1. Foreword

A: FOREWORD

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

Applicable model:
2009MY BL*****, BP*****

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.

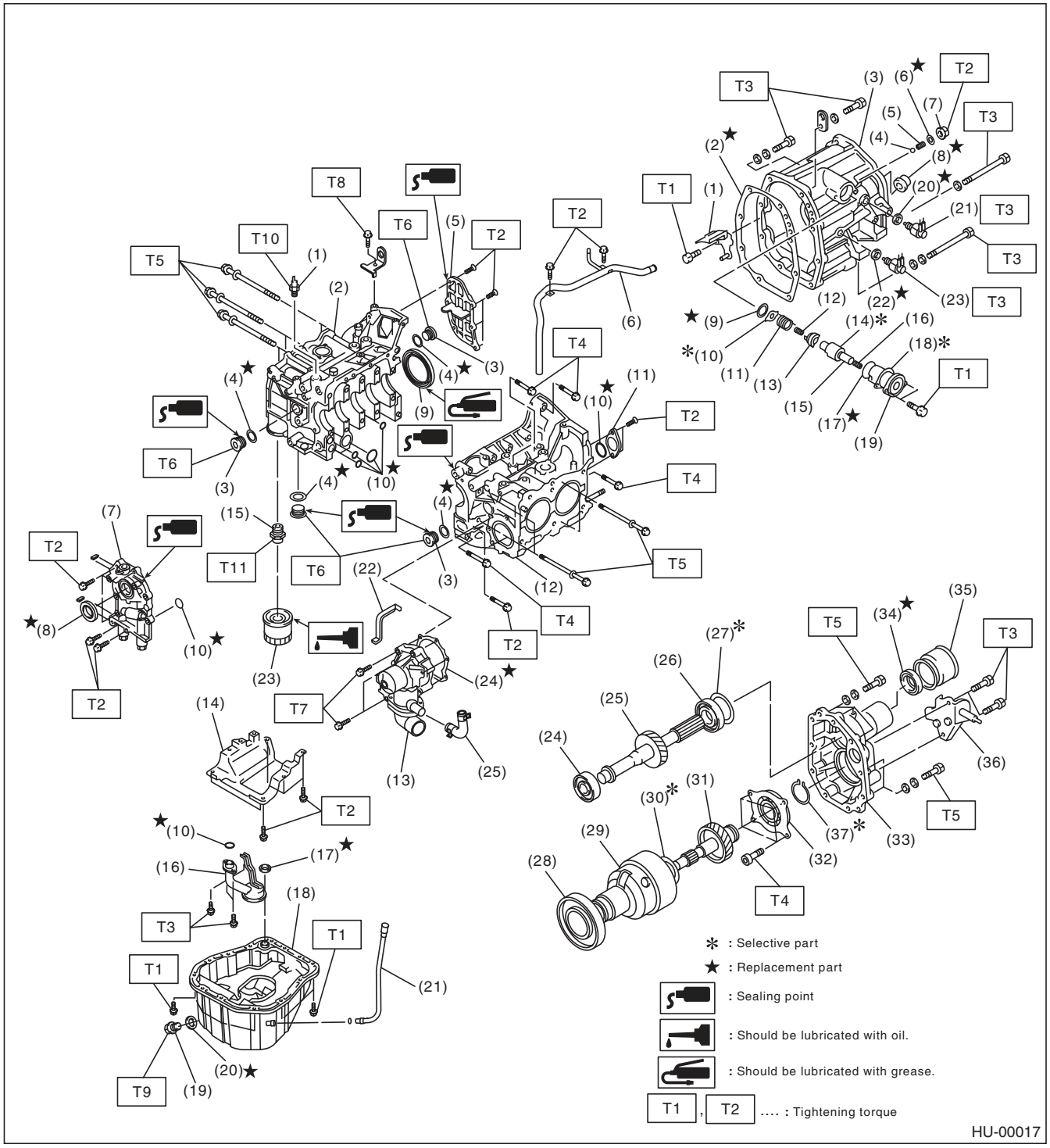
2. CONTENTS

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. SPECIFICATION

If necessary, specifications are also included.

5. INSPECTION

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

6. 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 Assembly for Single-Range ← (A)

A: REMOVAL ← (B)

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

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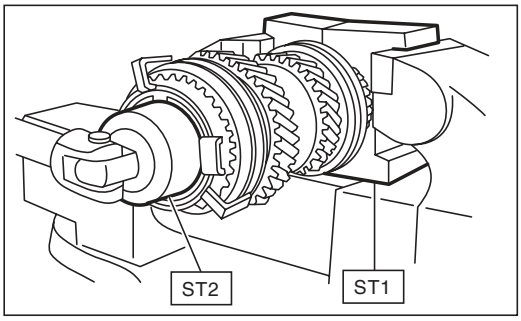
11) Tighten the lock nuts to the specified torque using ST1 and ST2.

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

7. DIAGNOSIS

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

8. SI UNITS

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

Example:

Tightening torque:
44 N·m (4.5 kgf-m, 33 ft-lb)

Item	SI units	Conventional unit	Remarks
Force	N (Newton)	kgf	1 kgf = 9.80655 N
Mass (Weight)	kg, g	kg, g	
Capacity	ℓ , 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 ( ).

9. EXPLANATION OF TERMINOLOGY

- **List**

AAI	: Air Assist Injection	H/U	: Hydraulic Unit
A/B	: Airbag	HVAC	: Heater, Ventilator and Air Conditioner
ABS	: Anti-lock Brake System	IG	: Ignition
A/C	: Air Conditioner	IN	: Intake
ADA	: Active Driving Assist	INT	: Intermittent
A/F	: Air Fuel Ratio	I/O	: Input / Output
ALT	: Generator	ISC	: Idle Speed Control
APS	: Accessory power supply socket	LAN	: Local Area Network
ASSY	: Assembly	LH	: LH (Left Hand)
AT	: Automatic Transmission	LSD	: Limited Slip Differential
ATF	: Automatic Transmission Fluid	M/B	: Main Fuse & Relay Box
AVCS	: Active Valve Control System	MID	: Multi-information Display
AWD	: All Wheel Drive	MFI	: Multi Point Injection
BATT	: Battery	MP-T	: Multi-Plate Transfer
BJ	: Bell Joint	MT	: Manual Transmission
CAN	: Communication Area Network	NA	: Natural Aspiration
CD	: Compact Disc	OP	: Option Parts
COMPL	: Complete	PC	: Personal Computer
CPU	: Central Processing Unit	PCV	: Positive Crankcase Ventilation
DOHC	: Double Overhead Camshaft	P/S	: Power Steering
DOJ	: Double Offset Joint	PTJ	: Pillow Tripod Joint
DTC	: Diagnostic code	P/W	: Power Window
EBJ	: High-Efficiency Compact Ball Fixed Joint	RH	: RH (Right Hand)
ECM	: Engine Control Module	Rr	: Rear
EDJ	: High-Efficiency Compact Double Offset Joint	SDI	: SUBARU Diagnostic Interface
EGI	: Electronic Gasoline Injection	SI-DRIVE	: SUBARU Intelligent Drive
E/G	: Engine	SOHC	: Single Overhead Camshaft
EGR	: Exhaust Gas Recirculation	SRS	: Supplemental Restraint System
ETC	: Electronic Throttle Control	ST	: Special Tool
EX	: Exhaust	SW	: Switch
F/B	: Fuse & Joint Box	TCS	: Traction Control System
Ft	: Front	TGV	: Tumble Generator Valve
FWD	: Front Wheel Drive	VDC	: Vehicle Dynamics Control
GPS	: Global Positioning System	VTD	: Variable Torque Distribution
HID	: High-Intensity Discharge		

1. LEGACY

A: DIMENSION

1. SEDAN MODEL

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Overall length		mm (in)	4,700 (185.0)		
Overall width		mm (in)	1,730 (68.1)		
Overall height (at C.W.)		mm (in)	1,425 (56.1)	1,425 (56.1), 1,435 (56.5)*2	1,435 (56.5)
Compartment	Length	mm (in)	1,900 (74.8)		
	Width	mm (in)	1,445 (56.9)		
	Height	mm (in)	1,165 (45.9), 1,100 (43.3)*1		
Wheelbase		mm (in)	2,670 (105.1)		
Tread	Front	mm (in)	1,495 (58.9)		
	Rear	mm (in)	1,485 (58.5)		
Minimum road clearance		mm (in)	150 (5.9)	150 (5.9), 160 (6.3)*2	160 (6.3)

*1: With sunroof
*2: 2.5 GT spec. B model

2. WAGON MODEL

Model			2.5 L SOHC	2.5 L DOHC turbo
Overall length		mm (in)	4,785 (188.4)	
Overall width		mm (in)	1,730 (68.1)	
Overall height (at C.W.)		mm (in)	1,475 (58.1)	
Compartment	Length	mm (in)	1,840 (72.4)	
	Width	mm (in)	1,445 (56.9)	
	Height	mm (in)	1,190 (46.9), 1,145 (45.1)*1	
Wheelbase		mm (in)	2,670 (105.1)	
Tread	Front	mm (in)	1,495 (58.9)	
	Rear	mm (in)	1,485 (58.5)	
Minimum road clearance		mm (in)	150 (5.9)	155 (6.1)

*1: With sunroof

B: ENGINE

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
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)		89.2 × 80.0 (3.512 × 3.150)
Displacement		cm^3 (cu in)	2,457 (149.9)		3,000 (183.06)
Compression ratio			10.0	8.4	10.7
Ignition order			1 — 3 — 2 — 4		1 — 6 — 3 — 2 — 5 — 4
Idle speed at Park or Neutral position		rpm	650 (MT) 700 (AT)	750	650
Maximum output		kW (HP)/rpm	125 (170)/6,000	184 (243)/6,000	185 (245)/6,600
Maximum torque		N·m (kgf-m, ft-lb)/rpm	230 (23.5, 170)/4,400	327 (33.3, 241)/3,600	291 (29.7, 215)/4,200

C: ELECTRICAL

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Ignition timing (at idling)		BTDC	MT: 10° AT: 15°	MT: 12° AT: 17°	15°
Spark plug	Type and manufacturer		NGK: FR5AP-11	NGK: SILFR6A	NGK: ILFR6B
Generator			12 V — 110 A		
Battery	Type and capacity (5HR)	MT	12V — 48AH (55D23L)		
		AT	12V — 52AH (75D23L)		

D: TRANSMISSION

1. MT

Model			2.5 L SOHC	2.5 L DOHC turbo	
Transmission type			5MT	5MT	6MT
Clutch type			DSPD	DSPD	DSPD
Gear ratio		1st	3.454	3.166	3.636
		2nd	2.062	1.882	2.235
		3rd	1.448	1.296	1.521
		4th	1.088	0.972	1.137
		5th	0.780	0.738	0.891
		6th	—	—	0.707
		Rev.	3.333	3.333	3.545
Reduction gear (Front)		Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	3.900	3.900
Reduction gear (Rear)	Transfer reduction	Type of gear	Helical	Helical	Helical
		Gear ratio	1.000	1.000	1.100
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	3.900	3.545

5MT: 5-forward speeds with synchromesh and 1-reverse
6MT: 6-forward speeds with synchromesh and 1-reverse
DSPD: Dry Single Plate Diaphragm

2. AT

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC	
					3.0 R	3.0 R LTD
Transmission type			4AT	5AT	5AT	
Clutch type			TCC	TCC	TCC	
Gear ratio		1st	2.785	3.540	3.540	
		2nd	1.545	2.264	2.264	
		3rd	1.000	1.471	1.471	
		4th	0.694	1.000	1.000	
		5th	—	0.834	0.834	
		6th	—	—	—	
		Rev.	2.272	2.370	2.370	
Reduction gear (Front)	1st reduction	Type of gear	Helical	Helical	Helical	
		Gear ratio	1.000	1.000	1.000	
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid	
		Gear ratio	4.111	3.083	3.083	3.272
Reduction gear (Rear)		Type of gear	Hypoid	Hypoid	Hypoid	
		Gear ratio	4.111	3.083	3.083	3.272

4AT: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse
5AT: Electronically controlled fully-automatic, 5-forward speeds and 1-reverse
TCC: Torque Converter Clutch

E: STEERING

Model		2.5 L SOHC	2.5 L DOHC turbo		3.0 L DOHC	
			GT spec. B	GT	3.0 R LTD	3.0 R
Type		Rack and pinion				
Turns, lock to lock		3.2	2.6	2.8	2.6	2.8
Minimum turning diameter m (ft)	Curb to curb	10.8 (35.4)	11.6 (38.0)	10.8 (35.4)	11.6 (38.0)	10.8 (35.4)
	Wall to wall	11.6 (38.1)	12.4 (40.7)	11.6 (35.4)	12.4 (40.7)	11.6 (35.4)

F: SUSPENSION

Front	Macpherson strut type suspension
Rear	Multi-link type suspension

G: BRAKE

Model	2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Service brake system	Dual circuit hydraulic with vacuum suspended power unit		
Front	Ventilated disc brake		
Rear	Disc brake	Ventilated disc brake	
Parking brake	Mechanical on rear brakes		

H: TIRE

Model	2.5 L SOHC		2.5 L DOHC turbo		3.0 L DOHC	
	Canada model	Except Canada model	2.5 GT spec. B	Except 2.5 GT spec.B	3.0 R	3.0 R LTD
Wheel size	16 × 6 $^{1}/_{2}$JJ	17 × 7JJ	18 × 7JJ	17 × 7JJ	17 × 7JJ	18 × 7JJ
Tire size	P205/55 R16 89H	P205/50 R17 88V	215/45 R18 89Y	215/45 R17 91W	215/45 R17 91W	P215/45 R18 89W
Type	Tubeless, Steel belted radial					

I: CAPACITY

Model			2.5 L SOHC		2.5 L DOHC turbo			3.0 L DOHC
			5MT	4AT	5MT	5AT	6MT	5AT
Fuel tank		ℓ (US gal, Imp gal)	64 (16.9, 14.1)					
Engine oil	Total capacity (Overhaul)	ℓ (US qt, Imp qt)	5.0 (5.3, 4.4)					7.0 (7.4, 6.2)
	Filling amount of engine oil ℓ (US qt, Imp qt)	When replacing engine oil and oil filter	4.2 (4.4, 3.7)		4.3 (4.5, 3.8)			5.7 (6.0, 5.0)
		When replacing engine oil only	4.0 (4.2, 3.5)					5.5 (5.8, 4.8)
Transmission gear oil		ℓ (US qt, Imp qt)	3.5 (3.7, 3.1)	—	3.5 (3.7, 3.1)	—	4.1 (4.3, 3.6)	—
ATF		ℓ (US qt, Imp qt)	—	9.3 (9.8, 8.2)	—	9.8 (10.4, 8.6)	—	9.8 (10.4, 8.6)
Front differential gear oil		ℓ (US qt, Imp qt)	—	1.2 (1.3, 1.1)	—	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)				1.0 (1.1, 0.9)	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)	6.4 (6.8, 5.6)	6.3 (6.7, 5.5)	7.3 (7.7, 6.4)	7.2 (7.6, 6.3)	7.3 (7.7, 6.4)	7.2 (7.6, 6.3)

J: WEIGHT

1. US MODEL

Model			Sedan				
			2.5 L Non-turbo				
			2.5 i BASE		2.5 i		2.5 i Limited
			5MT	4AT	5MT	4AT	4AT
Destination code			U5, U6				
OP code			DC		DW		EW
Curb weight (C.W.)	Front	kg (lb)	821 (1,810)	841 (1,855)	825 (1,819)	845 (1,864)	854 (1,884)
	Rear	kg (lb)	664 (1,465)	669 (1,475)	673 (1,483)	677 (1,493)	682 (1,503)
	Total	kg (lb)	1,485 (3,275)	1,510 (3,330)	1,498 (3,302)	1,522 (3,357)	1,536 (3,387)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)
Option	Vehicle dynamics control		❍	❍	❍	❍	❍
	Power package		—	—	—	—	❍
	Side airbag		❍	❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍	❍
	Sunroof		—	—	❍	❍	❍
	Navigation system		—	—	—	—	—
	Dark colored glass		—	—	—	—	—

Model			Sedan						
			2.5 L Turbo				3.0 L Non-turbo		
			2.5 GT LTD			2.5 GT spec. B	3.0 R	3.0 R LTD	
			5MT	5AT		6MT	5AT		
Destination code			U4						
OP code			3W	EW	EK	EK	DW	EW	EK
Curb weight (C.W.)	Front	kg (lb)	872 (1,922)	901 (1,987)	903 (1,992)	912 (2,012)	911 (2,008)	926 (2,042)	928 (2,047)
	Rear	kg (lb)	683 (1,506)	688 (1,516)	688 (1,516)	694 (1,531)	682 (1,503)	685 (1,511)	685 (1,511)
	Total	kg (lb)	1,555 (3,428)	1,589 (3,503)	1,591 (3,508)	1,607 (3,543)	1,592 (3,511)	1,611 (3,553)	1,614 (3,558)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	2,010 (4,435)	2,010 (4,435)	2,010 (4,535)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,010 (4,535)
Option	Vehicle dynamics control		—	❍	❍	❍	❍	❍	❍
	Power package		❍	❍	❍	❍	—	❍	❍
	Side airbag		❍	❍	❍	❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍	❍	❍	❍
	Sunroof		❍	❍	❍	❍	❍	❍	❍
	Navigation system		—	—	❍	❍	—	—	❍
	Dark colored glass		—	—	—	—	—	—	—

2. CANADA MODEL

Model			Sedan						
			2.5 L Non-turbo				2.5 L Turbo	3.0 L Non-turbo	
			2.5 i				2.5 GT spec. B	3.0 R	
			5MT		4AT		6MT	5AT	
Destination code			C0	C5	C0	C5	C0		
OP code			DW	UC	DW	UC	EK	EW	EK
Curb weight (C.W.)	Front	kg (lb)	828 (1,826)	812 (1,790)	848 (1,870)	832 (1,835)	913 (2,013)	913 (2,013)	916 (2,020)
	Rear	kg (lb)	678 (1,495)	660 (1,455)	682 (1,504)	664 (1,464)	695 (1,532)	684 (1,508)	684 (1,508)
	Total	kg (lb)	1,506 (3,321)	1,472 (3,246)	1,530 (3,374)	1,496 (3,299)	1,608 (3,546)	1,597 (3,521)	1,600 (3,528)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)
Option	Vehicle dynamics control		❍	—	❍	—	❍	❍	❍
	Power package		—	—	—	—	❍	❍	❍
	Side airbag		❍	❍	❍	❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍	❍	❍	❍
	Sunroof		❍	—	❍	—	❍	❍	❍
	Navigation system		—	—	—	—	❍	—	❍
	Dark colored glass		—	—	—	—	—	—	—

Model			Wagon			
			2.5 L Non-turbo			
			2.5 i			
			5MT		4AT	
Destination code			C0	C5	C0	C5
OP code			DW	UC	DW	UC
Curb weight (C.W.)	Front	kg (lb)	823 (1,815)	806 (1,777)	843 (1,859)	826 (1,821)
	Rear	kg (lb)	697 (1,537)	670 (1,477)	697 (1,537)	670 (1,477)
	Total	kg (lb)	1,520 (3,352)	1,476 (3,255)	1,540 (3,396)	1,496 (3,299)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)	1,960 (4,325)
Option	Vehicle dynamics control		❍	—	❍	—
	Power package		—	—	—	—
	Side airbag		❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍
	Sunroof		❍	—	❍	—
	Navigation system		—	—	—	—
	Dark colored glass		—	—	—	—

2. OUTBACK

A: DIMENSION

1. WAGON MODEL

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Overall length		mm (in)	4,800 (189.0)		
Overall width		mm (in)	1,770 (69.7)		
Overall height (at C.W.)		mm (in)	1,605 (63.2)		
Compartment	Length	mm (in)	1,840 (72.4)		
	Width	mm (in)	1,445 (56.9)		
	Height	mm (in)	1,190 (46.9), 1,145 (45.1)*1		
Wheelbase		mm (in)	2,670 (105.1)		
Tread	Front	mm (in)	1,495 (58.9)		
	Rear	mm (in)	1,490 (58.7)		
Minimum road clearance		mm (in)	215 (8.5)	220 (8.7)	215 (8.5)

*1: With sunroof

B: ENGINE

Model	2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
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)		89.2 × 80.0 (3.512 × 3.150)
Displacement cm^3 (cu in)	2,457 (149.9)		3,000 (183.06)
Compression ratio	10.0	8.4	10.7
Ignition order	1 — 3 — 2 — 4		1 — 6 — 3 — 2 — 5 — 4
Idle speed at Park or Neutral position rpm	650 (MT) 700 (AT)	750	650
Maximum output kW (HP)/rpm	125 (170)/6,000	184 (243)/6,000	185 (245)/6,600
Maximum torque N·m (kgf-m, ft-lb)/rpm	230 (23.5, 170)/4,400	327 (33.3, 241)/3,600	291 (29.7, 215)/4,200

C: ELECTRICAL

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Ignition timing (at idling) BTDC			MT: 10° AT: 15°	MT: 12° AT: 17°	15°
Spark plug	Type and manufacturer		NGK: FR5AP-11	NGK: SILFR6A	NGK: ILFR6B
Generator			12 V — 110 A		
Battery	Type and capacity (5HR)	MT	12V — 48AH (55D23L)		
		AT	12V — 52AH (75D23L)		

D: TRANSMISSION

1. MT

Model			2.5 L SOHC	2.5 L DOHC turbo
Transmission type			5MT	5MT
Clutch type			DSPD	DSPD
Gear ratio		1st	3.454	3.166
		2nd	2.062	1.882
		3rd	1.448	1.296
		4th	1.088	0.972
		5th	0.825	0.738
		Rev.	3.333	3.333
Reduction gear (Front)		Type of gear	Hypoid	Hypoid
		Gear ratio	4.111	4.444
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	4.444

5MT: 5-forward speeds with synchromesh and 1-reverse
DSPD: Dry Single Plate Diaphragm

2. AT

Model			2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Transmission type			4AT	5AT	5AT
Clutch type			TCC	TCC	TCC
Gear ratio		1st	2.785	3.540	3.540
		2nd	1.545	2.264	2.264
		3rd	1.000	1.471	1.471
		4th	0.694	1.000	1.000
		5th	—	0.834	0.834
		Rev.	2.272	2.370	2.370
Reduction gear (Front)	1st reduction	Type of gear	Helical	Helical	Helical
		Gear ratio	1.000	1.000	1.000
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	4.444	3.272	3.272
Reduction gear (Rear)		Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	4.444	3.272	3.272

4AT: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse
5AT: Electronically controlled fully-automatic, 5-forward speeds and 1-reverse
TCC: Torque Converter Clutch

E: STEERING

Model		2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Type		Rack & pinion		
Turns, lock to lock		3.2		
Minimum turning diameter m (ft)	Curb to curb	10.8 (35.4)		
	Wall to wall	11.6 (38.1)		

F: SUSPENSION

Front	Macpherson strut type suspension
Rear	Multi-link type suspension

G: BRAKE

Model	2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Service brake system	Dual circuit hydraulic with vacuum suspended power unit		
Front	Ventilated disc brake		
Rear	Disc brake		
Parking brake	Mechanical on rear brakes		

H: TIRE

Model	2.5L SOHC BASE	2.5 L SOHC	2.5 L DOHC turbo	3.0 L DOHC
Wheel size	16 × $6^1/_2$JJ	16 × $6^1/_2$JJ[*1], 17 × 7JJ	17 × 7JJ	17 × 7JJ
Tire size	P225/60 R16 97H	P225/60 R16 97H[*1], P225/55 R17 95V		
Type	Tubeless, Steel belted radial			

[*1]: 2.5 L SOHC model for Canada

I: CAPACITY

Model			2.5 L SOHC		2.5 L DOHC turbo		3.0 L DOHC
			5MT	4AT	5MT	5AT	5AT
Fuel tank		ℓ (US gal, Imp gal)	64 (16.9, 14.1)				
Engine oil	Total capacity (Overhaul)	ℓ (US qt, Imp qt)	5.0 (5.3, 4.4)				7.0 (7.4, 6.2)
	Filling amount of engine oil ℓ (US qt, Imp qt)	When replacing engine oil and oil filter	4.2 (4.4, 3.7)		4.3 (4.5, 3.8)		5.7 (6.0, 5.0)
		When replacing engine oil only	4.0 (4.2, 3.5)				5.5 (5.8, 4.8)
Transmission gear oil		ℓ (US qt, Imp qt)	3.5 (3.7, 3.1)	—	3.5 (3.7, 3.1)	—	—
ATF		ℓ (US qt, Imp qt)	—	9.3 (9.8, 8.2)	—	9.8 (10.4, 8.6)	9.8 (10.4, 8.6)
Front differential gear oil		ℓ (US qt, Imp qt)	—	1.2 (1.3, 1.1)	—	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)	6.4 (6.8, 5.6)	6.3 (6.7, 5.5)	7.3 (7.7, 6.4)	7.2 (7.6, 6.3)	7.2 (7.6, 6.3)

J: WEIGHT

1. US MODEL

Model			OUTBACK					
			2.5 L Non-turbo					
			2.5 i BASE		2.5 i		2.5 i LTD LLB	
			5MT	4AT	5MT	4AT	4AT	
Destination code			U5, U6					
OP code			DC		DC		EB	EH
Curb weight (C.W.)	Front	kg (lb)	826 (1,822)	847 (1,867)	826 (1,822)	849 (1,872)	863 (1,902)	863 (1,902)
	Rear	kg (lb)	696 (1,535)	696 (1,535)	700 (1,544)	700 (1,544)	716 (1,579)	716 (1,579)
	Total	kg (lb)	1,522 (3,357)	1,543 (3,402)	1,527 (3,366)	1,549 (3,416)	1,579 (3,481)	1,579 (3,481)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)
Option	Vehicle dynamics control		❍	❍	❍	❍	❍	❍
	Power package		—	—	—	—	❍	❍
	Side airbag		❍	❍	❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍	❍	❍
	Sunroof		—	—	—	—	❍	❍
	Navigation system		—	—	—	—	—	❍
	Dark colored glass		—	—	—	—	❍	❍

SPECIFICATIONS

Model			OUTBACK				
			2.5 L Turbo			3.0 L Non-turbo	
			2.5XT LTD			3.0 R LTD	
			5MT	5AT		5AT	
Destination code			U4				
OP code			EB	EB	EH	EB	EH
Curb weight (C.W.)	Front	kg (lb)	881 (1,942)	912 (2,012)	915 (2,017)	924 (2,037)	926 (2,042)
	Rear	kg (lb)	727 (1,604)	727 (1,604)	727 (1,604)	723 (1,594)	723 (1,594)
	Total	kg (lb)	1,608 (3,546)	1,640 (3,616)	1,642 (3,621)	1,647 (3,631)	1,649 (3,636)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	2,060 (4,545)	2,060 (4,545)	2,060 (4,545)	2,100 (4,635)	2,100 (4,635)
Option	Vehicle dynamics control		❍	❍	❍	❍	❍
	Power package		❍	❍	❍	❍	❍
	Side airbag		❍	❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍	❍
	Sunroof		❍	❍	❍	❍	❍
	Navigation system		—	—	❍	—	❍
	Dark colored glass		❍	❍	❍	❍	❍

2. CANADA MODEL

Model			OUTBACK					
			2.5 L Non-turbo					3.0 L Non-turbo
			2.5 i BASE		2.5 i		2.5 i Limited	3.0 R LTD
			5MT	4AT	5MT	4AT	4AT	5AT
Destination code			C0		C5		C0	
OP code			UC		DB		EB	EH
Curb weight (C.W.)	Front	kg (lb)	824 (1,817)	845 (1,863)	828 (1,826)	848 (1,870)	861 (1,899)	926 (2,042)
	Rear	kg (lb)	697 (1,537)	697 (1,537)	704 (1,552)	704 (1,552)	716 (1,579)	723 (1,594)
	Total	kg (lb)	1,521 (3,354)	1,542 (3,400)	1,532 (3,378)	1,552 (3,422)	1,577 (3,477)	1,649 (3,636)
Gross axle weight ratio (G.A.W.R.)	Front	kg (lb)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)	1,040 (2,295)
	Rear	kg (lb)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)	1,060 (2,340)
Gross vehicle weight (G.V.W.)	Total	kg (lb)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,010 (4,435)	2,100 (4,635)
Option	Vehicle dynamics control		—	—	❍	❍	❍	❍
	Power package		—	—	—	—	❍	❍
	Side airbag		❍	❍	❍	❍	❍	❍
	Curtain airbag		❍	❍	❍	❍	❍	❍
	Sunroof		—	—	❍	❍	❍	❍
	Navigation system		—	—	—	—	—	❍
	Dark colored glass		—	—	❍	❍	❍	❍

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. ABS

Handle the ABS as a total system. Do not disassemble or attempt to repair parts which are not instructed in this manual. Follow the directions in this manual when performing maintenance on the ABSCM&H/U. When parts other than those specified are disassembled, it is possible that the ABS system will not operate when needed or cause it to operate incorrectly and result in injury.

2. VEHICLE DYNAMICS CONTROL (VDC)

Handle the VDC as a total system. Do not disassemble or attempt to repair individual parts. Follow the directions in this manual when performing maintenance on the VDCCM&H/U. When parts other than those specified are disassembled, it is possible that the VDC system will not operate when needed or cause it to 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 or nearby, around front of the vehicle (radiator panel, front wheel apron, front side frame, bumper, hood, front fender), around side of the vehicle (front door, rear door, center pillar, rear fender, side sill, rear wheel apron), around rear of the vehicle (rear seat cushion, rear floor, rear crossmember) and the airbag wiring harnesses or nearby.
To prevent unexpected deployment, turn the ignition switch to OFF and disconnect the ground terminal from battery, then wait at least 20 seconds before starting work.

7. AIRBAG AND SEAT BELT PRETENSIONER DISPOSAL

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

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 because of the danger of engine coolant blowing out when the engine coolant is hot.
- Prepare a container and cloth to prevent spraying of engine coolant when performing work in which engine coolant can be spilled. If the fuel spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Follow all government and local regulations concerning disposal of refuse when disposing.

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.

NOTE

1. Note

A: NOTE

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

1. FASTENERS NOTICE

Fasteners are used to prevent the parts from damage, dislocation and play due to looseness. Fasteners must be tightened to the specified torque.
Do not apply paint, lubricant, rust retardant or other substance to the surface around bolts, nuts, etc. Doing so will make it difficult to obtain the correct torque and result in looseness and other problem.

2. STATIC ELECTRICITY DAMAGE

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

3. BATTERY

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

4. SERVICE PARTS

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

5. PROTECTING VEHICLE UNDER MAINTENANCE

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

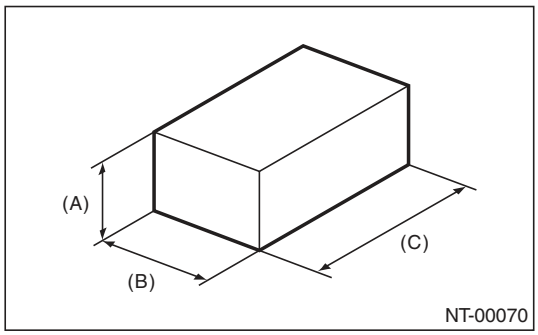
6. ENSURING SECURITY DURING WORK

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

7. LIFT AND JACK

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

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



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

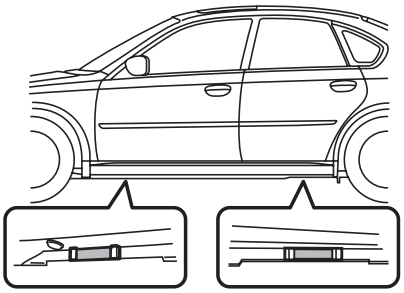
• Align the cushion rubber end of plate lift with the end of rubber attachment. (Portion b) Also, align the protrusion portion of the supporting locations with the end of attachment. (Portion a)

Note

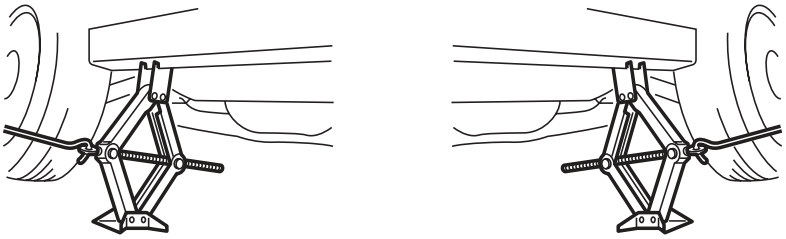
NOTE

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

(1)



(2)



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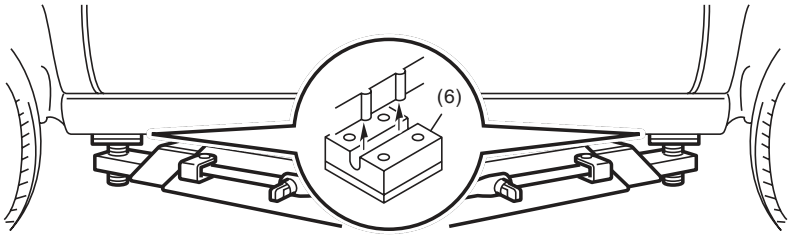

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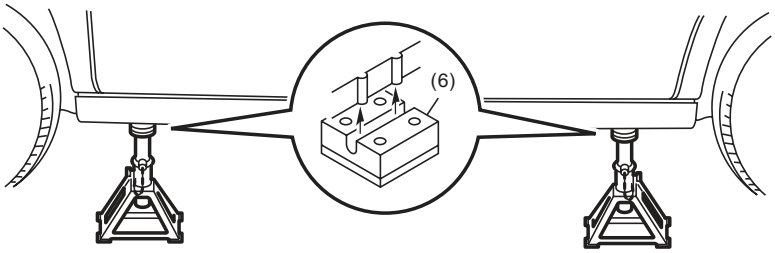
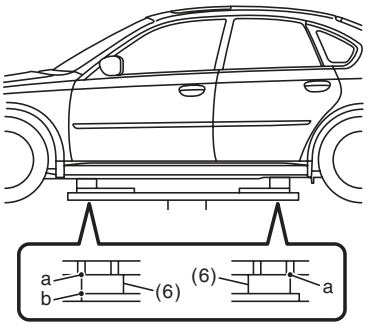


(5)

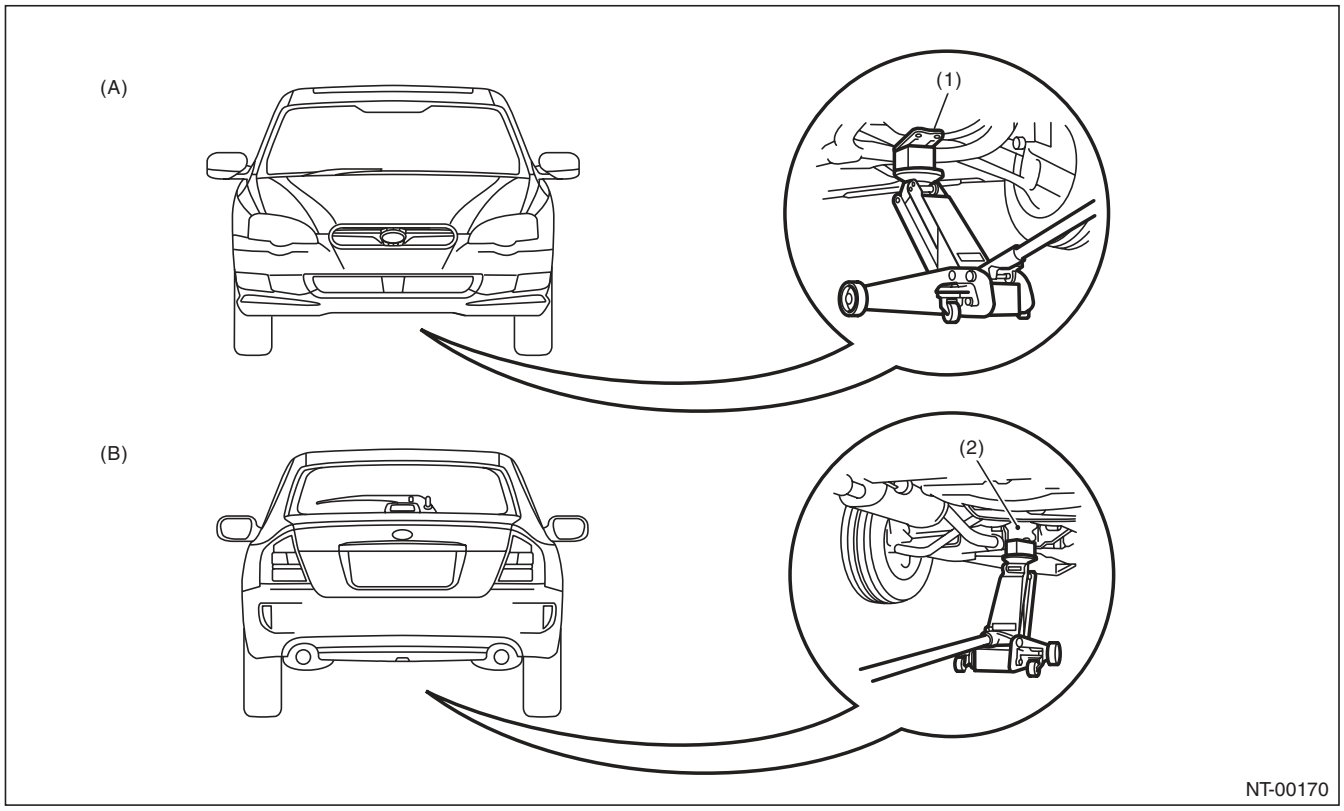


NT-00086

(1) Supporting locations
(2) Pantograph jack
(3) Swing arm lift
(4) Rigid rack
(5) Plate lift
(6) Attachment

Note

NOTE



(A) Front

(B) Rear

(1) Front crossmember

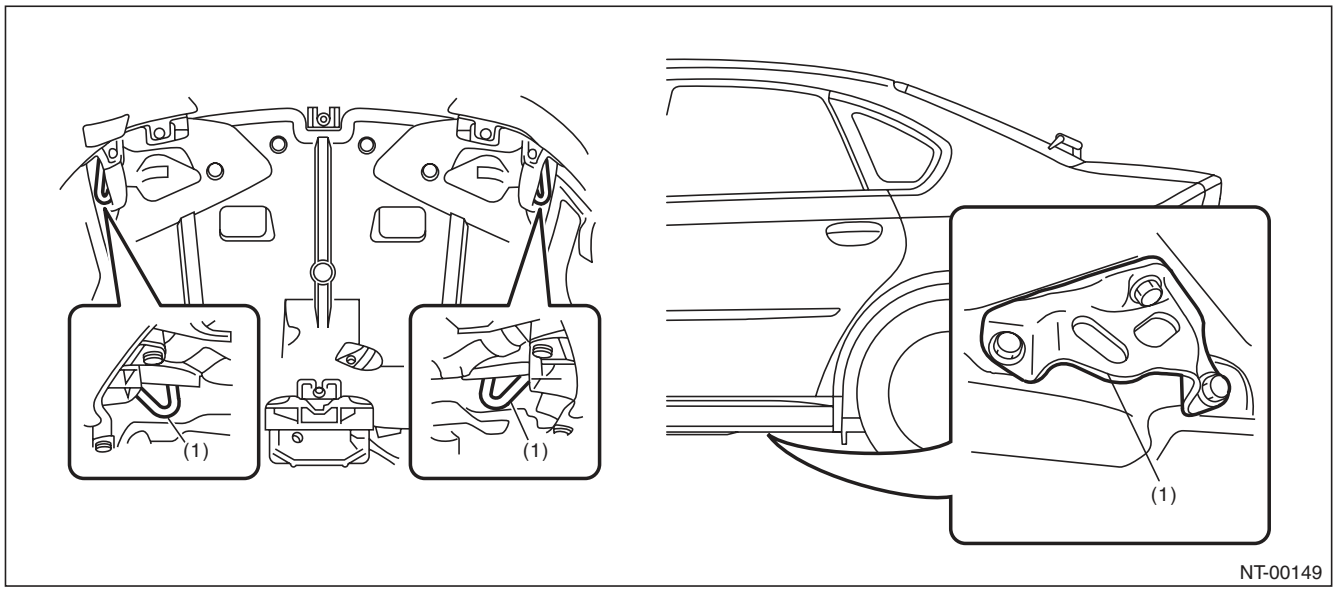
(2) Rear differential

8. TIE-DOWNS

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

- TIE-DOWN LOCATION

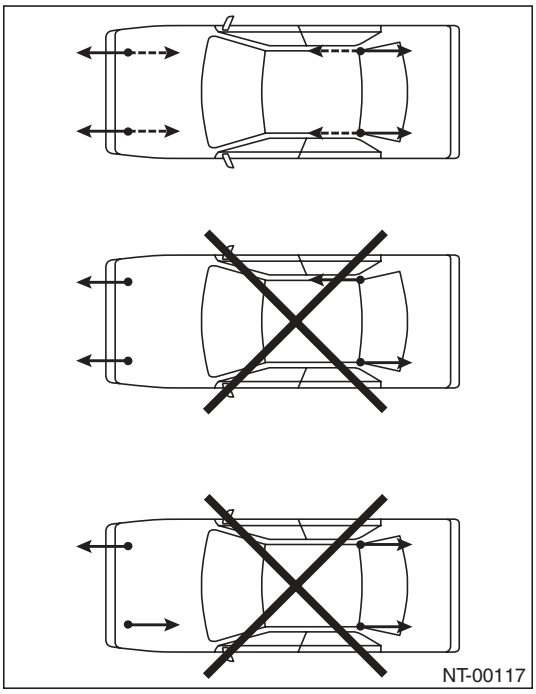
CAUTION:
Use the T-hook for rear tie-down. Do not use the hook other than T-hook, otherwise it can be removed when transporting vehicles.



(1) Hook for tie-down

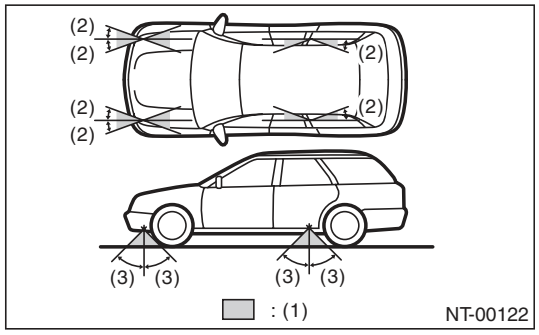
- CHAIN DIRECTION AT TIE-DOWN CONDITION

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

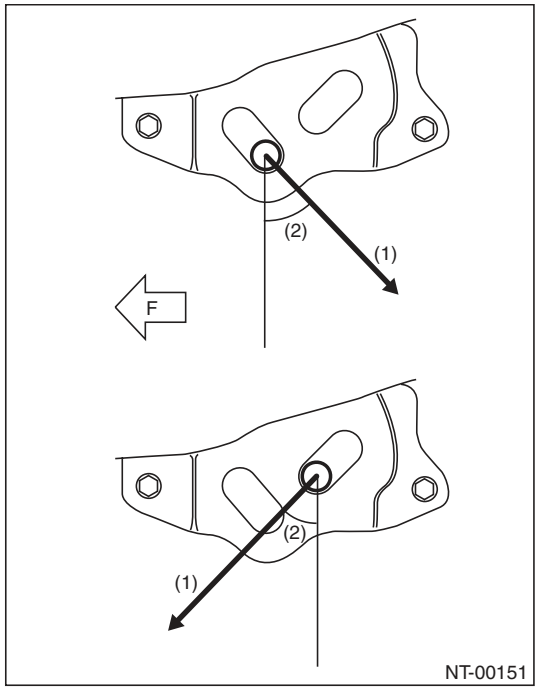


NOTE

• CHAIN PULLING RANGE AT TIE-DOWN CONDITION



(1) Chain pulling range at tie-down condition
(2) 20°
(3) 45°

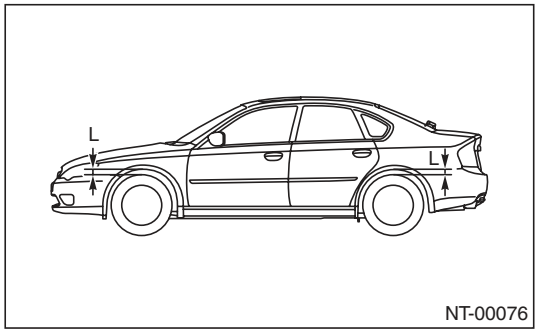


(F) Front side

(1) Tightening direction of chain
(2) 45°

• VEHICLE SINKING VOLUME AT TIE-DOWN CONDITION

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

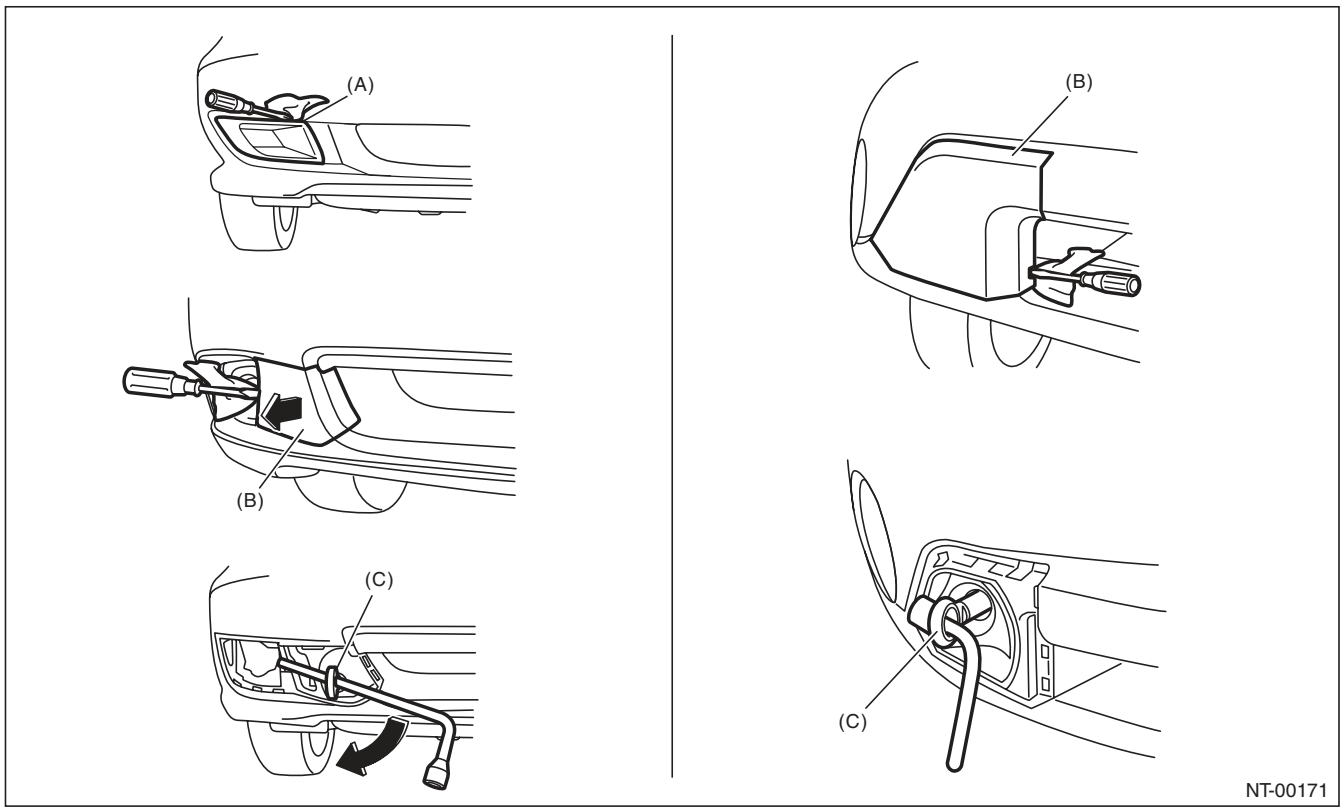


9. TOWING

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

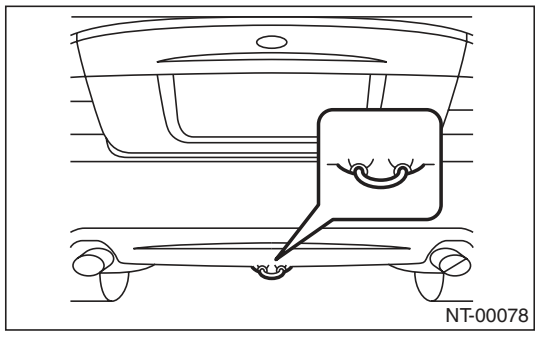
- Do not tow other vehicles with a front tie-down hook.
- Make sure the vehicle towing is heavier than the vehicle being towed.
- Front

Remove the fog light cover (except for OUTBACK model) and hook cover, and then install the hook.



(A) Fog light cover (except for OUTBACK model)
(B) Hook cover
(C) Hook

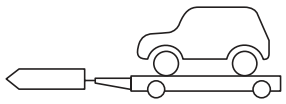
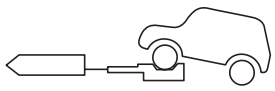
- Rear



Note

NOTE

- Notes

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 50 km/h (31 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.	×	×

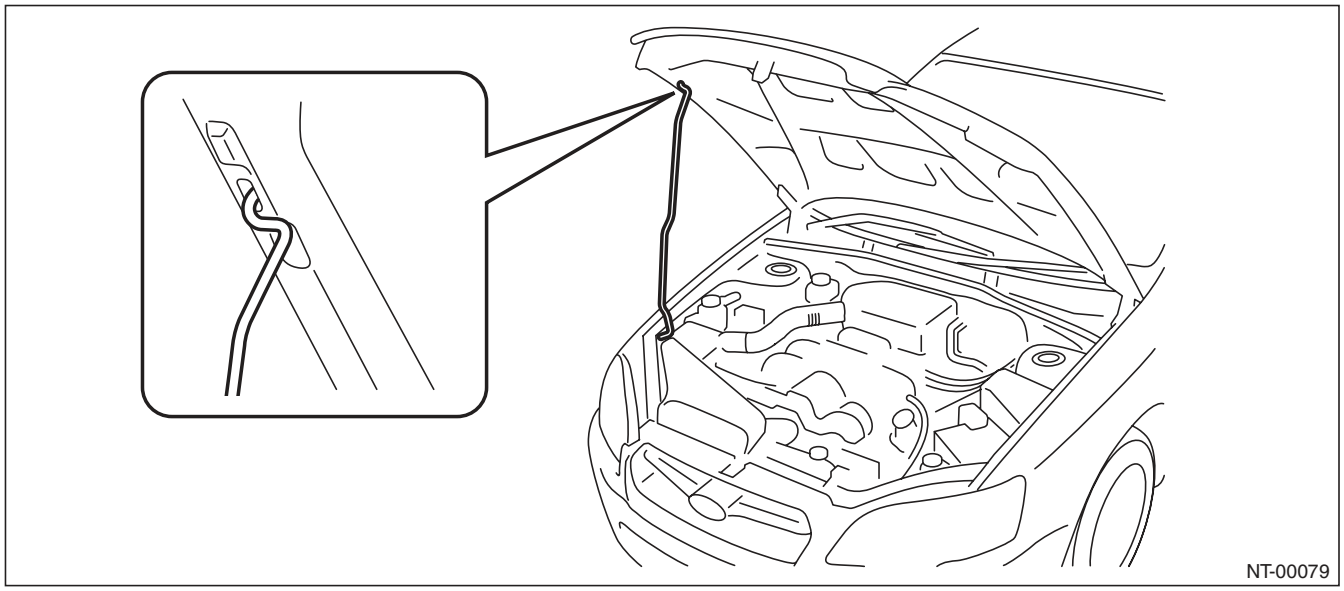
Marked ○: OK, Marked ×: Prohibited, Marked ▲: Conditionally OK.

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.**

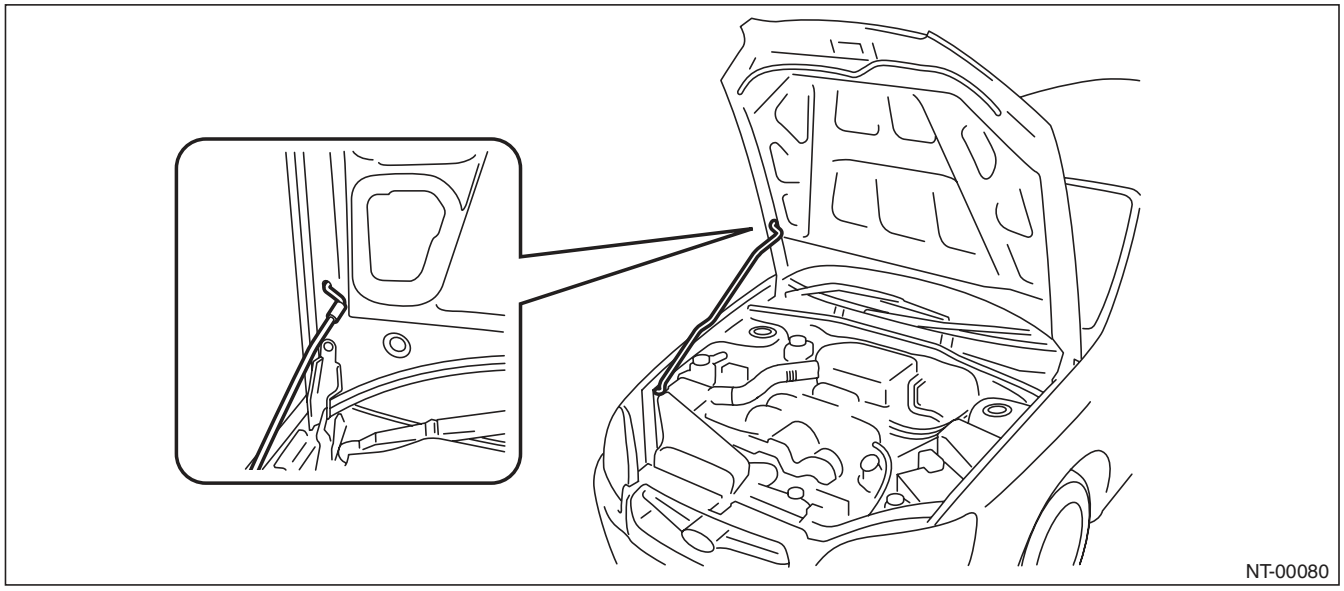
10.FRONT HOOD STAY INSTALLATION

- At the check and general maintenance



- When wider hood opening is necessary

Set the stay into the hole of lower hood as shown in the figure below.



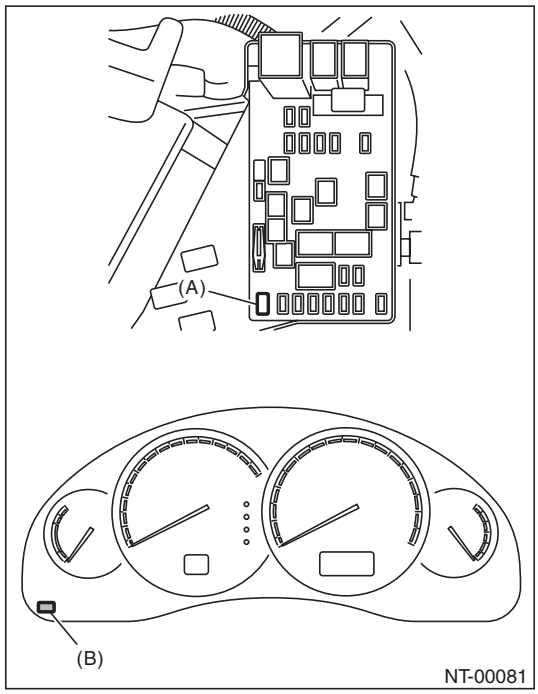
NOTE

11.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.

12.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 4AT model
Insert a spare fuse into FWD fuse holder in the fuse box located in the left side of engine room to select the FWD. Since electronically controlled MT-P hydraulic multi-plate clutch is adapted for center differential, select FWD. When maintenance is performed with jack-up or on the free roller, check the illumination of AWD warning light in the combination meter.

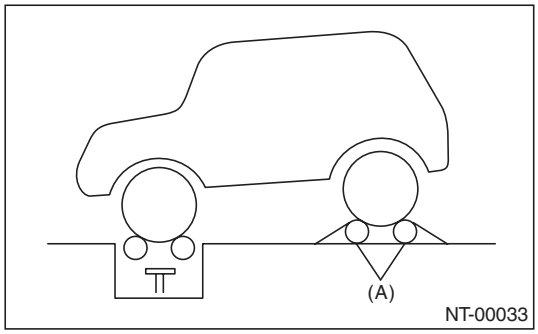


(A) FWD fuse holder
(B) AWD warning light

13.SPEEDOMETER TEST

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

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



(A) Free roller

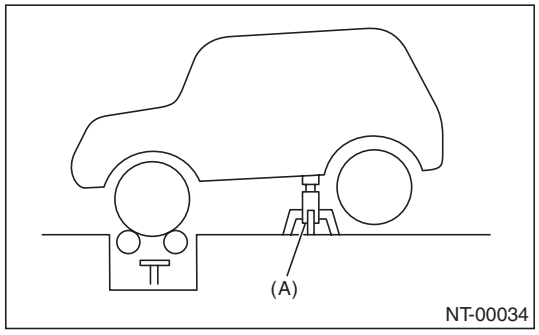
(3) Set the speedometer tester.
(4) Conduct the speedometer test work.

CAUTION:
Do not 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

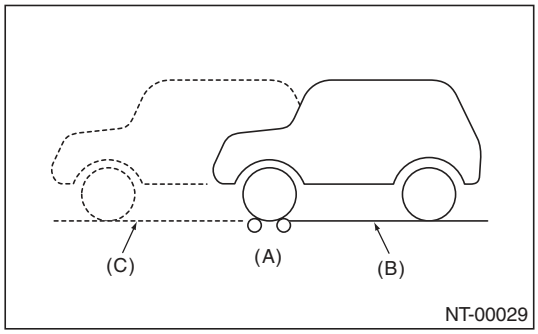
(3) Conduct the speedometer test work.

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

14.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.

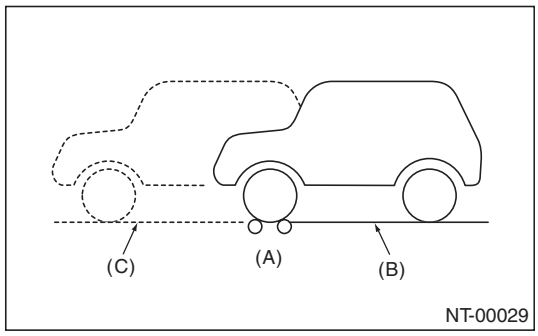


(A) Brake tester
(B) Position for measuring front wheel
(C) Position for measuring rear wheel

(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, brake force measurement in this condition conforms to standard grand total.

15.ON THE CAR WHEEL BALANCING

CAUTION:

• Carry out this procedures after measuring the balance of each single tire.

• Set the vehicle so that the front and rear wheels are the same height.

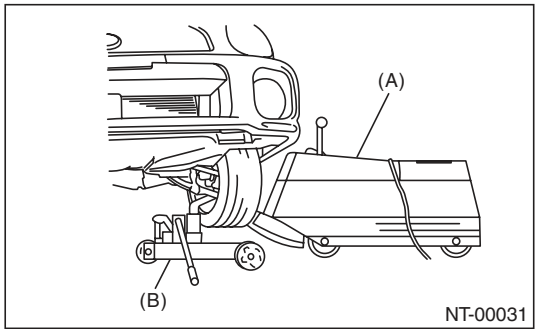
• Release the parking brake during measurement.

• Rotate each wheel by hands, and make sure it rotates without dragging.

• Do not 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

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.

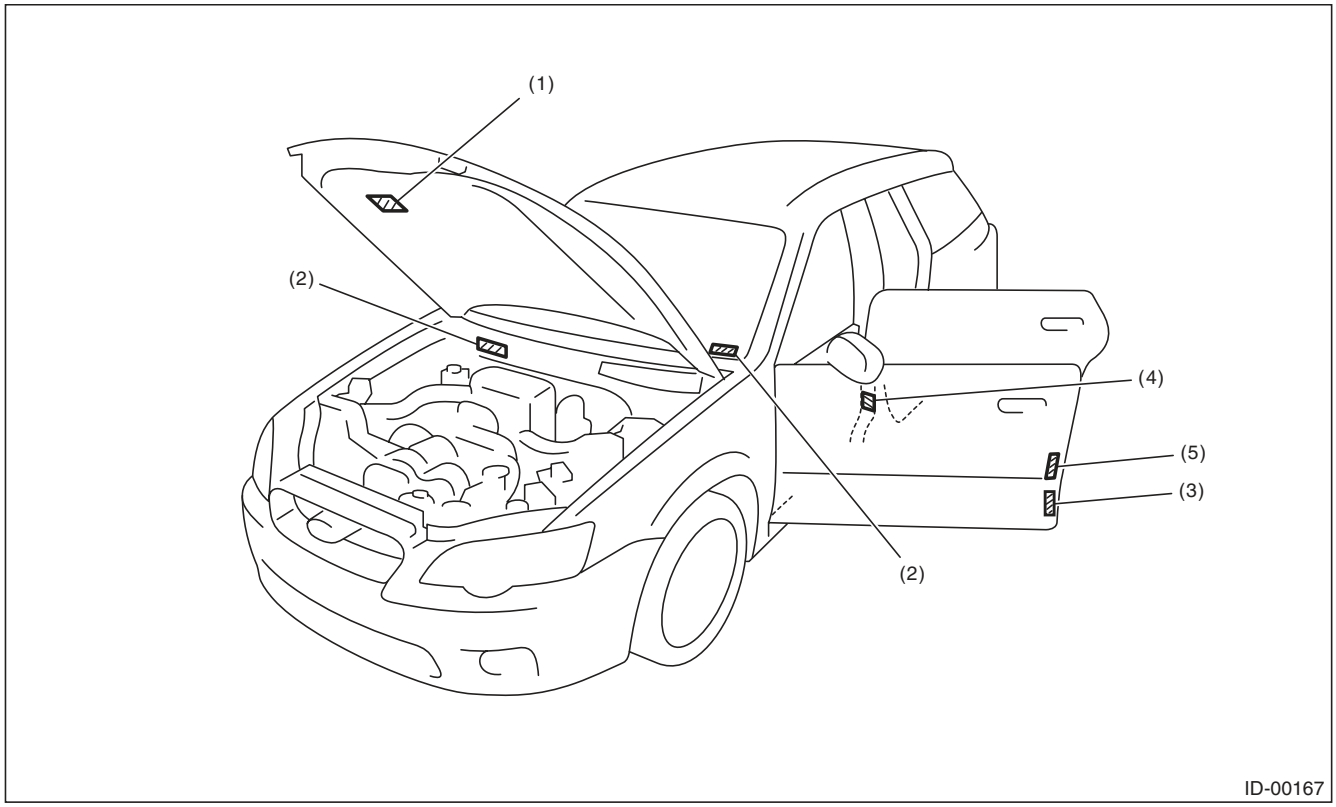
1. Identification

A: IDENTIFICATION

1. IDENTIFICATION NUMBER & LABEL LOCATIONS

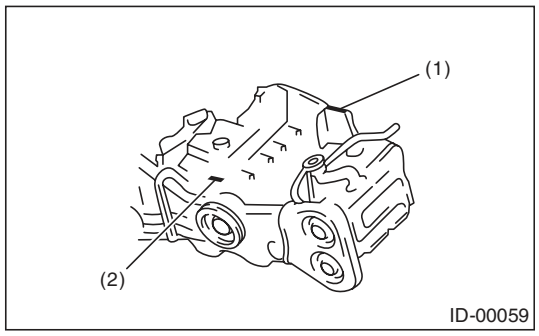
The V.I.N. (Vehicle Identification Numbers) is used to classify the vehicle.

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



(1) Emission control label
(2) Vehicle identification number (V.I.N.)
(3) Model number label (Right side)
(4) Tire inflation pressure label (Driver's side)
(5) Emission control label FMVSS label (U.S. model) (Left side) CMVSS label (Canada model) (Left side)

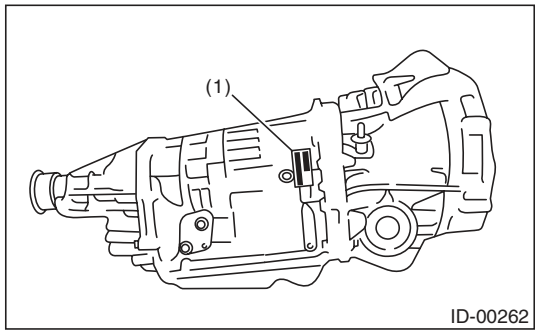
- **ENGINE**



(1) Engine serial number (Punch mark)
(2) Engine type (Crankcase upper side)

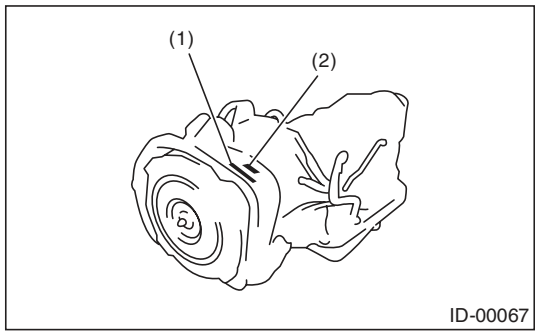
- **AUTOMATIC TRANSMISSION**

4AT



(1) AT type and Transmission serial number label

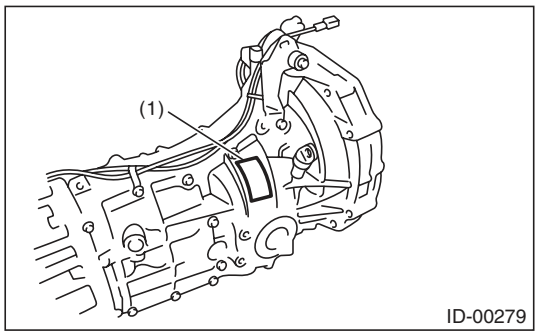
5AT



(1) AT type label
(2) Transmission serial number label

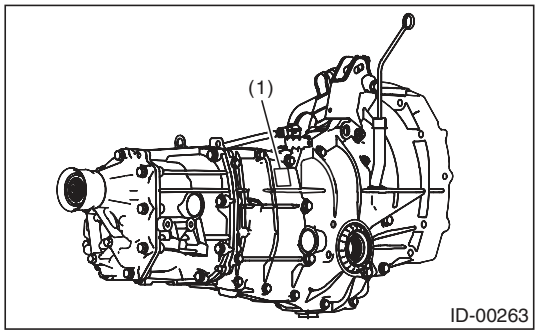
- **MANUAL TRANSMISSION**

5MT (non-turbo model)



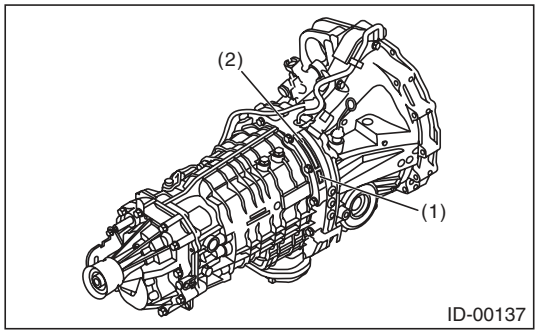
(1) MT type and Transmission serial number label

5MT (turbo model)



(1) MT type and Transmission serial number label

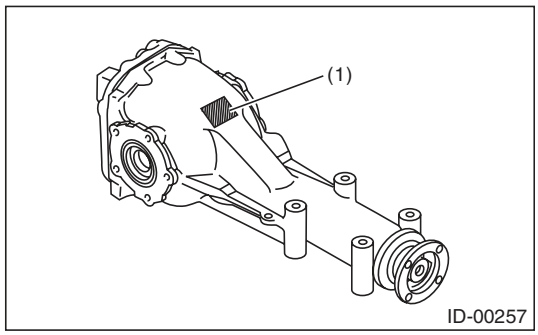
6MT



(1) Transmission serial No.
(2) MT type label

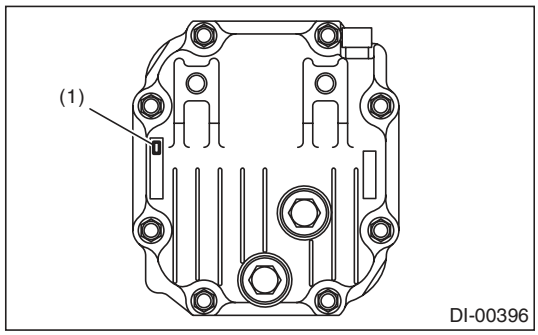
- **REAR DIFFERENTIAL**

T-TYPE



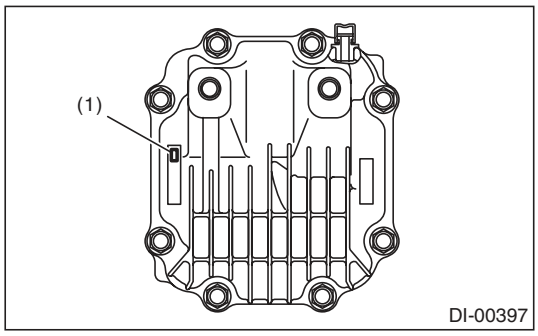
(1) Type (white paint)

VA1-TYPE



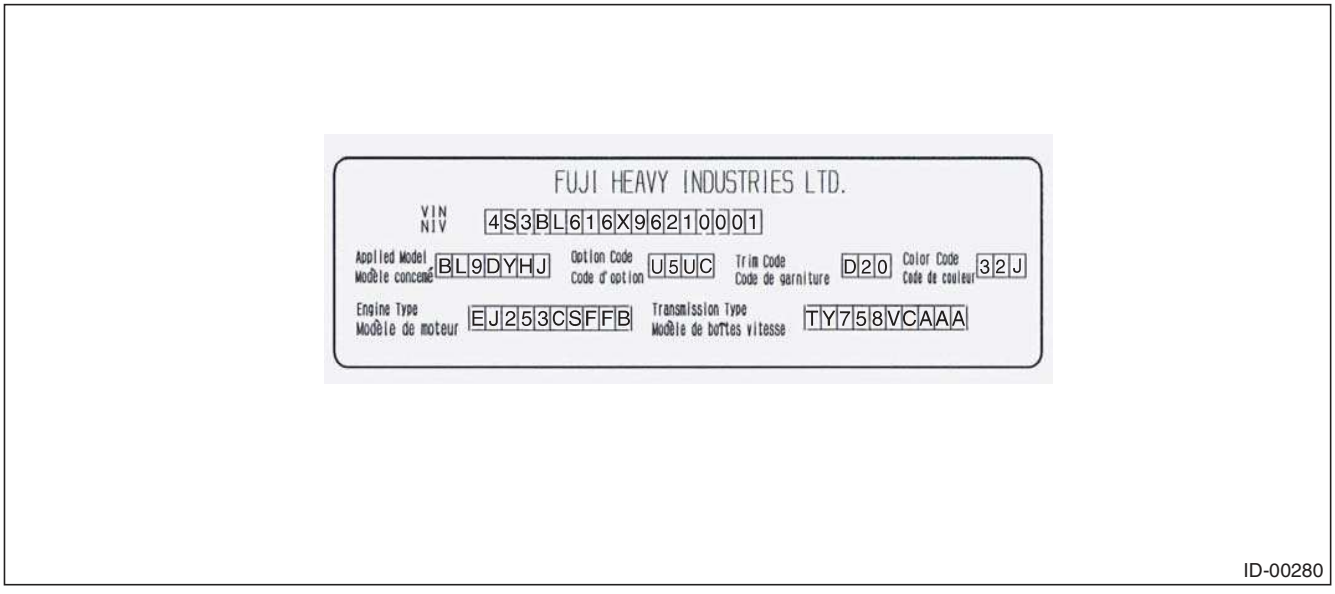
(1) Type (label)

VA2-TYPE



(1) Type (label)

- **MODEL NUMBER LABEL**



2. MEANING OF V.I.N.

The meaning of the V.I.N. is as follows:
]4S3BL616X96210001[
The starting and ending brackets ( ] [ ) are stop marks.

Digits	Code	Meaning	Details
1 — 3	4S3	Manufacturer body area	4S3: For C0 except OUTBACK model 4S4: For C0 OUTBACK model
4	B	Car line	B: LEGACY
5	L	Body type	L: Sedan P: Wagon
6	6	Displacement	6: 2.5 L AWD 8: 3.0 L AWD
7	1	Grade	0: 2.5 i BASE, OUTBACK 2.5 i BASE 1: 2.5 i, OUTBACK 2.5 i 2: 2.5 i-LTD, OUTBACK 2.5 i-LTD 3: OUTBACK 2.5 XT-LTD 4: 3.0 R 5: OUTBACK 3.0 R-LTD, 3.0 R-LTD 6: OUTBACK 2.5 i-LTD-LLB (L.L.Bean) 7: 2.5 GT-LTD 9: 2.5 GT-B
8	6	Restraint system or GVWR Class	6: Manual belts, Dual airbag, Side airbag (Except for OUTBACK model) C: Class C (GVWR 4001 — 5000 lb) (OUTBACK model)
9	X	Check digit	0 — 9&X
10	9	Model year	9: 2009MY
11	6	Transmission type	3: Full-time AWD 6MT 4: Full-time AWD 5AT 6: Full-time AWD 5MT 7: Full-time AWD 4AT
12 — 17	210001	Serial number	From 210001: Sedan From 310001: Wagon

3. MODEL NUMBER PLATE

The model number plate indicates the type, V.I.N. <Ref. to ID-5, MEANING OF V.I.N., IDENTIFICATION, Identification.>, applied model, option code, trim code, engine type, transmission type and the exterior color code. This information is helpful when placing orders for parts.

- **BL9FYJJ**

Digits	Code	Meaning	Details
1	B	Series	LEGACY
2	L	Body type	L: Sedan P: Wagon
3	9	Engine displacement Drive system Suspension system	9: 2.5 L AWD E: 3.0 L AWD
4	F	Model year	F: 2009MY
5	Y	Destination	Y: U.S., Canada
6	J	Grade	C: 2.5 GT Limited D: OUTBACK 2.5 XT Limited F: 2.5 GT spec. B H: 2.5 i J: 2.5 i BASE K: 2.5 i Limited L: 3.0 R Limited N: 3.0 R P: OUTBACK 2.5 BASE S: OUTBACK 2.5 i T: OUTBACK 2.5 i Limited U: OUTBACK 3.0 R V: OUTBACK 3.0 R Limited W: OUTBACK 2.5 i LTD-LLB
7	J	Transmission, fuel feed system	D: DOHC MFI Turbo 5MT J: SOHC MFI 5MT H: DOHC MFI Turbo 6MT L: SOHC MFI 4AT TIP U: DOHC MFI 5AT TIP V: DOHC MFI Turbo 5AT TIP

The engine and transmission type are as follows.

- **ENGINE**

EJ253CSFFB

Digits	Code	Meaning	Details
1 and 2	EJ	Engine type	EJ: 4 cylinder EZ: 6 cylinders
3 and 4	25	Displacement	25: 2.5 L 30: 3.0 L
5	3	Fuel feed system	3: MFI Non-turbo (SOHC) 5: MFI turbo D: MFI Non-turbo (DOHC, H6)
6	C	Emission control	A: For states not using California emission standards B: For USA C: For states using California emission standards
7	S	Mounted transmission	C: D-5AT E: 5MT (Flexible type flywheel, Wide angle damper type disc wheel) F: 6MT (Flywheel ø230) P: 4AT S: 5MT (Flexible type flywheel)
8 — 10	FFB	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

• Transmission

1. MT

TY758VCAAA

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: 5MT 85: 6MT
5	8	Series	6: 6MT 8: 5MT
6	V	Transmission specifications	V: Full-time AWD 5MT single range with viscous coupling center differential W: Full-time AWD 6MT single range with viscous coupling center differential
7	C	Mounted vehicle	C: 2.5 L SOHC W: 2.5 L DOHC Turbo
8 — 10	AAA	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

2. AT

TZ1B8LCEBA

Digits	Code	Meaning	Details
1	T	Transmission	T: Transmission
2	Z	Transmission type	G: Full-time AWD 5AT center differential Z: Full-time AWD 4AT MPT
3 and 4	1B	Identification	1B: 4AT 5D: 5AT
5	8	Series	7: 5AT 8: 4AT
6	L	Transmission specifications	C: Full-time AWD VTD 5AT L: Full-time AWD MPT 4AT
7	C	Mounted vehicle	C: 2.5 L SOHC Sedan, Touring wagon F: 2.5 L SOHC OUTBACK V: 3.0 L DOHC W: 2.5 L DOHC Turbo
8 — 10	EBA	Detailed specifications	Used when ordering parts. For details, refer to the parts catalog.

• REAR DIFFERENTIAL

Code	Reduction gear ratio	LSD
CD	4.444	Viscous
CF	4.444	Viscous
EW	3.900	Viscous
HY	3.545	Torsen
JE	4.111	Viscous
T1	3.900	None
T2	4.111	None
TP	4.444	None
XJ	4.111	None
XT	3.083	Viscous
XU	3.272	Viscous
XZ	3.083	Viscous

- **OPTION**

U5DC

Digits	Code	Meaning	Details
1 — 2	U5	Destination	C0: Canada U4: U.S. For USA U5: U.S. For states using California emission standards U6: U.S. For states not using California emission standards
3	D	Option equipment	3: Cruise control, Power pack D: Vehicle dynamics control (VDC), Cruise control E: Vehicle dynamics control (VDC), Cruise control, Power pack U: Cruise control
4	C	Option equipment	B: None C: A/C, Side airbag, Curtain airbag H: A/C, Side airbag, Curtain airbag, Sunroof, Navigation system, Dark colored glass K: A/C, Side airbag, Curtain airbag, Sunroof, Navigation system W: A/C, Side airbag, Curtain airbag, Sunroof

1. Recommended Materials

A: RECOMMENDED MATERIALS

1. GENERAL

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

2. FUEL

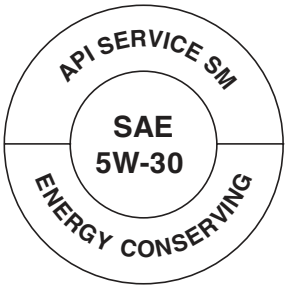
Always use gasoline of the same or higher octane value than specified in the owner's manual. Ignoring the specifications below will result in damage or poor performance of engine and fuel injection system. Use the specified gasoline to correct performance.

Unleaded gasoline

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

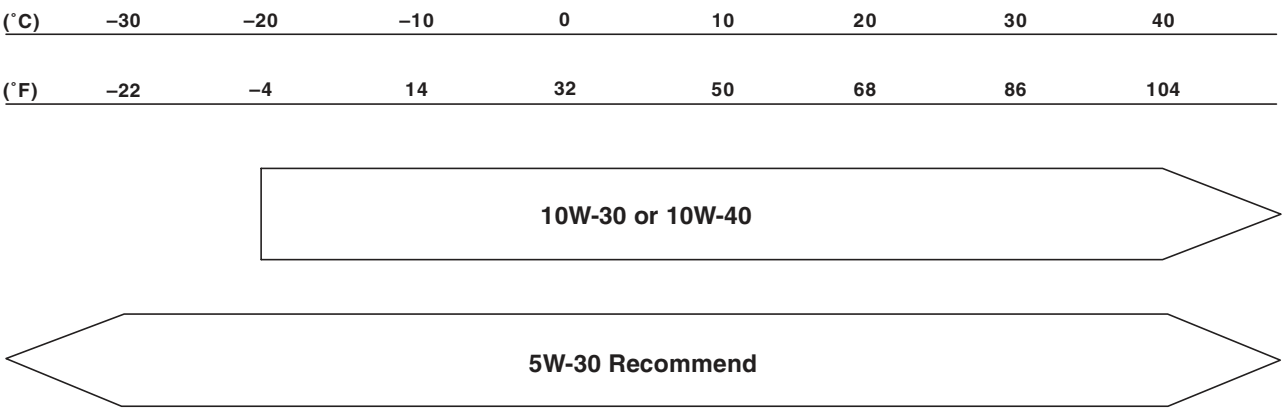
3. LUBRICANTS

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

Lubricants	Recommended materials	
	API standard	ILSAC standard
Engine oil Choose oil suitable for the standard from the right.	SM "Energy conserving"  RM-00049	GF-4 RM-00002
Manual transmission oil	GL-5	—
AT front differential gear oil	GL-5	—
Rear differential gear oil	GL-5	—

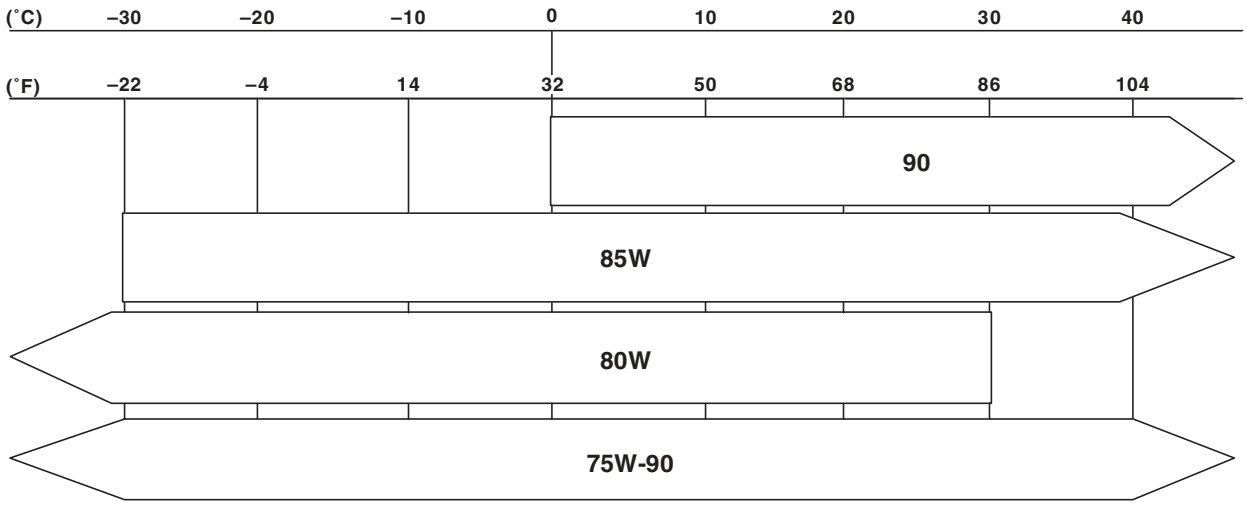
SAE viscosity No. and applicable temperature

Engine oil



RM-00060

Manual transmission oil, rear differential gear oil and AT 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:
Always use the recommended or equivalent ATF. Using material except recommended one or substitute would cause trouble.

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

5. COOLANT

Use the genuine coolants to protect the engine.

Engine coolant	Recommended materials	Item number	Alternative
Coolant	SUBARU SUPER COOLANT (Concentrated type)	—	—
	SUBARU SUPER COOLANT (Diluted type)	K0670Y0000	
Water for dilution	Distilled water	—	Soft water or tap water
Cooling system protective agent	Cooling system conditioner	SOA345001	—

6. REFRIGERANT

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

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

7. GREASE

Use grease and supplementary lubricants shown in the table below.

Grease	Application point	Recommended materials	Item number	Alternative
Supplementary lubricants	Oxygen sensor	Spray type lubricant	—	—
Grease	MT main shaft	NICHIMOLY N-130	—	—
	Clutch master cylinder push rod	SILICONE GREASE G-40M	004404003	—
	• Gear shift lever • Clutch activating cylinder • Clutch pedal • Brake pedal • Clutch bearing • Clutch release lever • Select lever	SUNLIGHT 2	003602010	—
	Steering gearbox	VALIANT GREASE M2	003608001	ONE LUBER SG or MO
	Disc brake (lock pin, guide pin, piston boot)	NIGLUBE RX-2	000041000	—
	Between brake pad and shim	Molykote AS-880N	K0777YA010	—
	Brake pad clip	Molykote M7439	K0777YA000	—
	Front axle PTJ	NKG302	—	—
	Front axle EBJ	NTG2218-M	—	—
	• Rear axle EBJ • Rear axle BJ	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 and body	Dow Automotive's adhesive: ESSEX U-400HV or the equivalent Glass primer: U-401 and U-402 Painted surface primer: U-413	—	—
	Rearview mirror base	REPAIR KIT IN MR	65029FC000	—

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	THREE BOND 1215	004403007	DOW CORNING No. 7038
	• Cylinder block • Camshaft cap • Cylinder head plug (Turbo model) • Oil pump (Except for 3.0 L model) • Cylinder head plug (Turbo model) • Rocker cover (3.0 L model and turbo model) • Engine oil pan (Pan upper) (3.0 L model) • Block (Pan upper) (3.0 L model) • Back cover (Front cover, block, head, pan upper) (3.0 L model) • Engine oil pan (Except for 3.0 L model) • Separator cover (Except for 3.0 L model)	THREE BOND 1217G	K0877Y0100	—
	Transmission oil pan (AT model)	THREE BOND 1217B	K0877YA020	—
	Rear differential (Side retainer bolt)	THREE BOND 1110B	K0879Y0020	—
Seal material	• Rear differential • Engine oil pressure switch • Connector (Oil hose) (Turbo model) • Connector (Heater hose) (3.0 L model) • Cylinder head (Nipple) (3.0 L model) • Camshaft bowl-shape plug (3.0 L model)	THREE BOND 1324	004403042	—
	• Rear differential • Service hole plug (Except for 3.0 L model)	THREE BOND 1105	004403010	DOW CORNING No. 7038
	• Steering adjusting screw • PCV Valve	THREE BOND 1141	004403006	—
	• Door (Front sealing cover) • Door (Rear sealing cover)	3M Butyl Rubber 8626	—	—

1. Pre-delivery Inspection

A: GENERAL DESCRIPTION

The purposes of the pre-delivery inspection (PDI) are as follows.
- Remove the additional parts used for ensuring the vehicle quality during transportation and restore the vehicle to its normal condition.
- Check the vehicle before delivery is in normal condition.
- Check the vehicle or parts for any damage occurred during transportation or storage.
- Check the vehicle after repair is in normal condition.
- Make sure to provide a complete vehicle to customer.

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

B: PRE-DELIVERY INSPECTION (PDI) PROCEDURE

STATIC CHECKS JUST AFTER VEHICLE RECEIPT

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

CHECKS WITH THE ENGINE RUNNING

Procedure	Check point
25. Delivery (test) mode connector	Turn the ignition switch to ON and check that the malfunction indicator light starts blinking.
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 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	Check that the clock operates normally.
33. Audio	Check the radio and CD player for normal operation.
34. Navigation system	1. Check all display functions for normal operation. 2. Check the map disc (DVD) are provided on vehicle. 3. Check that the navigation system operates normally.
35. Front accessory power supply socket	Check that the front 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 the power window for normal operations.
42. Sunroof	Check that the sunroof operates normally.
43. Door mirror	Check that the remote control mirror operates normally.

DYNAMIC TEST WITH THE VEHICLE RUNNING

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

CHECKS AFTER DYNAMIC TEST

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

1. APPEARANCE CHECK

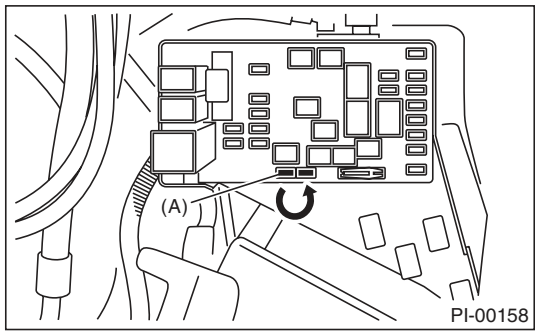
• If the vehicle is covered with protective coating, visually check the vehicle body for damage and dents.
• When the protective coating is removed, visually check the body paints for damage or stains in detail and repair as necessary.
• Visually check the windshield glass, door glasses and light lenses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

2. TIRE CHECK

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

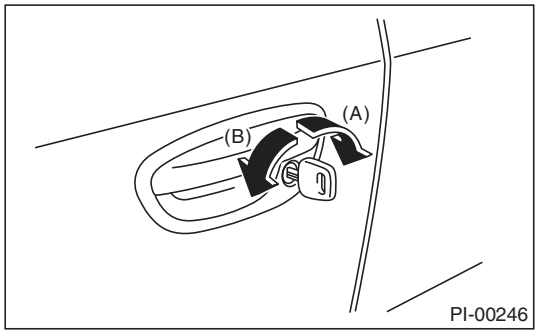
3. FUSE INSTALLATION

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



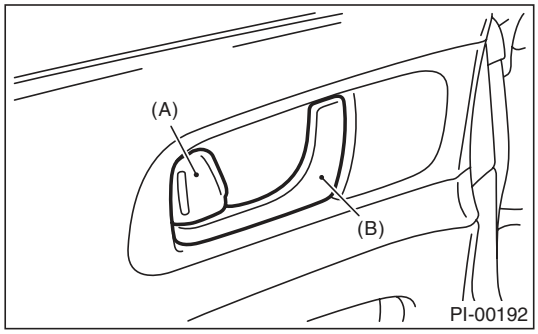
4. LOCK/UNLOCK AND OPEN/CLOSE OPERATION CHECKS OF DOORS

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



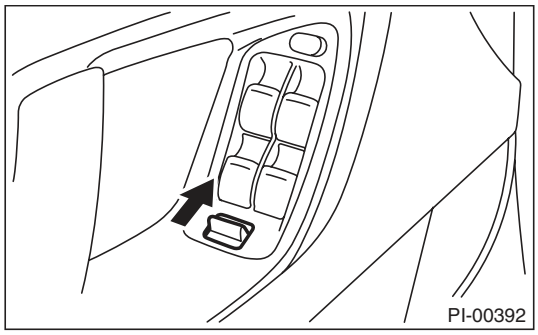
(A) Unlock
(B) Lock

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

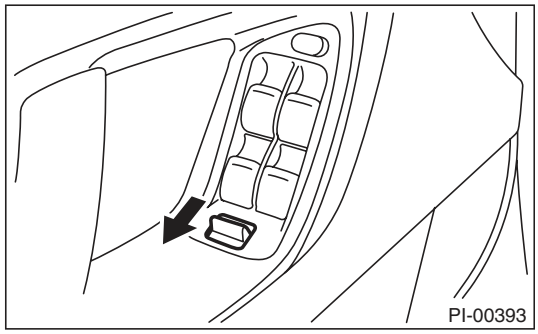


(A) Door lock knob
(B) Inner remote

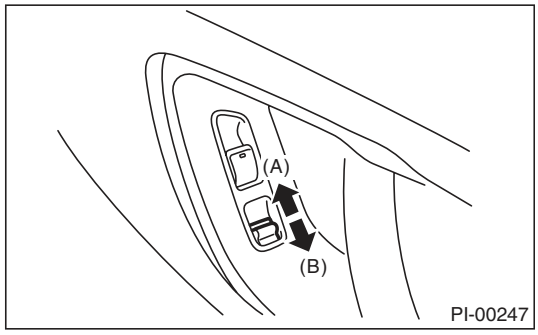
3) Close all the doors, and then press the lock on power door lock switch at driver's side. Check that all doors including rear gate are locked.



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



5) Check that the power door lock switch on the passenger's side also locks and unlocks.

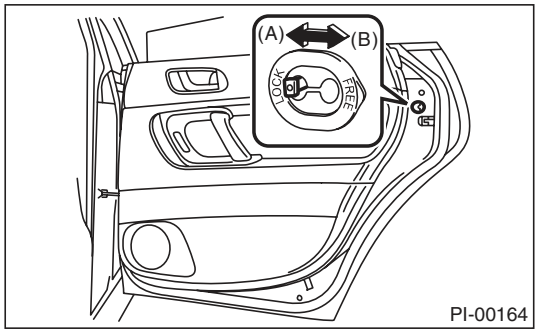


(A) Lock
(B) Unlock

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

5. OPERATION CHECK OF CHILD SAFETY LOCK SYSTEM

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

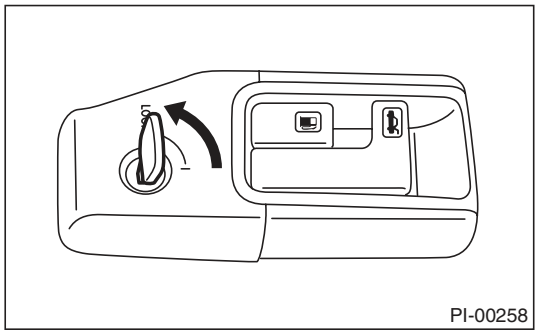


(A) Lock
(B) Unlock

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

6. OPEN/CLOE OPERATION CHECKS OF TRUNK LID

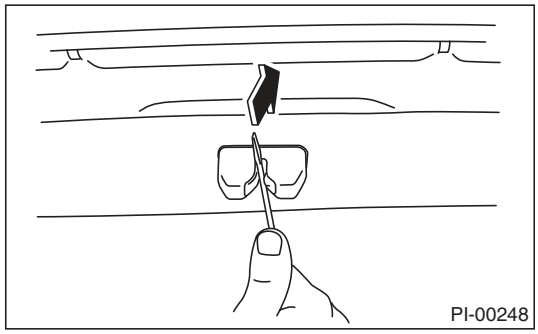
1) Operate the trunk lock release lever to check that the trunk lid opens normally.
2) Open and close the trunk lid several times for smooth movement.
3) Lock the trunk lock release lever using main key or sub key.



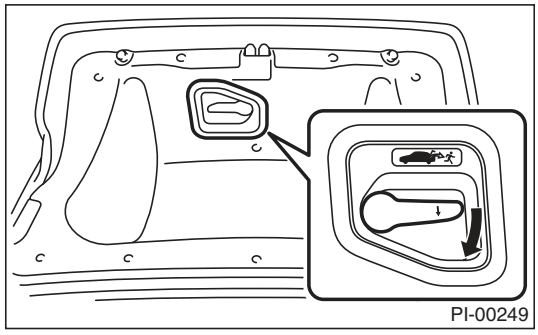
4) Check that the trunk lock release lever does not operate.
5) Check if the trunk lock release lever is not locked and unlocked using valet key.

7. OPERATION CHECK OF TRUNK LID RELEASE HANDLE

1) Use a flat tip screwdriver. Slide the screwdriver blade from the slit aperture of the lock assembly fully to the end until you hear a click. This places the latch in the locked position.

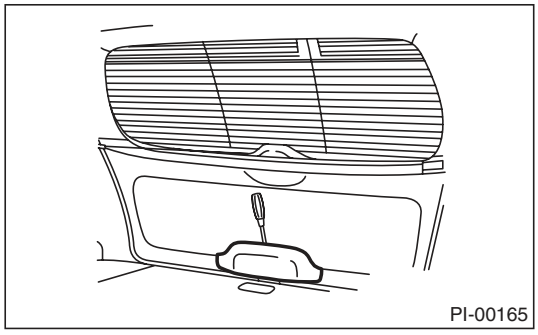


2) Move the release handle from outside the vehicle in the direction of the arrow to check if the latch is released.

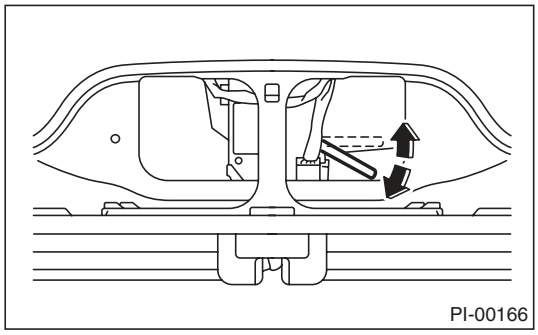


8. LOCK/UNLOCK AND OPEN/CLOSE OPERATION CHECKS OF REAR GATE

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



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



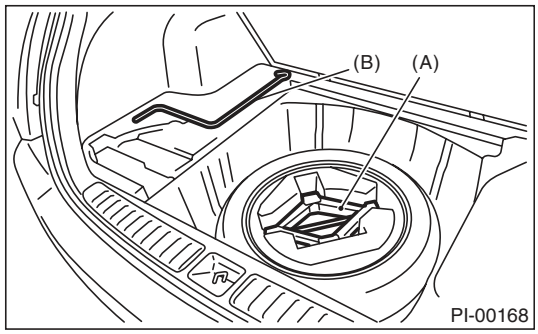
9. OPERATION CHECK OF FUEL LID OPENER LOCK RELEASE LEVER

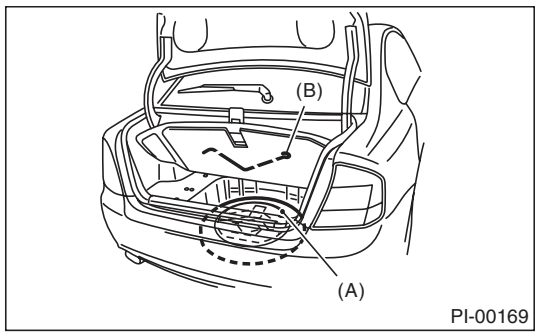
Operate the fuel lid opener to check that the fuel filler lid can be unlocked normally. Check that the filler cap is securely closed.

10.ACCESSORY CHECK

Check that the following accessories are provided.

- Owner's manual
- Warranty booklet
- Maintenance note
- Spare key
- Jack
- Tool set
- Spare tire

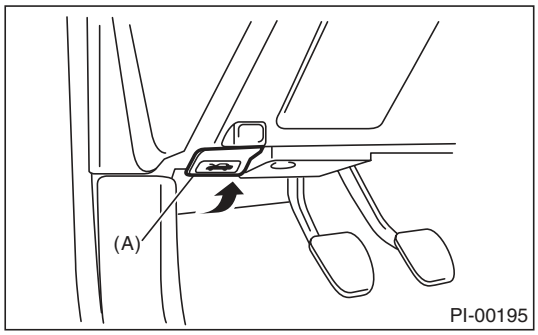




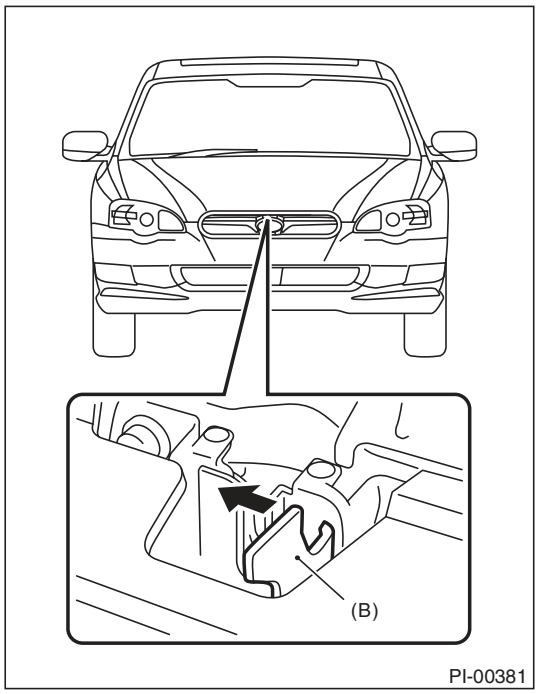
(A) Jack
(B) Jack handle

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.

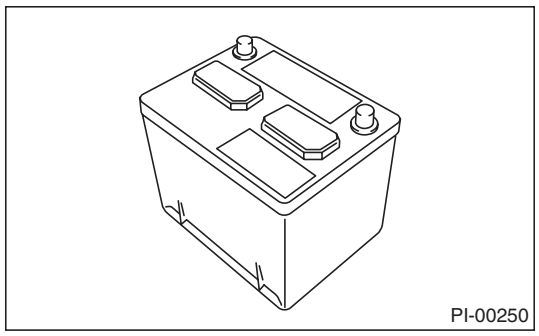


Operate the lever (B) and check that the front hood is opened normally. Support the front hood with hood stay.



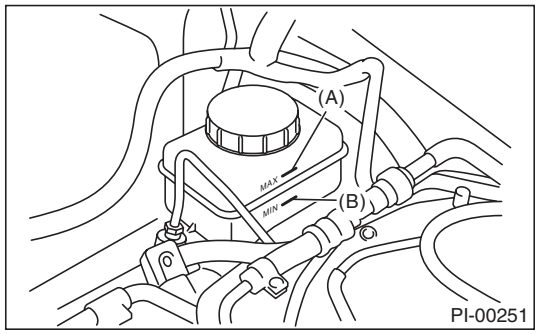
12.BATTERY

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



13.BRAKE FLUID

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

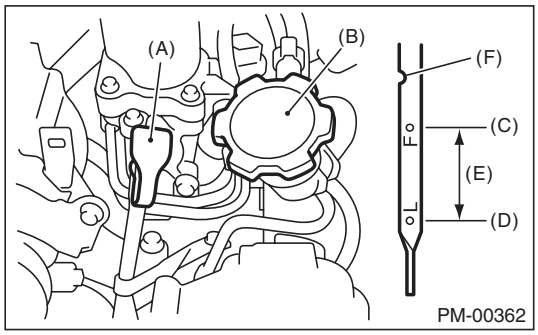


(A) MAX. level
(B) MIN. level

14.ENGINE OIL

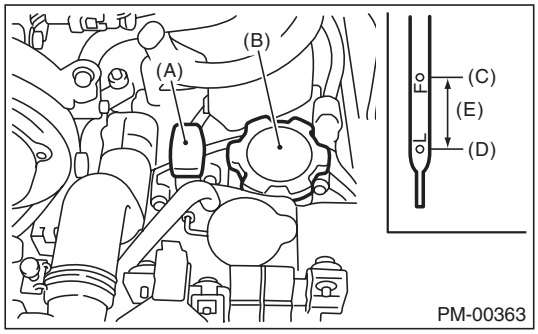
Check the engine oil amount. If the amount of oil is insufficient, check that no leaks are found. Then, add the necessary amount of the specified engine oil.

- Except for 3.0 L model



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

- 3.0 L model

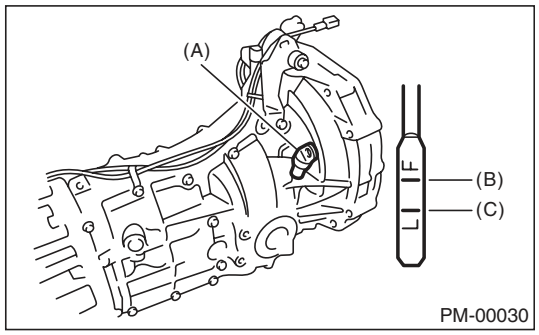


(A) Oil level gauge
(B) Engine oil filler cap
(C) Upper level
(D) Lower level
(E) Approx. 1.0 ℓ (1.1 US qt, 0.9 Imp qt)

15.TRANSMISSION GEAR OIL

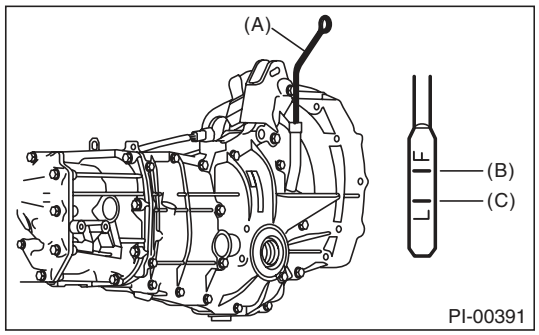
Check that the transmission gear oil level is normal. If the amount of fluid is insufficient, check that no leaks are found. Then add the necessary amount of the specified transmission gear oil.

- 5MT model (Non-turbo model)



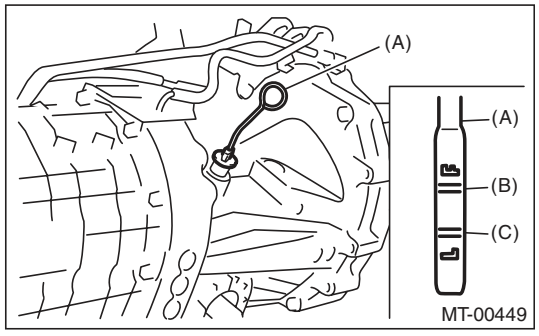
(A) Oil level gauge
(B) Upper level
(C) Lower level

- 5MT model (Turbo model)



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

- 6MT model

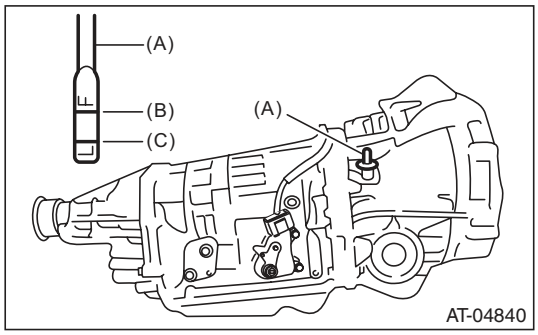


(A) Oil level gauge
(B) Upper level
(C) Lower level

16.AT FRONT DIFFERENTIAL GEAR OIL

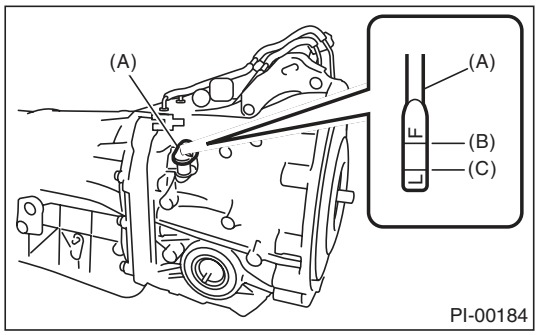
Check that the AT front differential oil level is normal. If the amount of oil is insufficient, check that no leaks are found. Then, add the necessary amount of the specified AT front differential oil.

- 4AT model



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

- 5AT model



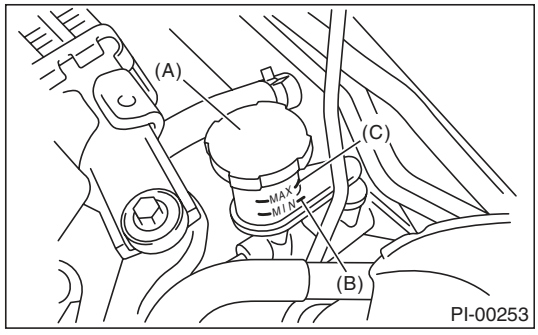
(A) Oil level gauge
(B) Upper level
(C) Lower level

17.ENGINE COOLANT

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

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



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

19.WINDOW WASHER FLUID

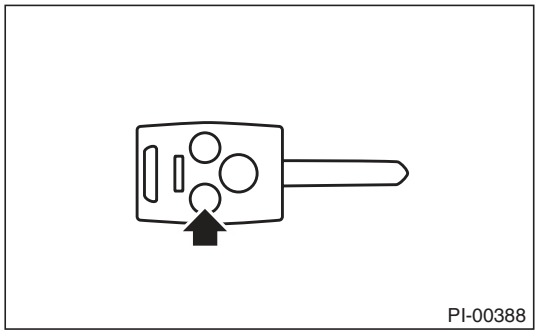
Check that the window washer fluid level is normal. If the amount is insufficient, check that no leaks are found. Then, add the necessary amount of washer fluid.

20.FRONT HOOD LATCH

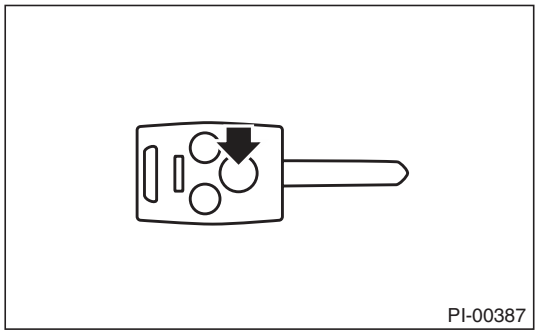
Retract the front hood stay and close the front hood. Check that the front hood is securely latched.

21.KEYLESS ENTRY SYSTEM

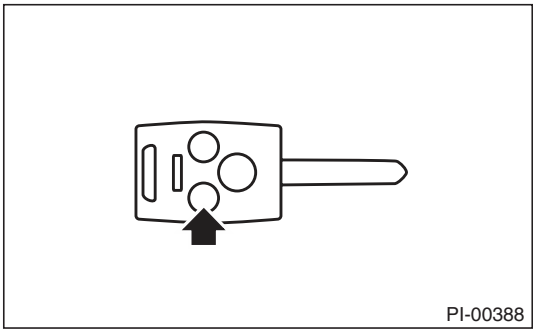
NOTE:
The following inspections show the initial settings. When the settings are different from the initial settings, use Subaru Select Monitor to check the details of each setting for inspections. <Ref. to LAN(diag)-29, OPERATION, Read Current Data.>
1) Fully open all the door windows.
2) Remove the key from the ignition switch and close all the doors including rear gate.
3) Press the rear gate 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. (Wagon 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.


PI-00388

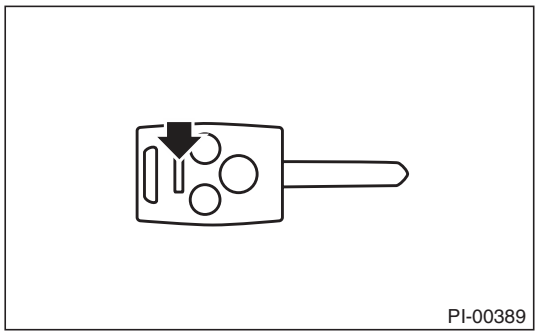
7) Within a distance of 10 m (33 ft) from a vehicle, press keyless transmitter’s “LOCK” button three times within 5 seconds. Check that the horn honks once and that the hazard light blinks three times.
8) Move the power door lock switch to the lock position with one of doors (including the rear gate) 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.

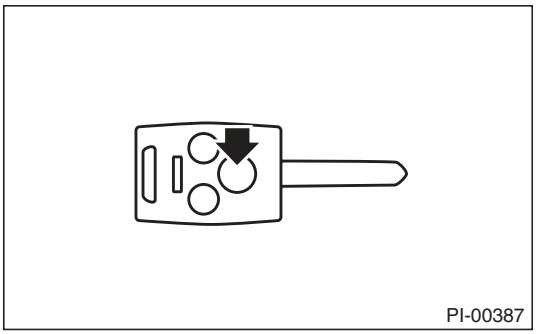
10) Press the Panic button of the keyless transmitter. Check if the alarm condition happens (horn sounds continuously, hazard light blinks, security indicator comes on). Check whether this condition lasts until any button on the keyless transmitter is pressed or lasts for 30 seconds.


PI-00389

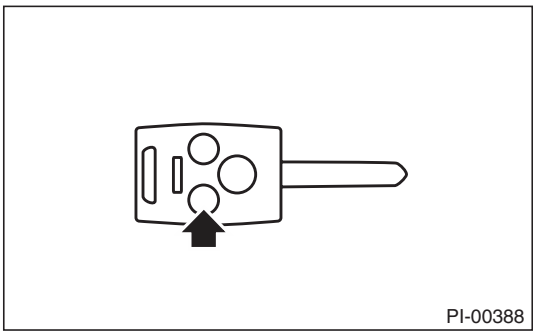
22.ALARM SYSTEM

NOTE:
The following inspections show the initial settings. When the settings are different from the initial settings, use Subaru Select Monitor to check the details of each setting for inspections. <Ref. to LAN(diag)-30, OPERATION, Function Setting (Customize).>

1) Fully open all the door windows.
2) Remove the key from the ignition switch and close all the doors including rear gate.
3) Press the “LOCK” button momentarily on the keyless transmitter. All doors are locked, and buzzer sounds once, hazard blinks once, security indicator light blinks faster (five times per two seconds) for 30 seconds and goes slower (twice per two seconds), then the alarm system is in set condition.


PI-00387

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.


PI-00388

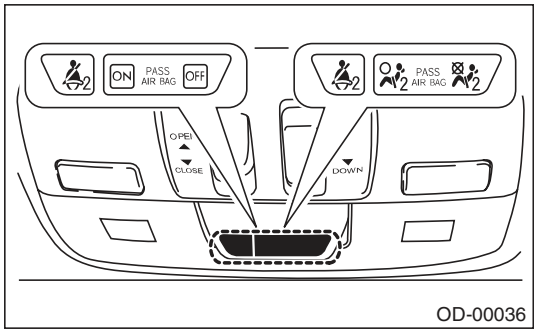
5) Close all the doors including rear gate. Press the “LOCK” button momentarily on the keyless transmitter. When all the doors are locked, buzzer sounds once, hazard blinks once and the alarm system is in set condition in 30 seconds.
6) Unlock a door using the inner lock knob and open the door while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

23.SEAT

1) Check the seat surfaces for stains or dirt.
2) Check that each seat provides full functionality 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 that the passenger's seat occupant detection system.
(1) Turn the ignition switch to ON.
(2) Check that 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.



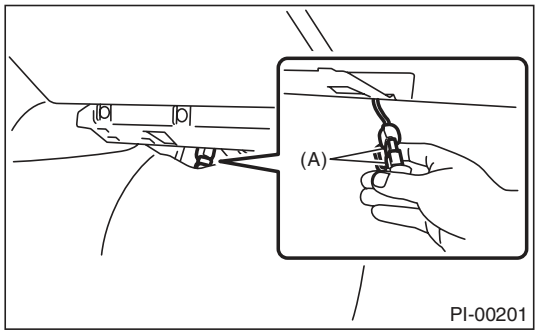
(3) Have a person weighing approximately 70 kg (155 lb) or more sit in the passenger's seat, and check whether the passenger's airbag indicator light illuminate or not.
(4) Empty the passenger seat, then check whether the passenger side airbag indicator light OFF illuminates.

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 system
(1) Turn the ignition switch to ON without fastening driver's and passenger's seat belts.
(2) Check if the seat belt warning lights of driver's and passenger's side blink for about six seconds and the buzzer beeps intermittently.
(3) Then, check that the seat belt warning light comes on → blink in about 15 second cycles. (If the passenger seat is empty, the seat belt warning light for passenger's side does not operate.)

25.DELIVERY (TEST) MODE CONNECTOR

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



(A) Delivery (test) mode connector

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 blinking.

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 noises are observed. Check for exhaust leaks.

29.INDICATOR AND WARNING LIGHTS

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 air conditioner, operate the air conditioner for 5 minutes at idling.

32.CLOCK

Check the clock for normal operations and enough accuracy.

33.AUDIO

Check the radio for full functionality and normal noise level. Check the CD unit operations.

34.NAVIGATION SYSTEM

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

35.FRONT 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 operations.
2) Check the stop light operation.
3) Check other lights for normal operations.

37.WIPER DEICER

Check that the wiper deicer operates normally.

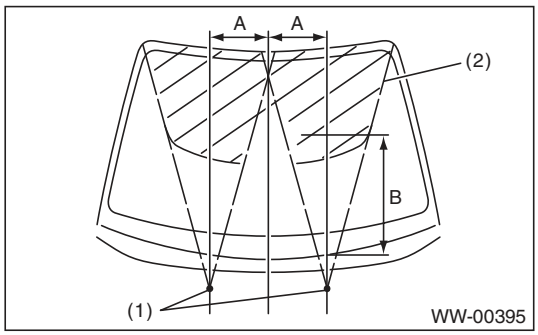
38.ILLUMINATION CONTROL

Check that the illumination control operates normally.

39.WINDOW WASHER

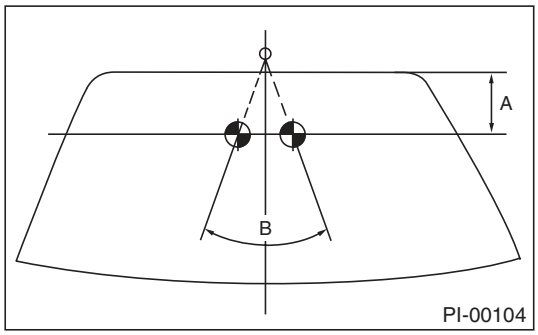
Check that the window washer system injects washer fluid to the specified area of the windshield shown in the figure.

Front injection position:
A: 250 mm (9.84 in)
B: 535 mm (21.1 in)



(1) Nozzle
(2) Spray area (shaded area)

Rear injection position:
Wagon model
A: 70 mm (2.8 in)
B: 70°



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.

42.SUNROOF

Check that the sunroof operates normally.

43.DOOR MIRROR

Check that the remote control mirror operates normally.

44.BRAKE TEST

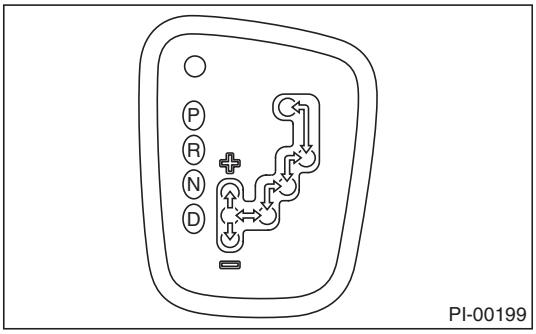
Check the foot brake for normal operations.

45.PARKING BRAKE

Check the parking brake for normal operations. When pulling the parking brake lever with force of 200 N (20.4 kgf, 45.0 lb), check that the lever stroke of parking brake lever is 5 to 6 notches.

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 AT selector lever to each gear position and check the shifting while driving the vehicle.



PI-00199

- 4AT

Selector position	Gear position			
	1st	2nd	3rd	4th
D	OK	OK	OK	OK
Manual mode	OK	OK	OK	OK

- 5AT

Selector position	Gear position				
	1st	2nd	3rd	4th	5th
D	OK	OK	OK	OK	OK
Manual mode	OK	OK	OK	OK	OK

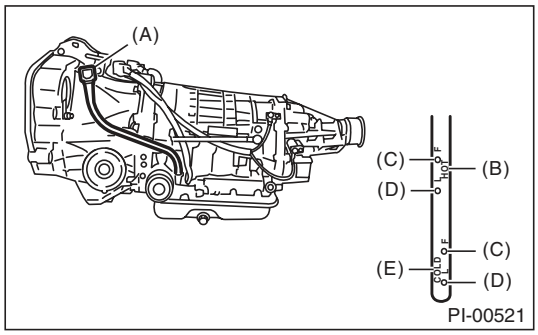
47.CRUISE CONTROL

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

48.ATF LEVEL

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.

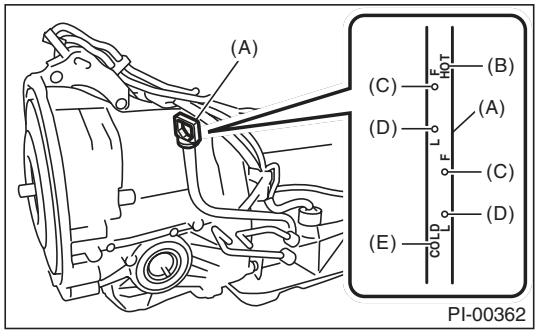
- 4AT



PI-00521

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

- 5AT

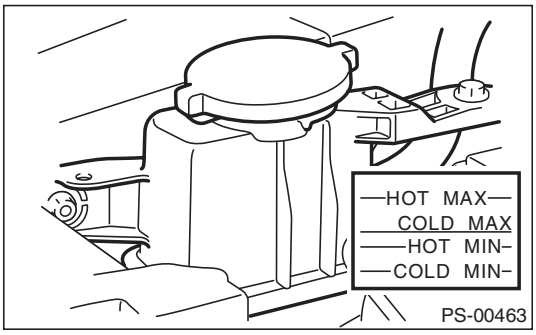


PI-00362

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

49.POWER STEERING FLUID LEVEL

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.



50.FLUID LEAKAGE

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

51.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 — 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.

52.APPEARANCE CHECK 2

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

NOTE:

• Use of steam facilitates peeling off the wrap guard.

• For a vehicle left for a long time or at low temperature, sprinkle some water heated to 50 — 60°C (122 — 140°F) over the vehicle to raise its surface temperature before peeling off the wrap guard. Do not use the water heated to over 60°C (140°F).

• If the adhesive remains 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.

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

NOTE:

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

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

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

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

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

6) Peel the protective tape, vinyl wrapping and identification seal attached to the following places.
- Seats
- Door trim
- Floor carpet
- Side sill
- Front hood lock release lever
- Edge rear
- Rear wiper
- Sedan rear combination light (Trunk lid opening portion)
- Roof rail
- Door mirror

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	3.0 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	3.0 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 5.
3	Spark plug						R				R				R				R	2.5 L Non-turbo model
											R								R	For 2.5 L turbo, 3.0 L model
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						I				I				I				I	Note 3.
13	Front & 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 & 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 dose not affect the manufacturer's obligations under EPA's in-use compliance program.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. ATF filter is maintenance free part. ATF filter needs replacement, when it has physically rust, damaged or ATF leaked. (5AT model)
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicators appear when the remaining tread has been worn to 1.6 mm (0.063 in) or less.
5. When the A/C filter is installed.
6. For 2.5 L 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		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				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					I				I				Note 3.
13	Front & 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 & 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 dose not affect the manufacturer's obligations under EPA's in-use compliance program.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. ATF filter is maintenance free part. ATF filter needs replacement, when it has physically rust, damaged or ATF leaked. (5AT model)
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicators appear when the remaining tread has been worn to 1.6 mm (0.063 in) or less.
5. When the A/C filter is installed.

Schedule

PERIODIC MAINTENANCE SERVICES

		Maintenance interval [Number of months or km (miles), whichever occurs first]											
	Months	Continued from the 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				R				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			I				I				I	Note 3.
13	Front & 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 & 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 dose not affect the manufacturer's obligations under EPA's in-use compliance program.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. ATF filter is maintenance free part. ATF filter needs replacement, when it has physically rust, damaged or ATF leaked. (5AT model)
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicators appear when the remaining tread has been worn to 1.6 mm (0.063 in) or less.
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	3.0 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	3.0 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				R				R	2.5 L Non-turbo model
											R								R	For 2.5 L turbo, 3.0 L model
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						I				I				I				I	Note 3.
13	Front & 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 & 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 dose not affect the manufacturer's obligations under EPA's in-use compliance program.
2. When the vehicle is used in extremely dusty conditions, the air cleaner element should be replaced more often.
3. ATF filter is maintenance free part. ATF filter needs replacement, when it has physically rust, damaged or ATF leaked. (5AT model)
4. A tire should be replaced when the tread wear indicator appears as a solid band across the tread. The indicators appear when the remaining tread has been worn to 1.6 mm (0.063 in) or less.
5. When the A/C filter is installed.

B: MAINTENANCE SCHEDULE 2

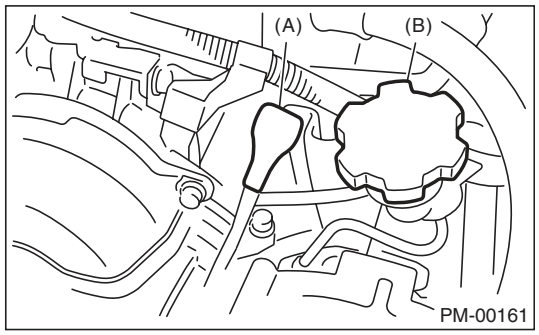
Item	Maintenance interval	Repeat short distance drive	Repeat rough/muddy road drive	Extremely cold weather area	Salt or other corrosive used or coastal area	High humidity or mountain area	Repeat towing trailer
Engine oil	3.75 months	R		R			R
	6,000 km						
	3,750 miles						
Engine oil filter	3.75 months	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						
Front and rear differential 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 & 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 & joints	7.5 months	I	I	I	I		I
	12,000 km						
	7,500 miles						
Steering system (Power steering)	7.5 months		I	I	I		
	12,000 km						
	7,500 miles						

3. Engine Oil

A: REPLACEMENT

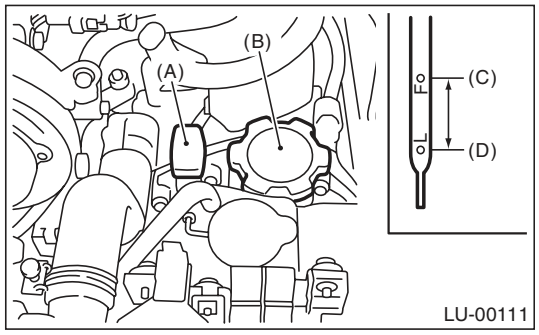
1) Open the engine oil filter cap for quick draining of the engine oil.

• 2.5 L model



(A) Oil level gauge
(B) Oil filler cap

• 3.0 L model



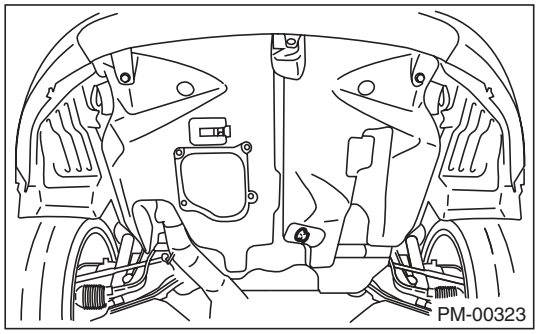
(A) Oil level gauge
(B) Oil filler cap
(C) Upper level
(D) Lower level

2) Drain the engine oil by removing the engine oil drain plug.

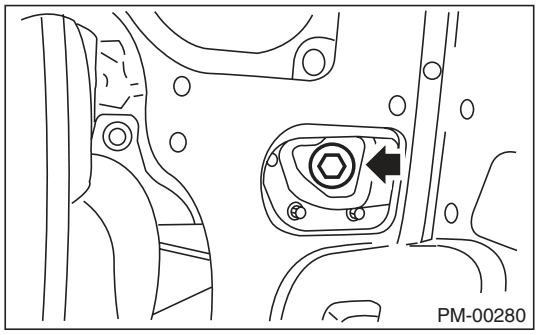
CAUTION:
If the engine oil is spilt over exhaust pipe or the under cover, wipe it off with cloth to avoid emitting smoke or causing a fire.

NOTE:
Prepare the container for draining of engine oil.

• 2.5 L model



• 3.0 L model

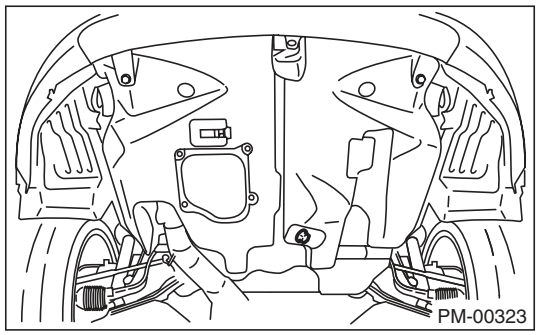


3) Replace the drain plug gasket with a new part.

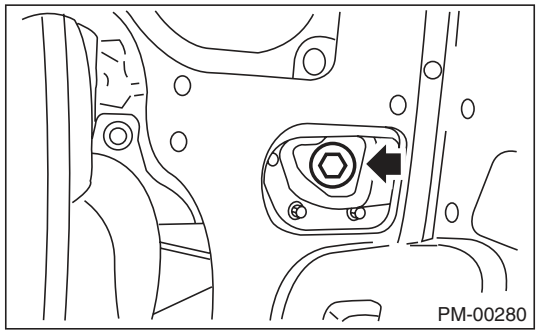
4) Tighten the engine oil drain plug after draining the engine oil.

Tightening torque:
44 N·m (4.5 kgf-m, 33 ft-lb)

- 2.5 L model



- 3.0 L model



5) Using engine oil of proper quality and viscosity, fill engine oil to the F line on oil level gauge. Place the vehicle on a level surface when checking oil level.

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

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

Engine oil capacity

2.5 L model
Upper level:
Approx. 4.0 ℓ (4.2 US qt, 3.5 Imp qt)
Lower level:
Approx. 3.0 ℓ (3.2 US qt, 2.6 Imp qt)

3.0 L model
Upper level:
Approx. 5.5 ℓ (5.8 US qt, 4.8 Imp qt)
Lower level:
Approx. 4.5 ℓ (4.8 US qt, 4.0 Imp qt)

CAUTION:
It is acceptable to fill an engine with oil of another brand when replacing the oil, but make sure to use an oil with an API standard and SAE viscosity number specified by Subaru.

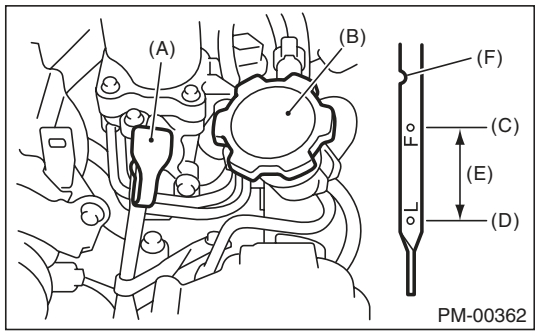
NOTE:
- If the vehicle is used in regions of high temperatures or in other severe environments, use oil with the viscosities shown below.
- API standard: SM or SL
- SAE viscosity No.: 30, 40, 10W-50, 20W-40, 20W-50

6) Close the engine oil filler cap.
7) Start the engine, and spreads the oil in engine room.
8) Stop the engine to inspect the oil level again. If necessary, add engine oil up to the F line on the level gauge. <Ref. to PM-11, INSPECTION, Engine Oil.>

B: INSPECTION

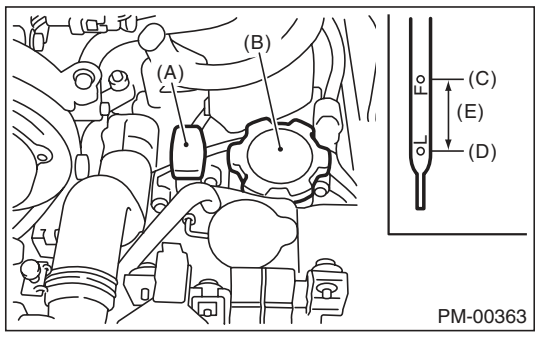
1) Park the vehicle on a level surface.
2) Remove the oil level gauge and wipe it clean.
3) Reinsert the level gauge all the way. Be sure that the level gauge is correctly inserted and in the proper orientation.
4) Remove the level gauge again and check the oil level. If the engine oil level is below “L” line, make sure that there is no oil leakage from the engine section, then add oil to rise the level up to the “F” line.

• 2.5 L model



(A) Oil level gauge
(B) Oil filler cap
(C) Upper level
(D) Lower level
(E) Approx. 1 ℓ (1.1 US qt, 0.9 Imp qt)
(F) Notch mark

• 3.0 L model



(A) Oil level gauge
(B) Oil filler cap
(C) Upper level
(D) Lower level
(E) Approx. 1 ℓ (1.1 US qt, 0.9 Imp qt)

5) Start the engine and warm it up for a time.
6) After turning off the engine, wait a few minutes for the oil to return to the oil pan before checking the level.

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

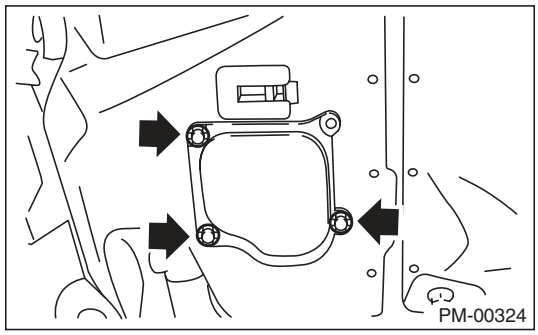
NOTE:
• Just after driving or while the engine is warm, engine oil level may show in the range between the “F” line and the notch mark. This is caused by thermal expansion of engine oil. (2.5 L model)
• To prevent overfilling the engine oil, do not add oil above the “F” line when the engine is cold.
• As the oil level gauge is used for daily inspection, standard of F line and L line of the oil level gauge is set for the condition that engine is cold.

4. Engine Oil Filter

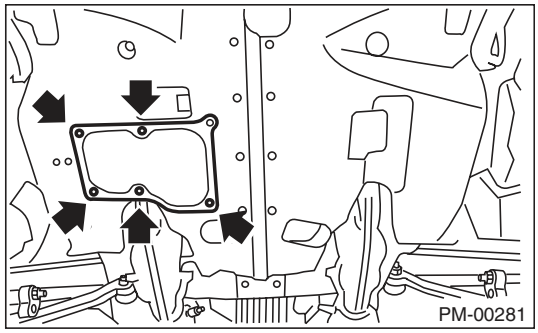
A: REPLACEMENT

1) Remove the service hole clip located on the under cover.

• 2.5 L model

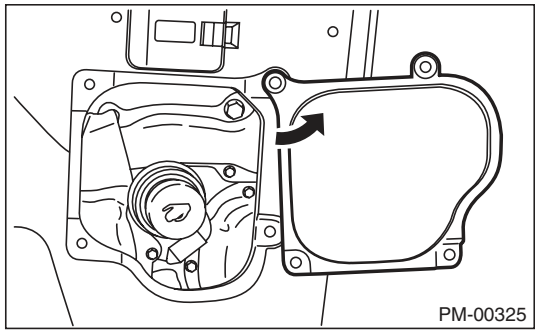


• 3.0 L model

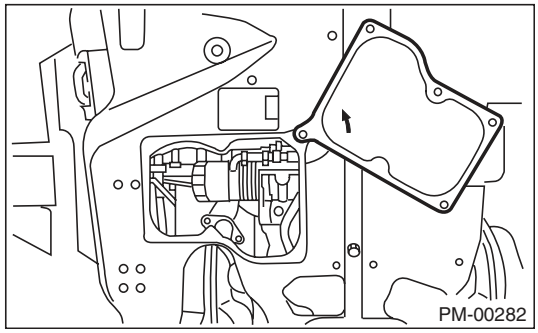


2) Rotate the service hole cover in the arrow direction.

• 2.5 L model



• 3.0 L model



3) Remove the oil filter using ST.

• 3.0 L model

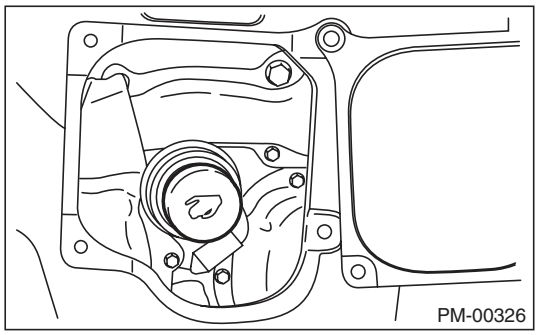
ST 49857000	OIL FILTER WRENCH (Outer diameter: 80 mm (3.15 in))

• 2.5 L model

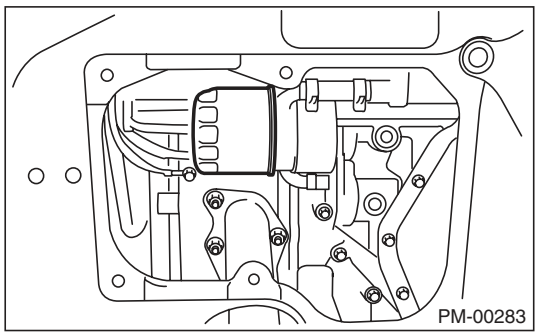
ST 18332AA000	OIL FILTER WRENCH (Outer diameter: 68 mm (2.68 in))
General tool	OIL FILTER WRENCH (65/67 mm 14 Flutes) (Outer diameter: 67.4 mm (2.65 in))

NOTE:
However, in 2.5L model, SUBARU genuine oil filter having outer diameter of 68 mm (2.68 in) or 67.4 mm (2.65 in) can also be used.

• 2.5 L model



• 3.0 L model



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

4) Clean the oil filter installation surface on cylinder block and oil cooler.

5) Obtain a new oil filter and apply a thin coat of engine oil to the seal rubber.

6) To install the oil filter, turn the filter by hand while being careful not to damage the seal rubber. When the seal rubber just touches the oil cooler, tighten by using a torque wrench or turn the filter by the specified amount.

- 3.0 L model

Oil filter 80 mm (3.15 in) in outer diameter
14 N·m (1.4 kgf-m, 10.3 ft-lb) or tighten 3/4 rotation.

- 2.5 L model

Oil filter 68 mm (2.68 in) in outer diameter 14 N·m (1.4 kgf-m, 10.3 ft-lb) or tighten 1 rotation. Oil filter 67.4 mm (2.65 in) in outer diameter 12 N·m (1.2 kgf-m, 8.9 ft-lb) or tighten approx. 7/8 rotation.

CAUTION:
Do not tighten excessively, or oil may leak.

7) Replace the service hole cover in the original position.
8) After installing the oil filter, run the engine and make sure that no oil is leaking around seal rubber.
9) Check the engine oil level. <Ref. to PM-11, INSPECTION, Engine Oil.>

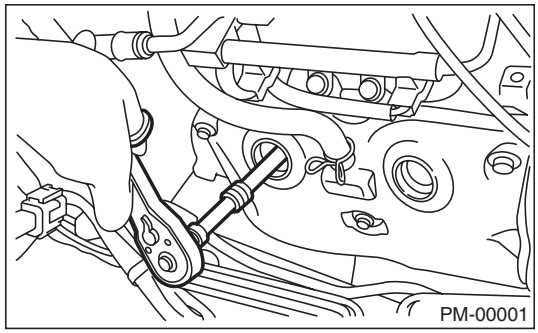
NOTE:
The filter element and filter case are permanently jointed, therefore, interior cleaning is not necessary.

5. Spark Plug

A: REPLACEMENT

1. 2.5 L NON-TURBO MODEL

1) Remove the intake duct and intake chamber.
2) Remove the battery.
3) Disconnect the spark plug cord.
4) Remove the spark plug with a spark plug socket.



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

Recommended spark plug:
<Ref. to SPC-3, ELECTRICAL, LEGACY.>

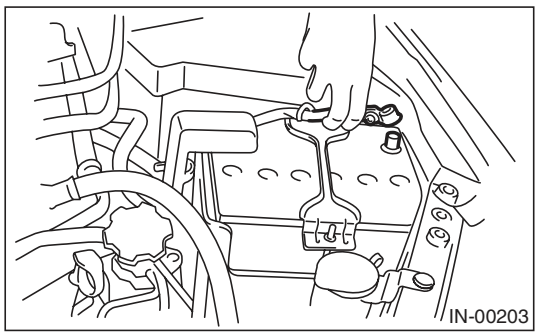
Tightening torque:
21 N·m (2.1 kgf-m, 15.5 ft-lb)

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

2. 2.5 L TURBO MODEL

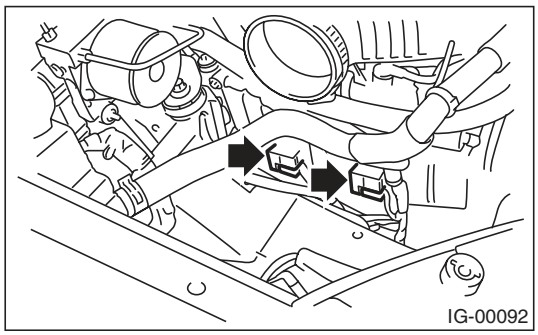
• RH side

1) Remove the collector cover and the engine side cover.
2) Disconnect the ground cable from battery.



3) Remove the air cleaner case. <Ref. to IN(H4DOTC)-8, REMOVAL, Air Cleaner Case.>
4) Disconnect the connector from ignition coil.
5) Remove the ignition coil.

NOTE:
Turn #3 ignition coil by 180 degrees to remove it.



6) Remove the spark plug with a spark plug socket.
7) Install in the reverse order of removal.

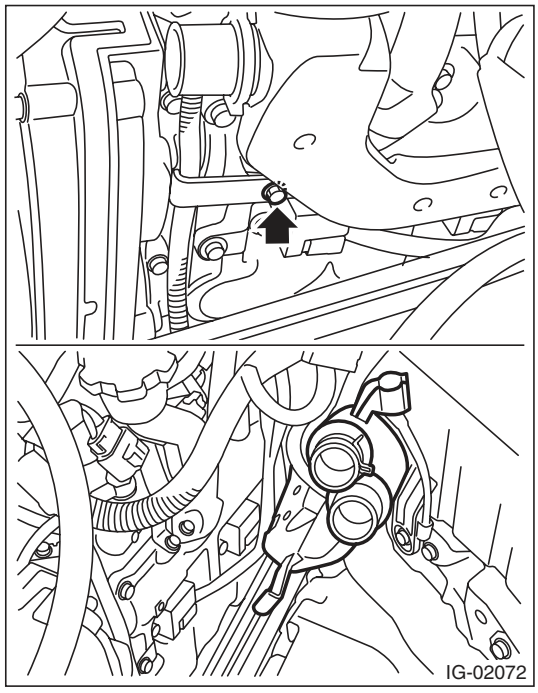
Recommended spark plug:
<Ref. to SPC-3, ELECTRICAL, LEGACY.>

Tightening torque (Spark plug):
21 N·m (2.1 kgf-m, 15.5 ft-lb)

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

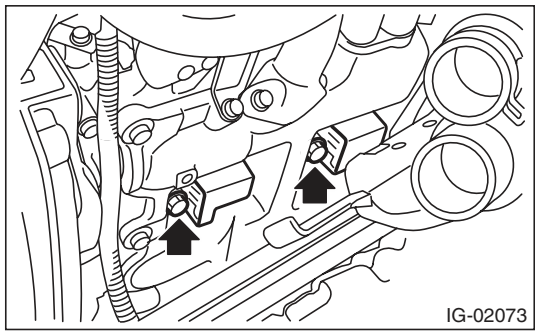
• **LH side**

1) Remove the collector cover and the engine side cover.
2) Remove the battery and battery carrier.
3) Remove the secondary air pump. <Ref. to EC(H4DOTC)-21, REMOVAL, Secondary Air Pump.>
4) Remove the bolts that attach the air pump duct to the rocker cover LH, and raise the air pump duct.


IG-02072

5) Disconnect the connector from ignition coil.
6) Remove the ignition coil.

NOTE:
Turn #4 ignition coil by 180 degrees to remove it.


IG-02073

7) Remove the spark plug with a spark plug socket.
8) Install in the reverse order of removal.

Tightening torque (Spark plug):
21 N·m (2.1 kgf-m, 15.5 ft-lb)

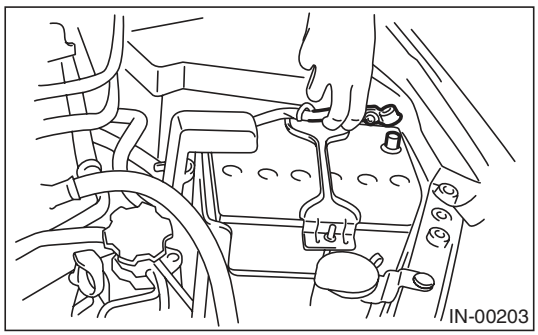
Tightening torque (Ignition coil):
16 N·m (1.6 kgf-m, 11.8 ft-lb)

Tightening torque (Air pump duct):
9 N·m (0.9 kgf-m, 6.6 ft-lb)

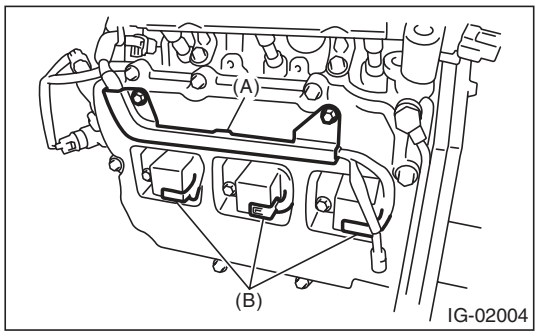
3. 3.0 L MODEL

• **RH side**

1) Remove the collector cover and the engine side cover.
2) Disconnect the ground cable from battery.


IN-00203

3) Remove the air cleaner case. <Ref. to IN(H6DO)-5, REMOVAL, Air Cleaner Case.>
4) Remove the bracket (A).
5) Disconnect the connector (B) from ignition coil.

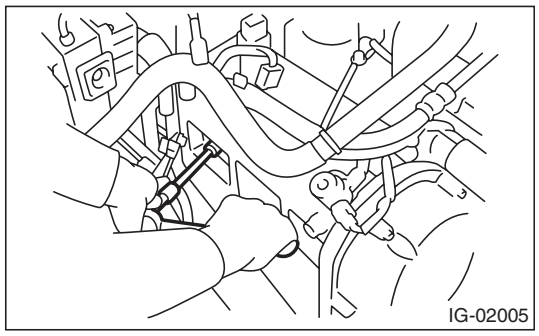


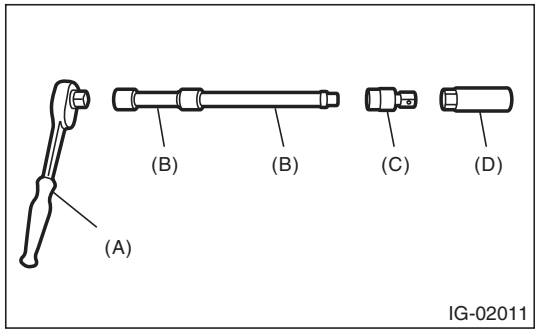
IG-02004

6) Remove the ignition coil.

NOTE:
Turn the #5 ignition coil to remove it.

7) Remove the spark plug with a spark plug socket.





(A) Ratchet handle
(B) Extension bar
(C) Universal joint
(D) Spark plug socket

8) Install in the reverse order of removal.

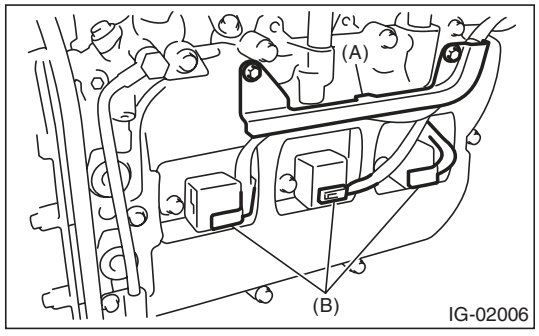
Recommended spark plug:
<Ref. to SPC-3, ELECTRICAL, LEGACY.>

Tightening torque (Spark plug):
21 N·m (2.1 kgf-m, 15.5 ft-lb)

Tightening torque (Ignition coil):
16 N·m (1.6 kgf-m, 11.7 ft-lb)

• LH side

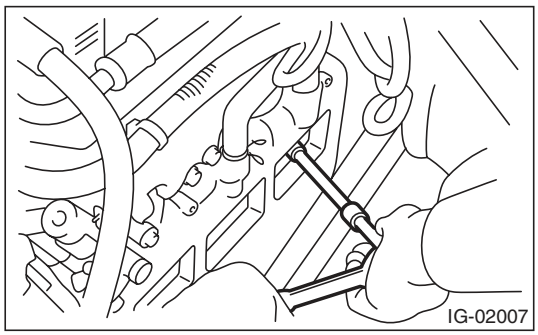
1) Remove the collector cover and the engine side cover.
2) Remove the battery and battery carrier.
3) Remove the bracket (A).
4) Disconnect the connector (B) from ignition coil.

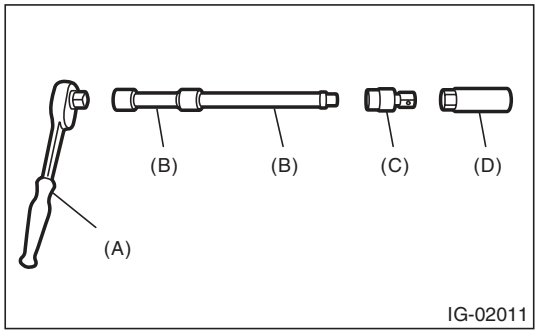


5) Remove the ignition coil.

NOTE:
Turn the #6 ignition coil to remove it.

6) Remove the spark plug with a spark plug socket.





(A) Ratchet handle
(B) Extension bar
(C) Universal joint
(D) Spark plug socket

7) Install in the reverse order of removal.

Recommended spark plug:
<Ref. to SPC-3, ELECTRICAL, LEGACY.>

Tightening torque (Spark plug):
21 N·m (2.1 kgf-m, 15.5 ft-lb)

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

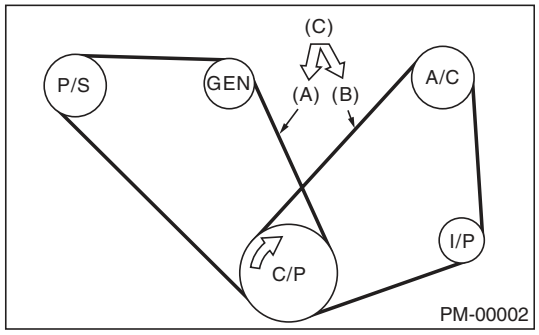
6. V-belt

A: INSPECTION

1. 2.5 L NON-TURBO AND 2.5 L TURBO MODEL

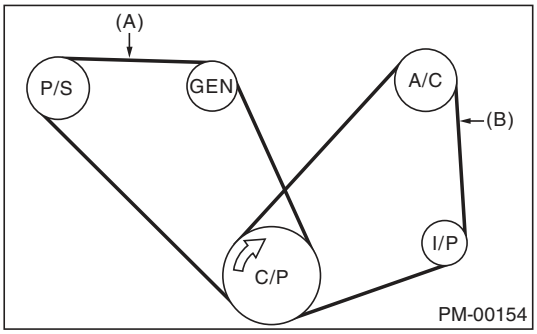
1) Replace the belts if cracks, fraying or wear are found.
2) Check the V-belt tension and adjust it if necessary by changing the generator installing position or idler pulley installing position. <Ref. to PM-18, REPLACEMENT, V-belt.>

Belt tension (without belt tension gauge):
(A)
When installing new part: 7 — 9 mm (0.276 — 0.354 in)
At inspection: 9 — 11 mm (0.354 — 0.433 in)
(B)
When installing new part: 7.5 — 8.5 mm (0.295 — 0.335 in)
At inspection: 9.0 — 10.0 mm (0.354 — 0.394 in)



(A) Front side belt
(B) Rear side belt
C/P Crank pulley
GEN Generator
P/S Power steering oil pump pulley
A/C A/C compressor pulley
I/P Idler pulley

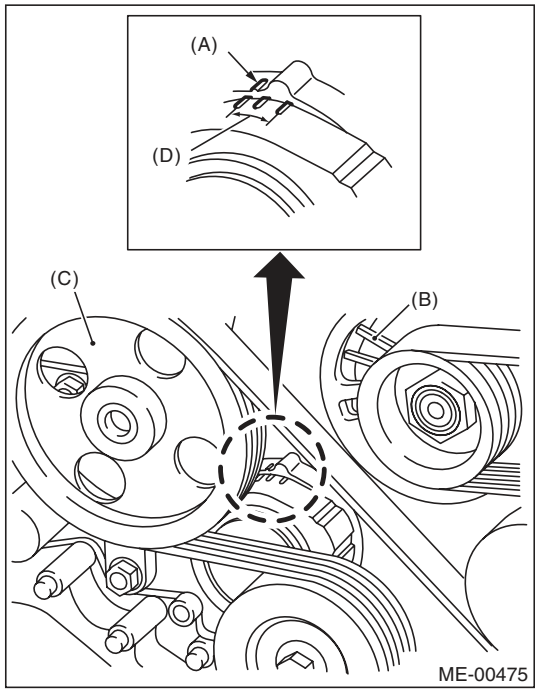
Belt tension (with belt tension gauge):
(A)
When installing new part: 640 — 785 N (65.3 — 80.0 kgf, 144 — 176 lbf)
At inspection: 490 — 640 N (50 — 65 kgf, 110 — 144 lbf)
(B)
When installing new part: 620 — 760 N (63 — 77 kgf, 140 — 170 lbf)
At inspection: 350 — 450 N (36 — 46 kgf, 79 — 101 lbf)



(A) Front side belt
(B) Rear side belt
C/P Crank pulley
GEN Generator
P/S Power steering oil pump pulley
A/C A/C compressor pulley
I/P Idler pulley

2. 3.0 L MODEL

1) Replace the belts if cracks, fraying or wear are found.
2) Check that the V-belt automatic belt tensioner indicator (A) is within the range (D).



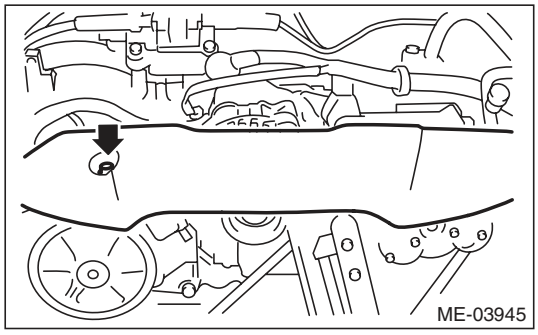
(A) Indicator
(B) Generator
(C) Power steering oil pump
(D) Service limit

B: REPLACEMENT

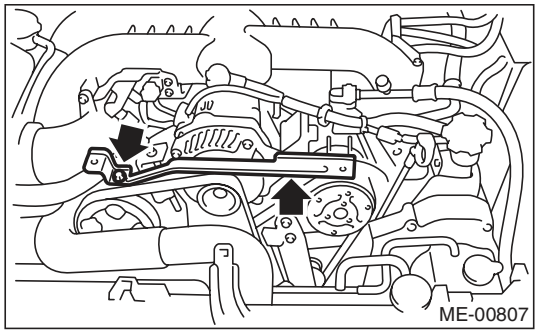
1. FRONT SIDE BELT (FOR POWER STEERING OIL PUMP AND GENERATOR)

NOTE:
Wipe off any oil and water on the belt and pulley.
1) Remove the collector cover. (If equipped)
2) Remove the V-belt covers.

- 2.5 L non-turbo model

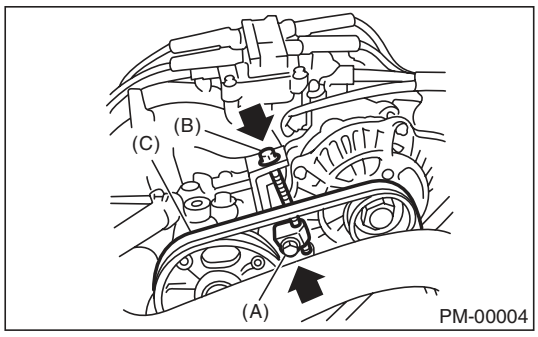


- 2.5 L turbo model



3) Loosen the lock bolt (A).
4) Loosen the slider bolt (B).
5) Remove the front side belt (C).
6) Install a new V-belt, and tighten the slider bolt so as to obtain the specified belt tension.
7) Tighten the lock bolt (A).
8) Tighten the slider bolt (B).

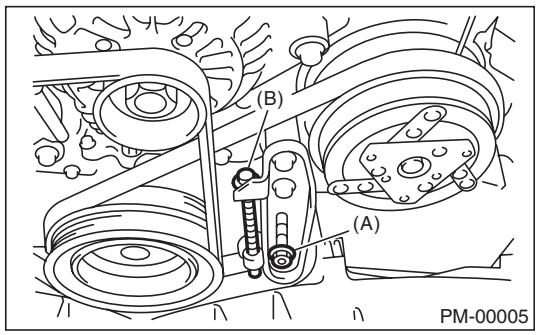
Tightening torque:
Lock bolt
25 N·m (2.5 kgf-m, 18.4 ft-lb)
Slider bolt
8 N·m (0.8 kgf-m, 5.8 ft-lb)



2. REAR SIDE BELT (FOR A/C)

NOTE:
Wipe off any oil and water on the belt and pulley.
1) Remove the front side belts.
2) Loosen the lock nut (A).
3) Loosen the slider bolt (B).
4) Remove the rear side belt.
5) Install a new V-belt, and tighten the slider bolt so as to obtain the specified belt tension.
6) Tighten the lock nut (A).

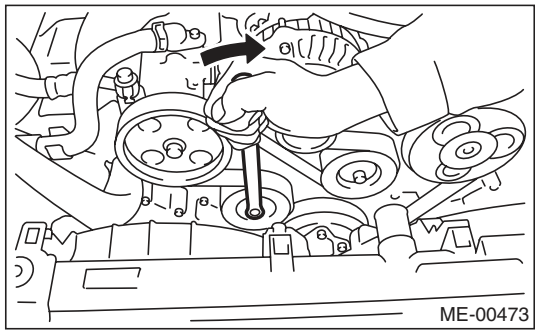
Tightening torque:
23 N·m (2.3 kgf-m, 17.0 ft-lb)



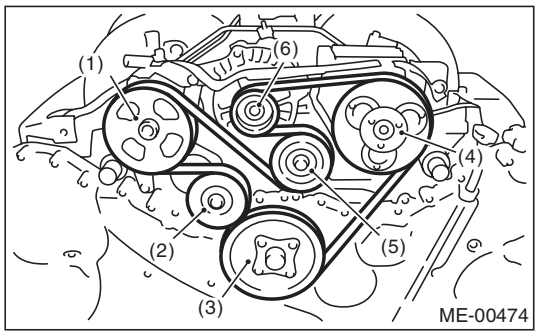
7) Install the front side belt.
• 2.5 L non-turbo model <Ref. to ME(H4SO)-39, FRONT SIDE BELT, INSTALLATION, V-belt.>
• 2.5 L turbo model <Ref. to ME(H4DOTC)-42, FRONT SIDE BELT, INSTALLATION, V-belt.>

3. 3.0 L MODEL

1) Fit the tool to the belt tensioner mounting bolt.
2) Turn the tool clockwise, and loosen the V-belt to remove.



3) Remove the V-belt cover.
4) Install in the reverse order of removal.



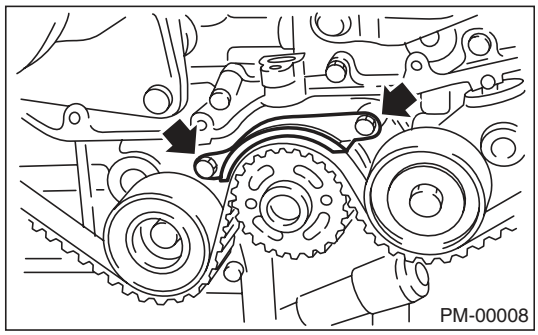
(1) Power steering oil pump
(2) Belt tension adjuster
(3) Crank pulley
(4) A/C compressor
(5) Belt idler
(6) Generator

7. Timing Belt

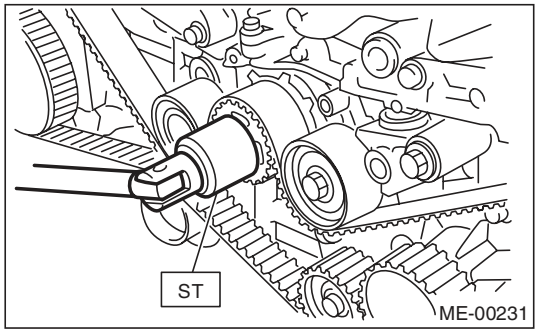
A: REPLACEMENT

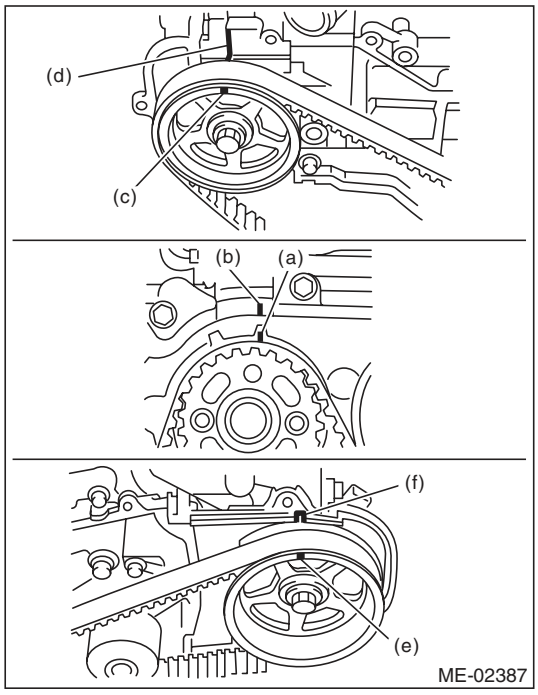
1. 2.5 L NON-TURBO MODEL

1) Remove the radiator fan and A/C fan. <Ref. to CO(H4SO)-24, REMOVAL, Radiator Main Fan and Fan Motor.>
2) Protect the radiator with cardboard and blanket.
3) Remove the V-belts. <Ref. to ME(H4SO)-38, V-belt.>
4) Remove the crank pulley. <Ref. to ME(H4SO)-41, REMOVAL, Crank Pulley.>
5) Remove the timing belt cover. <Ref. to ME(H4SO)-43, REMOVAL, Timing Belt Cover.>
6) Remove the timing belt guide. (MT model)

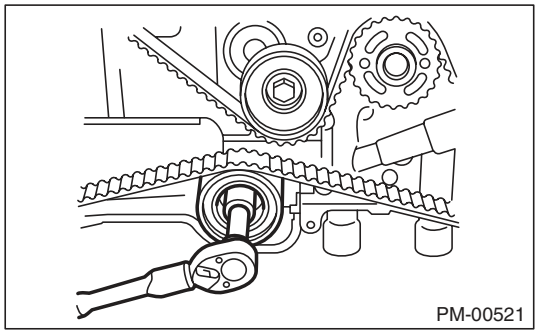


7) Use the ST to turn crankshaft. Align the mark (a) of sprocket to the mark (b) of oil pump, and then ensure the right side cam sprocket mark (c), cam cap and cylinder head matching surface (d) or left side cam sprocket mark (e), timing belt cover notch (f) are properly adjusted.
ST 499987500 CRANKSHAFT SOCKET

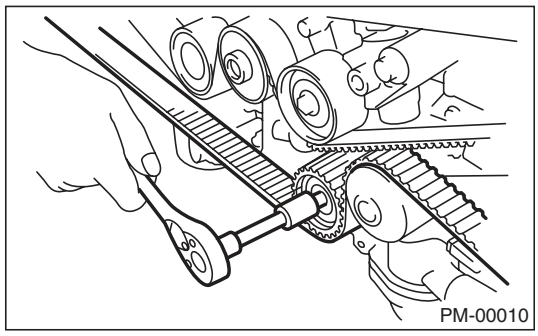




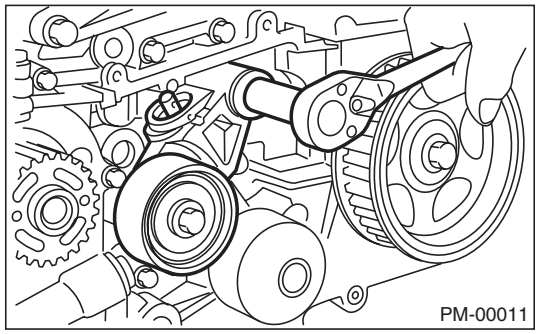
8) Remove the belt idler.



9) Remove the belt idler No. 2.



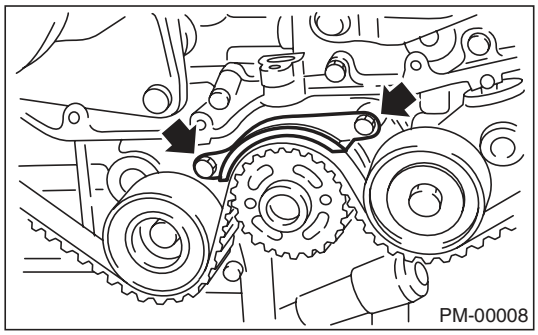
10) Remove the timing belt.
11) Remove the automatic belt tension adjuster assembly.

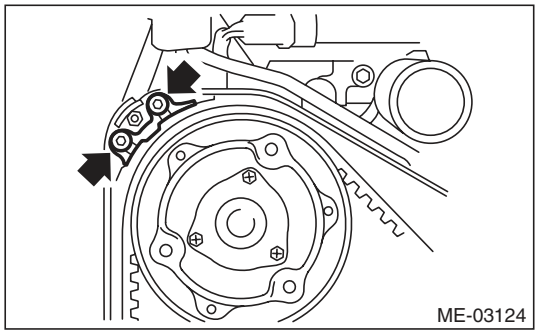


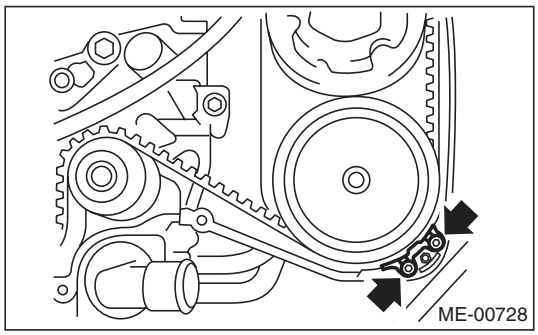
12) Install in the reverse order of removal. <Ref. to ME(H4SO)-45, INSTALLATION, Timing Belt.>

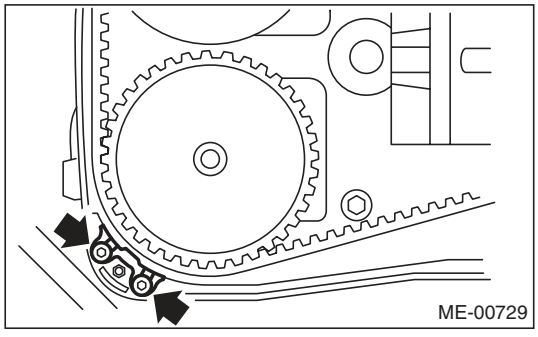
2. 2.5 L TURBO MODEL

1) Remove the radiator fan and A/C fan. <Ref. to CO(H4DOTC)-25, REMOVAL, Radiator Main Fan and Fan Motor.>
2) Protect the radiator with cardboard and blanket.
3) Remove the V-belts. <Ref. to ME(H4DOTC)-41, V-belt.>
4) Remove the crank pulley. <Ref. to ME(H4DOTC)-44, REMOVAL, Crank Pulley.>
5) Remove the timing belt cover. <Ref. to ME(H4DOTC)-46, REMOVAL, Timing Belt Cover.>
6) Remove the timing belt guide. (MT model)

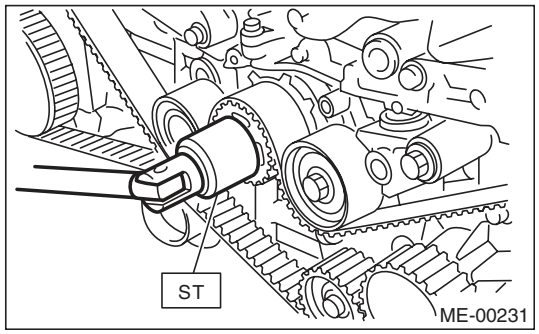


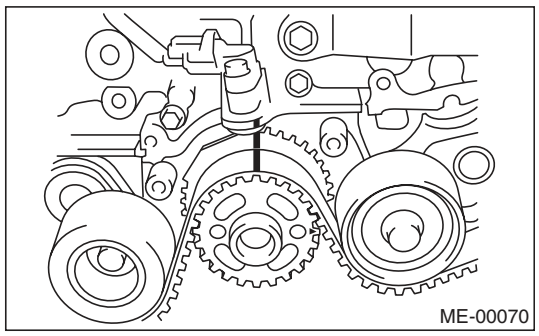


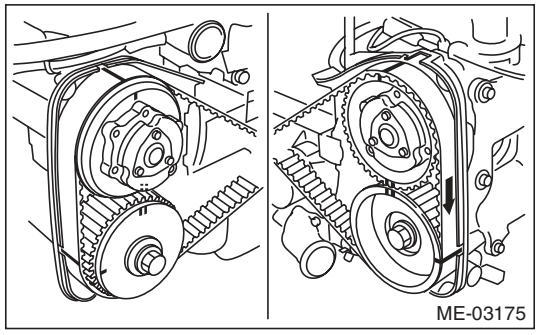




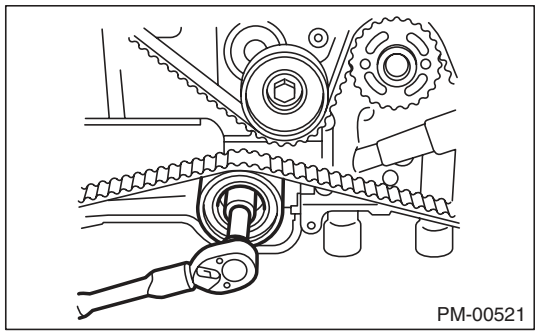
7) Using ST, turn the crankshaft and align the alignment marks on crank sprocket and left and right cam sprockets with notches of belt cover and oil pump.
ST 499987500 CRANKSHAFT SOCKET





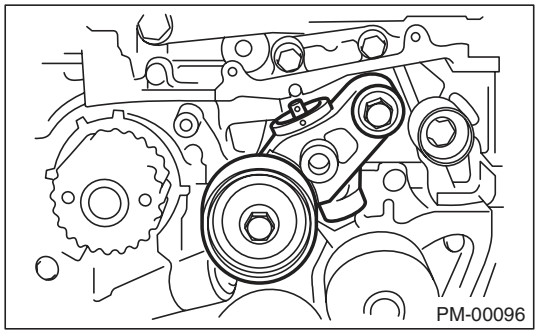


8) Remove the belt idler.



9) Remove the timing belt.

10) Remove the automatic belt tension adjuster assembly.



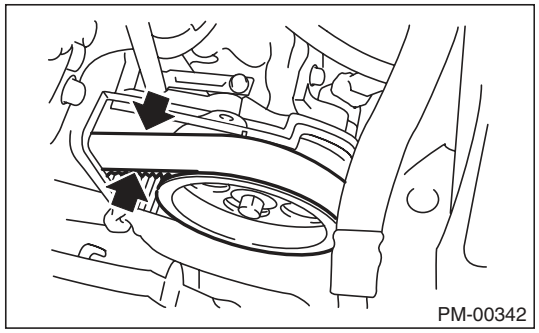
11) Install in the reverse order of removal. <Ref. to ME(H4DOTC)-47, Timing Belt.>

CAUTION:
When installing the timing belt, be sure to align all alignment marks on the belt with corresponding marks on the sprockets. If incorrectly installed, interference between pistons and valves may occur.

B: INSPECTION

1. 2.5 L NON-TURBO MODEL

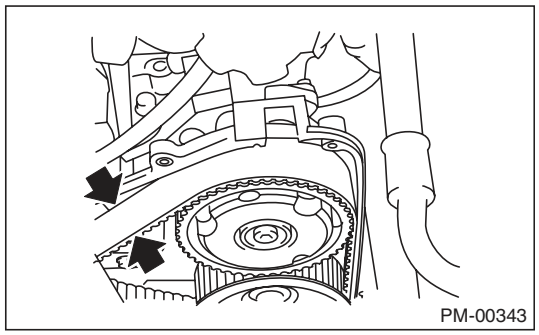
1) Remove the timing belt cover (LH).
2) While cranking engine at least four rotations, check the timing belt back surface for cracks or damage. Replace the faulty timing belt as needed.
3) When the side part of timing belt is abnormally worn (fluff or jumping out of core) or damaged, check the idlers,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


PM-00342

4) Install the timing belt cover (LH).

2. 2.5 L TURBO MODEL

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 faulty timing belts with new parts as required.
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.


PM-00343

4) Install the timing belt cover (LH).

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.

- 2.5 L non-turbo model

<Ref. to FU(H4SO)-65, Fuel Delivery and Evaporation Lines.>

- 2.5 L turbo model

<Ref. to FU(H4DOTC)-80, Fuel Delivery, Return and Evaporation Lines.>

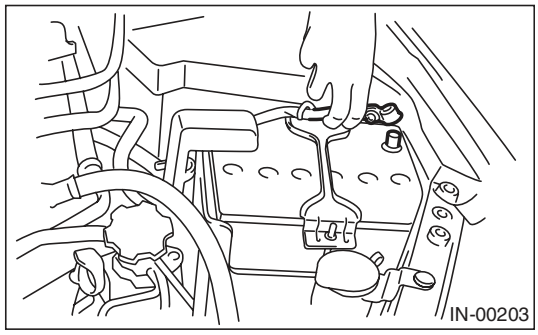
- 3.0 L model

<Ref. to FU(H6DO)-65, Fuel Delivery and Evaporation Lines.>

9. Air Cleaner Element

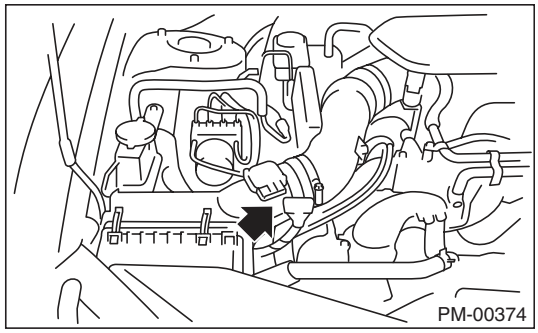
A: REPLACEMENT

1) Disconnect the ground cable from battery.

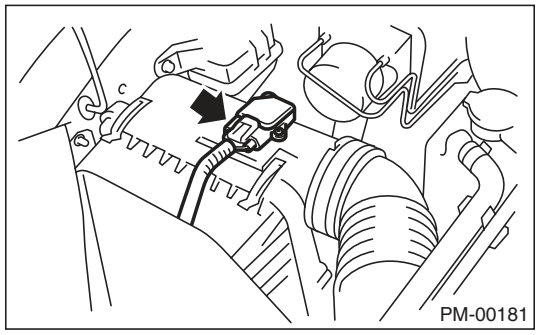


2) Disconnect the connector from mass air flow sensor.

- Non-turbo model



- Turbo model

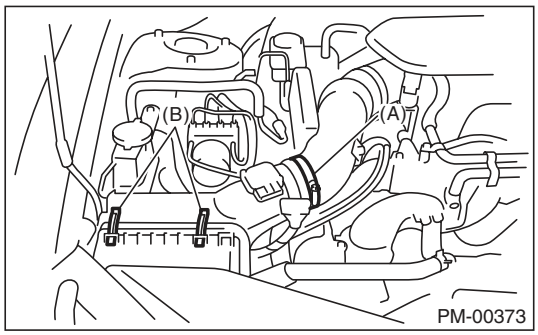


3) Remove the duct.

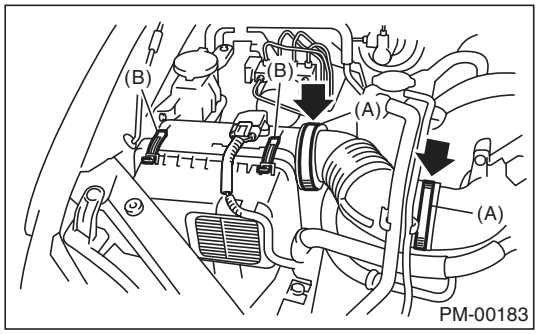
4) Loosen the clamps (A) which connect the air cleaner case to intake duct.

5) Remove the clips (B) on air cleaner case.

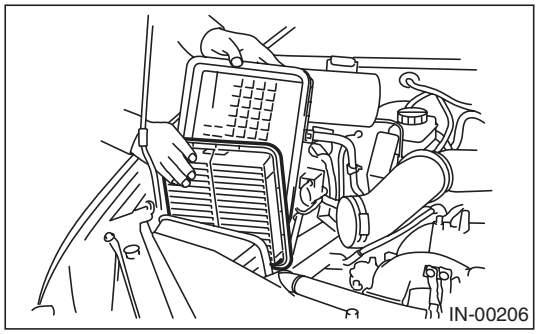
- Non-turbo model



- Turbo model



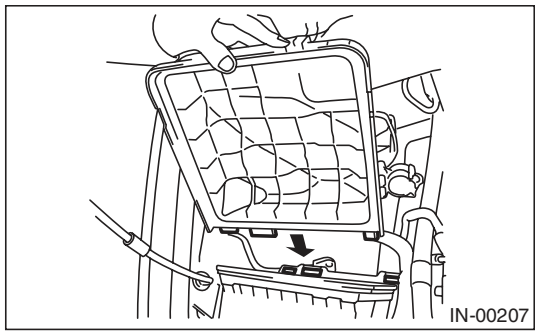
6) Remove the air cleaner element.



7) Install in the reverse order of removal.

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

NOTE:
• Check the clean side for contamination. Remove, if any.
• Fasten with a clip after inserting the lower tab of case.



- Refer to “COMPONENT” for tightening torque.
  2.5 L non-turbo model
  <Ref. to IN(H4SO)-2, COMPONENT, General Description.>
  2.5 L turbo model
  <Ref. to IN(H4DOTC)-2, COMPONENT, General Description.>
  3.0 L model
  <Ref. to IN(H6DO)-2, COMPONENT, General Description.>

10. Cooling System

A: INSPECTION

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

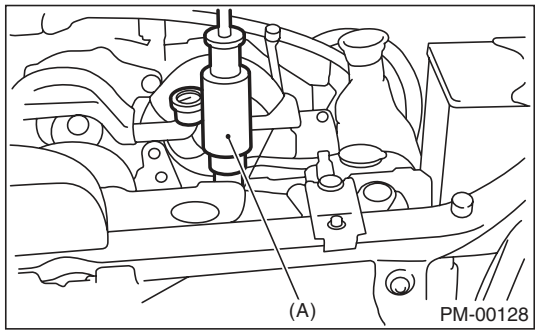
Non-turbo model:
157 kPa (1.6 kg/cm^2, 23 psi)

Turbo model:
122 kPa (1.2 kg/cm^2, 18 psi)

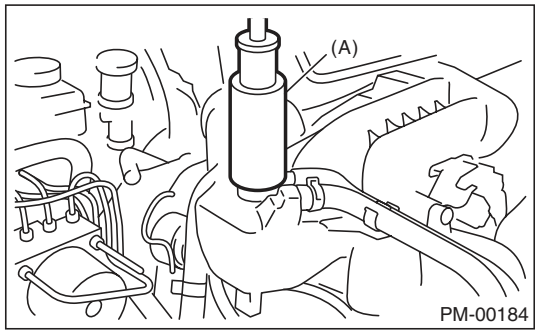
- Each portion of radiator for leakage
- Hose joints and other connections for leakage

NOTE:
- For turbo model, be sure to install the tester to filler tank side.
- Be particularly careful not to deform the filler neck of radiator when installing and removing the tester and after testing.

- Non-turbo model



- Turbo model



- When performing this check, be sure to keep the engine stationary and fill radiator with coolant.
- Wipe off check points before applying pressure.
- Use care not to spill coolant when detaching tester from radiator.
- Do not remove the radiator side cap. (Turbo model)

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

NOTE:
Rust or dirt on the cap may prevent valve from functioning normally: be sure to clean the cap before testing.
Raise the pressure until the needle of gauge stops and see if the pressure can be retained for five to six seconds. Replace the radiator cap if it is opened under a pressure less than the service limit value for this period.

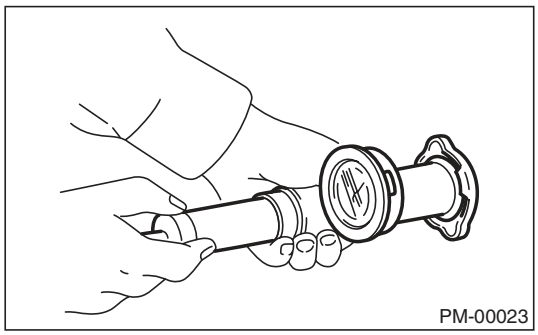
Radiator cap valve open pressure

Non-turbo model
Standard:
93 — 123 kPa (0.95 — 1.25 kg/cm^2, 14 — 18 psi)
Service limit:
83 kPa (0.85 kg/cm^2, 12 psi)

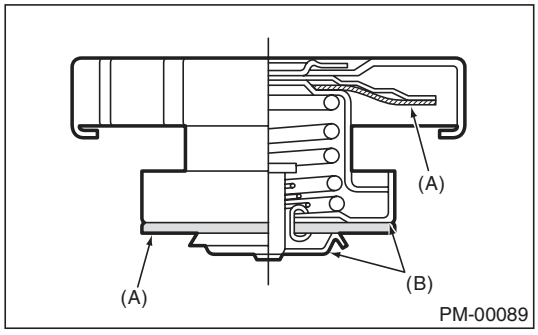
Turbo model

Filler tank side
Standard:
93 — 123 kPa (0.95 — 1.25 kg/cm^2, 14 — 18 psi)
Service limit:
83 kPa (0.85 kg/cm^2, 12 psi)

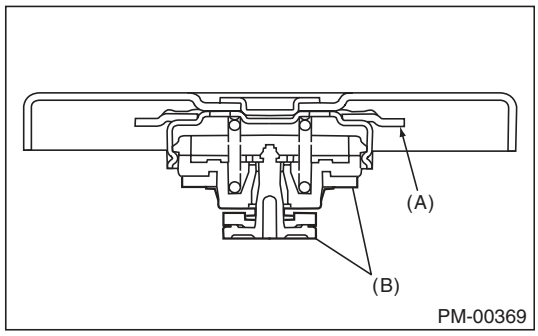
Radiator side
Standard:
122 — 152 kPa (1.24 — 1.55 kg/cm^2, 18 — 22 psi)
Service limit:
112 kPa (1.14 kg/cm^2, 16 psi)



- ***2.5 L model***



- ***3.0 L model***



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

3) Start the engine, and then check it does not overheat or it is cooled excessively. If it overheats or it is cooled excessively, check the cooling system.

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

- 2.5 L non-turbo model

<Ref. to CO(H4SO)-15, Water Pump.> <Ref. to CO(H4SO)-17, Thermostat.> <Ref. to CO(H4SO)-19, Radiator.> <Ref. to CO(H4SO)-23, Radiator Cap.>

- 2.5 L turbo model

<Ref. to CO(H4DOTC)-16, Water Pump.> <Ref. to CO(H4DOTC)-18, Thermostat.>
<Ref. to CO(H4DOTC)-20, Radiator.> <Ref. to CO(H4DOTC)-24, Radiator Cap.>

- 3.0 L model

<Ref. to CO(H6DO)-12, Water Pump.> <Ref. to CO(H6DO)-13, Thermostat.> <Ref. to CO(H6DO)-15, Radiator.> <Ref. to CO(H6DO)-18, Radiator Cap.>

4) Check the radiator fan operates using Subaru Select Monitor, when the coolant temperature exceeds 96°C (205°F). If it does not operate, check the radiator fan system.

- 2.5 L non-turbo model

<Ref. to CO(H4SO)-8, INSPECTION, Radiator Fan System.>

- 2.5 L turbo model

<Ref. to CO(H4DOTC)-9, INSPECTION, Radiator Fan System.>

- 3.0 L model

<Ref. to CO(H6DO)-8, INSPECTION, Radiator Fan System.>

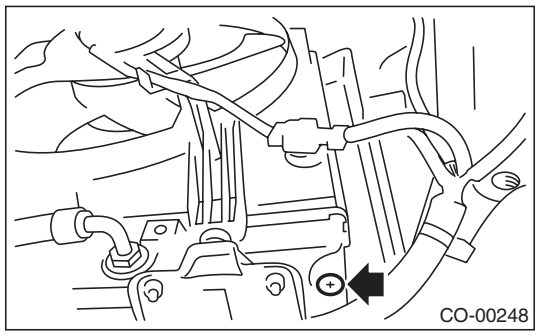
11. Engine Coolant

A: REPLACEMENT

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

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

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



5) For quick draining, open the radiator cap.

NOTE:
• For turbo model, be sure to open the radiator cap on the filler tank side.
• Be careful not to spill coolant on the floor.

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

Cooling system protective agent:
Cooling system conditioner (part No. SOA635071)

9) Pour the engine coolant into the radiator (or the coolant filler tank on turbo models) up to the filler neck position.
10) Fill engine coolant into the reservoir tank up to "FULL" level.

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

Coolant capacity (fill up to FULL level):

2.5 L non-turbo model
MT model
Approx. 6.4 ℓ (6.8 US qt, 5.61 Imp qt)
AT model
Approx. 6.3 ℓ (6.7 US qt, 5.5 Imp qt)

2.5 L turbo model
MT model
Approx. 7.3 ℓ (7.7 US qt, 6.4 Imp qt)
AT model
Approx. 7.2 ℓ (7.6 US qt, 6.3 Imp qt)

3.0 L model
Approx. 7.2 ℓ (7.6 US qt, 6.3 Imp qt)

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

11) Close the radiator cap (or the coolant filler tank cap on turbo models), and start the engine. Race 5 to 6 times at 3,000 rpm or less, then stop the engine. (Complete this operation within 40 seconds.)
12) Wait for one minute after the engine stops, then open the radiator cap (or the coolant filler tank cap on turbo models). If the engine coolant level drops, add engine coolant into the radiator (or the coolant filler tank on turbo models) up to the filler neck position.
13) Perform the procedures 11) and 12) again.
14) Install the radiator cap (or the coolant filler tank cap on turbo models) and reservoir tank cap properly.
15) Start the engine and operate the heater at maximum hot position and the blower speed setting to LO.
16) Run the engine at 2,000 rpm or less until radiator fan starts and stops.

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

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

18) Open the radiator cap (or the coolant filler tank cap on turbo models). If the engine coolant level drops, add engine coolant into the coolant filler tank up to the filler neck position and the reservoir tank to “FULL” level.
19) Install the radiator cap (or the coolant filler tank cap on turbo models) and reservoir tank cap properly.
20) Set the heater setting to maximum hot position and the blower speed setting to “LO” and start the engine. Perform racing at 3,000 rpm or less. If the flowing sound is heard from heater core, repeat the procedures from step 16).

B: ADJUSTMENT

1. PROCEDURE TO ADJUST THE CONCENTRATION OF THE SUBARU SUPER COOLANT

CAUTION:
Use the SUBARU Super Coolant with a 50 — 60% concentration in order to obtain maximum anti-freeze and anti-rust performance.
To adjust the concentration of SUBARU Super Coolant according to temperature, find the proper coolant concentration from the table, and adjust the concentration of the coolant (concentrated type) with a dilution water to the proper value.

Relationship of SUBARU Super Coolant concentration and freezing temperature			
SUBARU Super Coolant concentration	50%	55%	60%
Freezing temperature	–36°C (–33°F)	–41°C (–42°F)	–50°C (–58°F)

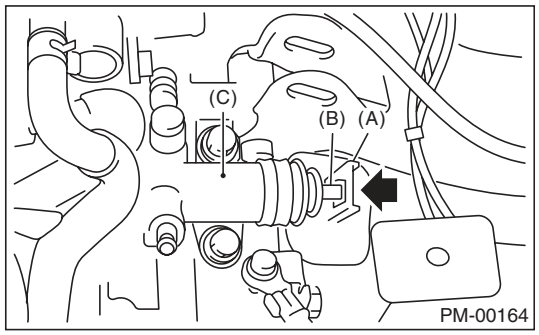
Recommended engine coolant and dilution water:
Refer to RM section for the recommended engine coolant and diluting water. <Ref. to RM-4, COOLANT, RECOMMENDED MATERIALS, Recommended Materials.>

12. Clutch System

A: INSPECTION AND ADJUSTMENT

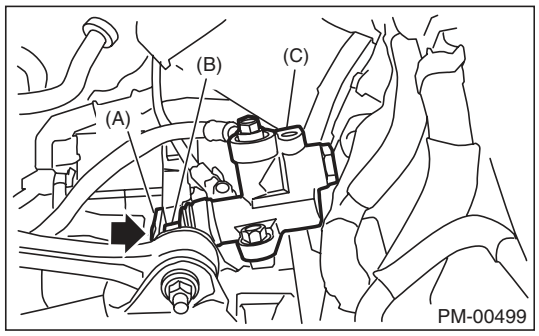
1) Push the release lever to retract the push rod of the operating cylinder and check if the fluid level in the clutch reservoir tank rises or not.

- 5MT model (non-turbo model)



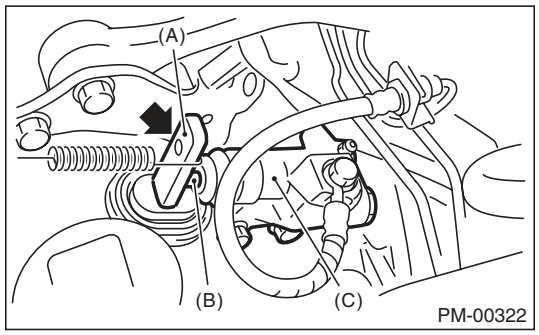
(A) Release lever
(B) Push rod
(C) Operating cylinder

- 5MT model (turbo model)



(A) Release lever
(B) Push rod
(C) Operating cylinder

- 6MT model



(A) Release lever
(B) Push rod
(C) Operating cylinder

2) If the fluid level rises, pedal free play is correct.

3) If the fluid level does not rise, or the push rod cannot be retracted, adjust the clutch pedal. <Ref. to CL-32, Clutch Pedal.>

4) Check the fluid level using the scale on the outside of the clutch reservoir tank (A). If the level is below “MIN” (B), inspect the clutch master cylinder, operating cylinder and hydraulic line for fluid leaks. If fluid leaks are found, repair or replace. If fluid leaks are not found, add clutch fluid to bring it up to “MAX” (C) of clutch reservoir tank.

Recommended clutch fluid:

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

CAUTION:

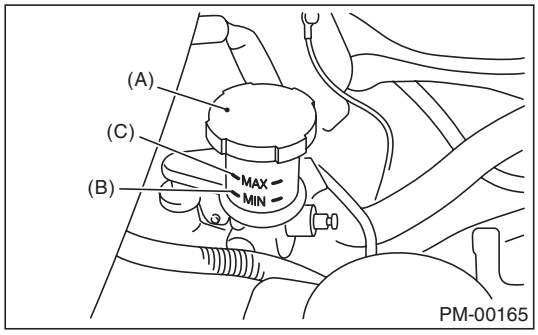
• Prevent the clutch fluid from being splashed over vehicle body. If clutch fluid is splashed over vehicle body, flush it, and then wipe it up.

• If any clutch fluid is spilt on the exhaust pipe, wipe it off with a cloth to avoid emitting smoke or causing a fire.

NOTE:

• Avoid mixing brake fluid of different brands to prevent fluid performance from degrading.

• Be careful not to allow dirt or dust to get into the reservoir tank.



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

13. Transmission Gear Oil

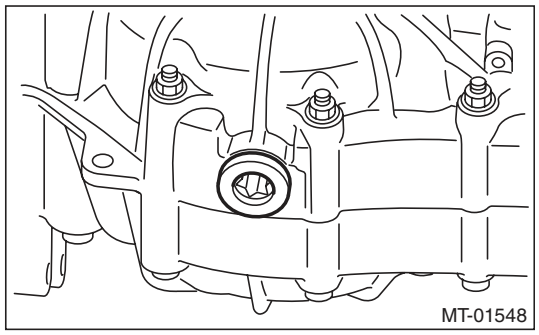
A: REPLACEMENT

1. MANUAL TRANSMISSION

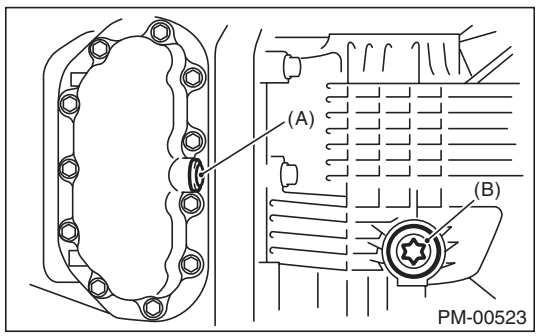
1) Drain the gear oil by removing drain plug.

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

NOTE:
• Before starting work, cool off the transmission gear oil well.
• Drain the gear oil by removing drain plug using TORX® bit T70.
• 5MT



• 6MT



(A) Drain plug (Oil pan side)
(B) Drain plug (Clutch housing side)

2) Replace the gasket with new part, and then tighten the drain plug to specified torque.

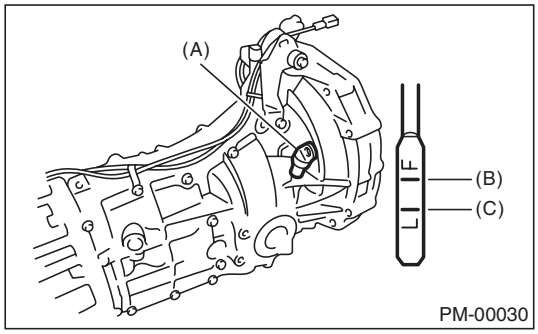
Tightening torque:
5MT (Aluminum gasket)
44 N·m (4.5 kgf-m, 32.5 ft-lb)
5MT (Copper gasket)
70 N·m (7.1 kgf-m, 51.6 ft-lb)
6MT (Oil pan side):
50 N·m (5.1 kgf-m, 36.9 ft-lb)
6MT (Clutch housing side):
70 N·m (7.1 kgf-m, 51.6 ft-lb)

3) Fill the transmission gear oil through the oil level gauge hole up to the upper point of level gauge.

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

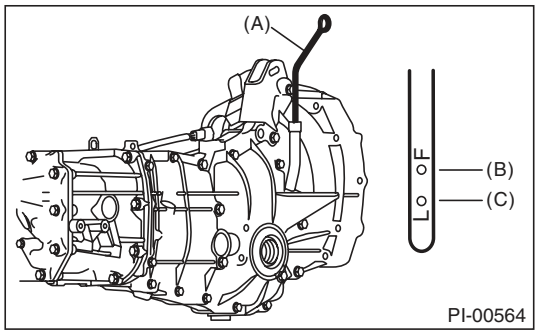
NOTE:
Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

Gear oil capacity:
5MT model:
3.5 ℓ (3.7 US qt, 3.1 Imp qt)
6MT model:
4.1 ℓ (4.3 US qt, 3.6 Imp qt)
• 5MT (non-turbo model)



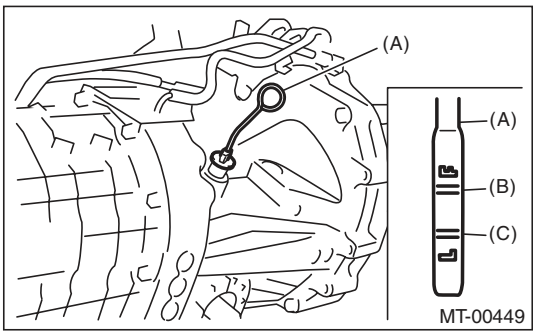
(A) Oil level gauge
(B) Upper level
(C) Lower level

• 5MT (turbo model)



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

- 6MT



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

14. Automatic Transmission Fluid

A: INSPECTION

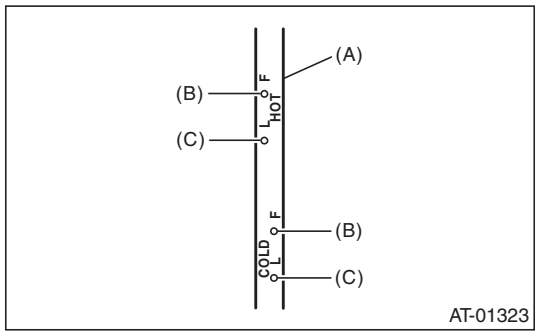
CAUTION:
The level of ATF varies with fluid temperature. Pay attention to the fluid temperature when checking ATF level.

1) Raise the ATF temperature by driving a distance of 5 — 10 km (3 — 6 miles). Otherwise, idle the engine to raise ATF temperature to 70 — 80°C (158 — 176°F) on Subaru Select Monitor. <Ref. to 4AT(diag)-17, READ CURRENT DATA, OPERATION, Subaru Select Monitor.>

2) Make sure the vehicle is level.

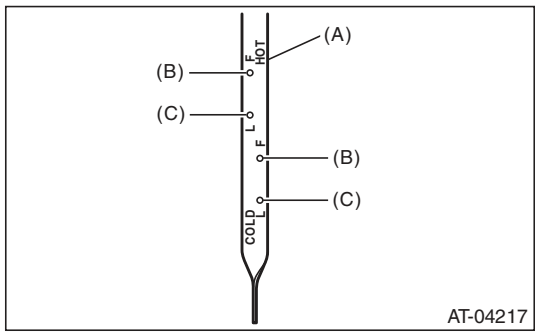
3) After selecting all positions (P, R, N, D), shift the select lever in "P" range. Idle the engine for 1 — 2 minutes, and measure the ATF level.

- 4AT model



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

- 5AT model



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

4) Make sure that ATF level is above the center of upper and lower marks at "HOT" side.

5) If the ATF level is below the center between upper and lower marks, add the recommended ATF until the fluid level is found above the center between upper and lower marks.

CAUTION:
- **Be careful not to exceed the upper level limit.**
- **Adding ATF to the upper limit mark on "HOT" side when the ATF temperature is less than 70°C (158°F) will overfill of ATF and cause a transmission failure.**

6) Check ATF level after raising ATF temperature to 70 — 80°C (158 — 176°F) by running the vehicle or by idling the engine again.

7) Check the ATF for leaks.

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

B: REPLACEMENT

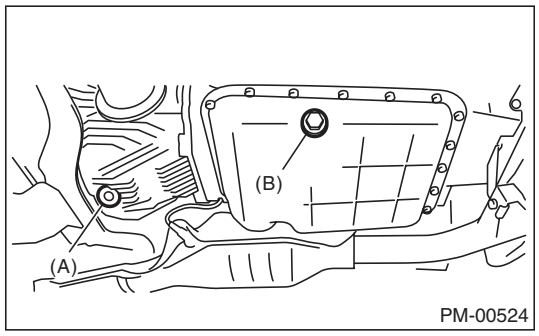
1. AUTOMATIC TRANSMISSION FLUID

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

1) Drain the ATF by removing drain plug.

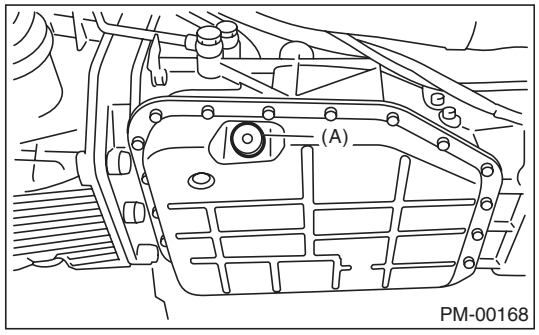
NOTE:
Before starting work, cool off the ATF well.

- 4AT model



(A) Front differential gear oil drain plug
(B) ATF drain plug

- 5AT model



(A) ATF drain plug

2) Replace the gasket with new part, and then tighten the drain plug to specified torque.

Tightening torque:
4AT model
25 N·m (2.5 kgf-m, 18.4 ft-lb)
5AT model
20 N·m (2.0 kgf-m, 14.8 ft-lb)

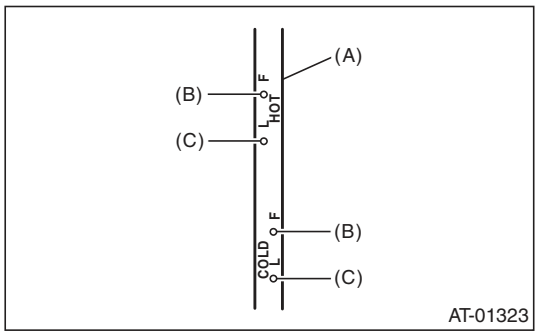
3) Pour in the ATF using the oil charge pipe.

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

Capacity:
Fill with the same amount of ATF as drained.

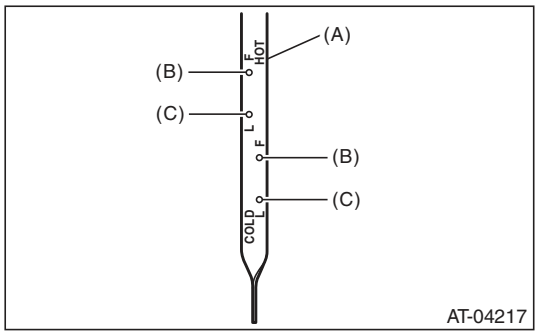
4) Check the ATF level. <Ref. to PM-34, INSPECTION, Automatic Transmission Fluid.>

- 4AT model



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

- 5AT model



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

2. ATF FILTER

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

NOTE:
Basically, the ATF filter is maintenance free, but when it is rusted or physically damaged or leaking, the ATF filter needs to be replaced.
For the replacement procedure of ATF filter, refer to “ATF Filter”. <Ref. to 5AT-59, ATF Filter.>

15. Front & Rear Differential Gear Oil

A: REPLACEMENT

1. FRONT DIFFERENTIAL (MT MODEL)

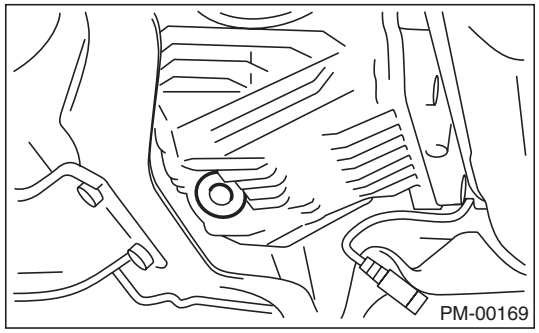
Front differential gear oil of MT model lubricates the transmission and differential together. Refer to "Transmission Oil" for replacement procedure. <Ref. to PM-32, Transmission Gear Oil.>

2. FRONT DIFFERENTIAL (AT MODEL)

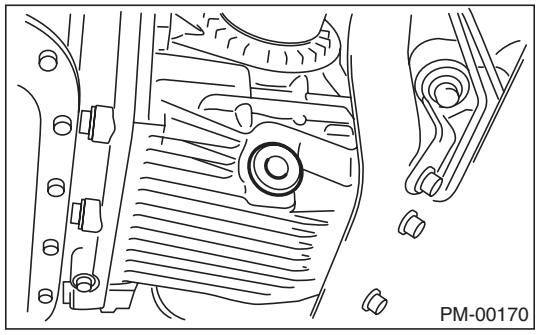
1) Drain the differential gear oil by removing drain plug using TORX® bit T70.

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

NOTE:
• Before starting work, cool off the differential gear oil well.
• 4AT model



• 5AT model



2) Replace the gasket with new part, and then tighten the drain plug to specified torque.

Tightening torque:

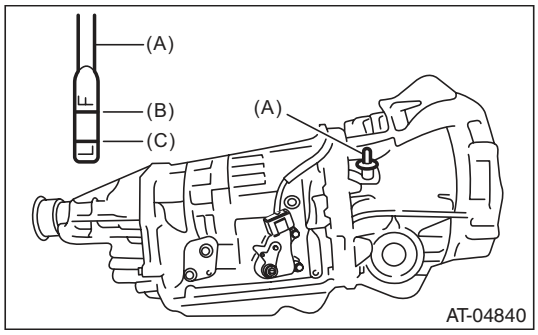
- ***4AT model***
  Copper gasket
  70 N·m (7.1 kgf-m, 51.6 ft-lb)
  Aluminum gasket
  44 N·m (4.5 kgf-m, 32.5 ft-lb)
- ***5AT model***
  Copper gasket
  70 N·m (7.1 kgf-m, 51.6 ft-lb)

3) Fill differential gear oil through the oil level gauge hole up to the upper point of level gauge.

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

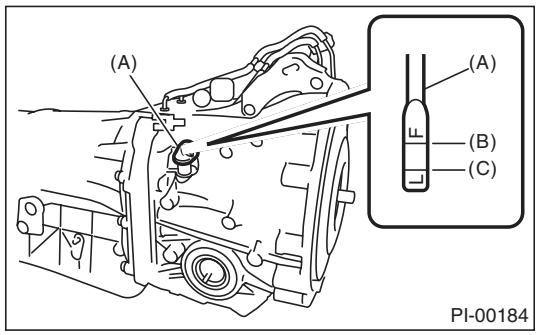
NOTE:
Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

Gear oil capacity:
4AT model
1.1 — 1.3 ℓ (1.2 — 1.4 US qt, 1.0 — 1.1 Imp qt)



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

5AT model
1.3 — 1.5 ℓ (1.4 — 1.6 US qt, 1.1 — 1.3 Imp qt)



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

3. REAR DIFFERENTIAL

1) Drain the oil by removing drain plug.
2) Remove the filler plug for quick draining oil.
3) Install the drain plug after draining oil.

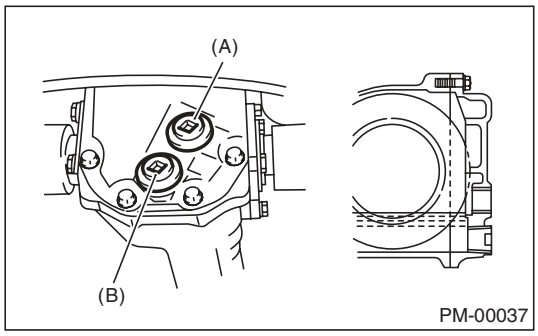
NOTE:
• Apply liquid gasket to the drain plug threads for T-type (except for turbo 6MT model).
• Use a new gasket for VA-type and T-type (turbo 6MT model).

Liquid gasket:
THREE BOND 1105 (Part No. 004403010)

Tightening torque:
T-type (except for turbo 6MT model)
49.0 N·m (5.0 kgf-m, 36.2 ft-lb)
T-type (turbo 6MT model)
60 N·m (6.1 kgf-m, 44.3 ft-lb)
VA1-type
34 N·m (3.5 kgf-m, 25.1 ft-lb)
VA2-type
50 N·m (5.1 kgf-m, 36.9 ft-lb)

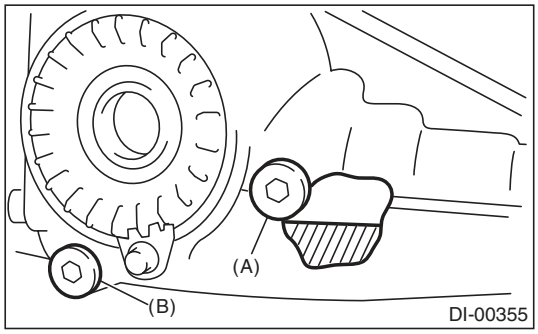
4) Pour oil to the bottom end of filler plug hole.

Recommended gear oil:
Refer to RM section. <Ref. to RM-2, LUBRICANTS, RECOMMENDED MATERIALS, Recommended Materials.>
• Except for VA2-type



(A) Filler plug
(B) Drain plug

• VA2-type



(A) Filler plug
(B) Drain plug

Oil capacity:
Except for turbo 6MT model
0.8 ℓ (0.8 US qt, 0.7 Imp qt)
Turbo 6MT model
1.0 ℓ (1.1 US qt, 0.9 Imp qt)

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

5) Install the filler plug.

NOTE:
• Apply liquid gasket to the drain plug threads for T-type (except for turbo 6MT model).
• Use a new gasket for VA-type and T-type (turbo 6MT model).

Liquid gasket:
THREE BOND 1105 (Part No. 004403010)

Tightening torque:
T-type (except for turbo 6MT model)
49.0 N·m (5.0 kgf-m, 36.2 ft-lb)
T-type (turbo 6MT model)
60 N·m (6.1 kgf-m, 44.3 ft-lb)
VA1-type
34 N·m (3.5 kgf-m, 25.3 ft-lb)
VA2-type
50 N·m (5.1 kgf-m, 36.9 ft-lb)

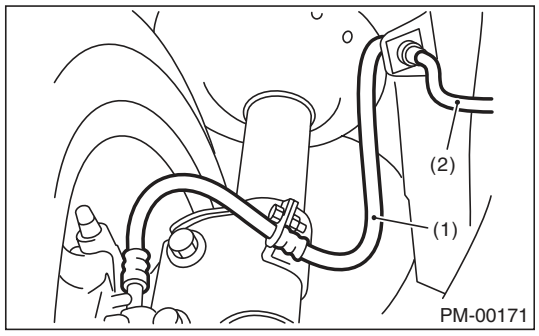
16.Brake Line

A: INSPECTION

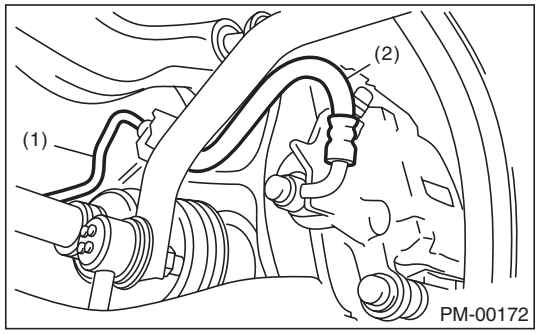
1. BRAKE LINE

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

NOTE:
• When the brake fluid level in the reservoir tank is lower than specified limit, the brake warning light on the combination meter will 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

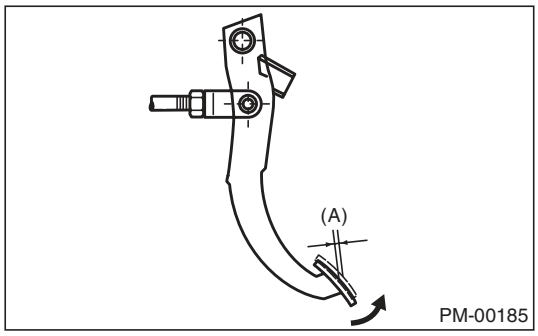


(1) Rear brake pipe
(2) Rear brake hose

2. SERVICE BRAKE

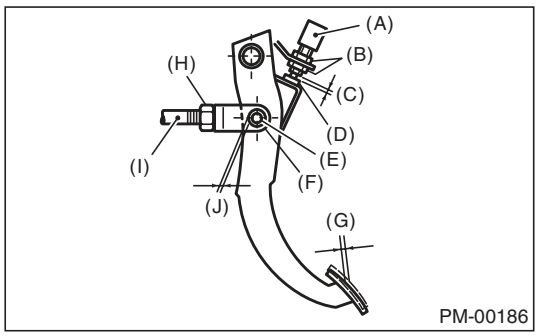
1) Check the free play of brake pedal by pulling up the pedal with a force of 10 N (1 kgf, 2 lb) or less.

Brake pedal free play (Pulling up direction of pedal)
0.5 — 2.0 mm (0.02 — 0.08 in)



(A) Pedal free play

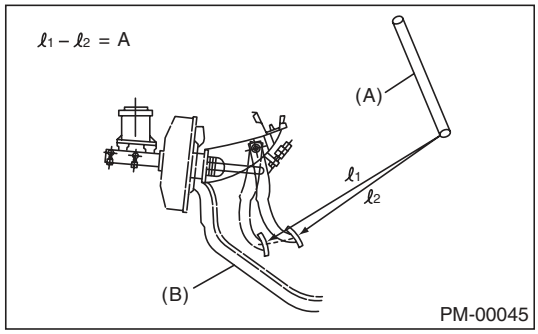
2) If the free play is out of specifications above, adjust the brake pedal as follows.
(1) Make sure the engine is off. (No vacuum is applied to brake booster.)
(2) There should be play between brake booster clevis and pin at brake pedal installing portion. [Pulling up the brake pedal pad with a force of 10 N (1 kgf, 2 lb) or less to a stroke of 0.5 to 2.0 mm (0.02 to 0.08 in).]
(3) If there is no free play between clevis pin and clevis, turn brake switch adjusting nut until the clearance between stopper and screw of brake switch becomes 0.3 mm (0.012 in).



(A) Brake switch
(B) Adjusting nut
(C) 0.3 mm (0.012 in)
(D) Stopper
(E) Clevis pin
(F) Clevis
(G) Pedal free play
(H) Lock nut
(I) Brake booster operating rod
(J) Play at pin

3) Check the pedal stroke.
While the engine is idling, depress the brake pedal with a 490 N (50 kgf, 110 lb) load and measure the distance between the brake pedal and steering wheel. With the brake pedal released, measure the distance between pedal and steering wheel again. The pedal stroke is normal if the difference between two measured values is the specified value or less. If the measured value is the specification or more, there is possibility of entering air in hydraulic unit.

Brake pedal stroke A:
95 mm (3.7 in)/ 490 N (50 kgf, 110 lb) or less

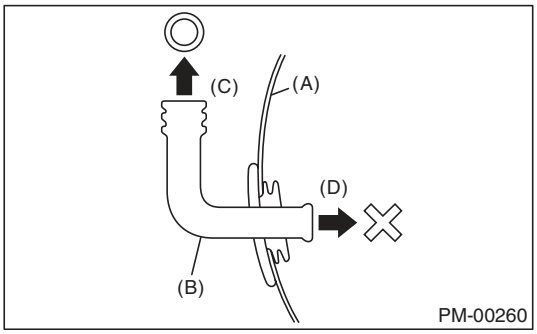


(A) Steering wheel
(B) Toe board

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

3. BRAKE SERVO SYSTEM

1) With the engine off, depress the brake pedal several times applying the same pedal force. Make sure the travel distance should not change.
2) With the brake pedal depressed, start the engine. Make sure the pedal should move slightly toward the floor.
3) With the brake pedal depressed, stop the engine and keep the pedal depressed for 30 seconds. Make sure the pedal height should not change.
4) A check valve is incorporated into the brake booster nipple part. Disconnect the vacuum hose to inspect function of check valve.
Make sure air flows from the booster end to engine end but does not flow in the opposite direction in the check valve.



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

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

NOTE:
When installing the vacuum hose on the engine and brake booster, do not use soapy water or lubricating oil on their connections.
6) Check the vacuum hose to make sure it is tightly secured.

17. Brake Fluid

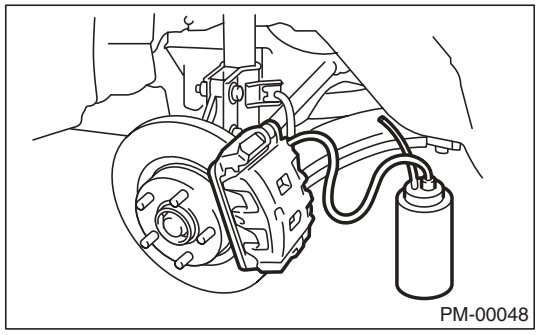
A: REPLACEMENT

1) Either jack-up the vehicle and place a rigid rack under it, or lift up the vehicle.
2) Remove all the wheels.
3) Drain the brake fluid from master cylinder.
4) Refill the reservoir tank with recommended brake fluid.

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

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

NOTE:
• Avoid mixing different brands of brake fluid to prevent degrading the quality of fluid.
• Be careful not to allow dirt or dust to get into the reservoir tank.
• Perform the operation in the order from farthest wheel cylinder to the master cylinder.
5) Install one end of a vinyl tube onto the air bleeder and insert the other end of the tube into a container to collect the brake fluid.



NOTE:
• Cover the bleeder with cloth, when loosening it, to prevent brake fluid from being splashed over surrounding parts.
• While bleeding air, keep the reservoir tank filled with brake fluid to prevent entry of air.
• Operate the brake pedal slowly.
• For convenience and safety, perform work with 2 people.
• The amount of brake fluid required is approx. 500 mℓ (16.9 US fl oz, 17.6 Imp fl oz) for total brake system.
6) Instruct your co-worker to depress the brake pedal slowly two or three times and then hold it depressed.
7) Loosen the bleeder screw approximately 1/4 turn until a small amount of brake fluid drains into the container, and then quickly tighten the screw.
8) Repeat steps 6) and 7) until there are no air bubbles in drained brake fluid and new fluid flows through vinyl tube.

NOTE:
Add brake fluid as necessary while performing the air bleed operation, in order to prevent the tank from running short of brake fluid.
9) After completing the bleeding operation, hold the brake pedal depressed and tighten the screw and install bleeder cap.

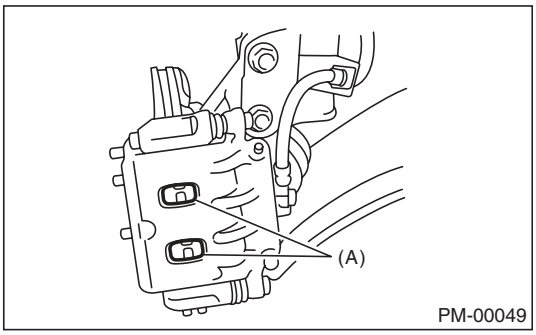
Tightening torque:
8 N·m (0.8 kgf-m, 5.8 ft-lb)
10) Bleed air from each wheel cylinder by following steps from 5) to 9).
11) Depress the brake pedal with a force of approx. 294 N (30 kgf, 66 lb) and hold it there for approx. 20 seconds. At this time check the pedal to see if it makes any unusual movement. Visually inspect the bleeder screws and brake pipe joints to confirm there is no fluid leakage.
12) Install the wheels, and drive the vehicle for a distance of 2 to 3 km (1 to 2 miles) to confirm that brakes are operating properly.

18. Disc Brake Pad and Disc

A: INSPECTION

1) Jack-up the vehicle and support with rigid racks. Then remove the wheels.
2) Visually check the pad thickness through inspection hole of disc brake assembly. Replace the pad if necessary.

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



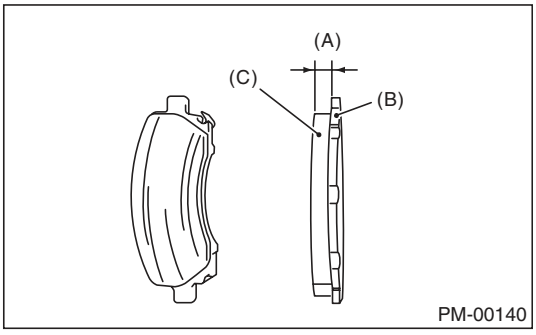
(A) Inspection hole

• Front

Pad thickness		mm (in)
Standard	16-inch	11 (0.43)
	17-inch	11 (0.43)
Wear limit	16-inch	1.5 (0.059)
	17-inch	1.5 (0.059)

• Rear

Pad thickness		mm (in)
Standard	Solid disc type	9 (0.35)
	Ventilated disc type	9 (0.35)
Wear limit	Solid disc type	1.5 (0.059)
	Ventilated disc type	1.5 (0.059)



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

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

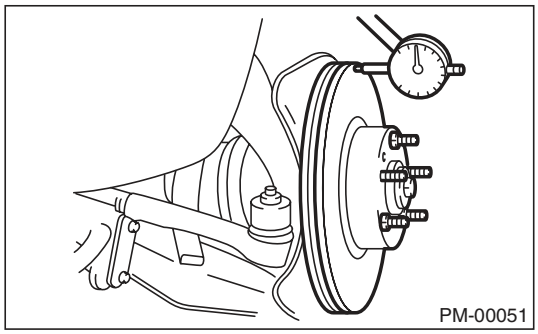
Disc rotor thickness		mm (in)
Standard	16-inch	24 (0.94)
	17-inch	30 (1.18)
Wear limit	16-inch	22 (0.87)
	17-inch	28 (1.10)

• Rear

Disc rotor thickness		mm (in)
Standard	Solid disc type	10 (0.39)
	Ventilated disc type	18 (0.71)
Wear limit	Solid disc type	8.5 (0.34)
	Ventilated disc type	16 (0.63)

4) Remove the caliper body. <Ref. to BR-15, Front Disc Brake Assembly.> <Ref. to BR-22, Rear Disc Brake Assembly.>
5) Tighten the wheel nuts to secure disc rotor.
6) Set a dial gauge at a point of 10 mm (0.39 in) or less from outer periphery of the rotor, and then measure the disc rotor runout.

Disc rotor runout limit:
Front: 0.05 mm (0.002 in)
Rear: 0.05 mm (0.002 in)



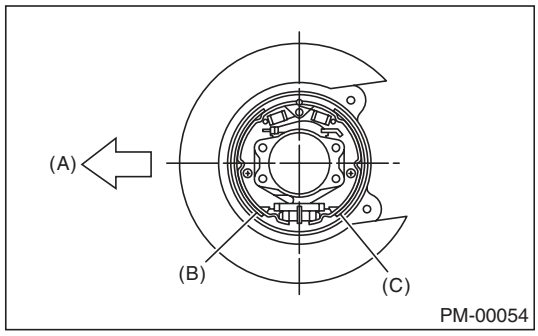
19. Parking Brake

A: INSPECTION

Inspect the brake linings and disc rotor of both sides of the rear brake at the same time by removing disc rotor.
1) Inspect the brake shoes for damage or deformation and check the brake linings for wear.

NOTE:
Always replace both primary and secondary brake shoes for the left and right wheels at the same time.

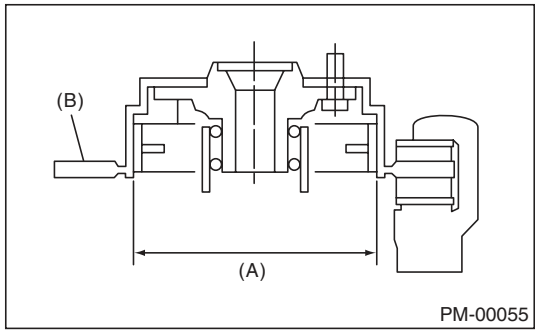
Thickness of brake lining (except for back metal):
Standard: 3.2 mm (0.126 in)
Wear limit: 1.5 mm (0.059 in)



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

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

Brake drum inside diameter:
Standard: 170 mm (6.69 in)
Wear limit: 171 mm (6.73 in)

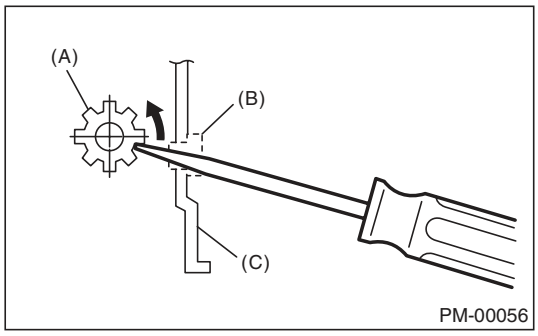


(A) Inside diameter
(B) Disc

3) If the deformation or wear of back plate, shoe, etc. is noticeable, replace them.
4) When the shoe return spring tension is excessively weakened, replace it.

B: ADJUSTMENT

For rear disc brake, adjust the parking brake after bleeding air.
1) Remove the rear cover (rubber) installed at back plate.
2) Turn the adjuster toward arrow mark (upward) until it is locked slightly, by using flat-tip screwdriver as shown in the figure.



(A) Adjuster
(B) Cover (rubber)
(C) Back plate

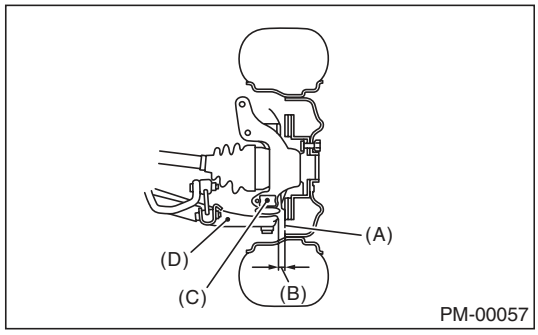
3) Turn back (downward) the adjuster 3 to 4 notches.
4) Install the cover (rubber) in original position correctly.

20. Suspension

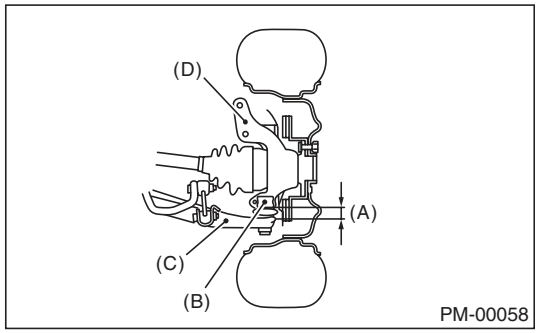
A: INSPECTION

1. SUSPENSION BALL JOINT

1) Jack-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 relative movement (B) is observed between the brake disc cover (A) and the end of front arm (D), ball joint (C) may be excessively worn.



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

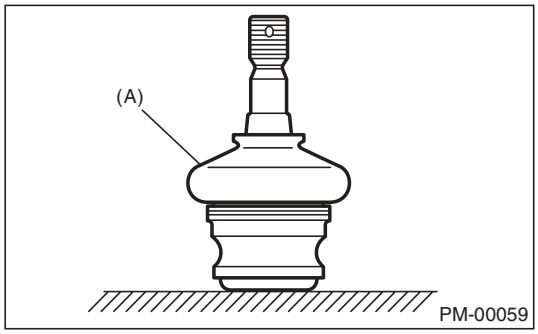


4) If relative movement is observed in the step 2), 3), remove and inspect the ball joint. If the free play exceeds standard value, replace the ball joint. <Ref. to FS-16, Front Ball Joint.>

5) Damage of dust seal
Visually inspect the ball joint dust seal. If it is damaged, remove the front arm. <Ref. to FS-18, Front Arm.> Also, measure the free play of the ball joint. <Ref. to FS-16, Front Ball Joint.>

(1) If the free play exceeds standard value, replace the ball joint.
(2) If the dust seal is damaged, replace with a new ball joint.

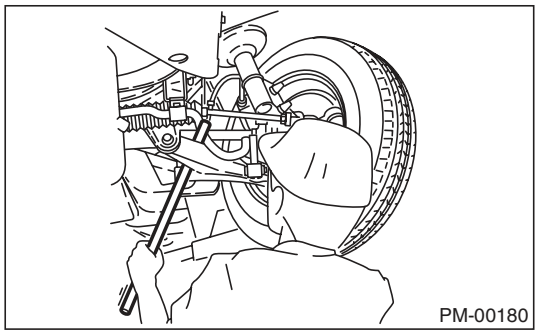
NOTE:
When the front arm ball joint has been removed or replaced, check the toe of front wheel. If the front wheel toe-in is not at the specified value, adjust the toe-in. <Ref. to FS-6, Wheel Alignment.>



(A) Dust seal

2. FRONT, REAR SUSPENSION BUSHING

Apply pressure with tire lever etc. to inspect the bushing for abnormal fatigue or damage. Replace the bushings if there is abnormal fatigue or damage.



3. WHEEL ARCH HEIGHT

1) Unload the cargoes and set the vehicle in curb weight (empty) condition.
2) Check the wheel arch height of the front and rear suspensions to ensure that they are within specified values. <Ref. to FS-6, Wheel Alignment.>
3) When the wheel arch height is out of standard, visually inspect following components and replace deformed parts.
- Suspension components [Front strut assembly and rear damper assembly]
- Parts connecting suspension and body

4) When no components are deformed, adjust wheel arch height by replacing coil spring in the suspension whose wheel arch height is out of standard. <Ref. to FS-6, Wheel Alignment.> <Ref. to RS-7, Wheel Alignment.>

4. WHEEL ALIGNMENT OF FRONT SUSPENSION

1) Check the alignment of front suspension to ensure that following items conform to standard values.
- Toe-in
- Camber
- Caster
- Steering angle

<Ref. to FS-6, Wheel Alignment.>
2) When the caster angle does not conform to reference obviously, visually inspect the following components and replace deformed parts.
- Suspension components [Strut assembly, crossmember, front arm, etc.]
- Parts connecting suspension and body

3) When the toe-in and camber are out of standard value, adjust them so that they conform to standard value.
4) When the right-and-left turning angles of tire are out of standard, adjust to standard value.

5. WHEEL ALIGNMENT OF REAR SUSPENSION

1) Check the alignment of rear suspension to ensure that following items are within standard values.
- Toe-in
- Camber
- Thrust angle

<Ref. to RS-7, Wheel Alignment.>
2) When the camber angle does not conform to standard value, visually inspect the following components. If the deformation is observed, replace the damaged parts.
- Suspension components [Shock absorber, front link, rear link, upper link, rear arm, sub frame, etc]
- Parts connecting suspension and body

3) When the toe-in and thrust angle are out of standard value, adjust them so that they conform to standard value.

6. OIL LEAKAGE OF STRUT AND SHOCK ABSORBER

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

7. TIGHTNESS OF BOLTS AND NUTS

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

<Ref. to FS-3, COMPONENT, General Description.>
- Rear suspension

<Ref. to RS-3, COMPONENT, General Description.>

8. DAMAGE TO SUSPENSION PARTS

Check the following parts and the fastening portion of the vehicle body for deformation or excessive rusting which impairs the suspension. If necessary, replace the damaged parts with new parts. If minor rust formation, pitting, etc. are noted, remove the rust and take rust prevention measure.
- Front suspension
  - Front arm
  - Crossmember
  - Strut
- Rear suspension
  - Sub frame
  - Front link
  - Rear link
  - Upper link
  - Rear arm
  - 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.

21. Wheel Bearing

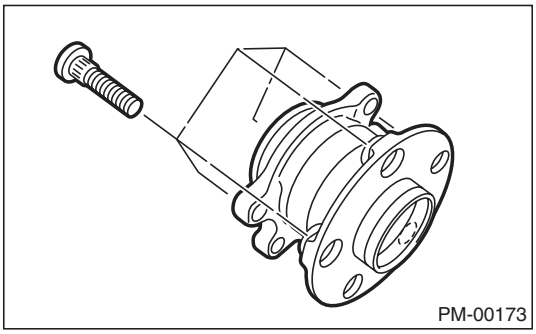
A: INSPECTION

1. FRONT WHEEL BEARING

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

Service limit:
Straight-ahead position within 0.05 mm (0.0020 in)

5) Remove the bolts and self-locking nuts, and extract the front arm from front crossmember.
6) Remove the PTJ of front drive shaft from transmission. <Ref. to DS-13, 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.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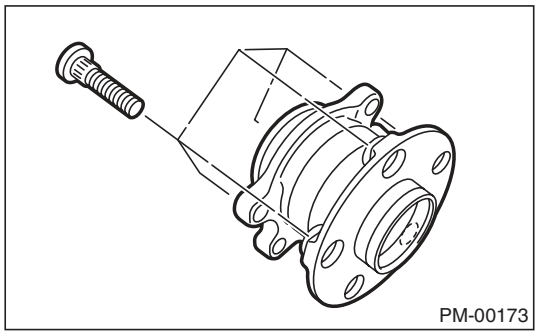
2. REAR WHEEL BEARING

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-26, Rear Drive Shaft.>
6) While supporting the 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.


PM-00173

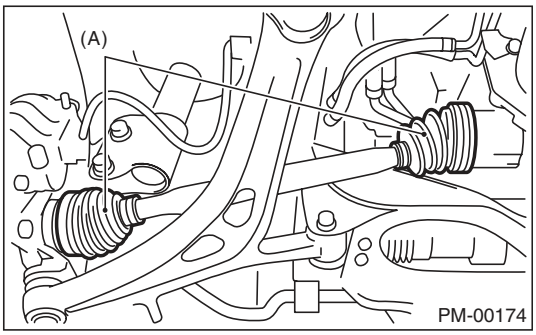
22. Axle Boots & Joints

A: INSPECTION

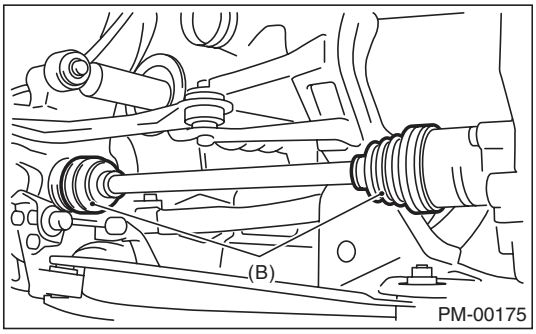
1. FRONT AND REAR AXLE BOOTS

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-22, Front Drive Shaft.> <Ref. to DS-26, Rear Drive Shaft.>

- Front



- Rear



2. PROPELLER SHAFT

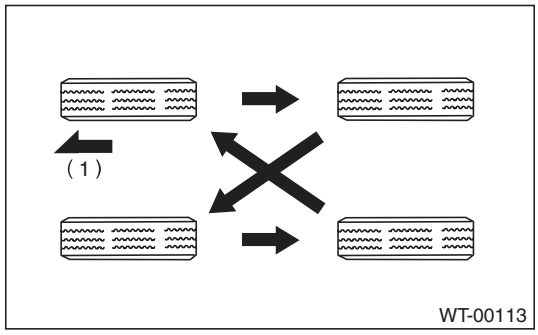
Inspect the propeller shaft for damage or failure. If faulty, replace with new part. <Ref. to DS-10, Propeller Shaft.>

23. Tire Rotation

A: INSPECTION

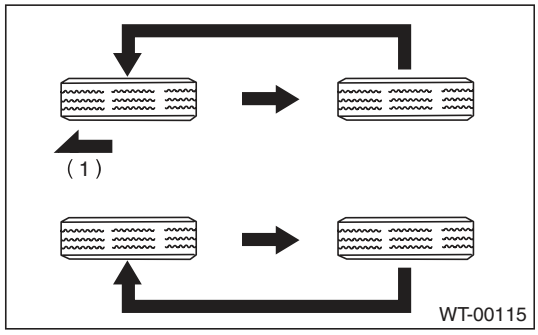
1) When the tread has worn down to less than 1.6 mm (0.063 in) or the wear indicator appears across the tread, replace the tire. (Replace the right and left tire as a set.)
2) If the tire appears to be worn unevenly, adjust the wheel alignment.
3) Next, make a tire rotation between front and rear as shown in the figure, make sure tires are worn evenly.

- When the direction of tire rotation is not specified

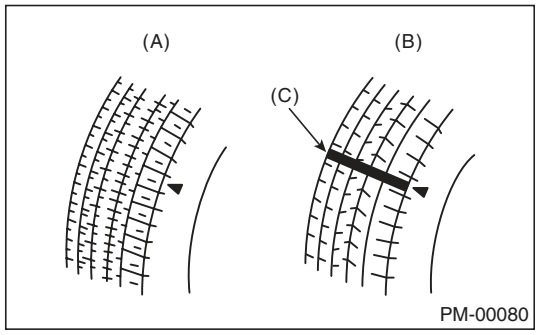


(1) Front

- When the direction of tire rotation is specified



(1) Front



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

4) Re-register the transmitter ID when rotation was performed. (3.0 L U4 model) <Ref. to TPM(diag)-10, REGISTER TRANSMITTER ID, OPERATION, Subaru Select Monitor.>

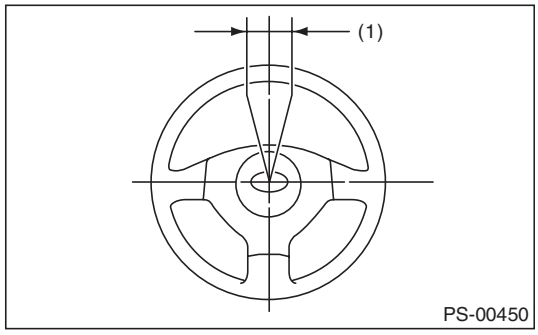
24. Steering System (Power Steering)

A: INSPECTION

1. STEERING WHEEL

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

Steering wheel free play:
0 — 17 mm (0 — 0.67 in)



(1) Steering wheel free play

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

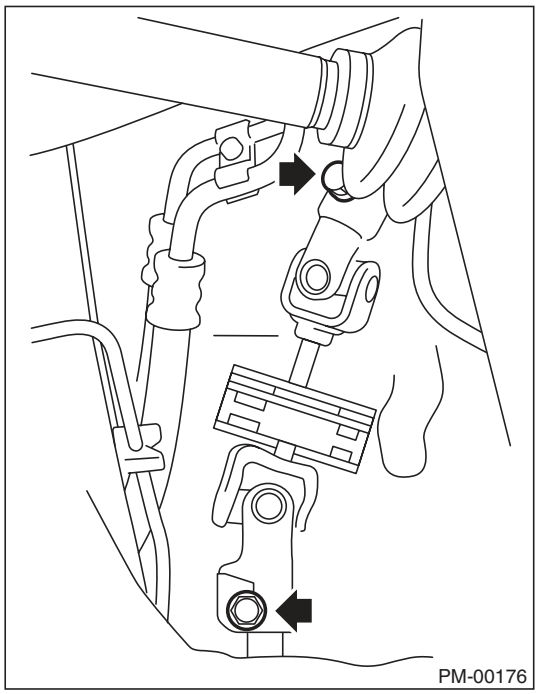
Maximum permissible play:
0.5 mm (0.020 in)

3) Drive the vehicle and check the following items during operation.
(1) Steering force:
The effort required for steering should be smooth and even at all points, and should not vary.
(2) Pulled to one side:
Steering wheel should not be pulled to either side while driving on a level surface.
(3) Wheel runout:
Steering wheel should not show any sign of runout.
(4) Return factor:
Steering wheel should return to its original position after it has been turned and then released.

2. STEERING SHAFT JOINT

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

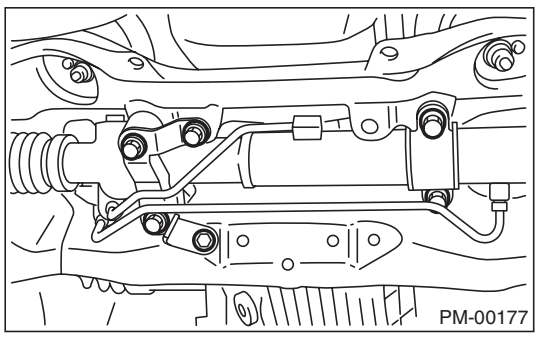
Tightening torque:
24 N·m (2.4 kgf-m, 17.7 ft-lb)



3. GEARBOX

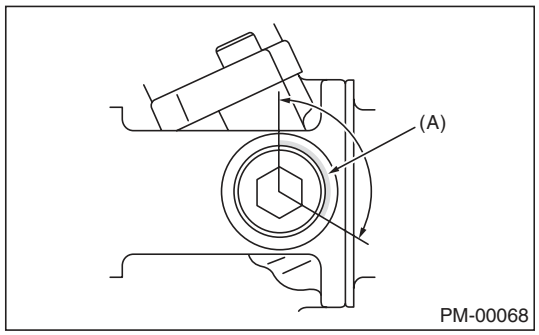
1) With the vehicle placed on a level surface, turn the steering wheel 90° in both the left and right directions.
While the wheel is being rotated, reach under the vehicle and check for looseness in gearbox.

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



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

3) With the vehicle placed on a level surface, quickly turn the steering wheel to the left and right.
While steering wheel is being rotated, check the gear backlash. If any noise is noticed, adjust the gear backlash.
4) Apply liquid gasket to at least 1/3 of entire perimeter of adjusting screw thread.
5) Tighten the adjusting screw to 25 N·m (2.5 kgf-m, 18.4 ft-lb) and then loosen.
6) Tighten the adjusting screw to 3.9 N·m (0.40 kgf-m, 2.9 ft-lb) and then loosen 20°.



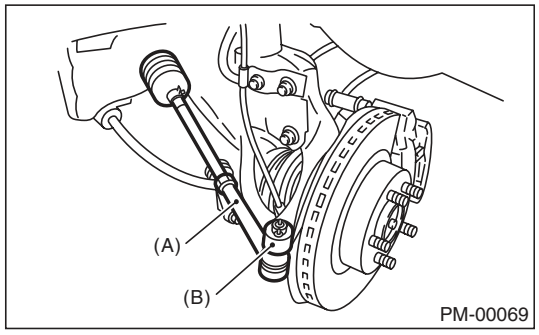
(A) Apply liquid gasket to at least 1/3 of entire perimeter

7) Install the lock nut. While holding the adjusting screw with wrench, tighten the lock nut using ST.
ST 926230000 SPANNER

Tightening torque (lock nut):
25 N·m (2.5 kgf-m, 18.4 ft-lb)
Hold the adjusting screw with wrench to prevent it from turning while tightening the lock nut.

4. TIE-ROD

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



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

2) Check the connections of knuckle ball joints for play, inspect for damage on dust seals, and check 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.

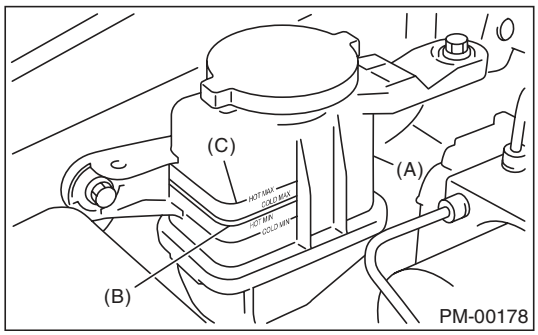
Tightening torque:
27 N·m (2.75 kgf-m, 19.9 ft-lb)
3) Check the lock nut on the tie-rod for tightness. If it is loose, retighten it to the specified torque.

Tightening torque:
85 N·m (8.7 kgf-m, 63 ft-lb)

5. POWER STEERING FLUID LEVEL

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

NOTE:
• Check at power steering fluid temperature 20°C (68°F); read the fluid level on the “COLD” side.
• Check at power steering fluid temperature 80°C (176°F); read the fluid level on the “HOT” side.
1) Place the vehicle with engine “OFF” on a level surface.
2) Check the fluid level using the scale on the outside of the reservoir tank (A). If the level is below “MIN” (B), add fluid to bring it up to “MAX” (C).



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

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

Fluid capacity:
0.8 ℓ (0.8 US qt, 0.7 Imp qt)

6. POWER STEERING FLUID FOR LEAKS

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

Inspect the underside of oil pump and gearbox of power steering system, hoses, pipes and their couplings for fluid leaks.
If the fluid leaks are found, retighten their fitting bolts (or nuts) and/or replace their parts.

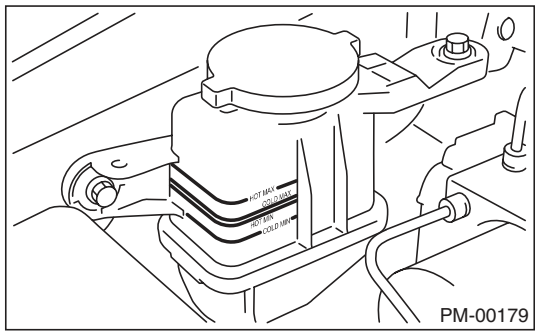
NOTE:
• Wipe the leaked fluid off after correcting fluid leaks.
• Also pay attention to clearances between hoses (or pipes) and other parts when inspecting fluid leaks.

7. HOSES OF OIL PUMP FOR DAMAGES

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

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

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



8. POWER STEERING PIPES FOR DAMAGES

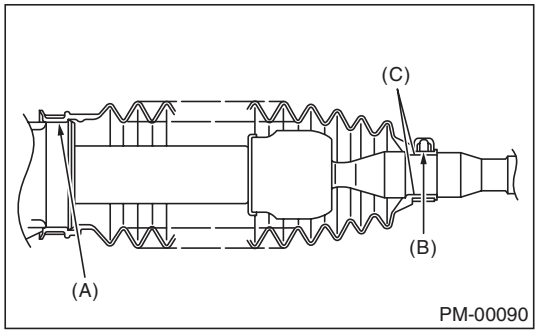
CAUTION:
If the power steering fluid is spilt on the exhaust pipe, wipe it off with a clean cloth to avoid emitting smoke or causing a fire.

Check the power steering pipes for corrosion and damage.
Replace the pipes with new parts if necessary.

9. GEARBOX BOOTS

Inspect both sides of the gearbox boot as follows, and correct the defects if necessary.
1) Positions (A) and (B) of the gearbox boot are fitted correspondingly in grooves (A) and (B) of the gearbox and rod (C).
2) Clips are fitted outside of positions (A) and (B) of boot.
3) Boot does not have crack or hole.

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



10.FITTING BOLTS AND NUTS

Inspect the fitting bolts and nuts of oil pump and bracket for looseness, and retighten them if necessary.
Inspect and/or retighten them when engine is cold.