TRANSMISSION SECTION

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

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

FUJI HEAVY INDUSTRIES LTD. G1870GE4

AUTOMATIC TRANSMISSION

4AT

1. General Description

A: SPECIFICATIONS

1. TORQUE CONVERTER CLUTCH

Model	1.6 L	2.0 L Non-turbo	2.5 L	2.0 L Turbo
Type	Symmetric, 3 element, single stage, 2 phase torque converter			
Stall torque ratio	2.2 — 2.4	2.0 — 2.2	1.85 — 2.15	2.05 — 2.35
Nominal diameter	236 mm (9.29 in)		246 mm (9.69 in)	
Stall speed (at sea level)	2,400 — 3,000 rpm	2,200 — 2,700 rpm	2,100 — 2,600 rpm	2,900 — 3,500 rpm
One-way clutch	Sprague type one-way clutch			

2. OIL PUMP

Type	Pracoid constant-displacement pump	
Driving method	Driven by engine	
Number of teeth	Inner rotor	9
	Outer rotor	10

3. TRANSMISSION CONTROL ELEMENT

Type	4-forward, 1-reverse, double-row planetary gears
Multi-plate clutch	3 sets
Multi-plate brake	2 sets
One-way clutch (sprague type)	1 sets

4. TRANSMISSION GEAR RATIO

	Gear ratio
1st	2.785
2nd	1.545
3rd	1.000
4th	0.694
Rev	2.272

5. PLANETARY GEAR AND PLATE

Model	1.6 L	2.0 L Non-turbo	2.5 L	2.0 L Turbo
Tooth number of front sun gear	33			
Tooth number of front pinion	21			
Tooth number of front internal gear	75			
Tooth number of rear sun gear	42			
Tooth number of rear pinion	17			
Tooth number of rear internal gear	75			
Drive & driven plate number of high clutch	3	4		5
Drive & driven plate number of low clutch	4		6	7
Drive & driven plate number of reverse clutch	1	2		
Drive & driven plate number of 2-4 brake	2	3		4
Drive & driven plate number of low & reverse brake	4		6	7

6. SELECTOR POSITION

P (Park)	Transmission in neutral, output member immovable, and engine start possible
R (Reverse)	Transmission in reverse for backing
N (Neutral)	Transmission in neutral and engine start possible
D (Drive)	4-forward, Automatic gear change 1st ← → 2nd ← → 3rd ← → 4th
3 (3rd)	3-forward, Automatic gear change 1st ← → 2nd ← → 3rd ← 4th
2 (2nd)	2-forward, Automatic gear change 1st ← → 2nd ← 3rd ← 4th
1 (1st)	1st gear locked (Deceleration possible 1st ← 2nd ← 3rd ← 4th)
Control method	Wire cable

7. HYDRAULIC CONTROL AND LUBRICATION

Type		Electro-hydraulic control [Four forward speed changes by electrical signals of vehicle speed and accelerator (throttle) opening]
Fluid		Dexron III type
Fluid capacity	1.6 L FWD model	8.0 — 8.3 ℓ (8.5 — 8.8 US qt, 7.0 — 7.3 Imp qt)
	1.6 L AWD and 2.0 L Non-turbo model	8.4 — 8.7 ℓ (8.9 — 9.2 US qt, 7.4 — 7.7 Imp qt)
	2.5 L and 2.0 L Turbo model	9.3 — 9.6 ℓ (9.8 — 10.1 US qt, 8.2 — 8.4 Imp qt)
Lubrication system		Forced feed lubrication with oil pump
Oil		Automatic transmission fluid (above mentioned)

8. COOLING AND HARNESS

Cooling system	Liquid-cooled cooler incorporated in radiator
Inhibitor switch	12 poles
Transmission harness	20 poles

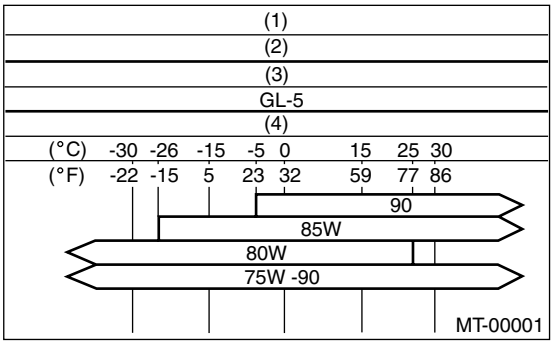
9. TRANSFER

Model	1.6 L and 2.0 L Non-turbo	2.5 L	2.0 L Turbo
Transfer type	Multi-plate transfer (MPT)		Variable torque distribution (VTD)
Drive & driven plate number of transfer clutch	4	5	3
Control method	Electro-hydraulic type		
Lubricant	The same Automatic transmission fluid used in automatic transmission		
Reduction gear ratio	1.000 (53/53)		

10.FINAL REDUCTION

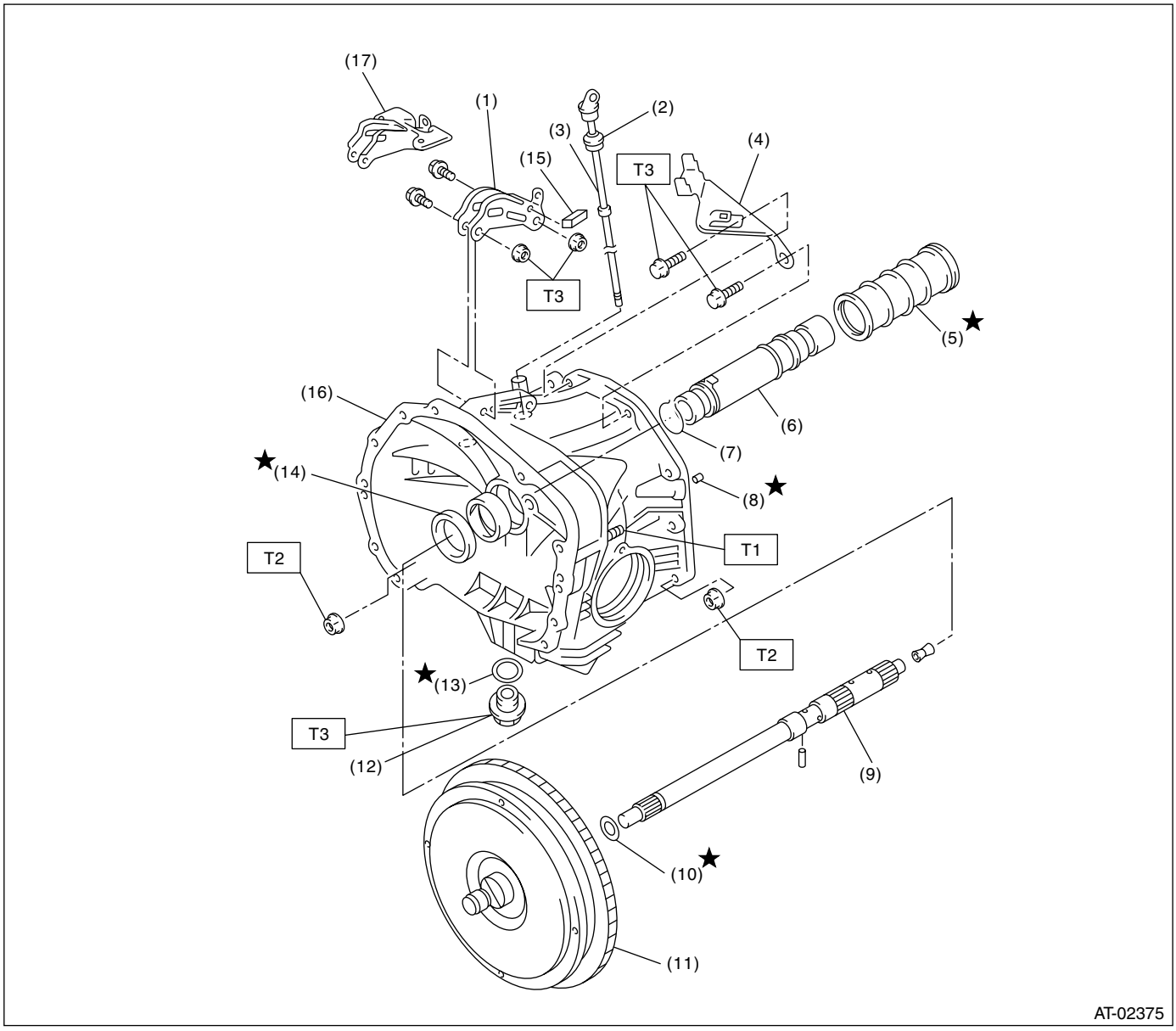
Model	Except for 1.6 L, 2.0 L Turbo	1.6 L, 2.0 L Turbo
Front final gear ratio	4.111 (37/9)	4.444 (40/9)

11.RECOMMENDED GEAR OIL

Lubrication oil	 (1) Item (2) Front differential gear oil (3) API classification (4) SAE viscosity No. and applicable temperature
Front differential oil capacity	1.1 — 1.3 ℓ (1.2 — 1.4 US qt, 1.0 — 1.1 Imp qt)

B: COMPONENT

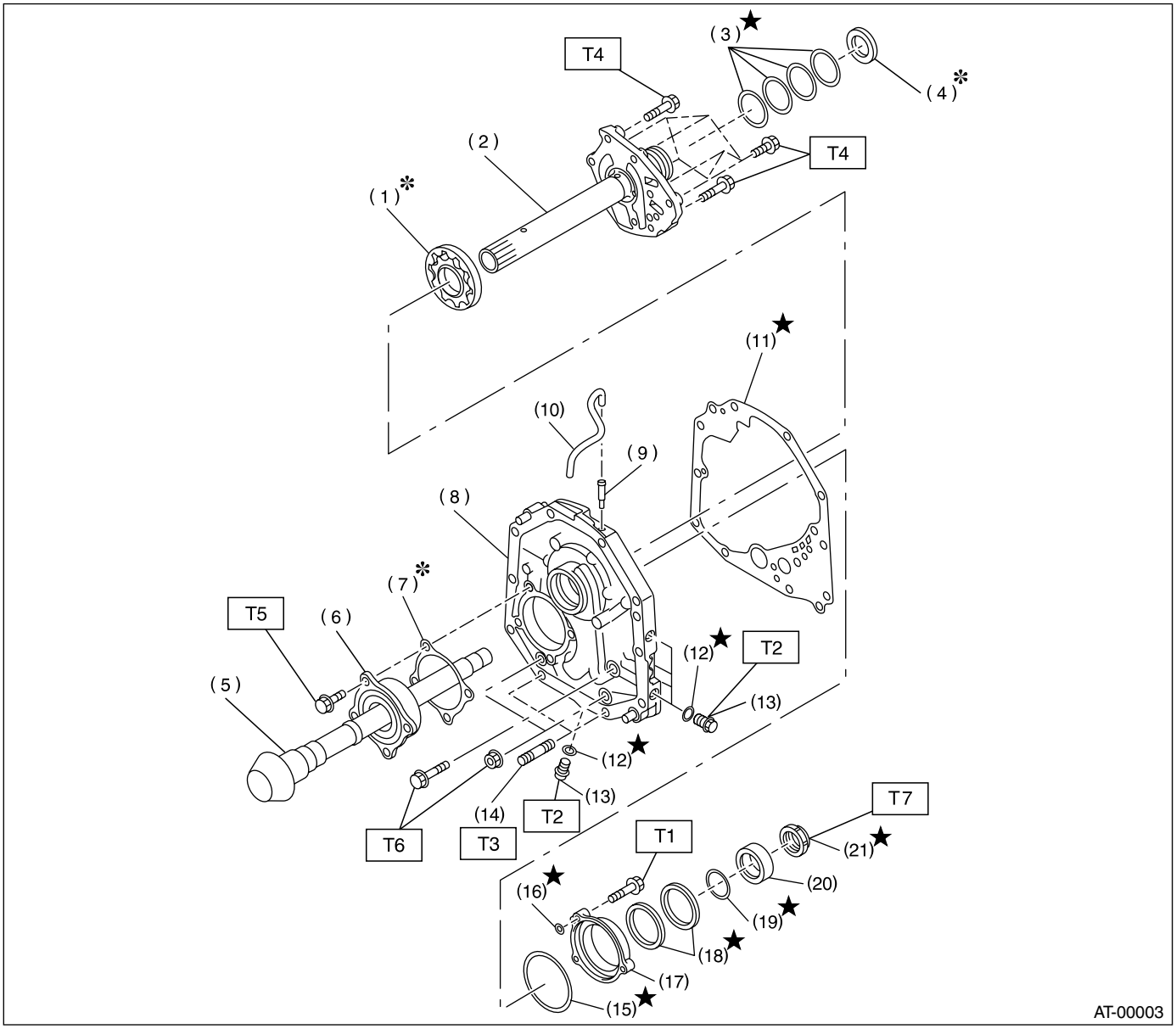
1. TORQUE CONVERTER CLUTCH AND CASE



(1)	Pitching stopper bracket (Turbo model)	(8)	Oil drain pipe	(16)	Converter case
(2)	O-ring	(9)	Input shaft	(17)	Pitching stopper bracket (Non-turbo model)
(3)	Differential oil level gauge	(10)	O-ring		
(4)	Stay	(11)	Torque converter clutch ASSY		
(5)	Seal pipe	(12)	Drain plug		
(6)	Oil pump shaft	(13)	Gasket		
(7)	Clip	(14)	Oil seal		
		(15)	Clip (Turbo model)		

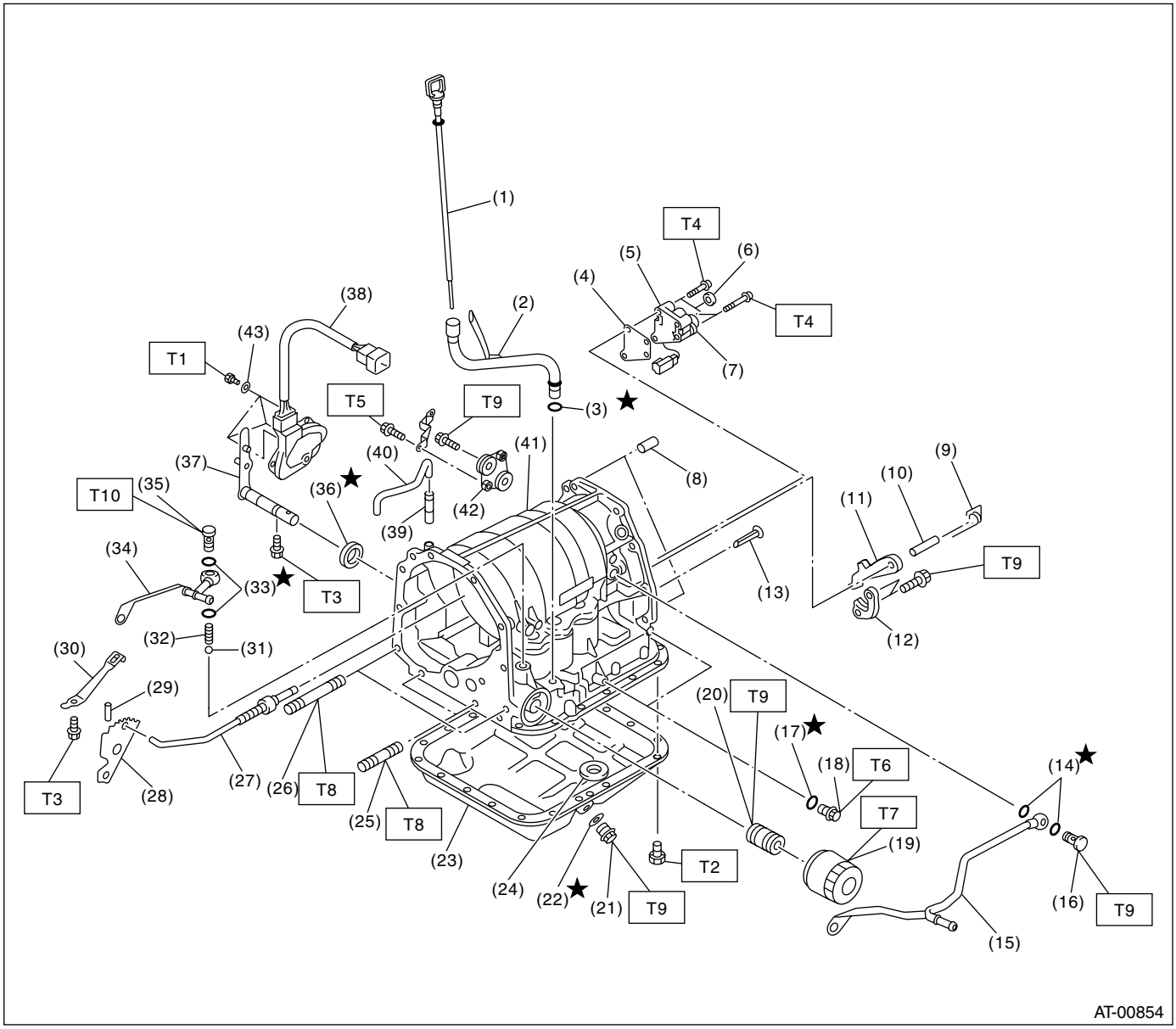
Tightening torque: N·m (kgf-m, ft-lb)
T1: 18 (1.8, 13.0)
T2: 41 (4.2, 30.4)
T3: 70 (7.1, 51.6)

2. OIL PUMP



(1)	Oil pump rotor	(11)	Gasket	(21)	Lock nut
(2)	Oil pump cover	(12)	O-ring		
(3)	Seal ring	(13)	Test plug	***Tightening torque: N·m (kgf-m, ft-lb)***	
(4)	Thrust needle bearing	(14)	Stud bolt	***T1:***	***7 (0.7, 5.1)***
(5)	Drive pinion shaft	(15)	O-ring	***T2:***	***13 (1.3, 9.4)***
(6)	Roller bearing	(16)	O-ring	***T3:***	***18 (1.8, 13.0)***
(7)	Shim	(17)	Oil seal retainer	***T4:***	***25 (2.5, 18.1)***
(8)	Oil pump housing	(18)	Oil seal	***T5:***	***40 (4.1, 30)***
(9)	Nipple	(19)	O-ring	***T6:***	***42 (4.3, 31)***
(10)	Air breather hose	(20)	Drive pinion collar	***T7:***	***116 (11.8, 85)***

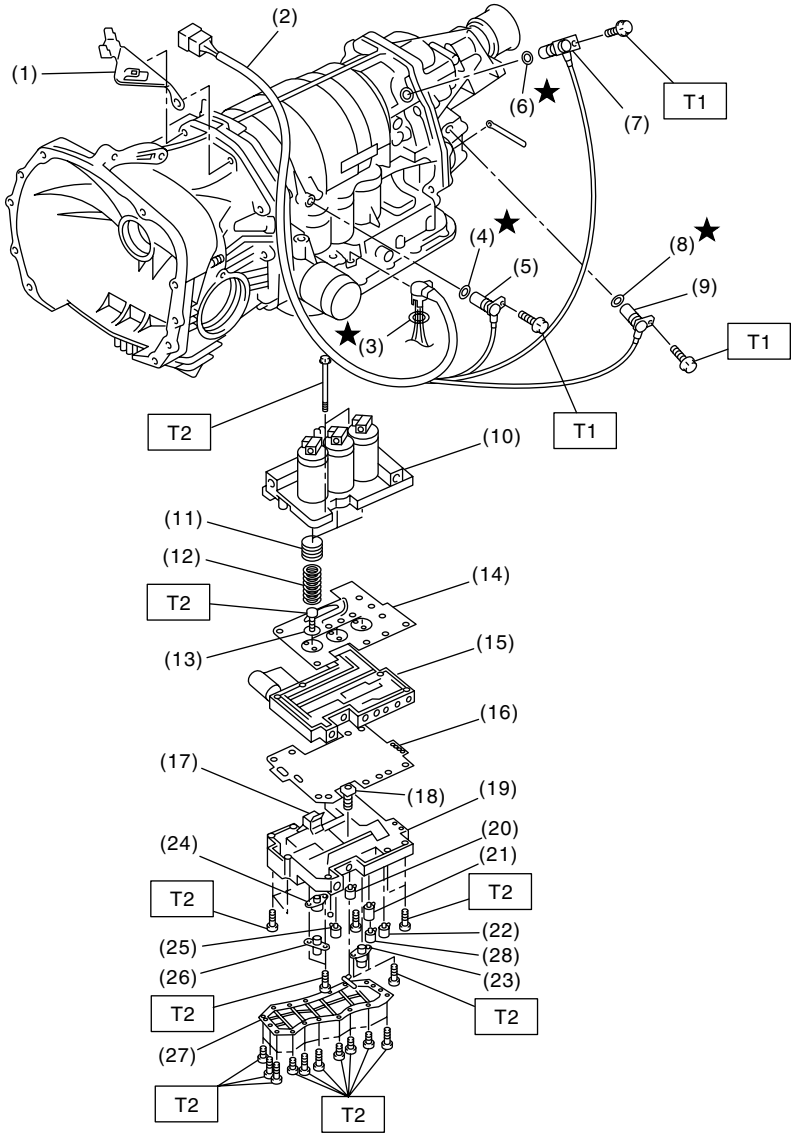
3. TRANSMISSION CASE AND CONTROL DEVICE



(1) ATF level gauge
(2) Oil charge pipe
(3) O-ring
(4) Transfer valve plate
(5) Transfer valve ASSY
(6) Transfer clutch seal
(7) Transfer duty solenoid
(8) Straight pin
(9) Return spring
(10) Shaft
(11) Parking pawl
(12) Parking support
(13) Inlet filter
(14) Gasket
(15) Inlet pipe
(16) Union screw
(17) O-ring
(18) Test plug
(19) Oil filter (Except for turbo model)
(20) Oil filter stud bolt
(21) Drain plug
(22) Gasket
(23) Oil pan
(24) Magnet
(25) Stud bolt (Short)
(26) Stud bolt (Long)
(27) Parking rod
(28) Manual plate
(29) Spring pin
(30) Detention spring
(31) Ball
(32) Spring
(33) Gasket
(34) Outlet pipe
(35) Union screw
(36) Oil seal
(37) Select lever
(38) Inhibitor switch ASSY
(39) Nipple
(40) Air breather hose
(41) Transmission case
(42) Plate ASSY
(43) Washer

Tightening torque: N·m (kgf-m, ft-lb)	
T1:	***3.5 (0.36, 2.6)***
T2:	***5 (0.5, 3.6)***
T3:	***6 (0.6, 4)***
T4:	***8 (0.8, 6)***
T5:	***12 (1.2, 8.7)***
T6:	***13 (1.3, 10)***
T7:	***14 (1.4, 10)***
T8:	***18 (1.8, 13)***
T9:	***25 (2.6, 18)***
T10:	***45 (4.6, 33)***

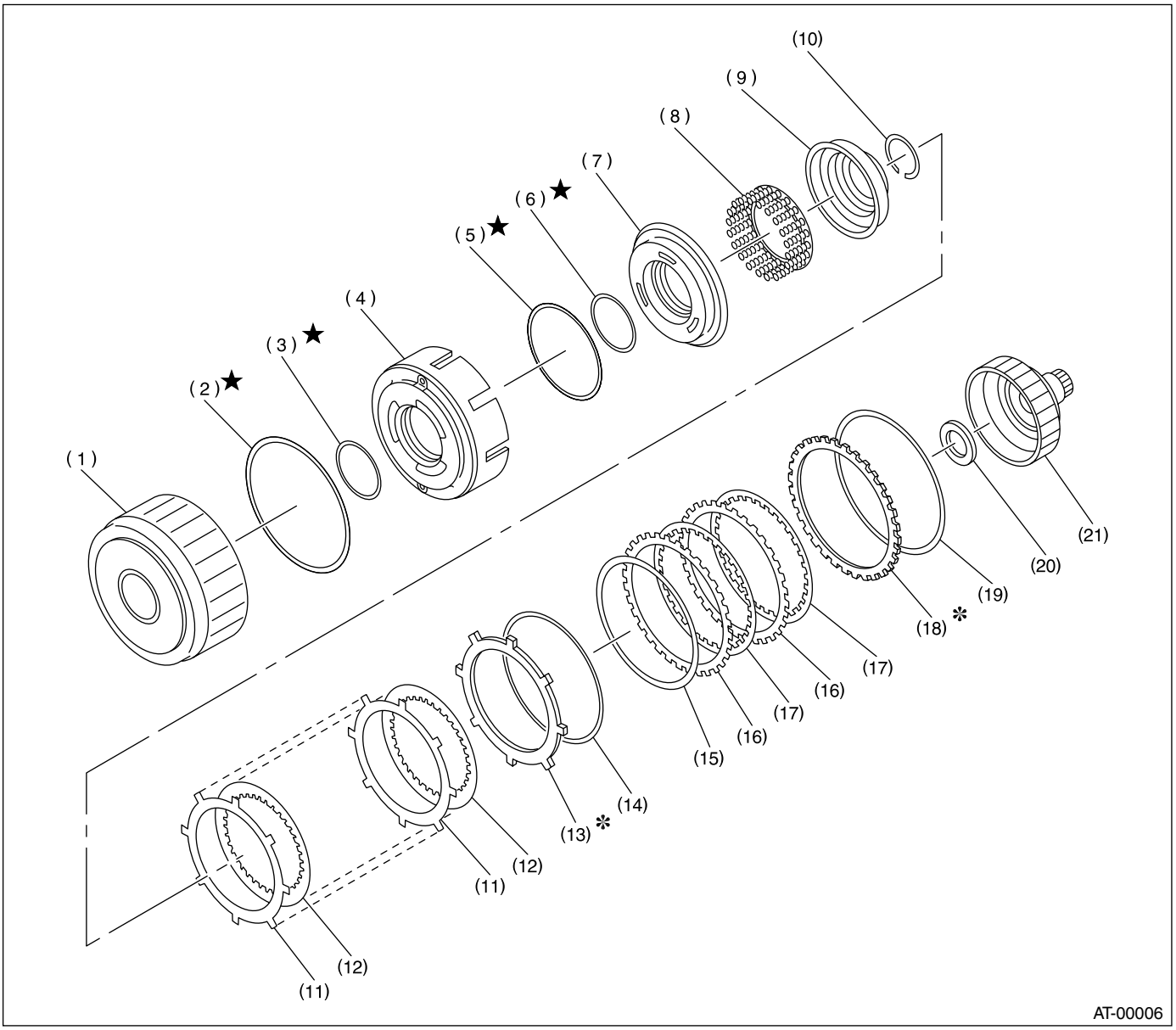
4. CONTROL VALVE AND HARNESS ROUTING



(1) Stay
(2) Transmission harness
(3) O-ring
(4) O-ring
(5) Torque converter turbine speed sensor
(6) O-ring
(7) Front vehicle speed sensor
(8) O-ring
(9) Rear vehicle speed sensor
(10) Upper valve body
(11) Accumulator piston
(12) Accumulator spring
(13) Side plate
(14) Separate plate
(15) Middle valve body
(16) Separate plate
(17) Fluid filter
(18) Fluid filter
(19) Lower valve body
(20) Shift solenoid 2
(21) Shift solenoid 1
(22) 2-4 brake timing solenoid
(23) 2-4 brake duty solenoid
(24) Line pressure duty solenoid
(25) Low clutch timing solenoid
(26) Lock-up duty solenoid
(27) Oil strainer
(28) SPORT shift solenoid (if equipped)

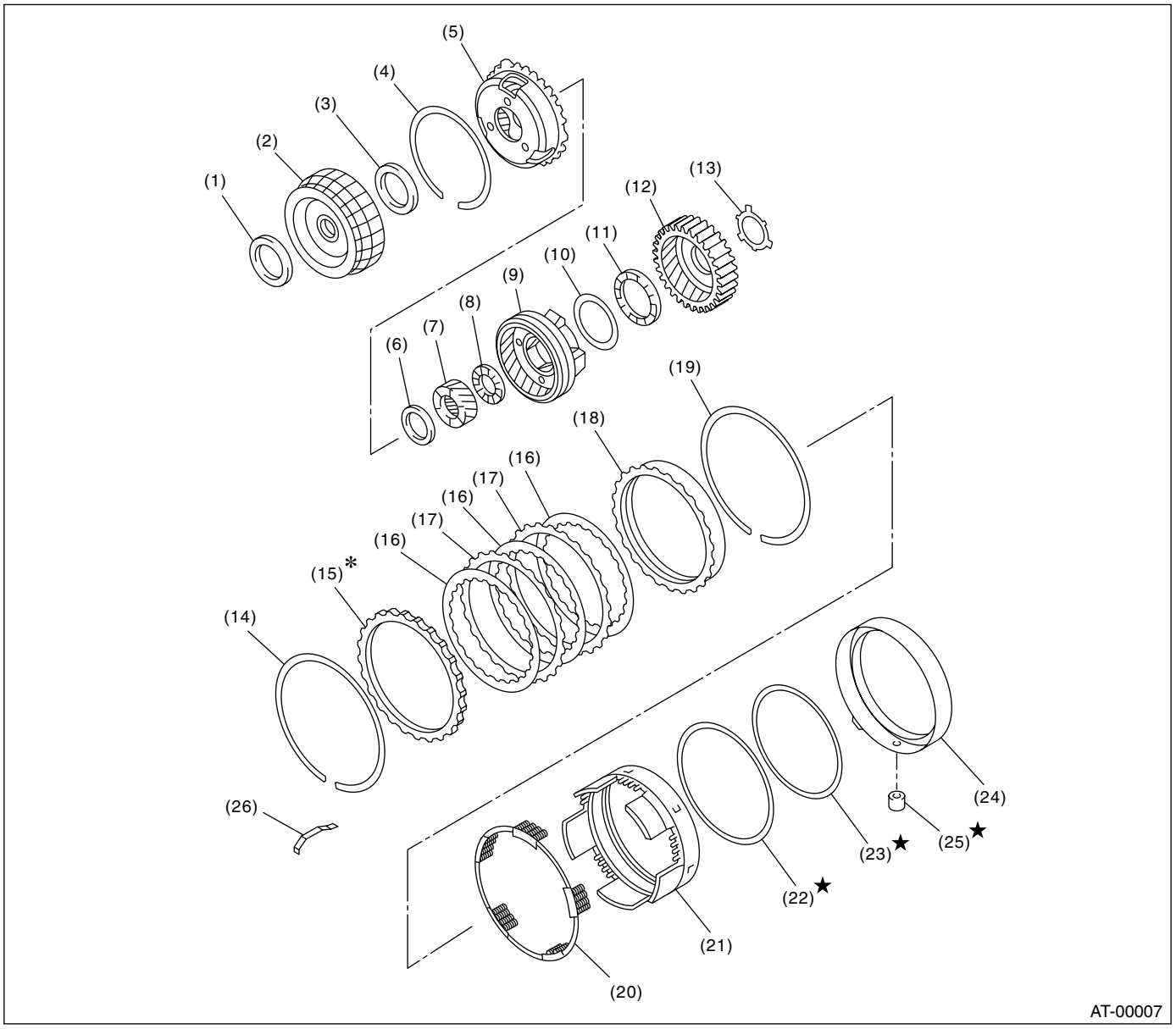
Tightening torque: N·m (kgf-m, ft-lb)
T1: 7 (0.7, 5.1)
T2: 8 (0.8, 5.8)

5. HIGH CLUTCH AND REVERSE CLUTCH



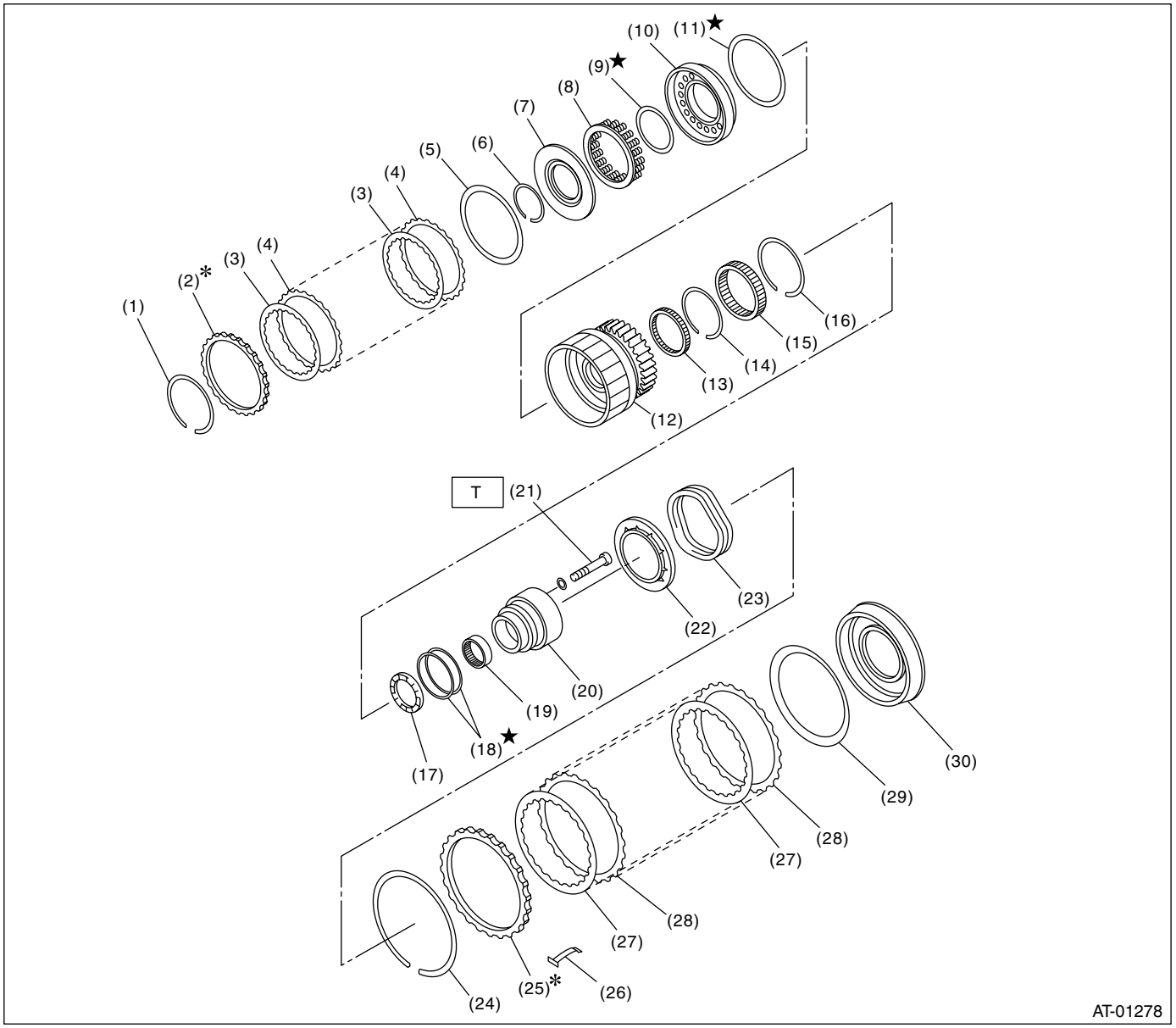
(1)	High clutch drum	(8)	Spring retainer	(15)	Dish plate
(2)	Lip seal	(9)	Cover	(16)	Driven plate (Reverse clutch)
(3)	D-ring	(10)	Snap ring	(17)	Drive plate (Reverse clutch)
(4)	Reverse clutch piston	(11)	Driven plate (High clutch)	(18)	Retaining plate (Reverse clutch)
(5)	D-ring	(12)	Drive plate (High clutch)	(19)	Snap ring
(6)	D-ring	(13)	Retaining plate (High clutch)	(20)	Thrust needle bearing
(7)	High clutch piston	(14)	Snap ring	(21)	High clutch hub

6. PLANETARY GEAR AND 2-4 BRAKE



(1) Thrust needle bearing
(2) Front sun gear
(3) Thrust needle bearing
(4) Snap ring
(5) Front planetary carrier
(6) Thrust needle bearing
(7) Rear sun gear
(8) Thrust needle bearing
(9) Rear planetary carrier
(10) Washer
(11) Thrust needle bearing
(12) Rear internal gear
(13) Washer
(14) Snap ring
(15) Retaining plate
(16) Drive plate
(17) Driven plate
(18) Pressure rear plate
(19) Snap ring
(20) Spring retainer
(21) 2-4 brake piston
(22) D-ring
(23) D-ring
(24) 2-4 brake piston retainer
(25) 2-4 brake seal
(26) Leaf spring

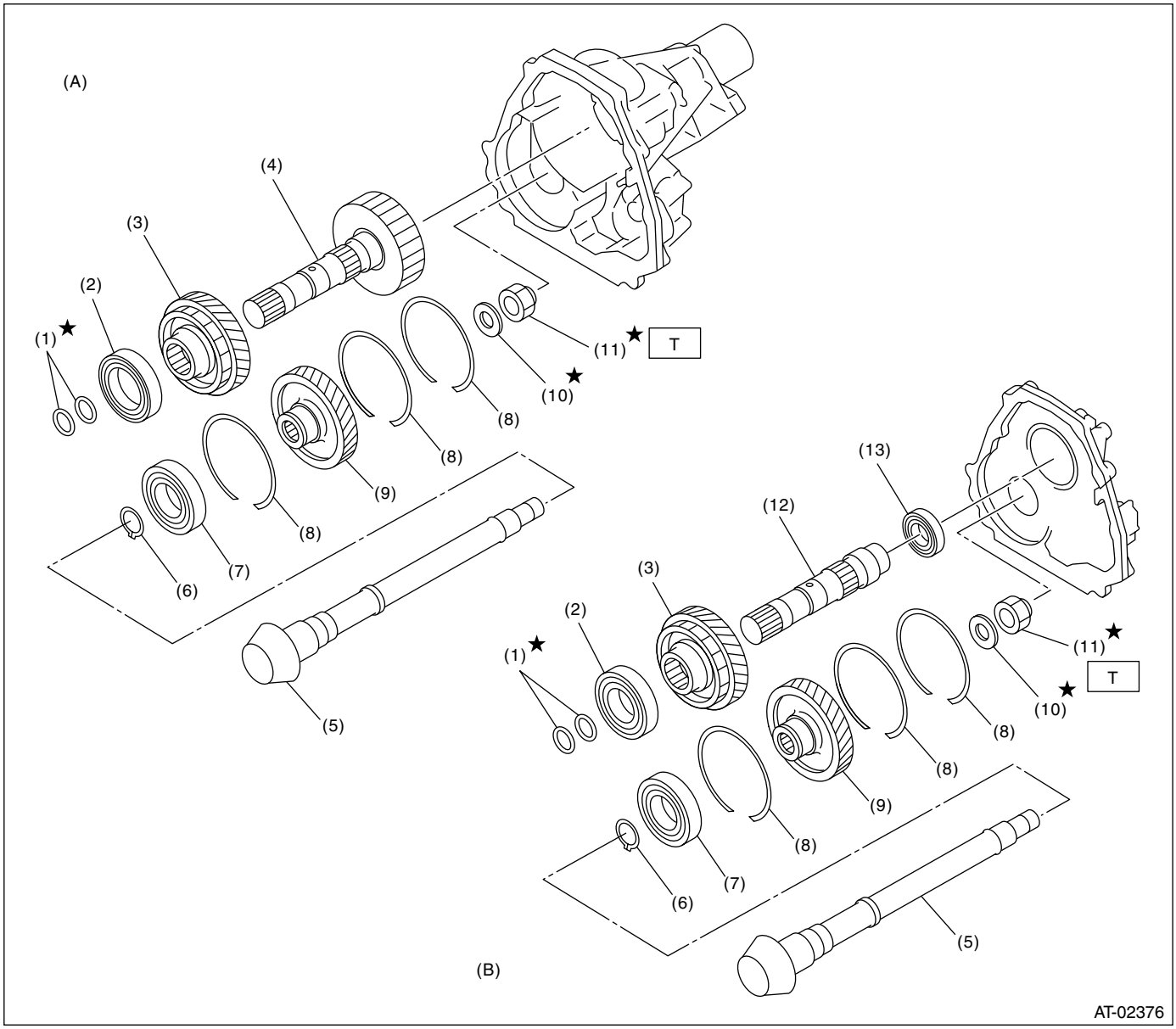
7. LOW CLUTCH AND LOW & REVERSE BRAKE



(1) Snap ring
(2) Retaining plate
(3) Drive plate
(4) Driven plate
(5) Dish plate
(6) Snap ring
(7) Cover
(8) Spring retainer
(9) D-ring
(10) Low clutch piston
(11) D-ring
(12) Low clutch drum
(13) Needle bearing
(14) Snap ring
(15) One-way clutch
(16) Snap ring
(17) Thrust needle bearing
(18) Seal ring
(19) Needle bearing
(20) One-way clutch inner race
(21) Socket bolt
(22) Spring retainer
(23) Return spring
(24) Snap ring
(25) Retaining plate
(26) Leaf spring
(27) Drive plate
(28) Driven plate
(29) Dish plate
(30) Low and reverse brake piston

Tightening torque: N·m (kgf-m, ft-lb)
T: 25 (2.5, 18.1)

8. REDUCTION GEAR WITH MPT

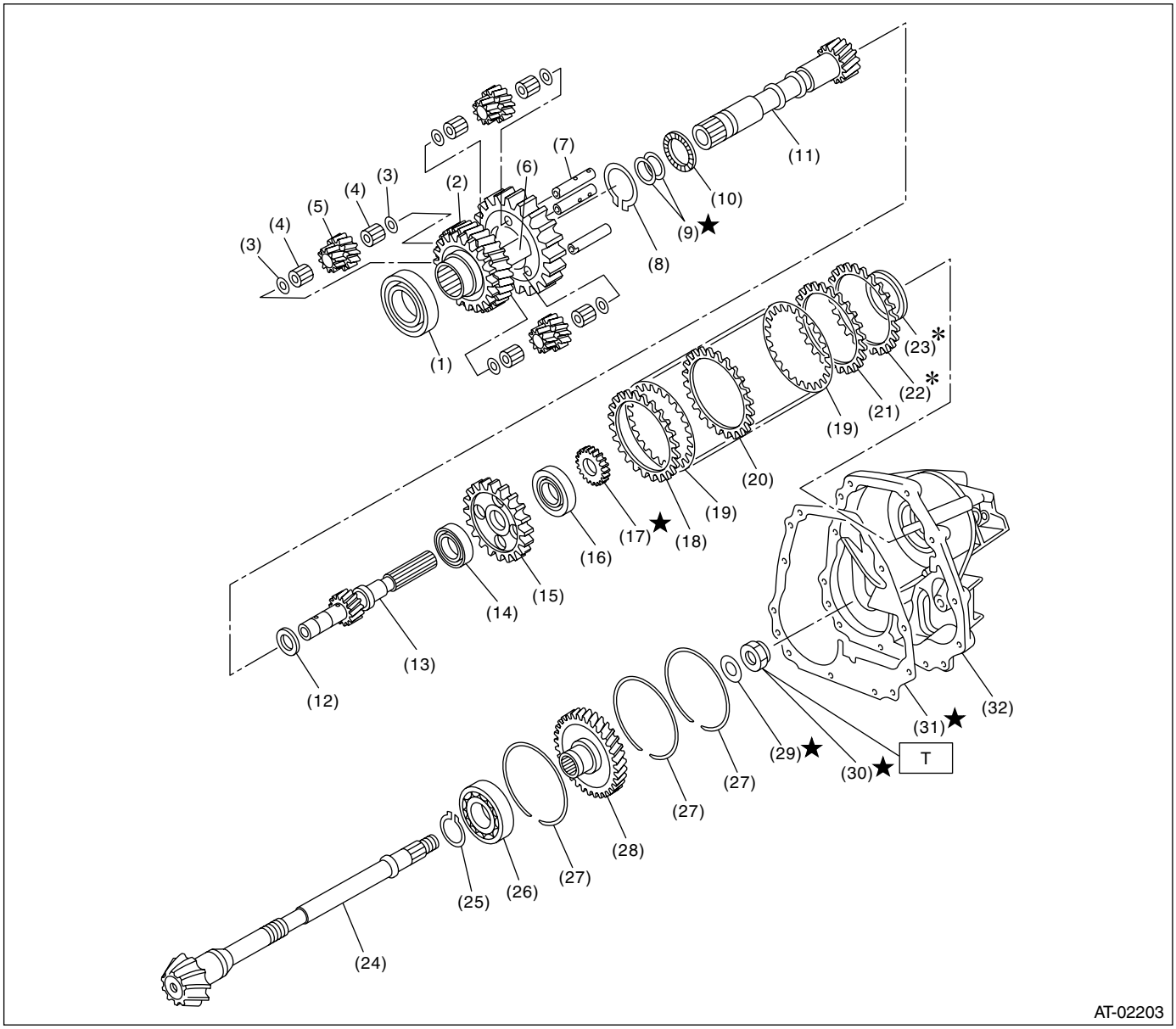


(A) AWD
(B) FWD

(1) Seal ring
(2) Ball bearing
(3) Reduction drive gear
(4) Reduction drive shaft
(5) Drive pinion shaft
(6) Snap ring
(7) Ball bearing
(8) Snap ring
(9) Reduction driven gear
(10) Washer
(11) Lock nut
(12) Reduction drive shaft
(13) Ball bearing

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

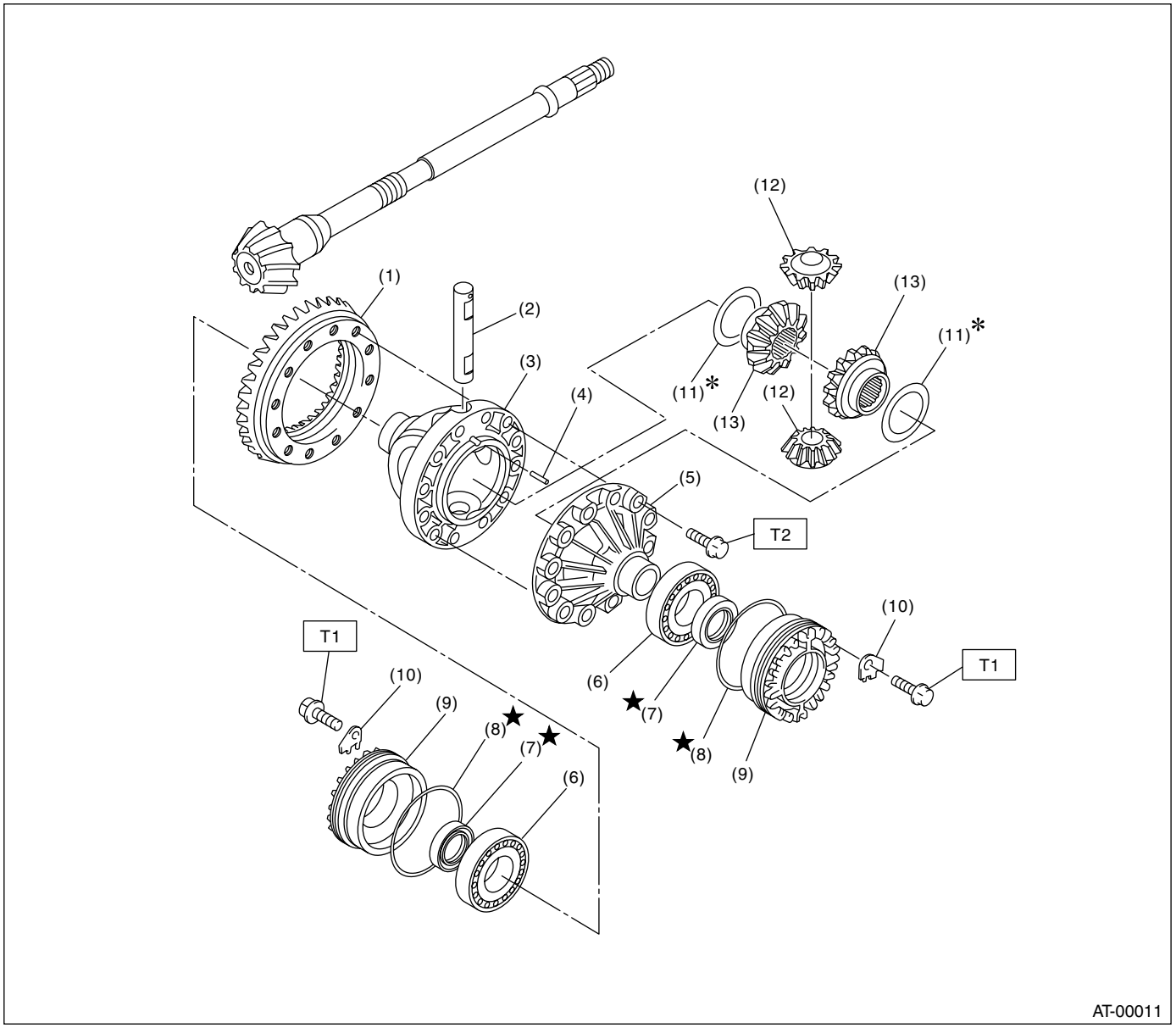
9. REDUCTION GEAR WITH VTD



(1) Ball bearing
(2) Reduction drive gear
(3) Washer
(4) Needle bearing
(5) Pinion gear
(6) Carrier
(7) Planetary pinion shaft
(8) Snap ring
(9) Seal ring
(10) Thrust needle bearing
(11) Intermediate shaft
(12) Thrust washer
(13) Rear drive shaft
(14) Ball bearing
(15) Multi-plate clutch (LSD) hub
(16) Ball bearing
(17) Revolution gear
(18) Driven plate (Thick)
(19) Driven plate
(20) Driven plate (Thin)
(21) Driven plate (Thick)
(22) Pressure plate
(23) Rear drive shaft shim
(24) Drive pinion shaft
(25) Snap ring
(26) Ball bearing
(27) Snap ring
(28) Reduction driven gear
(29) Lock washer
(30) Lock nut
(31) Gasket
(32) Extension case

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

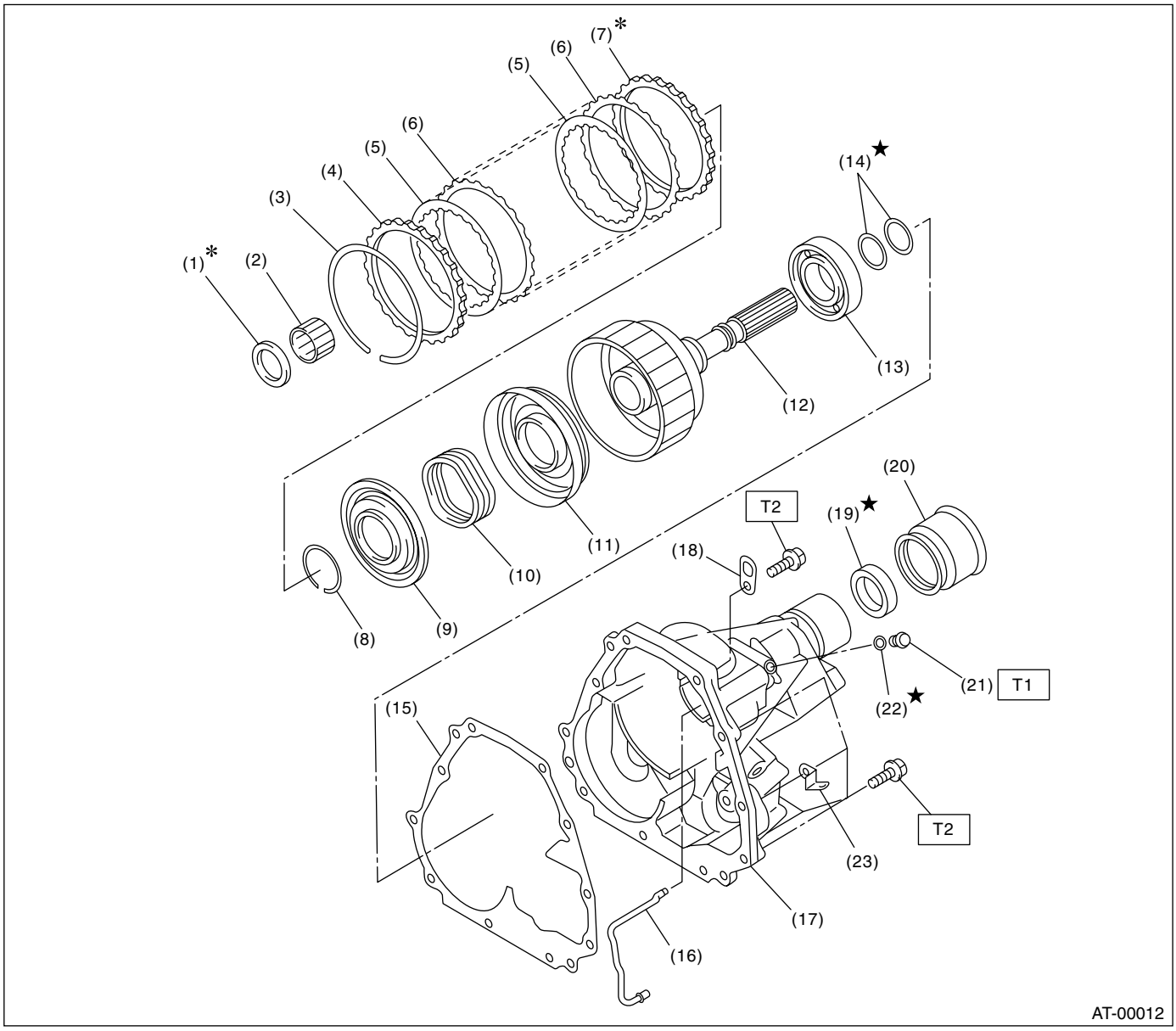
10.DIFFERENTIAL GEAR



(1) Crown gear
(2) Pinion shaft
(3) Differential case (RH)
(4) Straight pin
(5) Differential case (LH)
(6) Taper roller bearing
(7) Oil seal
(8) O-ring
(9) Differential side retainer
(10) Lock plate
(11) Washer
(12) Differential bevel pinion
(13) Differential bevel gear

Tightening torque: N·m (kgf-m, ft-lb)
T1: 25 (2.5, 18.1)
T2: 62 (6.3, 45.6)

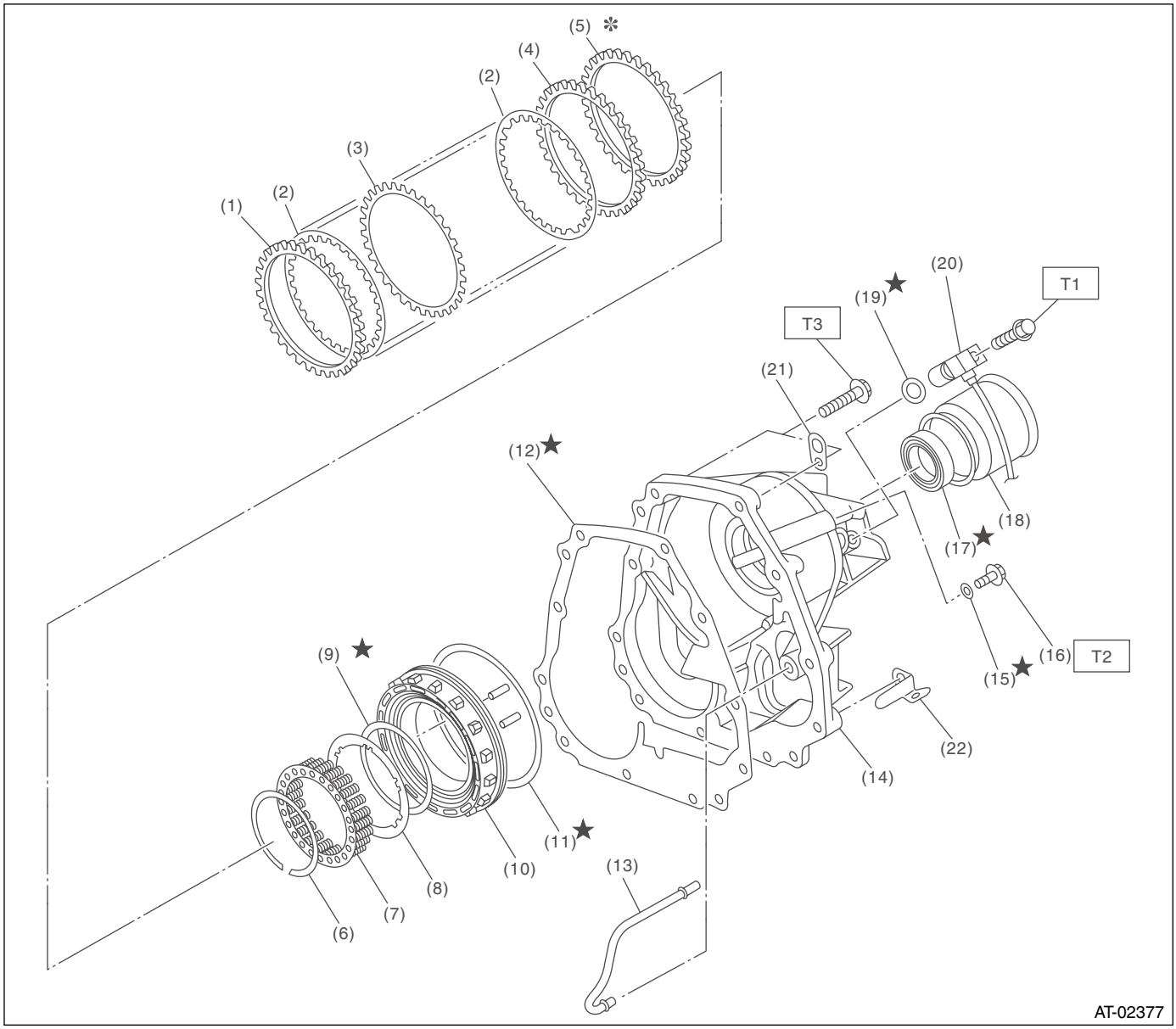
11.TRANSFER AND EXTENSION CASE WITH MPT



(1) Thrust needle bearing
(2) Needle bearing
(3) Snap ring
(4) Pressure plate
(5) Drive plate
(6) Driven plate
(7) Retaining plate
(8) Snap ring
(9) Transfer piston seal
(10) Return spring
(11) Transfer clutch piston
(12) Rear drive shaft
(13) Ball bearing
(14) Seal ring
(15) Gasket
(16) Transfer clutch pipe
(17) Extension case
(18) Transmission hanger
(19) Oil seal
(20) Dust cover
(21) Test plug
(22) O-ring
(23) Clip

Tightening torque: N·m (kgf-m, ft-lb)
T1: 13 (1.3, 9.4)
T2: 25 (2.5, 18.1)

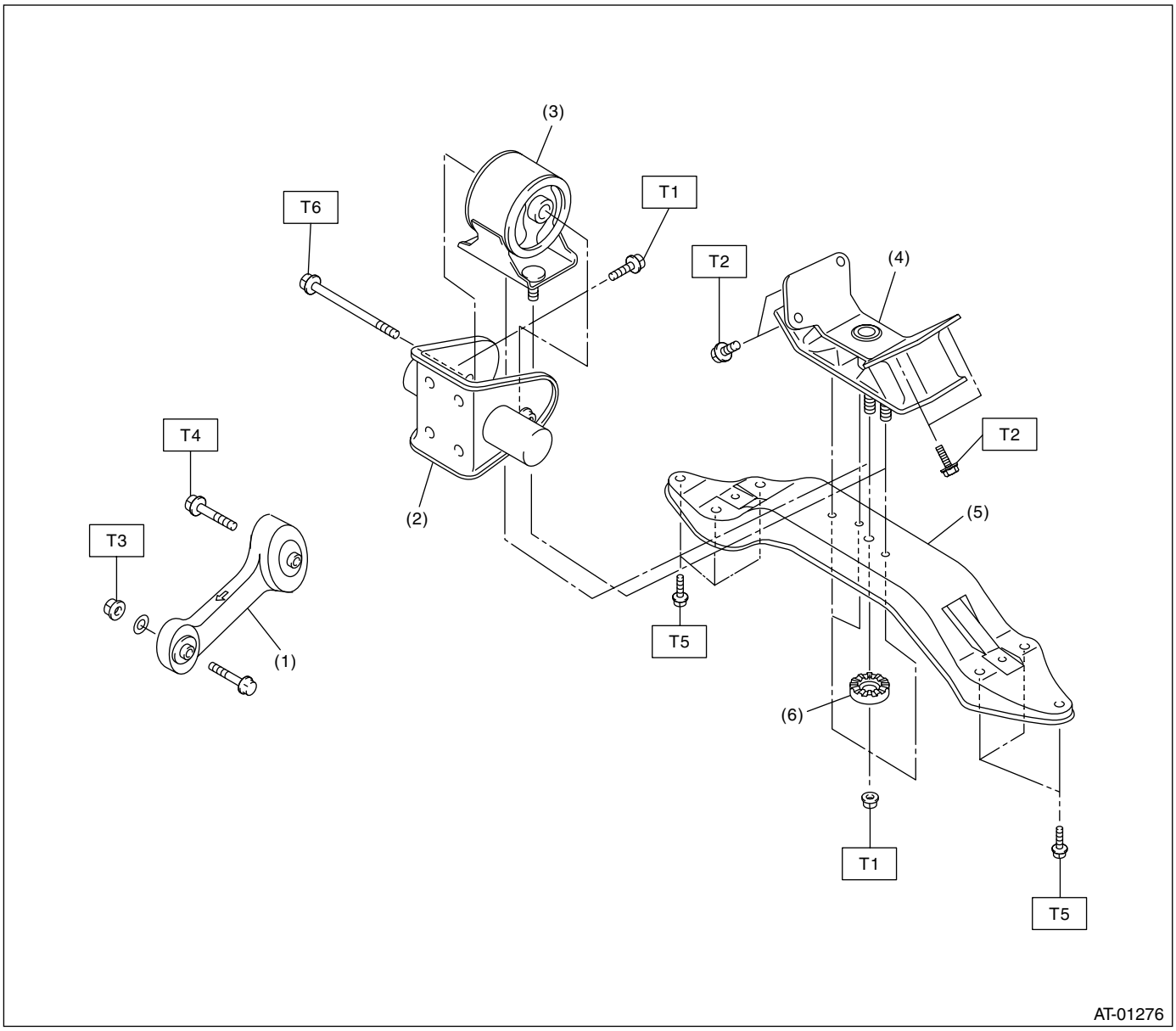
12.TRANSFER AND EXTENSION CASE WITH VTD



(1) Driven plate (Thick)
(2) Driven plate
(3) Driven plate (Thin)
(4) Driven plate (Thick)
(5) Retaining plate
(6) Snap ring
(7) Spring retainer
(8) Plate
(9) O-ring
(10) Multi-plate clutch (LSD) piston
(11) D-ring
(12) Gasket
(13) Multi-plate clutch (LSD) pipe
(14) Extension case
(15) O-ring
(16) Test plug
(17) Oil seal
(18) Dust cover
(19) O-ring
(20) Rear wheel sensor
(21) Transmission hanger
(22) Harness bracket

Tightening torque: N·m (kgf-m, ft-lb)
T1: 7 (0.7, 5.1)
T2: 13 (1.3, 9.4)
T3: 25 (2.5, 18.1)

13.TRANSMISSION MOUNTING



(1) Pitching stopper
(2) Rear bracket (FWD model)
(3) Rear cushion rubber (FWD model)
(4) Rear cushion rubber (AWD model)
(5) Crossmember
(6) Stopper

Tightening torque: N·m (kgf-m, ft-lb)
T1: 35 (3.6, 26)
T2: 39 (4.0, 29)
T3: 50 (5.1, 37)
T4: 58 (5.9, 43)
T5: 70 (7.1, 51)
T6: 123 (12.5, 90)

C: CAUTION

• Wear working clothing, including a cap, protective goggles and protective shoes during operation.
• Remove contamination including dirt and corrosion before removal, installation, and disassembly.
• Keep the disassembled parts in order and protect them from dust or dirt.
• Until the oil pan is removed, do not place with the oil pan inner side facing up to prevent foreign matter from entering the valve body.
• Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
• When disassembling the case and other light alloy parts, use a plastic hammer to open. Do not pry it apart with a screwdriver or other tool.
• Be careful not to burn your hands, because each part on the vehicle is hot after running.
• Do not mix gear oil, grease etc. with that of another grade or from other manufacturers.
• Be sure to tighten fasteners including bolts and nuts to the specified torque.
• Place shop jacks or rigid racks at the specified points.
• Apply ATF or gear oil onto sliding or revolution surfaces before installation.
• Replace deformed or otherwise damaged snap rings with new ones.
• Before installing O-rings or oil seals, apply sufficient amount of ATF to avoid damage and deformation.
• Be careful not to incorrectly install or fail to install O-rings, snap rings and other such parts.
• Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or shop cloth between the part and the vise.
• Avoid damaging the mating surface of the case.
• Before applying sealant, completely remove the old seal.

D: PREPARATION TOOL

1. SPECIAL TOOLS

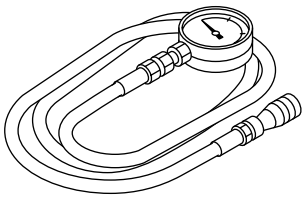
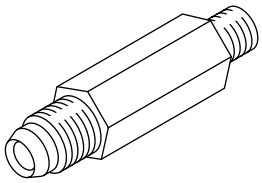
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498575400	498575400	OIL PRESSURE GAUGE ASSY	Used for measuring oil pressure.
 ST-498897200	498897200	ADAPTER	Used oil pump housing when measuring reverse clutch pressure and line pressure.

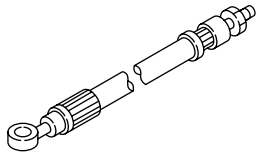
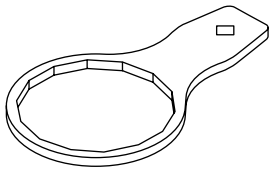
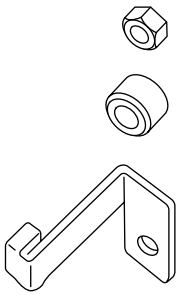
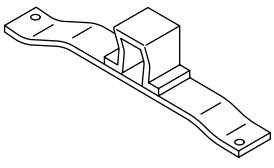
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498897700	498897700	ADAPTER SET	Used for measuring transfer clutch pressure.
 ST-498545400	498545400	FILTER WRENCH	Used for removing and installing ATF filter.
 ST-498277200	498277200	STOPPER SET	Used for removing and installing automatic transmission assembly to engine.
 ST41099AA010	41099AA010	ENGINE SUPPORT BRACKET	• Used for supporting engine. • Used with ENGINE SUPPORT (41099AA020).

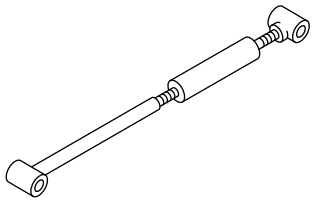
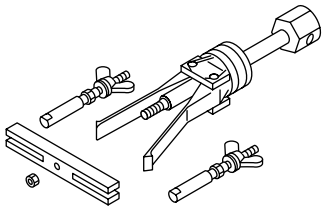
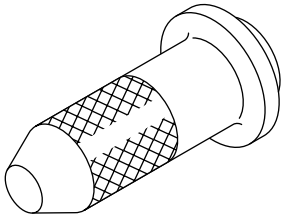
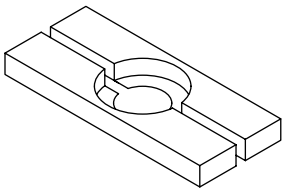
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST41099AA020	41099AA020	ENGINE SUPPORT	• Used for supporting engine. • Used with ENGINE SUPPORT BRACKET (41099AA010).
 ST-398527700	398527700	PULLER ASSY	• Used for removing extension case roller bearing. • Used for removing extension oil seal. • Used for removing front differential side retainer bearing outer race. • Used for removing front differential side retainer bearing outer ball race.
 ST-498057300	498057300	INSTALLER	Used for installing extension oil seal.
 ST-498077000	498077000	REMOVER	Used for removing differential taper roller bearing.

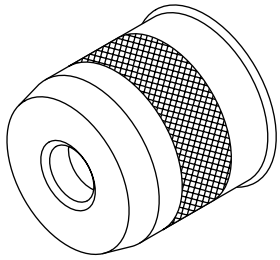
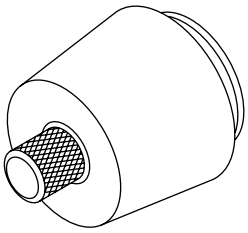
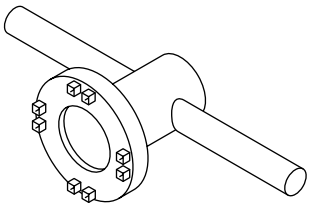
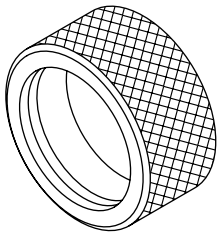
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499247400	499247400	INSTALLER	• Used for installing transfer outer snap ring. • Used with GUIDE (499257300).
 ST-499257300	499257300	SNAP RING OUTER GUIDE	• Used for installing transfer outer snap ring. • Used with INSTALLER (499247400).
 ST-499787000	499787000	WRENCH ASSY	Used for removing and installing differential side retainer.
 ST-398437700	398437700	DRIFT	Used for installing converter case oil seal.

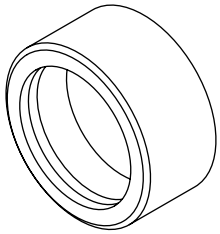
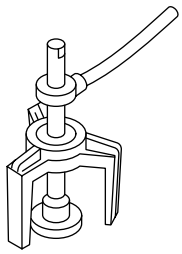
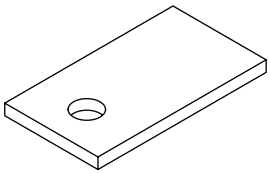
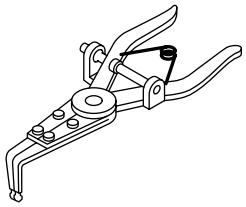
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398487700	398487700	INSTALLER	Used for installing taper roller bearing of front differential.
 ST-398673600	398673600	COMPRESSOR	Used for removing and installing clutch spring.
 ST-498255400	498255400	PLATE	Used for measuring backlash of hypoid gear.
 ST-399893600	399893600	PLIERS	Used for removing and installing clutch spring.

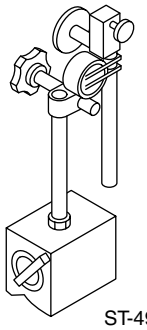
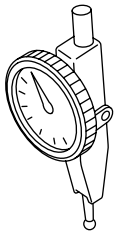
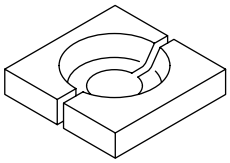
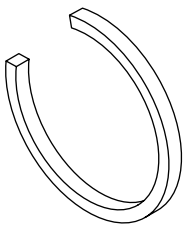
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498247001	498247001	MAGNET BASE	• Used for measuring gear backlash. • Used with DIAL GAUGE (498247100).
 ST-498247100	498247100	DIAL GAUGE	• Used for measuring gear backlash. • Used with MAGNET BASE (498247001).
 ST-498517000	498517000	REPLACER	Used for removing front roller bearing.
 ST-398623600	398623600	SEAT	Used for removing spring of transfer clutch piston.

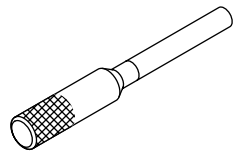
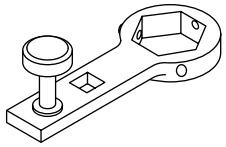
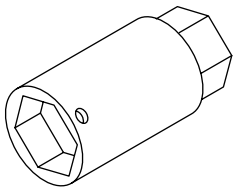
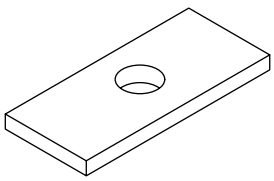
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499267300	499267300	STOPPER PIN	Used for installing inhibitor switch.
 ST-499787700	499787700	WRENCH	Used for removing and installing drive pinion lock nut.
 ST-499787500	499787500	ADAPTER	Used for removing and installing drive pinion lock nut.
 ST-398643600	398643600	GAUGE	Used for measuring total end play, extension end play and drive pinion height.

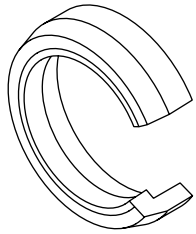
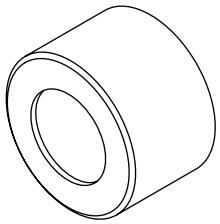
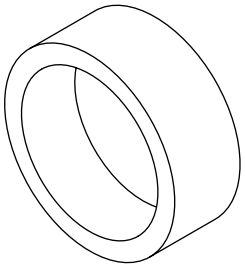
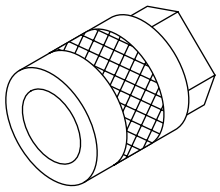
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498627100	498627100	SEAT	Used for holding low clutch piston retainer spring when installing snap ring.
 ST-499577000	499577000	GAUGE	• Used for measuring the transmission case mating surface to the reduction gear end surface. • For MPT model.
 ST-398744300	398744300	GAUGE	• Use for measuring contact face between multiplate clutch end and transmission. • For VTD model.
 ST-499737000	499737000	PULLER	Used for removing reduction driven gear assembly.

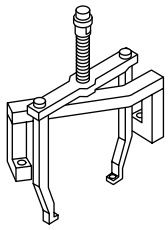
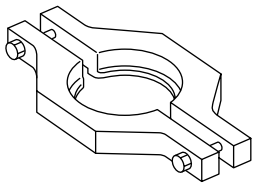
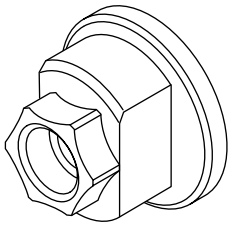
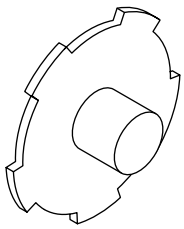
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499737100	499737100	PULLER SET	Used for removing reduction drive gear assembly.
 ST-498077600	498077600	REMOVER	Used for removing ball bearing.
 ST-498937110	498937110	HOLDER	Used for removing and installing drive pinion lock nut.
 ST-498677100	498677100	COMPRESSOR	Used for installing 2-4 brake snap ring.

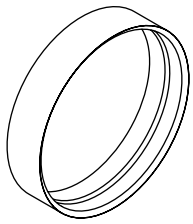
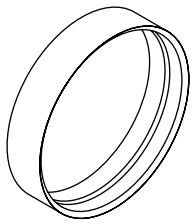
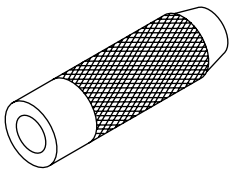
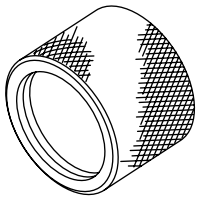
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498437000	498437000	HIGH CLUTCH PISTON GUIDE	Used for installing high clutch piston.
 ST-498437100	498437100	LOW CLUTCH PISTON GUIDE	Used for installing low clutch piston.
 ST-899580100	899580100	INSTALLER	Used for press-fitting the ball bearing for transfer clutch.
 ST18675AA000	18675AA000	DIFFERENTIAL OIL SEAL INSTALLER	Used for installing differential side retainer oil seal.

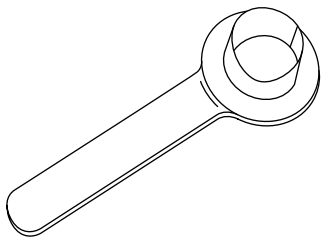
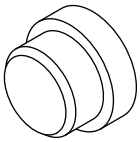
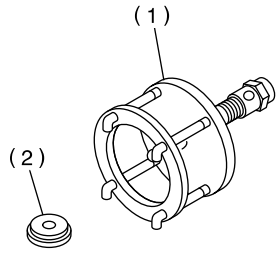
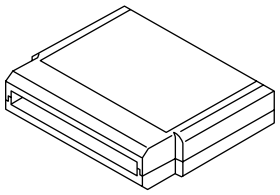
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST28399SA010	28399SA010	OIL SEAL PROTECTOR	Used for installing front drive shaft.
 ST-398497701	398497701	SEAT	Used for installing needle bearing.
 ST-899524100	899524100	PULLER SET	• Using the bolt only. (1) Bolt • Used with PULLER SET (499737100). • Used with PULLER (499737000). (1) Puller (2) Cap
 ST24082AA230	24082AA230	CARTRIDGE	Troubleshooting for electrical systems.

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST22771AA030	22771AA030	SUBARU SELECT MONITOR KIT	Troubleshooting for electrical system. • English: 22771AA030 (Without printer) • German: 22771AA070 (Without printer) • French: 22771AA080 (Without printer) • Spanish: 22771AA090 (Without printer)

2. GENERAL PURPOSE TOOLS

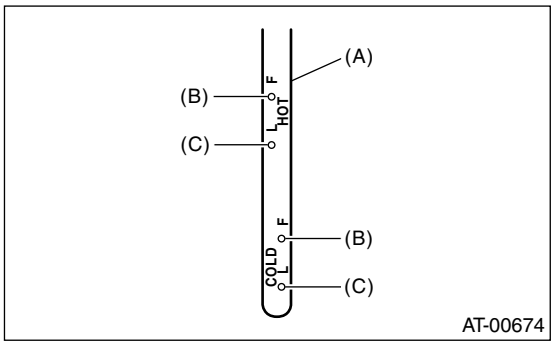
TOOL NAME	REMARKS
Depth gauge	Used for measuring transmission end play.
Thickness gauge	Used for measuring clearances of clutch, brake and oil pump.
Micro meter	Used for measuring thickness of drive pinion.
Spring balance	Used for measuring starting torque of drive pinion.
Circuit tester	Used for measuring resistance and voltage.
TORX® T70	Used for removing and installing differential gear oil drain plug.
Push/pull gauge	Used for measuring low & reverse and high clutch piston stroke.

2. Automatic Transmission Fluid

A: INSPECTION

NOTE:
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 to 10 km (3 to 6 miles). Otherwise, idle the engine to raise ATF temperature to 70 — 80°C (158 — 176°F) on SUBARU Select Monitor. <Ref. to 4AT(diag)-21, READ CURRENT DATA, OPERATION, Subaru Select Monitor.>
2) Make sure the vehicle is level.
3) After selecting all positions (P, R, N, D, 3, 2, 1), set the select lever in "P" range. Measure the ATF level with the engine idling for one or two minutes.



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

4) Make sure that ATF level is between the upper level and lower level at HOT side.
If the level is below the lower level, check for leaks in the transmission. If there are leaks, it is necessary to repair or replace gasket, oil seals, plugs or other parts.
5) If the ATF level is below the center between upper and lower marks, fill the recommended ATF until the ATF level is found above the center between upper and lower marks.

CAUTION:
• Use care not to exceed the upper level.
• Filling of ATF to the upper level when the transmission is cold will result in overfilling of ATF, causing a transmission failure.

6) Check ATF level after raising ATF temperature to 70 — 80°C (158 — 176°F) by during the distance of 5 to 10 km (3 to 6 miles) or by idling the engine again.

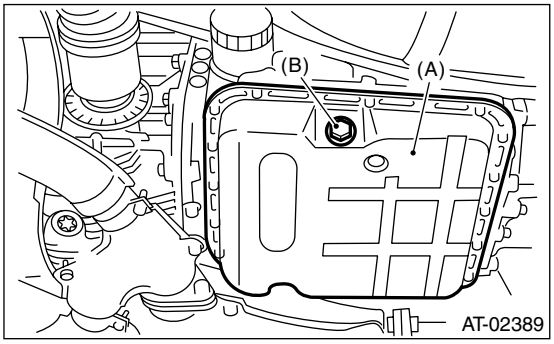
B: REPLACEMENT

1) Lift-up the vehicle.
2) Drain the ATF completely.

CAUTION:
Directly after the engine has been running, the ATF is hot. Be careful not to burn yourself.

3) Check the ATF condition. <Ref. to 4AT-32, CONDITION CHECK, Automatic Transmission Fluid.>
4) Replace with a new gasket, and then tighten the ATF drain plug.

Tightening torque:
25 N·m (2.5 kgf-m, 18.1 ft-lb)



(A) Oil pan
(B) ATF drain plug

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

Recommended fluid:
Dexron III type automatic transmission fluid

Capacity:
Fill the same amount of ATF drained from drain plug hole.

Capacity when transmission is overhauled:
1.6 L FWD model:
8.0 — 8.3 ℓ (8.5 — 8.8 US qt, 7.0 — 7.3 Imp qt)
1.6 L AWD and 2.0 L Non-turbo model:
8.4 — 8.7 ℓ (8.9 — 9.2 US qt, 7.4 — 7.7 Imp qt)
2.5 L and 2.0 L Turbo model:
9.3 — 9.6 ℓ (9.8 — 10.1 US qt, 8.2 — 8.4 Imp qt)

7) Check the level and leaks of ATF.
<Ref. to 4AT-31, INSPECTION, Automatic Transmission Fluid.>

C: CONDITION CHECK

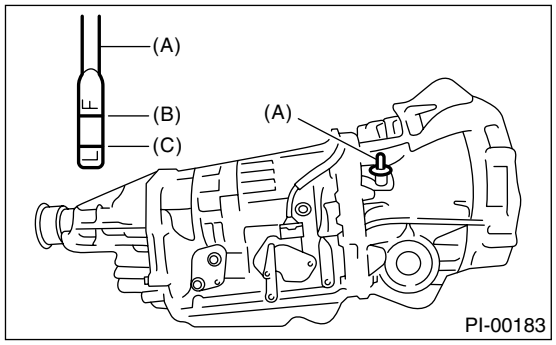
NOTE:
When replacing ATF, check the inside condition of the transmission body by inspecting the drained ATF.

Fluid condition	Trouble and possible cause	Corrective action
Large amount of metallic pieces are found.	Excessive wear of the internal of the transmission body.	Replace ATF and check if AT operates correctly.
Thick and varnish-form fluid.	Burned clutch and etc.	Replace ATF and check AT itself and vehicle for faulty.
Clouded fluid or bubbles are found in fluid.	Water mixed in fluid.	Replace ATF and check the water entering point.

3. Differential Gear Oil

A: 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 it again and note the reading. If the differential gear oil level is below the “L” line, fill oil to bring the level up to the “F” line.
5) To prevent overfilling the differential gear oil, do not add oil above the “F” line.



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

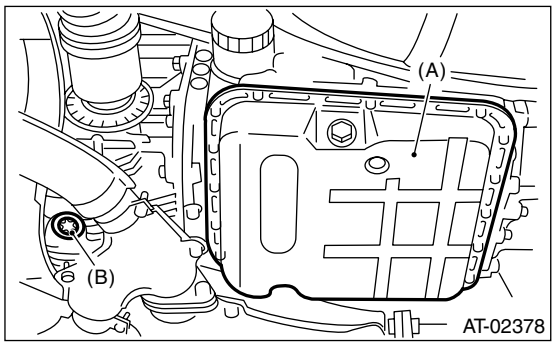
B: REPLACEMENT

1) Lift-up the vehicle.
2) Remove the differential gear oil drain plug using TORX® T70, and then drain the differential gear oil completely.

CAUTION:
• Directly after the engine has been running, the differential gear oil is hot. Be careful not to burn yourself.
• Be careful not to spill the differential gear oil on exhaust pipe to prevent it from emitting smoke or fire. When the differential gear oil is spilled on exhaust pipe, wipe it away completely.

3) Replace the gasket with a new one, and then tighten the differential gear oil drain plug using TORX® T70.

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



(A) Oil pan
(B) Differential oil drain plug

4) Lower the vehicle.
5) Pour gear oil into the gauge hole.

Recommended fluid:
<Ref. to RM-3, LUBRICANTS, RECOMMENDED MATERIALS, Recommended Materials.>

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

6) Check the level of differential gear oil.
<Ref. to 4AT-33, INSPECTION, Differential Gear Oil.>

4. Road Test

A: INSPECTION

1. GENERAL PRECAUTION

Road tests should be conducted to properly diagnose the condition of the automatic transmission.

NOTE:
When performing the test, do not exceed posted speed limit.

2. D RANGE SHIFT FUNCTION

Check shifting between 1st ←→ 2nd ←→ 3rd ←→ 4th while driving on normal city streets.

3. D RANGE SHIFT SHOCK

Check the shock level when shifting up during normal driving.

4. KICK-DOWN FUNCTION

Check kick-down for each gear. Also check the kick-down shock level.

5. ENGINE BRAKE OPERATION

- Check the 3rd gear engine brake when shifting between D ←→ 3rd range while driving in 4th gear of D range [50 to 60 km/h (31 to 37 MPH)].
- Check the 2nd gear engine brake when shifting between 3 ←→ 2 range while driving in the 3 range 3rd gear [40 to 50 km/h (25 to 31 MPH)].
- Check the 1st gear engine brake when shifting between 2 ←→1 range while driving in the 2 range 2nd gear [20 to 30 km/h (12 to 19 MPH)].

6. LOCK-UP FUNCTION

Check that engine speed does not change sharply when the acclelerator pedal is lightly depressed when driving on flat roads at normal speed in D range.

7. P RANGE OPERATION

Stop the vehicle on an uphill grade of 5% or more and shift to “P” range. Check that the vehicle does not move when the parking brake is released.

8. UNUSUAL SOUNDS AND VIBRATION

Check for unusual sounds and vibration while driving and during shifting.

9. CLIMBING CONTROL FUNCTION

- Check that the gear remains in 3rd when going up a grade.
- Check that the gear remains in 3rd when applying the brakes while going down a grade.

10.TRANSFER CLUTCH

Check if the tight corner braking occurs when the vehicle is started with steering wheel held at fully turned position. (MPT model)

11.OIL LEAKS

After the driving test, inspect for oil leaks.

5. Stall Test

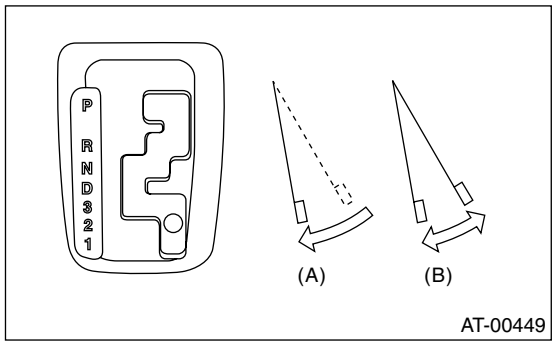
A: INSPECTION

NOTE:
The stall test is of extreme importance in diagnosing the condition of the automatic transmission and the engine. It should be conducted to measure the engine stall speeds in “R” and “2” ranges.

Purposes of the stall test:

- To check the operation of the automatic transmission clutch.
- To check the operation of the torque converter clutch.
- To check engine performance.

1) Check that throttle valve opens fully.
2) Check that engine oil level is correct.
3) Check that coolant level is correct.
4) Check that ATF level is correct.
5) Check that differential gear oil level is correct.
6) Increase ATF temperature to 70 to 80°C (158 to 176°F) by idling the engine for approx. 30 minutes (with select lever set to “N” or “P”).
7) Place the wheel chocks at the front and rear of all wheels and engage the parking brake.
8) Move the manual linkage to ensure it operates properly, and shift the select lever to the “2” range. Turn hold switch ON.
9) While forcibly depressing the foot brake pedal, gradually depress the accelerator pedal until the engine operates at full throttle.



(A) Brake pedal
(B) Accelerator pedal

10) When the engine speed is stabilized, record that speed quickly and release the accelerator pedal.
11) Shift the select lever to “N” range, and cool down the engine by idling it for more than one minute.
12) If the stall speed in “2” range is higher than specifications, low clutch slipping and 2-4 brake slipping may occur. To identify it, conduct the same test as above in “R” range.
13) Perform the stall tests with the select lever in “D” range. Turn hold switch OFF.

NOTE:

- Do not continue the stall test for MORE THAN 5 SECONDS at a time (from closed throttle, fully open throttle to stall speed reading). Failure to follow this instruction causes the engine oil and ATF to deteriorate and the clutch and brake to be adversely affected.
- Be sure to cool down the engine for at least 1 minute after each stall test with the select lever set in the “P” or “N” range and with the idle speed lower than 1,200 rpm.
- If the stall speed is higher than the specified range, attempt to finish the stall test in as short a time as possible, in order to prevent the automatic transmission from sustaining damage.

Stall speed (at sea level):

1.6 L model: 2,400 — 3,000 rpm
2.0 L Non-turbo model: 2,200 — 2,700 rpm
2.0 L Turbo model: 2,900 — 3,500 rpm
2.5 L model: 2,100 — 2,600 rpm

Stall Test

Stall speed (at sea level)	Position	Cause
Less than specifications	2 (HOLD switch ON), R	• Throttle valve not fully open • Erroneous engine operation • Torque converter clutch's one-way clutch slipping
Greater than specifications	D	• Line pressure too low • Low clutch slipping • One-way clutch malfunction
	R	• Line pressure too low • Reverse clutch slipping • Low & reverse brake slipping
	2 (HOLD switch ON)	• Line pressure too low • Low clutch slipping • 2-4 brake slipping

6. Time Lag Test

A: INSPECTION

NOTE:
If the select lever is shifted while the engine is idling, there will be a certain time elapse or lag before the shock can be felt. This is used for checking the condition of the low clutch, reverse clutch, low & reverse brake and one-way clutch.

- Perform the test at normal operating fluid temperature 70 to 80°C (158 to 176°F).
- Be sure to allow a 1 minute interval between tests.
- Make three measurements and take the average value.

1) Fully apply the parking brake.
2) Start the engine.
Check the idling speed (A/C OFF).
3) Shift the select lever from “N” to “D” range.
Using a stop watch, measure the time it takes from shifting the lever until the shock is felt.
Time lag: Less than 1.2 seconds
If “N” → “D” time lag is longer than specified:

- Line pressure too low
- Low clutch worn
- One-way clutch not operating properly
- D-ring worn

4) In the same manner, measure the time lag for “N” → “R”.
Time lag: Less than 1.5 seconds
If “N” → “R” time lag is longer than specified:

- Line pressure too low
- Reverse clutch worn
- Low & reverse brake worn
- D-ring worn

7. Line Pressure Test

A: MEASUREMENT

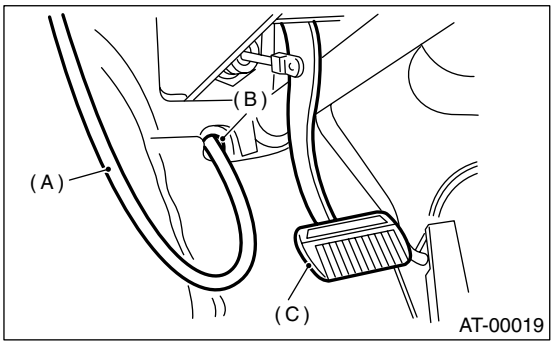
NOTE:
If the clutch or the brake shows a sign of slippage or shifting sensation is not correct, the line pressure should be checked.

• Excessive shocks during upshifting or shifting takes place at a higher point than under normal circumstances, may be due to the line pressure being too high.

• Slippage or inability to operate the vehicle may, in most cases, be due to loss of oil pressure for the operation of the clutch, brake or control valve.

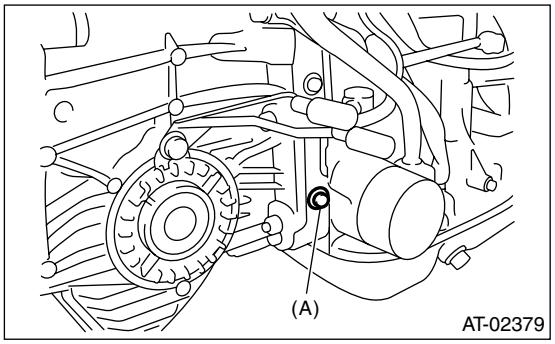
1) Line pressure measurement (under no load)
   (1) Before measuring the line pressure, jack-up all wheels.
   (2) Maintain the temperature of ATF at approx. 70 — 80°C (158 — 176°F) during measurement. (ATF will reach the above temperature after idling the engine for approx. 30 minutes with select lever in “N” or “P”.)
2) Line pressure measurement (under heavy load)
   (1) Before measuring the line pressure, apply both foot and parking brakes with all wheels chocked (Same as for “stall” test conditions).
   (2) Measure the line pressure when select lever is in “R”, “2” (HOLD switch ON) with engine under stall conditions.
   (3) Measure the line pressure within 5 seconds after shifting the select lever to each position. (If line pressure needs to be measured again, allow the engine to idle, and then stop it to cool down for at least one minute.)
   (4) Maintain the temperature of ATF at approx. 70 — 80°C (158 — 176°F) during measurement (ATF will reach the above temperature after idling the engine for approx. 30 minutes with the select lever in “N” or “P”.)
3) Temporarily attach the ST to a suitable place in the driver’s compartment, remove the blind plug located in front of the toe board and pass the hose of the ST to engine compartment.

ST 498575400 OIL PRESSURE GAUGE ASSY



(A) Pressure gauge hose
(B) Hole in toe board (blank cap hole)
(C) Brake pedal

4) Remove the test plug and install the ST instead.
ST 498897200 OIL PRESSURE GAUGE ADAPTER



(A) Test plug

5) Connect the ST1 with ST2.
ST1 498897200 OIL PRESSURE GAUGE ADAPTER
ST2 498575400 OIL PRESSURE GAUGE ASSY

6) Check for duty ratio changes by opening and closing the throttle valve using SUBARU Select Monitor.

Standard line pressure			
Range position	Line pressure duty ratio (%)	Throttle position	Line pressure kPa (kg/cm^2, psi)
2 (HOLD switch ON)	5	Full open	1,130 — 1,275 (11.5 — 13.0, 164 — 185)
R	5	Full open	1,520 — 1,716 (15.5 — 17.5, 220 — 249)
D	95	Full closed	300 — 410 (3.1 — 4.2, 44 — 60)

8. Transfer Clutch Pressure Test

A: INSPECTION

• MPT MODEL

Check the transfer clutch pressure in accordance with the following chart in the same manner as with line pressure. <Ref. to 4AT-38, Line Pressure Test.>

ST 498897700 OIL PRESSURE ADAPTER SET

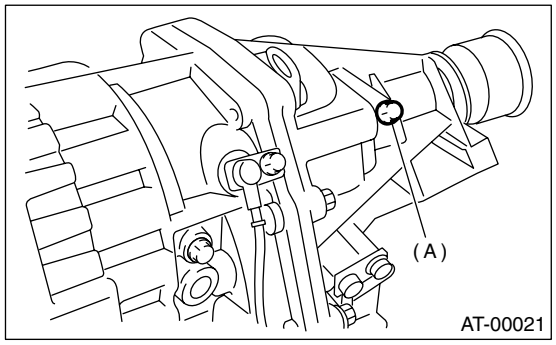
ST 498575400 OIL PRESSURE GAUGE ASSY

AWD mode: “D” range

FWD mode: “P” range, engine speed 2,000 rpm

If oil pressure is not produced or if it does not change in the AWD mode, the transfer duty solenoid or transfer valve assembly may be malfunctioning. If oil pressure is produced in the FWD mode, the problem is similar to that in the AWD mode.

NOTE:
Before setting in FWD mode, install the spare fuse on FWD mode switch.



(A) Test plug

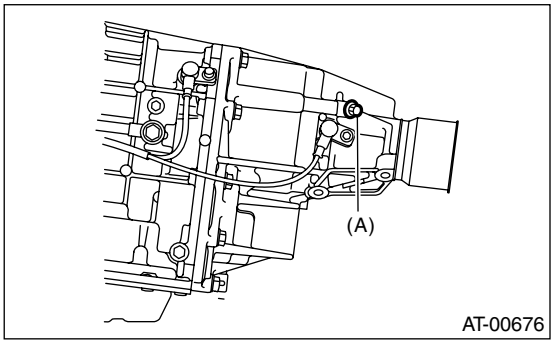
NOTE:
If the oil pressure is not produced or if it does not change in the AWD mode, the transfer duty solenoid or transfer valve assembly may be malfunctioning. If the oil pressure is produced in the FWD mode, the problem is similar to that in the AWD mode.

• VTD MODEL

Check transfer clutch pressure using the following chart. <Ref. to 4AT-38, Line Pressure Test.>

ST 498897700 OIL PRESSURE ADAPTER SET

ST 498575400 OIL PRESSURE GAUGE ASSY



(A) Test plug

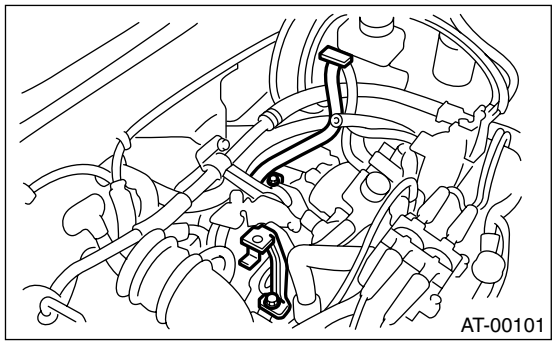
STANDARD TRANSFER CLUTCH PRESSURE:

Range position	ON Duty ratio (%)	Acceleration opening angle (%)	AWD mode Transfer clutch pressure (kPa (kg/cm^2, psi))	FWD mode Transfer clutch pressure (kPa (kg/cm^2, psi))
2	95	100 (Fully opens)	910 — 1,070 (9.3 — 10.9, 132 — 155)	—
2	60	Adjust ON Duty ratio to 60%. (Target 10%)	410 — 490 (4.2 — 5.0, 59 — 71)	—
N or P	5	0 (Fully closed)	0	—
2	5	0 (Fully closed)	—	0

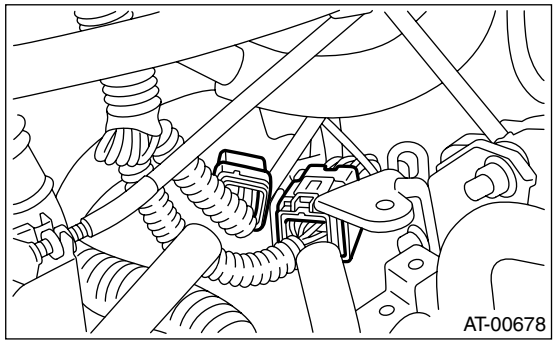
9. Automatic Transmission Assembly

A: REMOVAL

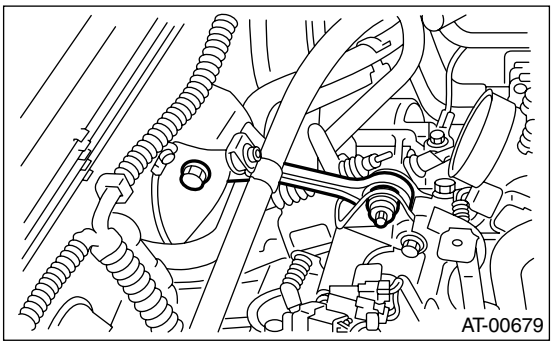
1) Set the vehicle on a lift.
2) Open the front hood fully, and support it with stay.
3) Disconnect the battery ground cable.
4) Remove the air intake duct. (Non-turbo model)
<Ref. to IN(H4SO)-6, REMOVAL, Air Intake Duct.>
5) Remove the air cleaner case or air intake chamber. (Non-turbo model)
<Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
6) Remove the intercooler. (Turbo model)
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
7) Remove the air cleaner case stay. (Non-turbo model)



8) Disconnect the following connectors.
(1) Transmission harness connector

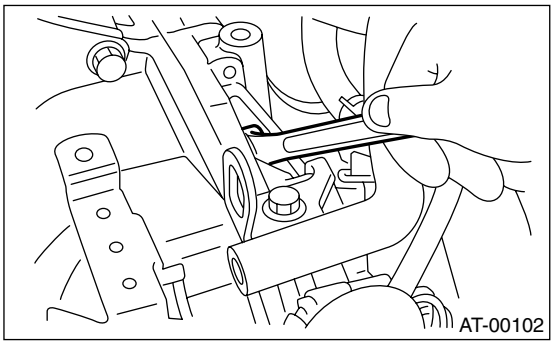


(2) Transmission ground terminal
9) Remove the starter.
2.0 L Non-turbo and 2.5 L models
<Ref. to SC(H4SO)-7, REMOVAL, Starter.>
2.0 L Turbo model
<Ref. to SC(H4SO)-7, REMOVAL, Starter.>
10) Remove the pitching stopper.

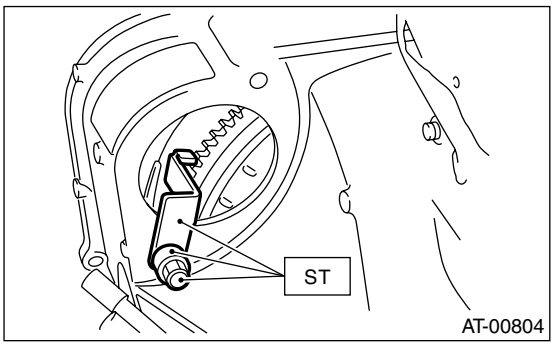


11) Separate the torque converter clutch from drive plate.
(1) Remove the service hole plug.
(2) Remove the bolts which hold torque converter clutch to drive plate.
(3) While rotating the engine, remove the other bolts using ST.

CAUTION:
Be careful not to drop the bolts into torque converter clutch housing.

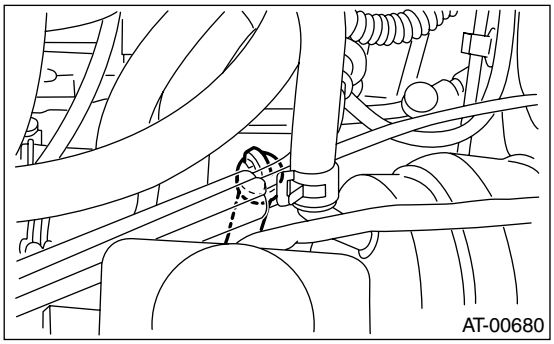


12) Install the ST to converter case.
ST 498277200 STOPPER SET



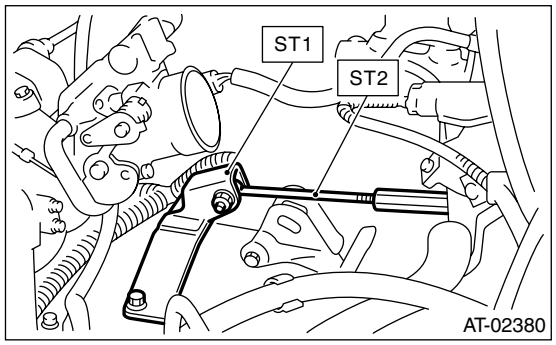
13) Remove the ATF level gauge.

NOTE:
Plug the opening to prevent an entry of foreign particles into transmission fluid.

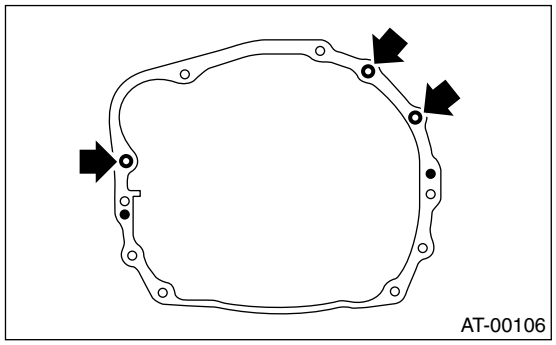


14) Remove the pitching stopper bracket.
15) Set the ST.

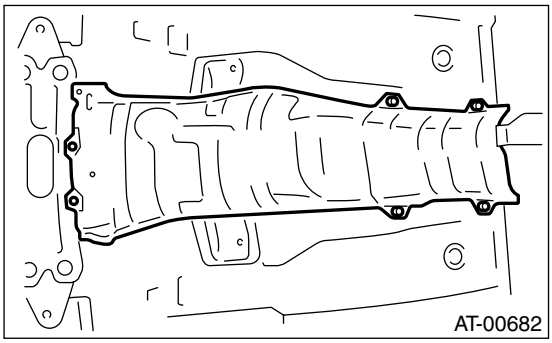
ST1	41099AA010	ENGINE SUPPORT BRACKET
ST2	41099AA020	ENGINE SUPPORT



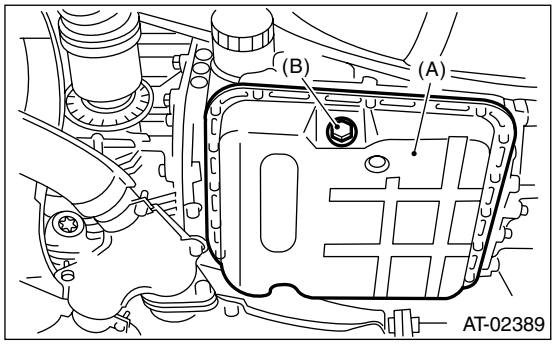
16) Remove the bolt which holds the right upper side of transmission to engine.



17) Lift-up the vehicle.
18) Remove the under cover.
19) Remove the front, center and rear exhaust pipe, and muffler. (Non-turbo model)
<Ref. to EX(H4SO)-6, REMOVAL, Front Exhaust Pipe.>, <Ref. to EX(H4SO)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, REMOVAL, Muffler.>
20) Remove the center and rear exhaust pipes, and muffler. (Turbo model)
<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, REMOVAL, Muffler.>
21) Remove the heat shield cover. (If equipped)

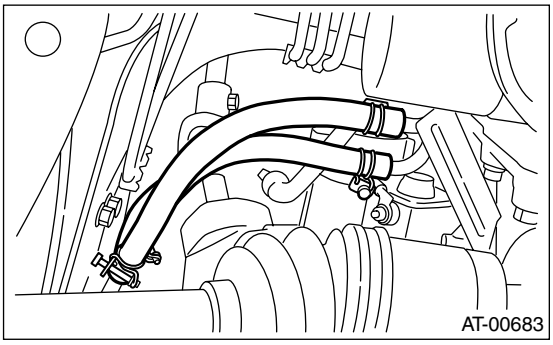


22) Drain ATF to remove the ATF drain plug.



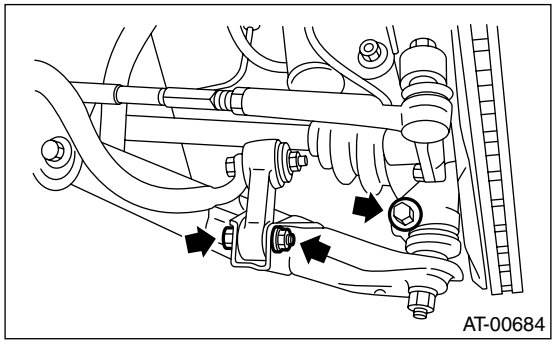
(A) Oil pan
(B) Drain plug

23) Disconnect the ATF cooler hoses from pipes of transmission side, and remove the oil charge pipe.

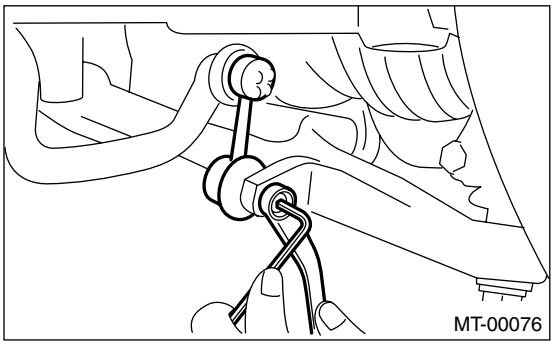


24) Remove the propeller shaft.
<Ref. to DS-16, REMOVAL, Propeller Shaft.>
25) Remove the shift select cable. <Ref. to CS-13, REMOVAL, Select Cable.>
26) Disconnect the stabilizer link from transverse link.
27) Remove the bolt securing ball joint of transverse link to housing.

• WAGON MODEL



• SEDAN MODEL



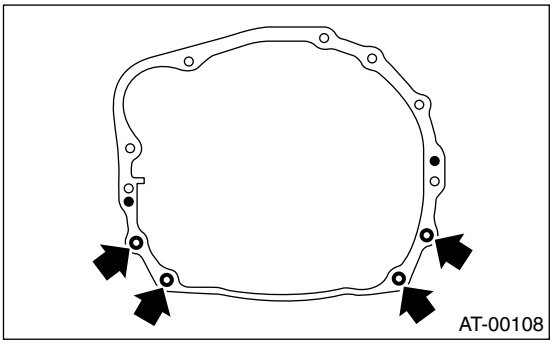
28) Pull out the front drive shaft from transmission.
(1) Using a tire lever or a pinch bar, etc., pull out the front drive shaft until its joint facing to transmission can move smoothly.

NOTE:
Place cloth between tire lever or pinch bar and transmission in order to avoid damaging the side retainer of transmission.

(2) Hold the transmission side joint portion of front drive shaft by hand and extract the housing from the transmission by pressing it outside so as not to stretch the boot.

29) Remove the bolts which hold the clutch housing cover.

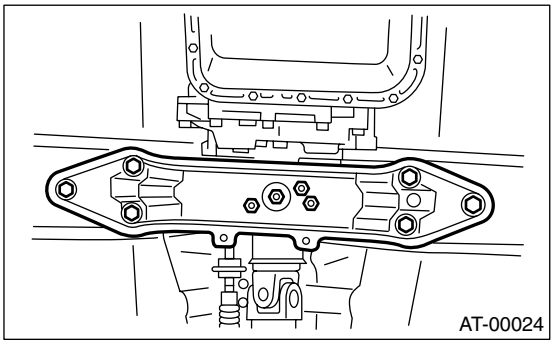
30) Remove the nuts which hold the lower side of transmission to engine.



31) Place the transmission jack under transmission.

NOTE:
Make sure that the support plates of transmission jack don't touch the oil pan.

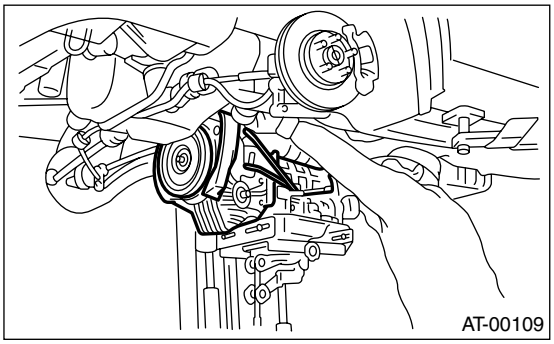
32) Remove the transmission rear crossmember from vehicle.



33) While gradually lowering the transmission jack, fully contract the engine support and tilt the engine rearward.

34) Remove the transmission.

CAUTION:
Remove the transmission and torque converter as a unit away from engine.



35) Separate the transmission assembly and rear cushion rubber.

B: INSTALLATION

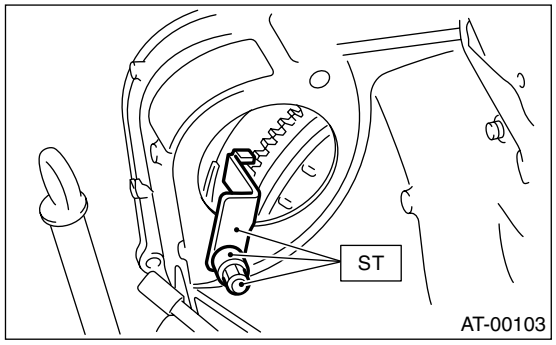
1) Replace the differential side oil seal with new one.

NOTE:
Replacement is not necessary when new oil seal has been installed.

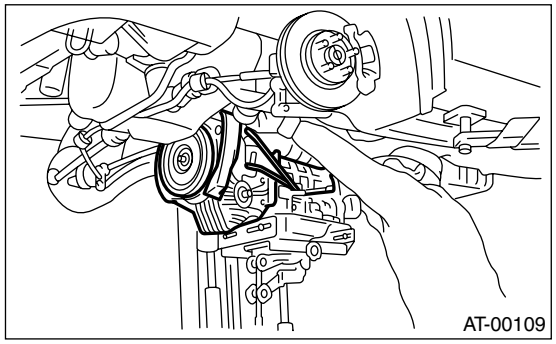
2) Install the rear cushion rubber to transmission assembly.

Tightening torque:
39 N·m (4.0 kgf-m, 29 ft-lb)

3) Install the ST to converter case.
ST 498277200 STOPPER SET

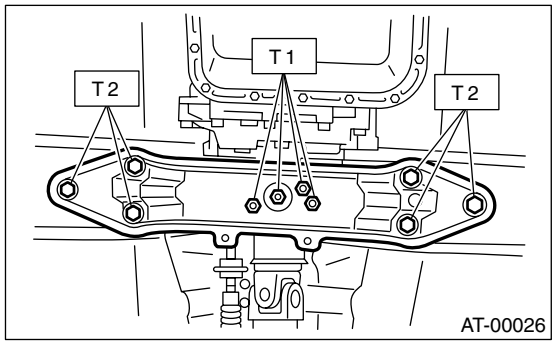


4) Install the transmission onto engine.
(1) Gradually raise the transmission with transmission jack.



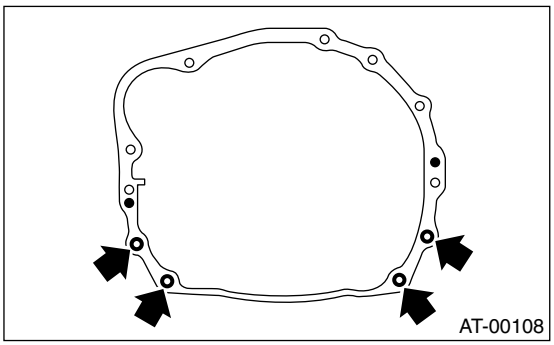
(2) Engage them at splines.
(3) While gradually lifting the transmission jack, turn the screw of engine support, and then tilt the engine forward.
5) Install the transmission rear crossmember.

Tightening torque:
T1: 35 N·m (3.6 kgf-m, 26 ft-lb)
T2: 70 N·m (7.1 kgf-m, 51 ft-lb)



6) Take off the transmission jack.
7) Tighten the nuts and bolts which hold the lower side of transmission to engine.

Tightening torque:
50 N·m (5.1 kgf-m, 36.9 ft-lb)

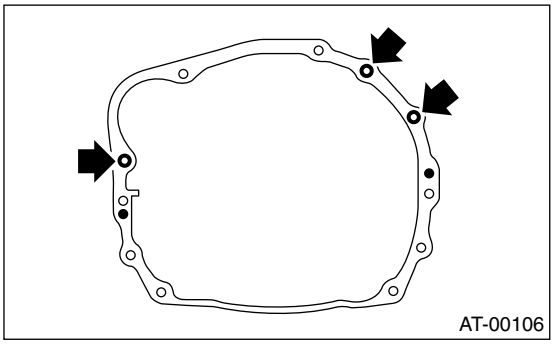


8) Tighten the bolt of clutch housing cover.
9) Lower the vehicle.
10) Connect the engine and transmission.
(1) Remove the ST from converter case.

NOTE:
Be careful not to drop the ST into converter case when removing ST.
ST 498277200 STOPPER SET

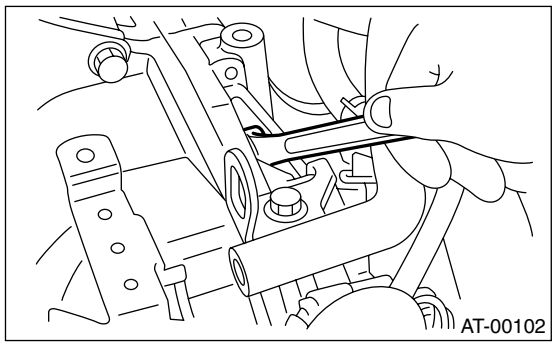
(2) Install the starter.
<Ref. to SC(H4SO)-7, INSTALLATION, Starter.>
(3) Tighten the bolt which holds the upper side of transmission to engine.

Tightening torque:
50 N·m (5.1 kgf-m, 36.9 ft-lb)



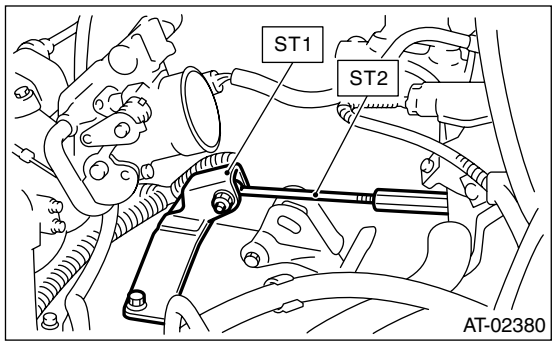
11) Install the torque converter clutch to drive plate.
(1) Tighten the bolts which hold the torque converter clutch to drive plate.
(2) Tighten the other bolts while rotating the engine by using ST.

Tightening torque:
25 N·m (2.5 kgf-m, 18.1 ft-lb)



(3) Clog the plug onto service hole.
(4) Install the V-belt cover.

12) Remove the ST.

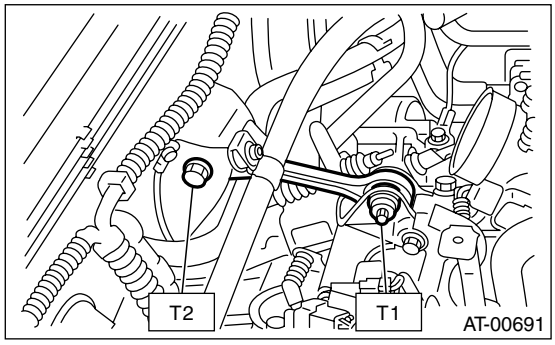


13) Install the pitching stopper bracket.

Tightening torque:
41 N·m (4.1 kgf-m, 30.0 ft-lb)

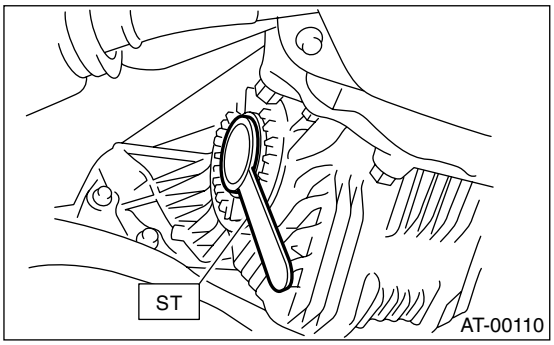
14) Install the pitching stopper.

Tightening torque:
T1: 50 N·m (5.1 kgf-m, 37 ft-lb)
T2: 58 N·m (5.9 kgf-m, 43 ft-lb)

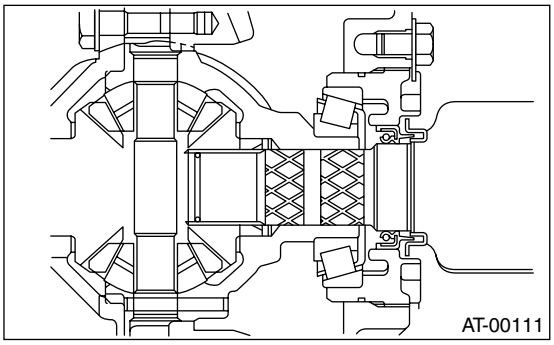


15) Lift-up the vehicle.
16) Replace the snap ring of front drive shaft with a new one.
17) Apply grease to the oil seal lips.
18) Install the ST to side retainer.

ST 28399SA010 OIL SEAL PROTECTOR



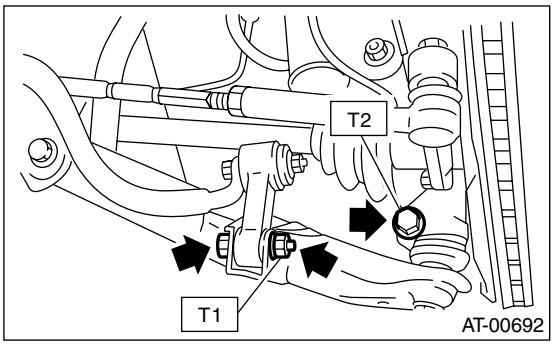
19) Align the spline of front differential shaft to that of differential bevel gear for insertion, and remove them using ST.
ST 28399SA010 OIL SEAL PROTECTOR
20) Insert the front drive shaft into transmission securely by pressing the front housing from outside.



21) Install the ball joint into housing.
22) Connect the stabilizer link to transverse link, and tighten the bolts. (Wagon model)

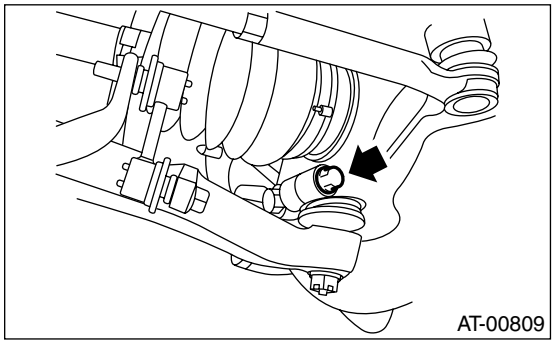
NOTE:
Discard the loosened self-locking nut and replace with a new one.

Tightening torque:
T1: 30 N·m (3.1 kgf-m, 22.4 ft-lb)
T2: 50 N·m (5.1 kgf-m, 37 ft-lb)



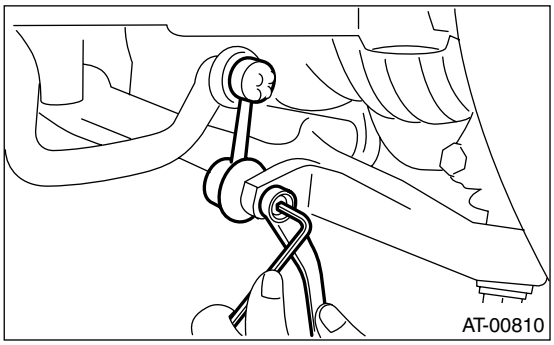
23) Tighten the installing bolts. (Sedan model)

Tightening torque:
50 N·m (5.1 kgf-m, 36.9 ft-lb)

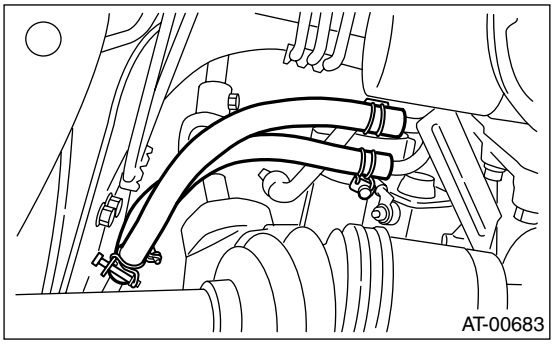


24) Install the stabilizer link to transverse link. (Sedan model)

Tightening torque:
45 N·m (4.6 kgf-m, 33.2 ft-lb)

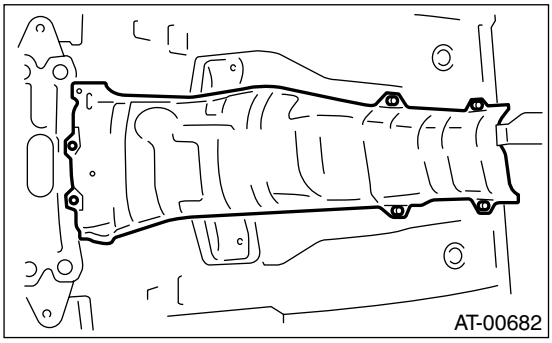


25) Install the shift select cable onto select lever.
<Ref. to CS-14, INSTALLATION, Select Cable.>
26) Install the oil charge pipe, and connect the ATF cooler hoses to pipe.

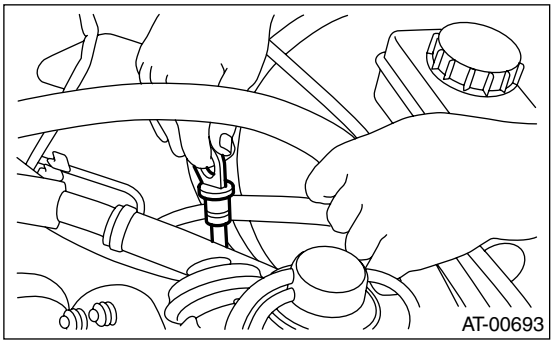


27) Install the propeller shaft.
<Ref. to DS-17, INSTALLATION, Propeller Shaft.>

28) Install the heat shield cover. (If equipped)



29) Install the rear exhaust pipe and muffler assembly.
Non-turbo model
<Ref. to EX(H4SO)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, INSTALLATION, Muffler.>
2.0 L Turbo model
<Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, INSTALLATION, Muffler.>
30) Install the front and center exhaust pipe. (Non-turbo model)
<Ref. to EX(H4SO)-7, INSTALLATION, Front Exhaust Pipe.>
31) Install the center exhaust pipe. (Turbo model)
<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>
32) Install the under cover.
33) Lower the vehicle.
34) Install the ATF level gauge.



35) Connect the following connectors.
(1) Transmission harness connectors
(2) Transmission ground terminal
36) Install the air cleaner case stay.

Tightening torque:
16 N·m (1.6 kgf-m, 11.6 ft-lb)

37) Install the air cleaner case or air intake chamber. (Non-turbo model)
<Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>

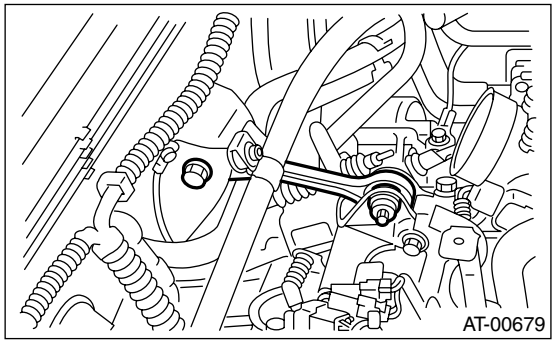
38) Install the air intake duct. (Non-turbo model)
<Ref. to IN(H4SO)-6, INSTALLATION, Air Intake Duct.>
39) Install the intercooler. (Turbo model)
<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>
40) Connect the battery ground cable.
41) Fill ATF up to the middle of the “COLD” side on level gauge by using the oil charge pipe. <Ref. to 4AT-31, Automatic Transmission Fluid.>
42) Take off the vehicle from lift arms.
43) Check select lever operation.
<Ref. to 4AT-52, INSPECTION, Inhibitor Switch.>
44) Check the ATF level. <Ref. to 4AT-31, Automatic Transmission Fluid.>
45) Check the road test.
<Ref. to 4AT-34, Road Test.>

10.Transmission Mounting System

A: REMOVAL

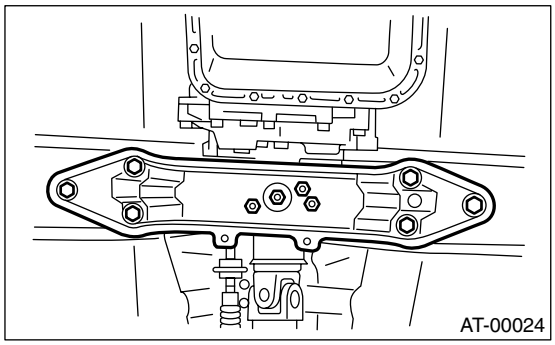
1. PITCHING STOPPER

1) Disconnect the ground cable from battery.
2) Remove the air cleaner case. (2.0 L Non-turbo model)
<Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
3) Remove the intercooler. (2.0 L Turbo model)
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
4) Remove the pitching stopper.



2. TRANSMISSION REAR CROSSMEMBER AND REAR CUSHION RUBBER

1) Disconnect the ground cable from battery.
2) Jack-up the vehicle and support it with sturdy racks.
3) Remove the front, center, rear exhaust pipes and muffler. (Non-turbo model)
<Ref. to EX(H4SO)-6, REMOVAL, Front Exhaust Pipe.>, <Ref. to EX(H4SO)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, REMOVAL, Muffler.>
4) Remove the center and rear exhaust pipes, and muffler. (Turbo model)
<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, REMOVAL, Muffler.>
5) Remove the heat shield cover. (If equipped)
6) Set the transmission jack under the transmission. Make sure that the support plates of transmission jack don't touch the oil pan.
7) Remove the transmission rear crossmember.



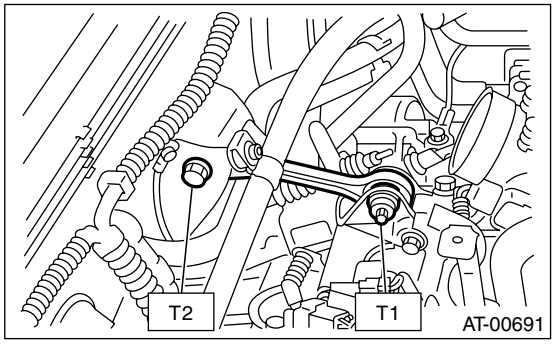
8) Remove the rear cushion rubber.

B: INSTALLATION

1. PITCHING STOPPER

1) Install the pitching stopper.

Tightening torque:
T1: 50 N·m (5.1 kgf-m, 37 ft-lb)
T2: 58 N·m (5.9 kgf-m, 43 ft-lb)



2) Install the air cleaner case. (Non-turbo model)
<Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>
3) Remove the intercooler. (Turbo model)
<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

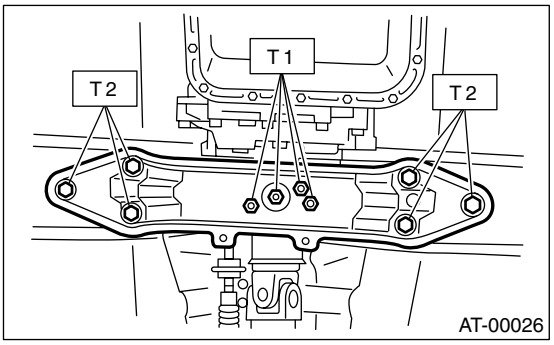
2. TRANSMISSION REAR CROSSMEMBER AND REAR CUSHION RUBBER

1) Install the rear cushion rubber.

Tightening torque:
39 N·m (4.0 kgf-m, 29 ft-lb)

2) Install the crossmember.

Tightening torque:
T1: 35 N·m (3.6 kgf-m, 26 ft-lb)
T2: 70 N·m (7.1 kgf-m, 51 ft-lb)



3) Remove the transmission jack.
4) Install the heat shield cover. (If equipped)
5) Install the front, center, rear exhaust pipes and the muffler. (Non-turbo model)
<Ref. to EX(H4SOw/oOBD)-7, INSTALLATION, Front Exhaust Pipe.>, <Ref. to EX(H4SOw/oOBD)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SOw/oOBD)-11, INSTALLATION, Muffler.>
6) Install center and rear exhaust pipes, and muffler. (Turbo model)
<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, INSTALLATION, Muffler.>

C: INSPECTION

Repair or replace parts if the results of the inspection below are not satisfactory.

1. PITCHING STOPPER

Make sure that the pitching stopper is not bent or damaged. Make sure that the rubber is not stiff, cracked, or otherwise damaged.

2. TRANSMISSION REAR CROSSMEMBER AND REAR CUSHION RUBBER

Make sure that the crossmember is not bent or damaged. Make sure that the cushion rubber is not stiff, cracked, or otherwise damaged.