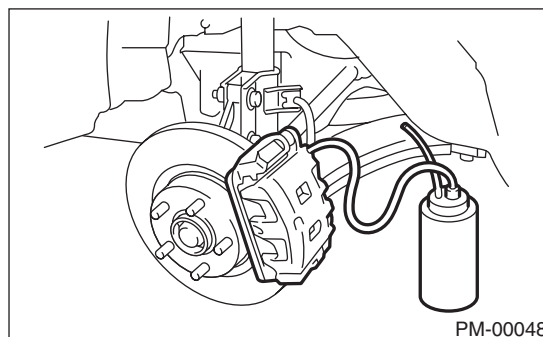
- Avoid mixing different brands of brake fluid to prevent degrading the quality of fluid.
- Be careful not to allow dirt or dust to get into the reservoir tank.

Bleeding sequence (1) → (2) → (3) → (4)



- (1) Front RH
- (2) Rear LH
- (3) Front LH
- (4) Rear RH
- (5) Secondary
- (6) Primary

5) Install one end of a vinyl tube onto the air bleeder and insert the other end of the tube into a container to collect the brake fluid.



NOTE:

- Cover the bleeder with cloth, when loosening it, to prevent brake fluid from being splashed over surrounding parts.
- While bleeding air, keep the reservoir tank filled with brake fluid to prevent entry of air.
- Operate the brake pedal slowly.
- For convenience and safety, perform the work with 2 people.

• The amount of brake fluid required is approx. 600 mℓ (20.3 US fl oz, 21.1 Imp fl oz) for total brake system.

6) Instruct your co-worker to depress the brake pedal slowly two or three times and then hold it depressed.

7) Loosen the bleeder screw approximately 1/4 turn until a small amount of brake fluid drains into the container, and then quickly tighten the screw.

8) Repeat steps 6) and 7) until there are no air bubbles in drained brake fluid and new fluid flows through vinyl tube.

NOTE:

Add brake fluid as necessary while bleeding air, so that the brake fluid in the tank is always between MAX and MIN.

9) After completing the bleeding operation, hold the brake pedal depressed and tighten the screw and install bleeder cap.

Tightening torque:

8 N·m (0.8 kgf-m, 5.9 ft-lb)

10) Bleed air from each wheel cylinder by following steps from 5) to 9).

11) Depress the brake pedal with a force of approx. 294 N (30 kgf, 66 lb) and hold it there for approx. 20 seconds. At this time check the pedal to see if it makes any unusual movement. Visually inspect the bleeder screws and brake pipe joints to confirm there is no fluid leakage.

12) Install the wheels, and drive the vehicle for a distance of 2 to 3 km (1 to 2 miles) to confirm that brakes are operating properly.

15.Disc Brake Pad and Disc

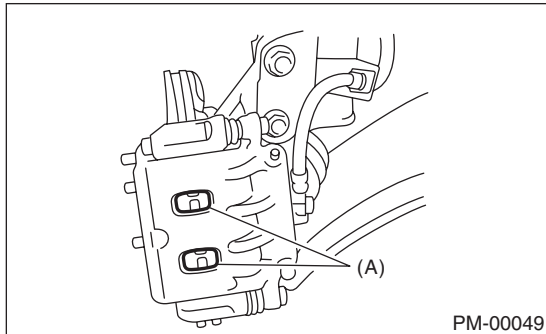
A: INSPECTION

1) Jack-up the vehicle and support with rigid racks. Then remove the wheels.

2) Visually check the pad thickness through inspection hole of disc brake assembly. Replace the pad if necessary.

NOTE:

When replacing a pad, always replace the pads for both the left and right wheels at the same time. Also replace the pad clips if they are twisted or worn.



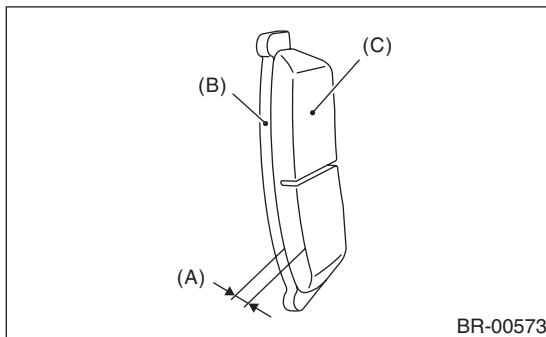
(A) Inspection hole

• Front

Pad thickness		mm (in)
Standard value		11 (0.43)
Wear limit		1.5 (0.059)

• Rear

Pad thickness		mm (in)
Standard value		11 (0.43)
Wear limit		1.5 (0.059)



- (A) Pad thickness
- (B) Back metal
- (C) Lining

3) Check the disc rotor, and correct or replace if it is damaged or worn.

• Front

Disc rotor thickness		mm (in)
Standard value		30 (1.18)
Wear limit		28 (1.10)

• Rear

Disc rotor thickness		mm (in)
Standard value		18 (0.71)
Wear limit		16 (0.63)

4) Remove the caliper body. <Ref. to BR-14, Front Disc Brake Assembly.> <Ref. to BR-22, Rear Disc Brake Assembly.>

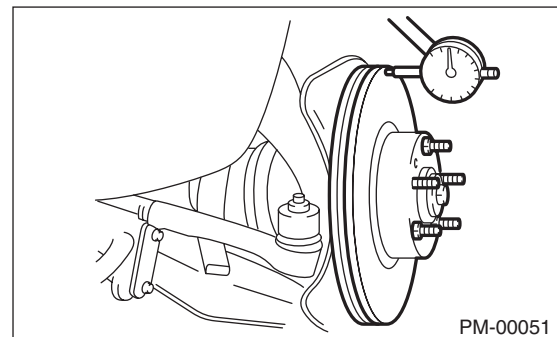
5) Tighten the wheel nuts to secure disc rotor.

6) Set a dial gauge at a point of 10 mm (0.39 in) or less from outer periphery of the rotor, and then measure the disc rotor runout.

Disc rotor runout limit:

Front: 0.05 mm (0.002 in)

Rear: 0.05 mm (0.002 in)



16. Parking Brake

A: INSPECTION

Inspect the brake linings and disc rotor of both sides of the rear brake at the same time by removing disc rotor.

1) Inspect the brake shoes for damage or deformation and check the brake linings for wear.

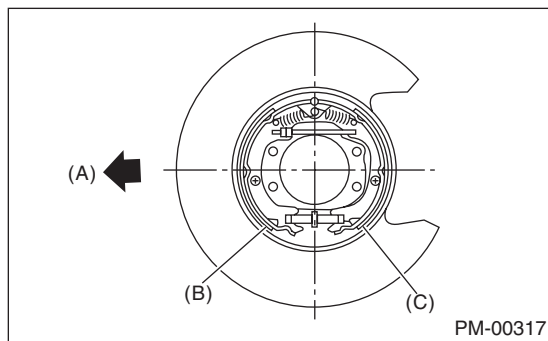
NOTE:

Always replace the primary and secondary brake shoe of right and left wheels at the same time.

Thickness of brake lining (except for back metal):

Standard: 4.0 mm (0.157 in)

Wear limit: 1.5 mm (0.059 in)



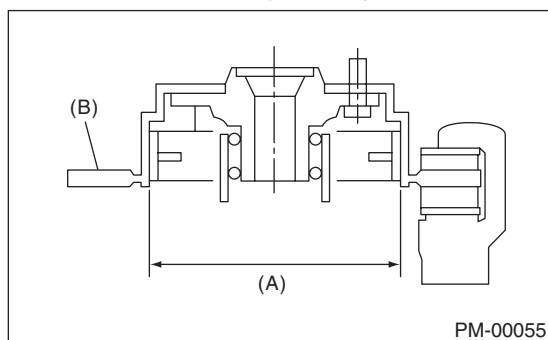
- (A) Forward
- (B) Brake shoe (Primary side)
- (C) Brake shoe (Secondary side)

2) Check the inside of disc rotor for wear, dents or other damage. If the inside surface of disc rotor is streaked, correct the surface with emery cloth (#200 or more). If it is unevenly worn or tapered, correct or replace it.

Brake drum inside diameter:

Standard: 210 mm (8.27 in)

Wear limit: 211 mm (8.31 in)



- (A) Inside diameter
- (B) Disc

3) If the deformation or wear of back plate, shoe, etc. is noticeable, replace them.

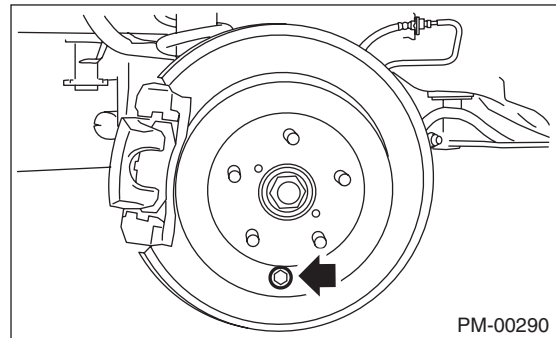
4) When the shoe return spring tension is excessively weakened, replace it.

5) Check whether the parking brake pedal is at the predetermined number of notches (5 to 6 notches).

B: ADJUSTMENT

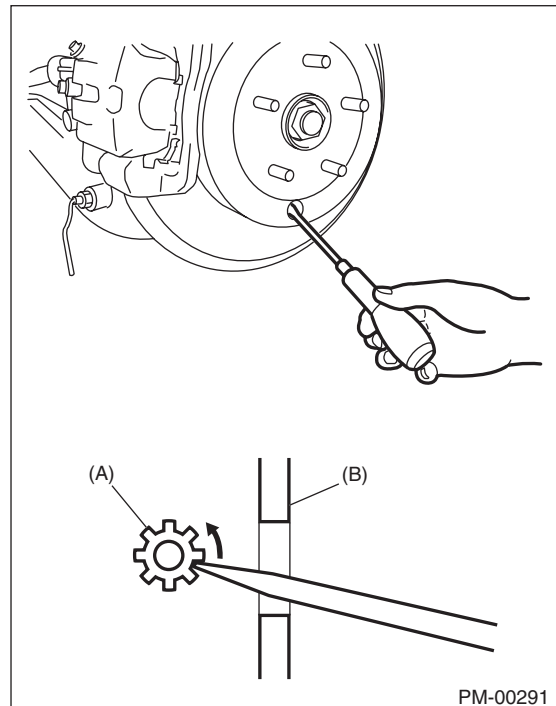
1) Remove the rear tire and release the parking brake.

2) Remove the cover (rubber) installed on the disc rotor.



3) Turn the disc rotor so that the service hole is directly below.

4) Turn the adjuster toward arrow mark (upward) until it is locked slightly, by using flat tip screwdriver as shown in the figure.



- (A) Adjuster
- (B) Disc rotor

5) Turn back (downward) the adjuster three to four notches until the brake pedal no longer has any drag.

6) Install the cover (rubber) in original position correctly.

7) Install the rear tires.

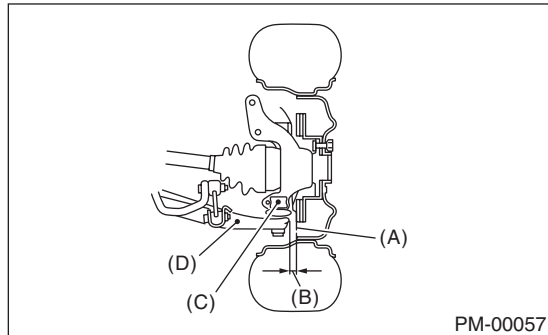
8) Adjust so that the parking brake pedal is at the predetermined number of notches (5 to 6 notches).
<Ref. to PB-9, PEDAL STROKE, ADJUSTMENT, Parking Brake Assembly (Rear Disc Brake).>

17. Suspension

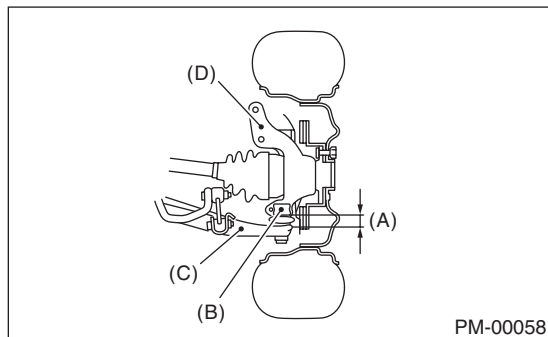
A: INSPECTION

1. SUSPENSION BALL JOINT

- 1) Jack up the vehicle until front tires are off ground.
- 2) Grasp the bottom of tire and move it in and out in axial direction. If relative movement (B) is observed between the brake disc cover (A) and end of front arm (D), ball joint (C) may be excessively worn.



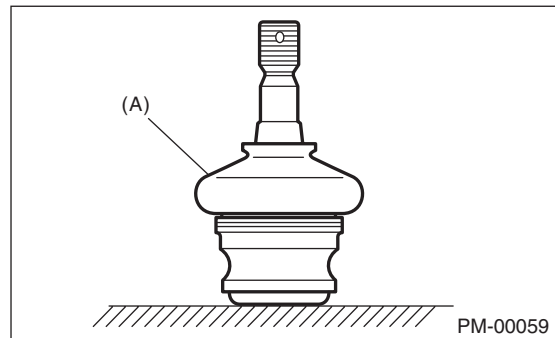
- 3) Grasp the end of front arm and move it up and down. Relative movement (A) between the housing (D) and front arm (C) boss indicates ball joint (B) may be excessively worn.



- 4) If relative movement is observed in the step 2), 3), remove and inspect the ball joint. If the free play exceeds standard value, replace the ball joint. <Ref. to FS-16, Front Ball Joint.>
- 5) Damage of dust cover
Visually inspect the ball joint dust cover. If it is damaged, remove the front arm. <Ref. to FS-17, Front Arm.> Measure the play of the ball joint. <Ref. to FS-16, Front Ball Joint.>
 - (1) If the free play exceeds standard value, replace the ball joint.
 - (2) If the dust cover is damaged, replace with a new ball joint.

NOTE:

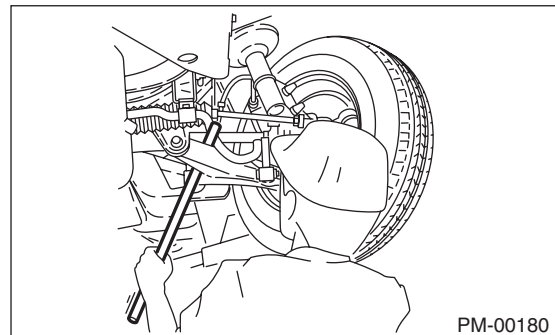
When the front arm ball joint has been removed or replaced, check the toe of front wheel. If the front wheel toe-in is not at specified value, adjust the toe-in. <Ref. to FS-6, Wheel Alignment.>



(A) Dust cover

2. FRONT, REAR SUSPENSION BUSHING

Apply pressure with tire lever etc, and inspect the bushing for excessive wear or damage. Replace the bushings and the arm assembly or link assembly if there is abnormal fatigue or damage.



3. WHEEL ARCH HEIGHT

- 1) Unload the vehicle, so that it is at curb weight.
- 2) Check the wheel arch height of the front and rear suspensions to ensure that they are within tolerance. <Ref. to FS-6, Wheel Alignment.>
- 3) When the wheel arch height is out of standard, visually inspect following components and replace deformed parts.
 - Suspension components [Front strut assembly and rear shock absorber assembly]
 - Parts connecting suspension and body
- 4) If none of the components is deformed, replace the suspension with wheel arch height out of specification and adjust the wheel arch height. <Ref. to FS-6, Wheel Alignment.> <Ref. to RS-7, Wheel Alignment.>

4. WHEEL ALIGNMENT OF FRONT SUSPENSION

1) Check the alignment of front suspension to ensure that following items conform to standard values.

- Toe-in
- Camber
- Caster
- Steering angle

<Ref. to FS-6, Wheel Alignment.>

2) When the caster angle does not conform to reference obviously, visually inspect the following components and replace deformed parts.

- Suspension components [Strut assembly, cross-member, front arm, etc.]
- Parts connecting suspension and body

3) When the toe-in and camber are outside of the tolerance value, adjust each one so that they conform to the specified value. <Ref. to FS-6, Wheel Alignment.>

4) When the rotating angles of the right and left tires are not within tolerance, adjust them to standard. <Ref. to FS-6, Wheel Alignment.>

5. WHEEL ALIGNMENT OF REAR SUSPENSION

1) Inspect the alignment of the rear suspension and check the following items are within the specified range.

- Toe-in
- Camber
- Thrust angle

<Ref. to RS-7, Wheel Alignment.>

2) When the camber is not within tolerance, visually inspect the following components. If the deformation is found, replace the damaged part.

- Suspension components [Shock absorber, rear upper arm, front lateral link, rear lateral link, rear trailing link, sub frame]
- Parts connecting suspension and body

3) If the toe-in and thrust angle are not within tolerance, adjust them so that they conform to the specified value. <Ref. to FS-6, Wheel Alignment.>

6. OIL LEAKAGE OF STRUT AND SHOCK ABSORBER

Visually inspect the front strut and rear shock absorber for oil leakage. Replace the front strut and rear shock absorber if oil leaks excessively.

7. TIGHTNESS OF BOLTS AND NUTS

Check the bolts and nuts for looseness. Retighten the bolts and nuts to specified torque. If the self-locking nuts and bolts are removed, replace them with new parts.

- Front suspension
<Ref. to FS-2, General Description.>
- Rear suspension
<Ref. to RS-2, General Description.>

8. DAMAGE TO SUSPENSION PARTS

Check the following parts and the fastening portion of the vehicle body for deformation or excessive rusting which impairs the suspension. If necessary, replace the damaged parts with new parts. If minor rust formation, pitting, etc. are noted, remove the rust and take rust prevention measure.

- Front suspension
 - Front arm
 - Crossmember
 - Strut
- Rear suspension
 - Upper arm
 - Front lateral link
 - Rear lateral link
 - Rear trailing link
 - Rear sub frame
 - Shock absorber
- In the area where salt is sprayed to melt snow on a road in winter, check suspension parts for damage caused by rust every 12 months after lapse of 60 months. Take rust prevention measures as required.

18. Wheel Bearing

A: INSPECTION

1. FRONT WHEEL BEARING

NOTE:

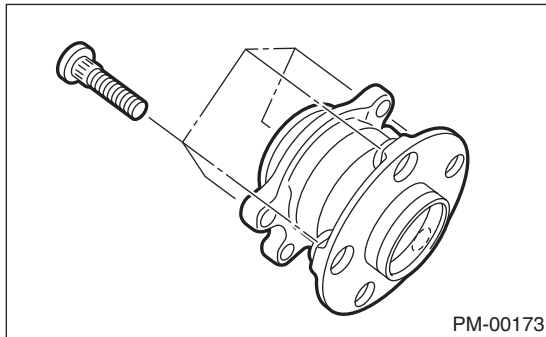
Inspect the condition of front wheel bearing grease.

- 1) Jack-up the front side of vehicle.
- 2) While holding the front wheel by hand, swing it in and out to check bearing free play.
- 3) Loosen the wheel nuts, and remove the front wheel.
- 4) If the bearing free play exists in step 2) above, attach a dial gauge to the hub and measure axial play in axial direction.

Service limit:

Straight-ahead position within 0.05 mm (0.0020 in)

- 5) Remove the bolts and self-locking nuts, and extract the front arm from front crossmember.
 - 6) Remove the PTJ of front drive shaft from transmission. <Ref. to DS-25, Front Drive Shaft.>
 - 7) While supporting the front drive shaft horizontally with one hand, turn the hub with the other hand to check for noise or binding.
- If the hub is noisy or binds, replace the front axle.



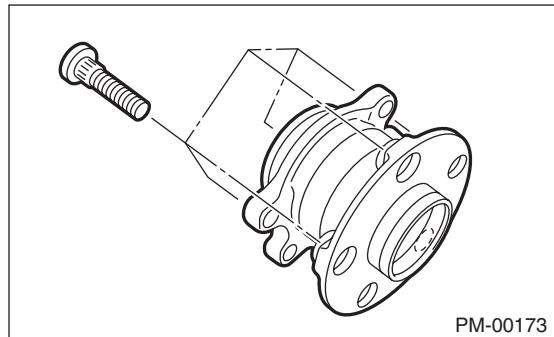
2. REAR WHEEL BEARING

- 1) Jack-up the rear side of vehicle.
- 2) While holding the rear wheel by hand, swing it in and out to check bearing free play.
- 3) Loosen the wheel nuts, and remove the rear wheel.
- 4) If the bearing free play exists in step 2) above, attach a dial gauge to the hub and measure axial play in axial direction.

Service limit:

Straight-ahead position within 0.05 mm (0.0020 in)

- 5) Remove the DOJ of rear drive shaft from rear differential. <Ref. to DS-29, Rear Drive Shaft.>
 - 6) While supporting rear drive shaft horizontally with one hand, turn the hub with the other hand to check for noise or binding.
- If the hub is noisy or binds, replace the rear axle.



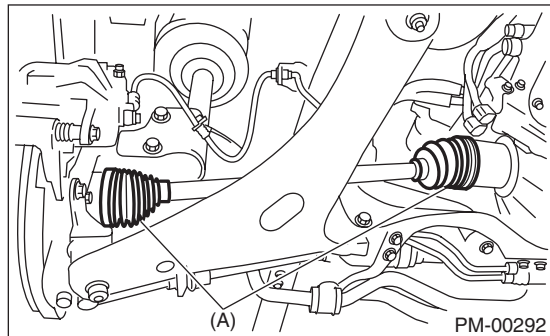
19. Axle Boots & Joints

A: INSPECTION

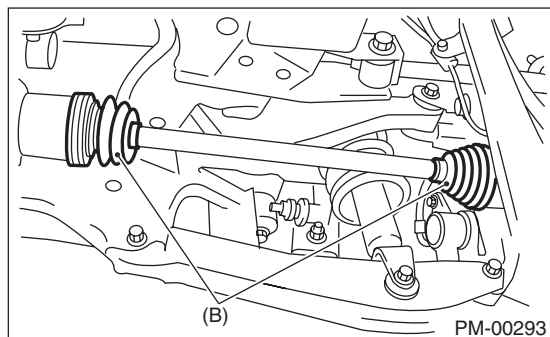
1. FRONT AND REAR AXLE BOOTS

Inspect the front axle boots (A) and rear axle boots (B) for deformation, damage or failure. If faulty, replace with a new part. <Ref. to DS-25, Front Drive Shaft.> <Ref. to DS-29, Rear Drive Shaft.>

- Front



- Rear



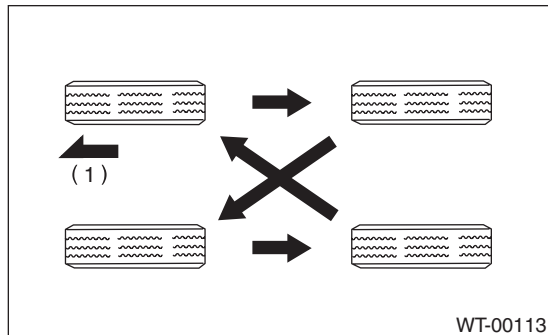
2. PROPELLER SHAFT

Inspect the propeller shaft for damage or failure. If faulty, replace with a new part. <Ref. to DS-10, Propeller Shaft.>

20. Tire Rotation

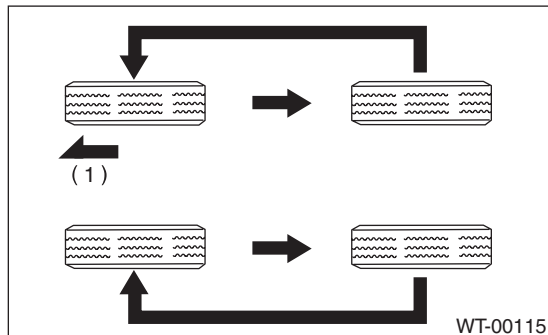
A: INSPECTION

- 1) When the tread has worn down to less than 1.8 mm (0.071 in) or the wear indicator appears across the tread, replace the tire. (Replace the right and left tires as a set.)
 - 2) If the tire appears to be worn unevenly, adjust the wheel alignment.
 - 3) Rotate tires periodically (12,000 km/7,500 miles) as shown in the figure, in order to prevent them from uneven wear and to prolong their life.
- When the direction of tire rotation is not specified

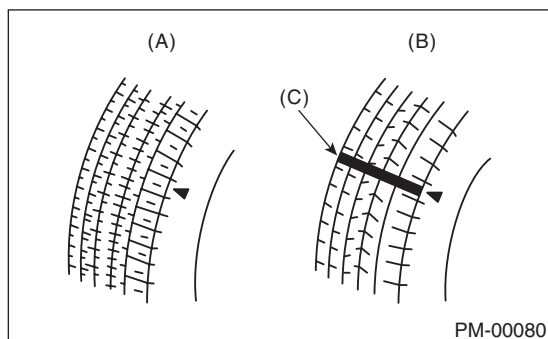


(1) Front

- When the direction of tire rotation is specified



(1) Front



- (A) New tread
- (B) Damaged tread
- (C) Tread wear indicator

21. Steering System (Power Steering)

A: INSPECTION

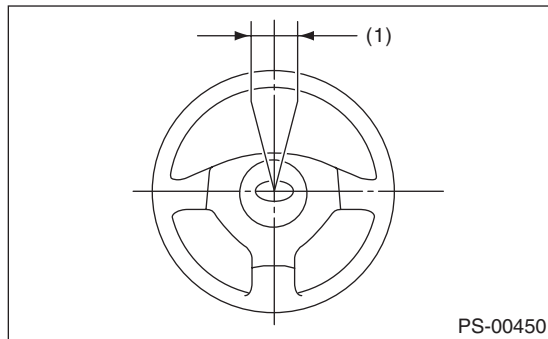
1. STEERING WHEEL

- 1) Set the steering wheel in a straight-ahead position, and check the wheel spokes to make sure they are correctly set in their specified positions.
- 2) Lightly turn the steering wheel to the left and right to determine the point where front wheels start to move.

Measure the distance of the movement of steering wheel at the outer periphery of wheel.

Steering wheel free play:

0 — 17 mm (0 — 0.67 in)



(1) Steering wheel free play

Move the steering wheel vertically toward the shaft to ascertain if there is play in the direction.

Maximum permissible play:

0.5 mm (0.020 in)

- 3) Drive the vehicle and check the following items during operation.

(1) Steering force:

The effort required for steering should be smooth and even at all points, and should not vary.

(2) Pulled to one side:

Steering wheel should not be pulled to either side while driving on a level surface.

(3) Wheel runout:

Steering wheel should not show any sign of runout.

(4) Return factor:

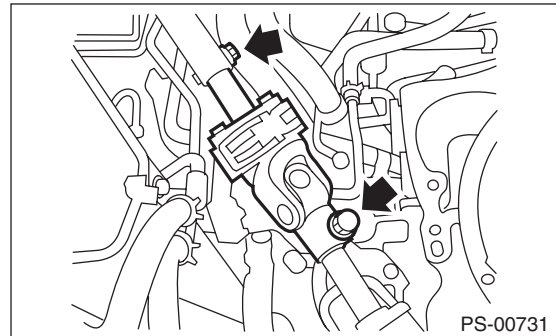
Steering wheel should return to its original position after it has been turned and then released.

2. STEERING SHAFT JOINT

When the steering wheel free play is excessive, disconnect the universal joint of steering shaft and check it for any play and yawing torque (at the point of the crossing direction). Also inspect for any damage to sealing or worn serrations. If the joint is loose, retighten the mounting bolts to the specified torque.

Tightening torque:

24 N·m (2.4 kgf-m, 17.7 ft-lb)



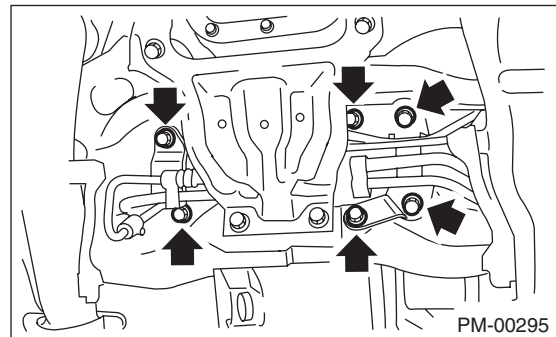
3. GEARBOX

- 1) With the vehicle placed on a level surface, turn the steering wheel 90° in both the left and right directions.

While the wheel is being rotated, reach under the vehicle and check for looseness in gearbox.

Tightening torque:

60 N·m (6.1 kgf-m, 44.3 ft-lb)



- 2) Check the boot for damage, cracks or deterioration.

- 3) With the vehicle placed on a level surface, quickly turn the steering wheel to the left and right. While steering wheel is being rotated, check the gear backlash. If any noise is noticed, adjust the gear backlash.

Liquid gasket:

THREE BOND 1102 or equivalent

- 4) Apply liquid gasket to at least 1/3 of entire perimeter of adjusting screw thread.

Steering System (Power Steering)

PERIODIC MAINTENANCE SERVICES

5) Tighten the adjusting screw to the specified torque, then loosen it.

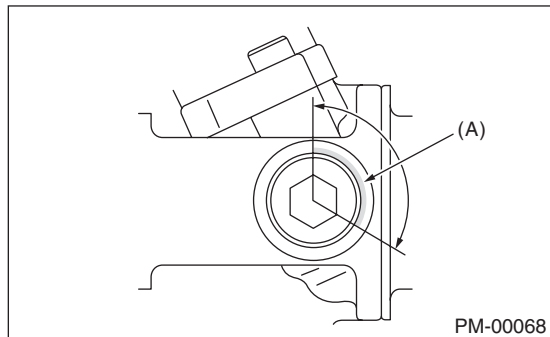
Tightening torque:

25 N·m (2.5 kgf·m, 18.4 ft-lb)

6) Tighten the adjusting screw to the specified torque, then loosen it 20°.

Tightening torque:

5.9 N·m (0.6 kgf·m, 4.4 ft-lb)



(A) Apply liquid gasket to at least 1/3 of entire perimeter.

7) Install the lock nut. While holding the adjusting screw with wrench, tighten the lock nut using ST.

NOTE:

Hold the adjusting screw with wrench to prevent it from turning while tightening the lock nut.

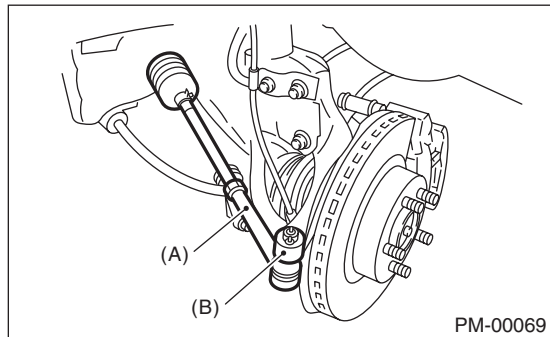
Tightening torque (lock nut):

25 N·m (2.5 kgf·m, 18.4 ft-lb)

ST 926230000 SPANNER

4. TIE-ROD

1) Check the tie-rod and tie-rod end for bend, cracks or other damages.



(A) Tie-rod end
(B) Knuckle arm

2) Confirm that the connections of knuckle ball joints for play, and then check for damage on dust cover and free play of ball studs. If the castle nut is loose, retighten it to the specified torque, then tighten it further up to 60° until the cotter pin hole is aligned.

Tightening torque:

27 N·m (2.8 kgf·m, 19.9 ft-lb)

3) Check the lock nut on the tie-rod for tightness. If it is loose, tighten it to the specified torque.

Tightening torque:

85 N·m (8.7 kgf·m, 62.7 ft-lb)

5. POWER STEERING FLUID LEVEL

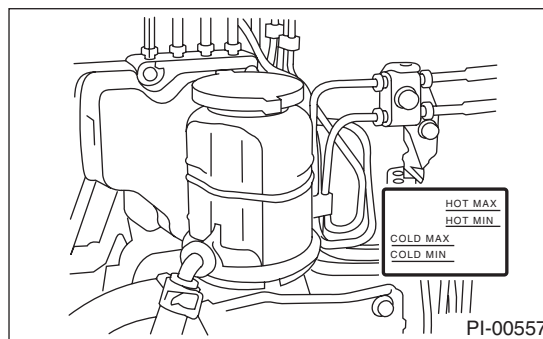
NOTE:

- At power steering fluid temperature 20°C (68°F); read the fluid level on the “COLD” side.

- At power steering fluid temperature 80°C (176°F); read the fluid level on the “HOT” side.

1) Place the vehicle with engine “OFF” on a level surface.

2) Check the fluid level using the scale on the outside of the reservoir tank. If the level is below “MIN”, fill fluid up to “MAX” level.



NOTE:

If fluid level is at MAX level or above, drain fluid to keep the level in the specified range of indicator by using a syringe or the like.

Recommended fluid:

Refer to “RM” section. <Ref. to RM-4, FLUID, RECOMMENDED MATERIALS, Recommended Materials.>

Fluid capacity:

Refer to the “SPC” section. <Ref. to SPC-3, CAPACITY, TRIBECA.>

6. POWER STEERING FLUID FOR LEAKS

Inspect the underside of oil pump and gearbox of power steering system, hoses, pipes and their couplings for fluid leaks.

If the fluid leaks are found, retighten their fitting bolts (or nuts) and/or replace their parts.

NOTE:

- Wipe the leaked fluid off after correcting fluid leaks.

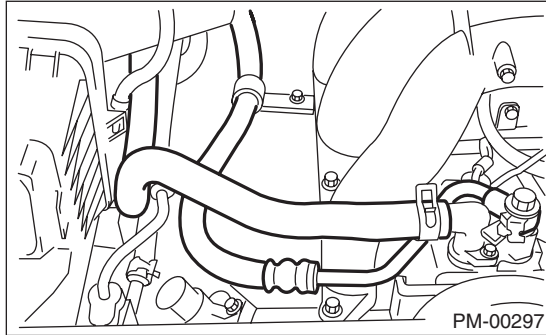
- Also pay attention to clearances between hoses (or pipes) and other parts when inspecting fluid leaks.

7. HOSES OF OIL PUMP FOR DAMAGES

Check the pressure hose and return hose of oil pump for crack, swell or damage. Replace the hose with a new part if necessary.

NOTE:

Prevent hoses from turning and/or bending when installing hoses.



8. POWER STEERING PIPES FOR DAMAGES

Check the power steering pipes for corrosion and damage.

Replace the pipes with new parts if necessary.

9. GEARBOX BOOTS

Inspect both sides of the gearbox boot as follows, and correct the defects if necessary.

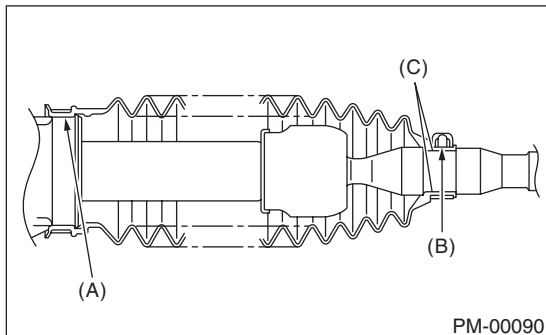
1) Positions (A) and (B) of the gearbox boot are fitted correspondingly in grooves (A) and (B) of the gearbox and rod (C).

2) Clips are fitted outside of positions (A) and (B) of boot.

3) Boot does not have crack or hole.

NOTE:

Rotate (B) position of gearbox boot against the torsion produced by the adjustment of toe-in etc. Apply grease to the groove (C).



10. FITTING BOLTS AND NUTS

Inspect the fitting bolts and nuts of oil pump and bracket for looseness, and retighten them if necessary.

Inspect and/or retighten them when engine is cold.

Supplemental Restraint System

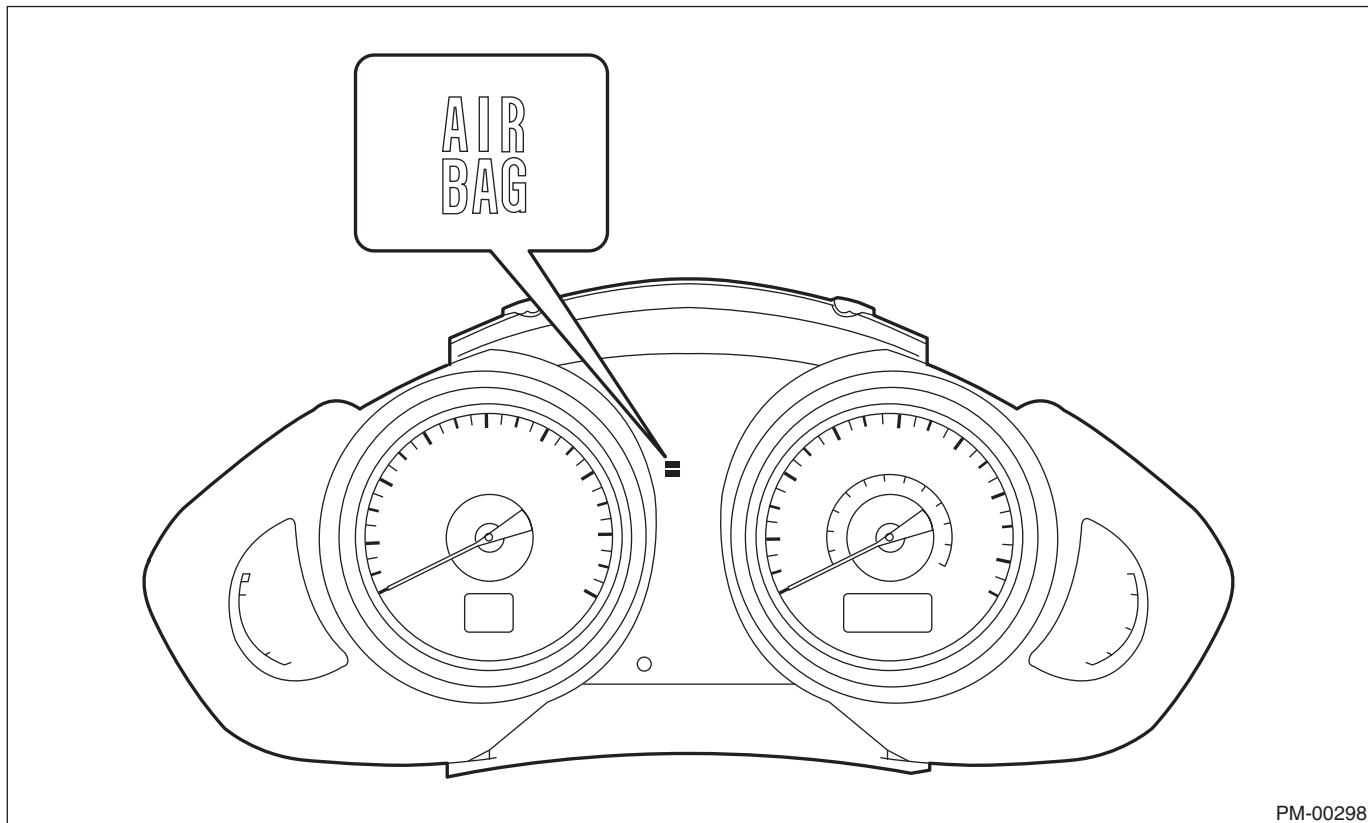
PERIODIC MAINTENANCE SERVICES

22. Supplemental Restraint System

A: INSPECTION

Check the airbag system in accordance with the result of the self-diagnosis. <Ref. to AB(diag)-2, Basic Diagnostic Procedure.>

1) Make sure that airbag connectors are connected. If not, properly connect. When the ignition switch is turned ON with the connector(s) disconnected, the airbag warning light blinks to identify the fault.



PM-00298

2) Connect the Subaru Select Monitor to data link connector. Turn the ignition switch to ON, and Subaru Select Monitor switch to ON.

3) Read the Diagnostic Trouble Code (DTC) using Subaru Select Monitor. <Ref. to AB(diag)-24, READ DIAGNOSTIC TROUBLE CODE (DTC), OPERATION, Subaru Select Monitor.>

4) Inspect the airbag system according to the Diagnostic Trouble Code (DTC).

23.A/C Filter**A: REPLACEMENT**

For the A/C filter replacement procedures, refer to the AC section. <Ref. to AC-51, REPLACEMENT, A/C Filter.>

ENGINE 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.

FUEL INJECTION (FUEL SYSTEMS)

FU(H6DO)

EMISSION CONTROL
(AUX. EMISSION CONTROL DEVICES)

EC(H6DO)

INTAKE (INDUCTION)

IN(H6DO)

MECHANICAL

ME(H6DO)

EXHAUST

EX(H6DO)

COOLING

CO(H6DO)

LUBRICATION

LU(H6DO)

SPEED CONTROL SYSTEMS

SP(H6DO)

IGNITION

IG(H6DO)

STARTING/CHARGING SYSTEMS

SC(H6DO)

ENGINE (DIAGNOSTICS)

EN(H6DO)(diag)

GENERAL DESCRIPTION

GD(H6DO)

FUEL INJECTION (FUEL SYSTEMS)

FU(H6DO)

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