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.

AUTOMATIC TRANSMISSION

4AT

1. General Description

A: SPECIFICATION

1. TORQUE CONVERTER CLUTCH

Model	2.0 L Non-turbo	2.5 L Non-turbo	2.0 L Turbo	2.5 L Turbo
Type	Symmetric, 3 element, single stage, 2 phase torque converter			
Stall torque ratio	2.0 — 2.2	1.9 — 2.1	1.85 — 2.15	2.05 — 2.35
Nominal diameter	246 mm (9.69 in)			
Stall speed (at sea level)	2,000 — 2,500 rpm	2,100 — 2,600 rpm	2,600 — 3,300 rpm	2,700 — 3,200 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	2.0 L Non-turbo	2.5 L Non-turbo	Turbo
Tooth number of front sun gear	33		
Front pinion number of teeth	21		
Front internal gear number of teeth	75		
Tooth number of rear sun gear	42		
Rear pinion number of teeth	17		
Tooth number of rear internal gear	75		
Drive & driven plate number of high clutch	4		5
Drive & driven plate number of low clutch	4	6	7
Drive & driven plate number of reverse clutch	2		
Drive & driven plate number of 2-4 brake	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
N (Neutral)	Transmission in neutral and engine start possible
D (Drive)	Automatic gear change 1st ←→ 2nd ←→ 3rd ←→ 4th
3 (3rd)	Automatic gear change 1st ←→ 2nd ←→ 3rd ← 4th
2 (2nd)	Automatic gear change 1st ←→ 2nd ← 3rd ← 4th
1 (1st)	1st gear locked (Deceleration possible 1st ← 2nd ← 3rd ← 4th)
Control method	Wire cable type

7. HYDRAULIC CONTROL AND LUBRICATION

Type		Electronic/hydraulic control [Four forward speed changes by electrical signals of vehicle speed and accelerator (throttle) opening]
Fluid		DEXRON III type automatic transmission fluid
Fluid capacity	2.0 L Non-turbo model	8.4 — 8.7 ℓ (8.9 — 9.2 US qt, 7.4 — 7.7 Imp qt)
	Except for 2.0 L Non-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)

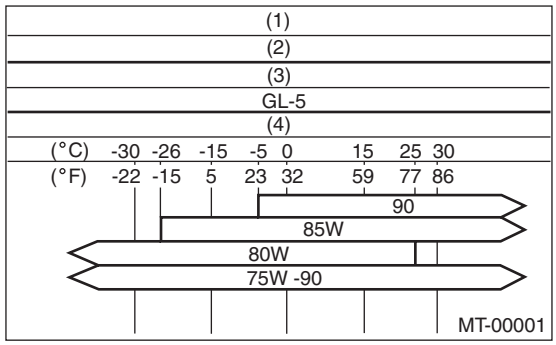
8. COOLING AND HARNESS

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

9. TRANSFER

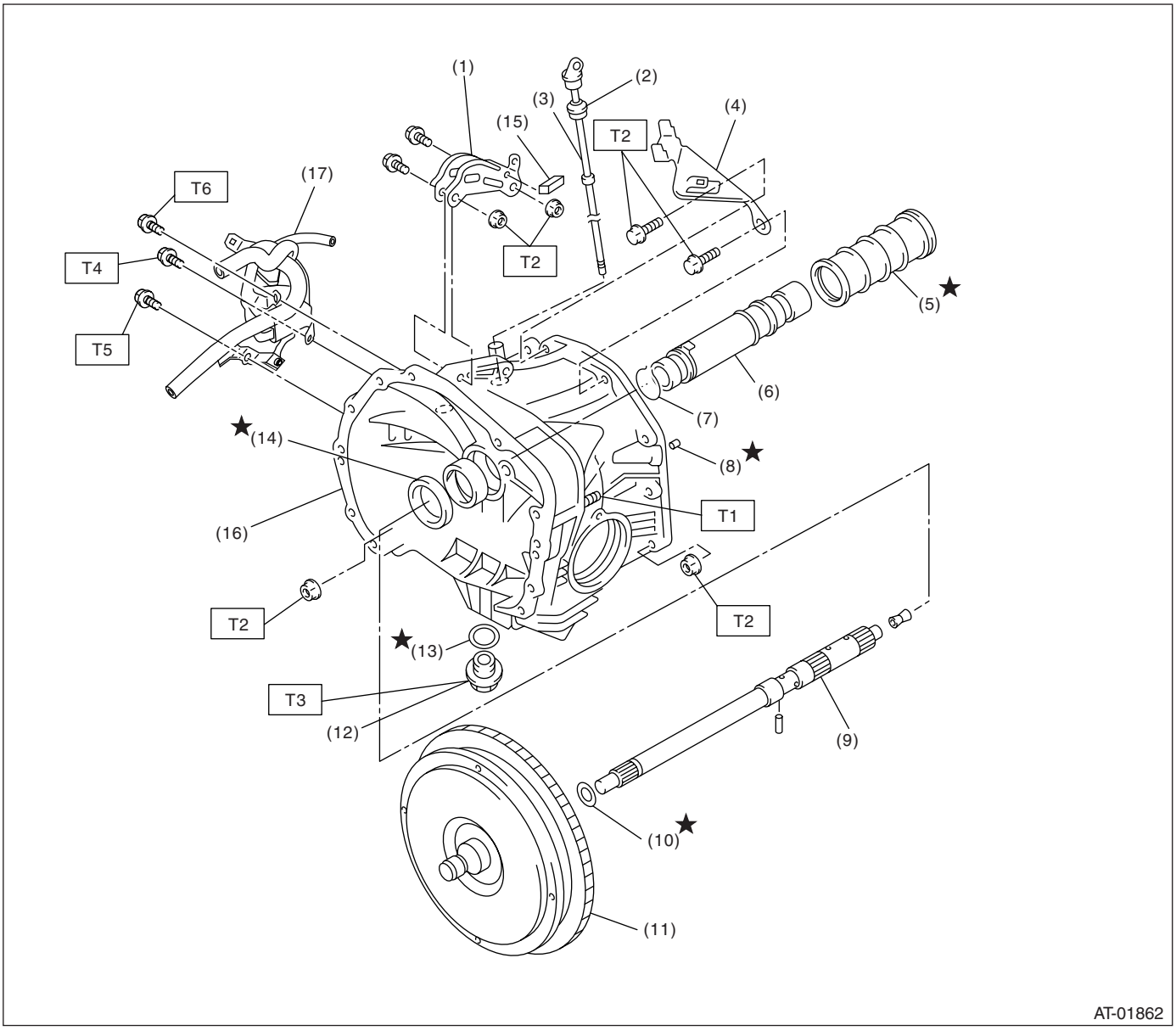
Model	2.0 L Non-turbo	2.5 L Non-turbo	Turbo
Transfer type	Multi-plate transfer (MPT)		
Drive & driven plate number of transfer clutch	4	5	6
Control method	Electronic, hydraulic type		
Lubricant	The same Automatic transmission fluid used in automatic transmission		
Reduction gear ratio	1.000 (53/53)		

10.FINAL REDUCTION

Model	2.0 L Turbo	Non-turbo, 2.5 L Turbo
Front final reduction gear ratio	4.111 (37/9)	4.444 (40/9)
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

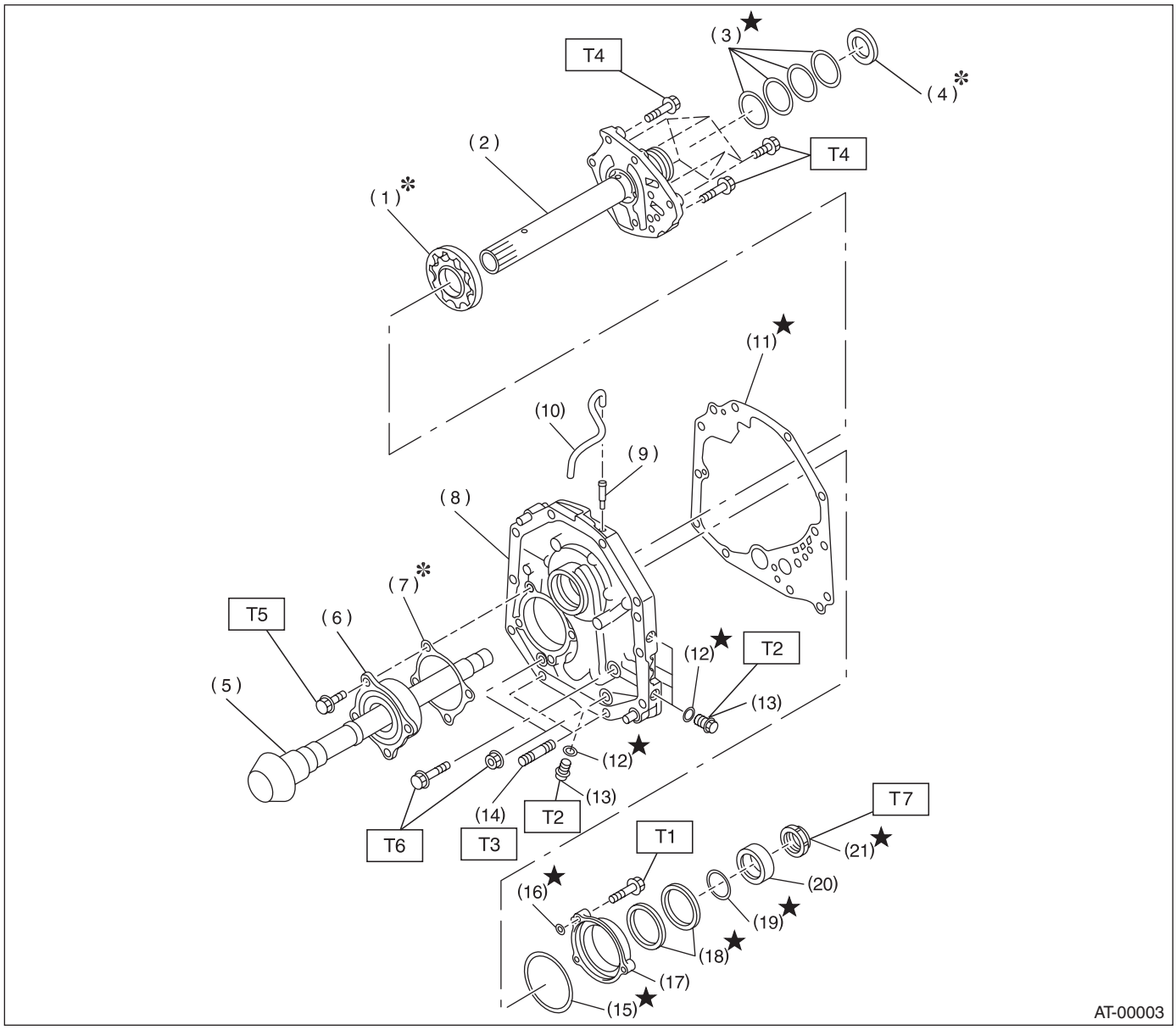
1. TORQUE CONVERTER CLUTCH AND CASE



(1) Pitching stopper bracket
(2) O-ring
(3) Differential oil level gauge
(4) Stay
(5) Seal pipe
(6) Oil pump shaft
(7) Clip
(8) Rubber seal
(9) Input shaft
(10) O-ring
(11) Torque converter clutch ASSY
(12) Differential gear oil Drain plug
(13) Gasket
(14) Oil seal
(15) Clip (Turbo model)
(16) Torque converter clutch case
(17) ATF cooler (with warmer function) (if equipped)

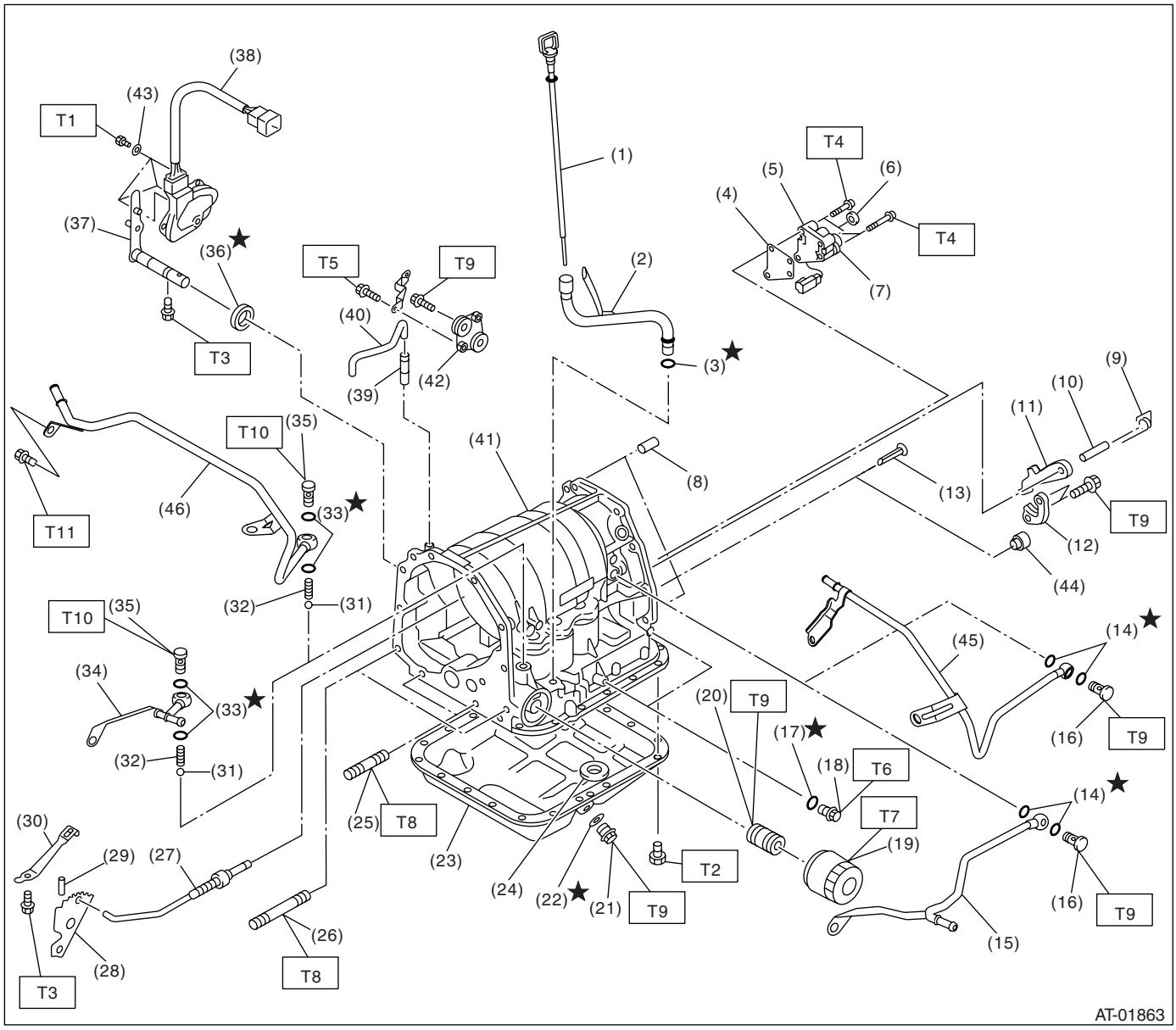
Tightening torque: N·m (kgf-m, ft-lb)
T1: 18 (1.8, 13.0)
T2: 41 (4.2, 30.4)
T3: 44 (4.5, 32.5)
T4: 33 (3.4, 24.3)
T5: 21 (2.1, 15.5)
T6: 23 (2.3, 17.0)

2. OIL PUMP



(1)	Oil pump rotor	(11)	Gasket	(21)	Lock nuts
(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)	Drive pinion shim	(17)	Oil seal retainer	***T4:***	***25 (2.5, 18.1)***
(8)	Oil pump housing	(18)	Oil seal	***T5:***	***40 (4.1, 29.5)***
(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

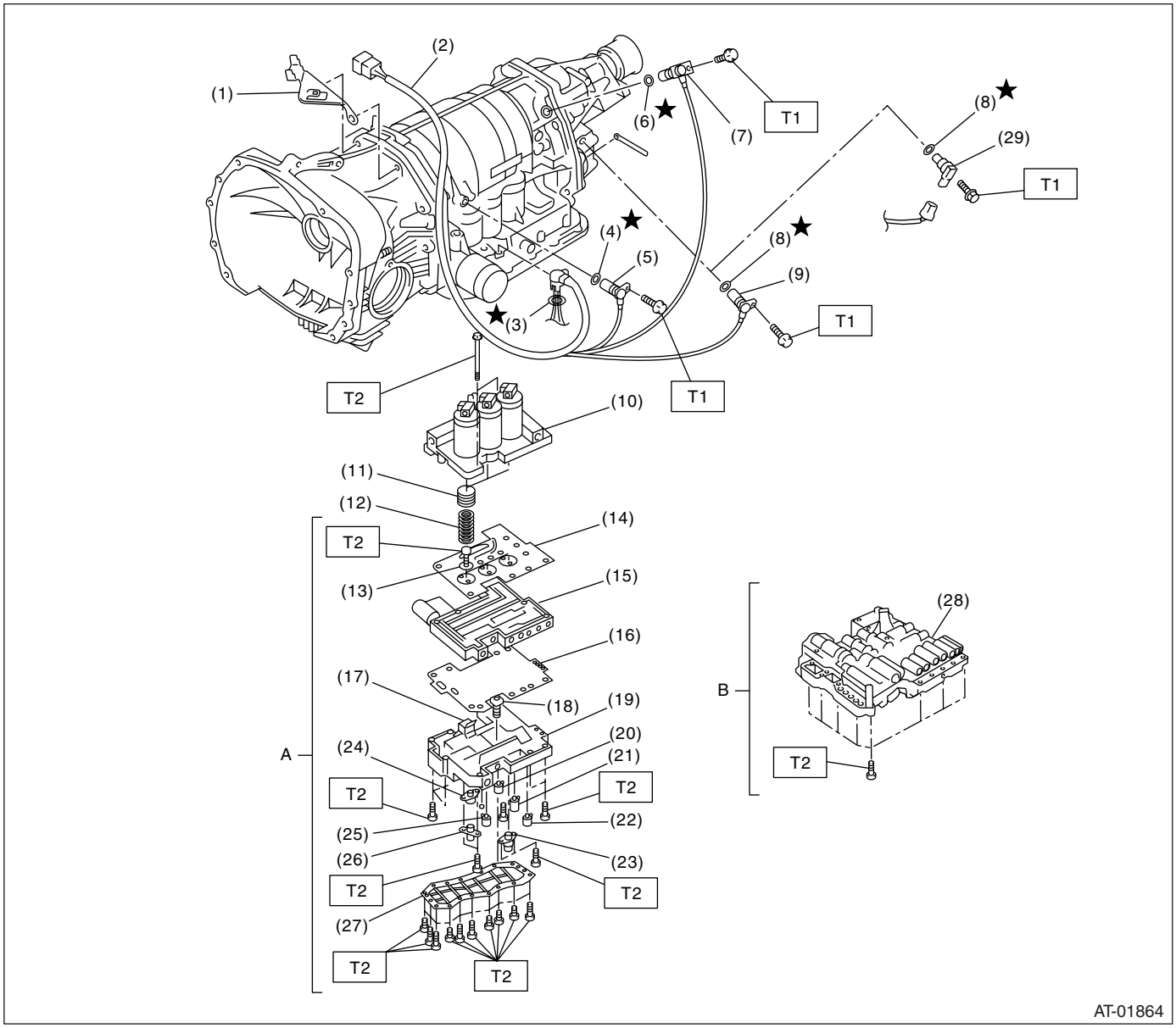


(1) ATF level gauge
(2) ATF charger pipe
(3) O-ring
(4) Transfer valve plate (Non-turbo model)
(5) Transfer valve ASSY (Non-turbo model)
(6) Transfer clutch seal (Non-turbo model)
(7) Transfer duty solenoid (non-turbo model)
(8) Straight pin
(9) Return spring
(10) Shaft
(11) Parking pawl
(12) Parking support
(13) Inlet filter (Non-turbo model)
(14) Gasket
(15) ATF cooler inlet pipe (model without ATF cooler (with warmer function))
(16) Union screw
(17) O-ring
(18) Test plug
(19) Oil filter
(20) Oil filter stud bolt
(21) Drain plug (ATF)
(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) ATF cooler outlet pipe (model without ATF cooler (with warmer function))
(35) Union screw
(36) Oil seal
(37) Range select lever
(38) Inhibitor switch ASSY
(39) Nipple
(40) Air breather hose
(41) Transmission case
(42) Plate ASSY
(43) Washer
(44) Bushing (turbo model)
(45) ATF cooler inlet pipe (model with ATF cooler (with warmer function))
(46) ATF cooler outlet pipe (model with ATF cooler (with warmer function))

Tightening torque: N·m (kgf-m, ft-lb)

T1:	***3.4 (0.35, 2.6)***
T2:	***5 (0.5, 3.6)***
T3:	***6 (0.6, 4.4)***
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 (2.5, 18.1)***
T10:	***45 (4.6, 33.2)***
T11:	***21 (2.1, 15.5)***

4. CONTROL VALVE AND HARNESS ROUTING



A	Non-turbo model	B	Turbo model

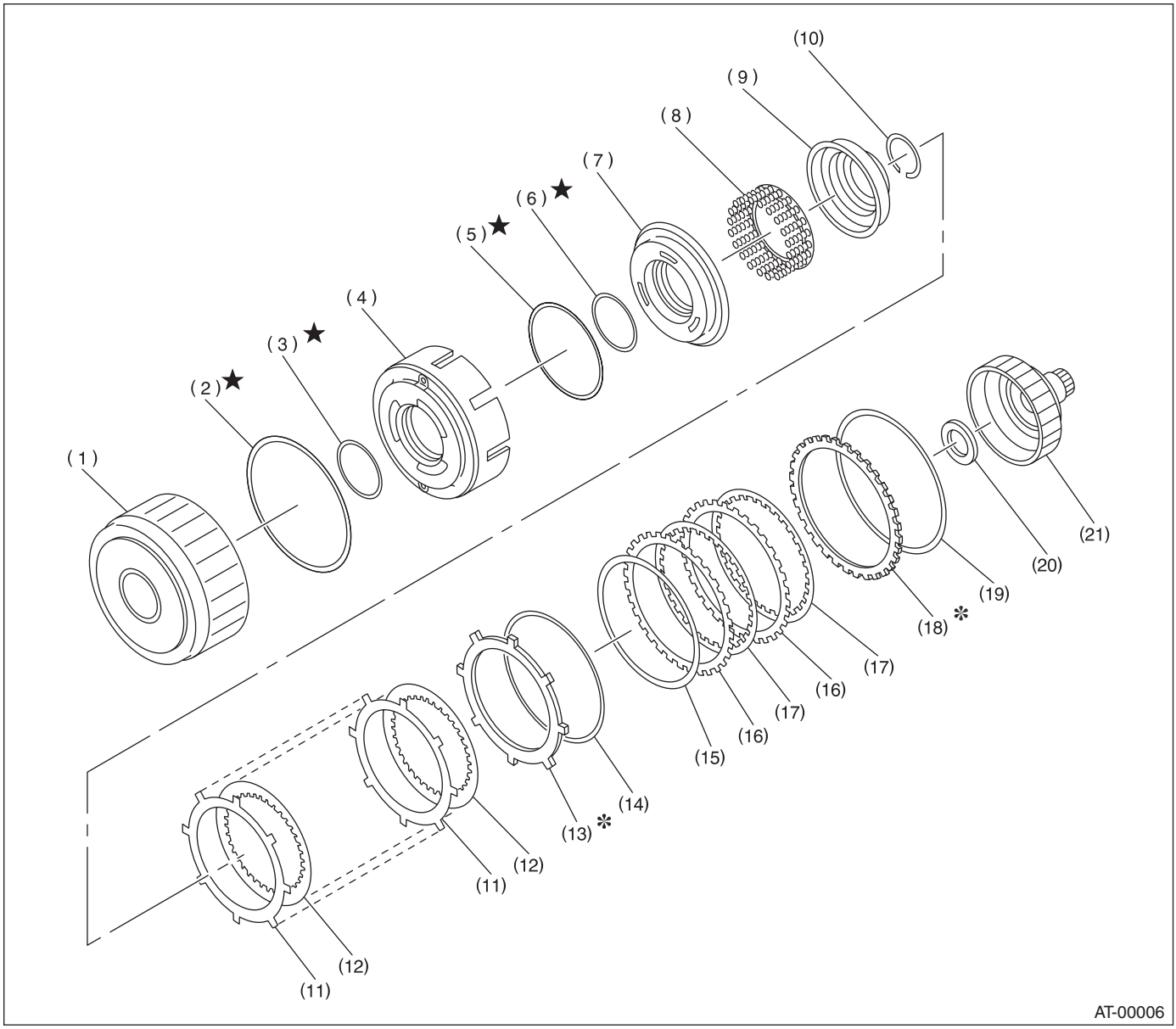
(1)	Stay	(11)	Accumulator piston	(23)	2-4 brake duty solenoid
(2)	Transmission harness ASSY	(12)	Accumulator spring	(24)	Line pressure duty solenoid
(3)	O-ring	(13)	Side plate	(25)	Low clutch timing solenoid
(4)	O-ring	(14)	Upper separate plate	(26)	Lock-up duty solenoid
(5)	Torque converter turbine speed sensor	(15)	Middle control valve body	(27)	Oil strainer
		(16)	Separate plate	(28)	Control valve ASSY
(6)	O-ring	(17)	Fluid filter	(29)	Rear vehicle speed sensor (turbo model)
(7)	Front vehicle speed sensor	(18)	Fluid filter		
(8)	O-ring	(19)	Lower control valve body		
(9)	Rear vehicle speed sensor (non-turbo model)	(20)	Shift solenoid 2		
		(21)	Shift solenoid 1		
(10)	Upper control valve body	(22)	2-4 brake timing solenoid		

Tightening torque: N·m (kgf-m, ft-lb)

T1: 7 (0.7, 5.1)

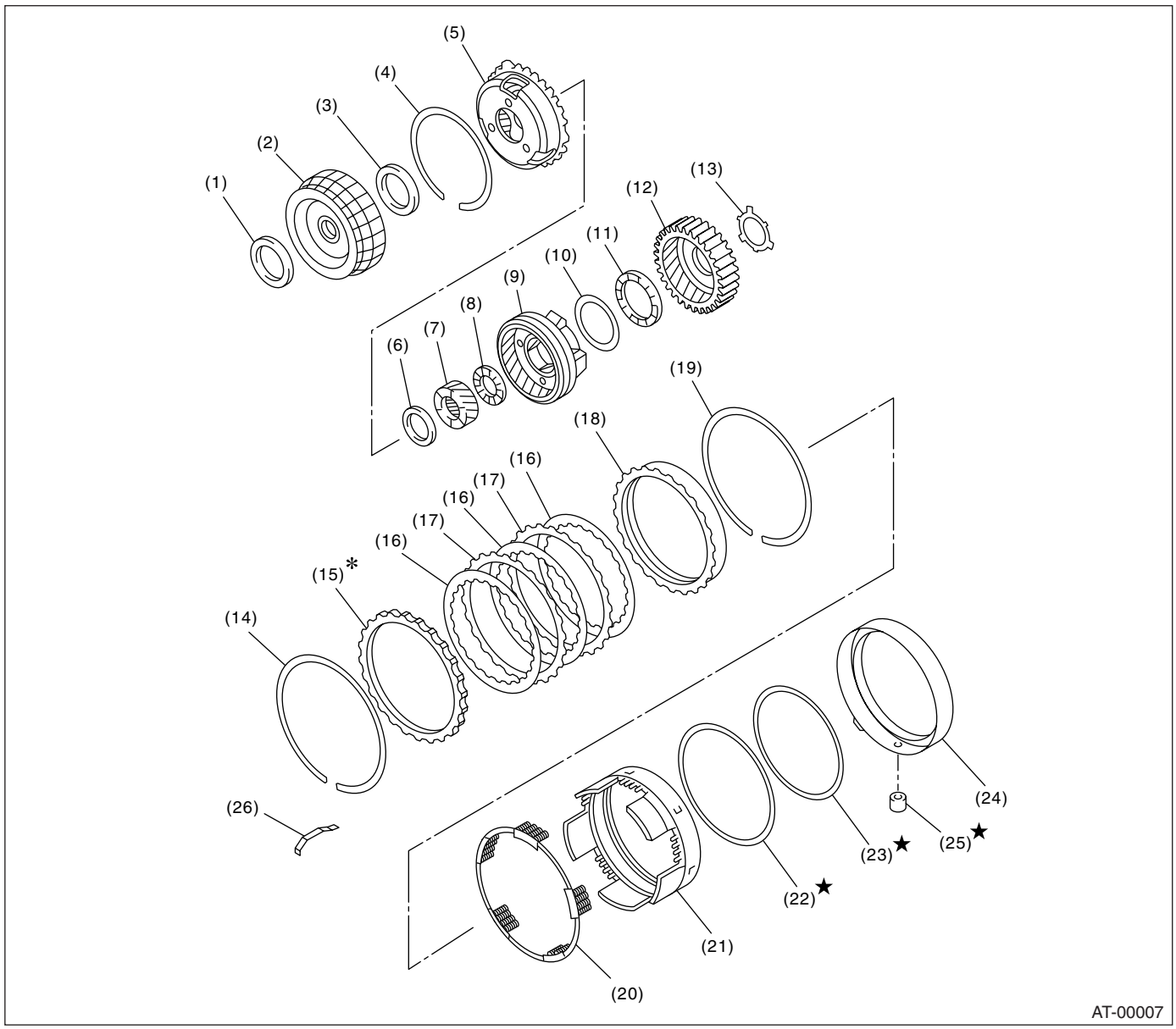
T2: 8 (0.8, 5.8)

5. HIGH CLUTCH AND REVERSE CLUTCH



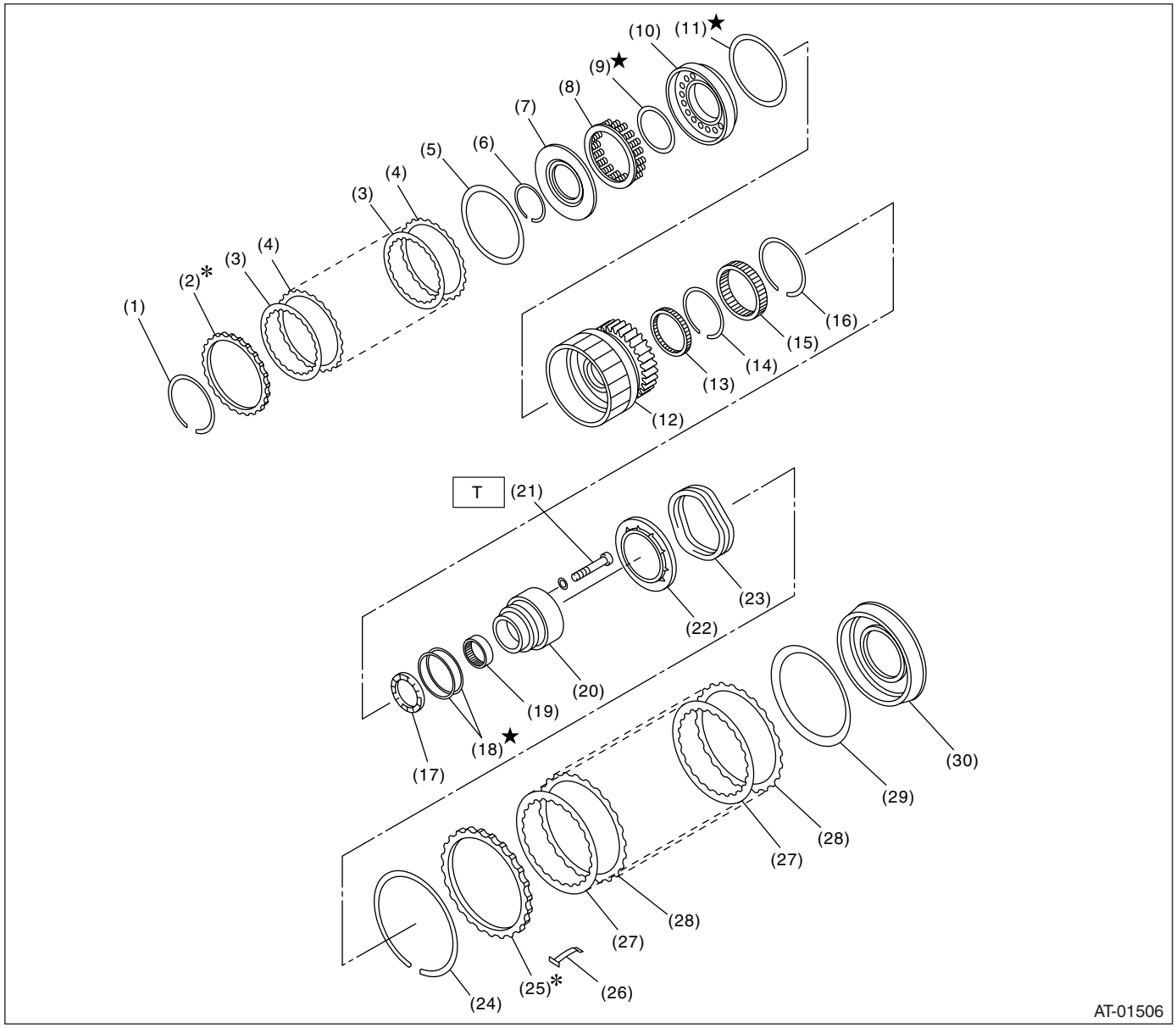
(1)	High clutch drum	(8)	Spring retainer	(15)	Dish plate
(2)	Lip seal	(9)	Clutch cover	(16)	Driven plate
(3)	D-ring	(10)	Snap ring	(17)	Drive plate
(4)	Reverse clutch piston	(11)	Driven plate	(18)	Retaining plate
(5)	D-ring	(12)	Drive plate	(19)	Snap ring
(6)	D-ring	(13)	Retaining plate	(20)	Thrust needle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

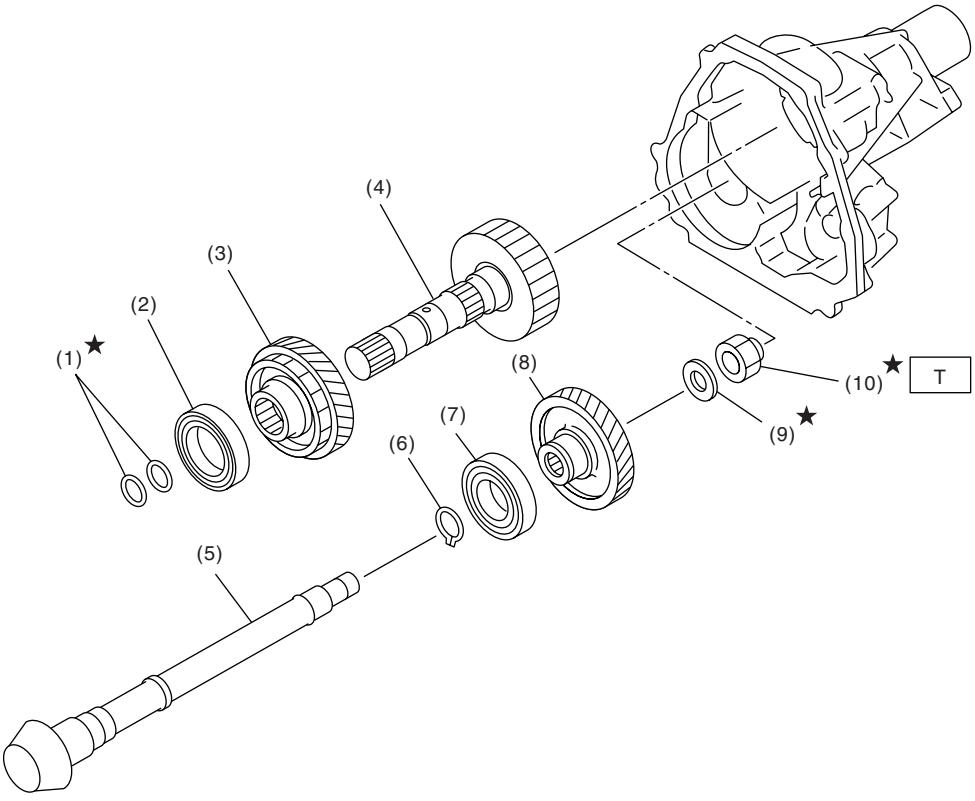
7. LOW CLUTCH AND LOW & REVERSE BRAKE



(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 & reverse brake piston

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

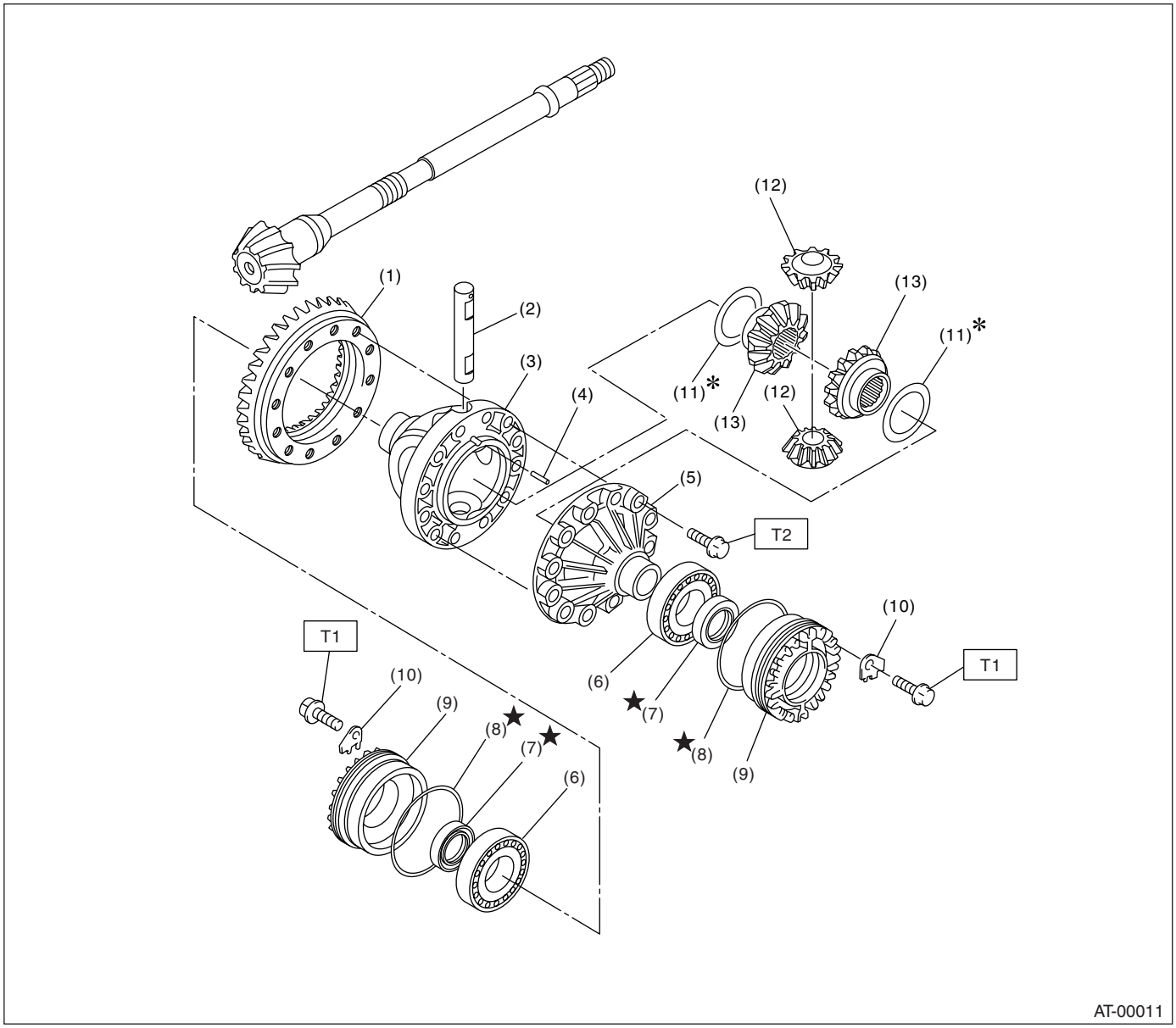
8. REDUCTION GEAR



(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) Reduction driven gear
(9) Washer
(10) Lock nuts

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

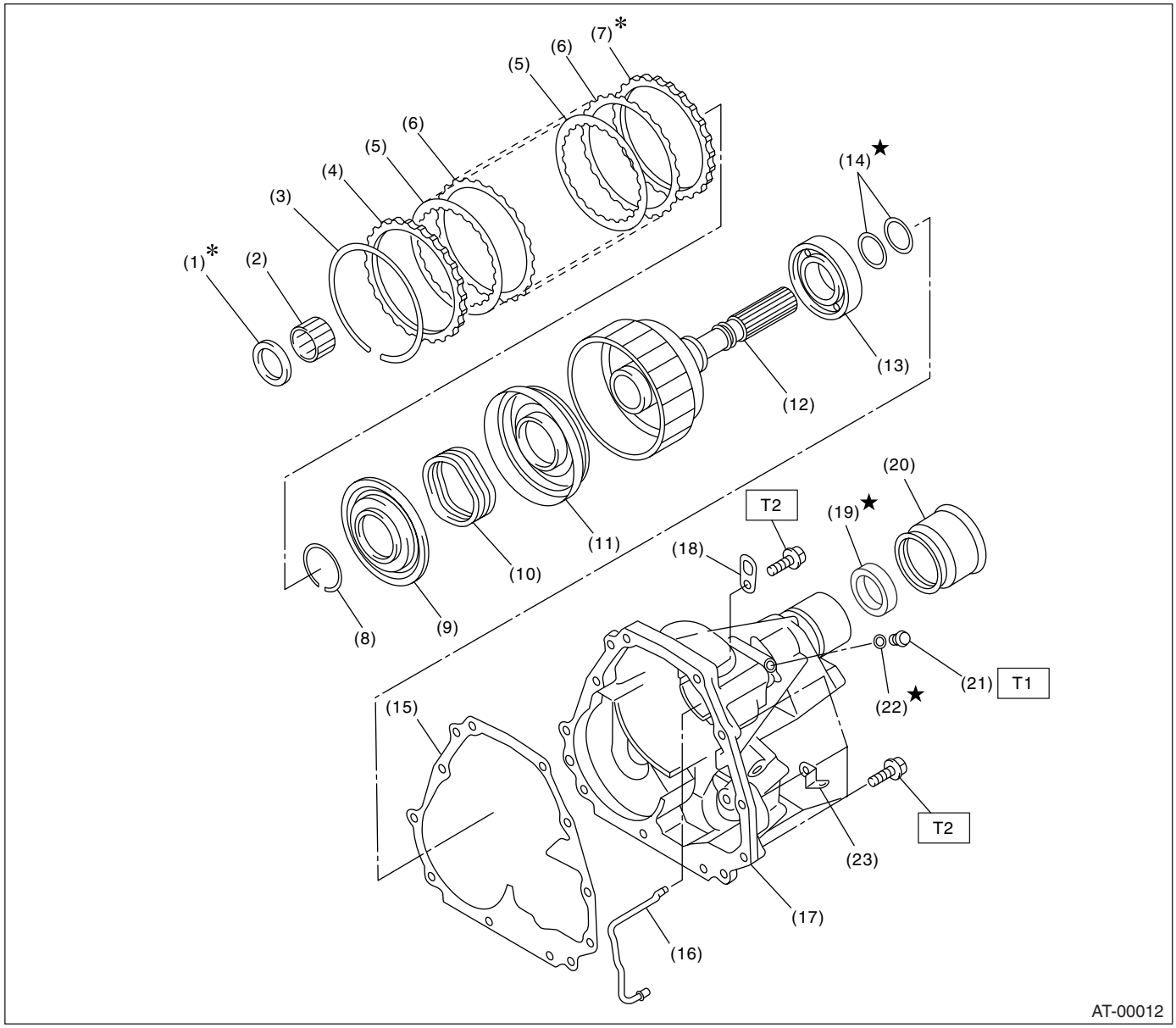
9. DIFFERENTIAL GEAR



(1) Hypoid driven 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)

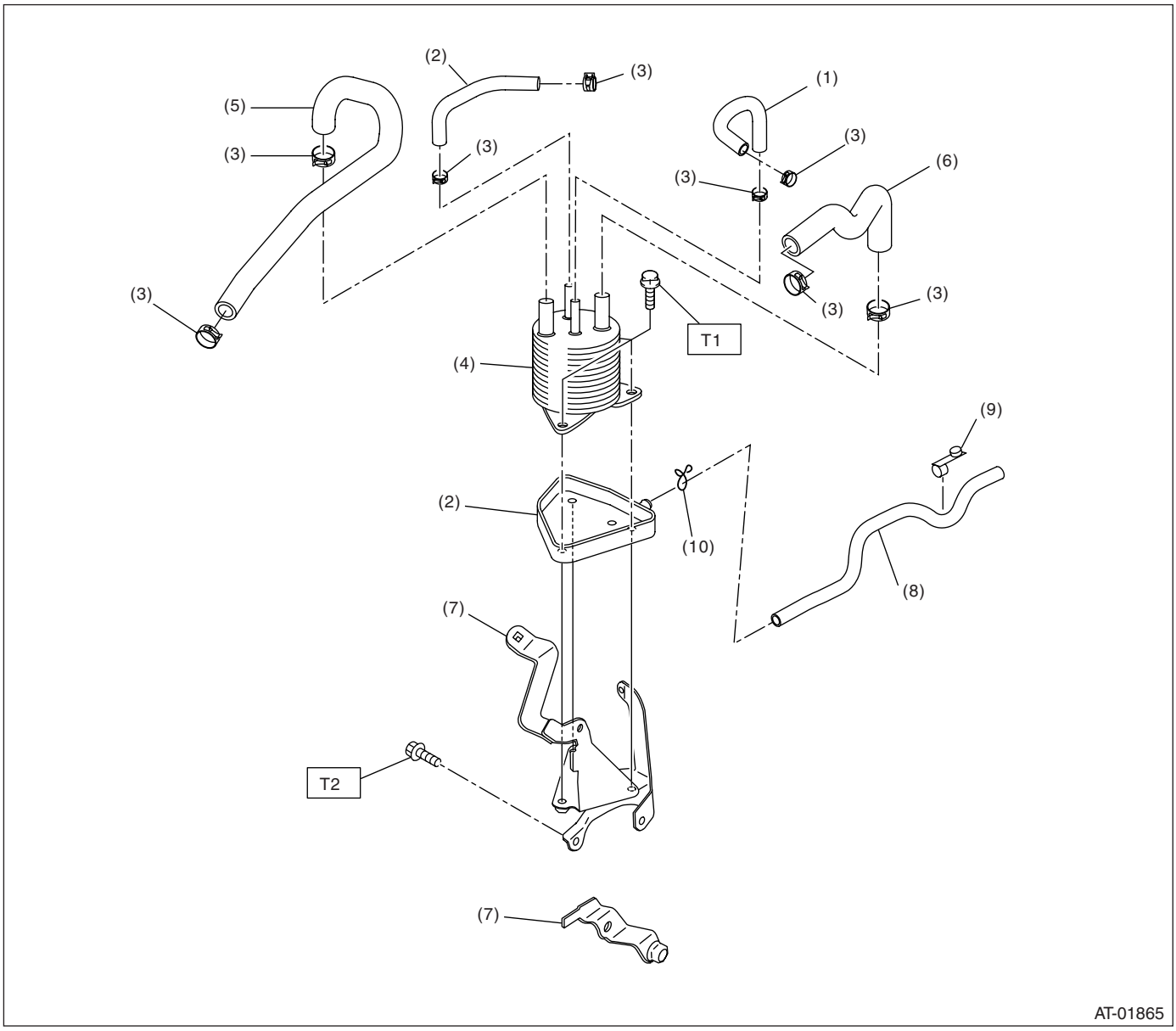
10.TRANSFER AND EXTENSION CASE



(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 clutch 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 (Turbo model)

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

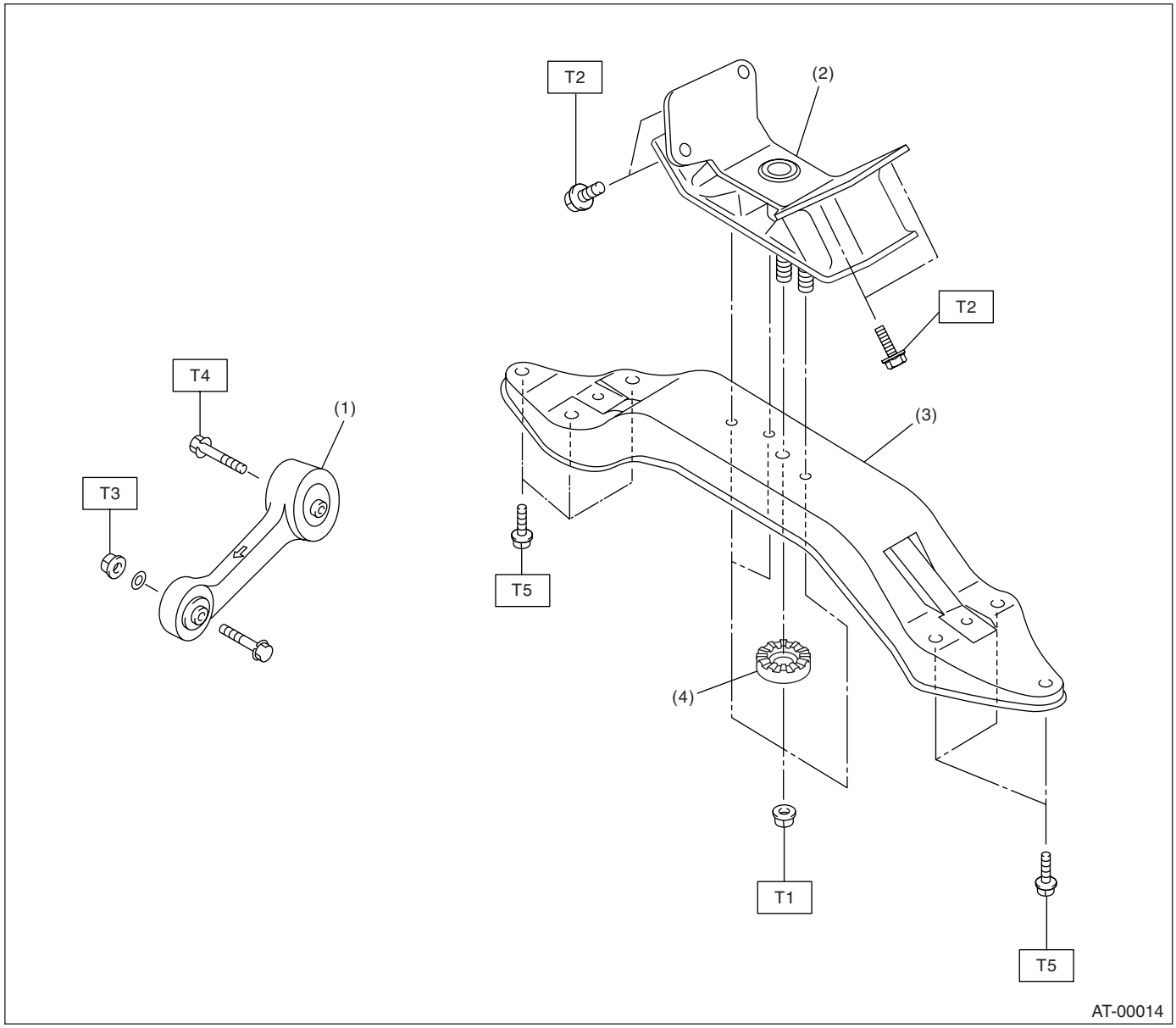
11.ATF COOLER (WITH WARMER FUNCTION)



(1) ATF cooler outlet hose
(2) ATF cooler inlet hose
(3) Hose clamp
(4) ATF cooler ASSY
(5) Engine coolant inlet hose
(6) Engine coolant outlet hose
(7) ATF cooler bracket
(8) Hose
(9) Clip

Tightening torque: N·m (kgf-m, ft-lb)
T1: 23 (2.3, 17.0)
T2: 33 (3.4, 24.3)

12.TRANSMISSION MOUNTING



(1) Pitching stopper
(2) Rear cushion rubber
(3) Transmission rear crossmember
(4) 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)

C: CAUTION

• Wear work clothing, including a cap, protective goggles, and protective shoes during operation.
• Remove contamination including dirt and corrosion before removal, installation or disassembly.
• Keep the disassembled parts in order and protect them from dust and dirt.
• Until the oil pan is installed, do not place with the inside of oil pan 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 force it apart. Do not pry it apart with a screwdriver or other tool.
• Be careful not to burn yourself, because each part on the vehicle is hot after running.
• Use SUBARU genuine gear oil, grease etc. or the equivalent. 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 gear oil or ATF 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 vice, place cushioning material such as wood blocks, aluminum plate, or shop cloth between the part and the vice.
• Avoid damaging the mating surface of the case.
• Before applying sealant, completely remove the old seal.

D: PREPARATION TOOL

1. SPECIAL TOOL

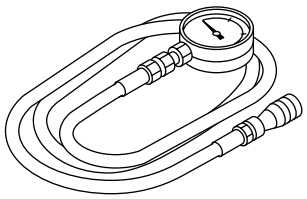
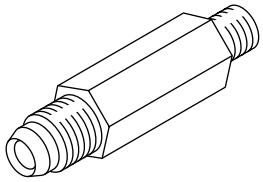
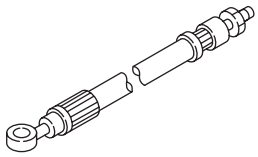
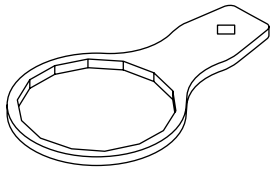
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498575400	498575400	OIL PRESSURE GAUGE ASSY	Used for measuring oil pressure.
 ST-498897200	498897200	OIL PRESSURE GAUGE ADAPTER	Used for oil pump housing when measuring reverse clutch pressure and line pressure.
 ST-498897700	498897700	ADAPTER SET	Used for measuring transfer clutch pressure.
 ST-498545400	498545400	FILTER WRENCH	Used for removing and installing ATF filter.

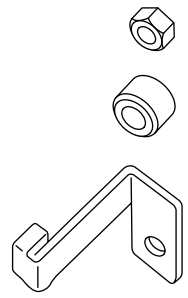
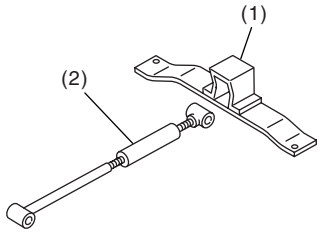
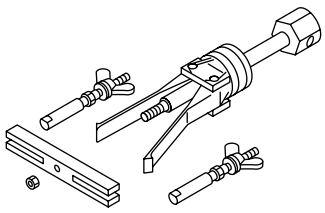
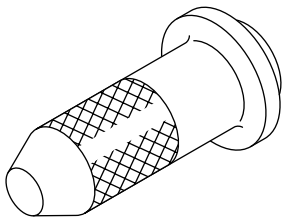
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498277200	498277200	STOPPER SET	Used for removing and installing automatic transmission assembly.
 ST41099AC000	41099AC000	ENGINE SUPPORT ASSEMBLY	Used for supporting engine. (1) ENGINE SUPPORT BRACKET (41099AA010) (2) ENGINE SUPPORT (41099AA020)
 ST-398527700	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 oil seal.
 ST-498057300	498057300	INSTALLER	Used for installing extension oil seal.

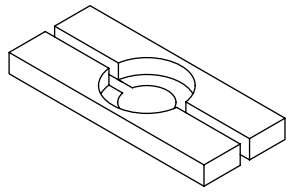
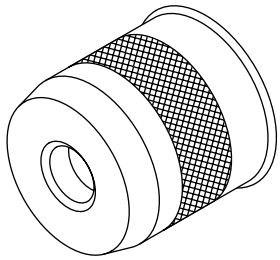
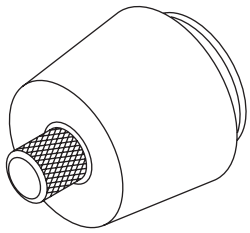
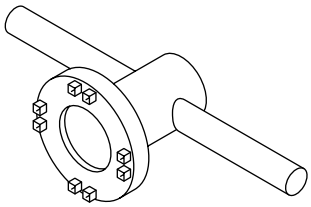
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498077000	498077000	REMOVER	Used for removing differential taper roller bearing.
 ST-499247400	499247400	INSTALLER	• Used for installing transfer outer snap ring. • Used with GUIDE (499257300).
 ST-499257300	499257300	SNAP RING OUTER GUIDE	• Used for installing transfer outer snap ring. • Used with INSTALLER (499247400).
 ST-499787000	499787000	WRENCH ASSY	Used for removing and installing differential side retainer.

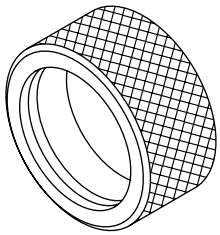
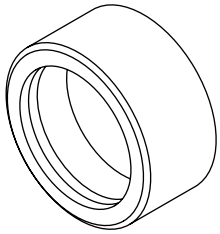
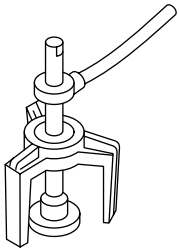
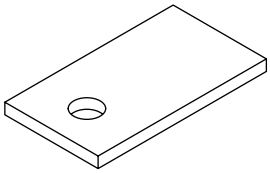
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398437700	398437700	DRIFT	Used for installing torque converter case oil seal.
 ST-398487700	398487700	INSTALLER	Used for installing front differential taper roller bearing.
 ST-398673600	398673600	COMPRESSOR	Used for removing and installing clutch spring.
 ST-498255400	498255400	PLATE	Used for measuring backlash of hypoid gear.

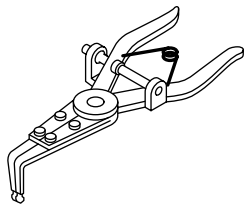
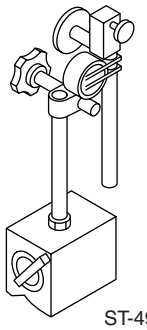
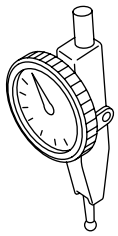
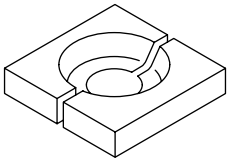
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-399893600	399893600	PLIERS	Used for removing and installing clutch spring.
 ST-498247001	498247001	MAGNET BASE	• Used for measuring gear backlash. • Used with DIAL GAUGE (498247100).
 ST-498247100	498247100	DIAL GAUGE	• Used for measuring gear backlash. • Used with MAGNET BASE (498247001).
 ST-498517000	498517000	REPLACER	Used for removing front roller bearing.

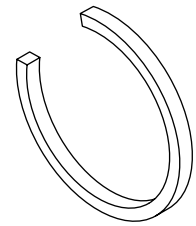
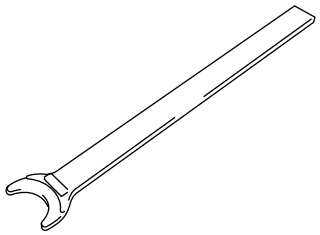
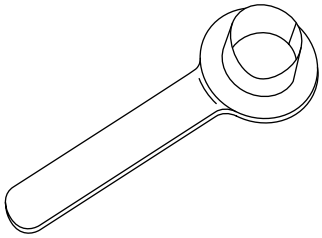
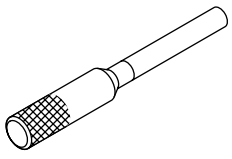
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-398623600	398623600	SEAT	Used for removing spring of transfer clutch piston.
 ST28399SA000	28399SA000	DRIVE SHAFT REMOVER	Used for removing axle shaft.
 ST28399SA010	28399SA010	OIL SEAL PROTECTOR	Used for installing axle shaft.
 ST-499267300	499267300	STOPPER PIN	Used for installing inhibitor switch.

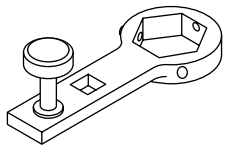
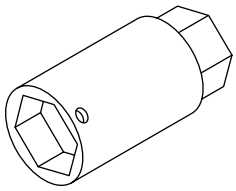
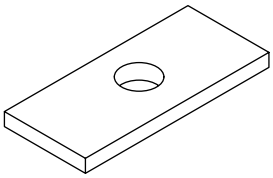
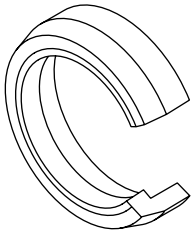
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499787700	499787700	WRENCH	Used for removing and installing drive pinion lock nut.
 ST-499787500	499787500	ADAPTER	Used for removing and installing drive pinion lock nut.
 ST-398643600	398643600	GAUGE	Used for measuring total end play, extension end play and drive pinion height.
 ST-498627100	498627100	SEAT	Used for holding low clutch piston retainer spring when installing snap ring.

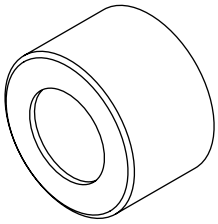
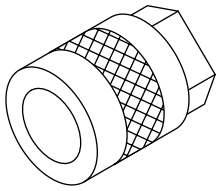
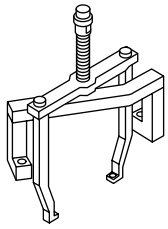
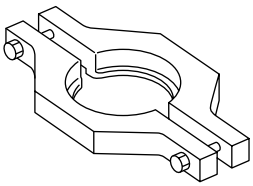
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499577000	499577000	GAUGE	Used for measuring mating surface of transmission to end of reduction gear.
 ST-499737000	499737000	PULLER	Used for removing reduction driven gear assembly.
 ST-499737100	499737100	PULLER SET	Used for removing reduction drive gear assembly.
 ST-498077600	498077600	REMOVER	Used for removing ball bearing.

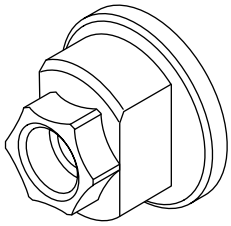
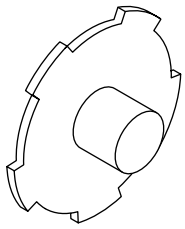
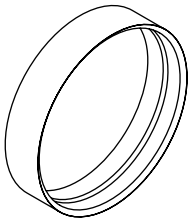
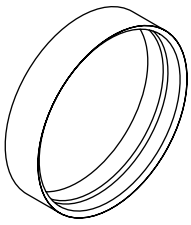
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498937110	498937110	HOLDER	Used for removing and installing drive pinion lock nut.
 ST-498677100	498677100	COMPRESSOR	Used for installing 2-4 brake snap ring.
 ST-498437000	498437000	HIGH CLUTCH PISTON GUIDE	Used for installing high clutch piston.
 ST-498437100	498437100	LOW CLUTCH PISTON GUIDE	Used for installing low clutch piston.

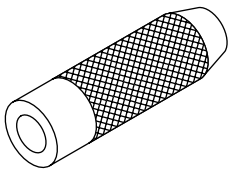
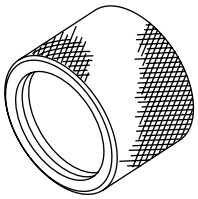
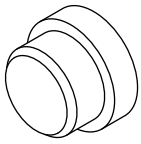
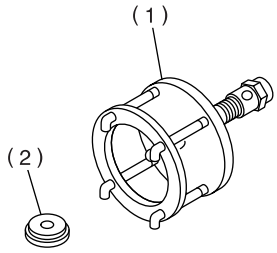
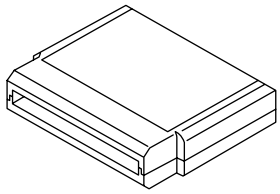
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-899580100	899580100	INSTALLER	Used for press-fitting the ball bearing for transfer clutch.
 ST18675AA000	18675AA000	DIFFERENTIAL OIL SEAL INSTALLER	Used for installing differential side retainer oil seal.
 ST-398497701	398497701	SEAT	Used for installing 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

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST24082AA230	24082AA230 (Newly adopted tool)	CARTRIDGE	Troubleshooting for electrical system.
 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 TOOL

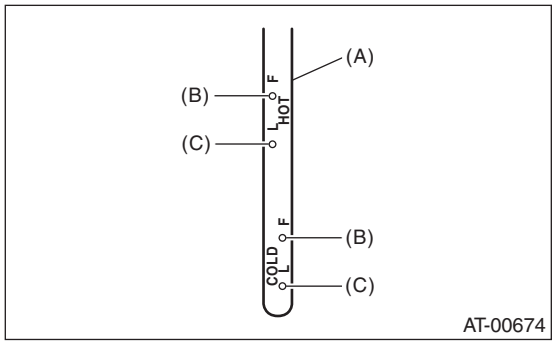
TOOL NAME	REMARKS
Depth gauge	Used for measuring transmission end play.
Thickness gauge	Used for measuring clearance of clutch, brake and oil pump.
Micro meter	Used for measuring thickness of drive pinion.
Spring balance	Used for measuring starting torque of drive pinion.
Circuit tester	Used for measuring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

2. Automatic Transmission Fluid

A: INSPECTION

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

1) Raise the ATF temperature by driving a distance of 5 to 10 km (3 to 6 miles). Otherwise, idle the engine to raise ATF temperature to 70 — 80°C (158 — 176°F) on Subaru Select Monitor. <Ref. to 4AT(H4SO)-18, 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 engine idling for one or two minutes.



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

4) Make sure that ATF level is above the center of upper level and lower level at HOT side.
If the ATF 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 level and lower level, add the recommended ATF until the fluid level is found above the center between upper level and lower level marks.

CAUTION:
- **Use care not to exceed the upper level.**
- **Remember that the addition of ATF to the upper limit mark when the transmission is cold will overfilling of ATF, causing 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.

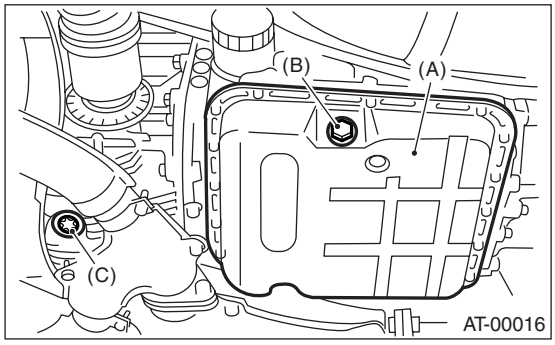
B: REPLACEMENT

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) Replace the gasket with new one, and then tighten the drain plug (ATF).

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



(A) Oil pan
(B) Drain plug (ATF)
(C) Differential gear oil drain plug

4) Lower the vehicle.
5) Pour ATF from the ATF charge pipe.

Recommended fluid:
DEXRON III type automatic transmission fluid

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

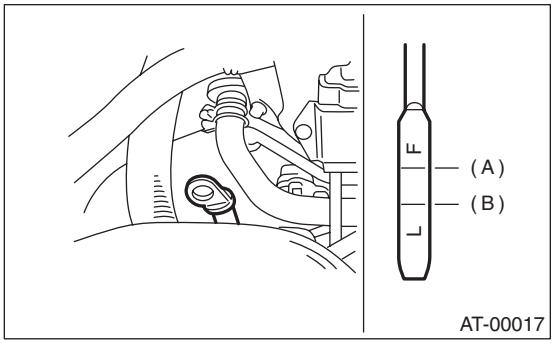
CAPACITY WHEN TRANSMISSION IS OVERHAULED:
2.0 L NON-TURBO MODEL
8.4 — 8.7 ℓ (8.9 — 9.2 US qt, 7.4 — 7.7 Imp qt)
EXCEPT 2.0 L NON-TURBO MODEL
9.3 — 9.6 ℓ (9.8 — 10.1 US qt, 8.2 — 8.4 Imp qt)

6) Check the level and leaks of ATF.
<Ref. to 4AT-30, INSPECTION, Automatic Transmission Fluid.>

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 the oil level gauge again, and check the level. If the differential gear oil level is below the “L” line, add 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) Upper level
(B) Lower level

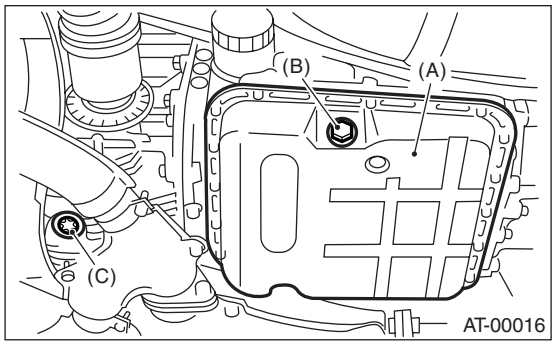
B: REPLACEMENT

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

CAUTION:
• Directly after driving the vehicle, 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 new ones, and then tighten the differential gear oil drain plug using TORX® BIT T70.

Tightening torque:
44 N·m (4.5 kgf-m, 32.5 ft-lb)



(A) Oil pan
(B) Drain plug (ATF)
(C) Differential gear oil drain plug

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

Recommended gear oil:
Use GL-5 (SAE: 75 W-90) or equivalent.

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

6. LOCK-UP FUNCTION

• Check that rpm does not change sharply when the axle pedal is lightly depressed when driving on flat roads at 60 km/h (37 MPH).
• Check slip lock-up with following procedure. Subaru Select Monitor is needed for checking (EC, EK model).
Before start checking, check that the DTC is not existed using Subaru Select Monitor. When the DTC is existed, perform the collective action with DTC and check that the DTC is not existed again, and then start the checking.
1) The check performed on flat and straight road or free roller.

NOTE:
• Slip lock-up does not operate when the vehicle is lifted up, because of not occurring surface resistance.
• Also checking on the free roller, check with depressing foot brake lightly to make the checking easier, because the surface resistance will be deficient

2) Connect the Subaru Select Monitor.
3) Check ATF temperature using Subaru Select Monitor.

NOTE:
• ATF temperature is between 50 — 100°C (122 — 212°F).
• When the temperature is low, warm-up the ATF by running the vehicle or etc.

4) Start the engine, and make the lock-up duty be able to read on data display of Subaru Select Monitor.
5) 35 — 40 Drive the vehicle at a constant speed of 35 — 40 km/h (22 — 25 MPH).
6) Read the lock-up duty while vehicle is running.

Standard value:
25 — 45%

NOTE:
On the free roller, the value sometimes lowers.
• Slip lock-up control is not operating when the lock-up duty is less than 5%, or when the lock-up duty goes down immediately after starts rise. On these cases, improper ATF or deterioration of ATF may be the cause. Check the amount of ATF or replace them, and then recheck it.

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. NOISE 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 tight corner braking when the vehicle started with steering fully turned.

11.OIL LEAKS

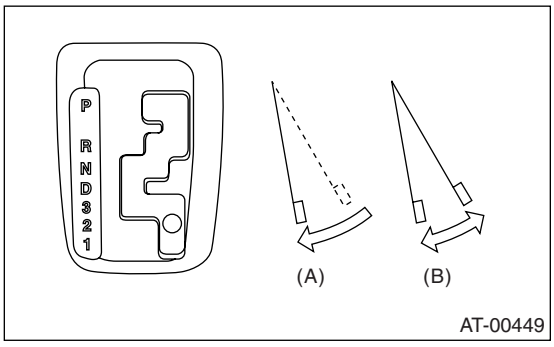
After the driving test, inspect for oil leaks.

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 (when HOLD switch is ON).
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 the throttle valve opens fully.
2) Check that the engine oil level is correct.
3) Check that the coolant level is correct.
4) Check that the ATF level is correct.
5) Check that the differential gear oil level is correct.
6) Increase ATF temperature to 70 — 80°C (158 — 176°F) by idling the engine for approximately 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) Shift the manual linkage to ensure it operates properly, then shift the select lever to the “2” range and turn the HOLD switch to 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 (with HOLD switch ON) 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 the “D” range.

NOTE:
• Do not continue the stall test for more than five 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 one 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):
2.0 L NON-TURBO MODEL
2,000 — 2,500 rpm
2.0 L TURBO MODEL
2,600 — 3,300 rpm
2.5 L NON-TURBO MODEL
2,100 — 2,600 rpm
2.5 L TURBO MODEL
2,700 — 3,200 rpm

Stall Test

Stall speed (at sea level)	Range	Cause
Less than standard	2 (Hold switch ON), R	• Throttle valve not fully open • Erroneous engine operation • Torque converter clutch's one-way clutch slipping
More than standard	D	• Line pressure is too low • Low clutch slipping • One-way clutch malfunctioning
	R	• Line pressure is too low • Reverse clutch slipping • Low & reverse brake slipping
	2 (HOLD switch ON)	• Line pressure is 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 operation fluid temperature 70 — 80°C (158 — 176°F).
- Be sure to allow a one minute interval between tests.
- Perform measurement for three times 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

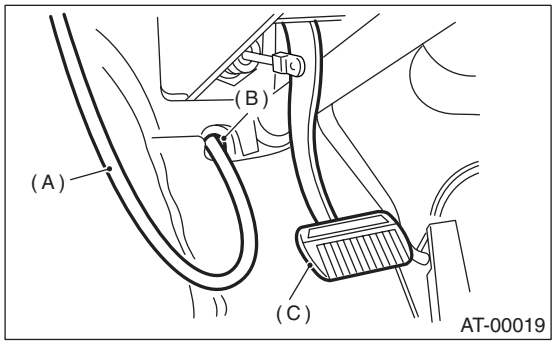
NOTE:
If the clutch or the brake shows a sign of slippage or shifting sensation is not correct, the line pressure should be checked.

• 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 insufficient oil pressure for the operation of the clutch, brake or control valve.

1) Line pressure measurement (under no load):
   (1) Before measuring 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 the select lever in “N” or “P”.)
2) Line pressure measurement (under heavy load):
   (1) Before measuring line pressure, apply both foot and parking brakes with all wheels chocked (Same as for “stall” test conditions).
   (2) Measure the line pressure when the select lever is in “D”, “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 the line pressure needs to be measured again, allow the engine to idle and cool it down more than 1 minute.)
   (4) Maintain the ATF temperature 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 the engine compartment.

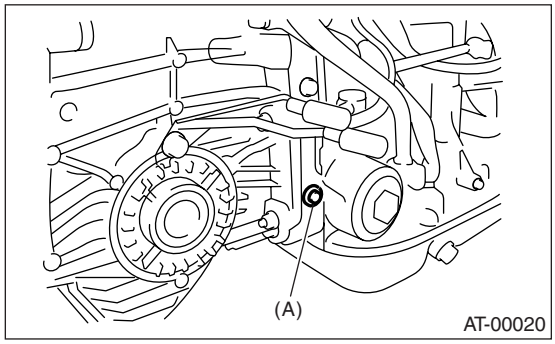
ST 498575400 OIL PRESSURE GAUGE ASSY



(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 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 the Subaru Select Monitor.

• NON-TURBO MODEL

Standard line pressure			
Range position	Line pressure duty ratio (%)	Acceleration opening angle (%)	Line pressure kPa (kg/cm^2, psi)
2 (HOLD switch ON)	5	100 (Fully opens)	1,130 — 1,275 (11.5 — 13.0, 164 — 185)
R	5	100 (Fully opens)	1,520 — 1,716 (15.5 — 17.5, 220 — 249)
D	95	0 (Fully closed)	300 — 410 (3.1 — 4.2, 44 — 60)

• TURBO MODEL

Standard line pressure			
Range position	Line pressure duty ratio (%)	Acceleration opening angle (%)	Line pressure kPa (kg/cm^2, psi)
2 (HOLD switch ON)	(2.5 — 3.5)	100 (Fully opens)	1,400 — 1,700 (14.3 — 17.3, 203 — 247)
R	(1.5 — 2.5)	100 (Fully opens)	1,600 — 1,900 (16.3 — 19.4, 232 — 276)
D	(3.5 — 4.5)	0 (Fully closed)	500 — 800 (5.1 — 8.2, 73 — 116)

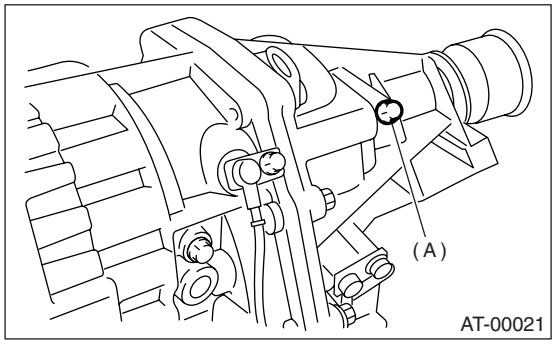
8. Transfer Clutch Pressure Test

A: INSPECTION

Check the transfer clutch pressure in accordance with the following steps in the same manner as with line pressure. <Ref. to 4AT-36, Line Pressure Test.>

ST 498897700 OIL PRESSURE ADAPTER SET
ST 498575400 OIL PRESSURE GAUGE ASSY

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.

STANDARD TRANSFER CLUTCH PRESSURE:

- NON-TURBO MODEL

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))
D	95	100 (Fully opens)	910 — 1,070 (9.3 — 10.9, 132 — 155)	—
D	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	—
D	5	0 (Fully closed)	—	0

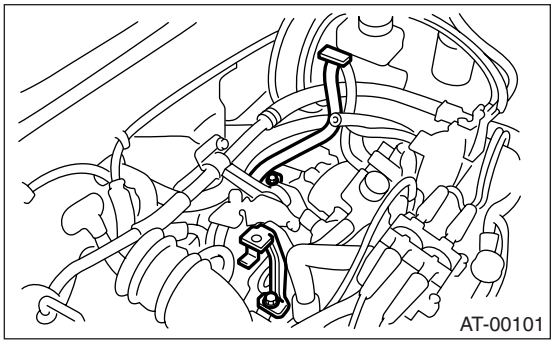
- TURBO MODEL

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)	930 — 1,100 (9.5 — 11.2, 135 — 160)	—
2	60	Adjust ON Duty ratio to 60%. (Target 12%)	420 — 560 (4.3 — 5.7, 61 — 81)	—
N or P	5	0 (Fully closed)	0	—
2	5	0 (Fully closed)	—	0

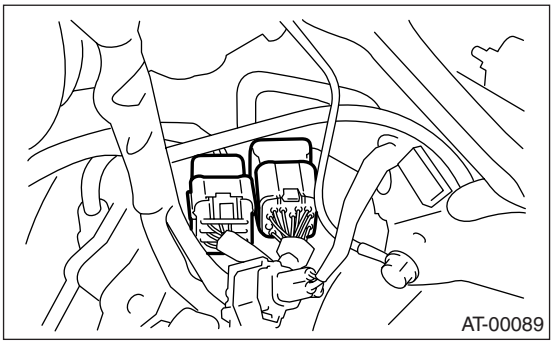
9. Automatic Transmission Assembly

A: REMOVAL

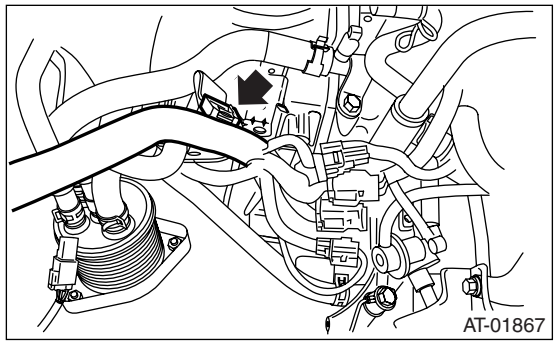
1) Set the vehicle on a lift.
2) Fully open the front hood and support with the hood stay.
3) Disconnect the ground cable from battery.
4) Remove the resonator chamber. (Non-turbo model)
<Ref. to IN(H4SO)-8, REMOVAL, Resonator Chamber.>
5) Remove the air cleaner case or air intake chamber. (Non-turbo model).
<Ref. to IN(H4SO)-6, 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).



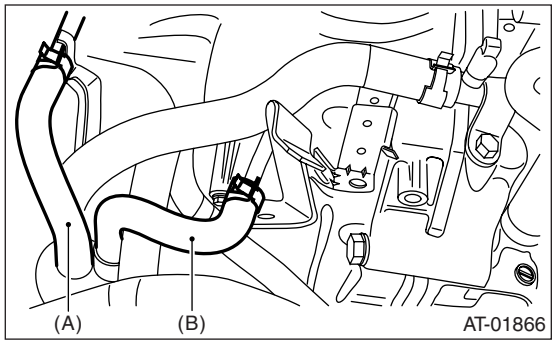
8) Disconnect the following connectors.
(1) Transmission harness connectors



(2) Transmission ground terminal
9) Remove the starter.
<Ref. to SC(H4SO)-6, REMOVAL, Starter.>
10) Remove the harness from bracket. (with ATF cooler (with warmer function))

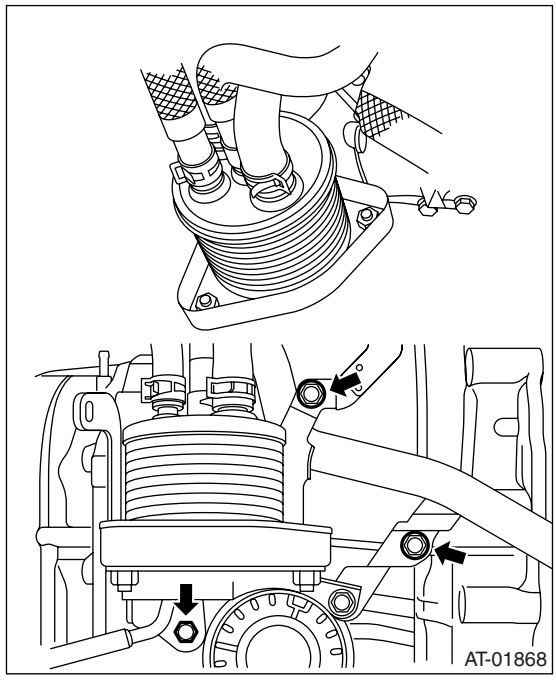


11) Disconnect the ATF cooler hoses from pipes of transmission side, and then remove the oil charger pipe. (with ATF cooler (with warmer function))

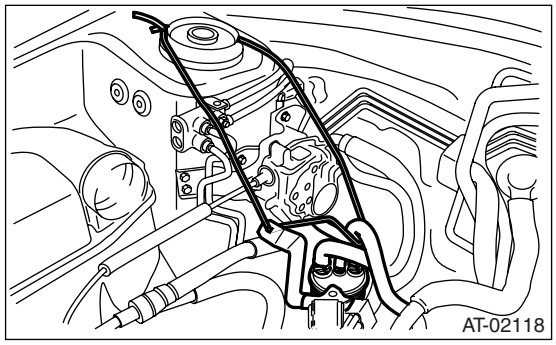


(A) Inlet hose
(B) Outlet hose

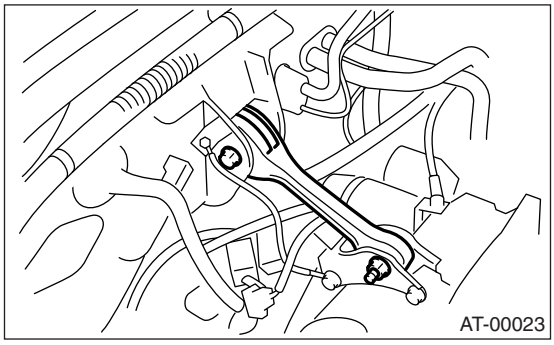
12) Remove the ATF cooler from the transmission body. (with ATF cooler (with warmer function))



13) Disconnect the hose from lower portion of ATF cooler (with warmer function), and then secure the ATF cooler to vehicle using string, etc.



14) Remove the pitching stopper.



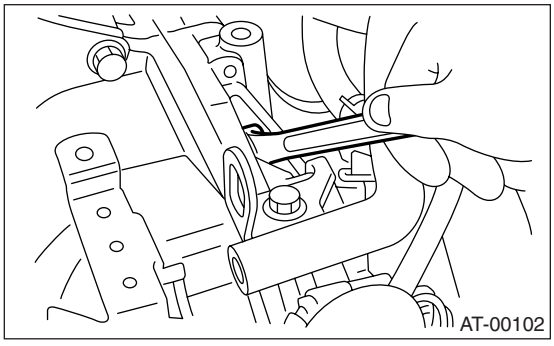
15) Separate the torque converter clutch assembly from drive plate.

(1) Remove the service hole plug.

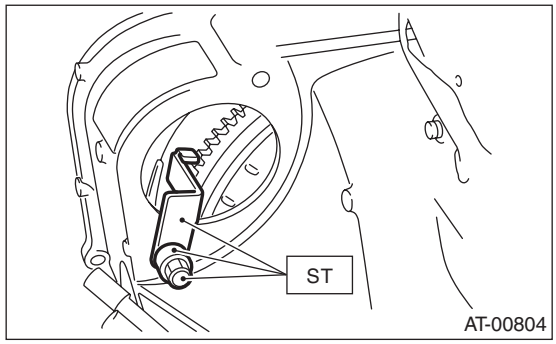
(2) Remove the bolts which hold torque converter clutch assembly to drive plate.

(3) Using ST, remove all bolts with slightly rotating crank sprocket.

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

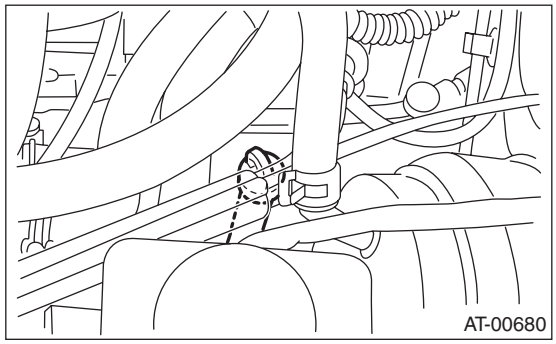


16) Install the ST to torque converter clutch case.
ST 498277200 STOPPER SET

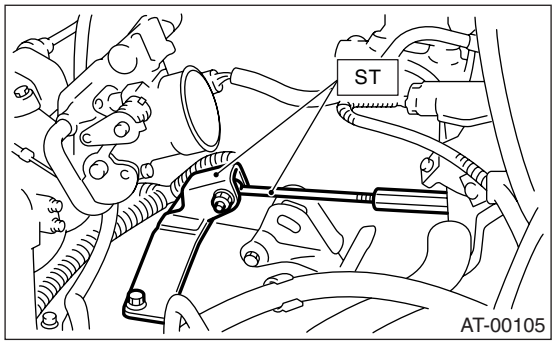


17) Remove the ATF level gauge.

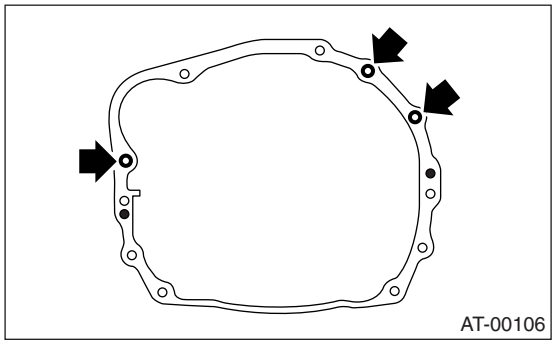
CAUTION:
Plug the opening to prevent entering foreign particles into transmission fluid.



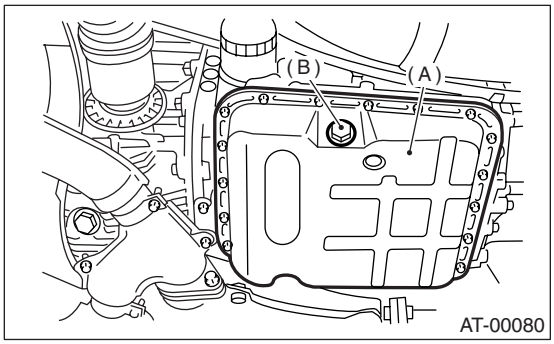
18) Set ST.
ST 41099AC000 ENGINE SUPPORT ASSEMBLY



19) Remove the bolts which hold right upper side of transmission to engine.

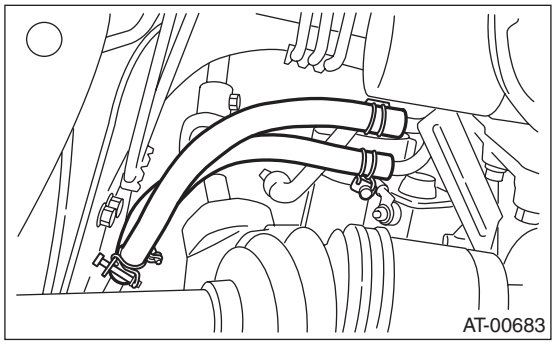


20) Lift-up the vehicle.
21) Remove the under cover.
22) Remove the front, center, rear, exhaust pipes and muffler. (Non-turbo model).
<Ref. to EX(H4SO)-7, REMOVAL, Front Exhaust Pipe.> <Ref. to EX(H4SO)-11, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4SO)-13, REMOVAL, Muffler.>
23) Remove the center, rear exhaust pipe and muffler. (Turbo model)
<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.> <Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-16, REMOVAL, Muffler.>
24) Remove the heat shield cover. (If equipped)
25) Remove the drain plug (ATF) to drain ATF.



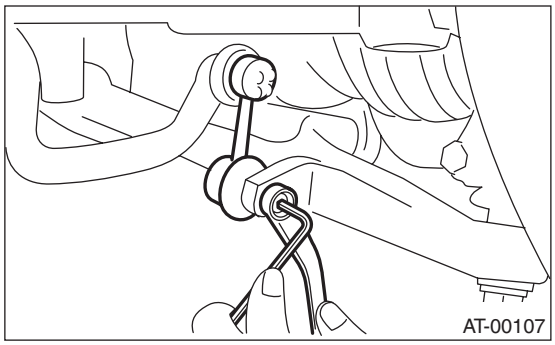
(A) Oil pan
(B) Drain plug (ATF)

26) Disconnect the ATF cooler hoses from pipes of transmission side, and remove the ATF level gauge guide. (without ATF cooler (with warmer function))

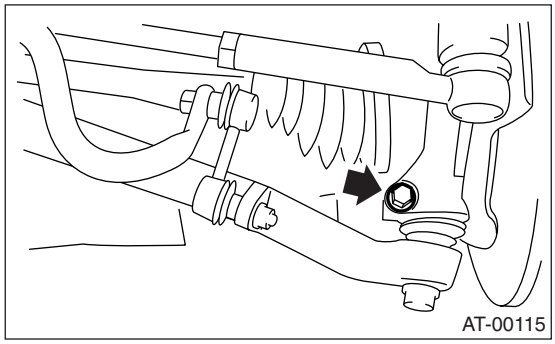


27) Remove the propeller shaft.
<Ref. to DS-15, REMOVAL, Propeller Shaft.>
28) Remove the shift select cable.
<Ref. to CS-13, REMOVAL, Select Cable.>

29) Disconnect the stabilizer link from the transverse link.

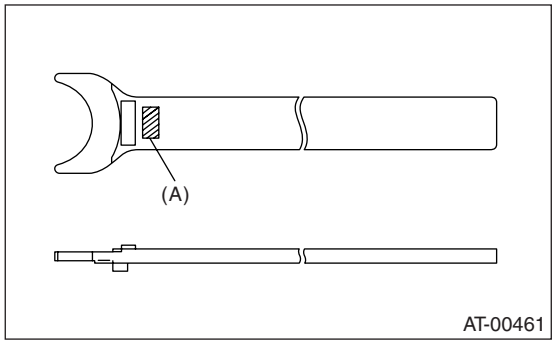


30) Remove the bolt securing ball joint of transverse link to housing.



31) Pull out the front drive shaft from transmission.
(1) Face the letter of “AT” to the transmission side.

ST 28399SA000 DRIVE SHAFT REMOVER

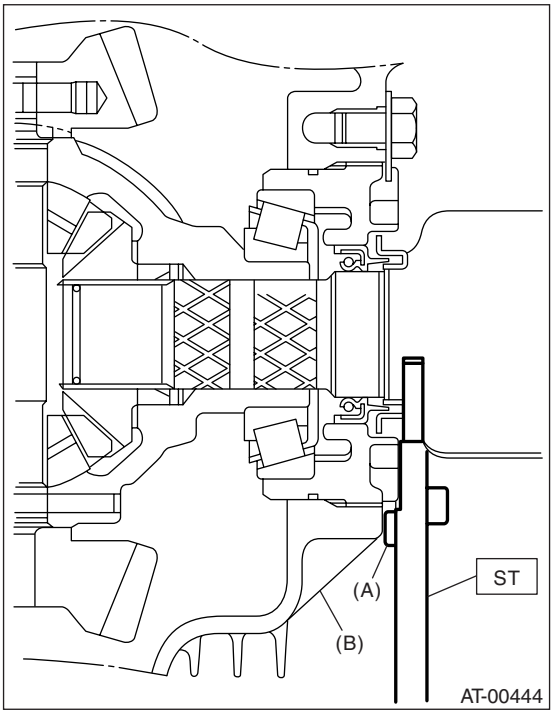


(A) Letter “AT”

(2) Insert ST between the transmission and front drive shaft.

NOTE:
Set the protrusion portion of ST to the torque converter clutch housing.

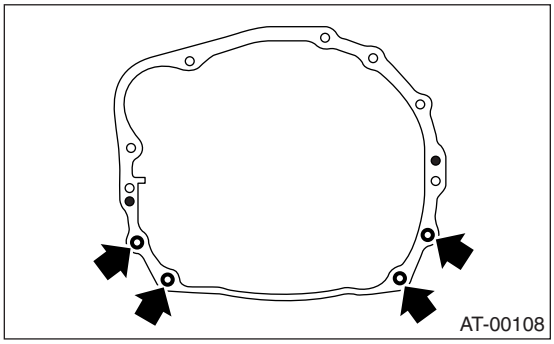
ST 28399SA000 DRIVE SHAFT REMOVER



(A) Protrusion portion of ST
(B) Torque converter clutch case

(3) Hold the joint portion of front drive shaft (AARi) by hand and extract the housing from the transmission by pressing it outside.

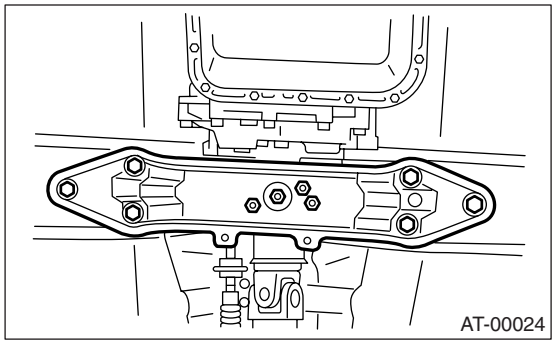
32) Remove the bolts which hold lower side of transmission to engine.



33) Place the transmission jack under transmission.

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

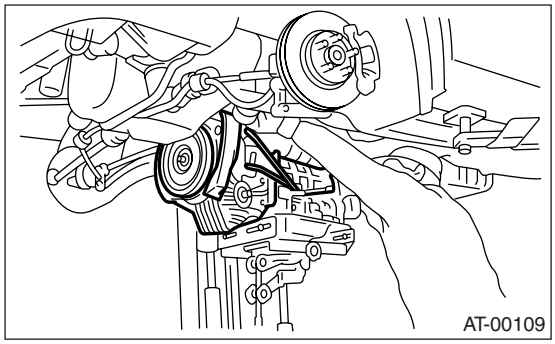
34) Remove the transmission rear crossmember from the vehicle.



35) Slightly lowering the transmission jack, fully contract the engine support and tilt the engine backward.

36) Remove the transmission.

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



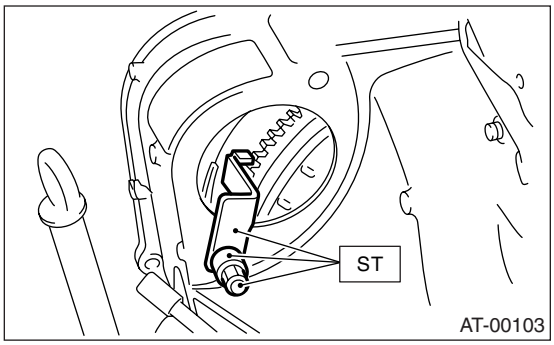
37) Remove the rear cushion rubber from transmission.

B: INSTALLATION

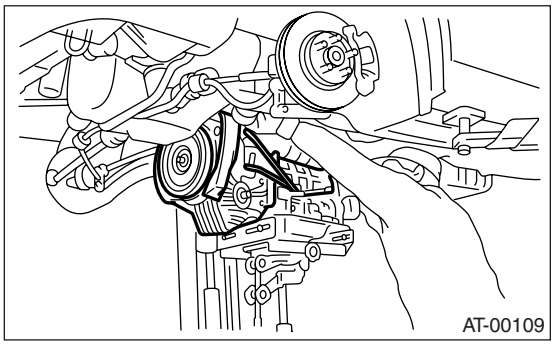
1) Replace the differential side oil seal with a new one. <Ref. to 4AT-50, REPLACEMENT, Differential Side Retainer Oil Seal.>
2) Install the rear cushion rubber to the transmission.

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

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



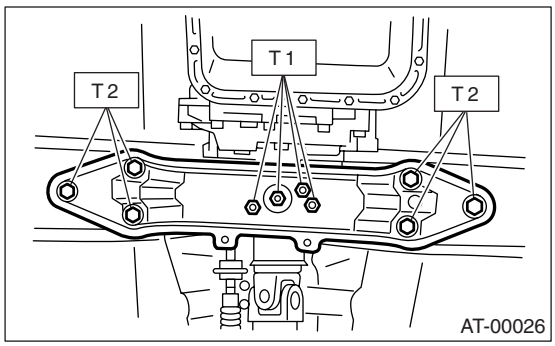
4) Install the transmission onto the engine.
(1) Lift up the transmission gradually using a transmission jack.



(2) Engage them at splines.
(3) Slightly raising the transmission jack, turn the screws of engine support and tilt the engine forward.

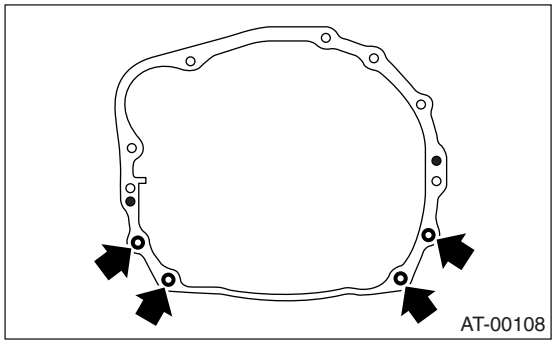
5) Install the transmission rear crossmember.

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 bolts which hold lower side of transmission to engine.

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



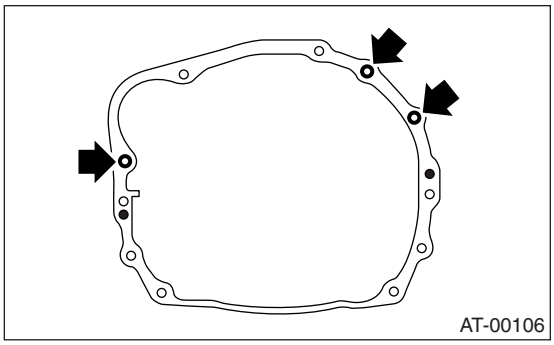
8) Lower the lift.
9) Connect the engine and transmission.
(1) Remove the ST from torque converter clutch case.

NOTE:
When removing ST, be careful not to drop it into torque converter clutch case.

ST 498277200 STOPPER SET
(2) Install the starter.
<Ref. to SC(H4SO)-6, INSTALLATION, Starter.>

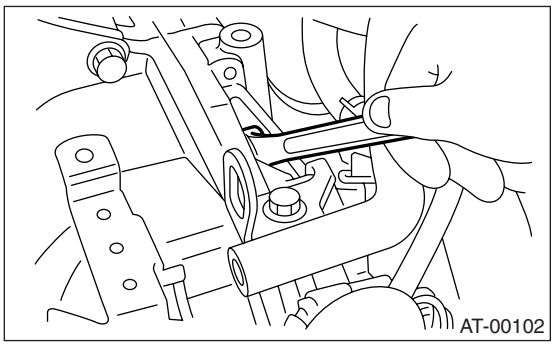
(3) Tighten the bolts which hold right upper side of transmission to engine.

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

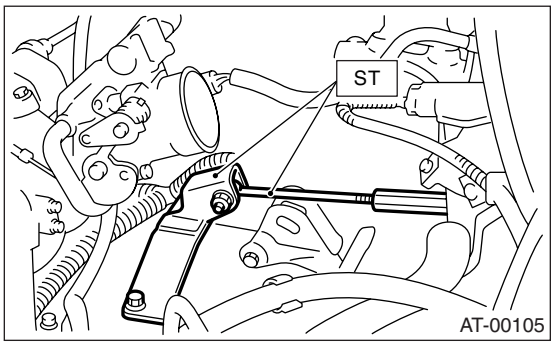


10) Install the torque converter clutch assembly to drive plate.
(1) Tighten the bolts which hold torque converter clutch assembly to drive plate.
(2) Using ST, remove all bolts with slightly rotating crank sprocket.

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

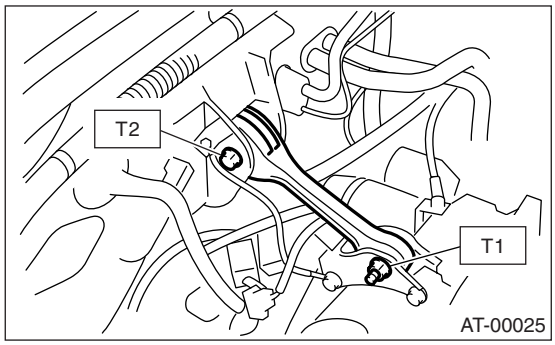


(3) Fit the plug to the service hole.
11) Remove the ST.

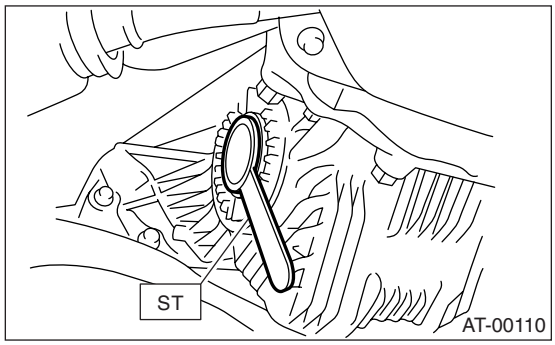


12) Install the pitching stopper.

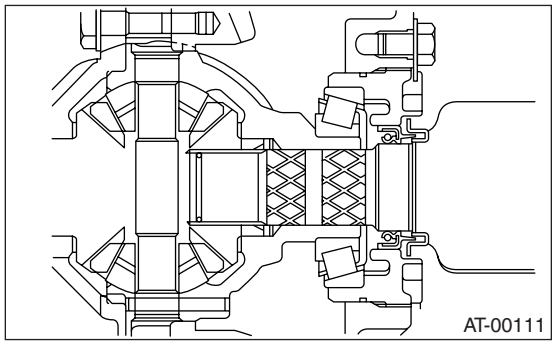
Tightening torque:
T1: 50 N·m (5.1 kgf-m, 37 ft-lb)
T2: 58 N·m (5.9 kgf-m, 43 ft-lb)



13) Lift-up the vehicle.
14) Replace the snap ring of front drive shaft with a new one.
15) Apply grease to the oil seal lips.
16) Install ST to side retainer.
ST 28399SA010 OIL SEAL PROTECTOR



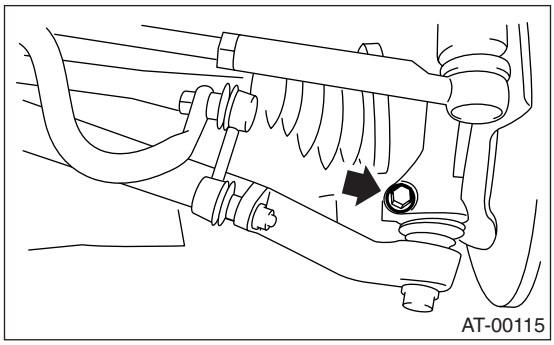
17) Align the serration of front differential shaft to that of differential bevel gear for insertion, and remove them using ST.
ST 28399SA010 OIL SEAL PROTECTOR
18) Insert the front drive shaft into transmission securely by pressing the front housing.



19) Install the ball joint onto front housing.

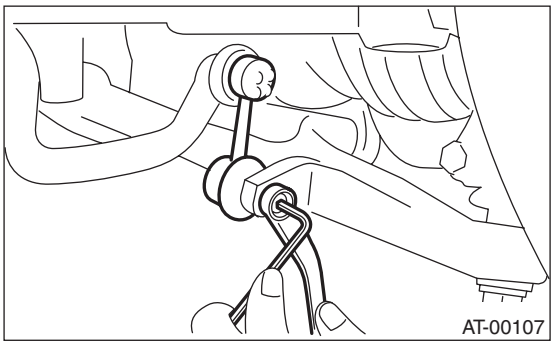
20) Tighten the attachment bolts.

Tightening torque:
49 N·m (5.0 kgf-m, 36 ft-lb)

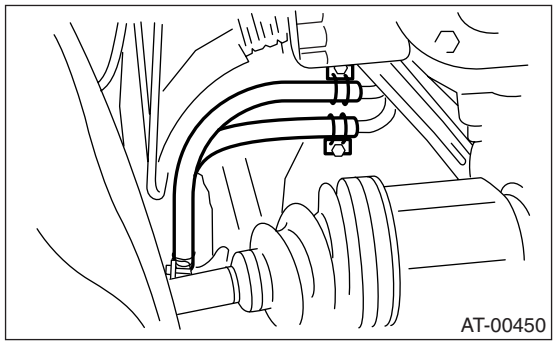


21) Install the stabilizer link from the transverse link.

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



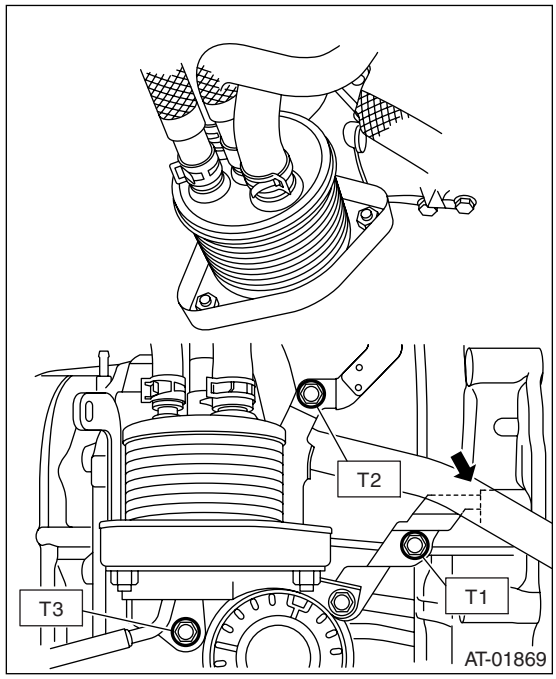
22) Install the shift select cable onto select lever.
<Ref. to CS-13, INSTALLATION, Select Cable.>
23) Connect the ATF cooler hoses to the pipe. (with ATF cooler (with warmer function))



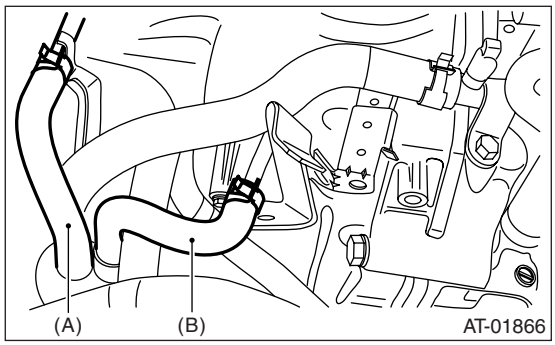
24) Install the ATF level gauge guide.
25) Install the propeller shaft.
<Ref. to DS-16, INSTALLATION, Propeller Shaft.>
26) Install the heat shield cover. (If equipped)
27) Install the rear exhaust pipe and muffler assembly.
(Non-turbo model)
<Ref. to EX(H4SO)-11, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4SO)-13, INSTALLATION, Muffler.>
(Turbo model)
<Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-16, INSTALLATION, Muffler.>
28) Install the front and center exhaust pipe. (Non-turbo model)
<Ref. to EX(H4SO)-8, INSTALLATION, Front Exhaust Pipe.>
29) Install the center exhaust pipe. (Turbo model)
<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>
30) Install the under cover.
31) Lower the lift.
32) Install the ATF cooler assembly bracket to transmission body. (with ATF cooler (with warmer function))

NOTE:
Insert the end of ATF cooler bracket to the hole of converter case.

Tightening torque:
T1: 21 N·m (2.1 kgf-m, 15.5 ft-lb)
T2: 23 N·m (2.3 kgf-m, 17.0 ft-lb)
T3: 33 N·m (3.4 kgf-m, 24.3 ft-lb)

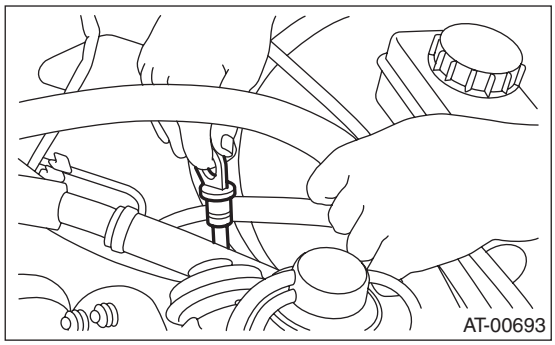


33) Connect the ATF cooler hoses to pipes on transmission side, and then install the oil charge pipe. (with ATF cooler (with warmer function))



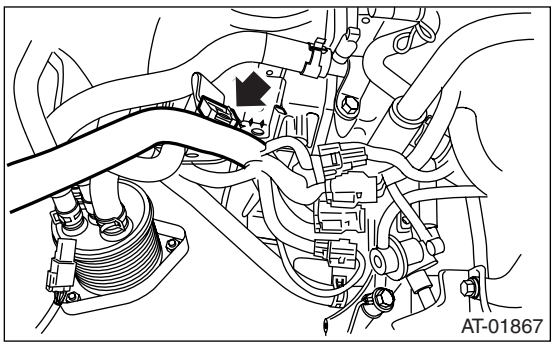
(A) Inlet hose
(B) Outlet hose

34) Install the ATF level gauge guide.



35) Connect the following connectors.
(1) Transmission harness connectors
(2) Transmission ground terminal

36) Install the harness to bracket.



37) Install the air cleaner case stay. (Non-turbo model)

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

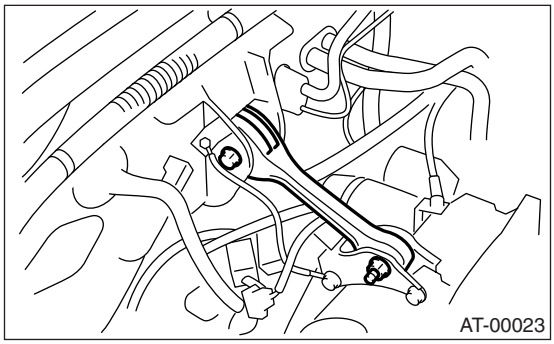
38) Install the air cleaner case and air intake duct. (Non-turbo model).
<Ref. to IN(H4SO)-6, INSTALLATION, Air Cleaner Case.> <Ref. to IN(H4SO)-7, INSTALLATION, Air Intake Duct.>
39) Install the intercooler. (Turbo model)
<Ref. to IN(H4DOTC)-11, INSTALLATION, Intercooler.>
40) Connect the battery ground cable to battery.
41) Pour ATF from the oil charge pipe. <Ref. to 4AT-30, Automatic Transmission Fluid.>
42) Check the ATF level. <Ref. to 4AT-30, Automatic Transmission Fluid.>
43) Take off the vehicle from a lift.
44) Check the select lever operation.
<Ref. to 4AT-51, INSPECTION, Inhibitor Switch.>
45) Execute the learning control promotion. (Turbo model) <Ref. to 4AT(H4DOTC)-17, FACILITATION OF LEARNING CONTROL, OPERATION, Subaru Select Monitor.>
46) Perform the road test.
<Ref. to 4AT-32, Road Test.>

10. Transmission Mounting System

A: REMOVAL

1. PITCHING STOPPER

1) Disconnect the ground cable from battery.
2) Remove the air cleaner case. (Non-turbo model).
<Ref. to IN(H4SO)-6, REMOVAL, Air Cleaner Case.>
3) Remove the intercooler. (Turbo model)
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
4) Remove the pitching stopper.

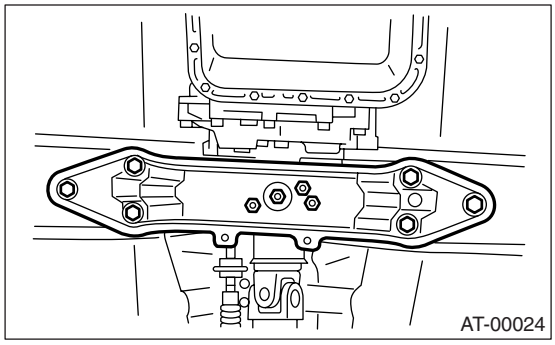


2. TRANSMISSION REAR CROSSMEMBER & REAR CUSHION RUBBER

1) Disconnect the ground cable from battery.
2) Jack-up the vehicle and support it with study racks.
3) Remove the front, center, rear exhaust pipes and muffler. (Non-turbo model).
<Ref. to EX(H4SO)-7, REMOVAL, Front Exhaust Pipe.> <Ref. to EX(H4SO)-11, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4SO)-13, REMOVAL, Muffler.>
4) Remove the center, rear exhaust pipe and muffler. (Turbo model)
<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.> <Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-16, REMOVAL, Muffler.>
5) Remove the heat shield cover. (If equipped)
6) Set the transmission jack under the transmission.

NOTE:
Make sure that the support plate of transmission jack does not touch the oil pan.

7) Remove the transmission rear crossmember.



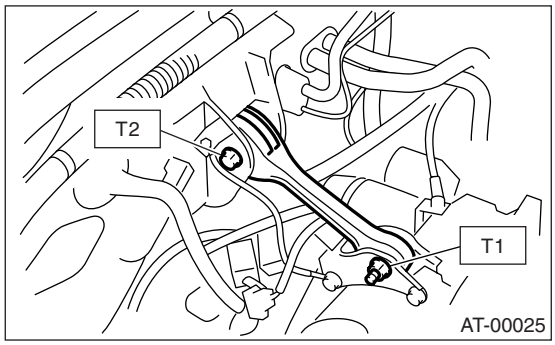
8) Remove the rear cushion rubber.

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)-6, INSTALLATION, Air Cleaner Case.>
3) Install the intercooler. (Turbo model)
<Ref. to IN(H4DOTC)-11, INSTALLATION, Intercooler.>

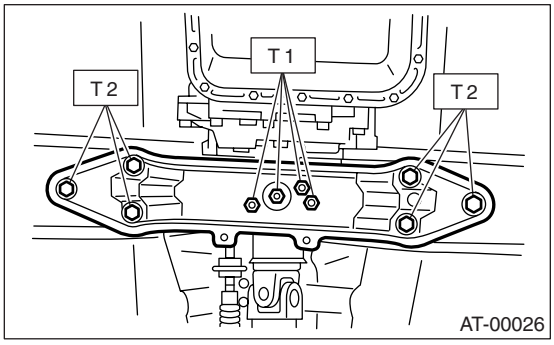
2. TRANSMISSION REAR CROSSMEMBER & REAR CUSHION RUBBER

1) Install the rear cushion rubber.

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

2) 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)



3) Remove the transmission jack.
4) Install the heat shield cover. (If equipped)
5) Install the front, center, rear exhaust pipes and muffler. (Non-turbo model).
<Ref. to EX(H4SO)-8, INSTALLATION, Front Exhaust Pipe.> <Ref. to EX(H4SO)-11, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4SO)-13, INSTALLATION, Muffler.>
6) Install the center, rear exhaust pipe and muffler. (Turbo model)
<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.> <Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-16, INSTALLATION, Muffler.>

C: INSPECTION

Perform the following inspection procedures and repair or replace the parts if defective.

1. PITCHING STOPPER

Make sure that the pitching stopper is not bent or damaged. Ensure there are no cracks, hardening, or damage on rubbers.

2. TRANSMISSION REAR CROSSMEMBER & REAR CUSHION RUBBER

Make sure that the crossmember is not bent or damaged. Ensure there are no cracks, breakage or damage on cushion rubbers.