1. Foreword

A: FOREWORD

These manuals are used when performing maintenance, repair or diagnosis of Subaru LEGACY.

Applicable model:
2010MY BM*****, BR*****

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

1. How to Use This Manuals

A: HOW TO USE THIS MANUALS

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.

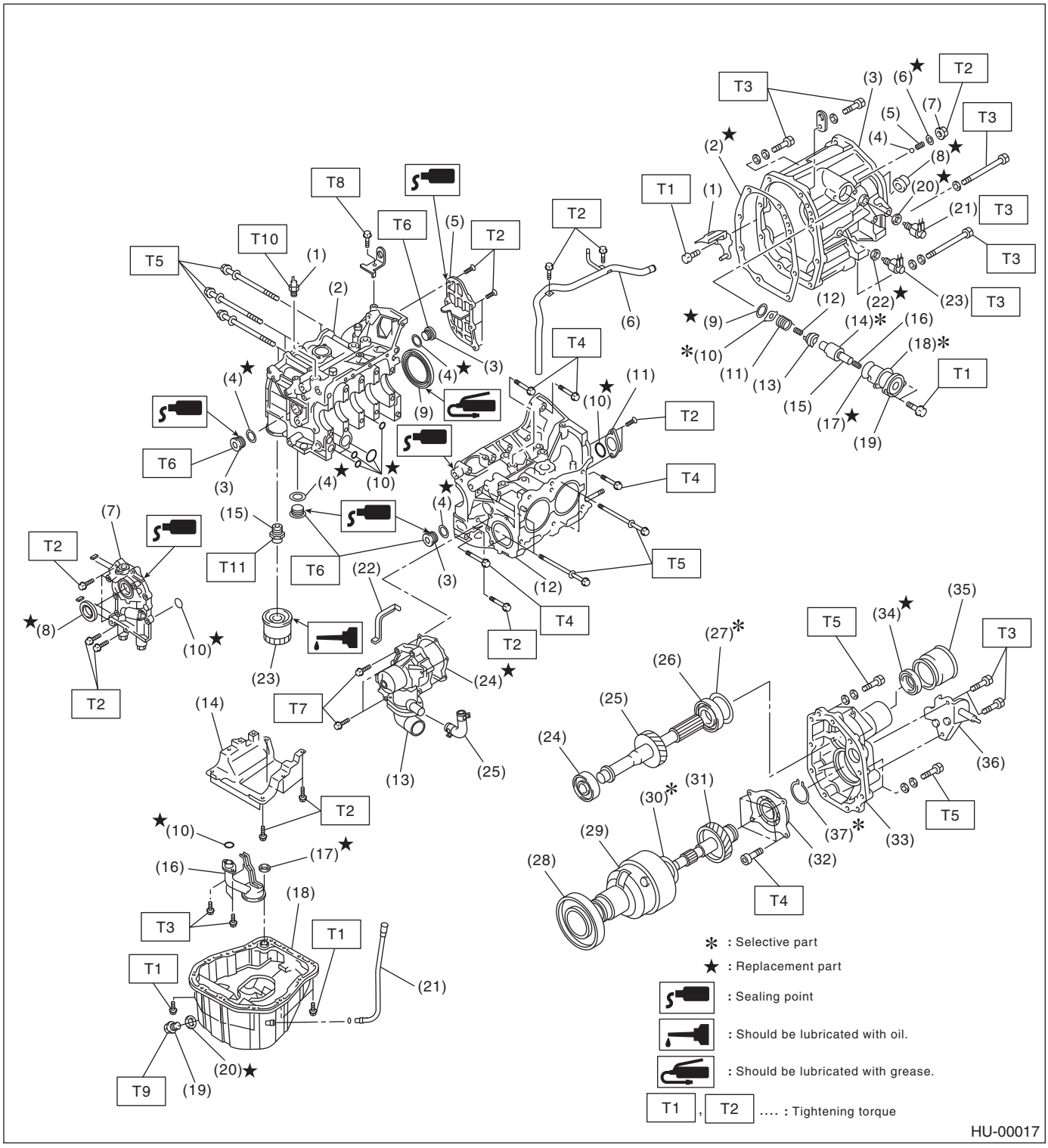
2. CONTENTS

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:



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

- NOTE:

describes supplementary explanations for efficient operation.

- CAUTION:

describes particular items to be followed and items to be prohibited to avoid vehicle or parts damage.

- WARNING:

describes items to be strictly prohibited to avoid serious injury to the person doing the work or people in the area, and items to be strictly followed to avoid any deficiency 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)

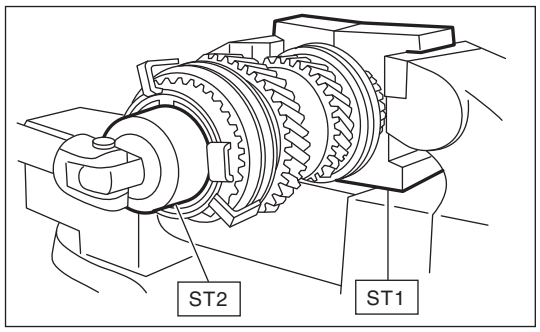
---

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)



← (H)

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

8. DIAGNOSIS

Diagnosis uses step-by-step process to make operations easier.

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)

LIST OF SI UNIT

Item	SI units	Conventional unit	Remarks
Force	N (Newton)	kgf	1 kgf = 9.80655 N
Mass (Weight)	kg, g	kg, g	
Capacity	ℓ , m ℓ or cm^3	ℓ or cc	1 cc = 1 cm^3 = 1 m ℓ
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

• LIST OF ABBREVIATIONS

AAI	: Air Assist Injection	IG	: Ignition
A/B	: Airbag	IN	: Intake
ABS	: Anti-lock Brake System	INT	: Intermittent
A/C	: Air Conditioner	I/O	: Input / Output
A/F	: Air Fuel Ratio	ISC	: Idle Speed Control
ALT	: Generator	LAN	: Local Area Network
APS	: Accessory Power supply Socket	LH	: LH (Left Hand)
ASSY	: Assembly	LSD	: Limited Slip Differential
AT	: Automatic Transmission	M/B	: Main Fuse & Relay Box
ATF	: Automatic Transmission Fluid	MD	: Mini Disc
AVCS	: Active Valve Control System	MID	: Multi Information Display
AWD	: All Wheel Drive	MFI	: Multi-Point Fuel Injection
BATT	: Battery	MP-T	: Multi-Plate Transfer
BCM	: Brake Control Module	MT	: Manual Transmission
BJ	: Bell Joint	NA	: Natural Aspiration
CAN	: Communication Area Network	NC	: Normal Close (Relay)
CD	: Compact Disc	NO	: Normal Open (Relay)
COMPL	: Complete	OP	: Option Parts
CPU	: Central Processing Unit	PC	: Personal Computer
DOHC	: Double Overhead Camshaft	PCV	: Positive Crankcase Ventilation
DOJ	: Double Offset Joint	P/S	: Power Steering
DTC	: Diagnostic Trouble Code	PTJ	: Pillow Tripod Joint
EBJ	: High-efficiency Compact Ball Fixed Joint	P/W	: Power Window
ECM	: Engine Control Module	RH	: RH (Right Hand)
EDJ	: High-efficiency Compact Double Offset Joint	Rr	: Rear
EGI	: Electronic Gasoline Injection	SDI	: SUBARU Diagnostic Interface
E/G	: Engine	SI	: SUBARU Intelligent
EGR	: Exhaust Gas Recirculation	SOHC	: Single Overhead Camshaft
ETC	: Electronic Throttle Control	SRS	: Supplemental Restraint System
EX	: Exhaust	ST	: Special Tool
F/B	: Fuse & Joint Box	SW	: Switch
Ft	: Front	TCS	: Traction Control System
FWD	: Front Wheel Drive	TGV	: Tumble Generator Valve
GPS	: Global Positioning System	T/M	: Transmission
HID	: High-Intensity Discharge	UJ	: Universal joint
H/U	: Hydraulic Unit	VDC	: Vehicle Dynamics Control
HVAC	: Heater, Ventilator and Air Conditioner	VTD	: Variable Torque Distribution

1. LEGACY

A: DIMENSION

1. SEDAN MODEL

Model			2.5 L SOHC non-turbo	2.5 L DOHC turbo	3.6 L DOHC non-turbo
Overall length		mm (in)	4,735 (186.4)		
Overall width		mm (in)	1,820 (71.7)		
Overall height (at C.W.)		mm (in)	1,505 (59.3)		
Wheelbase		mm (in)	2,750 (108.3)		
Tread	Front	mm (in)	1,565 (61.6)	1,550 (61.0)	1,565 (61.6)
	Rear	mm (in)	1,570 (61.8)	1,555 (61.2)	1,570 (61.8)
Minimum road clearance		mm (in)	150 (5.9)		

B: ENGINE

Model	2.5 L SOHC non-turbo	2.5 L DOHC turbo	3.6 L DOHC non-turbo
Engine type	Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine		Horizontally opposed, liquid cooled, 6-cylinder, 4-stroke gasoline engine
Valve arrangement	Overhead camshaft		
Bore × stroke mm (in)	99.5 × 79.0 (3.917 × 3.110)		92.0 × 91.0 (3.622 × 3.583)
Displacement cm^3 (cu in)	2,457 (149.9)		3,630 (221.4)
Compression ratio	10.0	8.4	10.5
Ignition order	1 — 3 — 2 — 4		1 — 6 — 3 — 2 — 5 — 4
Idle speed at Park or Neutral position rpm	650 (MT) 675 (CVT)	700	700
Maximum output kW (HP)/rpm	127 (170)/5,600	198 (265)/5,600	191 (256)/6,000
Maximum torque N·m (kgf-m, ft-lb)/rpm	230 (23.5, 170)/4,000	350 (35.7, 258)/2,000 — 5,200	334 (34.1, 247)/4,400

C: ELECTRICAL

Model		2.5 L SOHC non-turbo	2.5 L DOHC turbo	3.6 L DOHC non-turbo
Ignition timing (at idling) BTDC		15°		
Spark plug	Type and manufacturer	NGK: SIFR6A11	NGK: SILFR6B8	NGK: SILFR6C11
Generator		12 V — 110 A		12 V — 130 A
Battery	Type and capacity (5HR)	12 V — 52 AH (75D23R)		

D: TRANSMISSION

1. MT

Model			2.5 L SOHC non-turbo	2.5 L DOHC turbo
Transmission type			6MT	6MT
Clutch type			DSPD	DSPD
Gear ratio		1st	3.454	3.454
		2nd	1.947	1.947
		3rd	1.296	1.296
		4th	0.972	0.972
		5th	0.825	0.780
		6th	0.695	0.666
		Rev.	3.636	3.636
Reduction gear (Front)		Type of gear	Hypoid	Hypoid
		Gear ratio	4.111	4.111
Reduction gear (Rear)	Transfer reduction	Type of gear	Helical	Helical
		Gear ratio	1.000	1.000
	Final reduction	Type of gear	Hypoid	Hypoid
		Gear ratio	4.111	4.111

6MT: 6-forward and 1-reverse speeds with synchromesh for all gears
DSPD: Dry Single Plate Diaphragm

2. AT

Model			3.6 L DOHC non-turbo
Transmission type			5AT
Clutch type			TCC
Gear ratio		1st	3.540
		2nd	2.264
		3rd	1.471
		4th	1.000
		5th	0.834
		Rev.	2.370
Reduction gear (Front)	1st reduction	Type of gear	Helical
		Gear ratio	1.000
	Final reduction	Type of gear	Hypoid
		Gear ratio	3.083
Reduction gear (Rear)		Type of gear	Hypoid
		Gear ratio	3.083

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

3. CVT

Model			2.5 L SOHC non-turbo
Transmission type			CVT
Clutch type			TCC
Change gear ratio		Forward	3.525 — 0.558
		Rev.	2.358
Reduction gear (Front)	1st reduction	Type of gear	Helical
		Gear ratio	1.000
	Final reduction	Type of gear	Hypoid
		Gear ratio	3.700
Transfer reduction ratio			1.000
Reduction gear (Rear)		Type of gear	Hypoid
		Gear ratio	3.700

TCC: Torque Converter Clutch
CVT: Forward continuously variable speed change and 1-reverse

E: STEERING

Type		Rack & pinion
Turns, lock to lock		2.8
Minimum turning diameter m (ft)	Curb to curb	11.2 (36.7)
	Wall to wall	11.8 (38.7)

F: SUSPENSION

Front	Macpherson strut type suspension
REAR	Double wishbone type suspension

G: BRAKE

Model	2.5 L SOHC non-turbo	2.5 L DOHC turbo	3.6 L DOHC non-turbo
Service brake system	Dual circuit hydraulic with vacuum suspended power unit		
Front	Ventilated disc brake		
REAR	Disc brake	Ventilated disc brake	
Parking brake	Electric mechanical on rear brakes		
Brake assist	Standard equipment for all vehicles		

H: TIRE

Model	2.5L SOHC non-turbo	2.5L DOHC turbo	3.6L DOHC non-turbo
Wheel size	16 × 6 1/2JJ 16 × 6 1/2J 17 × 7 1/2J	18 × 7 1/2J	17 × 7 1/2J
Tire size	P205/60 R16 91V P215/50 R17 90V	225/45 R18 91W	P225/50 R17 93V
Type	Tubeless, Steel belted radial		

I: CAPACITY

Model			2.5L SOHC non-turbo		2.5L DOHC turbo	3.6L DOHC non-turbo
			6MT	CVT	6MT	5AT
Fuel tank		ℓ (US gal, Imp gal)	70 (18.5, 15.4)			
Engine oil	Total capacity (at overhaul)	ℓ (US qt, Imp qt)	4.8 (5.1, 4.2)	4.8 (5.1, 4.2)	5.2 (5.5, 4.6)	7.8 (8.2, 6.9)
	Filling amount of engine oil ℓ (US qt, Imp qt)	When replacing engine oil and oil filter	4.2 (4.4, 3.7)	4.2 (4.4, 3.7)	4.3 (4.5, 3.8)	6.5 (6.9, 5.7)
		When replacing engine oil only	4.0 (4.2, 3.5)			6.3 (6.7, 5.5)
Transmission gear oil		ℓ (US qt, Imp qt)	3.7 (3.9, 3.3)	—	3.7 (3.9, 3.3)	—
ATF or CVTF		ℓ (US qt, Imp qt)	—	12.0 — 12.5 (12.7 — 13.2, 10.6 — 11.0)	—	9.8 (10.4, 8.6)
Front differential gear oil		ℓ (US qt, Imp qt)	—	1.4 (1.5, 1.2)	—	1.4 (1.5, 1.2)
Rear differential gear oil		ℓ (US qt, Imp qt)	0.8 (0.8, 0.7)			
Power steering fluid		ℓ (US qt, Imp qt)	0.7 (0.7, 0.6)			
Engine coolant		ℓ (US qt, Imp qt)	6.5 (6.9, 5.7)	6.4 (6.8, 5.6)	6.5 (6.9, 5.7)	6.5 (6.9, 5.7)

2. OUTBACK

A: DIMENSION

1. OUTBACK MODEL

Model			2.5L SOHC non-turbo	3.6L DOHC non-turbo
Overall length		mm (in)	4,780 (188.2)	
Overall width		mm (in)	1,820 (71.7)	
Overall height (at C.W.)		mm (in)	1,680 (66.1), 1,670 (65.7)*1	
Wheelbase		mm (in)	2,740 (107.9)	
Tread	Front	mm (in)	1,550 (61.0)	
	REAR	mm (in)	1,550 (61.0)	
Minimum road clearance		mm (in)	220 (8.7)	

*1: when crossbar is stored

B: ENGINE

Model		2.5L SOHC non-turbo	3.6L DOHC non-turbo
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine	Horizontally opposed, liquid cooled, 6-cylinder, 4-stroke gasoline engine
Valve arrangement		Overhead camshaft	
Bore × stroke	mm (in)	99.5 × 79.0 (3.917 × 3.110)	92.0 × 91.0 (3.622 × 3.583)
Displacement	cm^3 (cu in)	2,457 (149.9)	3,630 (221.4)
Compression ratio		10.0	10.5
Ignition order		1 — 3 — 2 — 4	1 — 6 — 3 — 2 — 5 — 4
Idle speed at Park or Neutral position	rpm	650 (MT) 675 (CVT)	700
Maximum output	kW (HP)/rpm	127 (170)/5,600	191 (256)/6,000
Maximum torque	N·m (kgf-m, ft-lb)/rpm	230 (23.5, 170)/4,000	334 (34.1, 247)/4,400

C: ELECTRICAL

Model			2.5L SOHC non-turbo	3.6L DOHC non-turbo
Ignition timing (at idling)		BTDC	15°	
Spark plug	Type and manufacturer		NGK: SIFR6A11	NGK: SILFR6C11
Generator			12 V — 110 A	12 V — 130 A
Battery	Type and capacity (5HR)		12 V — 52 AH (75D23R)	

D: TRANSMISSION

1. MT

Model			2.5L SOHC non-turbo
Transmission type			6MT
Clutch type			DSPD
Gear ratio		1st	3.454
		2nd	1.947
		3rd	1.296
		4th	0.972
		5th	0.825
		6th	0.695
		Rev.	3.636
Reduction gear (Front)		Type of gear	Hypoid
		Gear ratio	4.444
Reduction gear (Rear)	Transfer reduction	Type of gear	Helical
		Gear ratio	1.000
	Final reduction	Type of gear	Hypoid
		Gear ratio	4.444

6MT: 6-forward and 1-reverse speeds with synchromesh for all gears
DSPD: Dry Single Plate Diaphragm

2. AT

Model			3.6L DOHC non-turbo
Transmission type			5AT
Clutch type			TCC
Gear ratio		1st	3.540
		2nd	2.264
		3rd	1.471
		4th	1.000
		5th	0.834
		Rev.	2.370
Reduction gear (Front)	1st reduction	Type of gear	Helical
		Gear ratio	1.000
	Final reduction	Type of gear	Hypoid
		Gear ratio	3.083
Reduction gear (Rear)		Type of gear	Hypoid
		Gear ratio	3.083

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

3. CVT

Model			2.5L SOHC non-turbo
Transmission type			CVT
Clutch type			TCC
Change gear ratio		Forward	3.525 — 0.558
		Rev.	2.358
Reduction gear (Front)	1st reduction	Type of gear	Helical
		Gear ratio	1.000
	Final reduction	Type of gear	Hypoid
		Gear ratio	3.900
Transfer reduction ratio			1.000
Reduction gear (Rear)		Type of gear	Hypoid
		Gear ratio	3.900

TCC: Torque Converter Clutch
CVT: Forward continuously variable speed change and 1-reverse

E: STEERING

Model		2.5L SOHC	3.6L DOHC
Type		Rack & pinion	
Turns, lock to lock		3.2	
Minimum turning diameter	m (ft)	Curb to curb	11.0 (36.1)
		Wall to wall	11.8 (38.7)

F: SUSPENSION

Front	Macpherson strut type suspension
REAR	Double wishbone type suspension

G: BRAKE

Model	2.5L SOHC non-turbo	3.6L DOHC non-turbo
Service brake system	Dual circuit hydraulic with vacuum suspended power unit	
Front	Ventilated disc brake	
REAR	Disc brake	Ventilated disc brake
Parking brake	Electric mechanical on rear brakes	
Brake assist	Standard equipment for all vehicles	

H: TIRE

Model	2.5L SOHC non-turbo	3.6L DOHC non-turbo
Wheel size	16 × 6 1/2JJ 17 × 7J	17 × 7J
Tire size	P215/70 R16 99S P225/60 R17 98T	P225/60 R17 98T
Type	Tubeless, Steel belted radial	

I: CAPACITY

Model			2.5L SOHC non-turbo		3.6L DOHC non-turbo
			6MT	CVT	5AT
Fuel tank		ℓ (US gal, Imp gal)	70 (18.5, 15.4)		
Engine oil	Total capacity (at overhaul)	ℓ (US qt, Imp qt)	4.8 (5.1, 4.2)	4.8 (5.1, 4.2)	7.8 (8.2, 6.9)
	Filling amount of engine oil ℓ (US qt, Imp qt)	When replacing engine oil and oil filter	4.2 (4.4, 3.7)	4.2 (4.4, 3.7)	6.5 (6.9, 5.7)
		When replacing engine oil only	4.0 (4.2, 3.5)		6.3 (6.7, 5.5)
Transmission gear oil		ℓ (US qt, Imp qt)	3.7 (3.9, 3.3)	—	
ATF or CVTF		ℓ (US qt, Imp qt)	—	12.0 — 12.5 (12.7 — 13.2, 10.6 — 11.0)	9.8 (10.4, 8.6)
Front differential gear oil		ℓ (US qt, Imp qt)	—	1.4 (1.5, 1.2)	
Rear differential gear oil		ℓ (US qt, Imp qt)	0.8 (0.8, 0.7)		
Power steering fluid		ℓ (US qt, Imp qt)	0.7 (0.7, 0.6)		
Engine coolant		ℓ (US qt, Imp qt)	6.5 (6.9, 5.7)	6.4 (6.8, 5.6)	6.5 (6.9, 5.7)

1. Precaution

A: CAUTION

Please clearly understand and adhere to the following general precautions. They must be strictly followed to avoid minor or serious 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 the system may operate incorrectly and result in injury.

2. ELECTRONIC PARKING BRAKE

Handle the electronic parking brake as a total system. Do not disassemble or attempt to repair individual parts. Doing so could prevent the electronic parking brake system from operating when needed, or the system may operate incorrectly and result in injury.

3. 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.

4. 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.

5. ROAD TEST

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

6. 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 and nearby, or around the vehicle front (radiator panel, front wheel apron, front side frame, front bumper, front hood panel, front fender panel), around side of the vehicle (front door panel, rear door panel, center pillar, rear fender panel, side sill, rear wheel apron) 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 to discharge backup power supply before starting work.

7. AIRBAG AND SEAT BELT PRETENSIONER DISPOSAL

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

8. AIRBAG MODULE

Adhere to the following when handing 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.

9. AIRBAG SPECIAL TOOL

To prevent unexpected deployment, only use special tools.

10.WINDOW

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

11.WINDOW ADHESIVE

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

12.OIL

When handling oil, carefully observe the following to prevent unexpected accidents.

- Prepare a container and cloth to prevent scattering of oil when performing work where fuels 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 regulations concerning disposal of refuse when disposing.

13.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 environment.
- Follow all government and local regulations concerning disposal of refuse when disposing.

14.ENGINE COOLANT

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

• Never remove the radiator cap since engine coolant may blow out when it is hot.

• Prepare a container and cloth to prevent scattering of engine coolant when performing work where engine coolant can be spilled. If the oil 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.

15.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.

16.REMOVAL AND INSTALLATION OPERATION OF HOSES, ETC.

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

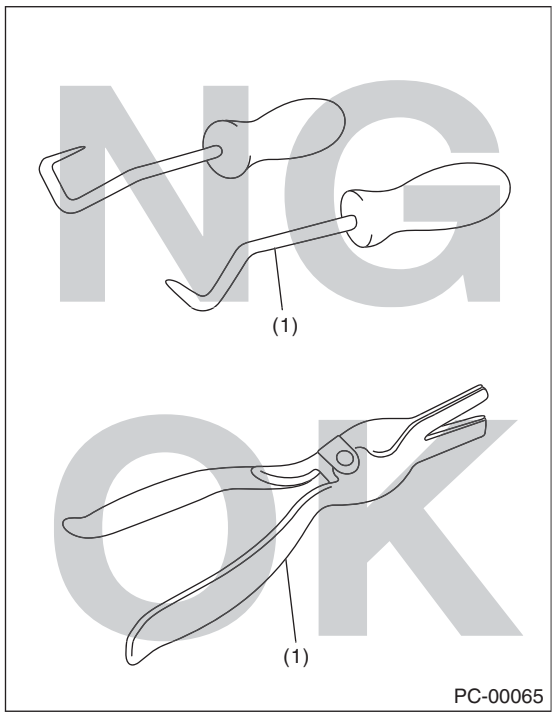
• If you keep using the damaged or deformed hose, it results bleeds or leakage of the fat adheres or disconnection of the hose. Be careful not to spill fat adheres on exhaust pipes, etc. during maintenance to prevent emitting smoke or causing fires.

• 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.

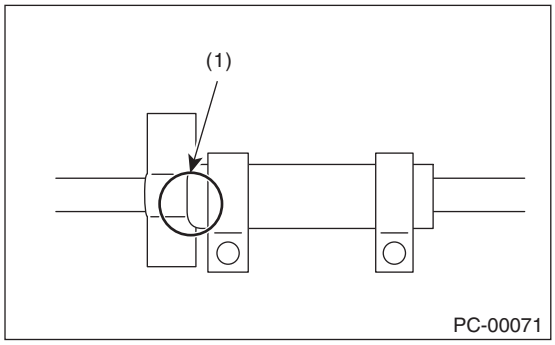


(1) Hose remover

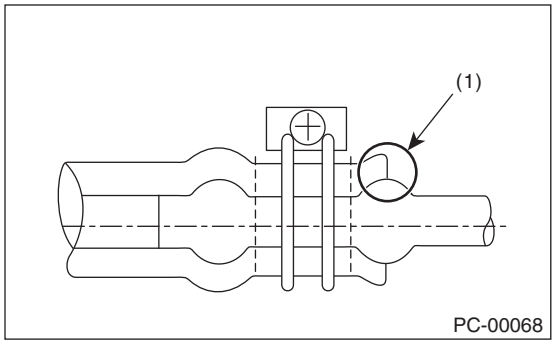
• When draining hose using pliers, be sure to cover the hose with cloth and rotate the hose slightly to extract straight.

• 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

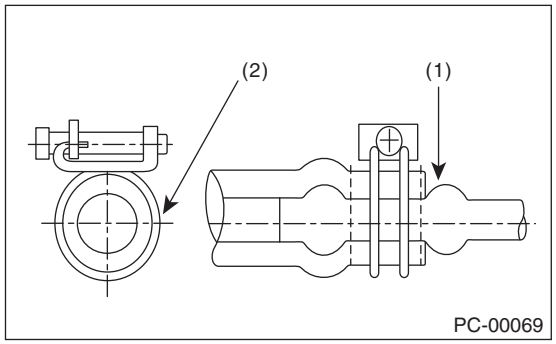
• Check if the surface and the inner surface of the hose are damaged, cracked, bend, hardened, softened, swelled, peeled or deformed due to the adherence or the entry of the foreign matter by bending the hose. Replace with the new part if faulty.

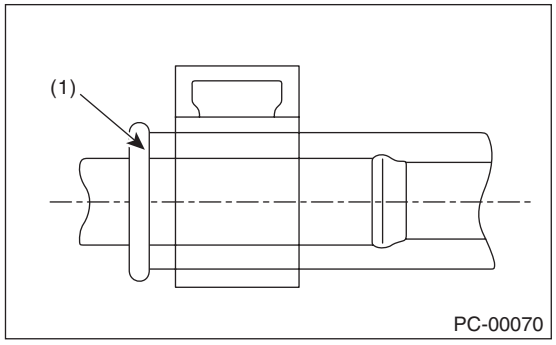
• Follow the instructions below during installation.

• 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

1. Note

A: BASIC REPAIR HINT

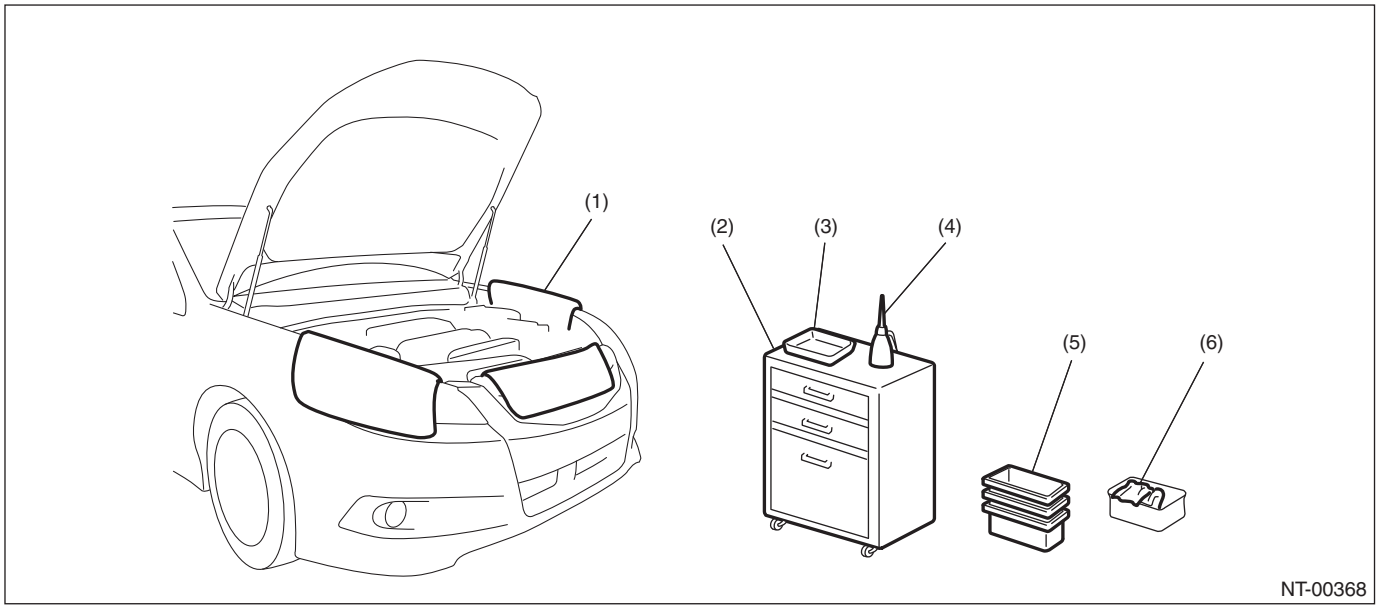
This section describes basic points that the service operator must understand before performing the service operation.

1. APPEARANCE

- Always wear clean work clothing.
- Wear a cap and protective shoes.

2. PROTECTION OF VEHICLE UNDER MAINTENANCE AND PREPARATION OF TOOLS/ EQUIPMENT

- Before work, cover the vehicle body. (Ex. grille cover, fender cover, seat cover and floor mat cover)
- Before performing the service operation, prepare tools, equipment, container box, grease and cloth etc.



(1) Fender cover
(2) Tools/equipment case
(3) Tray
(4) Oil
(5) Container box
(6) Cloth

3. SAFETY

- Before work, set the wheel stoppers to secure the vehicle.
- When performing work by multiple workers, call to each other to make sure that service operation is performed safely.
- Before starting engine, ventilate the room.
- When performing the service operation of high-temperature parts like muffler, rotating parts like fan and other movable parts, be careful not to get burned or injured.
- For the jack-up and lift up, set the tool to the proper location to support the vehicle correctly. And use the safety device properly when lifting up.

4. SERVICE OPERATION

- By identifying the vehicle problems thoroughly before work, service operation will be performed effectively.
- Before removing parts, confirm the installation condition or the damage of the parts.
- To reinstall parts properly, leave a note of the condition before work as necessary.
- For a part which needs positioning, take appropriate action such as putting alignment marks.
- For a removed part, clean it as necessary and check for damage and defect before installation.

5. REMOVED PART

• A removed part must be organized to avoid mixing up with similar parts. When same parts are used in multiple locations, such as pistons in engine, manage the parts by using labels with cylinder No. so that the parts are not installed to the wrong location.
• Always replace nonreusable parts such as gasket and O-ring with new parts.
• After work, have a customer confirm the replaced part.

6. WHEN REMOVING BATTERY

When removing battery, power supply is cut off and the information stored in the computer memory is volatilized. Therefore, setting information of some device is initialized to the factory default. The device and functions initialized by removing battery are as follows.
• Clock
• Set temperature of fully automatic air conditioner
• Automatic full open/close of driver's window (power window needs to be initialized)
• User setting items in the navigation system
• Past trouble history (memory code)

B: NOTE

This is the information that can improve the efficiency of maintenance and assure the sound work.

1. FASTENERS NOTICE

Tighten the bolts and nuts to the specified torque. Do not apply paint, lubricant, rust retardant or other substance to the surface around bolts, nuts, etc. It may cause troubles with tightening to the specified torque and result in looseness and other problems of bolts and nuts.

2. STATIC ELECTRICITY DAMAGE

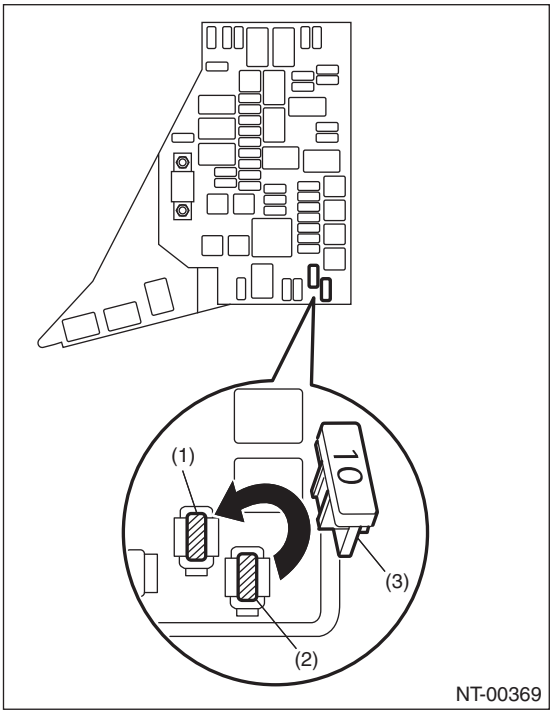
Touch grounded metal or equivalent for the elimination of static electricity before conducting work.

3. BATTERY

When removing the battery terminal, always be sure to turn the ignition switch to OFF and remove the battery ground cable first.

4. BACKUP/POWER SUPPLY FUSE

Right after the vehicle has arrived, 10 A backup fuse is removed to avoid run-down of the battery. Connect the backup fuse as shown in the figure. Also, delivery mode is canceled by disconnecting the backup fuse from the fuse holder.



(1) Backup fuse insertion slot
(2) Backup fuse holder
(3) Backup fuse

5. IMMOBILIZER RELATED PART

Do not replace parts which have immobilizer ID (ignition key, combination meter, body integrated unit and ECM) with the parts from other vehicle.

6. 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.

7. PROTECTING VEHICLE UNDER MAINTENANCE

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

8. ENSURING SECURITY DURING WORK

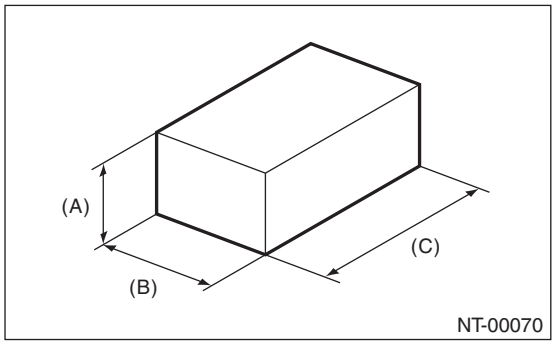
When working in a group of two or more, perform the work with calling each other to ensure mutual safety.

9. 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.

CAUTION:
Select the lift attachment so that the side sill does not contact the lift arm portion.

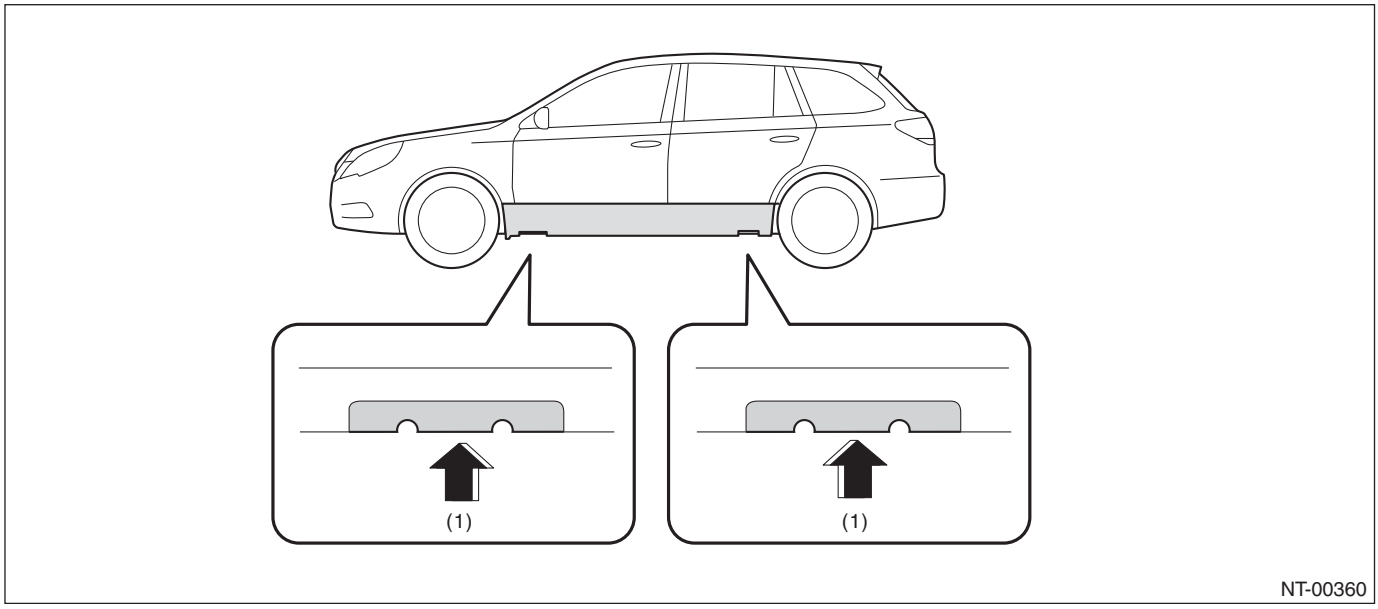
NOTE:
- When using a lift, follow its operation manual before work.
- If side sill cover touches the lift arm, use lift attachment.
- Do not work or leave unattended while the vehicle is supported with jack, support it with rigid racks.
- Be sure to use the rigid racks with rubber attached to cradle to support the vehicle.
- When using a plate lift, use a rubber attachment. Place the attachment to the specified position of the vehicle, by adjusting front/rear and left/right sides accordingly.



(A) 80 mm (3.1 in) or more
(B) 100 — 150 mm (3.94 — 5.91 in)
(C) 120 — 190 mm (4.72 — 7.48 in)

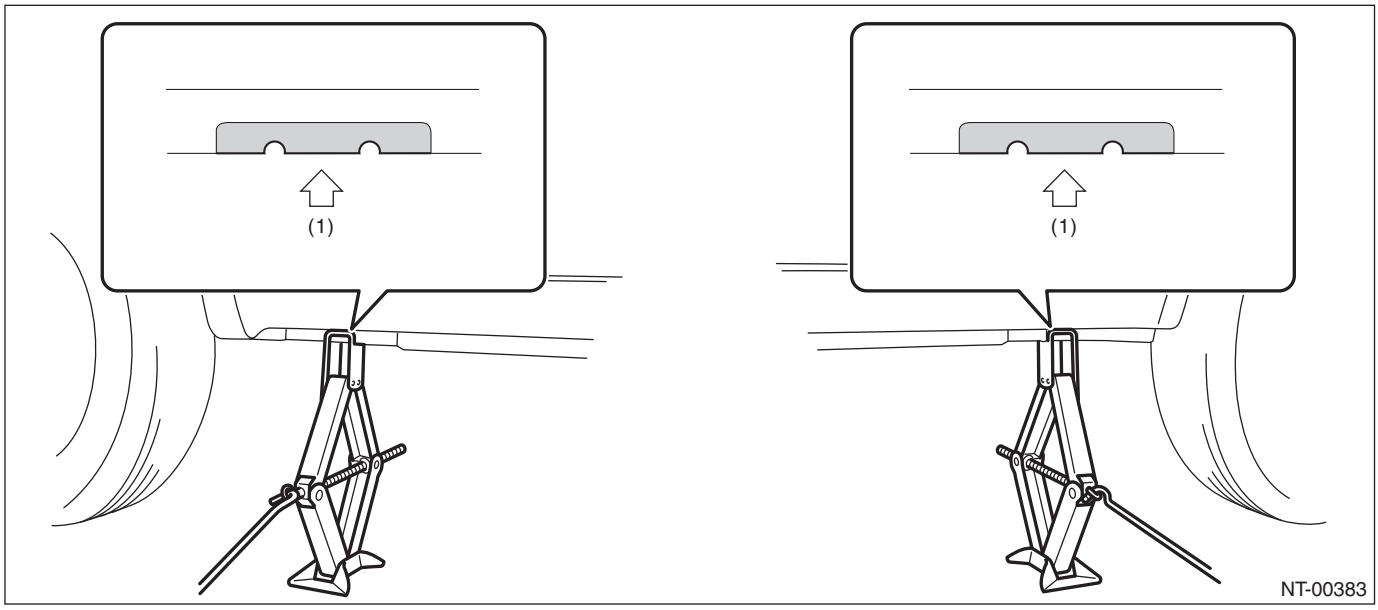
- Align the cushion rubber center of plate lift with the center of rubber attachment.
- Do not use the plate lift whose attachment does not reach the supporting locations.

• **SUPPORT LOCATIONS**



(1) Jack-up point

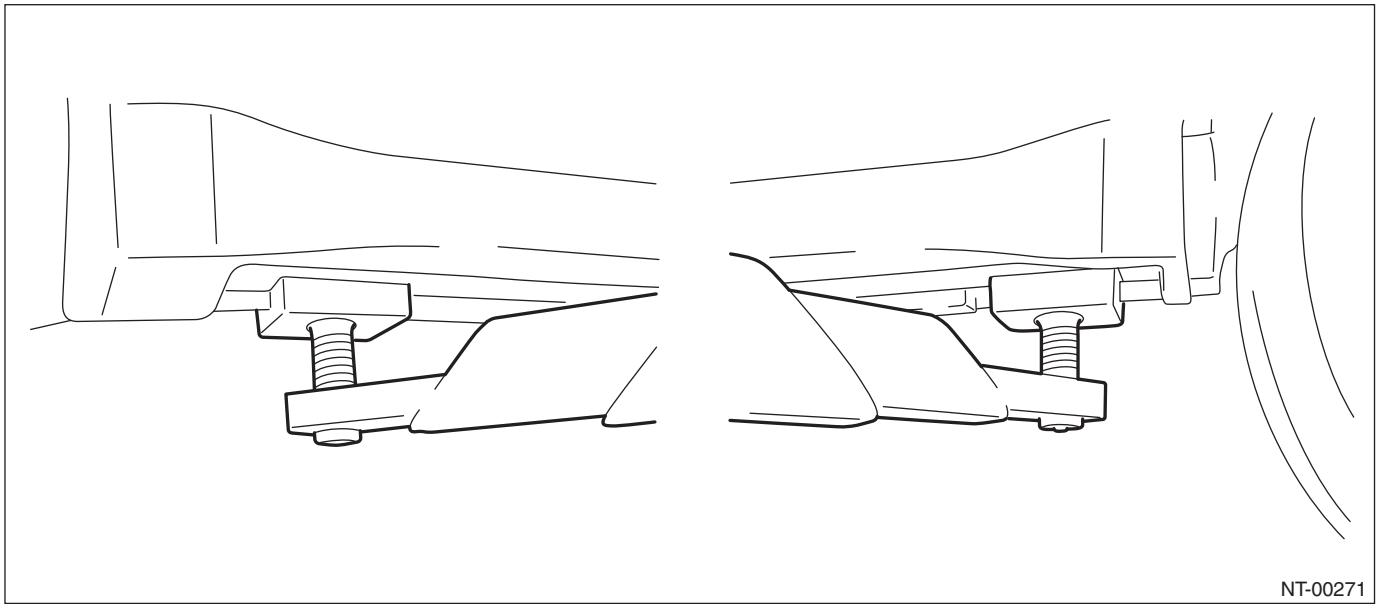
• **PANTOGRAPH JACK**



(1) Jack-up point

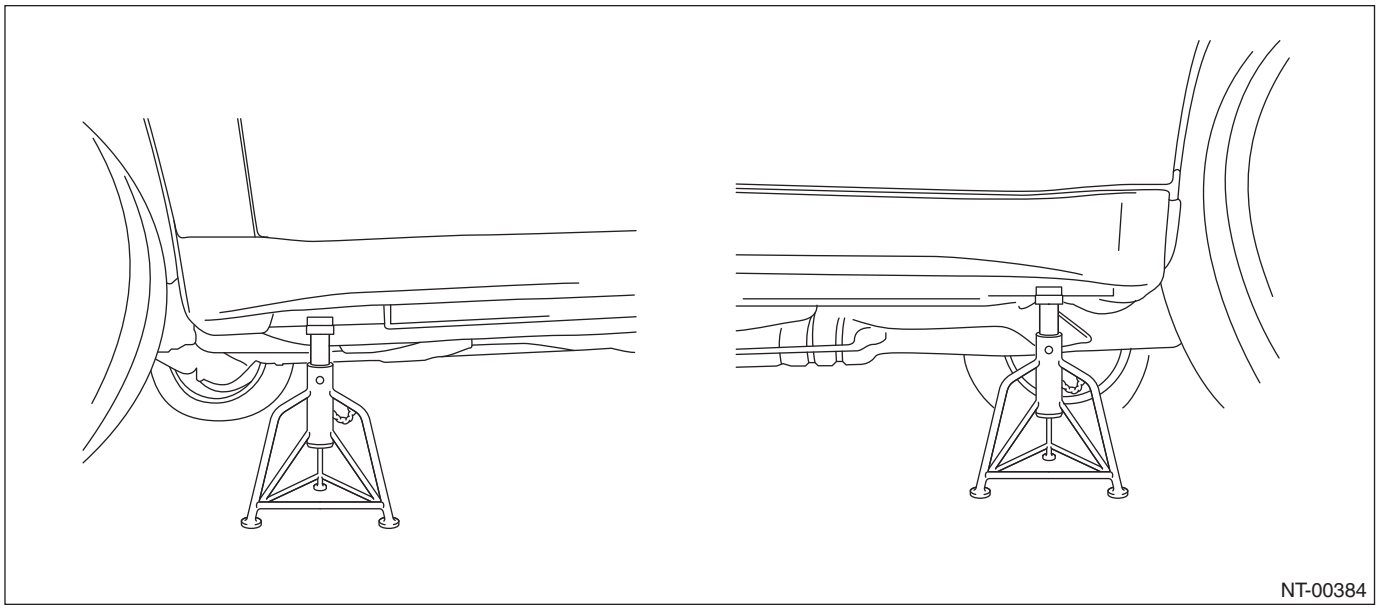
NOTE

- **Lift**

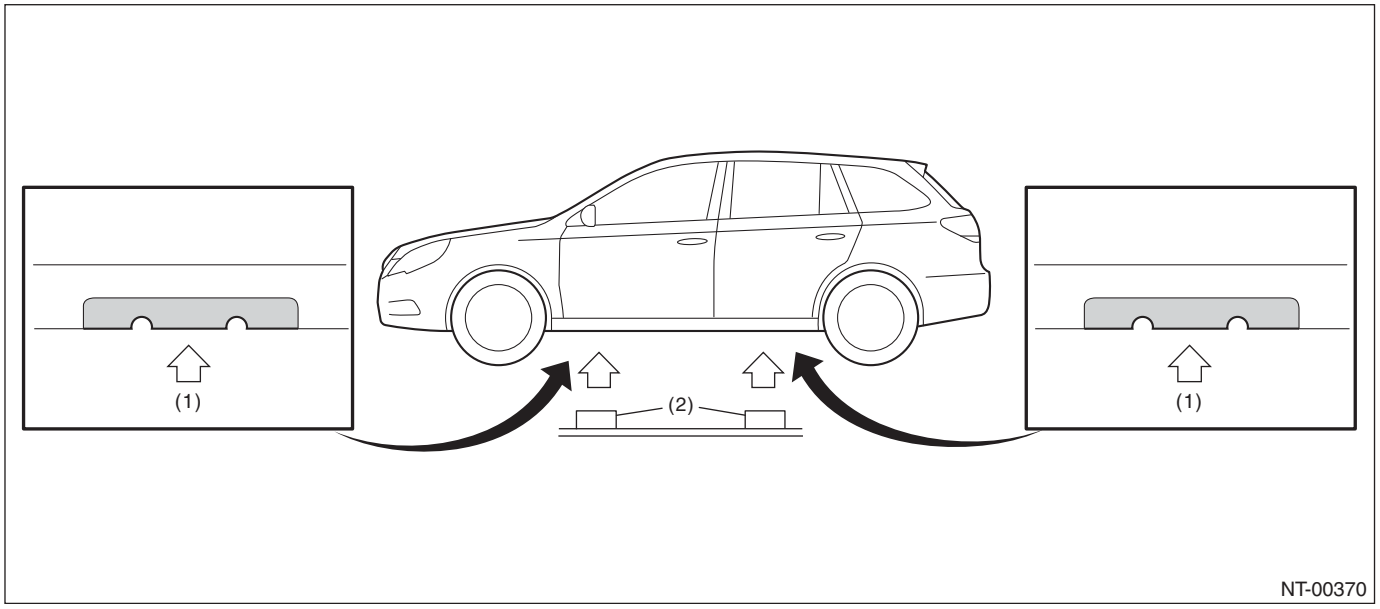


CAUTION:
For models with side under skirt, use a spacer or an attachment to lift up the vehicle securely at jack up point, without contact of side under skirt and lift.

- **RIGID RACK**

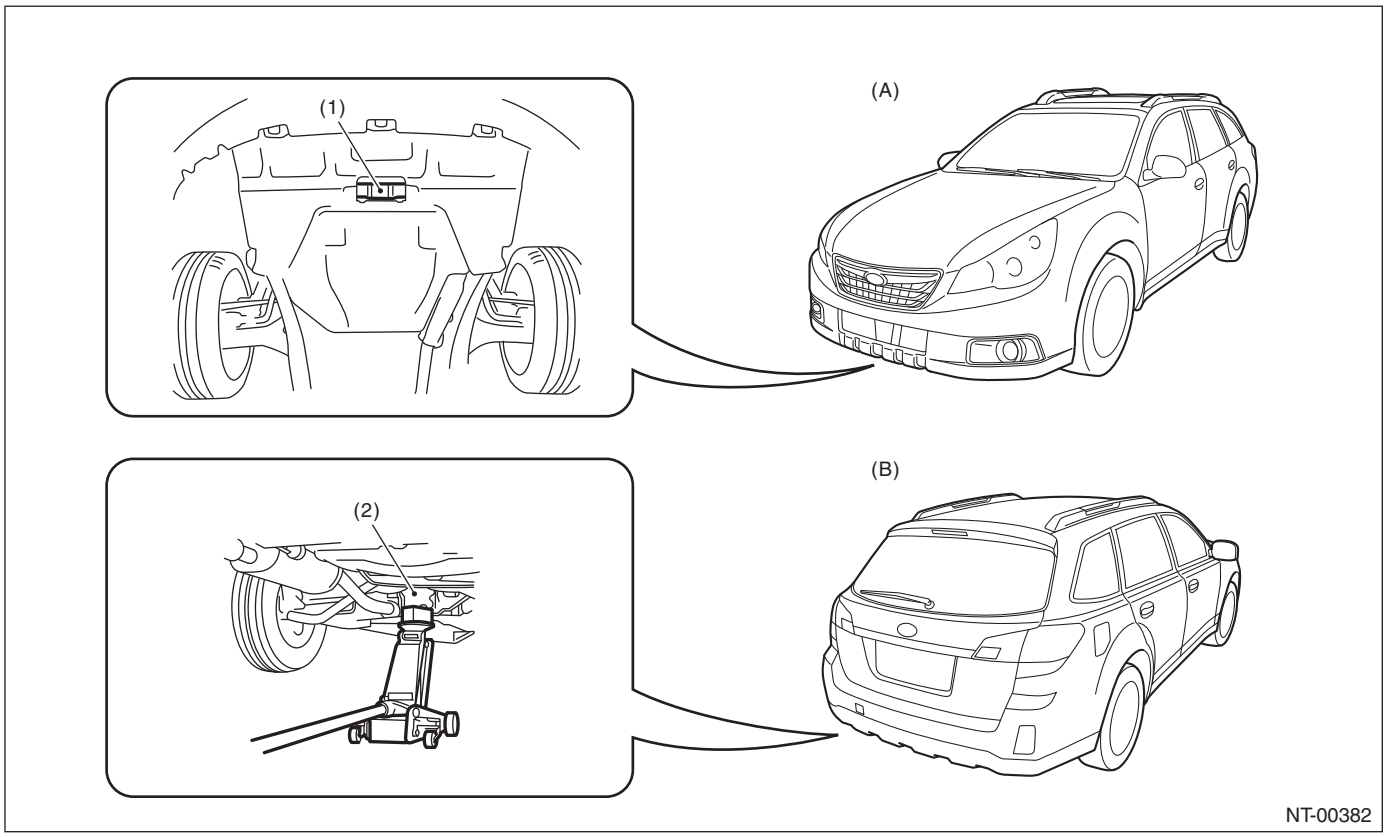


- **PLATE LIFT**



(1) Jack-up point (2) Attachment

- **Jack-up point (when using garage jack)**



(A) Front (B) Rear
(1) Front cradle (2) Rear differential

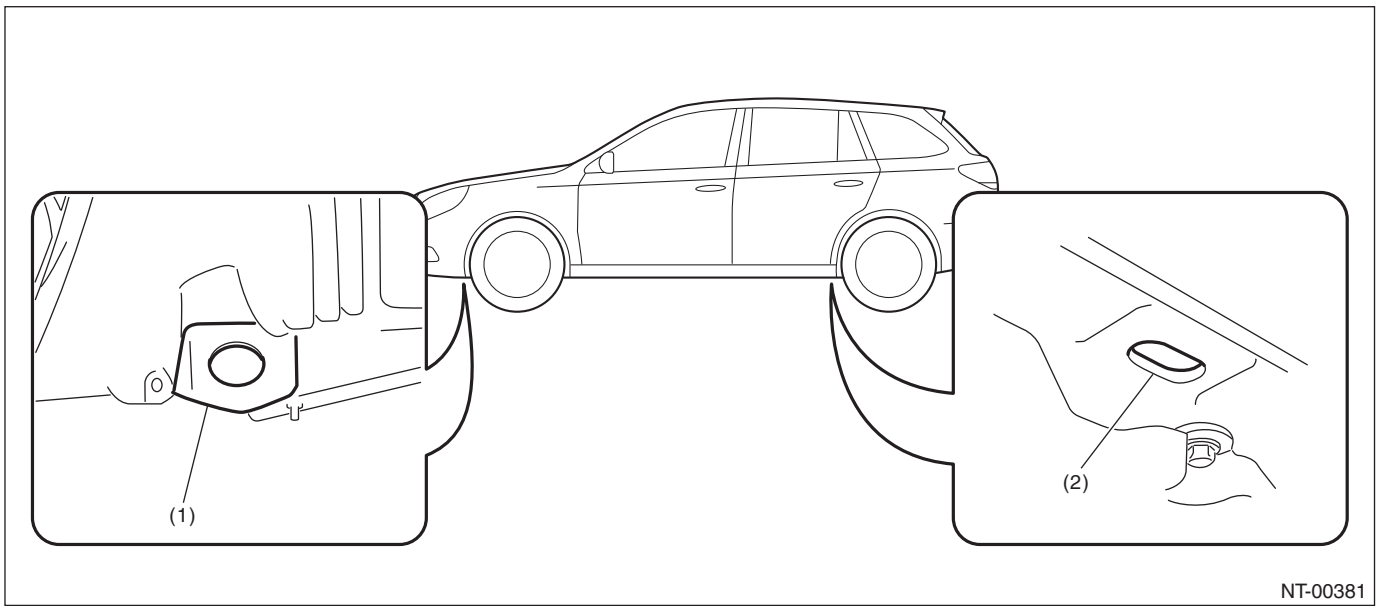
CAUTION:
If jacking up the front side of the vehicle, make sure that the jack is attached at the center of the jack-up plate not at the sides.

NOTE

10.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**



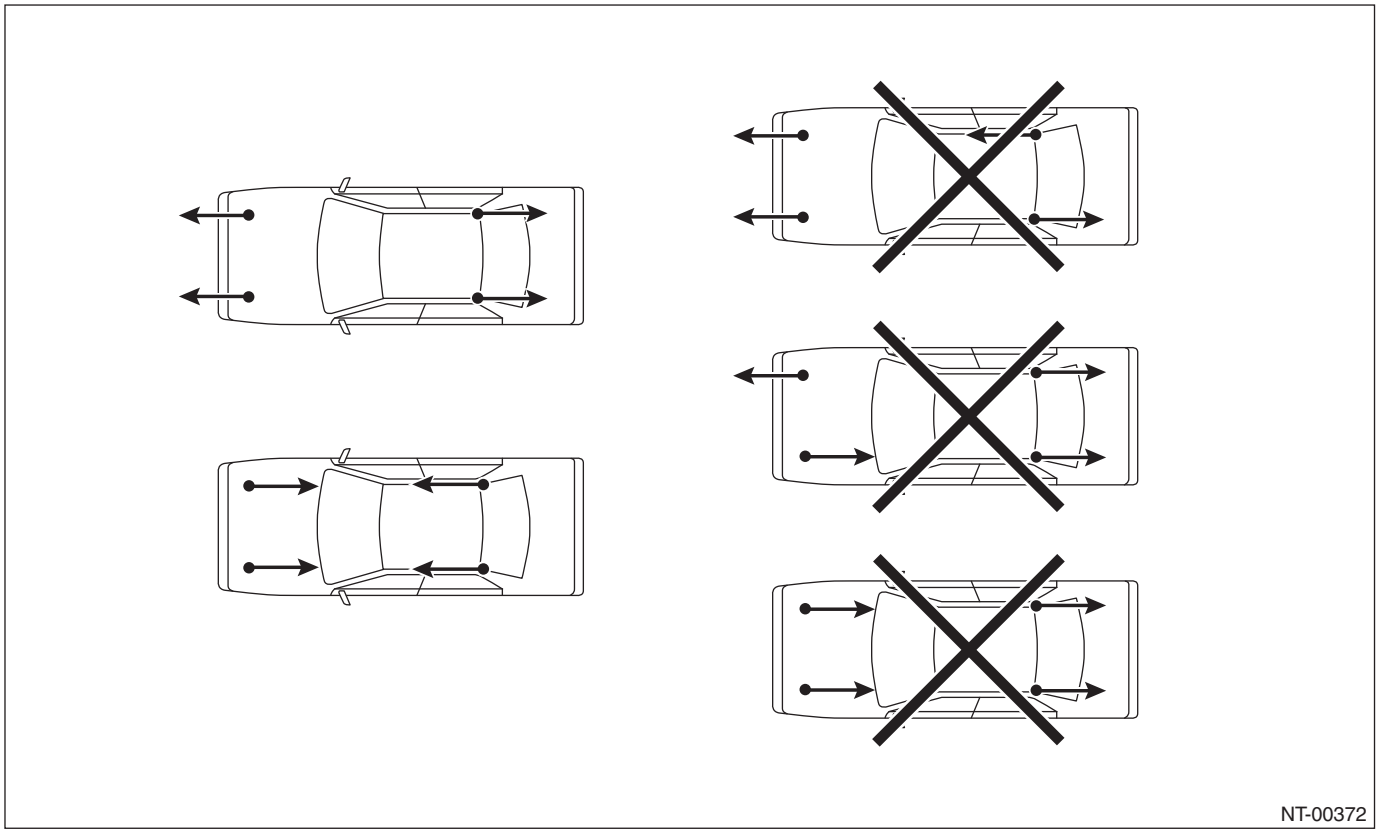
(1) Hook for tie-down
(2) Tie-down hole

• CHAIN DIRECTION AT TIE-DOWN CONDITION

CAUTION:

• Pull the tie-down chains LH and RH in the same direction, but front and rear side in the counter direction.

• Patterns except for the followings (recommended) are not allowed.

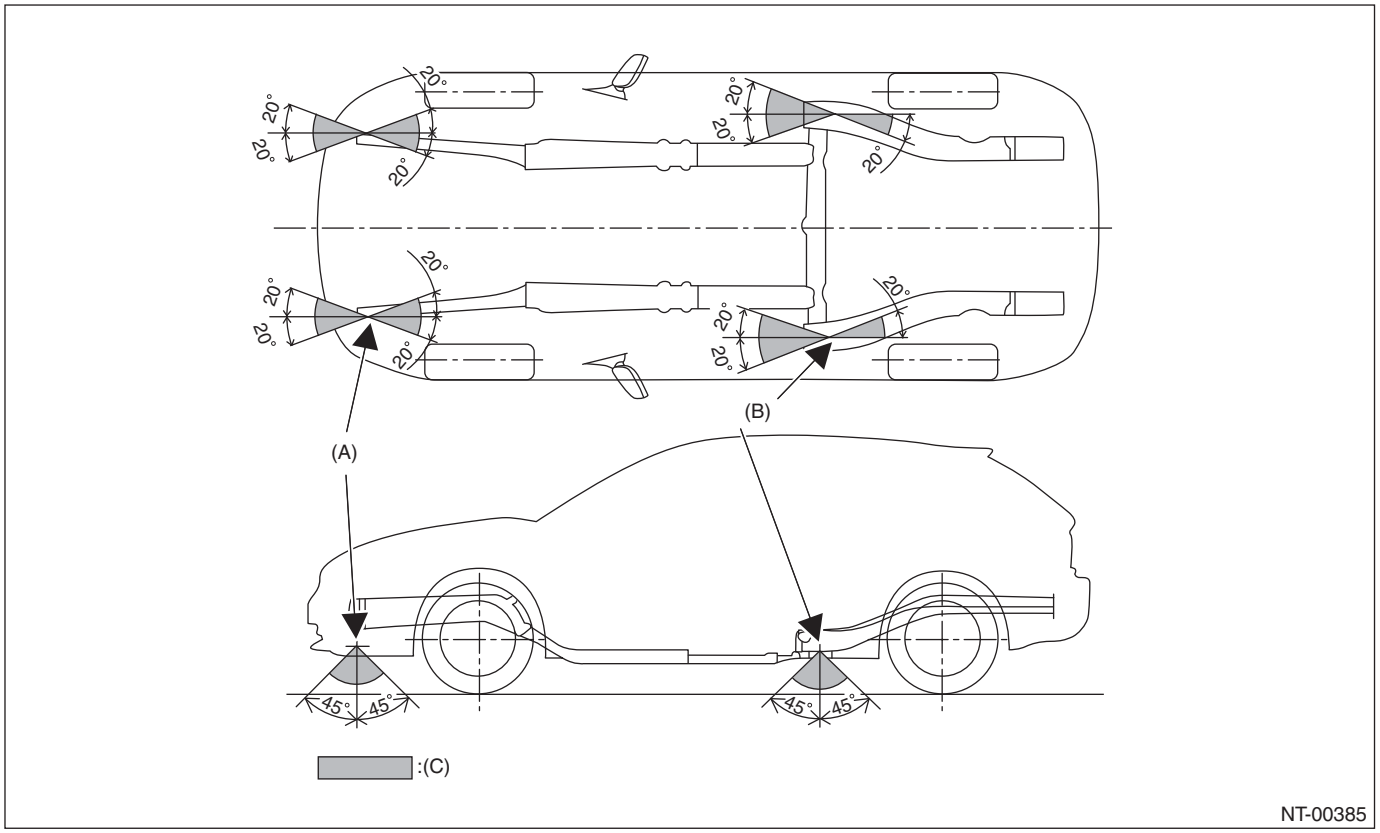


NOTE

- **TIE-DOWN RANGE**

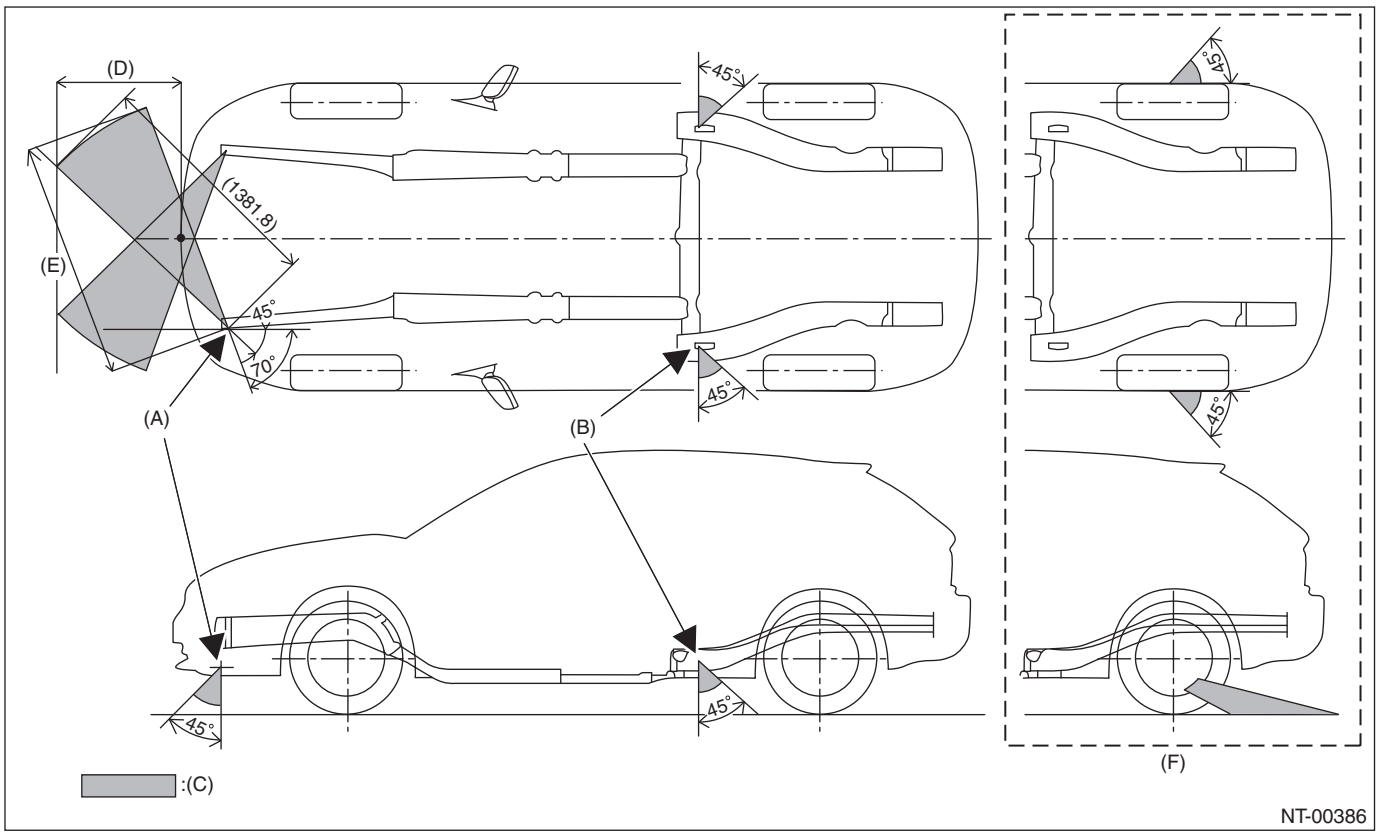
For ground transportation

CAUTION:
When the vehicle is tied down from vehicle inside, hook the hooks of tie-down chain on the rear tie-down hooks from vehicle inside. When the vehicle is tied down from vehicle outside, hook the hooks of tie-down chain on the rear tie-down hooks from vehicle outside.



(A) Front tie-down hook
(B) Rear tie-down hole
(C) Chain pulling range at tie-down condition

For sea transportation



(A)	Front tie-down hook	(C)	Chain pulling range at tie-down condition	(E)	1,320 mm (52.0 in)
(B)	Tie-down hole or wheel spoke	(D)	400 mm (15.7 in)	(F)	When rear wheel is tied down

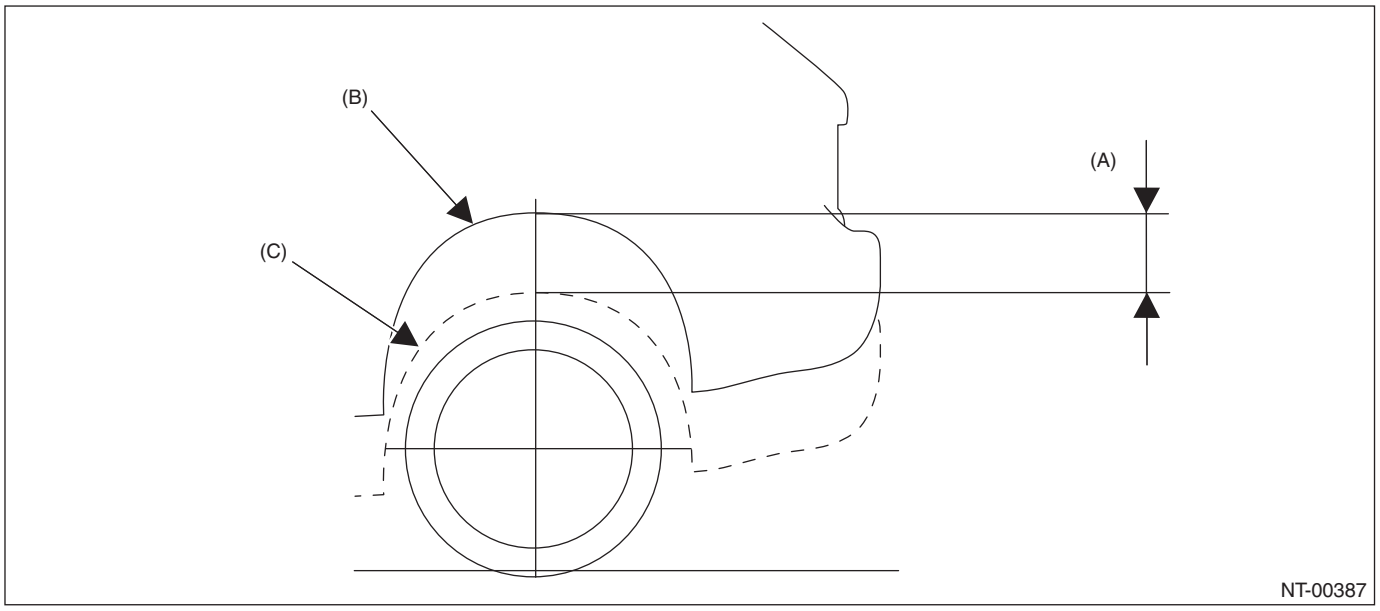
CAUTION:

- **Basically, tie down using the tie-down hole.**
- **Tie-down procedure should be followed as much as reasonably possible depending on the deck condition, however, lashing belt and vehicle must not contact each other. Also, if a wheel tie-down is conducted instead of using rear tie-down hole due to the vehicle loading condition of the deck, follow the instructions below.**
  1. **Tie-down range must be within the backward of rear wheel as shown in the figure.**
  2. **Wheel tie-down should be used only during sea transportation, and lashing belt should not contact air valve while tie-down. Be careful not damage the wheel and vehicle.**
  3. **Maximum tie-down load to each lashing belt is 5000 N (510 kgf, 1124 lbf).**
  4. **For steel wheel, do not tie down wheels.**

NOTE

- **VEHICLE SINKING VOLUME AT TIE-DOWN CONDITION**

CAUTION:
The vehicle sinking volume at tie-down condition should be less than 50 mm (1.97 in) and make sure to fix the vehicle securely.
Check to see if the tensions of chains or belts at tie-down condition are appropriate in the following procedures.
1) Measure the distance (A) between the center of wheel and highest arch point.
2) Compare the above dimensions of before and after tie-down.
3) If the distance is less than 50 mm (1.97 in), it is judged as OK. If the distance is 50 mm (1.97 in) or more, it is judged as NG because the tension is too high.



(B) Arch position before tie-down (C) Arch position after tie-down

- **NOTES FOR THE USE OF TIE-DOWN HOOK**

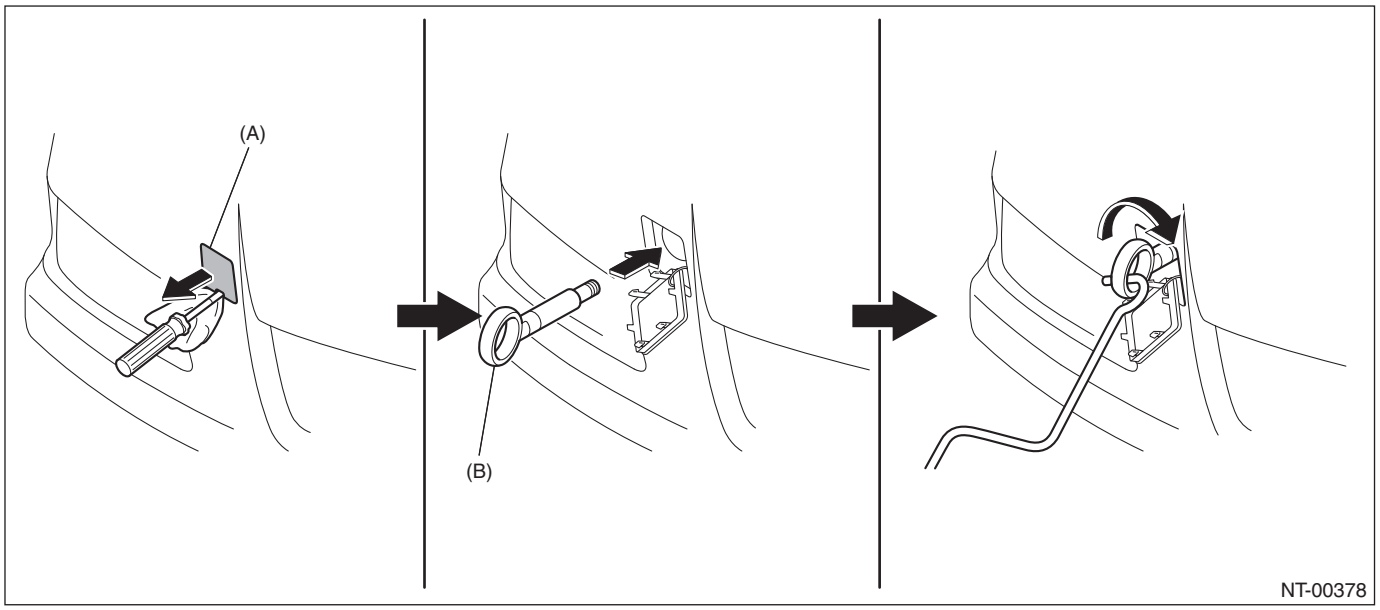
When the vehicle is tied down from vehicle inside, hook the hooks of tie-down chain from vehicle inside, and when the vehicle is tied down from vehicle outside, hook the hooks of tie-down chain from vehicle outside.
For front tie-down hook, use S hook and J hook, and for rear tie-down hole, use S hook, J hook and T hook. T hook can be used only for rear tie-down hole.

11.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.
- Front

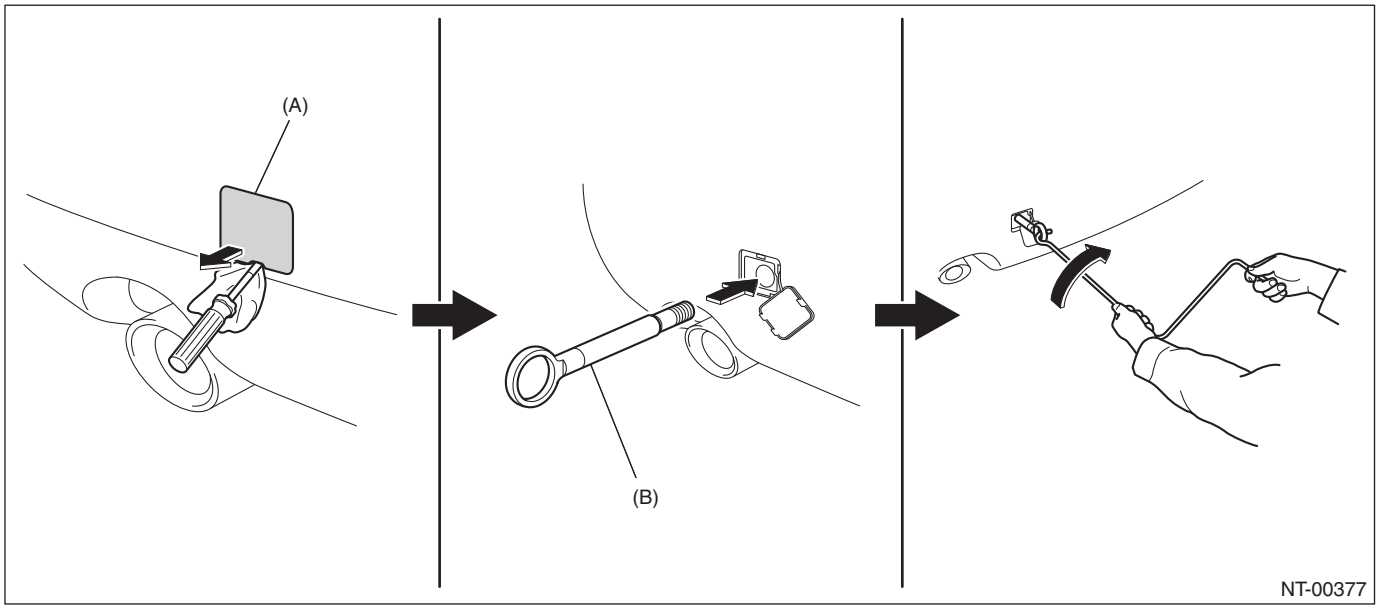
Remove the hook cover, and install the hook.



(A) Hook cover (B) Hook

- Rear

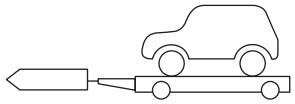
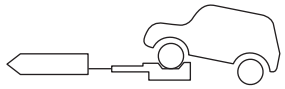
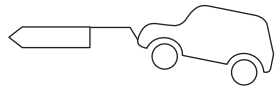
Remove the hook cover, and install the hook.



(A) Hook cover (B) Hook

NOTE

- Precautions

Towing	Precautions	MT	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. • AT model driving conditions: Driving speed of 30 km/h (19 MPH) or less Allow driving distance 30 km (19 miles) or less	○	▲
Raising the front wheels  NT-00025	Prohibited for full-time AWD model.	×	×
Lifting up the front wheels  NT-00026	• Prohibited, due to damage on bumper, front grille, etc. • Do not raise the vehicle with bumper.	×	×

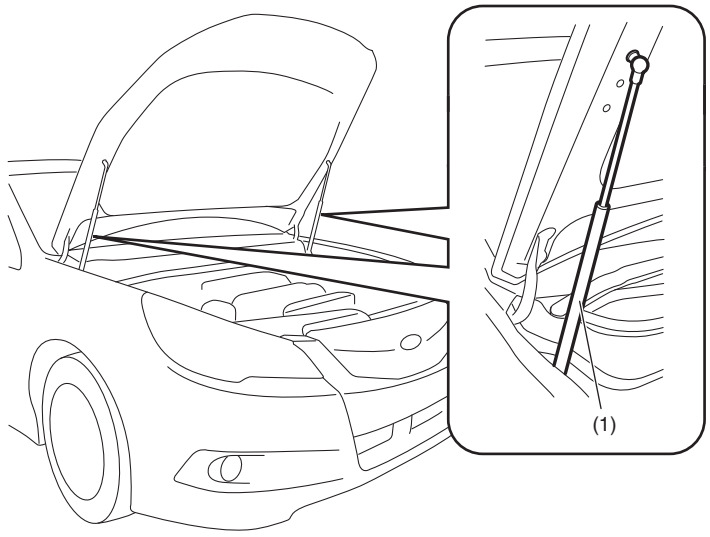
Marked ○: OK, Marked ×: Prohibited, Marked ▲: Conditionally OK.

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.**
- **Do not use towing hook except when towing.**
- **Make sure to detach the towing hook after towing. If the hook remains attached, airbag may not operate properly when receiving a shock from front side.**

12.FRONT HOOD DAMPER STAY

1) When performing inspection or general maintenance, install the damper stay to the normal position.

CAUTION:
When performing inspection or general maintenance, do not remove the damper stay.



NT-00366

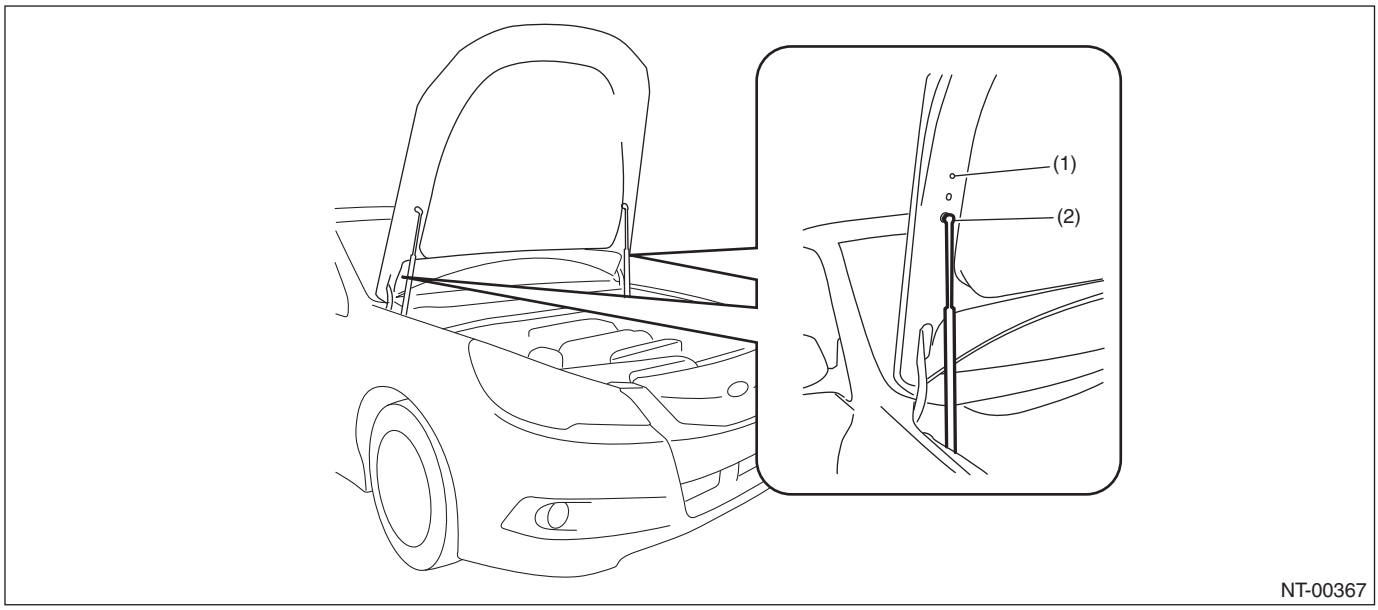
(1) Normal installation position

NOTE

2) When front hood needs to open wider, set the damper stay into the hole of lower hood as shown in the figure below.

Tightening torque:
<Ref. to EB-2, FRONT HOOD, COMPONENT, General Description.>

CAUTION:
- **Always perform inspection and general maintenance works with both damper stays attached.**
- **Do not keep detaching the damper stay on one side.**
- **The hood cannot be closed with the hood dumper at the full open position. When closing the hood, tie the hood striker and radiator panel and secure them.**
- **After work, make sure to return the damper stay to normal installation position and tighten the bolt to the specified torque.**



(1) Normal installation position (2) Installation position at full open

13.GENERAL SCAN TOOL

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

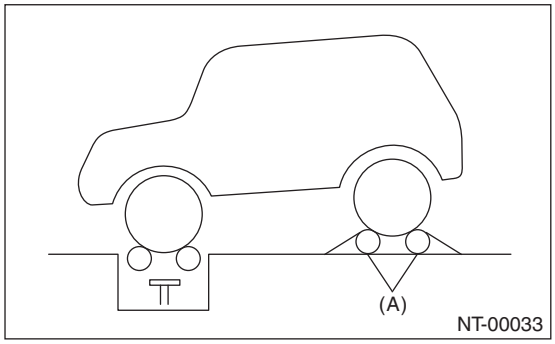
14.AWD CIRCUIT MEASURES

1) Full-time AWD MT model
Since viscous coupling (limited slip differential) is used in the center differential, cut-off of AWD circuit cannot be carried out.
2) Full-time AWD 5AT model
Since VTD type is used in the center differential, cut-off of AWD circuit cannot be carried out.
3) Full-time AWD CVT model
Since electronically controlled MT-P hydraulic multi-plate clutch is adapted for center differential, switch to FWD by using Subaru Select Monitor.

15.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

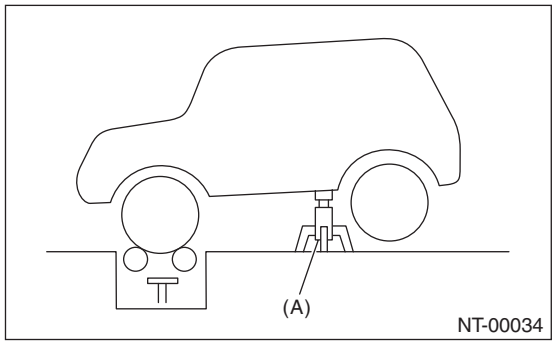
(3) Set the speedometer tester.
(4) Conduct the speedometer test work.

CAUTION:
Do not operate the clutch quickly and do not accelerate or decelerate suddenly during work.

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

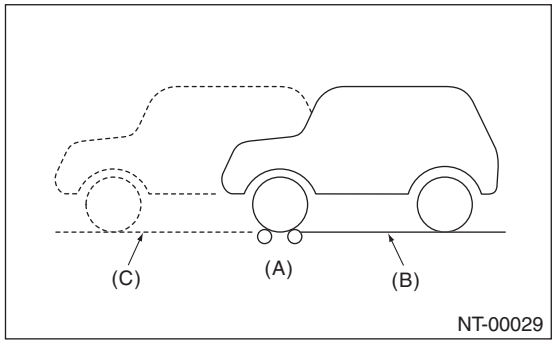
(3) Conduct the speedometer test work.

CAUTION:
Do not operate the clutch quickly and do not accelerate or decelerate suddenly during work.

16.BRAKE TEST

1) Full-time AWD MT model
(1) Perform this test after driving the vehicle 2 to 3 km (1.24 to 1.86 miles) on road in order to stabilize the viscous torque of viscous coupling.
(2) Keep the front or rear wheels on the ground for this test.

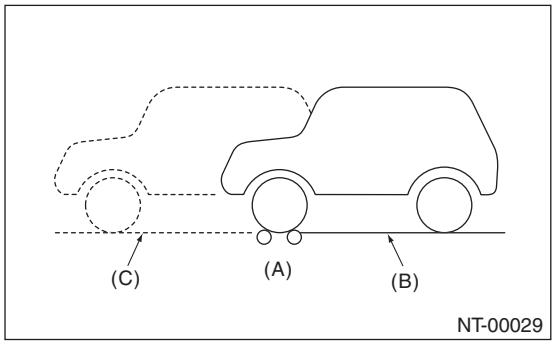
NOTE:
Effect of the viscous torque on braking force will be added approx. 25 kg compared with FWD model.



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

(3) When the brake dragging force is large.
• Check the dragging of brake pad or brake shoe.
• Since it may be affected by the viscosity of viscous coupling, jack up either of the front or rear two wheels to check the each wheel rotation condition with the viscous coupling affection removed.

2) Full-time AWD AT model
(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.
• Check the dragging of brake pad or brake shoe.

Specifications:

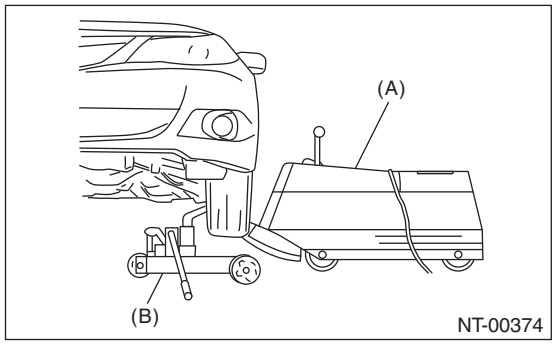
	Braking force
Rear wheel total	10% or more of load on front or rear wheels
Difference between right and left wheels	8% or less of load on front or rear wheels
Grand total	50% or more of vehicle weight at the time of test

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

17.ON THE CAR WHEEL BALANCING

CAUTION:
• Carry out the 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 operate the clutch quickly and do not accelerate or decelerate suddenly during work.
• 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.

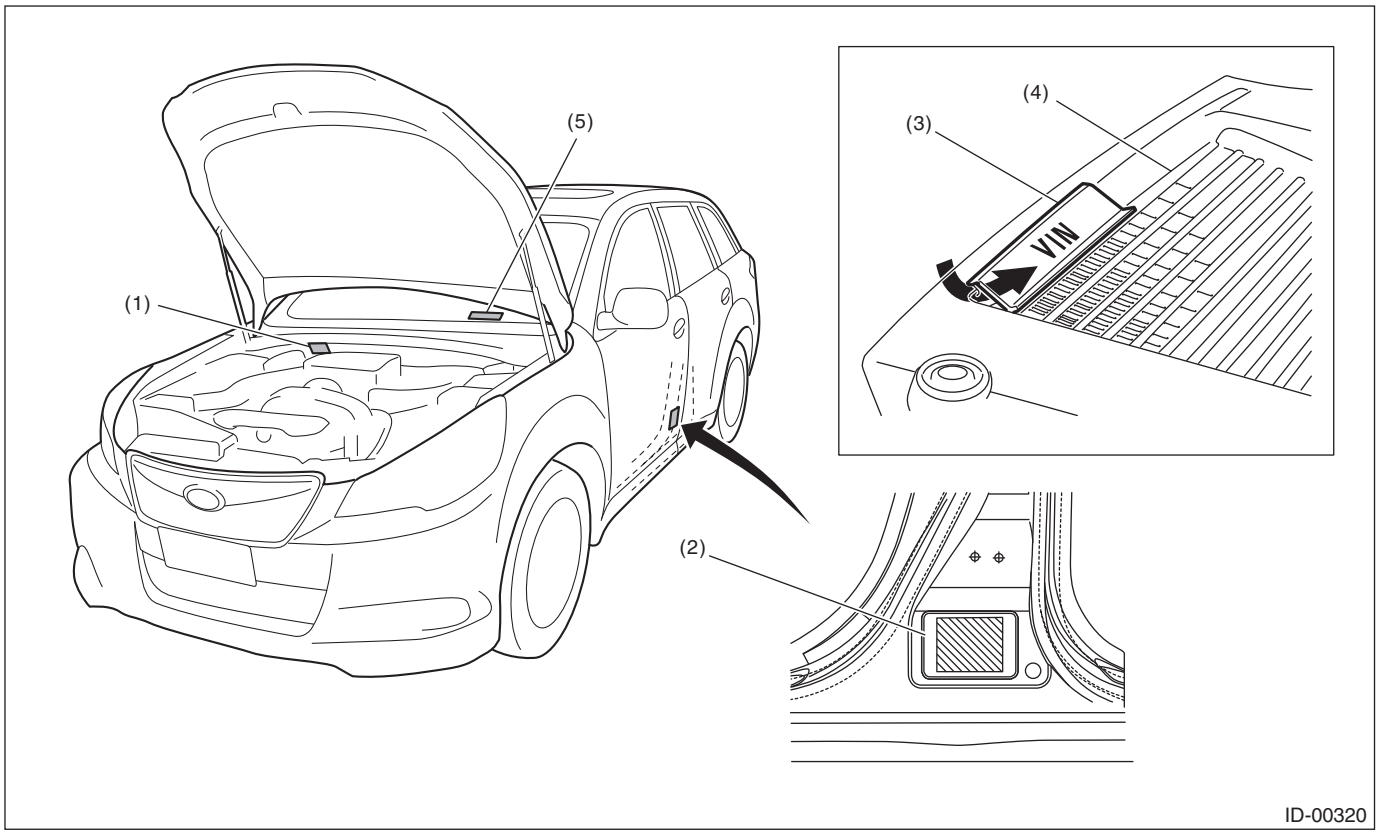
1. Identification

A: IDENTIFICATION

1. IDENTIFICATION NUMBER & LABEL LOCATIONS

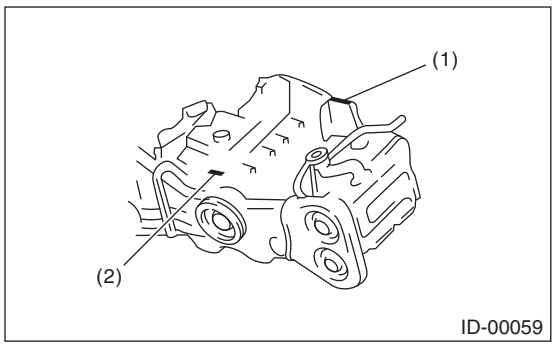
The V.I.N. (Vehicle Identification Numbers) is used to classify the vehicle.

- **POSITIONING OF THE PLATE LABEL FOR IDENTIFICATION**



(1) Vehicle identification number (V.I.N.)
(2) FMVSS label (U.S. model) (left side)
CMVSS label (Canada model) (left side)
Model No. label (Korea model) (right side)
(3) VIN cover (turbo model)
(4) Intercooler (turbo model)
(5) VIN plate

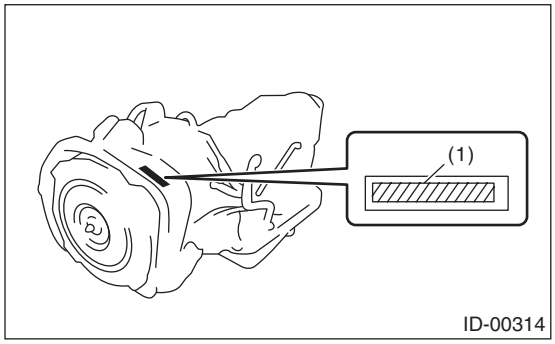
• ENGINE



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

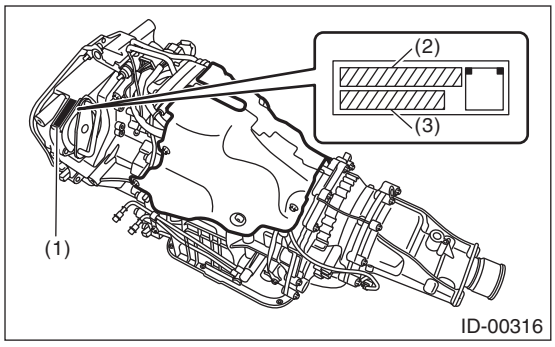
• AUTOMATIC TRANSMISSION

5AT



(1) Transmission serial number and AT type label

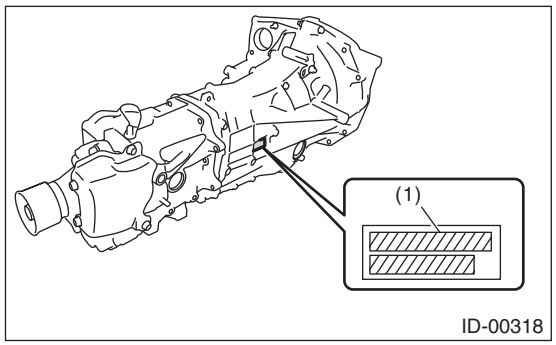
CVT



(1) Label
(2) CVT type label
(3) Transmission serial No. label

• MANUAL TRANSMISSION

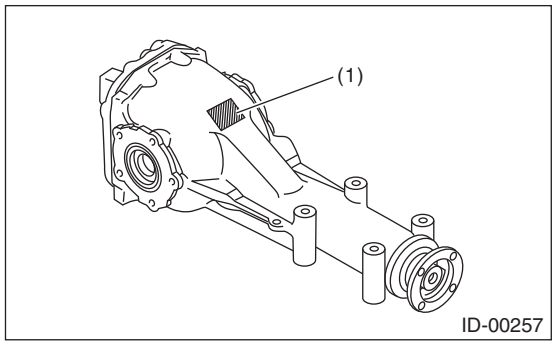
6MT



(1) Transmission serial number and MT type label

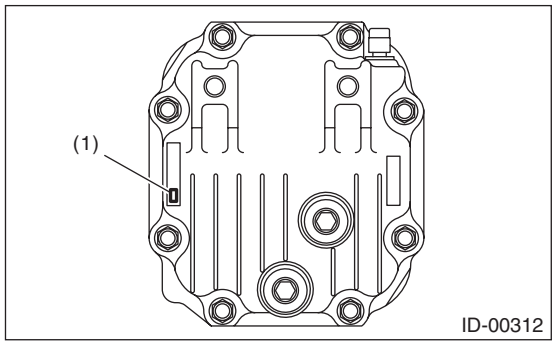
• REAR DIFFERENTIAL

T-type



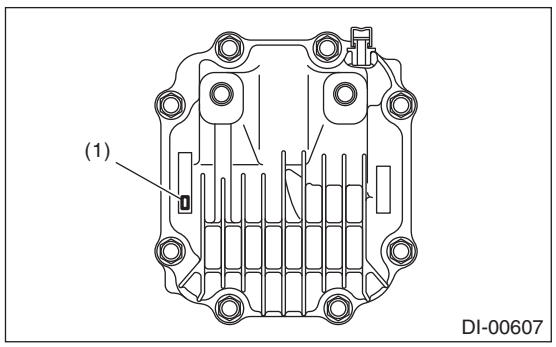
(1) Type (white paint)

VA1-type



(1) Type (label)

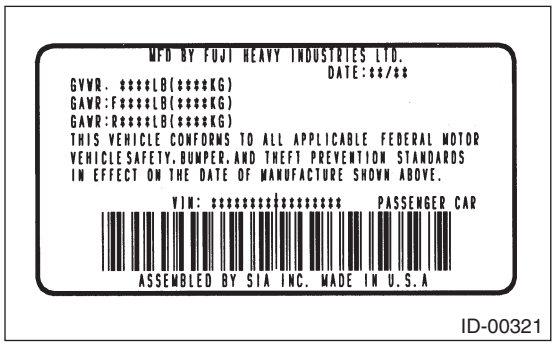
VA2-type



(1) Type (label)

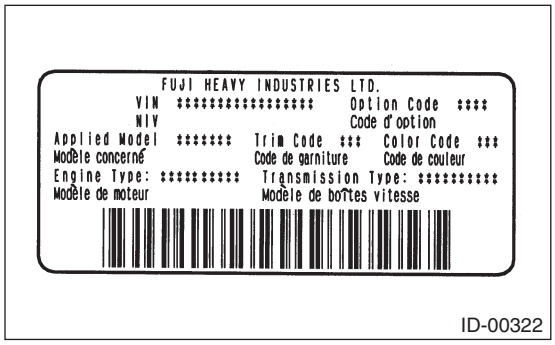
- **FMVSS LABEL, CMVSS LABEL**

Example



ID-00321

- **MODEL NUMBER LABEL**



ID-00322

2. MEANING OF V.I.N.

The meaning of the V.I.N. is as follows:
]4S3BMAA6XA1210001[
The starting and ending brackets ( ] [ ) are stop marks.

Digits	Code	Meaning	Details
1 — 3	4S3	Manufacturer of body area	4S3: All models except OUTBACK model for C0 4S4: OUTBACK for C0
4	B	Car line	B: LEGACY/OUTBACK
5	M	Body type	M: Sedan R: Wagon
6	A	Total emission and destination	A: 2.5L non-turbo for U4 B: 2.5L non-turbo for U5 C: 2.5L non-turbo for U6 D: 3.6L non-turbo for U5 E: 3.6L non-turbo for U6 F: 2.5L turbo for U4 G: 2.5L non-turbo for C0 H: 2.5L non-turbo for C5 J: 3.6L non-turbo for C0 K: 2.5L turbo for C0 L: 2.5L non-turbo for C6 M: 3.6L non-turbo for C6
7	A	Grade	A: Base B: Premium C: Premium + cold weather package D: Premium + 6CD harman/kardon E: Premium + M/R F: Premium + 6CD harman/kardon + cold weather package G: Premium + M/R + cold weather package H: Premium + M/R + cold weather package + 6CD harman/kardon J: Limited + 6CD harman/kardon K: Limited + 6CD harman/kardon + M/R L: Limited + M/R + navigation M: Limited + M/R
8	6	Restraint system or GVWR Class	6: Manual belt, dual airbag, side airbag for seat back + curtain airbag for roof (except for OUTBACK model) C: Manual belt, dual airbag, side airbag for seat back + curtain airbag for roof, class C (GVWR 4001 — 5000 lb) (for OUTBACK model)
9	X	Check digit	0 — 9&X
10	A	Model year	A: 2010MY
11	1	Transmission type	1: Full-time AWD 6MT 2: Full-time AWD 5AT 3: Full-time AWD CVT
12 — 17	210001	Serial number	210001 — : Sedan 310001 — : Wagon

3. MODEL NUMBER PLATE

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

- **BM9AY4M**

Digits	Code	Meaning	Details
1	B	Series	LEGACY
2	M	Body type	M: Sedan R: Wagon
3	9	Total engine displacement Drive system Suspension system	9: 2.5L AWD F: 3.6L AWD
4	A	Model year	A: 2010MY
5	Y	Destination	Y: US, Canada
6	4	Grade	4 : 2.5i 5: 2.5i Premium 6: 2.5i Limited C: 2.5GT Premium D: 2.5GT Limited F: 3.6R H: 3.6R Limited K: OUTBACK 2.5i L: OUTBACK 2.5i Premium M: OUTBACK 2.5i Limited S: OUTBACK 3.6R U: OUTBACK 3.6R Limited
7	M	Transmission, fuel feed system	9: SOHC MFI CVT M: SOHC MFI 6MT U: DOHC MFI 5AT X: DOHC MFI turbo 6MT

The engine and transmission type are as follows.

- **ENGINE**

EJ253CDAFB

Digits	Code	Meaning	Details
1 and 2	EJ	Engine type	EJ: 4 cylinders EZ: 6 cylinders
3 and 4	25	Displacement	25: 2.5L 36: 3.6L
5	3	Fuel feed system	3: MFI non-turbo (SOHC) 5: MFI turbo D: MFI non-turbo (DOHC, H6)
6	C	Emission regulations	A: For states not using California emission standards B: For USA C: For states using California emission standards
7	D	Mounted transmission	C: D5AT D: 6MT (T75) U: CVT
8 — 10	AFB	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

• TRANSMISSION

1. MT

TY756WCAAA

Digits	Code	Meaning	Details
1	T	Transmission	T: Transmission
2	Y	Transmission type	Y: Full-time AWD MT center differential
3 and 4	75	Identification	75: 6MT
5	6	Series	6: 6MT
6	W	Transmission specifications	W: Full-time AWD 6MT single range with viscous coupling center differential
7	C	Equipped vehicle	C: 2.5L SOHC non-turbo L: 2.5L DOHC turbo
8 — 10	AAA	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

2. AT

TG5D8CJAAA

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

3. CVT

TR690JHAAA

Digits	Code	Meaning	Details
1	T	Transmission	T: Transmission
2	R	Transmission type	R: Full-time AWD CVT
3 and 4	69	Distance between gear center	69: CVT
5	0	Series	0: CVT
6	J	Transmission specifications	J: Active torque split type full-time AWD CVT
7	H	Mounted engine	H: 2.5L SOHC non-turbo
8 — 10	AAA	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

• Rear differential

Code	Reduction gear ratio	LSD
B1	4.111	No
B2	3.900	No
XC	3.083	No
XD	3.700	No
T2	4.111	No
TP	4.444	No

• OPTION

U5DC

Digits	Code	Meaning	Details
1 — 2	U5	Destination	C0: Canada C5: Canada (PZEV) C6: Korea U4: USA U5: USA (for states using California emission standards) U6: USA (for states not using California emission standards)
3	D	Option equipment	A: Cruise control B: A package, power seat, cruise control C: A package, power seat, genuine leather seat, cruise control D: A package, cruise control 6: Special edition
4	C	Option equipment	A: Winter pack, side & curtain airbag B: Side & curtain airbag C: Winter pack, side & curtain airbag, sunroof D: Side & curtain airbag, sunroof E: Winter pack, navigation + wide monitor, side & curtain airbag, sunroof F: Dark colored glass, winter pack, side & curtain airbag, sunroof F: Dark colored glass, side & curtain airbag, sunroof H: Dark colored glass, winter pack, navigation + wide monitor, side & curtain airbag, sunroof I: Dark colored glass, winter pack, side & curtain airbag J: Dark colored glass, side & curtain airbag V: harman/kardon audio, side & curtain airbag, sunroof, winter pack V: harman/kardon audio, side & curtain airbag, winter pack Y: Dark colored glass, winter pack, harman/kardon audio, side & curtain airbag, sunroof Z: Dark colored glass, winter pack, harman/kardon audio, side & curtain airbag 1: Special edition 2: Special edition

1. Recommended Materials

A: RECOMMENDED MATERIALS

1. GENERAL

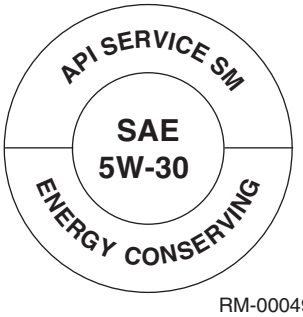
To insure the best performance, always use the specified oil, gasoline, adhesive, sealant, etc. or a substitute of equivalent quality.

2. FUEL

• Use unleaded gasoline to reduce air pollution, because using leaded gasoline will damage the catalytic converter.
• Do not use the low quality gasoline, or improper fuel such as diesel fuel, fuel alcohol, or gasoline additive because they will adversely affect on engine components.
• Always use gasoline that is equivalent to that prescribed in the owner's manual or that of high octane value. There is the possibility of damaging or improper operation of the engine and fuel injection system if the specifications are not observed. Use the prescribed gasoline type to maintain proper vehicle performance.

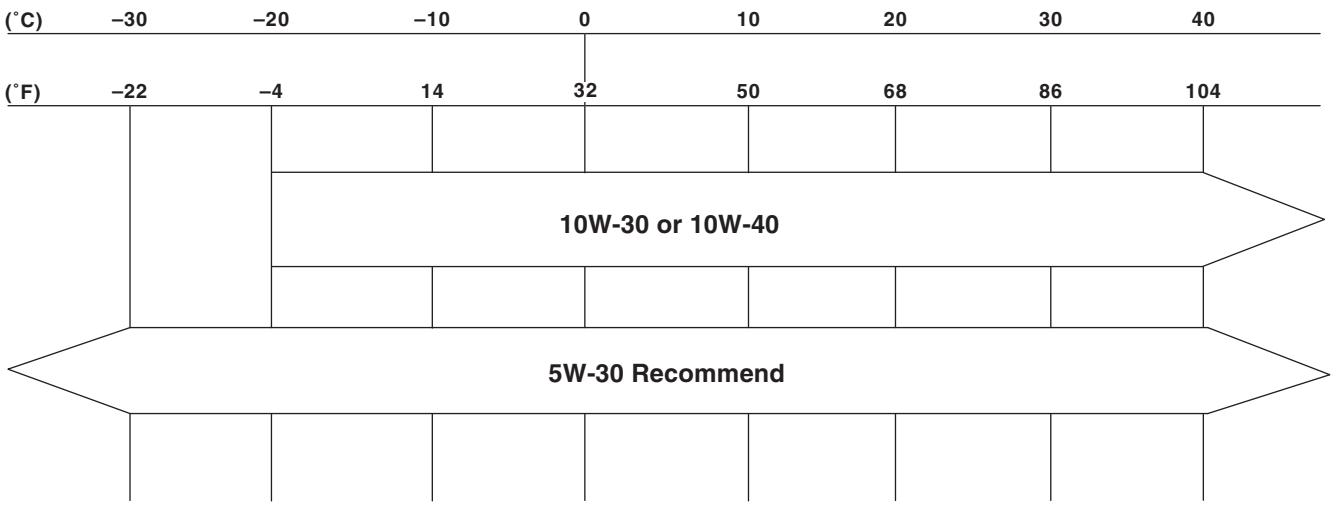
3. LUBRICANTS

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.	SM grade "Energy conserving"  RM-00049	GF-4  RM-00002
Manual Transmission Oil	GL-5	—
Front differential gear oil	GL-5	—
Rear differential gear oil	GL-5	—

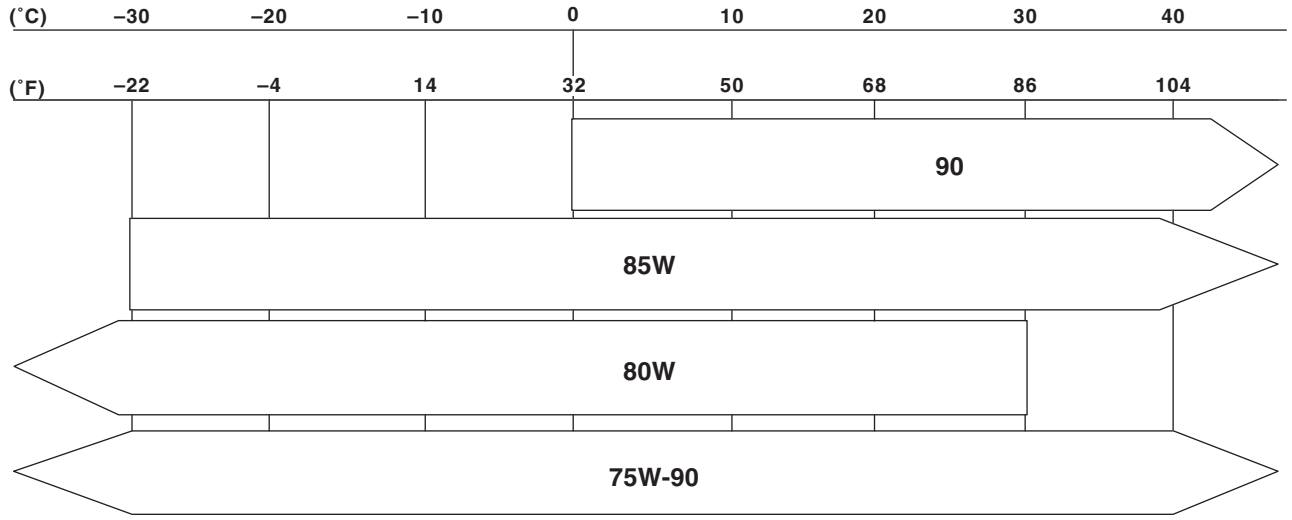
SAE viscosity No. and applicable temperature

Engine oil



RM-00059

Manual transmission oil, rear differential gear oil, AT and CVT front differential gear oil



RM-00004

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	Item number	Alternative
Automatic transmission fluid	CVT	SUBARU CVT OIL FOR LINEARTRONIC	K0425Y0710	—
	5AT	SUBARU ATF HP	—	IDEMITSU: ATF HP
Power steering fluid		SUBARU PS fluid	K0515YA000	DEXRON III
Brake fluid		FMVSS No. 116 DOT3 or DOT4	—	—
Clutch fluid		FMVSS No. 116 DOT3	—	—

5. COOLANT

Use genuine coolant to protect the engine.

Engine coolant	Recommended materials	Item number	Alternative
Coolant	SUBARU SUPER COOLANT	K0670Y0001	—
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	—	—
Compressor oil	DENSO OIL 8	—	—

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	• MT main shaft (spline parts) • MT main shaft (oil seal lip) • Clutch release lever	NICHIMOLY N-130	—	—
	Clutch master cylinder push rod	SILICONE GREASE G-40M	—	—
	• Gear shift lever • Clutch operating cylinder • Clutch pedal • Brake pedal • Release bearing • Select lever (Except for shift lock parts)	NIGTIGHT LYW No. 2 grease	—	—
	Select lever (Shift lock parts)	Multemp D	—	—
	• Door latch • Door striker	SILICONE GREASE G-30M	004404002	—
	Steering gearbox	VALIANT GREASE M2	003608001	ONE LUBER SG or MO
	Disc brake (lock pin, guide pin, piston boot)	Brake grease (NIGLUBE RX-2)	K0779GA102	—
	Between brake pad and shim	Molykote AS-880N	K0777YA010	—
	Brake pad clip	Molykote M7439 (Brake Grease 60G)	—	—
	Front axle AAR	One-Luber GKN-C	—	—
	• Rear axle BJ • Rear axle EBJ	NKG106	—	—
	Rear axle DOJ	NKG205	—	—

8. ADHESIVE

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

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

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	• MT transmission case • Converter case • CVT converter case • CVT transmission case • CVT intermediate case • CVT converter cover • CVT chain cover	THREE BOND 1215	004403007	DOW CORNING No. 7038
	Transmission oil pan (AT and CVT model)	THREE BOND 1217B	K0877YA020	—
	• Cylinder block • Camshaft cap • Oil pump (Except for 3.6 L model) • Rocker cover (3.6 L model or turbo model) • Oil pan (block lower) (except 3.6 L model) • Oil pan (oil pan upper) (3.6 L model) • Block lower (block) (except 3.6 L model) • Block (oil pan upper) (3.6 L model) • Back chain cover (front chain cover, block, head, oil pan upper) (3.6 L model) • Separator cover (except for 3.6 L model) • Scavenge pump (turbo model)	THREE BOND 1217G	K0877Y0100	—
	• Engine oil pressure switch • Rear differential lock nut (companion flange) • Rear differential driven gear mounting bolt threaded portion • Engine oil separator cover threaded portion (when reusing bolts) • Engine oil pump mounting bolt threaded portion (when reusing the bolt) (when reusing bolts) • Timing belt guide cam sprocket side mounting bolt threaded portion (when reusing the bolt) (when reusing bolts)	THREE BOND 1324	004403042	—
Seal material	• Rear differential • PCV valve (except 3.6L model) • Service hole plug • Intake manifold nipple	THREE BOND 1105	004403010	DOW CORNING No. 7038
	Steering adjusting screw	SEAL END No. 22	—	—
	PCV valve (3.6L model)	THREE BOND 1141G	—	—
	• Front sealing cover (door) • Rear sealing cover (door)	3M Butyl Rubber 8626	—	—
	Rear differential (side retainer bolt)	THREE BOND 1110B	K0879Y0020	—

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 has no damage and no vehicle protective parts are missing while shipped or stored in a car barn.
- Make sure to deliver a complete vehicle to customer.

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

B: PRE-DELIVERY INSPECTION (PDI) PROCEDURE

Static Checks Just After Vehicle Receipt

Procedure	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 inspect the body paints for small areas of damage or rust. 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. 4. Check the instrument panel, console, and trims for stains or dirt.
2. Tire	1. Check the tires for damage, defective, and dents on wheels. 2. Check the tire air pressure.
3. Fuse	If the vehicle is about to be delivered to customer, attach a back-up fuse.
4. Lock/unlock and open/close operation of doors.	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 all doors and the rear gate lock and unlock normally.
5. Child safety lock system	Check the child safety lock system operates normally.
6. Trunk lid open/close	1. Press the trunk opener switch for approx. one second to check for normal operation of the trunk lid. 2. Check that main and sub keys can lock/unlock the release lever, and that valet key can not lock/unlock the release lever. 3. Open and close the trunk lid to see that there are no abnormal conditions.
7. Trunk lid release lever	Operate the trunk lid release lever to check that the trunk lock is unlocked normally.
8. Lock/unlock and open/close operations of rear gate	1. Open and close the rear gate to see that there are no problems. 2. Check if the rear gate can be unlocked normally through the emergency hole. 3. Operate the power door lock switch to check that all doors and the rear gate lock and unlock normally.
9. Fuel lid opener lever	Operate the fuel lid opener to check that the fuel lid is unlocked normally.
10. Accessories	Check that the following accessories are provided. • Owner's manual • Warranty booklet • Maintenance note • Spare key • Key number plate • Jack • Tool set • Spare tire • Towing hook (Eye bolt) • Security ID plate

Procedure	Check point
11. Front hood lock release system	Operate the front hood lock release lever to check that the front hood opens normally.
12. Battery	Check the battery for any abnormal conditions such as rust and trace of battery fluid leaks.
13. Brake fluid	Check the brake fluid amount.
14. Engine oil	Check the engine oil amount.
15. Transmission gear oil	Check that the transmission gear oil level is normal.
16. CVT front differential gear oil	Check for no leakage of CVT front differential gear oil.
17. Engine coolant	Check the engine coolant amount.
18. Clutch fluid	Check the clutch fluid amount.
19. Window washer fluid	Check the window washer fluid amount.
20. Front hood latch	Check that the front hood is closed and locked normally.
21. Keyless entry system	Check that the keyless entry system operates normally.
22. Security system (Alarm system)	Check that the security system (alarm system) operates normally.
23. 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.
24. Seat belt	1. Check the seat belt installation conditions and functionality. 2. Check the seat belt warning system operates normally.
25: TPMS (U.S. models)	1. Turn the transmitter power of TPMS to ON. 2. When the display of the TPMS warning light does not operate normally, perform the diagnosis while referring to TPMS(diag).

Checks with the Engine Running

Procedure	Check point
26. 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.
27. Starting condition	Start the engine and check that the engine starts smoothly.
28. Exhaust system	Check that the exhaust noise is normal and no leaks are found.
29. Indicator and warning lights	Check that all indicator lights and warning lights operate normally.
30. Heater & ventilation	Check that the heater & ventilation system operates normally.
31. Air conditioner	Check that the air conditioner operates normally.
32. Clock	1. Check that the clock operates normally. 2. Check for normal switch operation of fuel economy display.
33. Audio	1. Check that the audio system operates normally. 2. Check that the radio, CD and AUX systems operate normally.
34. Navigation system	1. Check all display functions for normal operation. 2. Check that the navigation, audio and AUX systems operate normally. 3. Check that the rearview camera operates normally.
35. Accessory power supply socket	Check that the accessory power supply socket operates normally.
36. Lighting system	Check that the lighting system operates normally.
37. Wiper deicer	Check that the wiper deicer operates normally.
38. Illumination control	Check that the illumination control operates normally.
39. Window washer	Check that the window washer system operates normally.
40. Wiper	Check that the wiper system operates normally.
41. Power window	Check that the power window operates normally.
42. Sunroof	Check that the sunroof operates normally.
43. Door Mirror	Check that the remote control mirror operates normally.
44. Parking brake	Check the parking brake for normal operations.

Dynamic Test with the Vehicle Running

Procedure	Check point
45. Brake test	Check the foot brake for normal operations.
46. AT shift control	Check that the AT shifts normally.
47. MT shift control	Check that the MT shifts normally.
48. Cruise control	Check that the cruise control system operates normally.

Checks after Dynamic Test

Procedure	Check point
49. ATF level	Check that the ATF level is correct.
50. CVTF	Check for leakage of CVTF.
51. AT front differential oil	Check for leakage of AT front differential oil.
52. Power steering fluid level	Check that the power steering fluid level is normal.
53. Fluid leakage	Check for fluid/oil leaks.
54. Water leakage	Spray the vehicle with water and check for water leaks.
55. Appearance 2	1. Remove the protective coat. (If attached) 2. Check the body paints for damage and stain. 3. Check the plated parts for damage and rust.

1. APPEARANCE

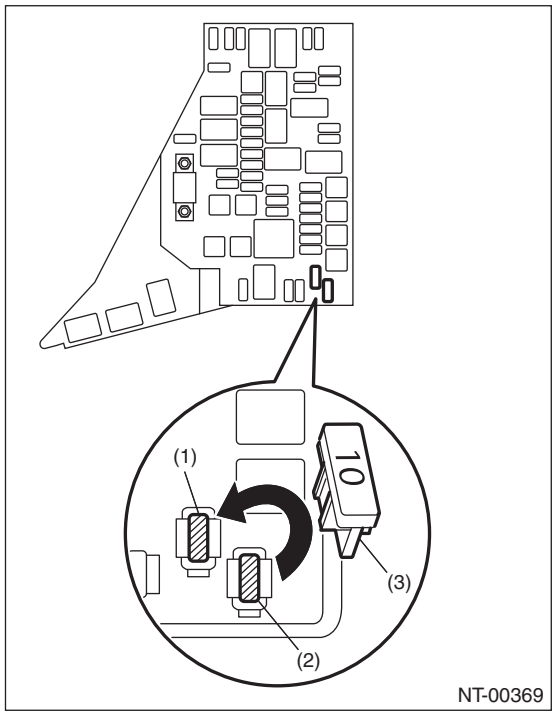
• If the vehicle is covered with protective coating, visually check the vehicle body for damage and dents.
• When the protective coating is removed, visually check the body paints for damage or stains in detail and repair as necessary.
• Visually check the windshield glass, door glasses and light lenses 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.
• Check the instrument panel, console, and trims for stains or dirt.

2. TIRE

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

3. FUSE

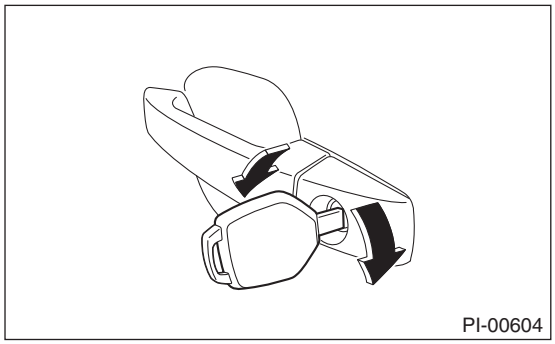
Right after the vehicle has arrived, 10 A backup fuse is removed to avoid run-down of the battery. Connect the backup fuse as shown in the figure. Also, delivery mode is canceled by disconnecting the backup fuse from the fuse holder.



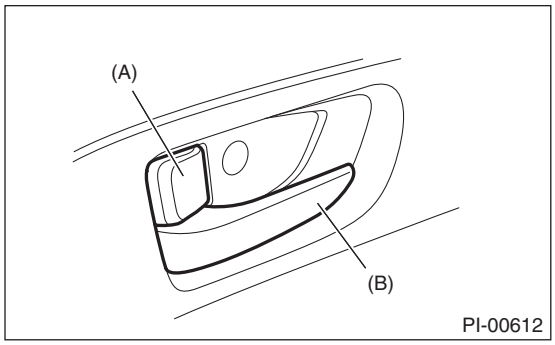
(1) Backup fuse insertion slot
(2) Backup fuse holder
(3) Backup fuse

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.


PI-00604

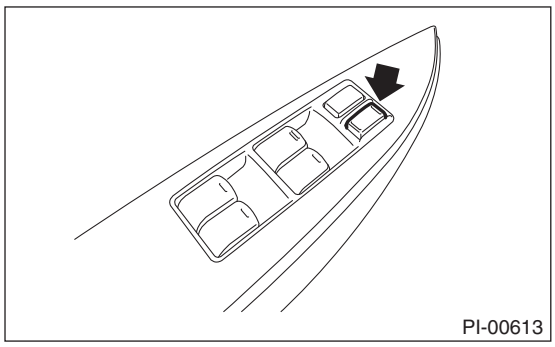
2) Completely close the driver's door, and then check the smooth movement with operating door lock knob from lock to unlock several times. Set the door lock knob (A) to lock position. Then pull the inner remote (B) to ensure that doors will not open.
For other doors, place the door lock knob (A) to lock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



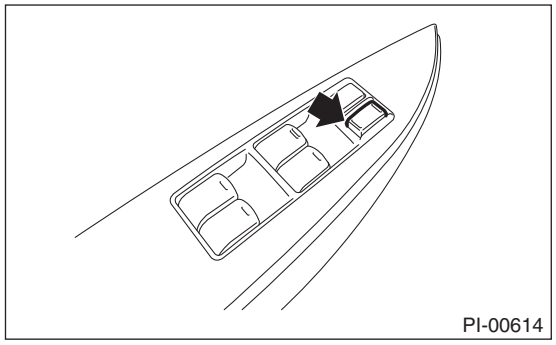
PI-00612

(A) Door lock knob
(B) Inner remote

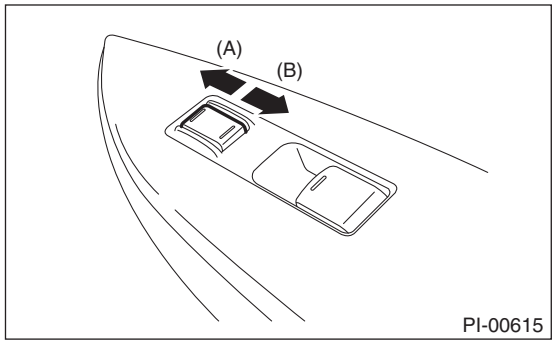
3) Close all the doors, and then press the lock on power door lock switch at driver's side. Check that all doors including rear gate are locked.


PI-00613

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


PI-00614

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



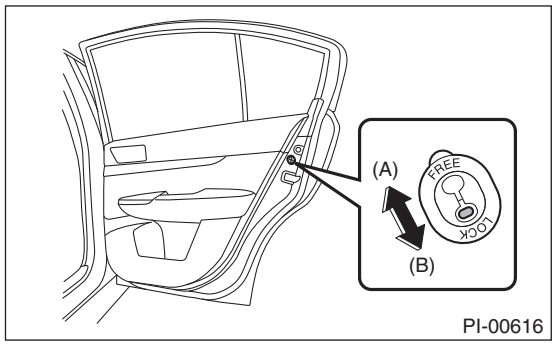
PI-00615

(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. CHILD SAFETY LOCK SYSTEM

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



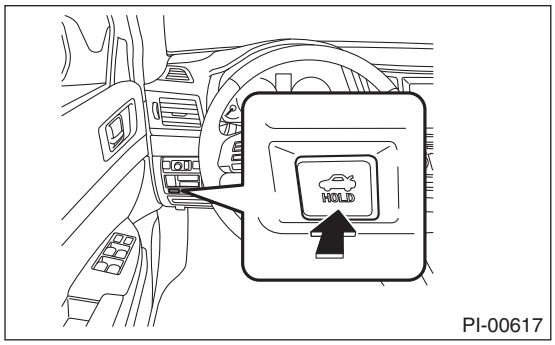
PI-00616

(A) Lock
(B) Unlock

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

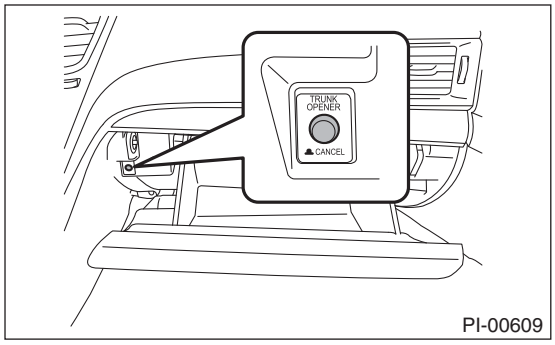
6. OPEN/CLOSE OPERATION CHECKS OF TRUNK LID

1) Press the trunk opener switch for approx. one second to check for normal operation of the trunk lid.



PI-00617

2) Open and close the trunk lid several times for smooth movement.
3) Press the trunk opener lock button in the glove box.



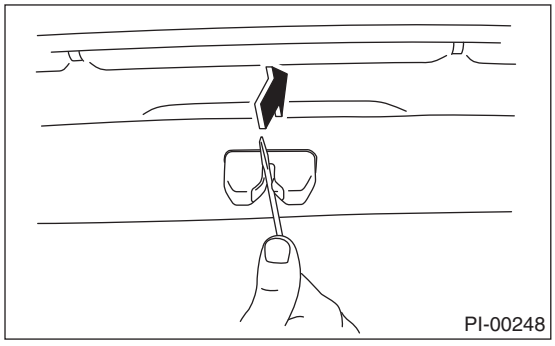
PI-00609

4) Check that the trunk lid will not open even when the trunk opener button is pressed.

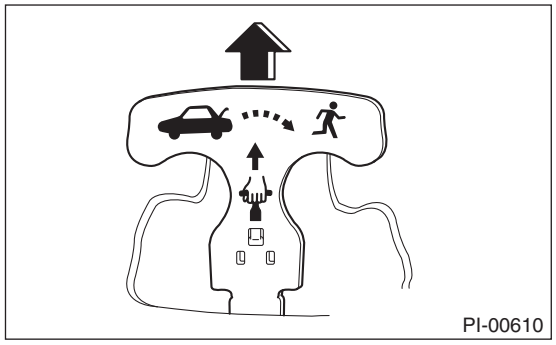
7. TRUNK LID RELEASE HANDLE

CAUTION:
Do not check the trunk lid release handle when in the trunk. If the trunk lid release handle is defective, you may be trapped in.

1) Use a flat tip screwdriver. Slide in the screwdriver through the clearance at the lock assembly until a click sound is heard. This is the latch lock position.

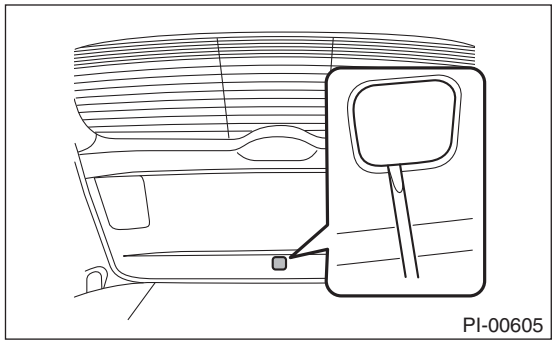

PI-00248

2) Make sure the latch is released by pulling the yellow trunk lid release handle in the direction of arrow.

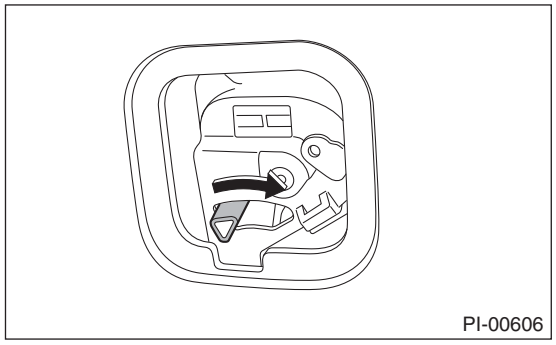

PI-00610

8. LOCK/UNLOCK AND OPEN/CLOSE OPERATIONS OF REAR GATE

1) Open and close the rear gate several times for smooth movement.
2) Operate the rear gate lever to check that the rear gate is locked and unlocked normally.
(1) Remove the cover inside the rear gate.


PI-00605

(2) Operate the lever to check that the rear gate is locked and unlocked normally.


PI-00606

9. FUEL LID OPENER LEVER

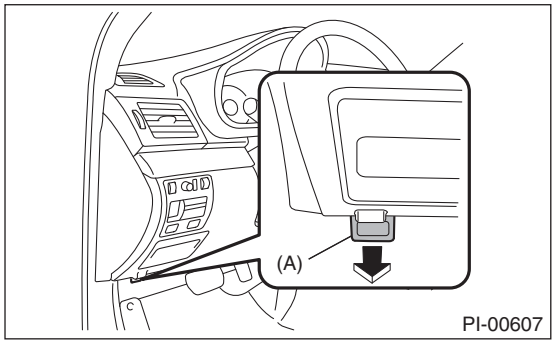
Operate the fuel lid opener to check that the fuel lid is unlocked normally. Check that the filler cap is securely closed.

10.ACCESSORY

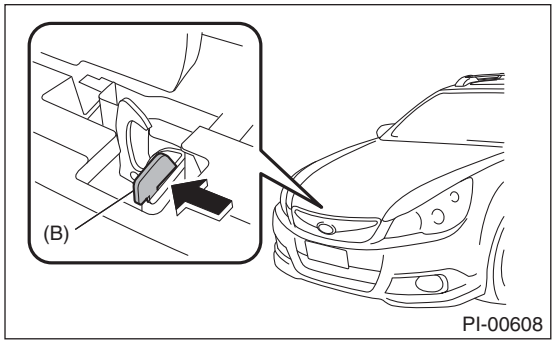
Check that the following accessories are provided.
- Owner's manual
- Warranty booklet
- Maintenance note
- Spare key
- Key number plate
- Jack
- Tool set
- Spare tire
- Towing hook (Eye bolt)
- Security ID plate

11.OPERATION CHECK OF FRONT HOOD LOCK RELEASE SYSTEM

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

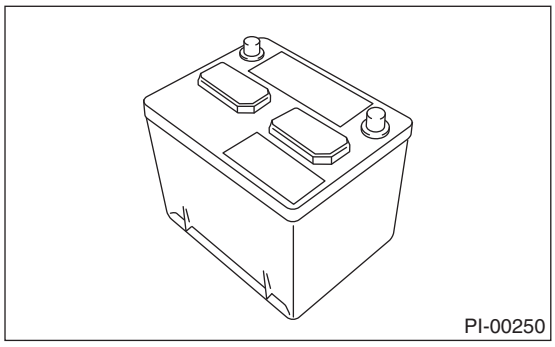


Operate the lever (B) and check that the front hood is opened normally.



12.BATTERY

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



13.BRAKE FLUID

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

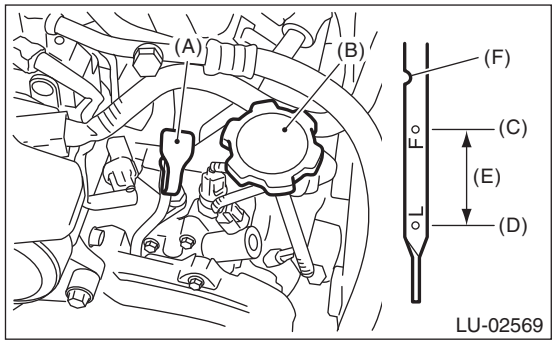
Check that the brake fluid level is normal. If the amount is insufficient, carry out a brake line test to identify brake fluid leaks and check the brake operation. After that, refill the brake fluid tank with the specified type of fluid.

14.ENGINE OIL

CAUTION:
If engine oil is spilt onto the exhaust pipe, wipe it off with cloth to avoid emission of smoke or causing a fire.

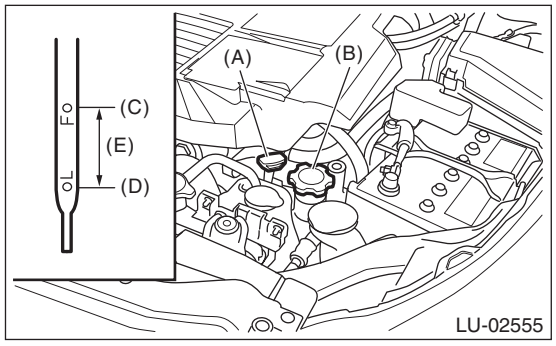
Check the engine oil amount. If the amount of oil is insufficient, check that no leaks are found. Then, add the necessary amount of the specified engine oil.

- 2.5 L model



(A) Oil level gauge
(B) Engine oil filler cap
(C) "F" line
(D) "L" line
(E) Approx. 1.0 ℓ (1.1 US qt, 0.9 Imp qt)
(F) Notch mark

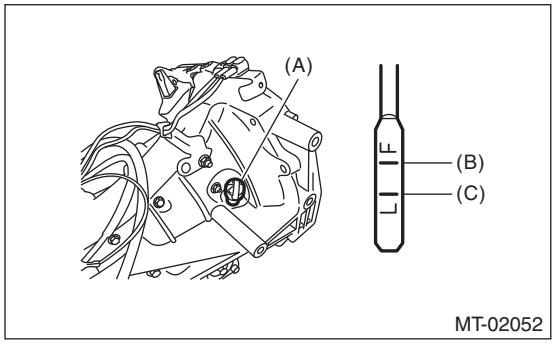
- 3.6 L model



(A) Oil level gauge
(B) Engine oil filler cap
(C) "F" line
(D) "L" line
(E) Approx. 1.0 ℓ (1.1 US qt, 0.9 Imp qt)

15.TRANSMISSION GEAR OIL

CAUTION:
If transmission gear oil is spilt over the exhaust pipe, wipe it off with a cloth to avoid emitting smoke or causing a fire.
Check that the transmission gear oil level is normal. If the amount of gear oil is insufficient, check that no leaks are found. Then add the necessary amount of the specified transmission gear oil.



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

16.CVT FRONT DIFFERENTIAL GEAR OIL

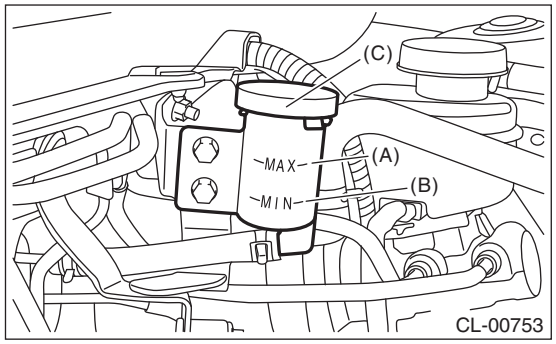
Check for no leakage of CVT front differential gear oil.

17.ENGINE COOLANT

CAUTION:
If the engine 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.

18.CLUTCH FLUID

CAUTION:
If the clutch fluid is spilt over the exhaust pipe, wipe it off with cloth to avoid emitting smoke or causing a fire.
Check that the clutch fluid level is normal. If the amount of the fluid is insufficient, check that no leaks are found. Then, add the necessary amount of the specified fluid.



(A) MAX. level
(B) MIN. level
(C) Reservoir tank

19.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.

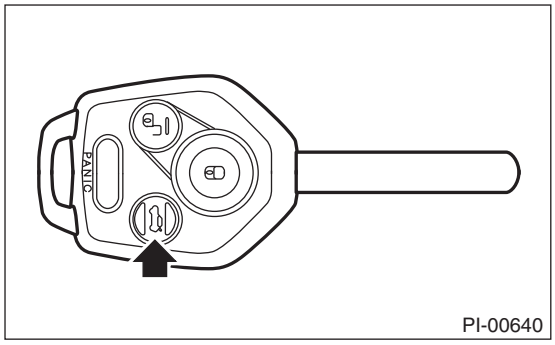
20.FRONT HOOD LATCH

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

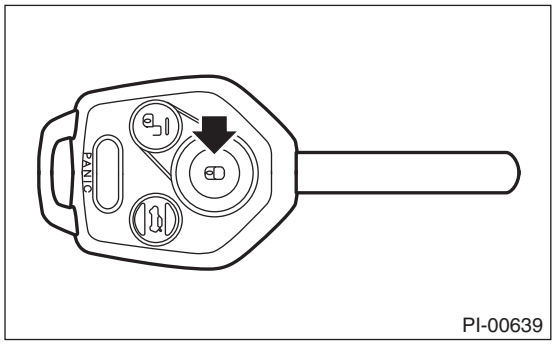
21.KEYLESS ENTRY SYSTEM

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 BC(diag)-20, OPERATION, User Customizing.>
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 and trunk open button for at least one second.
• Check if the trunk is opened and the hazard light blinks twice and the buzzer sounds twice. (Sedan model)

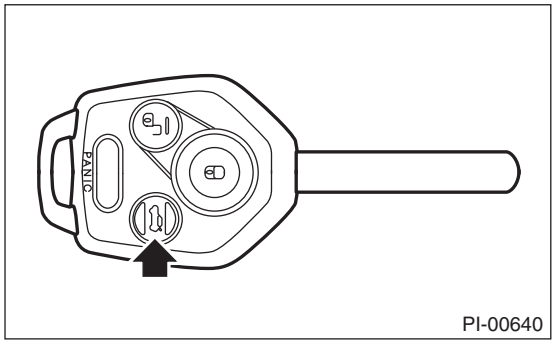
• Check if the rear gate is unlocked and the hazard light blinks twice and the buzzer sounds twice. (OUTBACK model)



4) Press the “LOCK” button on the keyless transmitter with one of the doors (including the rear gate and trunk) 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 and trunk) open.
5) Close all the doors including rear gate and trunk. 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.



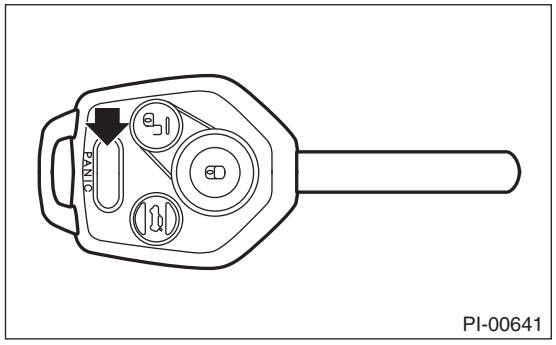
7) Within a distance of 10 m from a vehicle, press keyless transmitter’s “LOCK” button three times within five seconds. Check that the horn honks once and that the hazard light blinks three times.
8) Move the power door lock switch to the lock position with one of doors (including the rear gate) opened. 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 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.

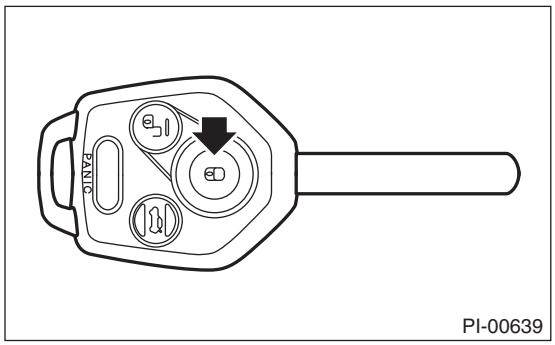
10) Press the “Panic” button of the keyless transmitter. Check if the alarm condition happens (horn sounds continuously, hazard light blinks, security indicator comes on). Check whether this condition lasts until any button on the keyless transmitter is pressed or lasts for 30 seconds.



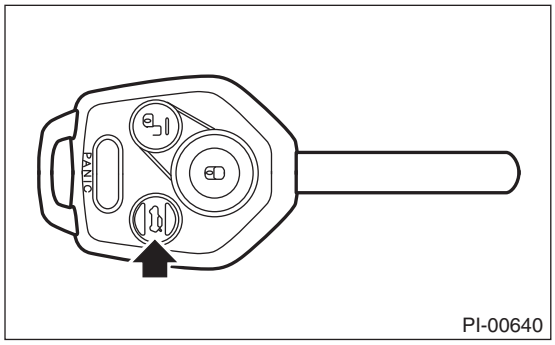
22.SECURITY SYSTEM (ALARM SYSTEM)

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 BC(diag)-20, OPERATION, User Customizing.>
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.



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.

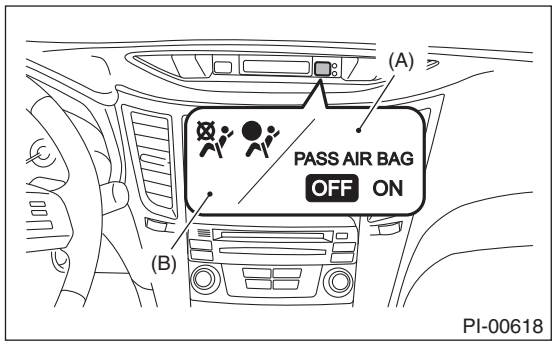


5) Close all the doors including rear gate. Press the “LOCK” button momentarily on the keyless transmitter. When all the doors are locked, buzzer sounds once, hazard blinks once and the alarm system is in set condition in 30 seconds.
6) Unlock a door using the inner lock knob and open the door while 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.

23.SEAT

1) Check the seat surfaces for stains or dirt.
2) Check that each seat functions properly in sliding and reclining. Check that the seat position memory for driver’s power seat function properly. Check all available functions of the rear seat such as a trunk-through center armrest.
3) Check the passenger’s seat occupant detection system.
(1) Turn the ignition switch to ON.
(2) Check the ON and OFF of passenger’s airbag indicator light come on simultaneously for about 6 seconds and go off for 2 seconds, and then only OFF illuminates again.



(A) Indication for US
(B) Indication for Canada

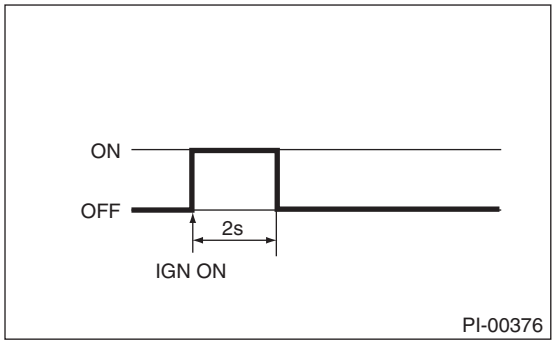
(3) Have a person weighing approximately 70 kg (155 lb) or more sit in the passenger’s seat, and check whether the passenger’s airbag indicator light illuminate or not.
(4) Empty the passenger seat, then check whether the passenger side airbag indicator light OFF illuminates.

24.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 that the ALR seat belt operates normally.
4) CHECK SEAT BELT WARNING FUNCTION.
(1) Turn the ignition switch to ON with the driver’s and passenger’s seat belt detached.
(2) Check the driver’s and passenger’s seat belt warning light blink for approx. 6 seconds and the buzzer sounds intermittently.
(3) Then, check the seat belt warning light illuminates and blinks repeatedly at a cycle of approx. 15 seconds. (If no passenger is on the passenger’s seat, the seat belt warning light on passenger’s seat does not operate.)

25.TPMS

1) Turn the ignition switch to ON, and check TPMS warning light for normal operation.
- Normal operation (IG ON (light check))



2) If the TPMS warning light display does not operate normally, check and repair the system. <Ref. to TPM(diag)-2, Basic Diagnostic Procedure.>

26.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.
3) For the model for Canada, execute Each System Check > Integ. unit mode > “SCU collation mode” on SSMIII to check [Collation OK (no error)] is displayed.

NOTE:
If malfunctions occur, refer to “IMMOBILIZER (DIAGNOSIS)”.

27.STARTING CONDITION

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

28.EXHAUST SYSTEM

Listen to the exhaust noise to see if no exhaust gas leak or abnormal noises are observed.

29.INDICATOR LIGHT AND WARNING LIGHT

Check that all indicator lights and warning lights operate normally.

30.HEATER & VENTILATION

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

31.AIR CONDITIONER

Operate the air conditioner. Check that the A/C compressor operates normally and enough cooling is provided.

NOTE:
To prevent the insufficient lubrication of the air conditioner, operate the air conditioner for five minutes at idling.

32.CLOCK

Check the clock for normal operations and enough accuracy. Check the fuel economy display switches by operating the knob on the meter. Also check there is no significant error on the outside temperature display.

33.AUDIO

Check that all radio functions operate, the speakers emit sound properly and the noise is at an acceptable level. Also check the CD unit and AUX unit operations.

34.NAVIGATION SYSTEM

1) Check all display functions for normal operation. (Refer to the owner’s manual for the operation procedures.)
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.

35.ACCESSORY POWER SUPPLY SOCKET

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

36.LIGHTING SYSTEM

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

37.WIPER DEICER

Check that the wiper deicer operates normally.

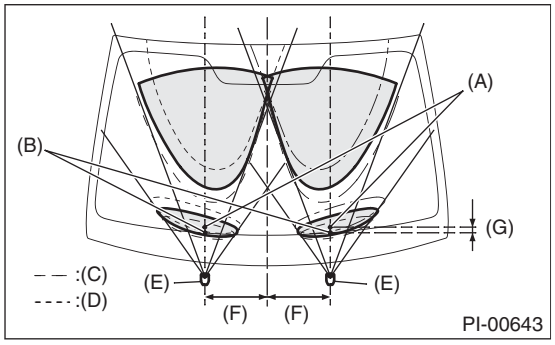
38.ILLUMINATION CONTROL

Check that the illumination control operates normally.

39.WINDOW WASHER

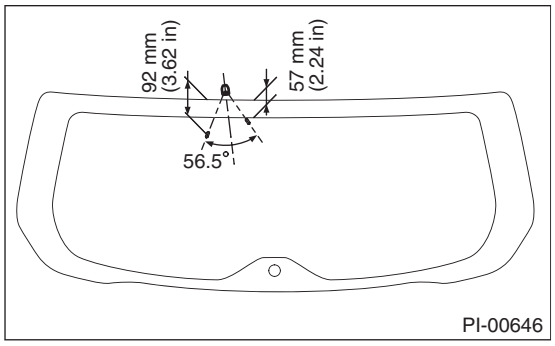
Check that the window washer system injects washer fluid to the specified area of the windshield and rear window glass shown in the figure.

Front injection position:



(A) Hitting point center
(B) Lower-side spray position center
(C) Washer fluid elevation angle/dispersal angle lower limit
(D) Washer fluid elevation angle/dispersal angle upper limit
(E) Upper spray nozzle center of washer nozzle
(F) 250 mm (9.84 in)
(G) 23 mm (0.91 in)

Rear injection position:



40.WIPER

Check the front and rear wipers for normal operations.

41.POWER WINDOW

• Operate the power window switches one by one to check that each of the power windows goes up and down without noises.
• Check AUTO UP/AUTO DOWN operate properly by operating the power window switch on driver's seat side.

CAUTION:
If battery has been removed, AUTO UP does not operate properly because initialized. In this case, perform the initial setting (reset A) and check AUTO UP operates properly.

42.SUNROOF

Check that the sunroof operates normally.

43.DOOR MIRROR

Check that the remote control mirror operates normally.

44.PARKING BRAKE

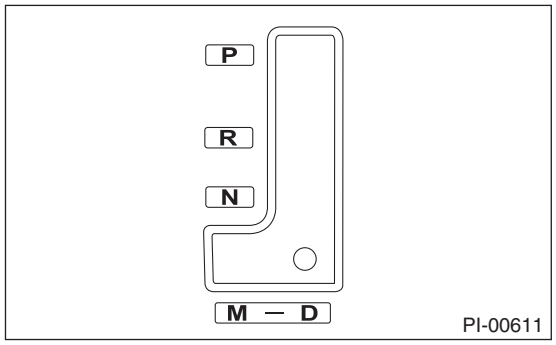
Check the parking brake operates properly by depressing brake pedal and pressing the electronic parking brake switch.

45.BRAKE TEST

Check the foot brake for normal operations.

46.AT SHIFT CONTROL

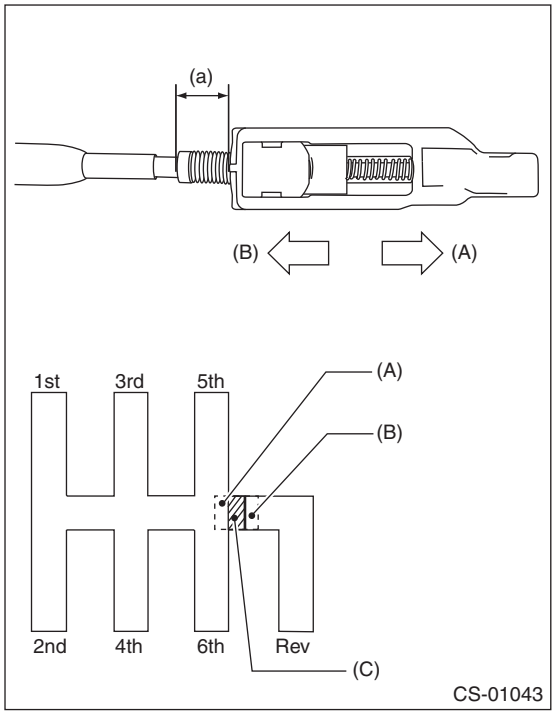
1) Turn the ignition switch to ON.
2) While brake pedal is not depressed, check if the select lever does not move from "P" range.
3) While brake pedal is depressed, check if the select lever moves from "P" range.
4) Set the select lever to other than "P" range.
5) When the ignition switch is turned to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



47.MT SHIFT CONTROL

1) Check for smooth operation to each position. Especially, shifting to 5th ← →6th, and then to Rev, check for any drag.
2) Check the slider returns to the original position by shifting to the Rev and then back in neutral while pulling up the slider.

3) If the shift operation is not smooth, readjust the exposed length (a) of the MT gear select cable referring to the figure below.



(a) Exposed length of MT gear select cable
(A) Extending exposed length of gear select cable
(B) Shrinking exposed length of gear select cable
(C) Reference for exposed length (a)

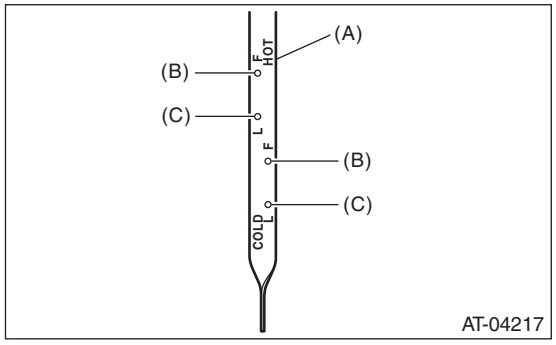
• If 5th or 6th gear cannot be selected when cable is pressed to reverse lock bracket:
⇒ Extend the exposed length (a) of MT gear select cable.
• If select lever does not move along the cranking line when it is operated from 4th to 5th gear:
⇒ Shorten the exposed length (a) of MT gear select cable.

48.CRUISE CONTROL

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

49.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) Upper level
(C) Lower level

50.CVTF

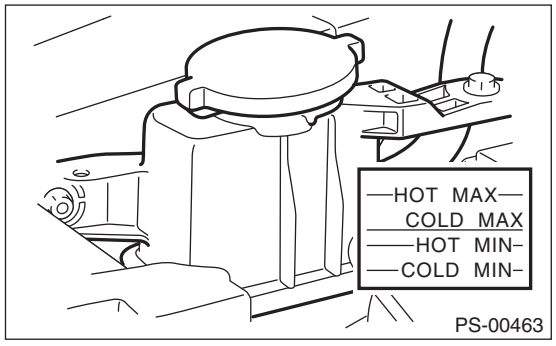
Check for leakage of CVTF.

51.AT FRONT DIFFERENTIAL OIL

Check for leakage of AT front differential oil.

52.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.



53.OIL LEAKAGE

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

54.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 hood and trunk lid 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.

55.APPEARANCE CHECK 2

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

NOTE:

• It is easier to remove the wrap guard using steam.

• 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 exist 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.

• If a yellow label is attached to the fog light lens, remove it.

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 much 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 exterior 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.

• Seat

• Door trim

• Floor carpet

• Side sill

• Front hood lock release lever

• Edge rear

• Rear wiper

• Sedan rear combination light (Trunk lid opening portion)

• Roof rail

• Assist rail

1. General Description

A: GENERAL DESCRIPTION

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

2. Schedule

A: MAINTENANCE SCHEDULE 1

1. U.S.

• Other than U5 model

			Maintenance interval [Number of months or km (miles), whichever occurs first]																	
	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	Remarks
	× 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	3.6 L	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
		2.5 L		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Turbo model Note 6.
2	Engine oil filter	3.6 L	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
		2.5 L		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Turbo model Note 6.
3	Spark plug										R								R	
4	Drive belt(s)						I				I				I		R			
5	Camshaft drive belt						I				I				I		R			
6	Fuel line						(I)				(I)				(I)				I	Note 1.
7	Air cleaner element						R				R				R				R	Note 2.
8	Cooling system						I				I				I				I	
9	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																	
10	Clutch system				I		I		I		I		I		I		I		I	
11	Transmission oil						I				I				I				I	
12	ATF and CVTF						I				I				I				I	Note 3.
13	Front and rear differential oil						I				I				I				I	
14	Brake line				I		I		I		I		I		I		I		I	
15	Brake fluid						R				R				R				R	
16	Disc brake pad and disc				I		I		I		I		I		I		I		I	
17	Parking brake				I		I		I		I		I		I		I		I	
18	Suspension				I		I		I		I		I		I		I		I	
19	Wheel bearing										(I)								(I)	
20	Axle boots and joints				I		I		I		I		I		I		I		I	
21	Tire rotation			I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Note 4.
22	Steering system (Power steering)				I		I		I		I		I		I		I		I	
23	A/C filter		Replace every 12 months or 15,000 km (9,300 miles).																	Note 5.

Symbols used:
R: Replace
I: Inspection
(R) or (I): Recommended service for safe vehicle operation.

PERIODIC MAINTENANCE SERVICES

NOTE:

1. This inspection is not required to maintain emission warranty eligibility and it does not affect the manufacturer's obligations under EPA.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. When CVTF is used under severe condition, to replace every 40,000 km (24,855 miles) is recommended.
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicator appears when the remaining amount of tread is less than 1.6 mm (0.063 in).
5. When the A/C filter is installed.
6. For 2.5L turbo model, replace every 3.75 months or 6,000 km (3,750 miles).

- U5 model

			Maintenance interval [Number of months or km (miles), whichever occurs first]												
	Months		3	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	To be continued to the next table.	Remarks
	× 1,000 km		4.8	12	24	36	48	60	72	81.4	96	108	120		
	× 1,000 miles		3	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75		
1	Engine oil	3.6 L	R	R	R	R	R	R	R	R	R	R	R		
		2.5 L		R	R	R	R	R	R	R	R	R	R		
2	Engine oil filter	3.6 L	R	R	R	R	R	R	R	R	R	R	R		
		2.5 L		R	R	R	R	R	R	R	R	R	R		
3	Spark plug										R				
4	Drive belt(s)						I				I				
5	Camshaft drive belt						I				I				
6	Fuel line						(I)				(I)				Note 1.
7	Air cleaner element						R				R				Note 2.
8	Cooling system						I				I				
9	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												
10	Clutch system				I		I		I		I		I		
11	Transmission oil						I				I				
12	ATF and CVTF						I				I				Note 3.
13	Front and rear differential oil						I				I				
14	Brake line				I		I		I		I		I		
15	Brake fluid						R				R				
16	Disc brake pad and disc				I		I		I		I		I		
17	Parking brake				I		I		I		I		I		
18	Suspension				I		I		I		I		I		
19	Wheel bearing										(I)				
20	Axle boots and joints				I		I		I		I		I		
21	Tire rotation			I	I	I	I	I	I	I	I	I	I		Note 4.
22	Steering system (Power steering)				I		I		I		I		I		
23	A/C filter		Replace every 12 months or 15,000 km (9,300 miles).												Note 5.

Symbols used:
R: Replace
I: Inspection
(R) or (I): Recommended service for safe vehicle operation.

NOTE:
1. This inspection is not required to maintain emission warranty eligibility and it does not affect the manufacturer's obligations under EPA.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. When CVTF is used under severe condition, to replace every 40,000 km (24,855 miles) is recommended.
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicator appears when the remaining amount of tread is less than 1.6 mm (0.063 in).
5. When the A/C filter is installed.

PERIODIC MAINTENANCE SERVICES

		Maintenance interval [Number of months or km (miles), whichever occurs first]											
	Months	Continued from previous table	82.5	90	97.5	105	112.5	120	127.5	135	142.5	150	Remarks
	× 1,000 km		132	144	156	168	180	192	204	216	228	240	
	× 1,000 miles		82.5	90	97.5	105	112.5	120	127.5	135	142.5	150	
1	Engine oil		R	R	R	R	R	R	R	R	R	R	
2	Engine oil filter		R	R	R	R	R	R	R	R	R	R	
3	Spark plug							R					
4	Drive belt(s)			I		R				I			
5	Camshaft drive belt			I		R				I			
6	Fuel line			(I)				I				(I)	Note 1.
7	Air cleaner element			R				R				R	Note 2.
8	Cooling system			I				I				I	
9	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											
10	Clutch system			I		I		I				I	
11	Transmission oil			I				I				I	
12	ATF and CVTF			I				I				I	Note 3.
13	Front and rear differential oil			I				I				I	
14	Brake line			I		I		I		I		I	
15	Brake fluid			R				R				R	
16	Disc brake pad and disc			I		I		I		I		I	
17	Parking brake			I		I		I		I		I	
18	Suspension			I		I		I		I		I	
19	Wheel bearing							(I)				(I)	
20	Axle boots and joints			I		I		I		I		I	
21	Tire rotation		I	I	I	I	I	I	I	I	I	I	Note 4.
22	Steering system (Power steering)			I		I		I		I		I	
23	A/C filter	Replace every 12 months or 15,000 km (9,300 miles).											Note 5.

Symbols used:
R: Replace
I: Inspection
(R) or (I): Recommended service for safe vehicle operation.

NOTE:
1. This inspection is not required to maintain emission warranty eligibility and it does not affect the manufacturer's obligations under EPA.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. When CVTF is used under severe condition, to replace every 40,000 km (24,855 miles) is recommended.
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicator appears when the remaining amount of tread is less than 1.6 mm (0.063 in).
5. When the A/C filter is installed.

2. CANADA

			Maintenance interval [Number of months or km (miles), whichever occurs first]																	
	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	Remarks
	× 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	3.6 L	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
		2.5 L	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
2	Engine oil filter	3.6 L	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
		2.5 L	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
3	Spark plug										R								R	
4	Drive belt(s)						I				I				I		R			
5	Camshaft drive belt						I				I				I		R			
6	Fuel line						(I)				(I)				(I)				I	Note 1.
7	Air cleaner element						R				R				R				R	Note 2.
8	Cooling system						I				I				I				I	
9	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																	
10	Clutch system				I		I		I		I		I		I		I		I	
11	Transmission oil						I				I				I				I	
12	ATF and CVTF						I				I				I				I	Note 3.
13	Front and rear differential oil						I				I				I				I	
14	Brake line				I		I		I		I		I		I		I		I	
15	Brake fluid						R				R				R				R	
16	Disc brake pad and disc				I		I		I		I		I		I		I		I	
17	Parking brake				I		I		I		I		I		I		I		I	
18	Suspension				I		I		I		I		I		I		I		I	
19	Wheel bearing										(I)								(I)	
20	Axle boots and joints				I		I		I		I		I		I		I		I	
21	Tire rotation			I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	Note 4.
22	Steering system (Power steering)				I		I		I		I		I		I		I		I	
23	A/C filter		Replace every 12 months or 15,000 km (9,300 miles).																	Note 5.

Symbols used:
R: Replace
I: Inspection
(R) or (I): Recommended service for safe vehicle operation.

NOTE:
1. This inspection is not required to maintain emission warranty eligibility and it does not affect the manufacturer's obligations under EPA.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. When CVTF is used under severe condition, to replace every 40,000 km (24,855 miles) is recommended.
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicator appears when the remaining amount of tread is less than 1.6 mm (0.063 in).
5. When the A/C filter is installed.

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						
Transmission oil	15 months						R
	24,000 km						
	15,000 miles						
ATF	15 months						R
	24,000 km						
	15,000 miles						
CVTF	40,000 km						R
	24,855 miles						
Front & 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	7.5 months	I	I		I		I
	12,000 km						
	7,500 miles						
Parking brake	7.5 months	I	I		I		I
	12,000 km						
	7,500 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: INSPECTION

Refer to “LU” section for engine oil inspection. <Ref. to LU(H4SO)-12, INSPECTION, Engine Oil.> <Ref. to LU(H6DO)-9, INSPECTION, Engine Oil.>

B: REPLACEMENT

Refer to “LU” section for engine oil replacement. <Ref. to LU(H4SO)-12, REPLACEMENT, Engine Oil.> <Ref. to LU(H6DO)-9, REPLACEMENT, Engine Oil.>

4. Engine Oil Filter

A: REPLACEMENT

Refer to “LU” section for engine oil filter replacement. <Ref. to LU(H4SO)-34, Engine Oil Filter.> <Ref. to LU(H6DO)-15, Engine Oil Filter.>

5. Spark Plug

A: REPLACEMENT

Refer to “IG” section for spark plug replacement. <Ref. to IG(H4SO)-3, Spark Plug.> <Ref. to IG(H4DOTC)-4, Spark Plug.> <Ref. to IG(H6DO)-4, Spark Plug.>

6. V-belt

A: INSPECTION

Refer to “ME” section for V-belt inspection. <Ref. to ME(H4SO)-43, INSPECTION, V-belt.> <Ref. to ME(H4DOTC)-43, INSPECTION, V-belt.> <Ref. to ME(H6DO)-48, INSPECTION, V-belt.>

B: REPLACEMENT

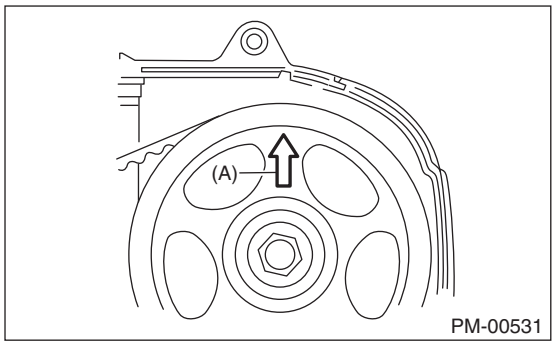
Refer to “ME” section for V-belt replacement. <Ref. to ME(H4SO)-42, V-belt.> <Ref. to ME(H4DOTC)-42, V-belt.> <Ref. to ME(H6DO)-48, V-belt.>

7. Timing Belt

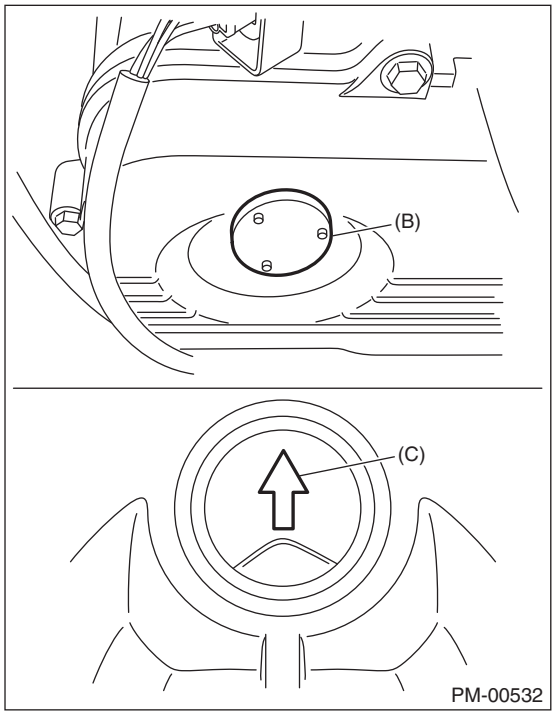
A: INSPECTION

1. SOHC MODEL (INSPECTION OF TIMING BELT POSITION)

1) Remove the timing belt cover (LH).
2) Rotate the crank pulley to set #1 cylinder piston to top dead center of compression stroke and check the followings.
(1) Confirm that the arrow (A) of camshaft pulley LH points in an upward direction.



(2) Remove the sealing rubber (B) of timing belt cover RH.
(3) Confirm that the arrow (C) of camshaft pulley RH points in an upward direction.



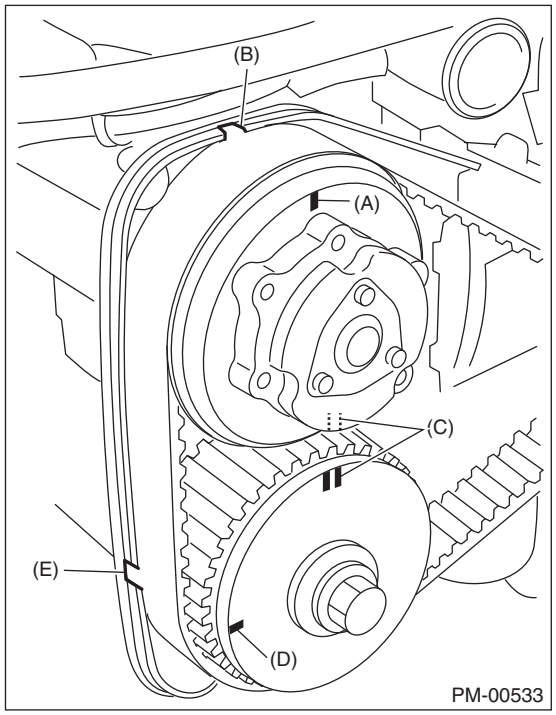
3) If the camshaft pulley or timing belt position is not appropriate, check the faulty part and repair or replace as required.

2. SOHC MODEL (OTHER INSPECTIONS)

1) Remove the front timing belt cover and timing belt cover (LH).
2) While cranking engine at least four rotations, check the timing belt back surface for cracks or damage. Replace the faulty timing belt with new part as needed.
3) When the side part of timing belt is abnormally worn (fluff or jumping out of core) or damaged, check the idlers, tensioner, water pump pulley and cam sprocket to determine idler alignment (squareness). Replace the worn timing belt with new part.
4) Install the front timing belt cover and timing belt cover (LH).

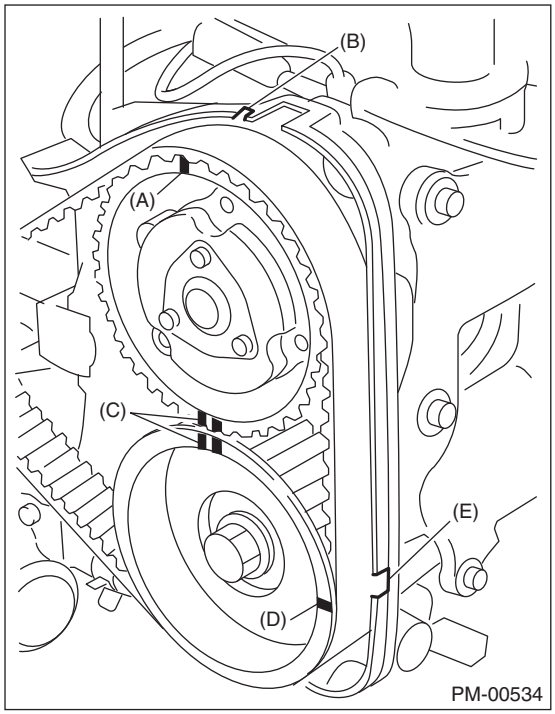
3. DOHC MODEL (INSPECTION OF TIMING BELT POSITION)

1) Remove the timing belt cover (LH) and (RH).
2) Rotate the crank pulley to align single line mark (A) on the intake camshaft pulley RH with notch (B) on timing belt cover and check the followings.
(1) Confirm that the double line marks (C) on intake camshaft pulley RH and exhaust camshaft pulley RH are aligned.
(2) Confirm that the single line mark (D) on exhaust camshaft pulley RH and notch (E) on timing belt cover are aligned.



(3) Confirm that the single line mark (A) on intake camshaft pulley LH and notch (B) on timing belt cover are aligned.
(4) Confirm that the double line marks (C) on intake camshaft pulley LH and exhaust camshaft pulley LH are aligned.

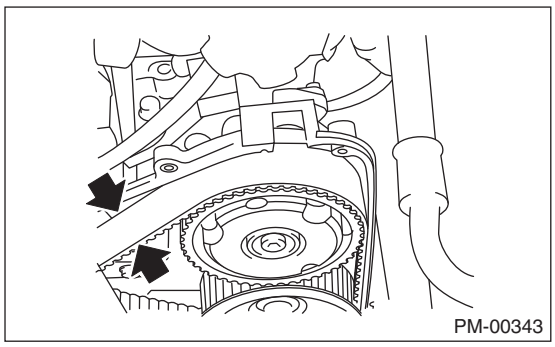
(5) Confirm that the single line mark (D) on exhaust camshaft pulley LH and notch (E) on timing belt cover are aligned.



3) If the camshaft pulley position is not appropriate, check the faulty part and repair or replace as required.

4. DOHC MODEL (OTHER INSPECTIONS)

1) Remove the timing belt cover (LH).
2) While cranking engine at least four rotations, check the timing belt back surface for cracks or damage. Replace the faulty timing belt with new part as needed.
3) When the side part of timing belt (arrow direction shown in the figure) is abnormally worn (fluff or jumping out of core) or damaged, check the idlers, tensioner, water pump pulley and cam sprocket to determine idler alignment (squareness). Replace the worn timing belt with new part.



4) Install the timing belt cover (LH).

B: REPLACEMENT

Refer to “ME” section for timing belt replacement. <Ref. to ME(H4SO)-47, Timing Belt.> <Ref. to ME(H4DOTC)-51, Timing Belt.>

8. 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(H4DOTC)-91, INSPECTION, Fuel Delivery, Return and Evaporation Lines.>

9. Fuel Filter

A: REPLACEMENT

Refer to “FU” section for fuel filter replacement. <Ref. to FU(H4SO)-64, Fuel Filter.> <Ref. to FU(H4DOTC)-84, Fuel Filter.> <Ref. to FU(H6DO)-73, Fuel Filter.>

B: INSPECTION

Replace if the filter is clogged, or time for replacement has come.

10.Air Cleaner Element

A: REPLACEMENT

Refer to “IN” section for air cleaner element replacement. <Ref. to IN(H4SO)-4, Air Cleaner Element.> <Ref. to IN(H4DOTC)-7, Air Cleaner Element.> <Ref. to IN(H6DO)-4, Air Cleaner Element.>

11.Cooling System

A: INSPECTION

1. RADIATOR

Refer to “CO” section for radiator inspection. <Ref. to CO(H4SO)-22, INSPECTION, Radiator.> <Ref. to CO(H4DOTC)-23, INSPECTION, Radiator.> <Ref. to CO(H6DO)-19, INSPECTION, Radiator.>

2. RADIATOR CAP

Refer to “CO” section for radiator cap inspection. <Ref. to CO(H4SO)-23, INSPECTION, Radiator Cap.> <Ref. to CO(H4DOTC)-24, INSPECTION, Radiator Cap.> <Ref. to CO(H6DO)-20, INSPECTION, Radiator Cap.>

3. COOLING FAN

Check the radiator fan operates using Subaru Select Monitor, when the coolant temperature exceeds 98°C (208°F). If it does not operate, check the radiator fan system. <Ref. to CO(H4SO)-8, INSPECTION, Radiator Fan System.> <Ref. to CO(H4DOTC)-8, INSPECTION, Radiator Fan System.> <Ref. to CO(H6DO)-9, INSPECTION, Radiator Fan System.>

4. COOLING SYSTEM

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.

12.Engine Coolant

A: REPLACEMENT

Refer to “CO” section for engine coolant replacement. <Ref. to CO(H4SO)-14, REPLACEMENT, Engine Coolant.> <Ref. to CO(H4DOTC)-14, REPLACEMENT, Engine Coolant.> <Ref. to CO(H6DO)-12, REPLACEMENT, Engine Coolant.>

13.Clutch System

A: INSPECTION AND ADJUSTMENT

Refer to “CL” section for inspection and adjustment of clutch system. <Ref. to CL-29, INSPECTION, Clutch Pedal.> <Ref. to CL-29, ADJUSTMENT, Clutch Pedal.>

14.Transmission Gear Oil

A: INSPECTION

Refer to “6MT” section for transmission gear oil inspection. <Ref. to 6MT-23, INSPECTION, Transmission Gear Oil.>

B: REPLACEMENT

Refer to “6MT” section for transmission gear oil replacement. <Ref. to 6MT-23, REPLACEMENT, Transmission Gear Oil.>

15. Automatic Transmission Fluid

A: INSPECTION

Refer to “5AT” section for ATF inspection. <Ref. to 5AT-28, INSPECTION, Automatic Transmission Fluid.>

B: REPLACEMENT

Refer to “5AT” section for ATF replacement. <Ref. to 5AT-28, REPLACEMENT, Automatic Transmission Fluid.>

16.CVTF

A: REPLACEMENT

Refer to “CVT” section for CVTF replacement.
<Ref. to CVT-37, REPLACEMENT, CVTF.>

17. Front & Rear Differential Gear Oil

A: INSPECTION

1. FRONT DIFFERENTIAL (MT MODEL)

Front differential gear oil of MT model lubricates the transmission and differential together. Refer to “Transmission Gear Oil” for replacement procedure. <Ref. to 6MT-23, INSPECTION, Transmission Gear Oil.>

2. FRONT DIFFERENTIAL (AT MODEL)

Refer to “5AT” section for inspection of AT model front differential gear oil. <Ref. to 5AT-30, INSPECTION, Differential Gear Oil.>

3. REAR DIFFERENTIAL

Refer to “DI” section for rear differential gear oil inspection. <Ref. to DI-23, INSPECTION, Differential Gear Oil.>

B: REPLACEMENT

1. FRONT DIFFERENTIAL (MT MODEL)

Front differential gear oil of MT model lubricates the transmission and differential together. Refer to “6MT” section for replacement procedure. <Ref. to 6MT-23, REPLACEMENT, Transmission Gear Oil.>

2. FRONT DIFFERENTIAL (AT MODEL)

Refer to “5AT” section for front differential gear oil replacement. <Ref. to 5AT-30, REPLACEMENT, Differential Gear Oil.>

3. FRONT DIFFERENTIAL (CVT MODEL)

Refer to “CVT” section for front differential gear oil replacement. <Ref. to CVT-42, REPLACEMENT, Differential Gear Oil.>

4. REAR DIFFERENTIAL

Refer to “DI” section for rear differential gear oil replacement. <Ref. to DI-23, REPLACEMENT, Differential Gear Oil.>

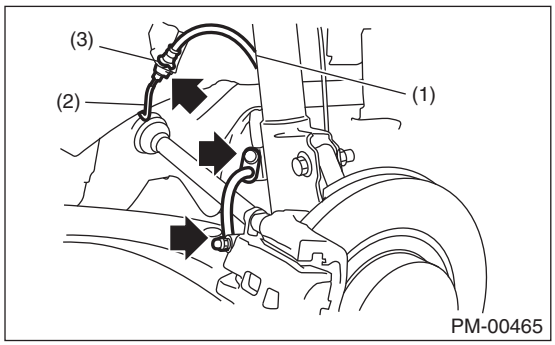
18.Brake Line

A: INSPECTION

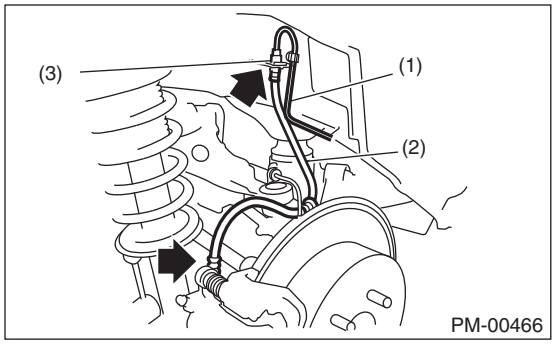
1. BRAKE LINE

1) Check for scratches, swelling, corrosion, traces of fluid leakage on the brake hoses or pipe joints.
2) Make sure that brake pipes/hoses do not interfere with adjacent parts and there is no loose connector/clamp during driving.
3) Check any trace of fluid leakage, scratches, etc. on master cylinder, wheel cylinder and hydraulic unit.

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



(1) Front brake hose
(2) Front brake pipe
(3) Clamp



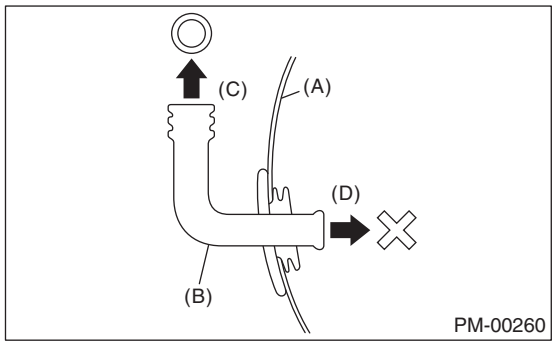
(1) Brake pipe
(2) Rear brake hose
(3) Clamp

2. SERVICE BRAKE

Refer to “BR” section for foot brake inspection. <Ref. to BR-40, INSPECTION, Brake Pedal.>

3. BRAKE SERVO SYSTEM

1) With the engine off, depress the brake pedal several times applying the same pedal force. Check that the travel distance should not change.
2) With the brake pedal depressed, start the engine. Check that the pedal moves slightly toward the floor.
3) With the brake pedal depressed, stop the engine and keep the pedal depressed for 30 seconds. Check that the pedal height does not change.
4) A check valve is built into the brake booster nipple. Disconnect the vacuum hose to inspect function of check valve.
Check that check valve ventilates from booster side to engine side. Also, check that there is no ventilation from engine side to booster side.



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

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

CAUTION:
When installing the vacuum hose on the engine and brake booster, do not use soapy water or lubricating oil on their connections.
6) Check that the vacuum hose is securely tightened.

19.Brake Fluid

A: INSPECTION

Refer to “BR” section for brake fluid inspection.
<Ref. to BR-33, INSPECTION, Brake Fluid.>

B: REPLACEMENT

Refer to “BR” section for brake fluid replacement.
<Ref. to BR-33, REPLACEMENT, Brake Fluid.>

20.Disc Brake Pad and Disc

A: INSPECTION

Refer to “BR” section for disc brake pad and disc inspection. <Ref. to BR-14, INSPECTION, Front Brake Pad.> <Ref. to BR-21, INSPECTION, Rear Brake Pad.> <Ref. to BR-15, INSPECTION, Front Disc Rotor.> <Ref. to BR-22, INSPECTION, Rear Disc Rotor.>

21.Brake Lining and Drum

A: INSPECTION

Refer to “PB” section for brake lining inspection. <Ref. to PB-8, INSPECTION, Parking Brake Assembly (Rear Disc Brake).>

B: ADJUSTMENT

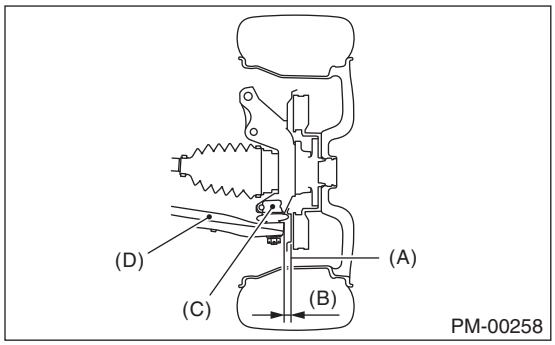
Refer to “PB” section for brake lining adjustment. <Ref. to PB-8, ADJUSTMENT, Parking Brake Assembly (Rear Disc Brake).>

22.Suspension

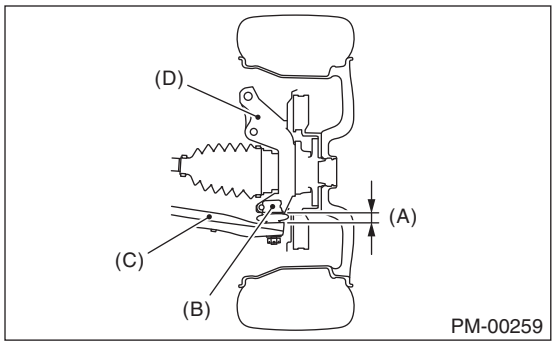
A: INSPECTION

1. FRONT SUSPENSION BALL JOINT

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

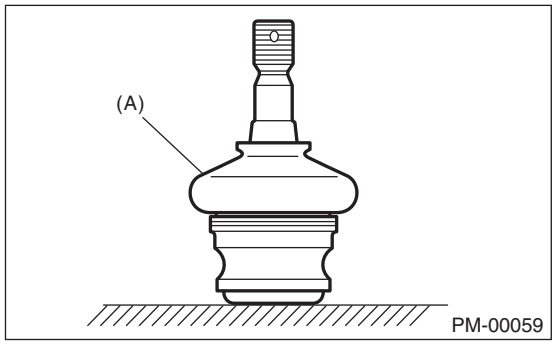


3) Next, grasp the end of front arm (C) and move it up and down. If movement (A) between the housing (D) and front arm (C) boss is observed, ball joint (B) may be excessively worn.



4) If the relative movement is observed in the preceding two steps, remove and inspect the ball joint. If the free play exceeds standard value, replace the ball joint. <Ref. to FS-20, Front Ball Joint.>
5) Damage of dust boot
Visually inspect the ball joint dust boot. Replace if ball joint is damaged.

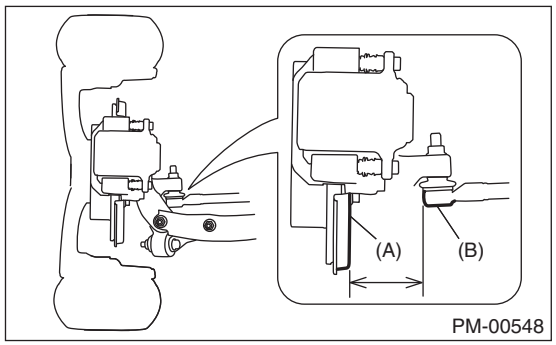
NOTE:
When the front arm ball joint is removed or replaced, check the toe-in of front wheel. If it is not within the specified value, adjust the toe-in. <Ref. to FS-8, Wheel Alignment.>



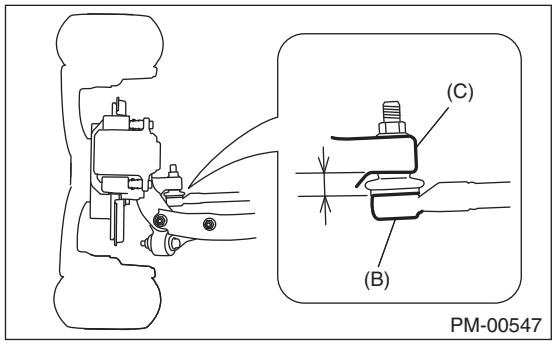
(A) Dust boot

2. REAR SUSPENSION BALL JOINT

1) Lift up the vehicle until rear wheels are off ground.
2) Grasp the bottom of tire and move it in and out in axial direction.
3) If movement is observed between the brake disc cover (A) and end of front lateral link (B), ball joint may be excessively worn.

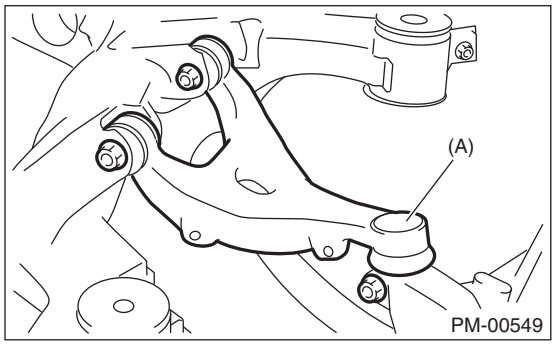


4) Grasp the end of front lateral link (B) and move it up and down. If movement is observed between the housing (C) and front lateral link (B) boss, ball joint may be excessively worn.



5) If the movement related to the previous two steps is observed, replace the front lateral link. <Ref. to RS-15, Front Lateral Link.>

6) Damage of dust boot
Visually inspect the ball joint dust boot. Replace if front lateral link is damaged.
7) Check upper arm ball joint in the same manner.

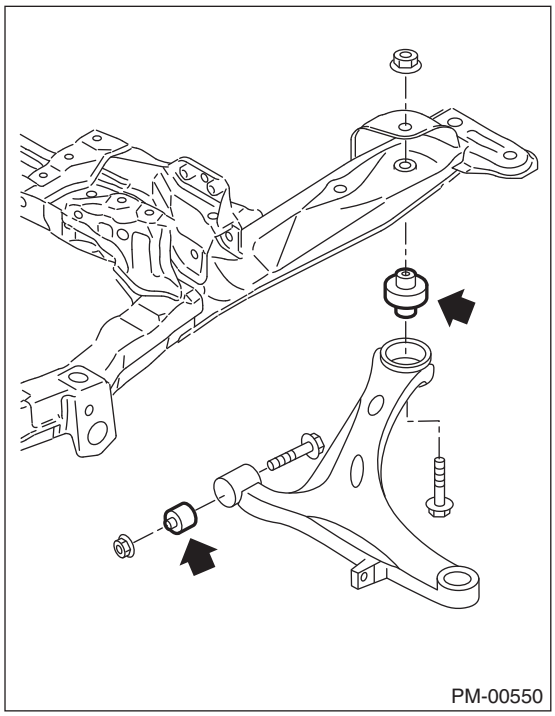


(A) Upper arm ball joint

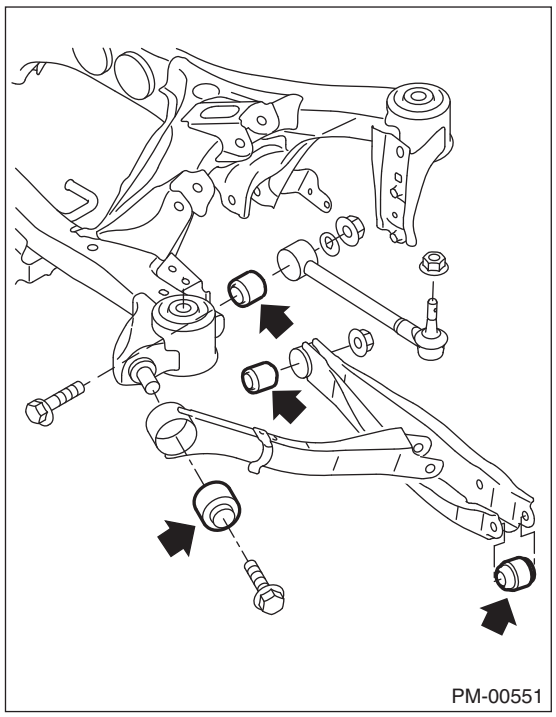
3. FRONT, REAR SUSPENSION BUSHING

Apply pressure with tire lever etc, and inspect the bushing for excessive wear or damage. Replace the bushings if faulty.

- Front suspension bushing



- Rear suspension bushing



4. WHEEL ARCH HEIGHT

Refer to “FS” section for wheel arch height inspection. <Ref. to FS-9, WHEEL ARCH HEIGHT, INSPECTION, Wheel Alignment.>

5. WHEEL ALIGNMENT

Measure and adjust the front and rear wheel alignment at a time. Refer to “FS” section for measurement and adjustment of wheel alignment. <Ref. to FS-8, INSPECTION, 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. <Ref. to FS-2, General Description.> <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. Thoroughly remove the deposits of the lower spring seat of strut where dust or mud are likely piled up. 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
  - Cradle
  - STRUT
- Rear suspension
  - Sub frame
  - Front lateral link
  - Rear lateral link
  - Upper arm
  - Trailing link
  - 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.

23.Wheel Bearing

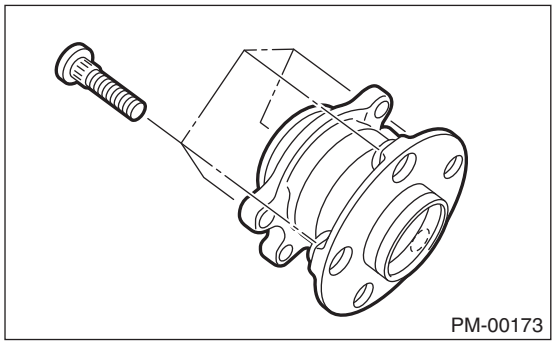
A: INSPECTION

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 AAR of front drive shaft from transmission. <Ref. to DS-12, Front Axle.>
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.

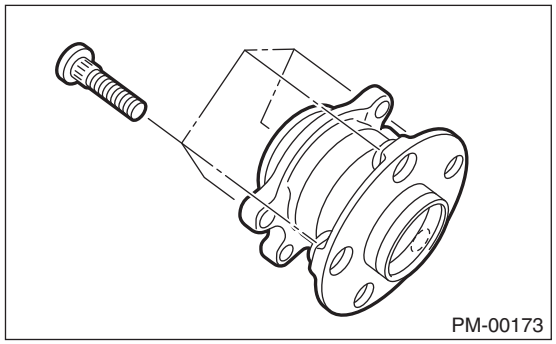


2. REAR WHEEL BEARING

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-30, 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.



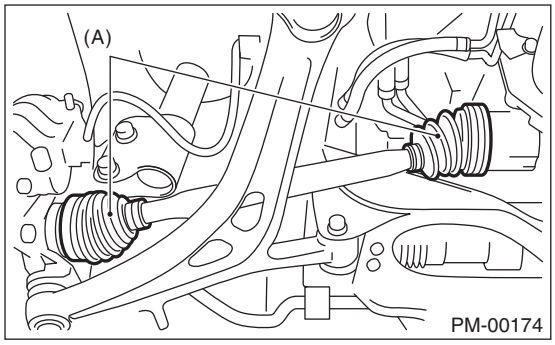
24.Axle Boots & Joints

A: INSPECTION

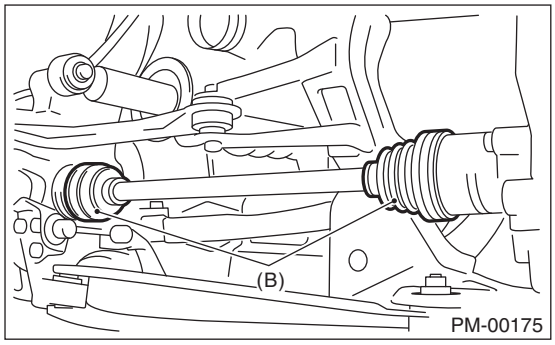
1. FRONT AND REAR AXLE BOOTS

Inspect the front axle boots (A) and rear axle boots (B) for deformation, damage or failure. If faulty, replace with new part. <Ref. to DS-25, Front Drive Shaft.> <Ref. to DS-30, Rear Drive Shaft.>

- Front



- REAR



2. PROPELLER SHAFT

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

25.Tire Rotation

A: INSPECTION

Refer to “WT” section for tire rotation procedures. <Ref. to WT-4, TIRE ROTATION, INSPECTION, Tire and Wheel.>

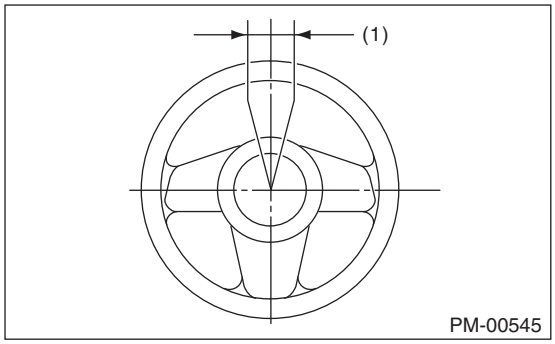
26.Steering System (Power Steering)

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 (periphery).

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 check if there is play in the direction.

Play limit:
0.5 mm (0.020 in)

3) Drive the vehicle and check the following items.
(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 one side while driving on a level surface.
(3) Wheel runout:
Steering wheel should not show any sign of runout.
(4) Return status:
Steering wheel should return to its original position after it has been turned and then released.

2. STEERING SHAFT JOINT

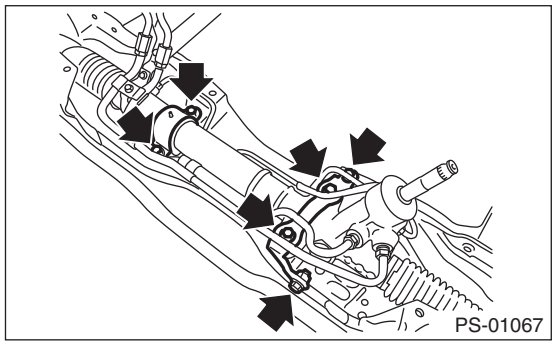
When the steering wheel free play is excessive, disconnect the universal joint of steering shaft and check it for any play and yawing torque (at the point of the crossing direction). Also inspect for any damage to sealing or worn serrations. If the joint is loose, retighten the mounting bolts to the specified torque. <Ref. to PS-18, Universal Joint.>

Tightening torque:
24 N·m (2.4 kgf-m, 17.4 ft-lb)

3. GEARBOX

1) Set the steering wheel in the straight position, then rotate it 90° in both the left and right directions. While steering wheel is being rotated, check the gearbox for looseness.

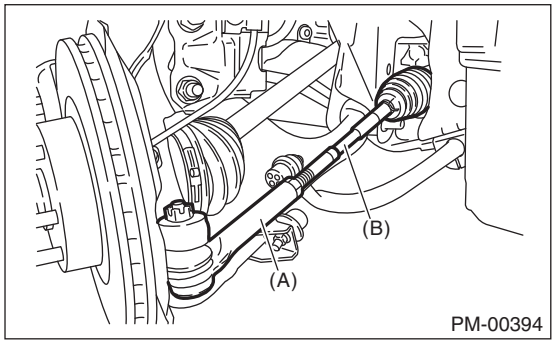
Tightening torque:
60 N·m (6.1 kgf-m, 44.3 ft-lb)



2) Check the boot for damage, cracks or deterioration.
3) With the vehicle stopped 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. <Ref. to PS-37, GEARBOX BACKLASH ADJUSTMENT (SERVICING ON VEHICLE), ADJUSTMENT, Steering Gearbox.>

4. TIE-ROD

1) Check the tie-rod and tie-rod ends for bends, scratches or other damage.



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

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

Tightening torque:
27 N·m (2.75 kgf-m, 19.9 ft-lb)

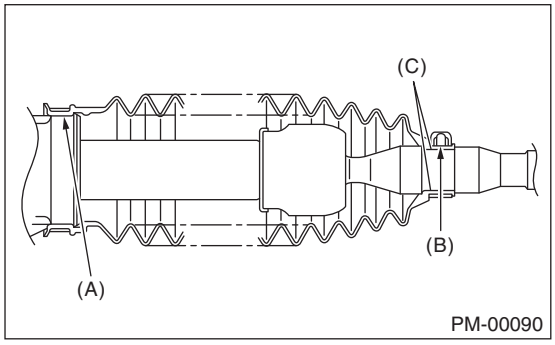
3) Check the lock nut on the tie-rod end for tightness. If it is loose, retighten it to the specified torque.

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

5. GEARBOX BOOTS

Inspect both sides of the gearbox boot as follows, and correct the defects if necessary.
1) The (A) and (B) positions of the gearbox boot are fitted in (A) and (C) grooves of gearbox and the rod.
2) Clips are fitted outside of positions (A) and (B) of boot.
3) Check that there is no cracks or holes in the boot.

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



27.A/C Filter

A: REPLACEMENT

Refer to “AC” section for A/C filter replacement.
<Ref. to AC-79, REPLACEMENT, A/C Filter.>