1. General Description

A: SPECIFICATION

1. TORQUE CONVERTER CLUTCH

Model	3.6 L non-turbo
Type	Symmetric, 3-element, single stage, 2-phase torque converter
Stall torque ratio	1.8
Nominal diameter	246 mm (9.69 in)
Stall speed (at sea level)	2,100 — 2,600 rpm
One-way clutch	Sprague type one-way clutch

2. OIL PUMP

Type	Internal gear fixed displacement pump	
Driving method	Driven by engine	
Number of teeth	Inner rotor	9
	Outer rotor	10

3. TRANSMISSION CONTROL ELEMENT

Type	5-forward, 1-reverse, double-row planetary gears
Multi-plate clutch	3 sets
Multi-plate brake	3 sets
One-way clutch (sprague type)	2 sets

4. TRANSMISSION GEAR RATIO

1st	3.540
2nd	2.264
3rd	1.471
4th	1.000
5th	0.834
Rev.	2.370

5. PLANETARY GEAR AND PLATE

Model	3.6 L non-turbo
Number of front internal gear teeth	106
Number of front carrier teeth	28
Number of front sun gear teeth	50
Number of mid internal gear teeth	78
Number of mid carrier teeth	18
Number of mid sun gear teeth	42
Number of rear internal gear teeth	110
Number of rear carrier teeth	24
Number of rear sun gear teeth	62
Number of front brake drive plates	2
Number of input clutch drive plates	6
Number of high & low reverse clutch drive plates	4
Number of direct clutch drive plates	5
Number of reverse brake drive plates	5
Number of forward brake drive plates	5

6. SELECTOR POSITION

P (Park)	Transmission is in neutral, output member is immovable, engine start is possible
R (Reverse)	Transmission is in reverse.
N (Neutral)	Transmission is in neutral and engine start is possible
D (Drive)	Automatic gear change 1st ←→ 2nd ←→ 3rd ←→ 4th ←→ 5th
M (Manual mode), Paddle shift (+)	Manual gear change 1st → 2nd → 3rd → 4th → 5th
M (Manual mode), Paddle shift (–)	Manual gear change 1st ← 2nd ← 3rd ← 4th ← 5th
Control method	Wire cable type

7. HYDRAULIC CONTROL AND LUBRICATION

Type		Electronic/hydraulic control [5 forward gear changes made by electronic signals of vehicle speed and accelerator (throttle) opening]
Fluid	Recommended materials	SUBARU ATF HP
	Alternative	Idemitsu “ATF HP” **CAUTION:** **Be sure to use the recommended or equivalent ATF. Using material except recommended one or substitute would cause trouble.**
Fluid capacity ℓ (US qt, Imp qt)		9.6 — 10.0 (10.1 — 10.6, 8.4 — 8.8)
Lubrication system		Forced feed lubrication with oil pump

8. COOLING AND HARNESS

Cooling system	Liquid-cooler incorporated in radiator
Transmission harness	20 + 8 poles

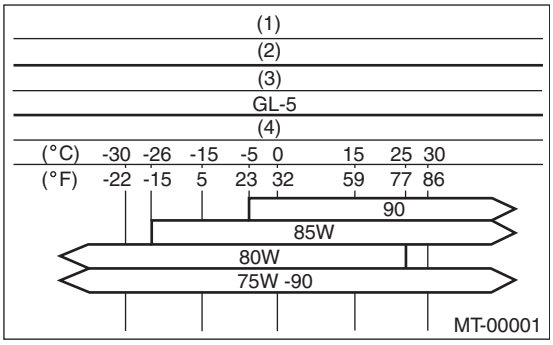
9. TRANSFER

Transfer type	Variable torque distribution (VTD)
Number of transfer clutch drives & driven plates	3
Reduction gear ratio	1.000 (41/41)

10.FINAL REDUCTION GEAR

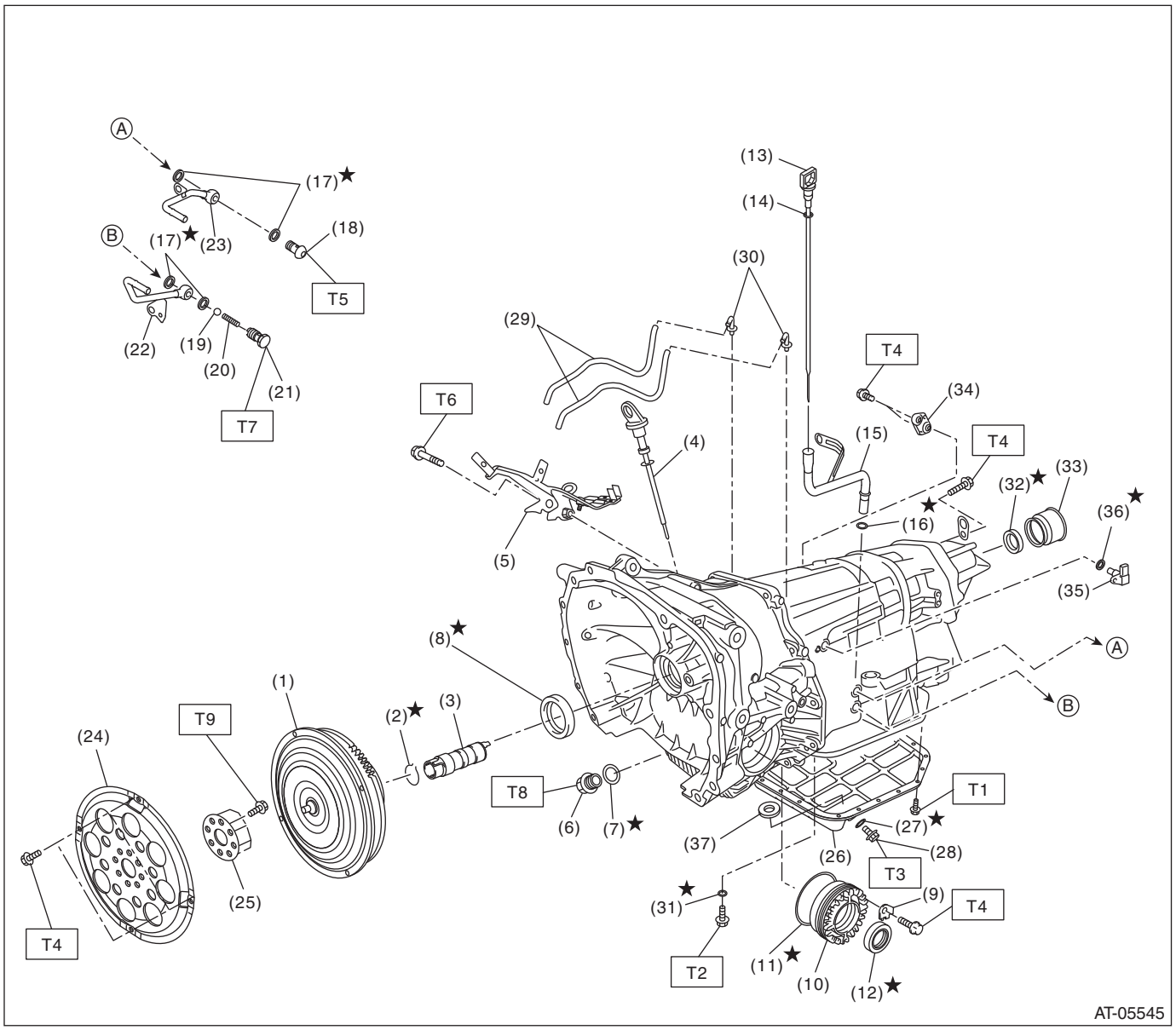
Model	3.6 L non-turbo
Front final reduction gear ratio	3.083

11.RECOMMENDED GEAR OIL

Lubrication oil	 (1) Item (2) Front differential gear oil (3) API standard (4) SAE viscosity No. and applicable temperature
Front differential oil capacity ℓ (US qt, Imp qt)	1.3 — 1.5 (1.4 — 1.6, 1.1 — 1.3)

B: COMPONENT

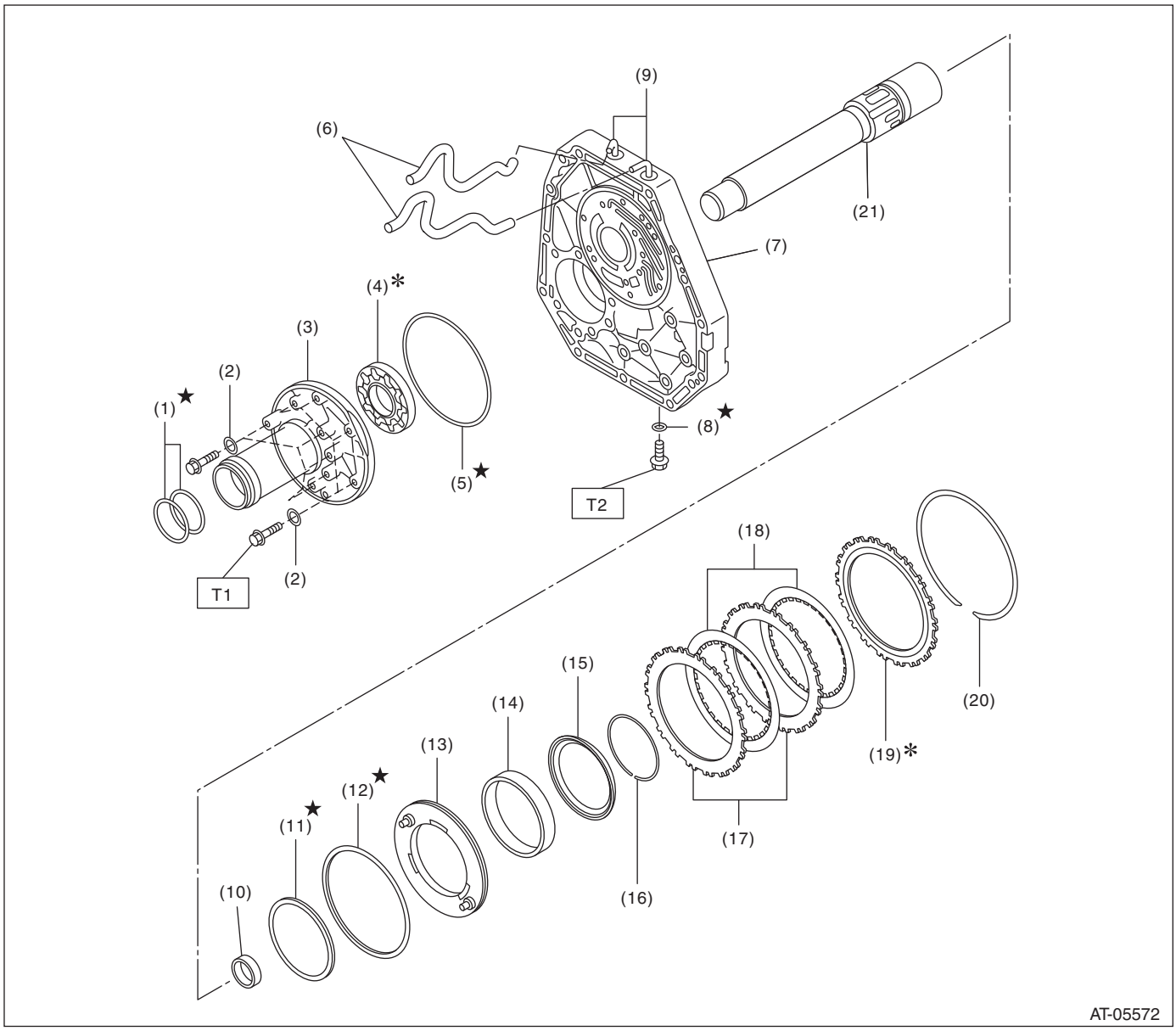
1. TORQUE CONVERTER CLUTCH & TRANSMISSION ASSEMBLY



(1) Torque converter ASSY
(2) Circlip
(3) Oil pump shaft
(4) Differential oil level gauge
(5) Transmission hanger COMPL
(6) Differential oil drain plug
(7) Gasket
(8) Oil seal
(9) Lock plate
(10) Side retainer
(11) O-ring
(12) Oil seal
(13) ATF level gauge
(14) O-ring
(15) Oil charge pipe
(16) O-ring
(17) Gasket
(18) Union screw
(19) Ball
(20) Spring
(21) Union screw
(22) ATF outlet pipe
(23) ATF inlet pipe
(24) Drive plate
(25) Reinforcement drive plate
(26) Oil pan
(27) Gasket
(28) ATF drain plug
(29) Breather hose
(30) Nipple
(31) O-ring
(32) Oil seal
(33) Dust cover
(34) Floating bracket
(35) Turbine speed sensor 1
(36) O-ring
(37) Magnet

Tightening torque:N·m (kgf-m, ft-lb)	
T1:	***5 (0.5, 3.7)***
T2:	***13 (1.3, 9.6)***
T3:	***20 (2.0, 14.8)***
T4:	***25 (2.5, 18.4)***
T5:	***40 (4.1, 29.5)***
T6:	***41 (4.2, 30.2)***
T7:	***45 (4.6, 33.2)***
T8:	***70 (7.1, 51.6)***
T9:	***90 (9.2, 66.4)***

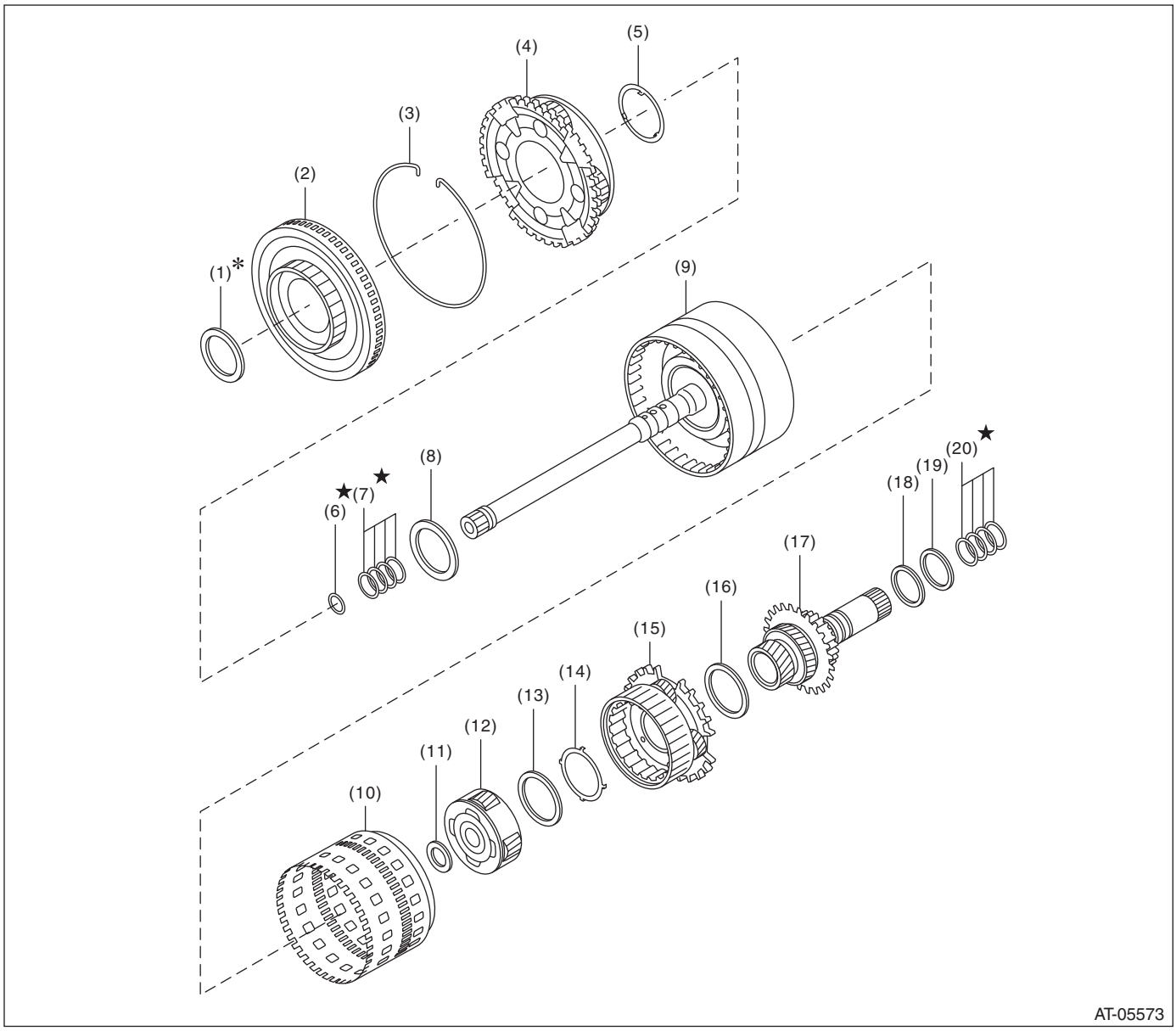
2. OIL PUMP & FRONT BRAKE



(1) O-ring
(2) Washer
(3) Oil pump housing
(4) Oil pump rotor
(5) O-ring
(6) Air breather hose
(7) Oil pump cover
(8) O-ring
(9) Nipple
(10) Needle bearing
(11) D-ring (Inner)
(12) D-ring (Outer)
(13) Front brake piston
(14) Return spring
(15) Retainer
(16) Snap ring
(17) Driven plate
(18) Drive plate
(19) Retaining plate
(20) Snap ring
(21) Stator shaft

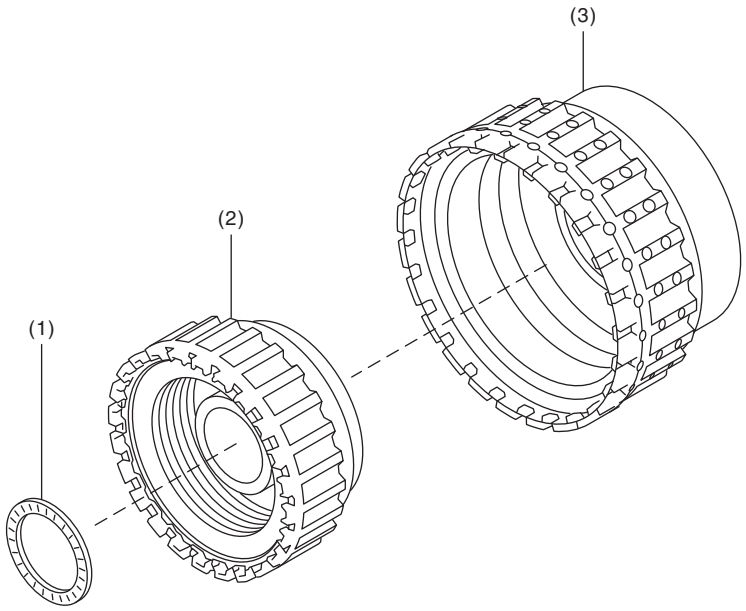
Tightening torque:N·m (kgf-m, ft-lb)
T1: 10 (1.0, 7.4)
T2: 13 (1.3, 9.6)

3. FRONT PLANETARY CARRIER AND MIDDLE & REAR PLANETARY CARRIER



(1) Thrust bearing
(2) Front sun gear ASSY
(3) Snap ring
(4) Front carrier ASSY
(5) Race bearing
(6) O-ring
(7) Seal ring
(8) Thrust bearing
(9) Input clutch ASSY
(10) Rear internal gear ASSY
(11) Thrust bearing
(12) Middle carrier ASSY
(13) Thrust bearing
(14) Race bearing
(15) Rear carrier ASSY
(16) Thrust bearing
(17) Middle & rear sun gear ASSY
(18) Washer
(19) Thrust bearing
(20) Seal ring

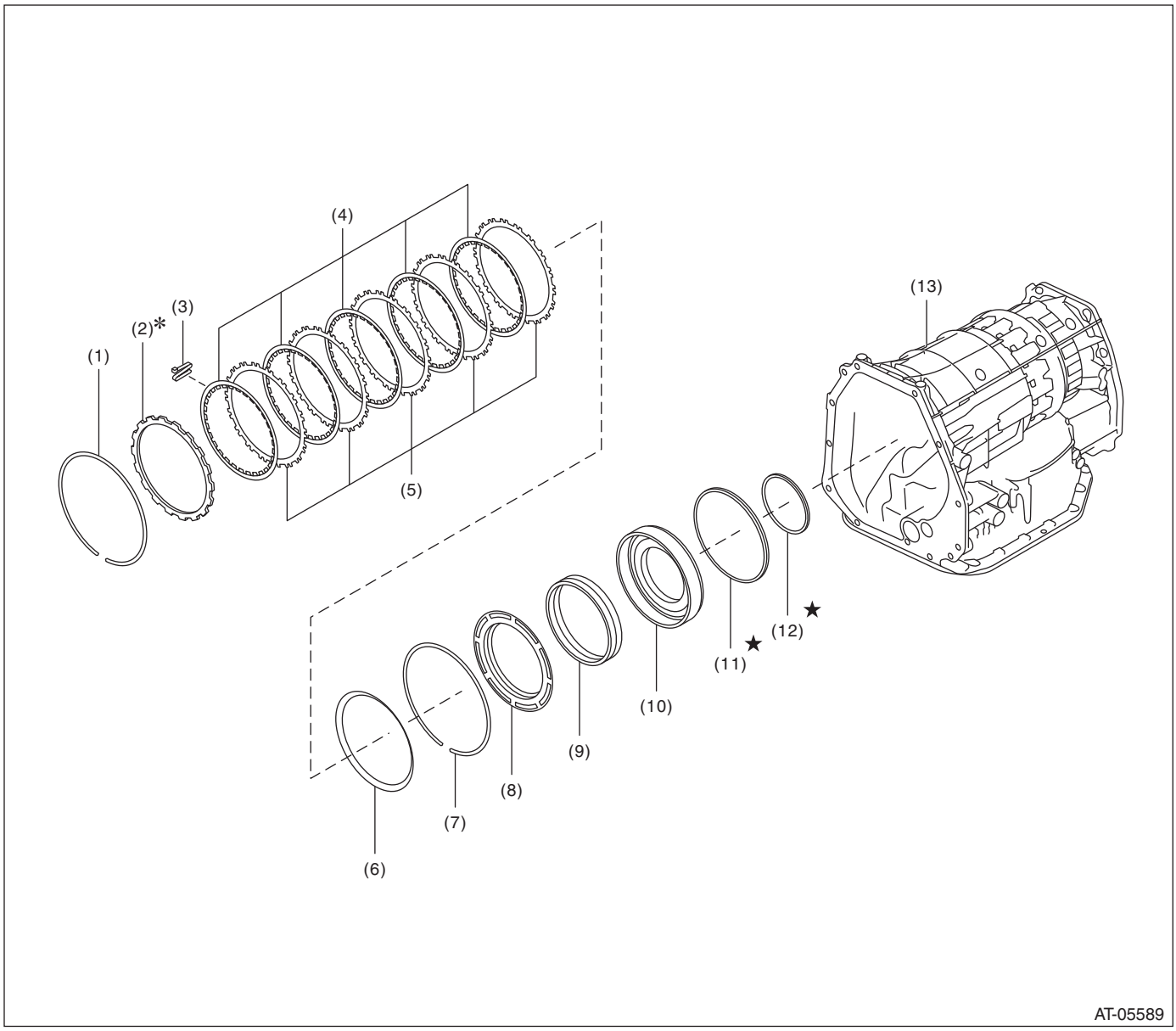
4. DIRECT CLUTCH AND HIGH & LOW REVERSE CLUTCH



AT-02018

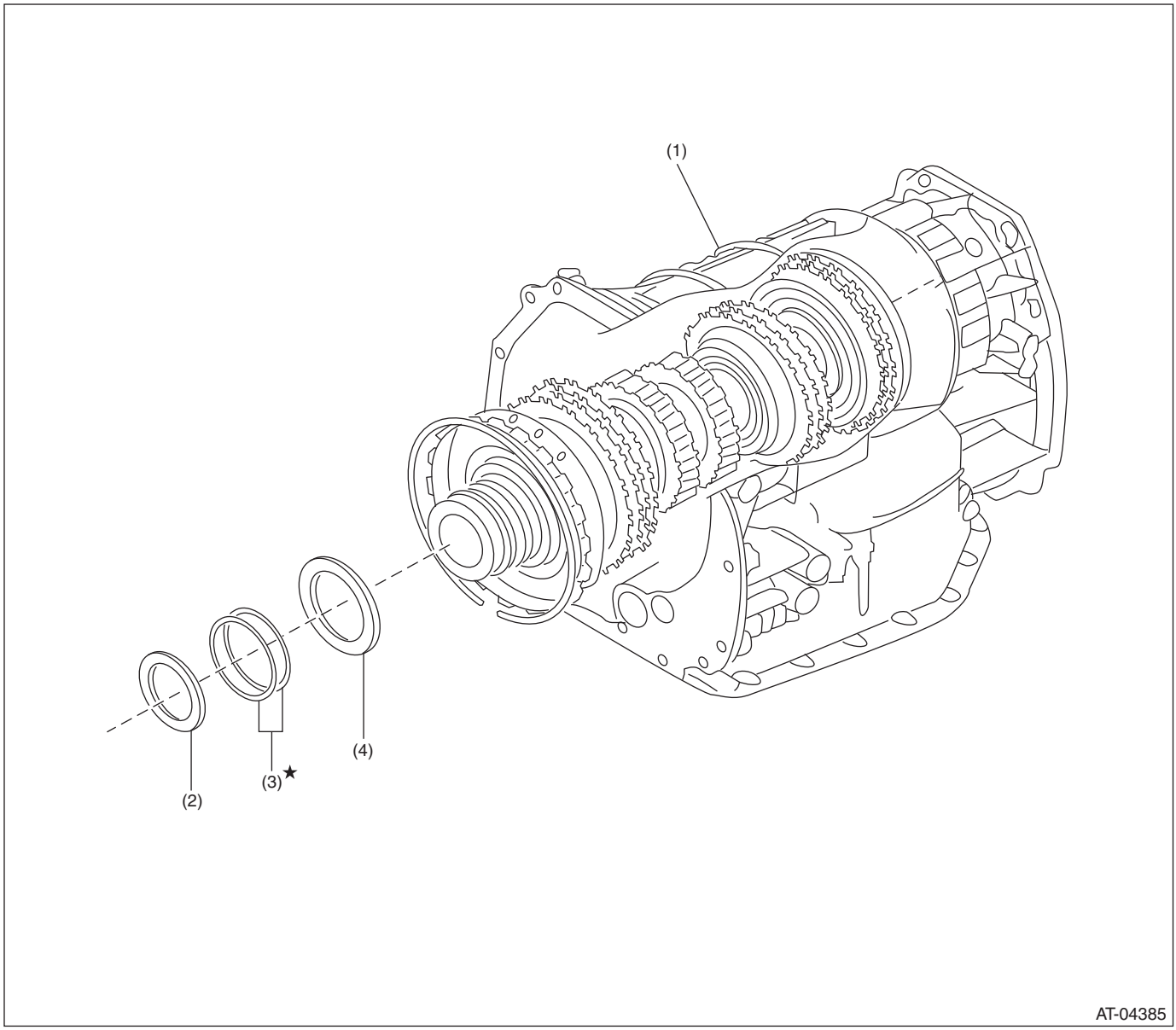
(1) Thrust bearing
(2) High & low reverse clutch ASSY
(3) Direct clutch ASSY

5. REVERSE BRAKE



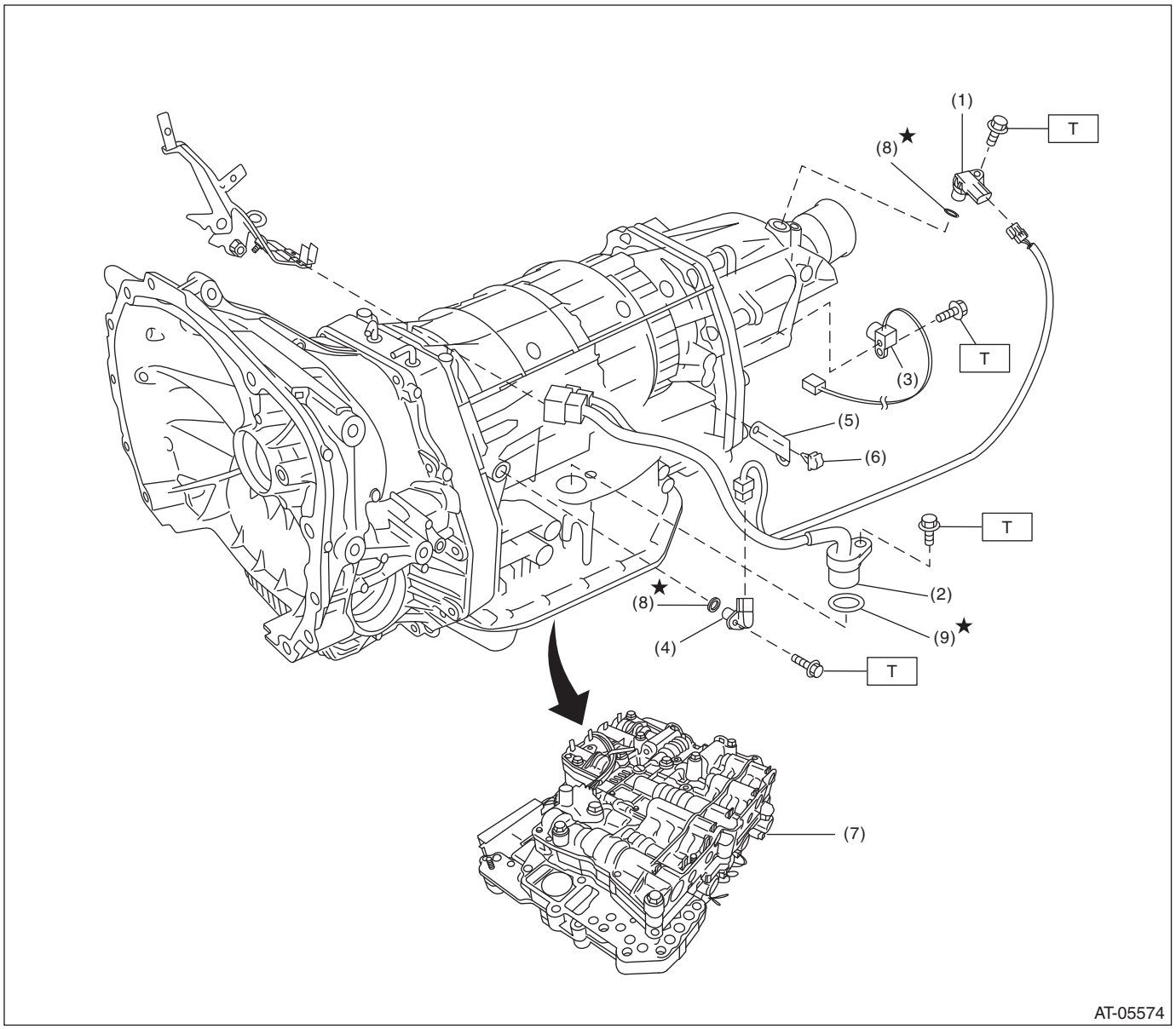
(1) Snap ring
(2) Retaining plate
(3) Leaf spring
(4) Drive plate
(5) Driven plate
(6) Dish plate
(7) Snap ring
(8) Retainer
(9) Return spring
(10) Reverse brake piston
(11) D-ring (Outer)
(12) D-ring (Inner)
(13) AT main case

6. SHORT AT ASSEMBLY



(1) Short AT assembly (non-disassembly)
(2) Thrust bearing
(3) Seal ring
(4) Thrust bearing

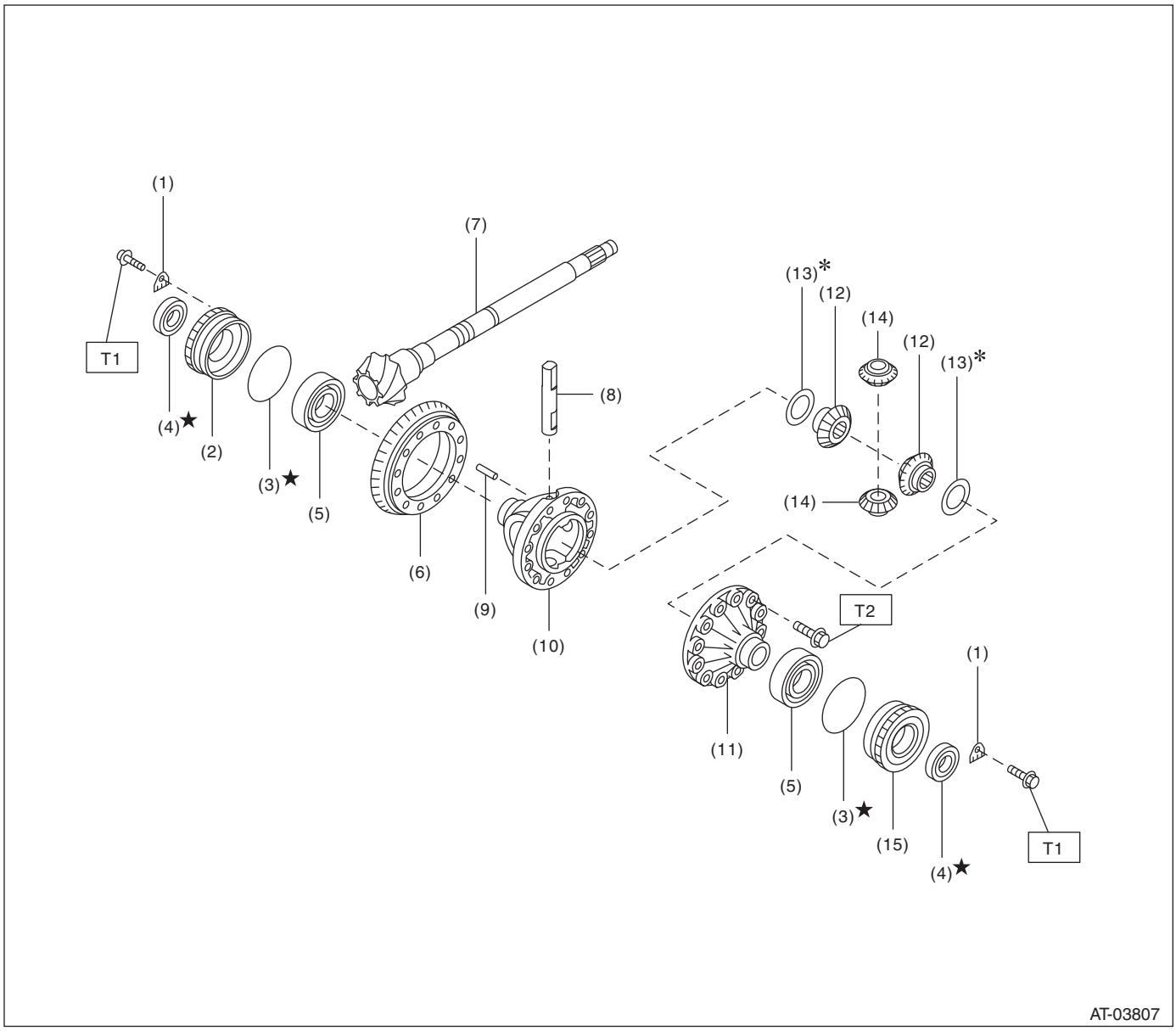
7. CONTROL VALVE & TRANSMISSION HARNESS



(1) Rear vehicle speed sensor
(2) Transmission harness ASSY
(3) Front vehicle speed sensor
(4) Turbine speed sensor 1
(5) Harness bracket
(6) Clip
(7) Control valve ASSY
(8) O-ring
(9) O-ring

Tightening torque:N·m (kgf-m, ft-lb)
T: 7 (0.7, 5.2)

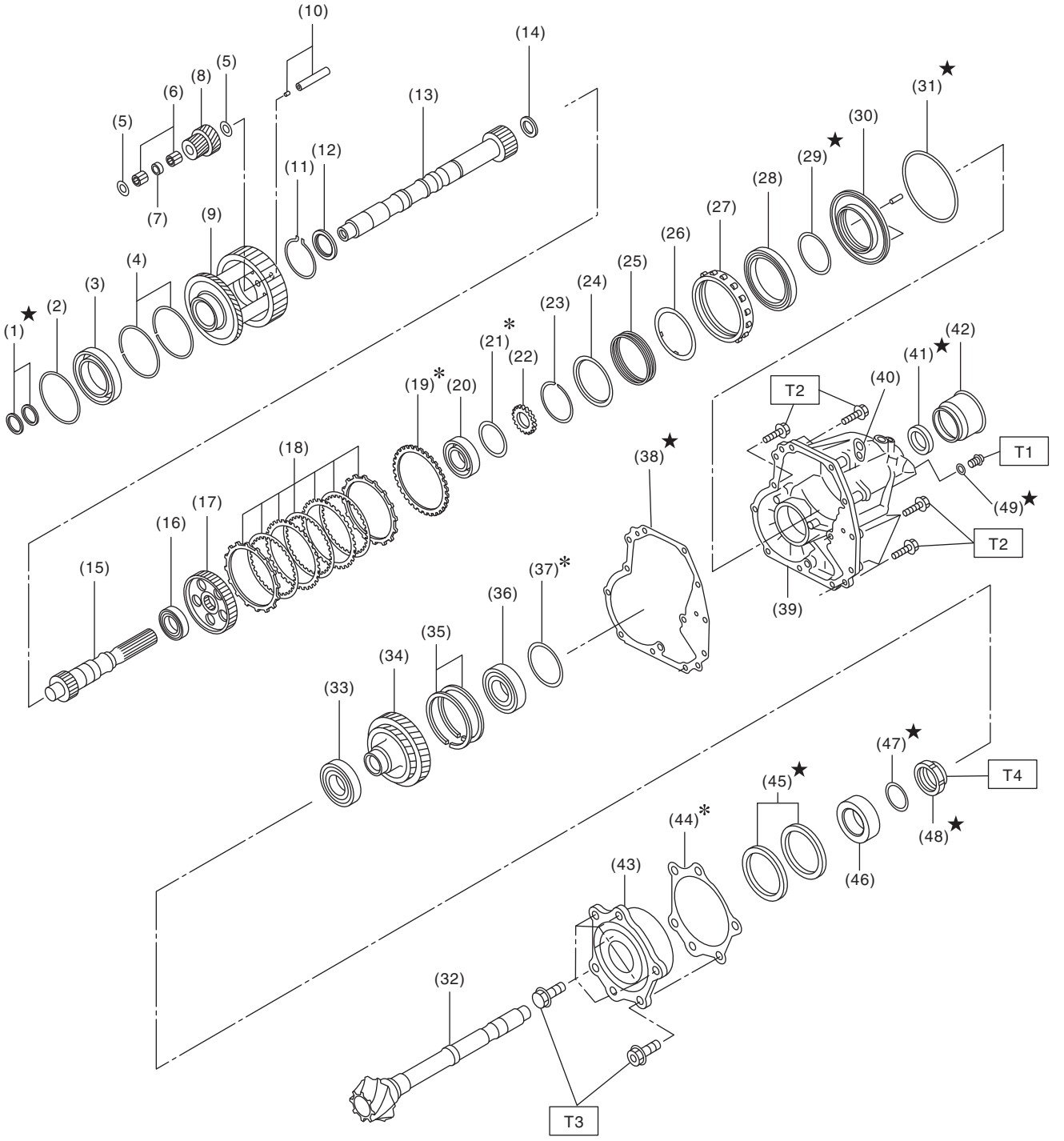
8. DIFFERENTIAL GEAR



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

Tightening torque:N·m (kgf-m, ft-lb)
T1: 25 (2.5, 18.4)
T2: 70 (7.1, 51.6)

9. TRANSFER CASE, EXTENSION CASE & REDUCTION GEAR

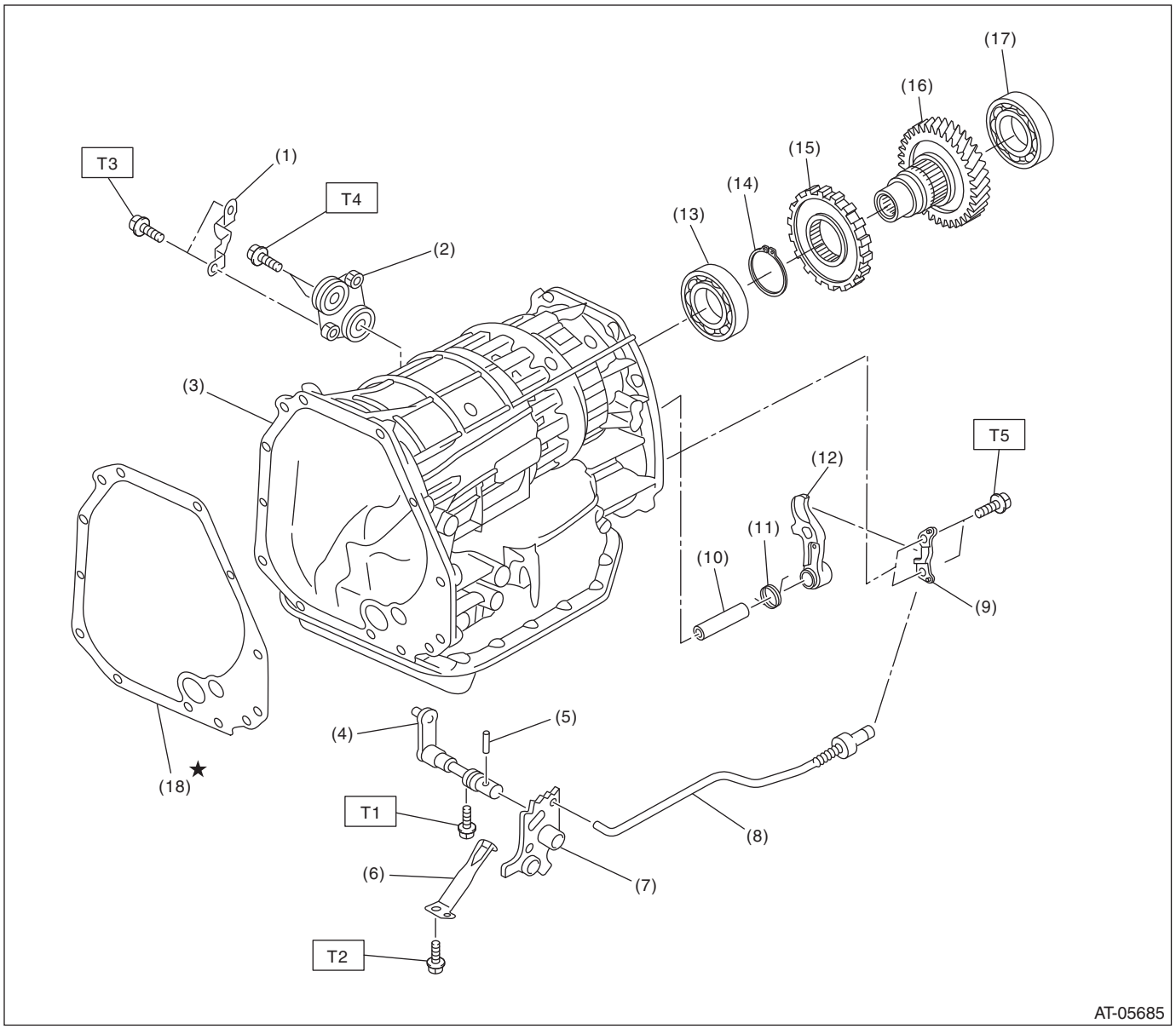


AT-05595

(1) Seal ring
(2) Reduction gear shim
(3) Ball bearing
(4) Snap ring
(5) Planetary pinion washer
(6) Needle bearing
(7) Spacer
(8) Pinion gear
(9) Planetary carrier ASSY
(10) Planetary pinion shaft ASSY
(11) Snap ring
(12) Thrust bearing
(13) Intermediate shaft
(14) Thrust washer
(15) Rear drive shaft
(16) Ball bearing
(17) Transfer clutch hub
(18) Transfer clutch plate
(19) Driven plate No. 3.
(20) Ball bearing
(21) Rear drive shaft shim
(22) Revolution gear
(23) Snap ring
(24) Clutch spring retainer
(25) Return spring
(26) Spring retainer
(27) Pressure plate
(28) Ball bearing
(29) O-ring
(30) Transfer clutch piston
(31) D-ring
(32) Drive pinion shaft
(33) Ball bearing
(34) Reduction driven gear
(35) Snap ring
(36) Ball bearing
(37) Shim
(38) Gasket
(39) Extension case
(40) Transmission hanger
(41) Oil seal
(42) Dust cover
(43) Taper roller bearing
(44) Drive pinion shim
(45) Oil seal
(46) Drive pinion collar
(47) O-ring
(48) Lock nut
(49) O-ring

Tightening torque:N·m (kgf-m, ft-lb)
T1: 13 (1.3, 9.6)
T2: 25 (2.5, 18.4)
T3: 70 (7.1, 51.6)
T4: 116 (11.8, 85.6)

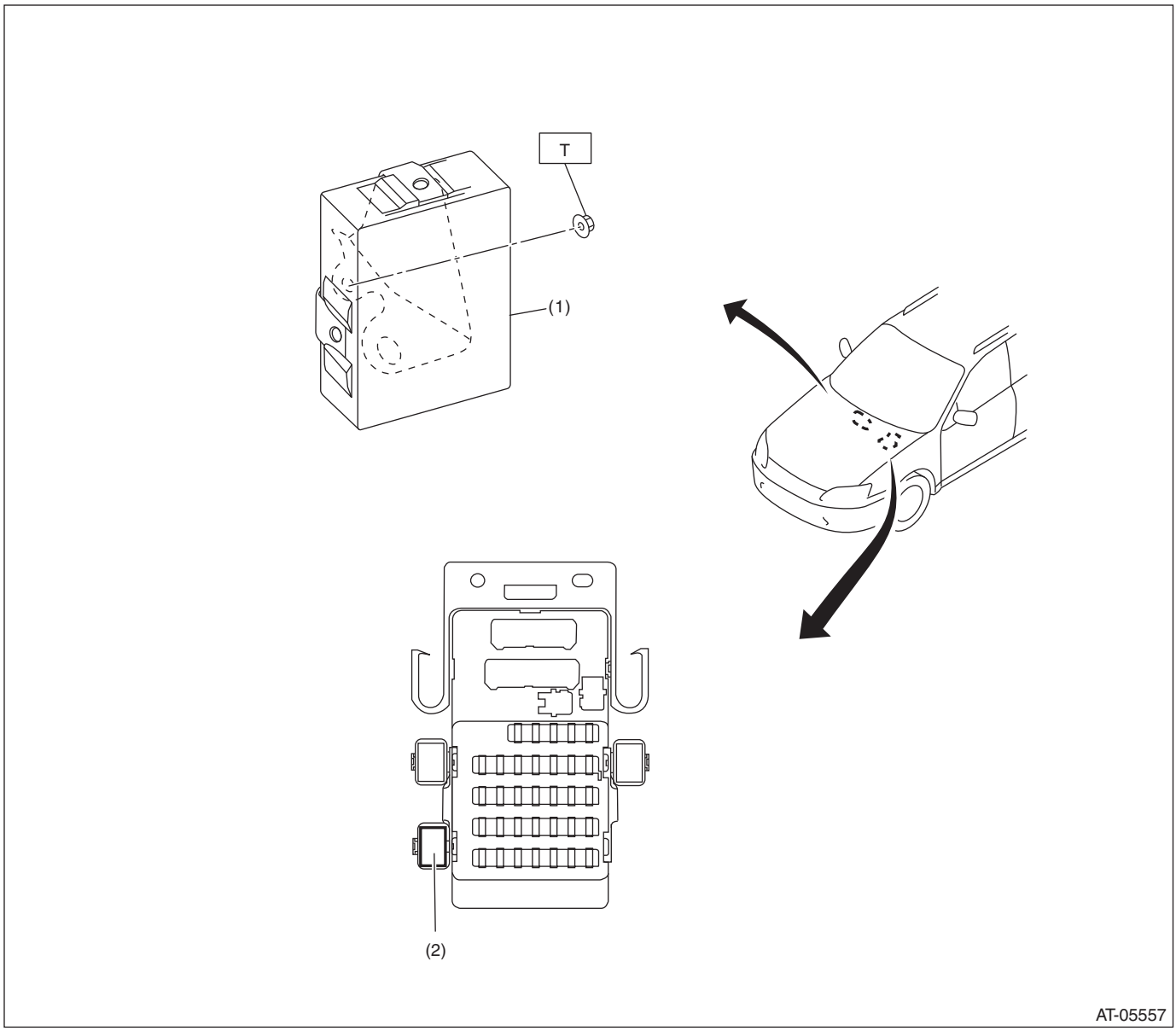
10.TRANSMISSION CONTROL DEVICE & PARKING SUPPORT



(1)	Bracket	(10)	Parking pawl shaft
(2)	Floating bracket	(11)	Return spring
(3)	AT main case	(12)	Parking pawl
(4)	Range select lever	(13)	Ball bearing
(5)	Straight pin	(14)	Snap ring
(6)	Detent spring	(15)	Parking gear
(7)	Manual plate	(16)	Reduction driven gear
(8)	Parking rod	(17)	Ball bearing
(9)	Parking support actuator	(18)	Gasket

Tightening torque:N·m (kgf-m, ft-lb)
T1: 6 (0.6, 4.4)
T2: 7 (0.7, 5.2)
T3: 18 (1.8, 13.3)
T4: 25 (2.5, 18.4)
T5: <Ref. to 5AT-76, Parking Pawl.>

11.TRANSMISSION CONTROL MODULE

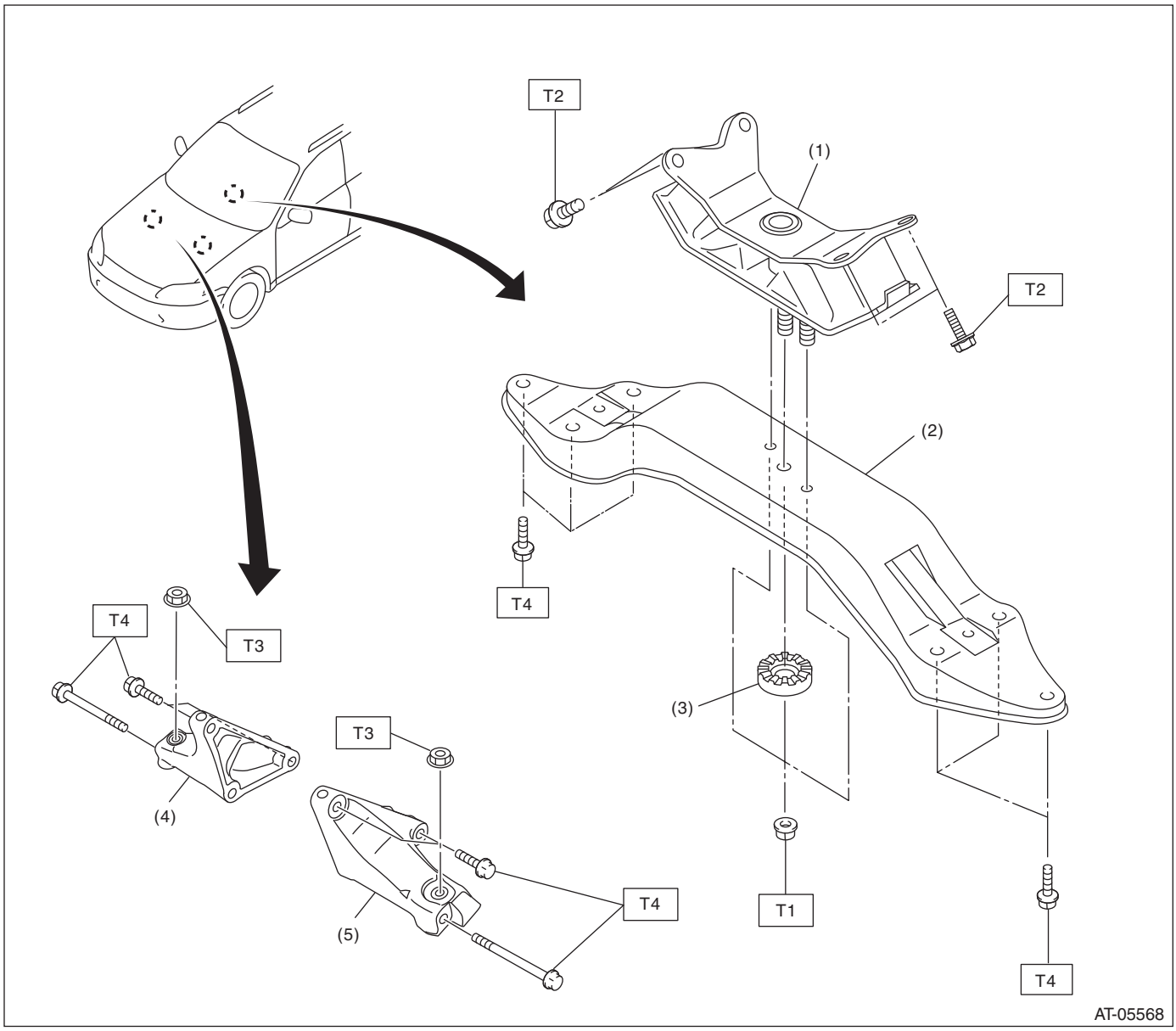


(1) Transmission control module (TCM)
(2) Relay

Tightening torque:N·m (kgf-m, ft-lb)

T: 7.5 (0.8, 5.5)

12.TRANSMISSION MOUNTING



(1)	Rear cushion rubber	(4)	Transmission main mounting bracket (RH)
(2)	Crossmember	(5)	Transmission main mounting bracket (LH)
(3)	Stopper		

Tightening torque:N·m (kgf-m, ft-lb)

T1: 35 (3.6, 25.8)

T2: 40 (4.1, 29.5)

T3: 45 (4.6, 33.2)

T4: 75 (7.6, 55.3)

C: CAUTION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- 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 removed, do not place with the oil pan 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, disassembly and replacement.
- When disassembling the case and other light alloy parts, disassemble them by slightly tapping with a plastic hammer. Do not pry apart with screwdrivers or other tools.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Use SUBARU genuine gear oil, grease or equivalent. Do not mix them of different grades or manufacturers.
- Be sure to tighten bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Apply gear oil onto sliding or revolving surfaces before installation.
- Replace deformed or damaged snap rings with new parts.
- Before installing O-rings or oil seals, apply sufficient amount of ATF fluid 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 cloth between the part and the vise.
- Avoid damaging the mating surface of the case.
- Before applying liquid gasket, completely remove the old liquid gasket.

D: PREPARATION TOOL

1. SPECIAL TOOL

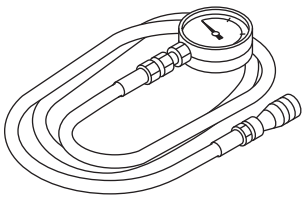
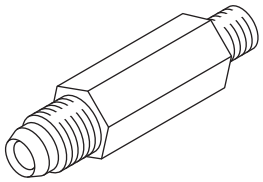
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498575400	498575400	OIL PRESSURE GAUGE ASSY	Used for measuring oil pressure.
 ST-498897200	498897200	OIL PRESSURE ADAPTER	Used together with oil pump cover installed on when measuring line pressure.

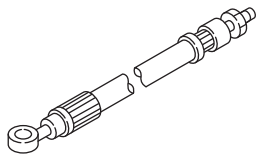
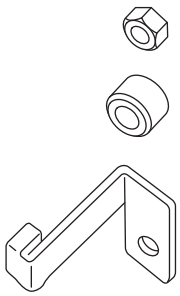
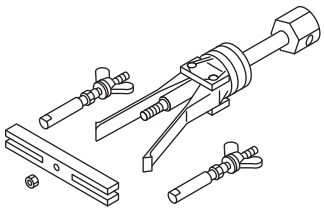
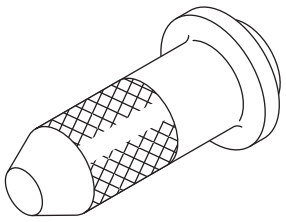
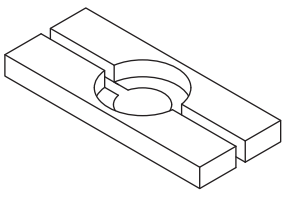
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498897800	498897800	OIL PRESSURE ADAPTER SET	Used for measuring transfer clutch pressure.
 ST-498277200	498277200	STOPPER SET	• Used for removing and installing automatic transmission assembly to engine. • Used for preventing the torque converter from dropping off.
 ST-398527700	398527700	PULLER ASSY	• Used for removing the extension case roller bearing. • Used for removing the extension oil seal. • Used for removing the front differential side retainer bearing outer race. • Used for removing the front differential side retainer oil seal.
 ST-498057300	498057300	INSTALLER	Used for installing the extension oil seal.
 ST-498077000	498077000	REMOVER	Used for removing the differential taper roller bearing.

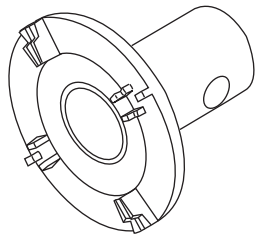
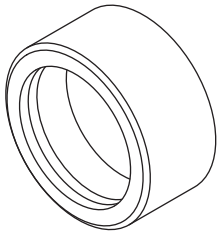
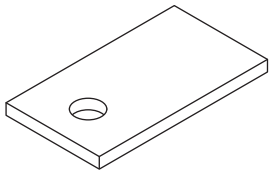
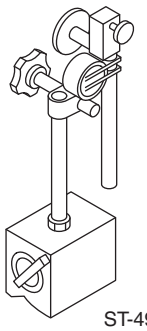
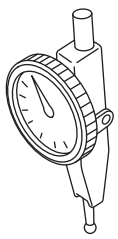
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18658AA020	18658AA020 (Newly adopted tool)	WRENCH COMPL RETAINER	• Used for removing and installing the differential side retainer. • Existing SST (18630AA010) with the handle removed. Use together with a commercially sold spinner handle. • WRENCH COMPL RETAINER (18630AA010) can also be used.
 ST-398487700	398487700	DRIFT	Used for installing the front differential taper roller bearing.
 ST-498255400	498255400	PLATE	Used for measuring the backlash of hypoid gear.
 ST-498247001	498247001	MAGNET BASE	• Used for measuring the gear backlash. • Used together with DIAL GAUGE (498247100).
 ST-498247100	498247100	DIAL GAUGE	• Used for measuring the gear backlash. • Used together with MAGNET BASE (498247001).

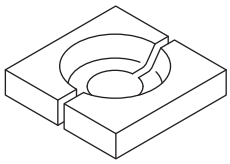
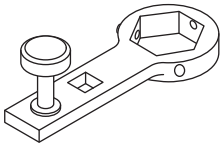
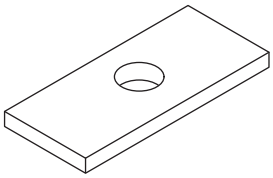
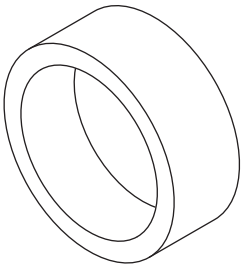
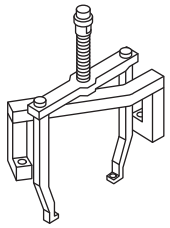
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498517000	498517000	REPLACER	Used for removing the front roller bearing.
 ST-499787700	499787700	WRENCH	Used for removing and installing the drive pinion lock nut.
 ST-398643600	398643600	GAUGE	Used for measuring total end play, extension end play and drive pinion height.
 ST-398744300	398744300	PISTON GUIDE	Used for measuring height from mating surface of the main case to pressure plate.
 ST-499737100	499737100	PULLER SET	Used for removing the reduction driven gear assembly.

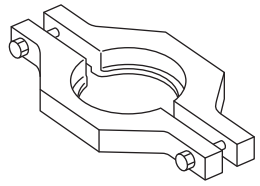
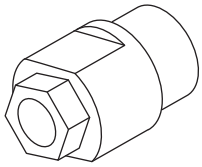
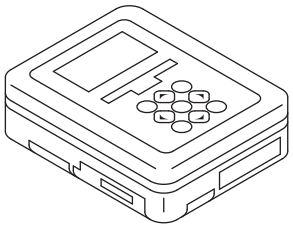
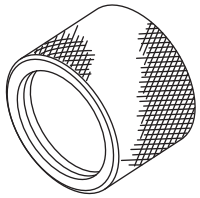
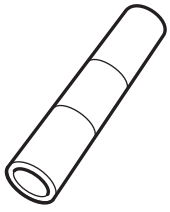
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498077600	498077600	REMOVER	Used for removing the ball bearing.
 ST18667AA010	18667AA010	HOLDER	• Used for removing and installing the drive pinion lock nut. • Used as a handle to rotate gear when checking tooth contact.
 ST1B022XU0	1B022XU0	SUBARU SELECT MONITOR III KIT	Used for troubleshooting the electrical system.
 ST18675AA000	18675AA000	DIFFERENTIAL SIDE OIL SEAL INSTALLER	Used for installing the differential side retainer oil seal.
 ST18654AA000	18654AA000	INSTALLER	Used for removing and installing the ball bearing.

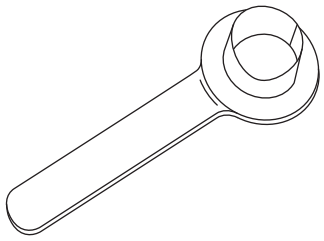
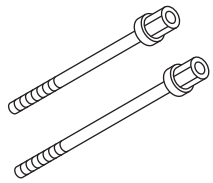
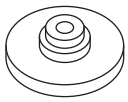
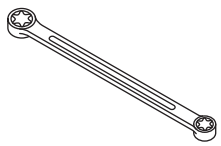
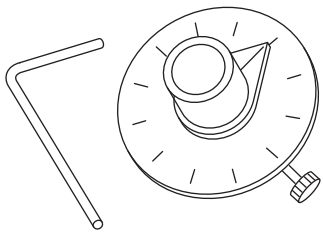
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST28399SA010	28399SA010	OIL SEAL PROTECTOR	Used for protecting oil seal when installing front drive shaft.
 ST18763AA000	18763AA000	COMPRESSOR SHAFT	Used for disassembling multi-plate clutch for shift transmission.
 ST18765AA000	18765AA000	COMPRESSOR SUPPORT	Used for disassembling multi-plate clutch for shift transmission.
 ST18676AA020	18676AA020	TORX® WRENCH	Used for disassembling torque converter case.
 ST18854AA000	18854AA000	ANGLE GAUGE	Used for tightening parking support.

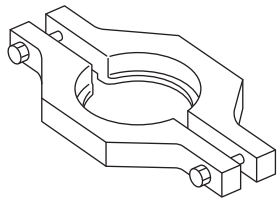
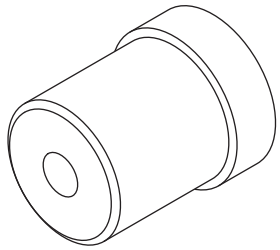
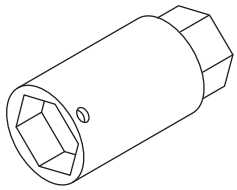
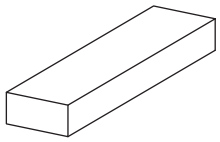
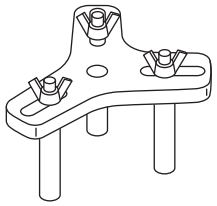
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498077300	498077300	REMOVER	Used for removing ball bearing of reduction driven gear.
 ST-499587100	499587100	OIL SEAL INSTALLER	Used for installing the oil seal.
 ST-499787500	499787500	ADAPTER	Used for removing and installing drive pinion lock nut.
 ST-499575400	499575400	GAUGE	Used for measuring the height of total end play.
 ST18762AA000	18762AA000	COMPRESSOR SPECIAL TOOL	Used for disassembling multi-plate clutch for shift transmission.

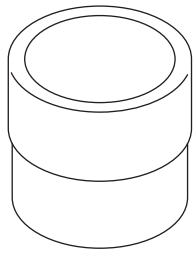
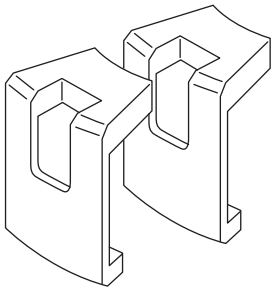
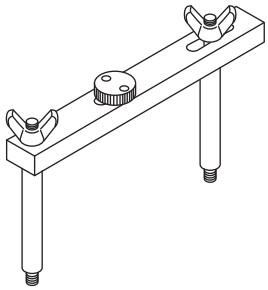
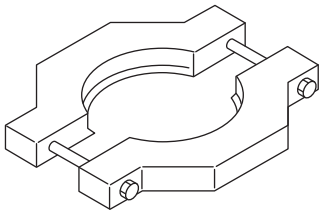
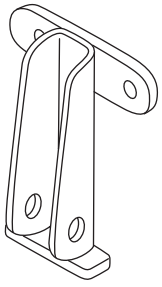
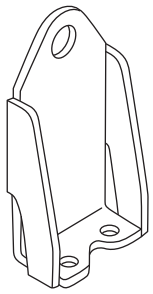
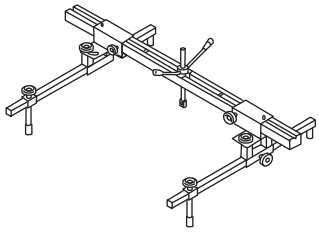
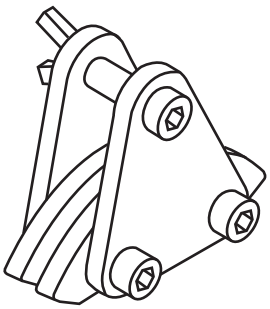
ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499755602	499755602	PRESS	Used for installing the parking gear.
 ST18680AA010	18680AA010	GEAR HOLDER	Used for removing reduction driven gear assembly. (2-piece set)
 ST18766AA000	18766AA000	SUPPORT PULLER	Used for removing reduction driven gear assembly.
 ST18767AA000	18767AA000	REMOVER	• Used to pull out the parking gear. • Used to pull out the bearing from the VTD assembly.
 ST41099AJ010	41099AJ010 (Newly adopted tool)	SPECIAL TOOL H6	• Used for removing and installing transmission. • For H6 engine.

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18360AA020	18360AA020 (Newly adopted tool)	HANGER	• Used for removing and installing transmission. • For H6 engine.
 ST99099AJ000	99099AJ000 (Newly adopted tool)	SPECIAL TOOL ENGINE HANGER	• Used for removing and installing transmission. (Weight of 350 kg (772 lb) is supported) • Used together with SPECIAL TOOL CHAIN BALANCER (99099AJ010) and sling chain (general tool).
 ST99099AJ010	99099AJ010 (Newly adopted tool)	SPECIAL TOOL CHAIN BALANCER	• Used for removing and installing transmission. (Weight of 350 kg (772 lb) is supported) • Used together with SPECIAL TOOL ENGINE HANGER (99099AJ000) and sling chain (general tool). • Used to hang the engine while balancing it with the sling chain inserted in this tool.

2. GENERAL TOOL

TOOL NAME	REMARKS
Depth gauge	Used for measuring the transmission end play.
Thickness gauge	Used for measuring clearance of the clutch, brake and oil pump.
Micrometer	Used for measuring thickness of the drive pinion.
Spring scale	Used for measuring the starting torque of the drive pinion.
Circuit tester	Used for measuring resistance and voltage.
TORX® T70	Used for removing and installing differential gear oil drain plug.
Snap ring pliers	Used for removing and installing each snap ring.
Sling chain	Used for removing and installing transmission. • Length: 0.8 — 1 m (2.6 — 3.3 ft) • Load capacity: 1.2 t (2646 lb) or more • Diameter: 6 mm (0.24 in) or 6.3 mm (0.25 in) • Chain external width: 23.5 mm (0.93 in) or less • Chain internal width: 8.5 mm (0.33 in) or more
Screw shackle	Used for removing and installing transmission. • Load capacity: 250 kg (551 lb) or more • Use two pieces.