

## TRANSMISSION SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

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

CONTROL SYSTEMS

CS

AUTOMATIC TRANSMISSION

4AT

AUTOMATIC TRANSMISSION  
(DIAGNOSTICS)

4AT(diag)

MANUAL TRANSMISSION AND  
DIFFERENTIAL

5MT

MANUAL TRANSMISSION AND  
DIFFERENTIAL

6MT

MANUAL TRANSMISSION AND  
DIFFERENTIAL (DIAGNOSTICS)

6MT(diag)

CLUTCH SYSTEM

CL

# MANUAL TRANSMISSION AND DIFFERENTIAL

# 6MT

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# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 1. General Description

#### A: SPECIFICATION

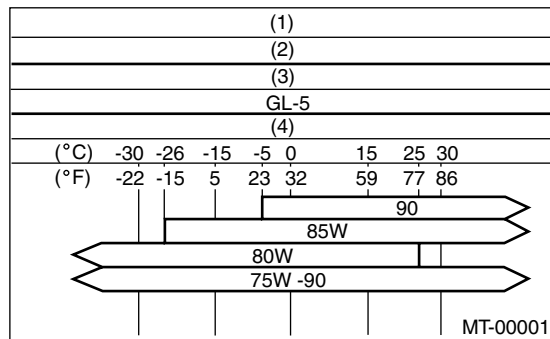
##### 1. MANUAL TRANSMISSION AND FRONT DIFFERENTIAL

Item		STD	OP
Type		6-forward speeds and 1-reverse	
Transmission gear ratio	1st	3.636	
	2nd	2.375	
	3rd	1.761	
	4th	1.346	
	5th	0.971 [1.062]	
	6th	0.756 [0.842]	
	Reverse	3.545	
Front reduction gear	Final	Type of gear	Hypoid
		Gear ratio	3.900
Rear reduction gear	Transfer	Type of gear	Helical
		Gear ratio	1.100 [1.000]
	Final	Type of gear	Hypoid
		Gear ratio	3.545 [3.900]
Front differential	Type and number of gear	SURETRAC®	
Center differential	Type and number of gear	Straight bevel gear (Bevel pinion: 2, Bevel gear: 2 and viscous coupling)	Planetary gear (Internal gear 1, pinion gear 6, sun gear 1 and electromagnetic pressure variable control multiplate clutch)
Transmission gear oil		GL-5	
Transmission gear oil capacity		4.1 ℓ (4.3 US qt, 3.6 Imp qt)	

[ ]: Australia model

### 2. TRANSMISSION GEAR OIL

#### Recommended oil



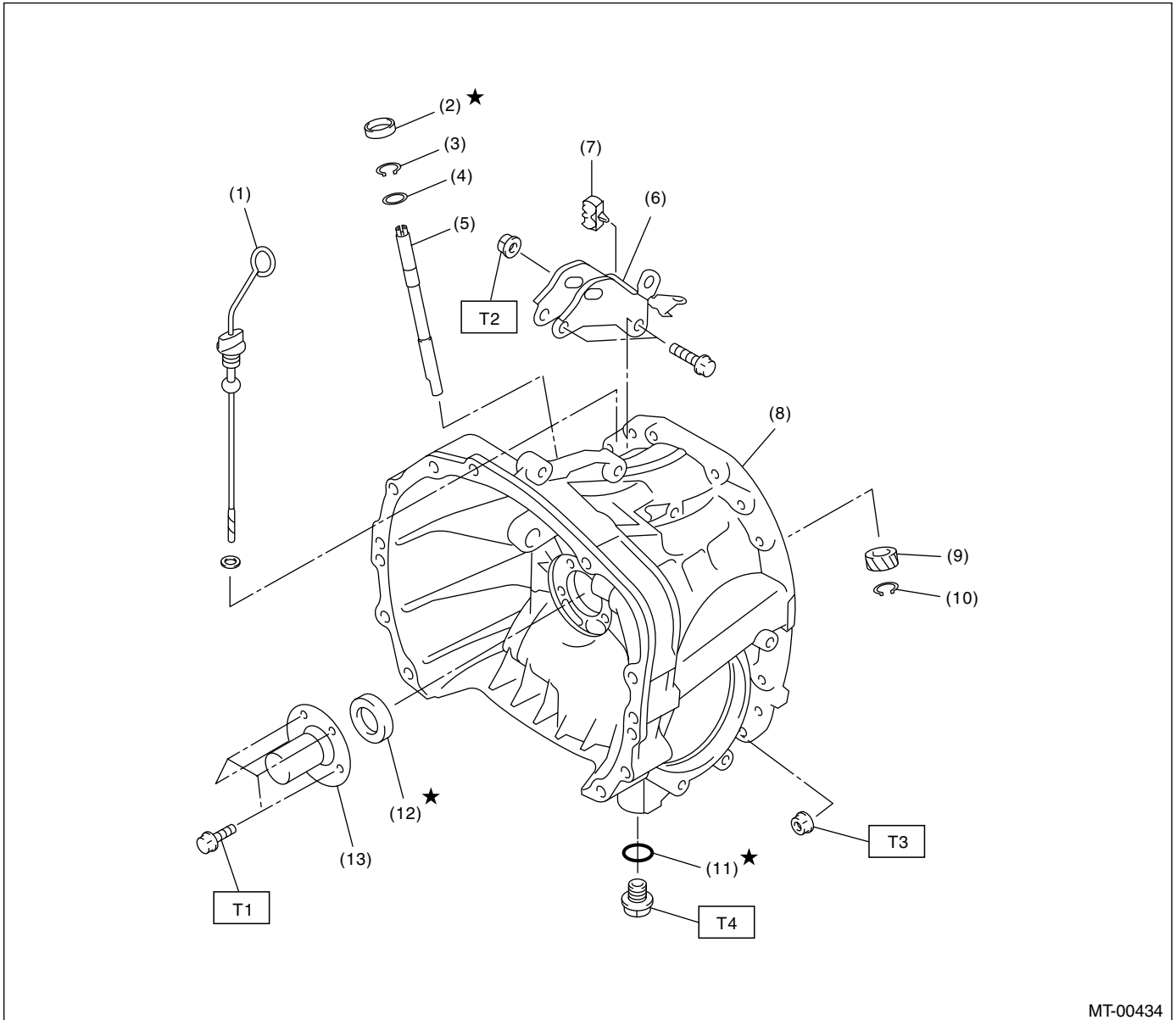
- (1) Item
- (2) Transmission gear oil
- (3) API classification
- (4) SAE viscosity No. and applicable temperature

# General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

## B: COMPONENT

### 1. CLUTCH HOUSING



MT-00434

- |                              |                                   |
|------------------------------|-----------------------------------|
| (1) Oil level gauge          | (8) Clutch housing                |
| (2) Oil seal                 | (9) Speedometer driven gear       |
| (3) Snap ring                | (10) Snap ring                    |
| (4) Washer                   | (11) Gasket                       |
| (5) Speedometer gear shaft   | (12) Oil seal                     |
| (6) Pitching stopper bracket | (13) Clutch release bearing guide |
| (7) Clip                     |                                   |

**Tightening torque: N·m (kgf-m, ft-lb)**

**T1: 6.4 (0.65, 4.7)**

**T2: 41 (4.2, 30.2)**

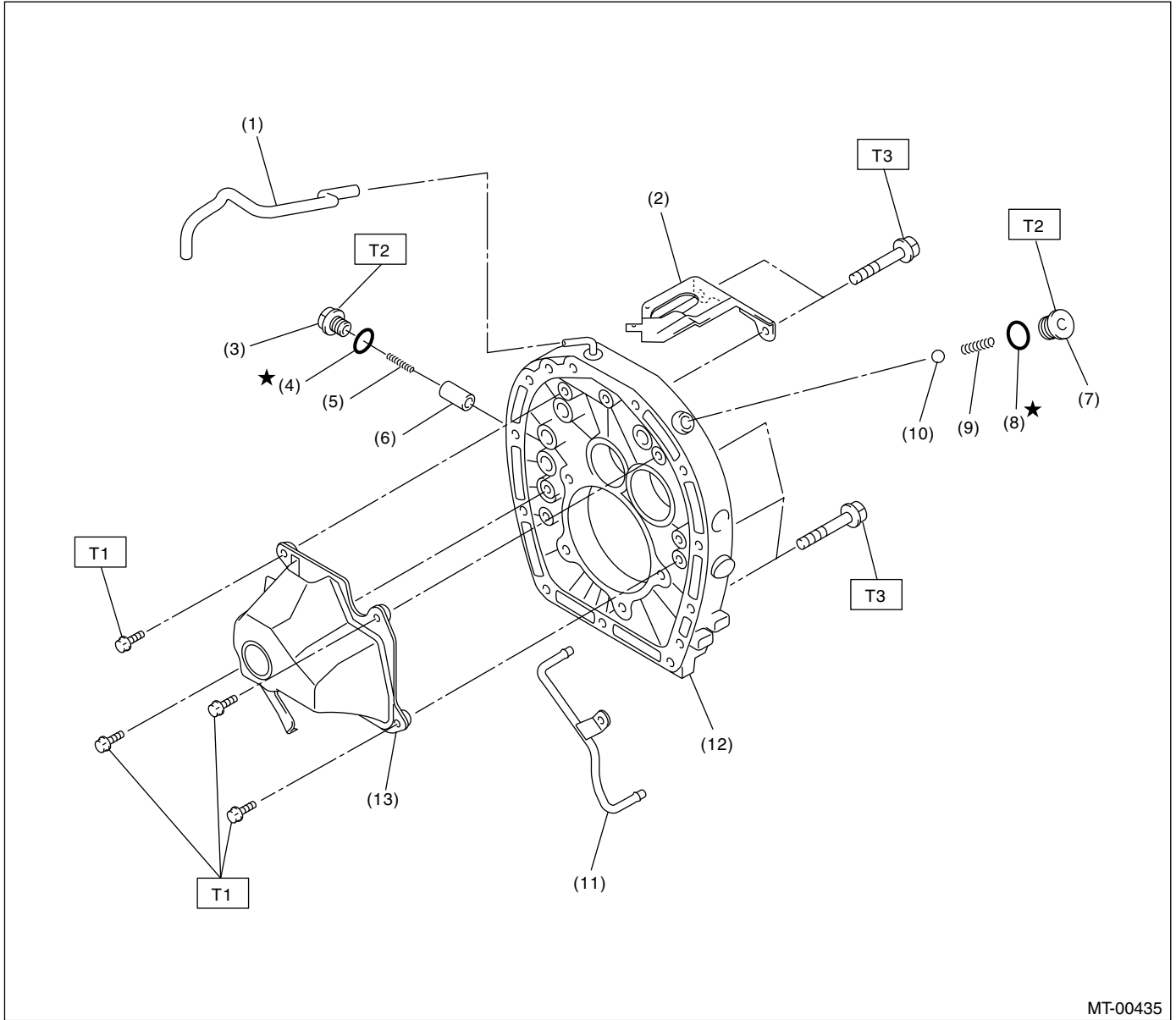
**T3: 50 (5.1, 36.9)**

**T4: 70 (7.1, 51.6)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 2. ADAPTER PLATE



MT-00435

- (1) Breather hose
- (2) Transmission harness stay
- (3) Plug
- (4) Gasket
- (5) Spring
- (6) Plunger

- (7) Plug
- (8) Gasket
- (9) Spring
- (10) Ball
- (11) Lubrication pipe
- (12) Adapter plate

- (13) Oil chamber

**Tightening torque: N·m (kgf·m, ft·lb)**

**T1: 6.4 (0.65, 4.7)**

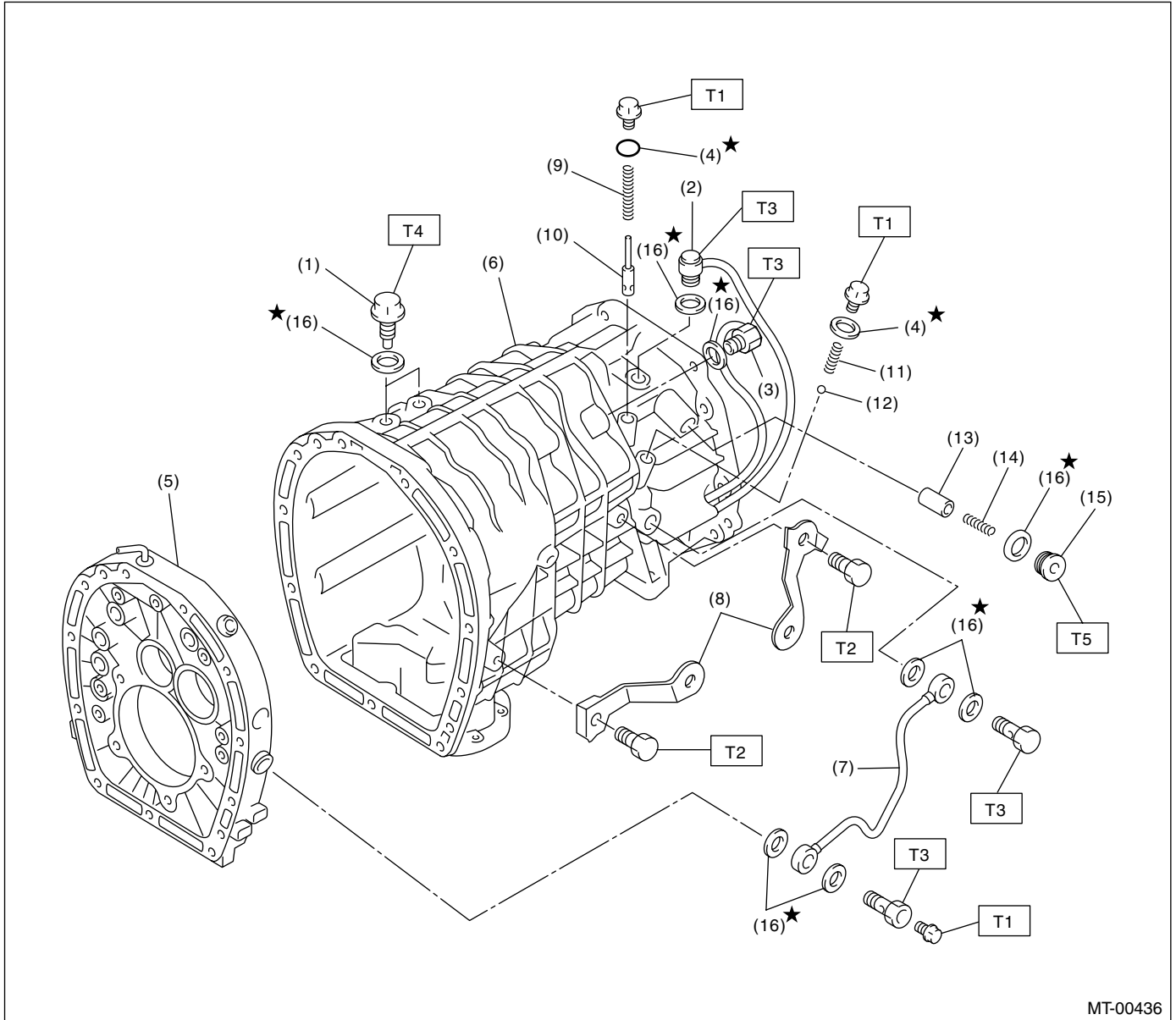
**T2: 37 (3.8, 27.3)**

**T3: 50 (5.1, 36.9)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 3. TRANSMISSION CASE



- |                          |                            |
|--------------------------|----------------------------|
| (1) Pilot bolt           | (9) Return spring          |
| (2) Neutral switch       | (10) Pressure relief valve |
| (3) Back-up light switch | (11) Return spring         |
| (4) O-ring               | (12) Ball                  |
| (5) Adapter plate        | (13) Plunger               |
| (6) Transmission case    | (14) Spring                |
| (7) Oil pipe             | (15) Plug                  |
| (8) Harness bracket      | (16) Gasket                |

#### **Tightening torque: N-m (kgf-m, ft-lb)**

**T1: 13 (1.3, 9.6)**

**T2: 16 (1.6, 11.8)**

**T3: 32 (3.3, 23.6)**

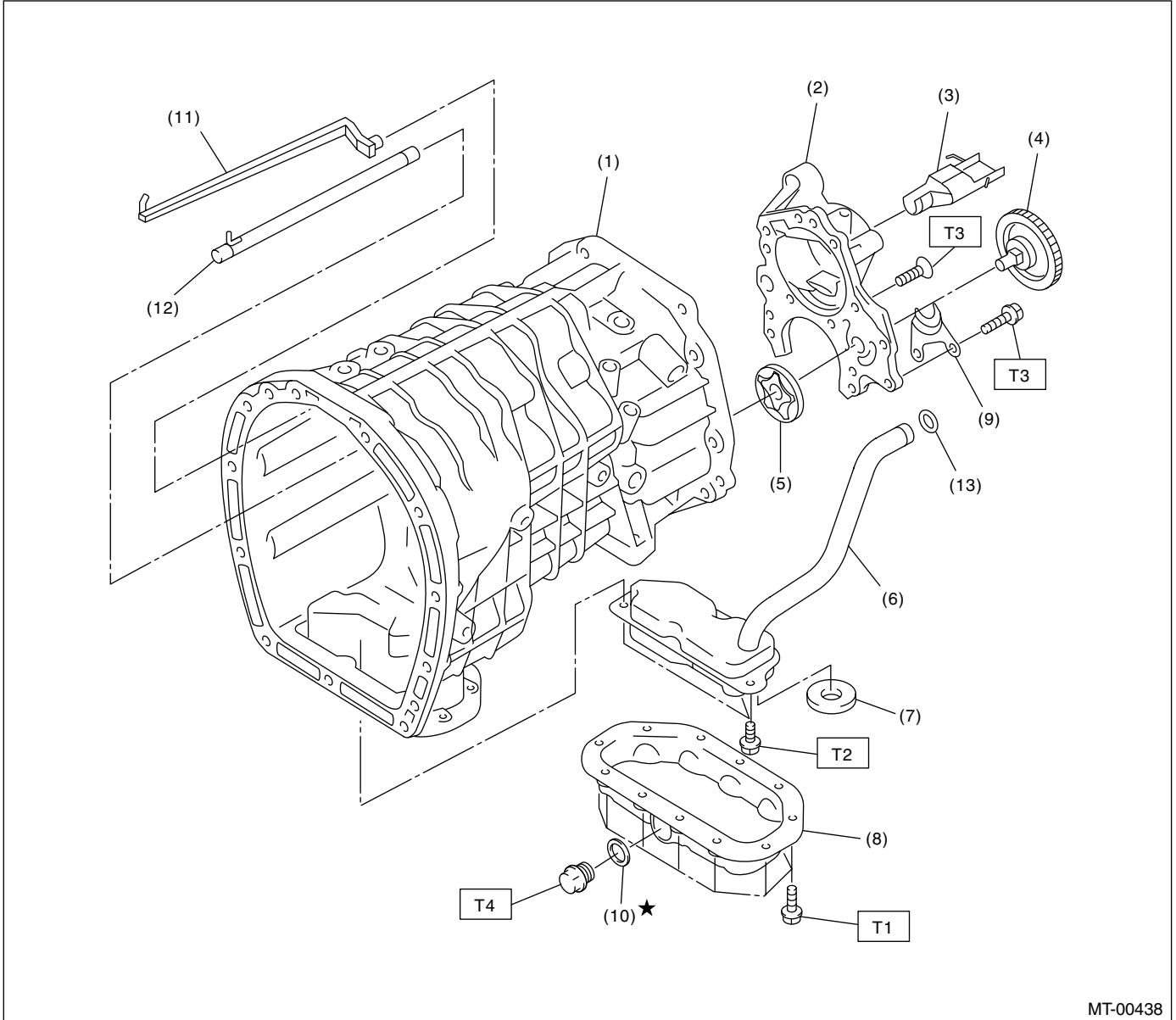
**T4: 34 (3.5, 25.1)**

**T5: 41 (4.2, 30.2)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 4. OIL PAN AND OIL PUMP



MT-00438

- |                               |                |
|-------------------------------|----------------|
| (1) Main case                 | (8) Oil pan    |
| (2) Oil pump cover            | (9) Plate      |
| (3) Oil guide                 | (10) Gasket    |
| (4) Oil pump driven gear ASSY | (11) Oil guide |
| (5) Oil pump rotor ASSY       | (12) Oil pipe  |
| (6) Strainer ASSY             | (13) O-ring    |
| (7) Magnet                    |                |

**Tightening torque: N-m (kgf-m, ft-lb)**

**T1: 6.4 (0.65, 4.7)**

**T2: 10 (1.0, 7.4)**

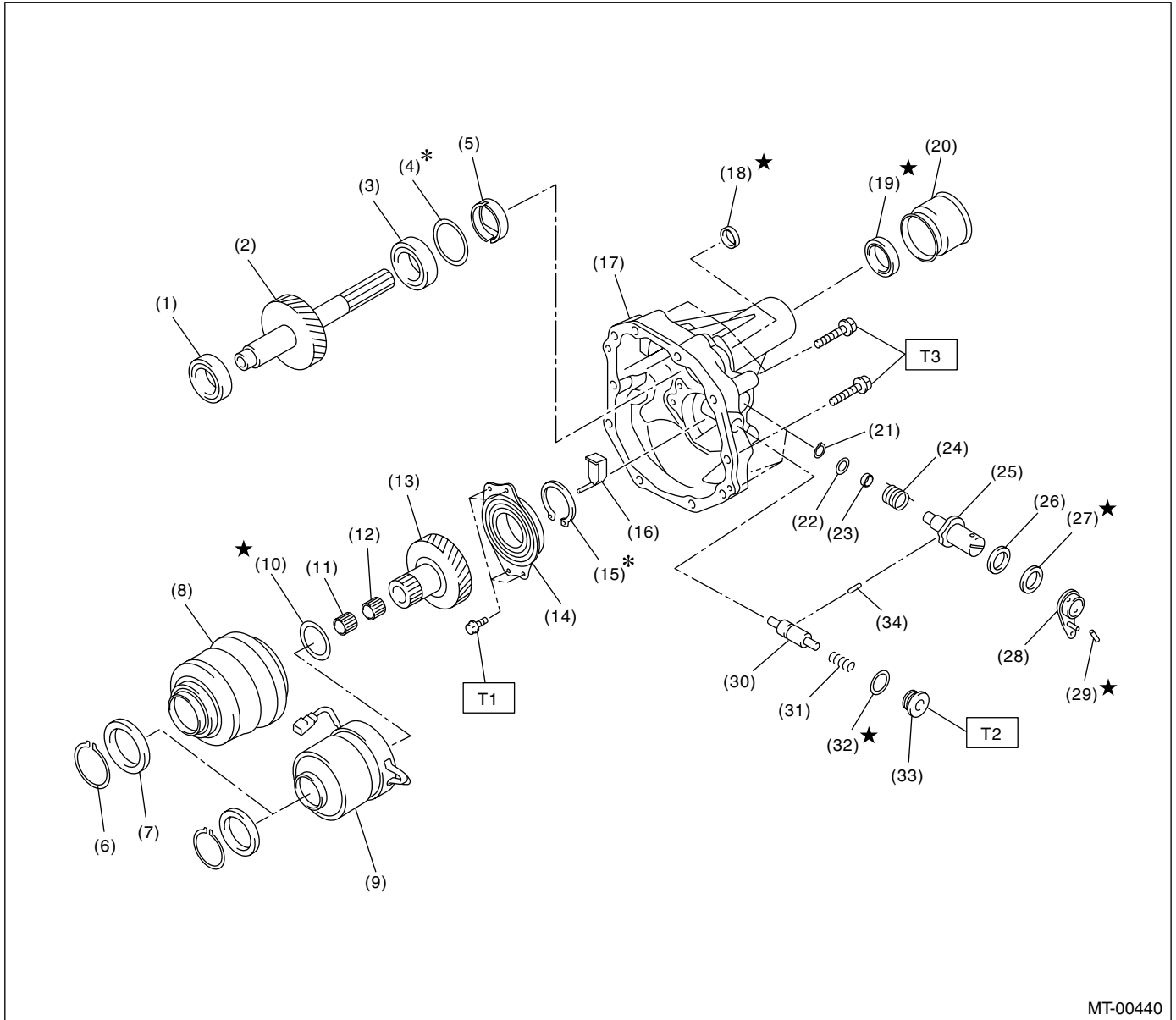
**T3: 25 (2.5, 18.1)**

**T4: 44 (4.5, 32.5)**

# General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

## 5. EXTENSION CASE AND CENTER DIFFERENTIAL



MT-00440

- |  |                                 |                                |
|--|---------------------------------|--------------------------------|
| (1) Taper roller bearing   | (14) Ball bearing (with flange) | (28) Reverse check lever COMPL |
| (2) Transfer driven gear   | (15) Snap ring                  | (29) Straight pin              |
| (3) Taper roller bearing   | (16) Extension guide            | (30) Reverse check plug        |
| (4) Shim   | (17) Extension case             | (31) Spring                    |
| (5) Oil plate  | (18) Oil seal                   | (32) Gasket                    |
| (6) Snap ring  | (19) Oil seal                   | (33) Plug                      |
| (7) Oil pump drive gear  | (20) Dust cover                 | (34) Plunger                   |
| (8) Center differential  | (21) Snap ring                  |                                |
| (9) Center differential (Driver's control center differential model) | (22) Washer                     |                                |
| (10) Shim  | (23) Bush                       |                                |
| (11) Needle bearing  | (24) Spring                     |                                |
| (12) Needle bearing  | (25) Reverse check shaft        |                                |
| (13) Transfer drive gear   | (26) Ball bearing               |                                |
|  | (27) Oil seal                   |                                |

**Tightening torque: N·m (kgf-m, ft-lb)**

**T1: 25 (2.5, 18.1)**

**T2: 41 (4.2, 30.2)**

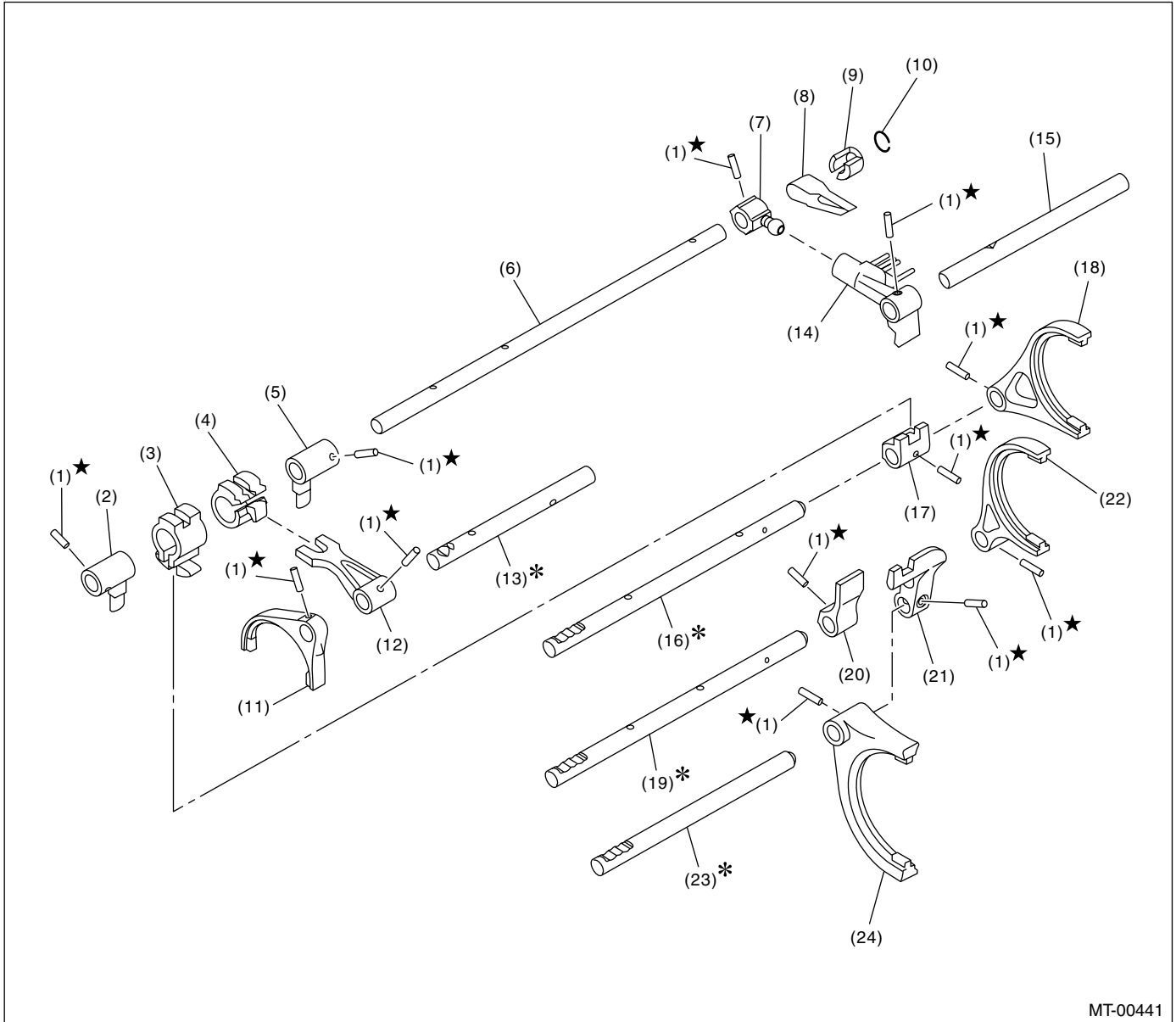
**T3: 48 (4.9, 35.4)**



# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 6. SHIFTER FORK AND FORK ROD



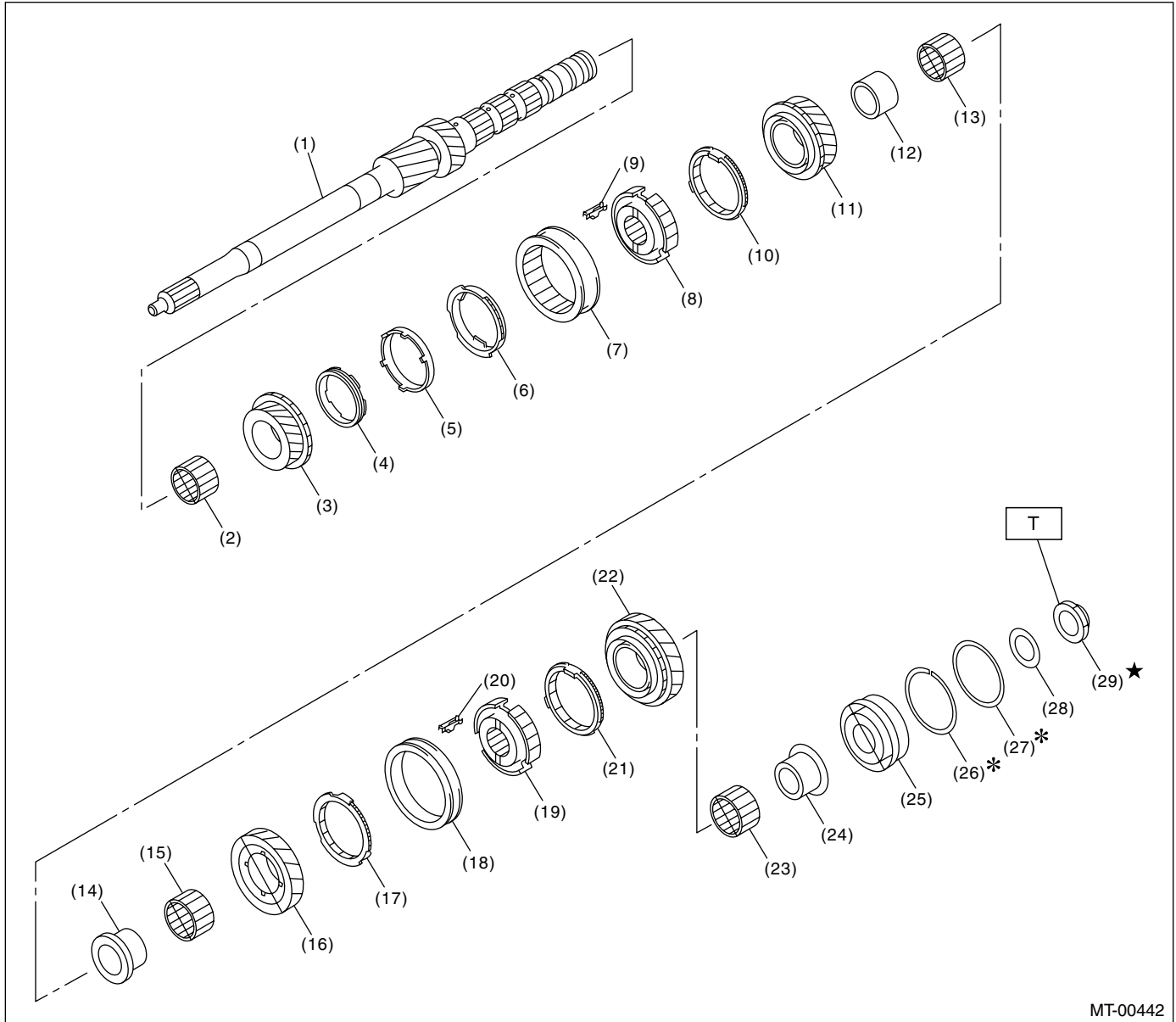
MT-00441

- |                             |                          |                          |
|-----------------------------|--------------------------|--------------------------|
| (1) Spring pin              | (9) Support              | (17) 5th-6th shifter arm |
| (2) Interlock arm           | (10) Snap ring           | (18) 5th-6th fork COMPL  |
| (3) Interlock block         | (11) Reverse fork COMPL  | (19) 3rd-4th fork rod    |
| (4) Reverse interlock block | (12) Reverse shifter arm | (20) 3rd-4th shifter arm |
| (5) Interlock arm           | (13) Reverse fork rod    | (21) 1st-2nd shifter arm |
| (6) Striking rod            | (14) Selector arm        | (22) 3rd-4th fork COMPL  |
| (7) Selector arm No. 2      | (15) Shifter arm shaft   | (23) 1st-2nd fork rod    |
| (8) Neutral set spring      | (16) 5th-6th fork rod    | (24) 1st-2nd fork COMPL  |

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 7. MAIN SHAFT ASSY



MT-00442

- |                      |                      |                           |
|----------------------|----------------------|---------------------------|
| (1) Main shaft       | (12) 4th bush        | (23) Needle bearing       |
| (2) Needle bearing   | (13) Needle bearing  | (24) 6th bush             |
| (3) 3rd drive gear   | (14) 5th bush        | (25) Taper roller bearing |
| (4) Inner baulk ring | (15) Needle bearing  | (26) Snap ring            |
| (5) Synchro cone     | (16) 5th drive gear  | (27) Washer               |
| (6) Outer baulk ring | (17) 5th baulk ring  | (28) Washer               |
| (7) 3rd-4th sleeve   | (18) 5th-6th sleeve  | (29) Lock nut             |
| (8) 3rd-4th hub      | (19) 5th-6th hub     |                           |
| (9) Shifting insert  | (20) Shifting sleeve |                           |
| (10) 4th baulk ring  | (21) 6th baulk ring  |                           |
| (11) 4th gear        | (22) 6th drive gear  |                           |

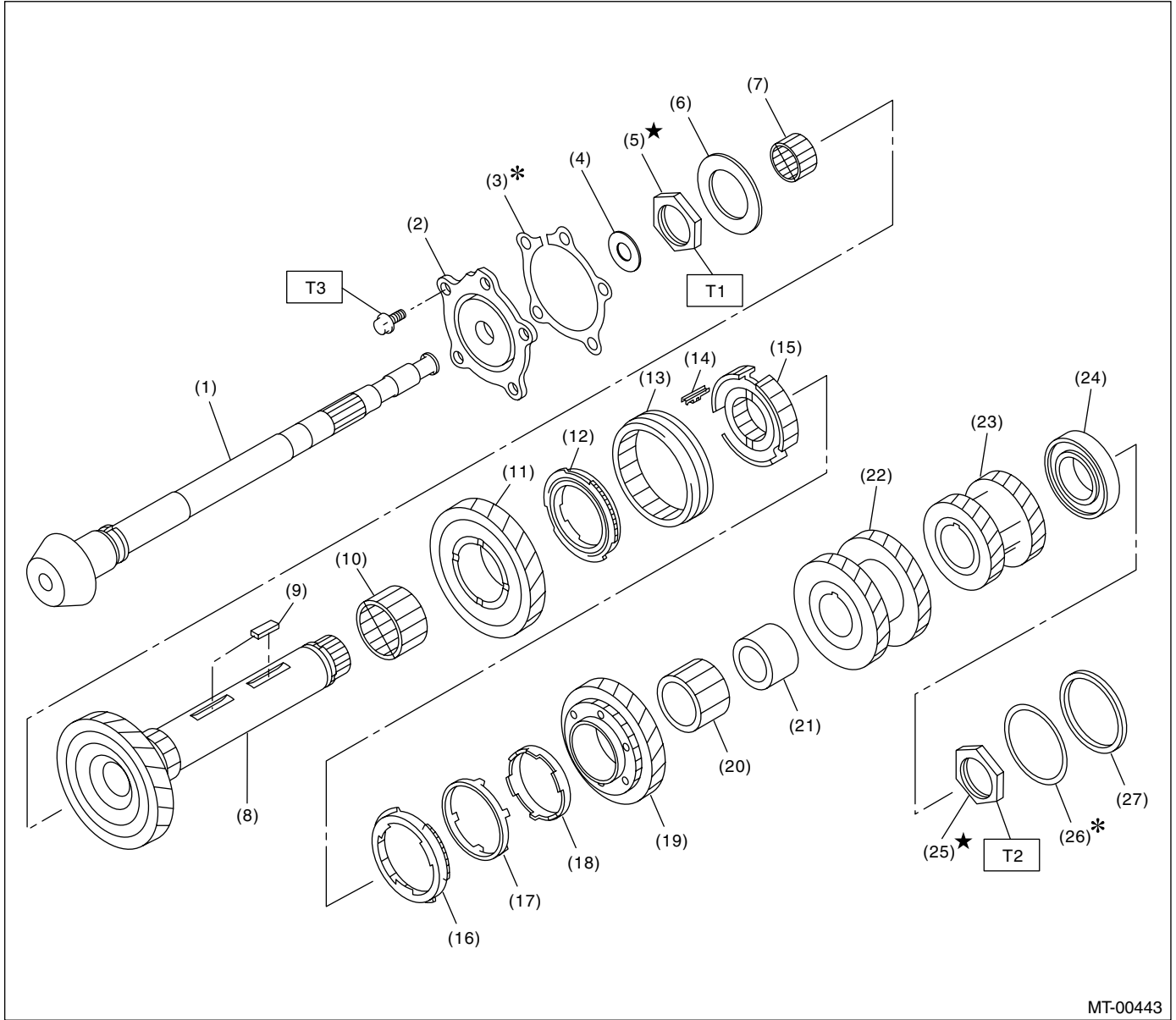
**Tightening torque: N·m (kgf·m, ft·lb)**

**T: 392 (40.0, 289)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 8. DRIVE PINION AND DRIVEN SHAFT ASSY



MT-00443

- |                            |                          |
|----------------------------|--------------------------|
| (1) Drive pinion shaft     | (13) 1st-2nd sleeve      |
| (2) Taper roller bearing   | (14) Shifting insert     |
| (3) Shim                   | (15) 1st-2nd hub         |
| (4) Washer                 | (16) Outer baulk ring    |
| (5) Lock nut               | (17) Synchro cone        |
| (6) Thrust bearing         | (18) Inner baulk ring    |
| (7) Needle bearing         | (19) 2nd driven gear     |
| (8) Driven shaft           | (20) Needle bearing      |
| (9) Key                    | (21) 2nd bush            |
| (10) Needle bearing        | (22) 3rd-4th driven gear |
| (11) 1st driven gear       | (23) 5th-6th driven gear |
| (12) 1st synchro ring ASSY | (24) Ball bearing        |

- |               |
|---------------|
| (25) Lock nut |
| (26) Shim     |
| (27) Collar   |

**Tightening torque: N-m (kgf-m, ft-lb)**

**T1: 285 (29.1, 210)**  
\* 265 (27.0, 195)

**T2: 570 (58.1, 420)**  
\* 530 (54.0, 391)

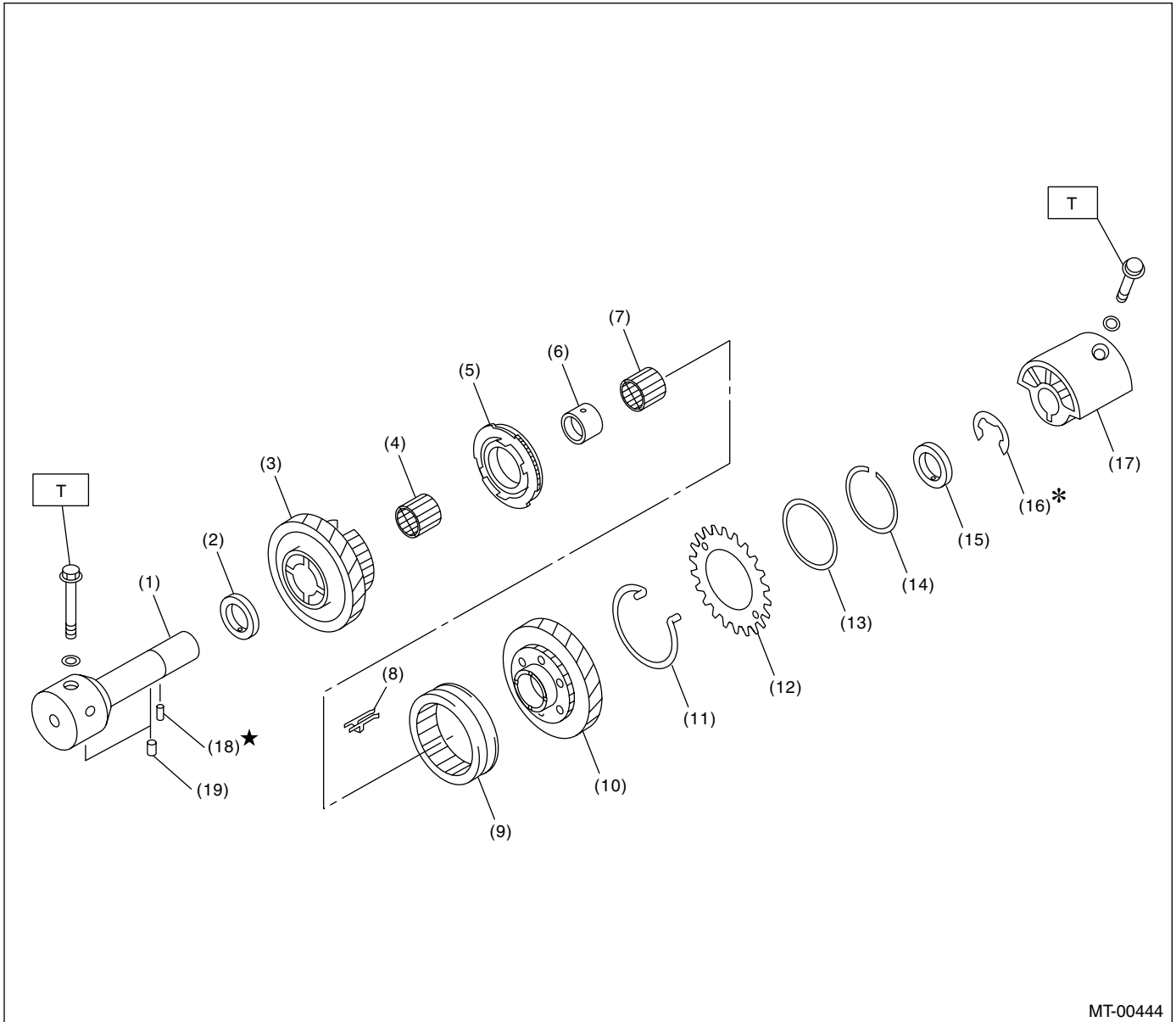
**T3: 50 (5.0, 36.9)**

\* Tightening torque when ST used.

# General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

## 9. REVERSE IDLER GEAR ASSY



MT-00444

- |                               |                             |                           |
|-------------------------------|-----------------------------|---------------------------|
| (1) Base COMPL                | (9) Reverse coupling sleeve | (17) Reverse idler holder |
| (2) Washer                    | (10) Reverse idler gear     | (18) Spring pin           |
| (3) Reverse idler gear No. 2  | (11) Spring                 | (19) Knock pin            |
| (4) Needle bearing            | (12) Sub gear               |                           |
| (5) Reverse idler synchro set | (13) Friction plate         |                           |
| (6) Reverse idler gear bush   | (14) Snap ring              |                           |
| (7) Needle bearing            | (15) Washer                 |                           |
| (8) Shifting insert           | (16) Snap ring              |                           |

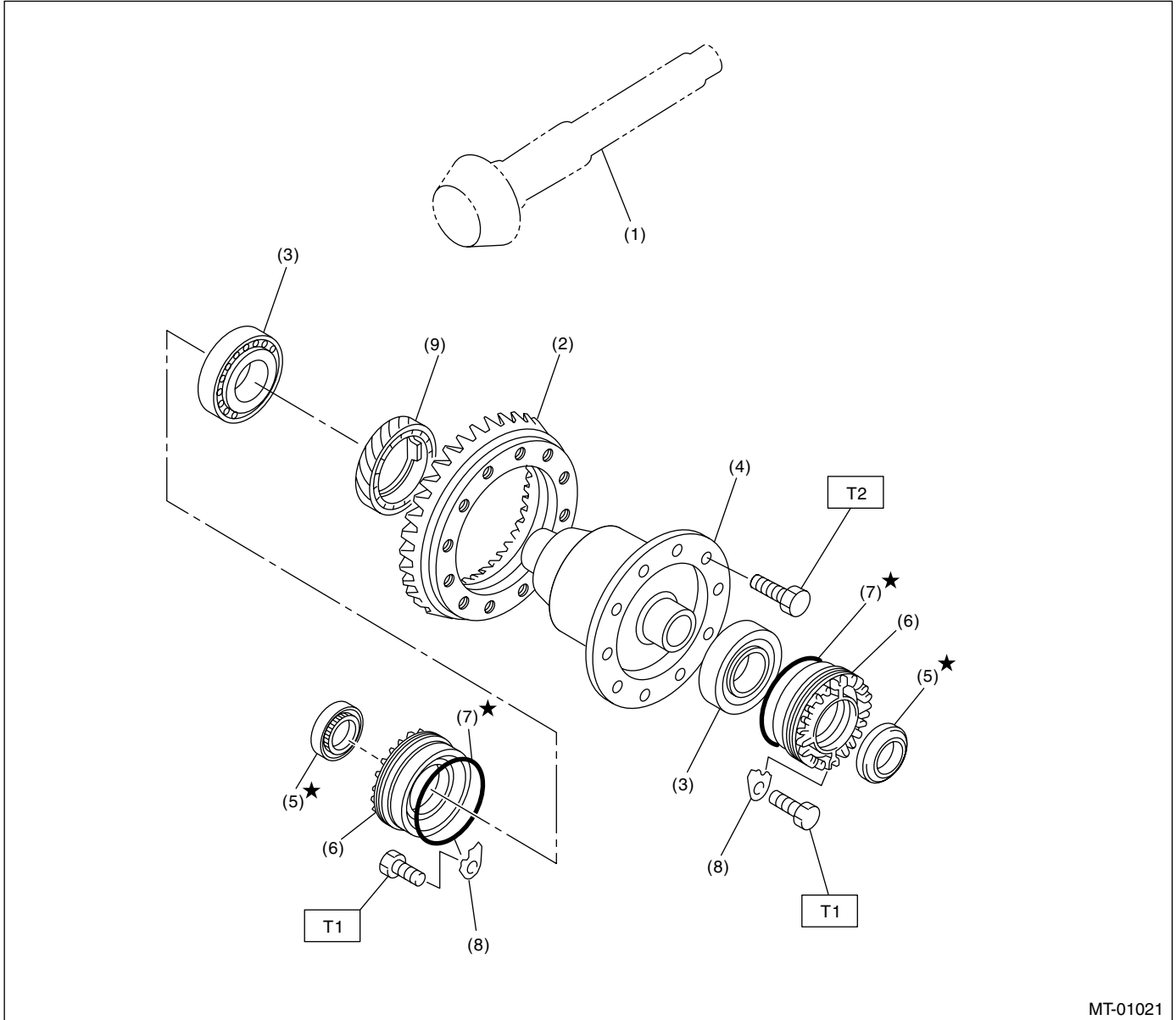
**Tightening torque: N·m (kgf·m, ft·lb)**

**T: 25 (2.5, 18.1)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 10.FRONT DIFFERENTIAL WITH LSD



MT-01021

- |                            |                                |
|----------------------------|--------------------------------|
| (1) Drive pinion shaft     | (6) Differential side retainer |
| (2) Hypoid driven gear     | (7) O-ring                     |
| (3) Roller bearing         | (8) Retainer lock plate        |
| (4) Differential case ASSY | (9) Speedometer drive gear     |
| (5) Oil seal               |                                |

**Tightening torque: N-m (kgf-m, ft-lb)**

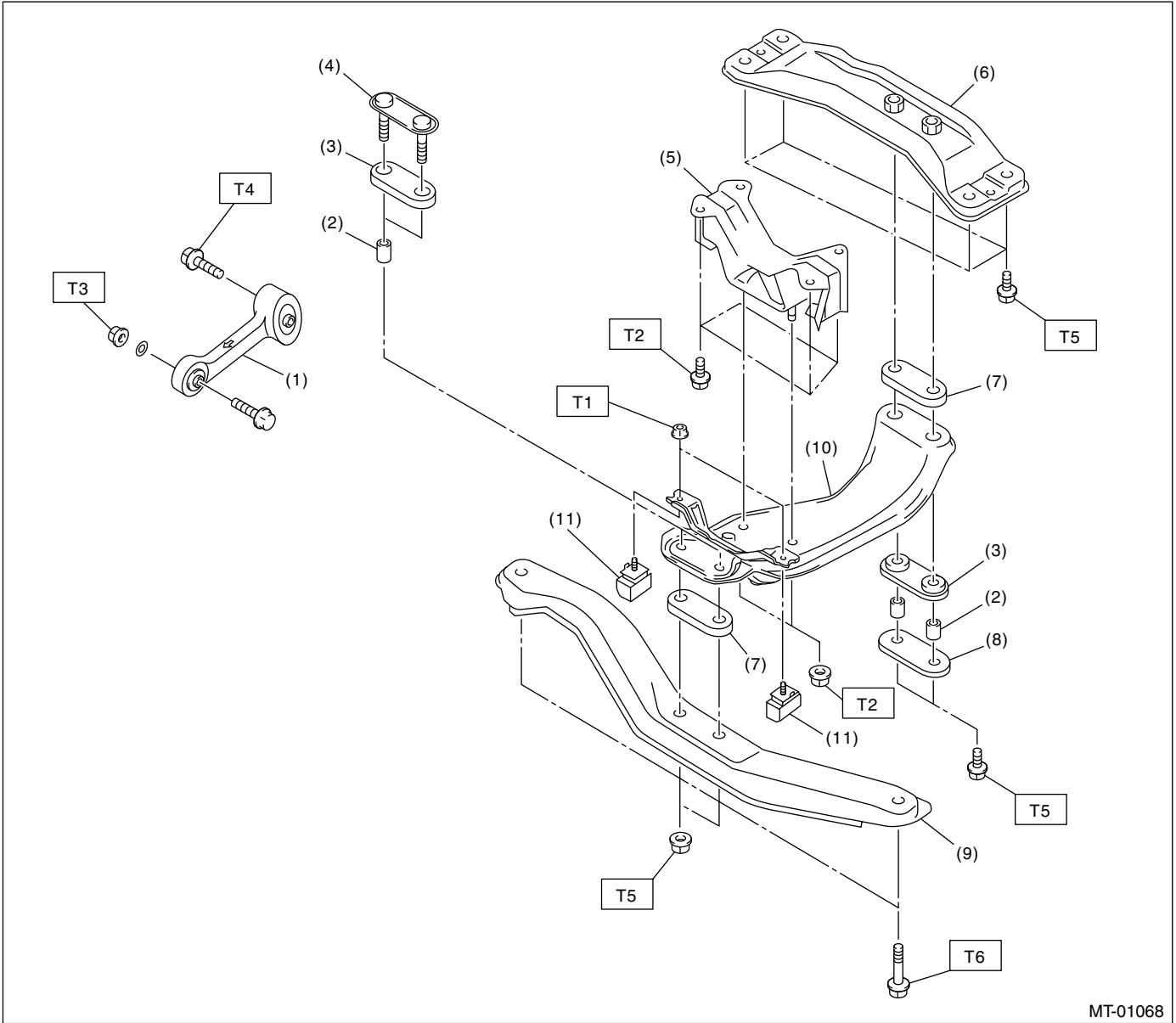
**T1: 25 (2.5, 18.1)**

**T2: 69 (7.0, 50.9)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 11. TRANSMISSION MOUNTING



MT-01068

- |                         |                         |
|-------------------------|-------------------------|
| (1) Pitching stopper    | (8) Rear plate          |
| (2) Spacer              | (9) Front crossmember   |
| (3) Cushion C           | (10) Center crossmember |
| (4) Front plate         | (11) Dynamic damper     |
| (5) Rear cushion rubber |                         |
| (6) Rear crossmember    |                         |
| (7) Cushion D           |                         |

**Tightening torque: N-m (kgf-m, ft-lb)**

**T1: 7.5 (0.76, 5.5)**

**T2: 35 (3.6, 25.8)**

**T3: 50 (5.1, 36.9)**

**T4: 58 (5.9, 42.8)**

**T5: 70 (7.1, 51.6)**

**T6: 140 (14.3, 103)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

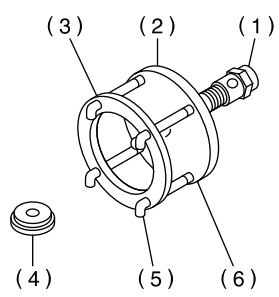
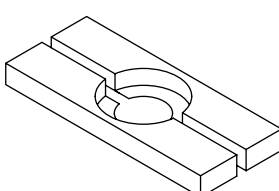
### C: CAUTION

- Wear working clothing, including a cap, protective goggles and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation, and disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- 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 your hands, 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 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 gear oil to avoid damage and deformation.
- Be careful not to incorrectly install or fail to install O-rings, snap rings and other such parts.
- Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or shop cloth between the part and the vise.
- Avoid damaging the mating surface of the case.
- Before applying sealant, completely remove the old seal.

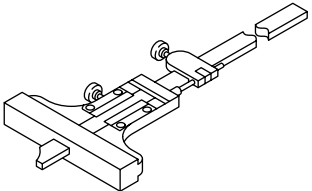
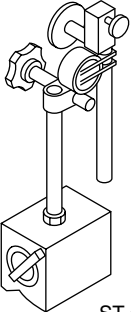
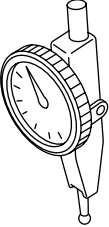
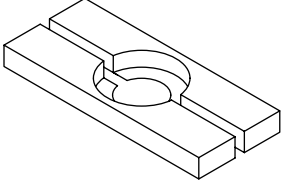
### D: PREPARATION TOOL

#### 1. SPECIAL TOOLS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST-399527700</p>	399527700	PULLER SET	Used for removing and installing roller bearing (Differential). (1) BOLT (899521412) (2) PULLER (399527702) (3) HOLDER (399527703) (4) ADAPTER (398497701) (5) BOLT (899520107) (6) NUT (021008000)
 <p>ST-498515700</p>	498515700	REMOVER	Used for removing roller bearing of drive pinion shaft.

# General Description

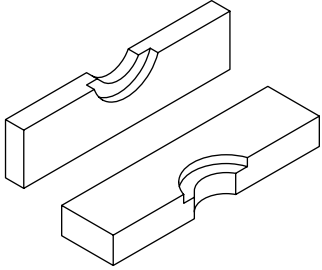
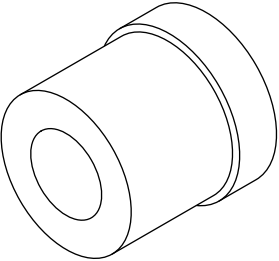
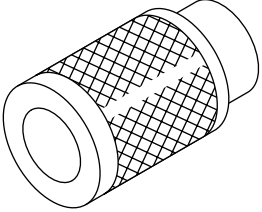
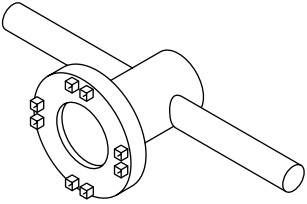
## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-49814700</p>	498147000	DEPTH GAUGE	Used for adjusting main shaft axial end play.
 <p style="text-align: center;">ST-498247001</p>	498247001	MAGNET BASE	<ul style="list-style-type: none"> <li>• Used for measuring backlash between side gear and pinion, and hypoid gear.</li> <li>• Used with DIAL GAUGE (498247100).</li> </ul>
 <p style="text-align: center;">ST-498247100</p>	498247100	DIAL GAUGE	<ul style="list-style-type: none"> <li>• Used for measuring backlash between side gear and pinion, and hypoid gear.</li> <li>• Used with MAGNET BASE (498247001).</li> </ul>
 <p style="text-align: center;">ST-498077000</p>	498077000	REMOVER	Used for removing differential taper roller bearing.



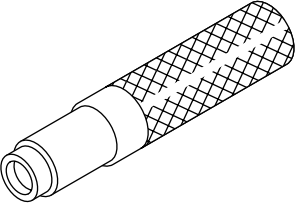
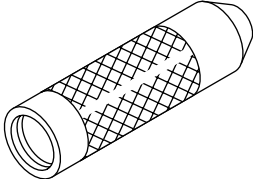
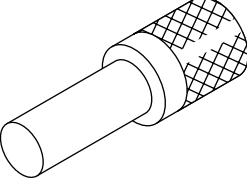
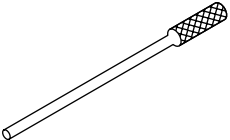
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-899858600</p>	899858600	REMOVER	Used for removing roller bearing.
 <p style="text-align: center;">ST-399513600</p>	399513600	INSTALLER	Used for installing oil seal.
 <p style="text-align: center;">ST-499757002</p>	499757002	INSTALLER	Used for installing bearing cone of transfer driven gear (extension core side).
 <p style="text-align: center;">ST-499787000</p>	499787000	WRENCH ASSY	Used for removing and installing differential side retainer (right side).

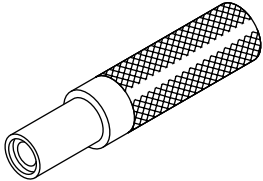
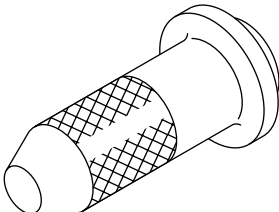
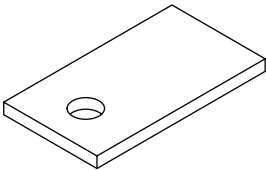
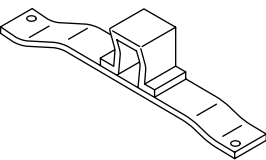
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-499827000</p>	499827000	PRESS	Used for installing speedometer oil seal when installing speedometer cable to transmission.
 <p style="text-align: center;">ST-499877000</p>	499877000	RACE 4-5 INSTALLER	Used for disassembling driven shaft and transfer driven gear.
 <p style="text-align: center;">ST-899864100</p>	899864100	REMOVER	Used for removing parts on transmission main shaft and drive pinion.
 <p style="text-align: center;">ST-899904100</p>	899904100	REMOVER	Used for removing and installing straight pin.

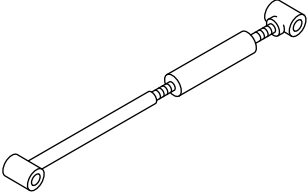
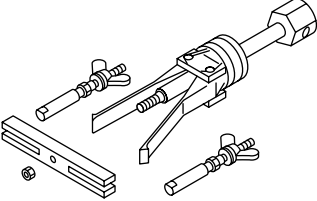
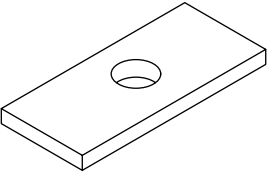
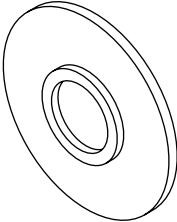
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-899824100</p>	899824100	PRESS	Used for installing speedometer shaft oil seal.
 <p style="text-align: center;">ST-498057300</p>	498057300	INSTALLER	Used for installing extension oil seal.
 <p style="text-align: center;">ST-498255400</p>	498255400	PLATE	Used for measuring backlash.
 <p style="text-align: center;">ST41099AA010</p>	41099AA010	ENGINE SUPPORT BRACKET	Used for supporting engine.

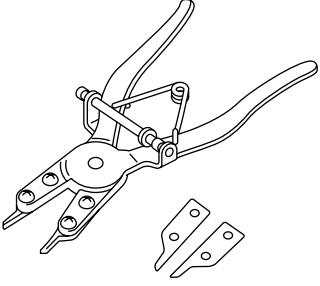
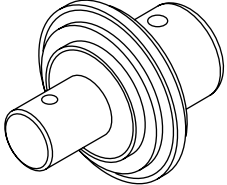
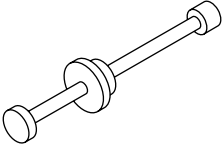
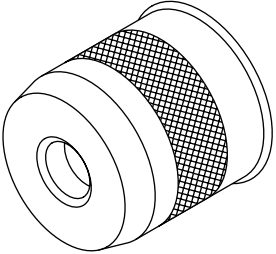
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p data-bbox="326 562 467 583">ST41099AA020</p>	41099AA020	ENGINE SUPPORT	Used for supporting engine.
 <p data-bbox="337 982 467 1003">ST-398527700</p>	398527700	PULLER ASSY	Used for removing extension case oil seal and clutch housing oil seal.
 <p data-bbox="337 1398 467 1419">ST-398643600</p>	398643600	GAUGE	Used for measuring total end play, extension end play and drive pinion height.
 <p data-bbox="337 1818 467 1839">ST-398177700</p>	398177700	INSTALLER	Used for assembling main shaft.

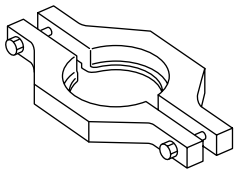
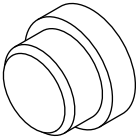
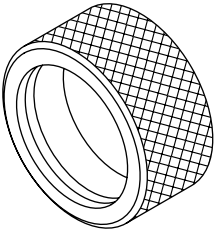
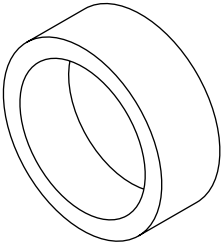
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-398663600</p>	398663600	PLIERS	<ul style="list-style-type: none"> <li>• Used for removing and installing neutral set spring.</li> <li>• Used with CLAW (18756AA000).</li> </ul>
 <p style="text-align: center;">ST-499247300</p>	499247300	INSTALLER	<ul style="list-style-type: none"> <li>• Used for removing axle shaft.</li> <li>• Used with REMOVER ASSY (499095500).</li> </ul>
 <p style="text-align: center;">ST-499095500</p>	499095500	REMOVER ASSY	<ul style="list-style-type: none"> <li>• Used for removing axle shaft.</li> <li>• Used with INSTALLER (499247300).</li> </ul>
 <p style="text-align: center;">ST-499247400</p>	499247400	INSTALLER	Used for installing transfer drive gear ball bearing.

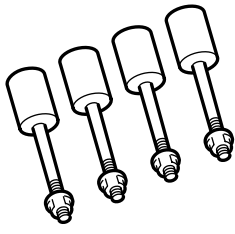

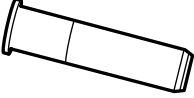
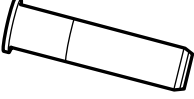
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498077610	498077610	REMOVER	Used for removing speedometer drive gear.
 ST-398497701	398497701	SEAT	Used for installing transfer drive gear ball bearing.
 ST-398437700	398437700	INSTALLER	Used for installing front differential side bearing.
 ST-498745600	498745600	INSTALLER	Used for installing oil pump drive gear.

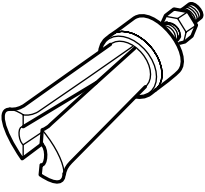
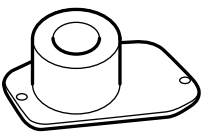
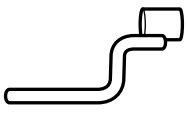
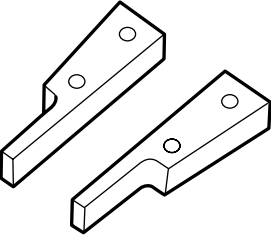
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18632AA000</p>	18632AA000	STAND ASSY	Used for disassembling and assembling transmission.
 <p style="text-align: center;">ST18671AA000</p>	18671AA000	OIL SEAL GUIDE	<ul style="list-style-type: none"> <li>• Used for installing oil seal to reverse check.</li> <li>• Used with INSTALLER (18657AA010).</li> </ul>
 <p style="text-align: center;">ST18657AA010</p>	18657AA010	INSTALLER	<ul style="list-style-type: none"> <li>• Used for installing oil seal to reverse check.</li> <li>• Used with OIL SEAL GUIDE (18671AA000).</li> </ul>
 <p style="text-align: center;">ST18657AA000</p>	18657AA000	INSTALLER	Used for installing oil seal to shift rod.

# General Description

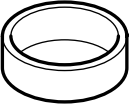

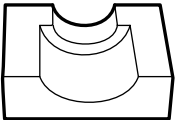
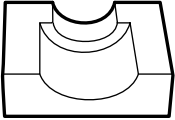
## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18758AA000</p>	<p style="text-align: center;">18758AA000</p>	<p style="text-align: center;">PULLER</p>	<p>Used for removing extension taper roller bearing outer race.</p>
 <p style="text-align: center;">ST18831AA000</p>	<p style="text-align: center;">18831AA000</p>	<p style="text-align: center;">GAUGE</p>	<p>Used for measuring extension taper roller bearing.</p>
 <p style="text-align: center;">ST18631AA000</p>	<p style="text-align: center;">18631AA000</p>	<p style="text-align: center;">HANDLE</p>	<p>Used for measuring front differential backlash.</p>
 <p style="text-align: center;">ST18756AA000</p>	<p style="text-align: center;">18756AA000</p>	<p style="text-align: center;">CLAW</p>	<ul style="list-style-type: none"> <li>• Used for installing and removing neutral set spring.</li> <li>• Used with INSTALLER (399893600).</li> </ul>



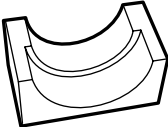
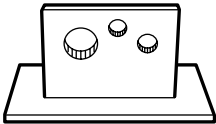


# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18754AA000</p>	18754AA000	REMOVER	Used for removing each parts of driven gear.
 <p style="text-align: center;">ST18757AA000</p>	18757AA000	STRAIGHT PIN REMOVER	Used for installing reverse idler gear.
 <p style="text-align: center;">ST18665AA000</p>	18665AA000	HOLDER	<ul style="list-style-type: none"> <li>• Used for installing and removing main shaft lock nut.</li> <li>• Used with BASE (18664AA000).</li> </ul>
 <p style="text-align: center;">ST18666AA000</p>	18666AA000	HOLDER	<ul style="list-style-type: none"> <li>• Used for installing and removing driven shaft lock nut.</li> <li>• Used with BASE (18664AA000).</li> </ul>

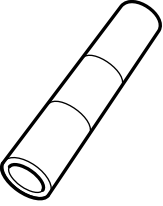
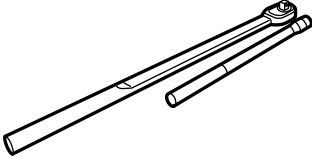


# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18667AA000</p>	18667AA000	HOLDER	<ul style="list-style-type: none"> <li>• Used for installing and removing drive pinion shaft lock nut.</li> <li>• Used with BASE (18664AA000).</li> </ul>
 <p style="text-align: center;">ST18664AA000</p>	18664AA000	BASE	<ul style="list-style-type: none"> <li>• Used for installing and removing main shaft lock nut.</li> <li>• Used for installing and removing drive pinion shaft lock nut.</li> <li>• Used for installing and removing driven shaft lock nut.</li> </ul>
 <p style="text-align: center;">ST18722AA000</p>	18722AA000	REMOVER	Used for disassembling main shaft. (TY856WX...model)
 <p style="text-align: center;">ST18722AA010</p>	18722AA010	REMOVER	Used for disassembling main shaft. (TY856WN...model)


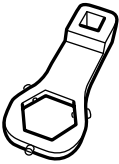
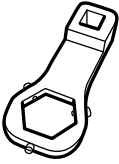
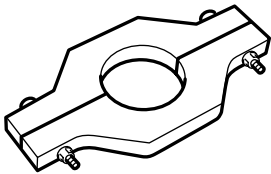
## General Description

### MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18651AA000</p>	18651AA000	INSTALLER	Used for assembling main shaft.
 <p style="text-align: center;">ST18852AA000</p>	18852AA000	TORQUE WRENCH	<ul style="list-style-type: none"> <li>• Used for tightening main shaft lock nut.</li> <li>• Used for tightening drive pinion shaft lock nut.</li> <li>• Used for tightening driven shaft lock nut.</li> </ul>
 <p style="text-align: center;">ST18668AA000</p>	18668AA000	PUNCH	Used for caulking main shaft lock nut.
 <p style="text-align: center;">ST18669AA000</p>	18669AA000	PUNCH	Used for caulking driven shaft lock nut.

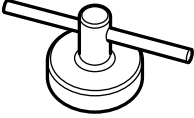
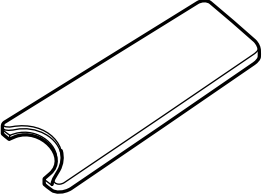

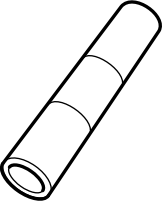
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18670AA000</p>	18670AA000	PUNCH	Used for caulking drive pinion shaft lock nut.
 <p style="text-align: center;">ST18620AA000</p>	18620AA000	ADAPTER WRENCH	Used for installing and removing driven gear shaft lock nut.
 <p style="text-align: center;">ST18621AA000</p>	18621AA000	ADAPTER WRENCH	Used for installing and removing drive pinion shaft lock nut.
 <p style="text-align: center;">ST18723AA000</p>	18723AA000	REMOVER	Used for disassembling the driven shaft.

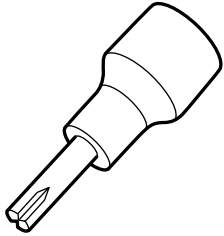
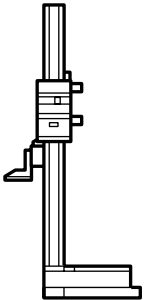
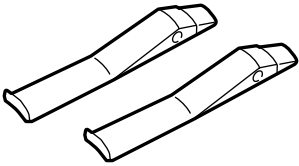
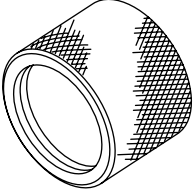
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18630AA000</p>	18630AA000	WRENCH ASSY	Used for removing and installing differential side retainer (left side).
 <p style="text-align: center;">ST18672AA000</p>	18672AA000	GUIDE CLIP	Used for installing reverse idler gear snap ring.
 <p style="text-align: center;">ST18720AA000</p>	18720AA000	REMOVER	Used for disassembling main shaft.
 <p style="text-align: center;">ST18654AA000</p>	18654AA000	INSTALLER	Used for assembling driven shaft.

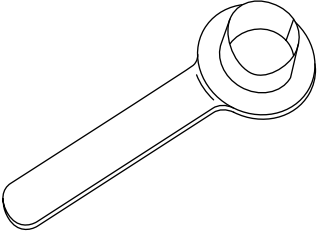
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18663AA000</p>	18663AA000	SOCKET	Used for installing and removing oil pump cover.
 <p style="text-align: center;">ST18853AA000</p>	18853AA000	HEIGHT GAUGE	Used for selecting shift rod.
 <p style="text-align: center;">ST18760AA000</p>	18760AA000	CLAW	<ul style="list-style-type: none"> <li>• Used for removing front side retainer bearing outer race.</li> <li>• Used with PULLER ASSEMBLY (398527705).</li> </ul>
 <p style="text-align: center;">ST18675AA000</p>	18675AA000	DIFFERENTIAL SIDE OIL SEAL INSTALLER	Used for installing differential side retainer oil seal.

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST28399SA010	28399SA010	OIL SEAL PROTECTOR	Used for protecting oil seal when installing front drive shaft.

## 2. GENERAL PURPOSE TOOLS

TOOL NAME	REMARKS
Circuit Tester	Used for measuring resistance, voltage and ampere.

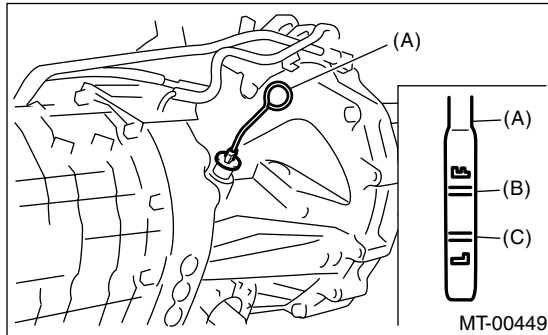
# Transmission Gear Oil

MANUAL TRANSMISSION AND DIFFERENTIAL

## 2. Transmission Gear Oil

### A: INSPECTION

- 1) Park the vehicle on a level surface.
- 2) Turn the ignition switch to OFF, and wait until the engine cools.
- 3) Remove the oil level gauge and wipe it clean.
- 4) Reinsert the level gauge all the way. Be sure that the level gauge is correctly inserted and in the proper direction.
- 5) Pull out the oil level gauge again and check the oil level on it. If it is below the lower level, add oil through the oil level gauge hole to bring the level up to the upper level.



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

### B: REPLACEMENT

- 1) Pull out the oil level gauge.
- 2) Lift-up the vehicle.
- 3) Remove the transmission under cover.
- 4) Drain the transmission gear oil completely.

#### CAUTION:

**Directly after the engine has been running, the transmission gear oil is hot. Be careful not to burn yourself.**

#### NOTE:

- Tighten the transmission gear oil drain plug after draining transmission gear oil.
- Always use a new gasket.

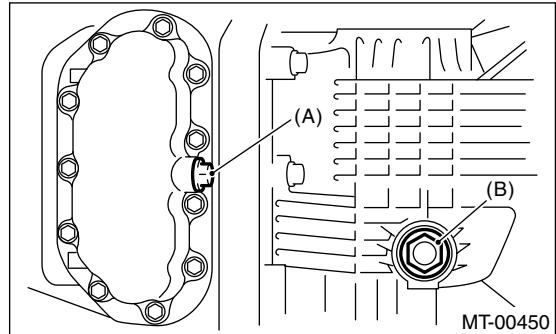
#### Tightening torque:

##### Oil pan side

**44 N·m (4.5 kgf-m, 32.5 ft-lb)**

##### Clutch housing side

**70 N·m (7.1 kgf-m, 51.6 ft-lb)**



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

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

#### Recommended gear oil:

**Use GL-5 or equivalent.**

#### Gear oil capacity:

**4.1 ℓ (4.3 US qt, 3.6 Imp qt)**

- 7) Check the level of the transmission gear oil.

#### NOTE:

- When inserting the level gauge into transmission gear, align the protrusion on the side of the top part of the level gauge with the notch in the gauge hole.
- The gear oil level should be within the specified range marked on the level gauge.



# Oil Seal

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 3. Oil Seal

#### A: INSPECTION

Inspect for oil leakage from the oil seal. Replace the oil seal if the lips is deformed, hardened, damaged, worn or defective if any.

#### B: REPLACEMENT

- 1) Clean the transmission exterior.
- 2) Drain the gear oil completely.

#### NOTE:

- Tighten the drain plug after draining gear oil.
- Always use a new gasket.

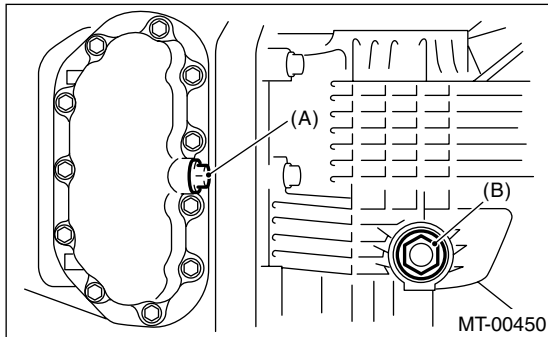
#### Tightening torque:

##### Oil pan side

**44 N·m (4.5 kgf·m, 32.5 ft·lb)**

##### Clutch housing side

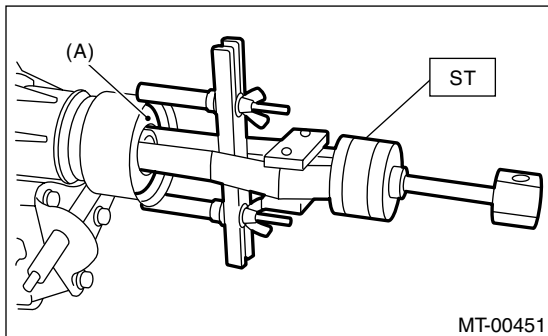
**70 N·m (7.1 kgf·m, 51.6 ft·lb)**



(A) Drain plug (Oil pan side)

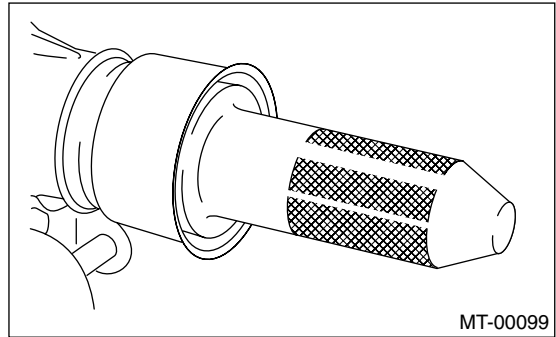
(B) Drain plug (Clutch housing side)

- 3) Remove the rear exhaust pipe and muffler.
  - 4) Remove the propeller shaft. <Ref. to DS-16, REMOVAL, Propeller Shaft.>
  - 5) Using the ST, remove the oil seal.
- ST 398527700 PULLER ASSY



(A) Oil seal

- 6) Using the ST, install the oil seal.
- ST 498057300 INSTALLER

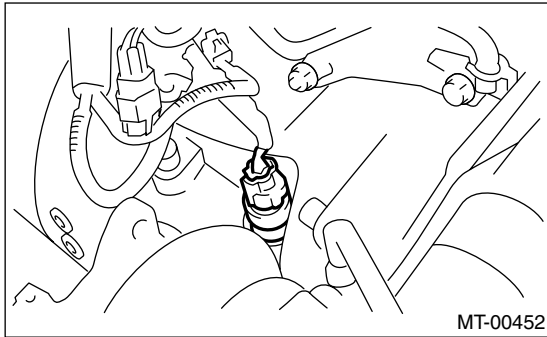


- 7) Install the propeller shaft. <Ref. to DS-17, INSTALLATION, Propeller Shaft.>
- 8) Install the rear exhaust pipe and muffler.
- 9) Pour gear oil and check the oil level. <Ref. to 6MT-31, REPLACEMENT, Transmission Gear Oil.>

## 4. Vehicle Speed Sensor

### A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 3) Disconnect the vehicle speed sensor connector.



- 4) Remove the vehicle speed sensor.

### B: INSTALLATION

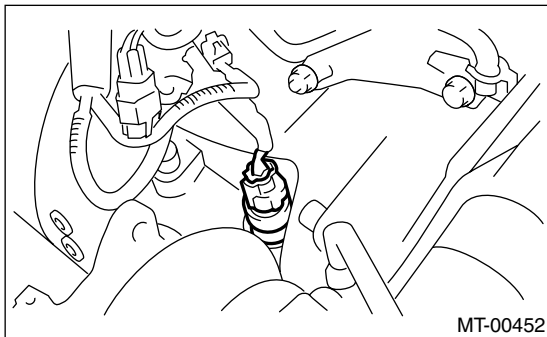
- 1) Align the tip end of vehicle speed sensor key with key groove on the end of speedometer shaft, and then install it.

#### **Tightening torque:**

**5.9 N·m (0.6 kgf-m, 4.4 ft-lb)**

#### **NOTE:**

- Ensure the sensor mounting hole is clean and free of foreign matter.
- Discard the vehicle speed sensor and after removal, replace with a new one.



- 2) Connect the connector to vehicle speed sensor.
- 3) Install the intercooler. <Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

### C: INSPECTION

Inspect that the speedometer is normally operated, because vehicle speed sensor cannot be inspected as single part. If it is not normally operated, inspect the combination meter system. <Ref. to IDI-3, INSPECTION, Combination Meter System.>

# Transmission Mounting System

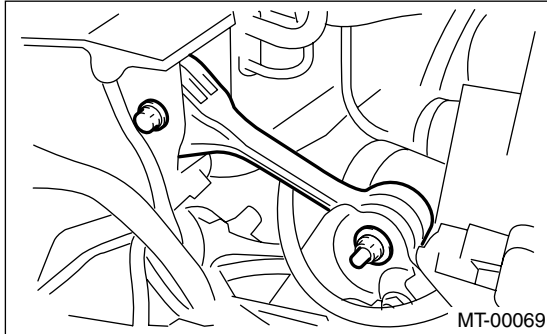
MANUAL TRANSMISSION AND DIFFERENTIAL

## 5. Transmission Mounting System

### A: REMOVAL

#### 1. PITCHING STOPPER

- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 3) Remove the pitching stopper.



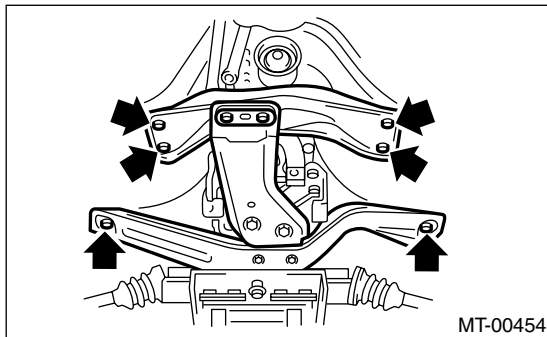
#### 2. CROSSMEMBER AND CUSHION RUBBER

- 1) Disconnect the ground cable from battery.
- 2) Jack-up the vehicle and support it with sturdy racks.
- 3) Remove the center exhaust pipe. <Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>
- 4) Remove the rear exhaust pipe and muffler.
- 5) Remove the heat shield cover.
- 6) Set the transmission jack under the transmission body.

#### CAUTION:

Always support the transmission case with a transmission jack.

- 7) Remove the rear crossmember.



- 8) Remove the rear cushion rubber.

### B: INSTALLATION

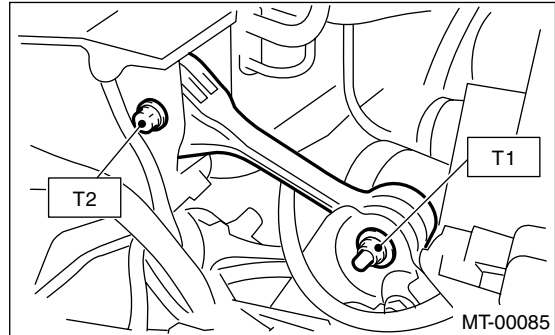
#### 1. PITCHING STOPPER

- 1) Install the pitching stopper.

#### Tightening torque:

**T1: 50 N·m (5.1 kgf-m, 36.9 ft-lb)**

**T2: 58 N·m (5.9 kgf-m, 42.8 ft-lb)**



- 2) Install the intercooler. <Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>
- 3) Connect the battery ground cable to battery.

#### 2. CROSSMEMBER AND CUSHION RUBBER

- 1) Install the rear cushion rubber.

#### Tightening torque:

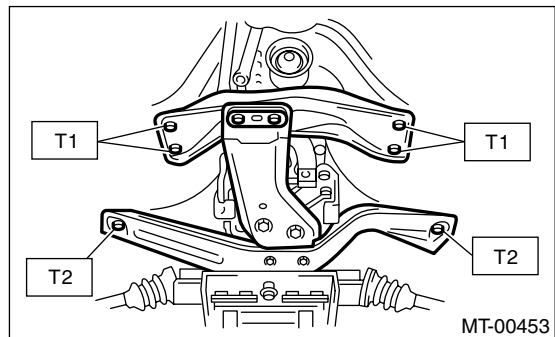
**35 N·m (3.6 kgf-m, 25.8 ft-lb)**

- 2) Install the crossmember.

#### Tightening torque:

**T1: 70 N·m (7.1 kgf-m, 51.6 ft-lb)**

**T2: 140 N·m (14.3 kgf-m, 103 ft-lb)**



- 3) Remove the transmission jack.
- 4) Install the center exhaust pipe. <Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>
- 5) Install the rear exhaust pipe and muffler.

## **C: INSPECTION**

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

### **1. PITCHING STOPPER**

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

### **2. CROSSMEMBER AND CUSHION RUBBER**

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

# Manual Transmission Assembly

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 6. Manual Transmission Assembly

#### A: REMOVAL

1) Set the vehicle on a lift, and then open the front hood and support with hood stay.

#### NOTE:

Set the hood stay to its specified hole.

2) Remove the front wheel.

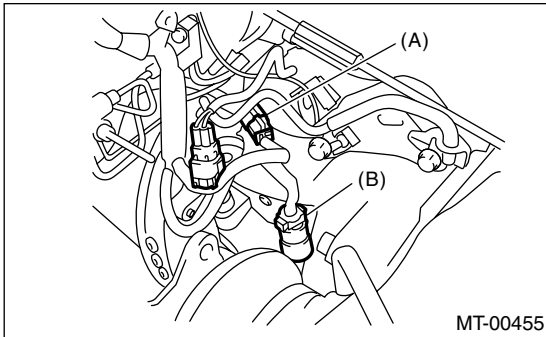
3) Disconnect the ground cable from battery.

4) Remove the intercooler assembly. <Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>

5) Lift-up the vehicle, and then remove the under cover.

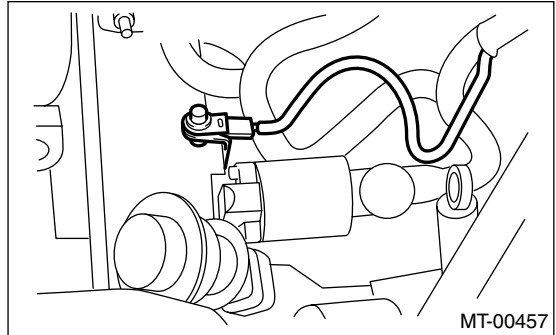
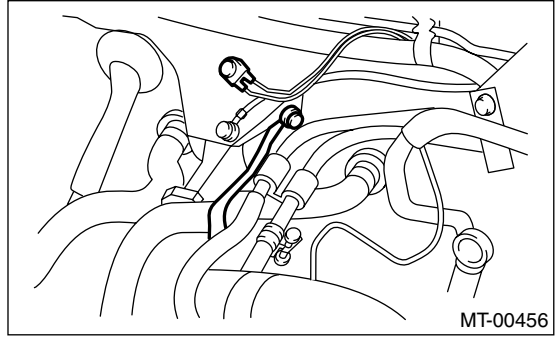
6) Remove the steering universal joint. <Ref. to PS-24, REMOVAL, Universal Joint.>

7) Lower the vehicle and disconnect the connector located on upper side of transmission.



- (A) Transmission connector
- (B) Vehicle speed sensor connector

8) Disconnect the ground cable at upper side of transmission case and body.

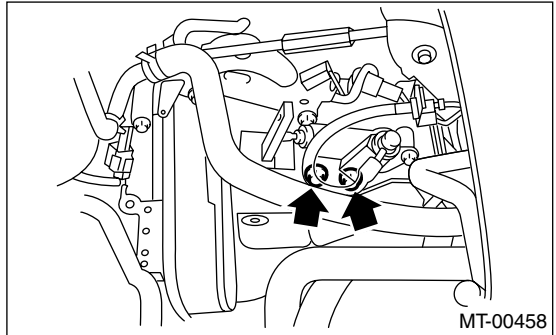


9) Remove the starter assembly. <Ref. to SC(H4SO)-7, REMOVAL, Starter.>

10) Remove the clutch operating cylinder.

#### NOTE:

Hang the removed operating cylinder with wire.



11) Remove the clutch release shaft.

(1) Remove the plug with hexagon wrench.

(2) Install a 6 mm (0.24 in) bolt to the release shaft, then pull out the release shaft.

(3) Lift up the release fork, and then remove it from the release bearing claw. Pull it to the engine side and set it free.

12) Remove the pitching stopper, and then remove the pitching stopper bracket.

# Manual Transmission Assembly

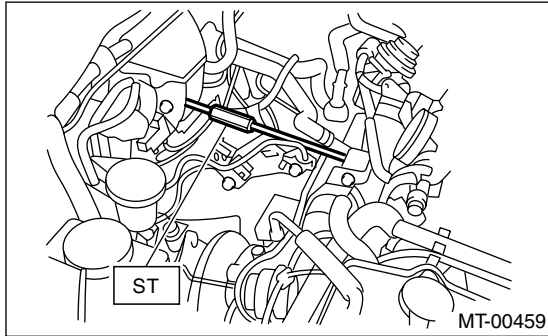
MANUAL TRANSMISSION AND DIFFERENTIAL

13) Set the ST.

NOTE:

Also Part No. 41099AA010 can be used.

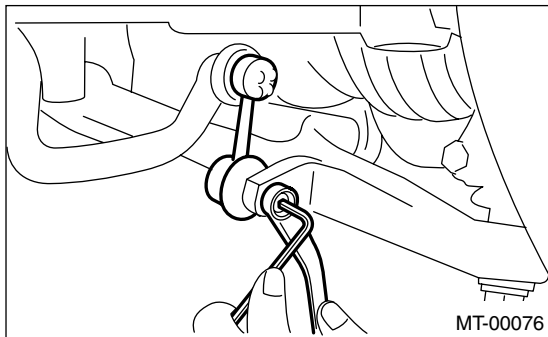
ST 41099AA020 ENGINE SUPPORT



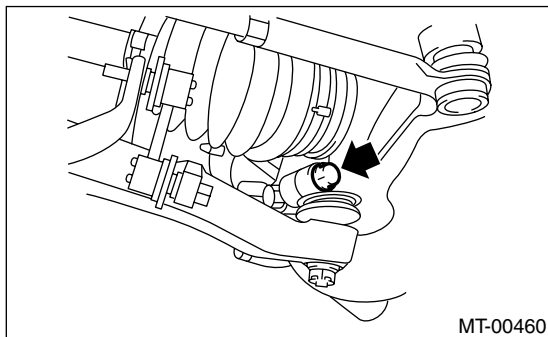
14) Remove the center and rear exhaust pipe and muffler. <Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.>, <Ref. to EX(H4DOTC)-13, REMOVAL, Joint Pipe.>

15) Remove the propeller shaft. <Ref. to DS-16, REMOVAL, Propeller Shaft.>

16) Remove the front stabilizer bolt.

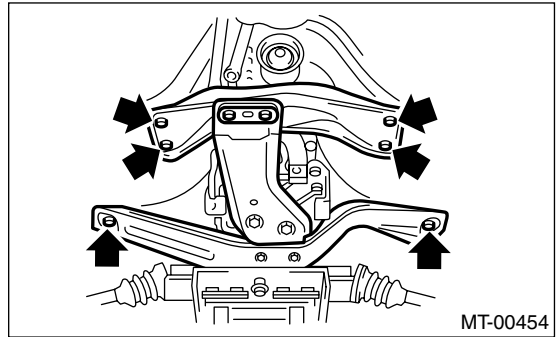


17) Remove the ball joint of transverse link from housing.



18) Remove the front drive shaft. <Ref. to DS-36, REMOVAL, Front Drive Shaft.>

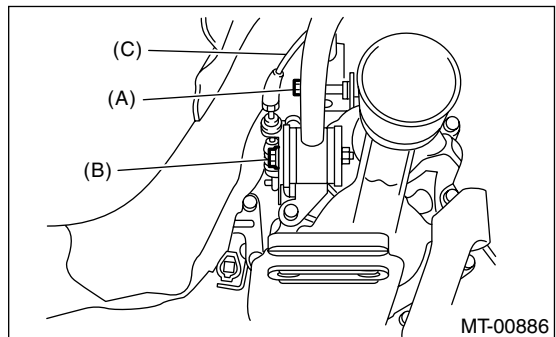
19) Set the transmission jack under the transmission, then remove the front crossmember and rear crossmember.



20) Move the transmission to right side, then remove the joint COMPL, stay bolt and reverse check cable.

NOTE:

If the transmission is not moved, the joint COMPL and stay bolt will contact body and damage may occur.



(A) Joint COMPL bolt

(B) Stay bolt

(C) Reverse check cable

21) Remove the fixing bolt of engine and transmission, then remove the transmission from vehicle.

NOTE:

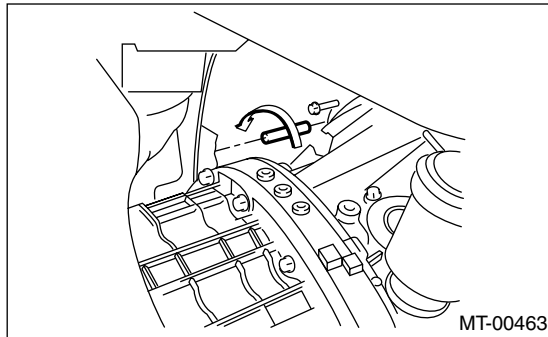
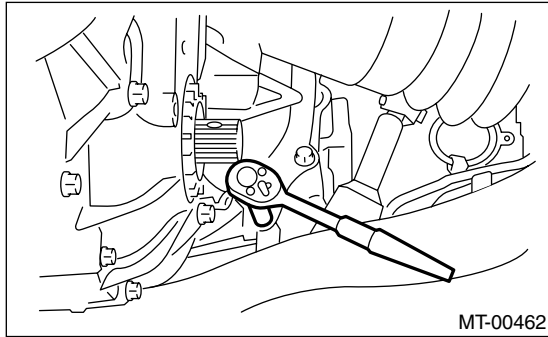
- Rotate the ST (ENGINE SUPPORT ASSY) counterclockwise (to shorter the ST) and lower the rear side of engine to facilitate removal.

- Take care not to contact the transmission with body when pulling backward to remove.

# Manual Transmission Assembly

## MANUAL TRANSMISSION AND DIFFERENTIAL

- Remove carefully. The clutch pipe and breather pipe may interfere each other.



### B: INSTALLATION

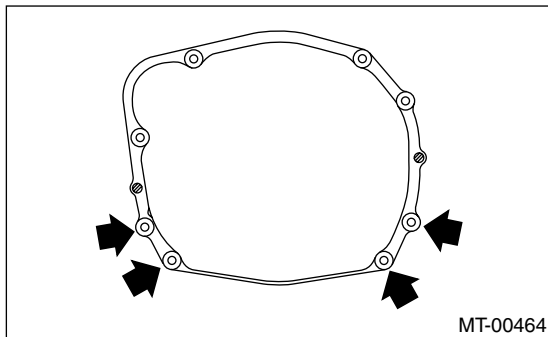
- 1) Set the release fork, release bearing and release shaft to transmission. <Ref. to CL-26, INSTALLATION, Release Bearing and Lever.>
- 2) Install the transmission.

#### NOTE:

- Make sure the main shaft spline part is inserted completely.
- Make sure the rear side of engine is lowered.

#### Tightening torque:

**50 N·m (5.1 kgf-m, 36.9 ft-lb)**

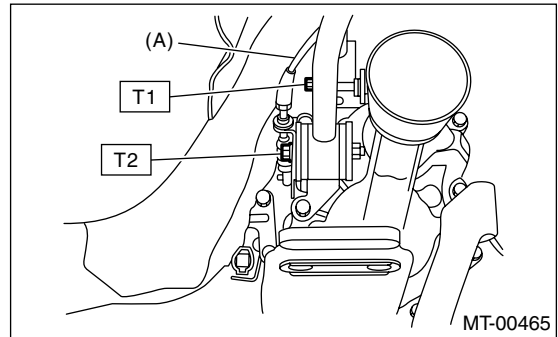


- 3) Move the transmission to the right side, then install the joint COMPL bolt, stay bolt and reverse check cable.

#### Tightening torque:

**T1: 11.8 N·m (1.2 kgf-m, 8.7 ft-lb)**

**T2: 32 N·m (3.3 kgf-m, 23.6 ft-lb)**



(A) Reverse check cable

- 4) Install the front crossmember and rear crossmember.

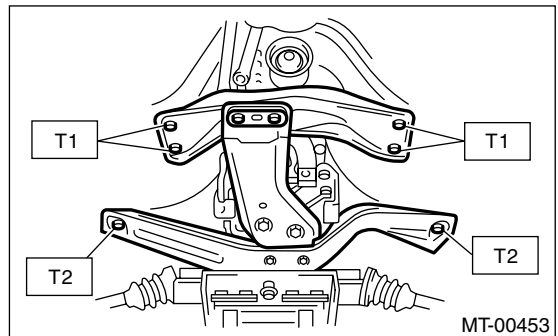
#### NOTE:

Rotate the ST (ENGINE SUPPORT ASSY) turn buckle clockwise (make longer the ST) and lift up the rear side of engine to facilitate installation.

#### Tightening torque:

**T1: 70 N·m (7.1 kgf-m, 51.6 ft-lb)**

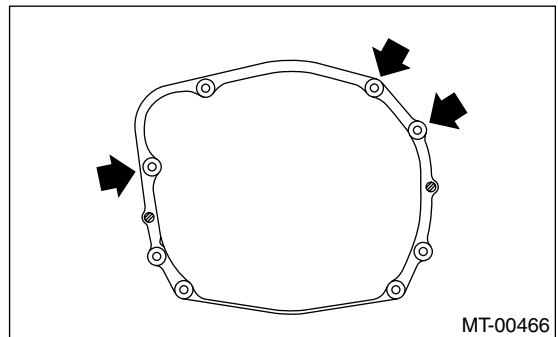
**T2: 140 N·m (14.3 kgf-m, 103 ft-lb)**



- 5) Lower the vehicle and install the fixing bolt.

#### Tightening torque:

**50 N·m (5.1 kgf-m, 36.9 ft-lb)**



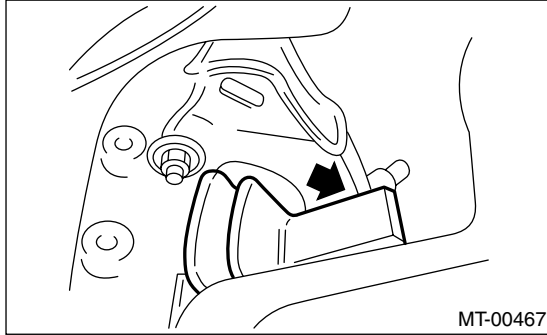
- 6) Make sure the release bearing is installed completely.

# Manual Transmission Assembly

## MANUAL TRANSMISSION AND DIFFERENTIAL

### NOTE:

- Push the release fork to operating cylinder side until you hear a “click” sound. Pull the release fork to engine side. Setting is completed if the release fork does not contact case.
- Make sure the boot cover is firmly set.

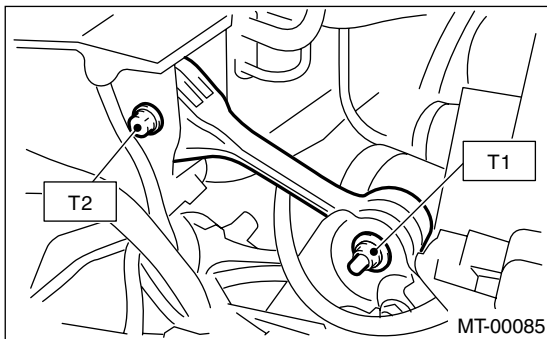


7) Install the pitching stopper bracket, and then install the pitching stopper.

### Tightening torque:

**T1: 50 N·m (5.1 kgf·m, 36.9 ft·lb)**

**T2: 58 N·m (5.9 kgf·m, 42.8 ft·lb)**



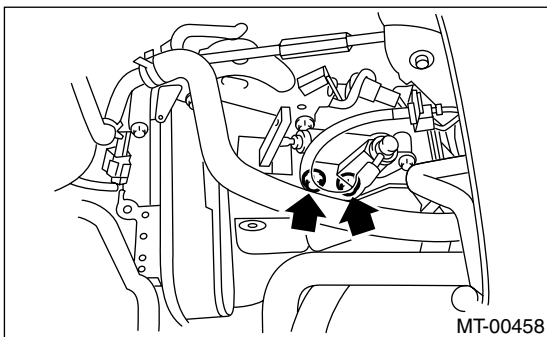
8) Install the clutch operating cylinder.

### Tightening torque:

**41 N·m (4.2 kgf·m, 30.2 ft·lb)**

### NOTE:

Check that the clutch hose is routed properly.

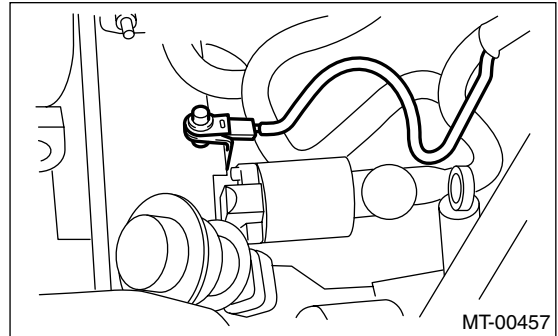
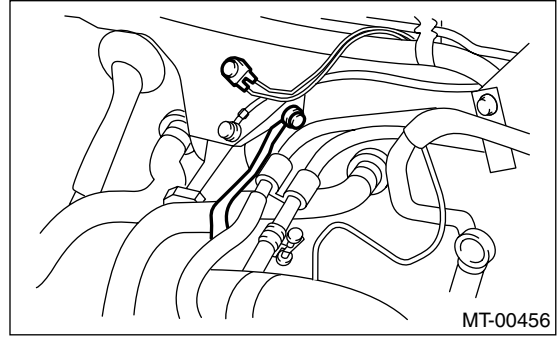


9) Install the starter assembly.

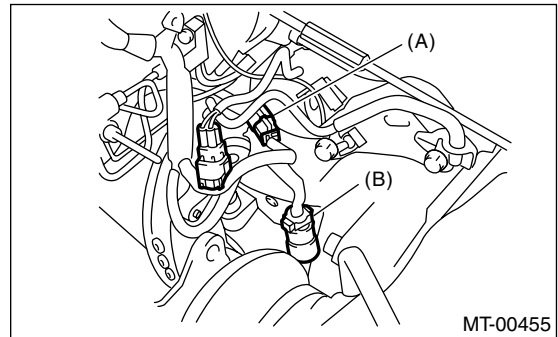
### Tightening torque:

**50 N·m (5.1 kgf·m, 36.9 ft·lb)**

10) Install the transmission and body ground cable.



11) Connect the connector located on the upper side of transmission.



(A) Vehicle speed sensor connector

(B) Transmission connector

12) Lift-up the vehicle.

13) Replace the front differential side retainer oil seal.

(1) Remove the oil seal by using flat tip screwdriver and etc.

(2) Fit a new oil seal using ST.

ST 18675AA000 DIFFERENTIAL SIDE OIL SEAL INSTALLER

### NOTE:

- Apply oil to the oil seal lips.
- Always replace the differential side oil seal after extracting front drive shaft from the transmission.

14) Apply grease to the oil seal lips.

15) Set the ST to the side retainer.

ST 28399SA000 OIL SEAL PROTECTOR



# Manual Transmission Assembly

## MANUAL TRANSMISSION AND DIFFERENTIAL

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16) Install the front drive shaft into transmission.

**NOTE:**

Replace the circlip of drive shaft with a new one.

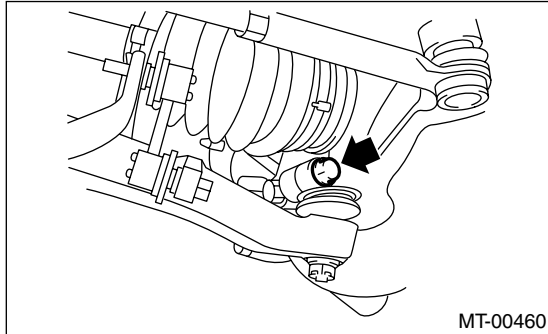
17) Install the front drive shaft into transmission, remove the ST and insert the drive shaft securely.

ST 28399SA000 OIL SEAL PROTECTOR

18) Install the ball joint of transverse link to housing.

**Tightening torque:**

**50 N·m (5.1 kgf·m, 36.9 ft·lb)**



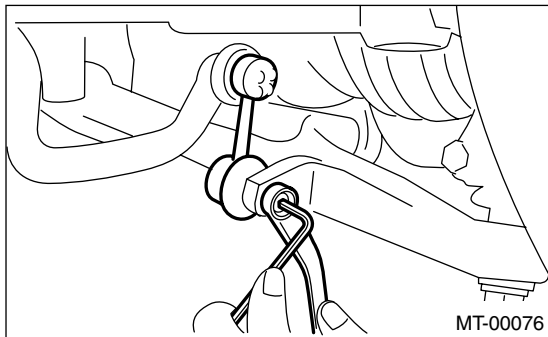
19) Install the stabilizer nut.

**Tightening torque:**

**45 N·m (4.6 kgf·m, 33.2 ft·lb)**

**NOTE:**

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



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

21) Install the center exhaust pipe. <Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>

22) Install the rear exhaust pipe and muffler. <Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.>, <Ref. to EX(H4DOTC)-13, INSTALLATION, Joint Pipe.>

23) Install the universal joint. <Ref. to PS-24, INSTALLATION, Universal Joint.>

24) Install the under cover.

25) Install the intercooler assembly. <Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

26) Connect the battery ground cable to battery.

## 7. Preparation for Overhaul

### A: PROCEDURE

- 1) Clean oil, grease, dirt and dust from transmission.
- 2) Remove the drain plug to drain oil. After draining, retighten it as before.

**NOTE:**

Replace the gasket with a new one.

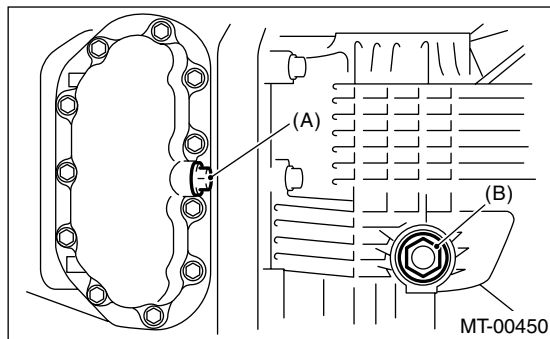
**Tightening torque:**

**Oil pan side**

**44 N·m (4.5 kgf·m, 32.5 ft·lb)**

**Clutch housing**

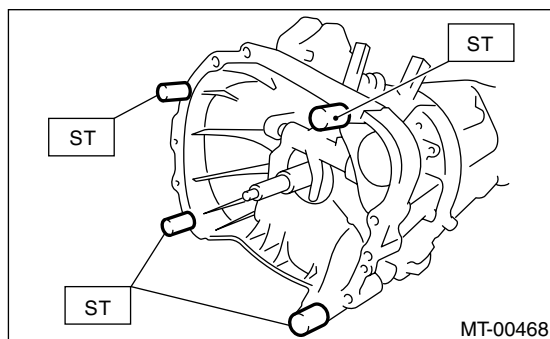
**70 N·m (7.1 kgf·m, 51.6 ft·lb)**



(A) Drain plug (Oil pan side)

(B) Drain plug (Clutch housing side)

- 3) Attach the transmission to ST.  
ST 18632AA000 STAND ASSY



- 4) Rotating parts should be coated with oil prior to assembly.
- 5) All disassembled parts, if to be reused, should be reinstalled in the original positions and directions.
- 6) Gaskets, lock washers and lock nut must be replaced with new ones.
- 7) Liquid gasket should be used where specified to prevent leakage.

## Air Breather Hose

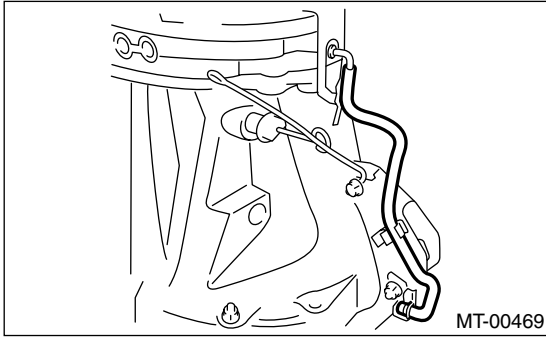
MANUAL TRANSMISSION AND DIFFERENTIAL

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### 8. Air Breather Hose

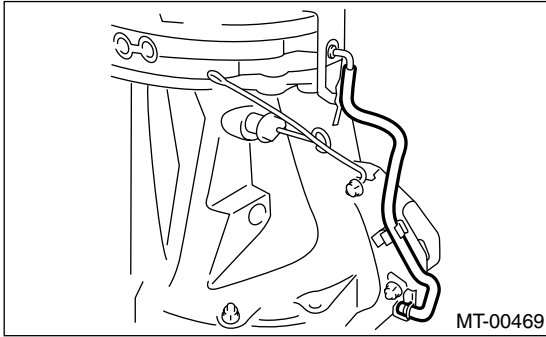
#### A: REMOVAL

Disconnect the air breather hose.



#### B: INSTALLATION

Install the air breather hose.



#### C: INSPECTION

Make sure the hose is not cracked or clogged.

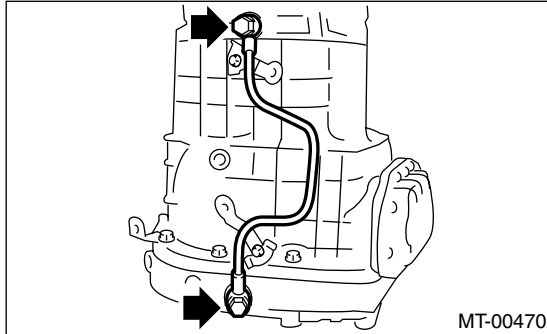
## 9. Oil Pipe

### A: REMOVAL

Remove the oil pipe.

#### NOTE:

Do not reuse the gasket.



### B: INSTALLATION

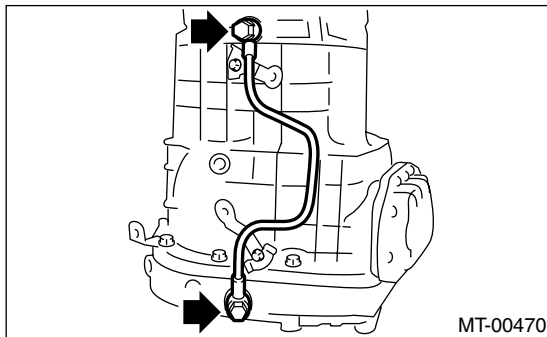
Install in the reverse order of removal.

#### NOTE:

Always use a new gasket.

#### *Tightening torque:*

***32 N·m (3.3 kgf·m, 23.6 ft·lb)***



### C: INSPECTION

- 1) Make sure there is no damage on pipe. If there is damage, replace the pipe.
- 2) Check the joint parts of pipe for oil leakage. If there is oil leakage, replace the gasket.

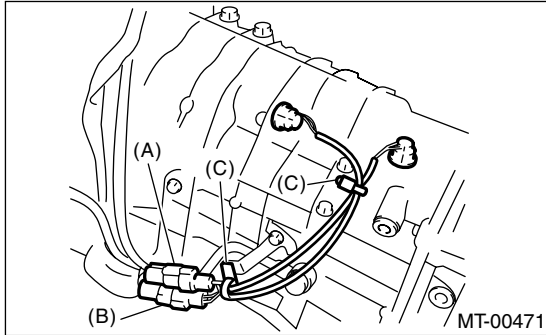
# Back-up Light Switch

MANUAL TRANSMISSION AND DIFFERENTIAL

## 10. Back-up Light Switch

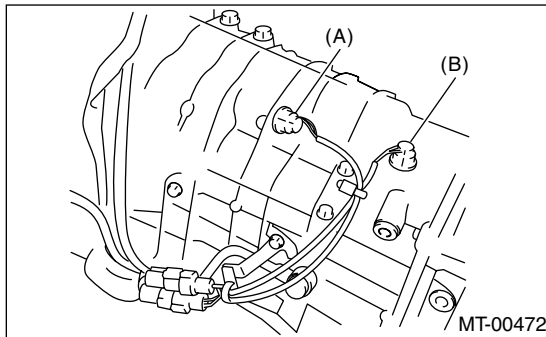
### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Disconnect the back-up light switch connector.



- (A) Back-up light switch connector (White)
- (B) Neutral position switch connector (Black)
- (C) Clip

- 3) Remove the back-up light switch.



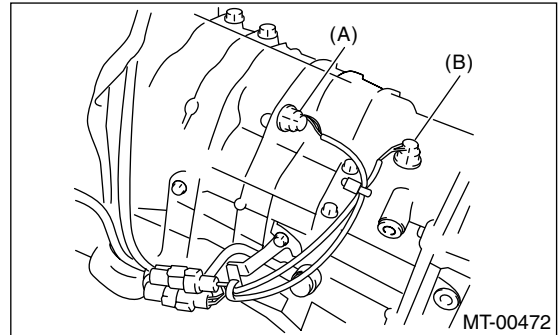
- (A) Back-up light switch
- (B) Neutral position switch

### B: INSTALLATION

- 1) Install the back-up light switch.

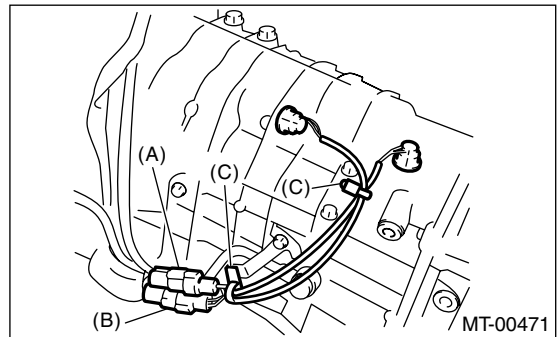
#### Tightening torque:

**32 N·m (3.3 kgf-m, 23.6 ft-lb)**



- (A) Back-up light switch
- (B) Neutral position switch

- 2) Connect the back-up light switch connector.



- (A) Back-up light switch connector (White)
- (B) Neutral position switch connector (Black)
- (C) Clip

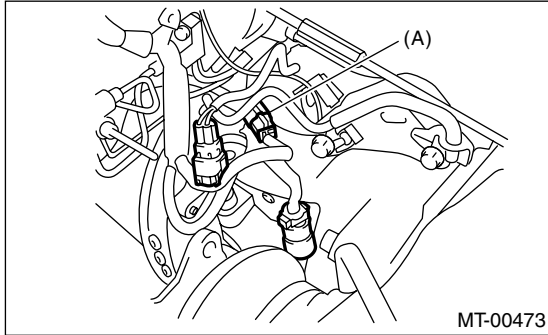
- 3) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

# Back-up Light Switch

MANUAL TRANSMISSION AND DIFFERENTIAL

## C: INSPECTION

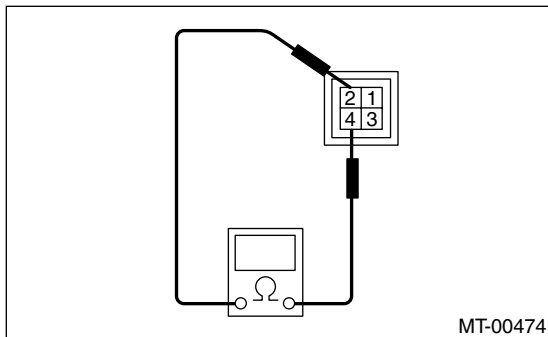
- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 3) Disconnect the transmission harness and chassis harness.



(A) Transmission connector

- 4) Measure the resistance between back-up light switch terminals. If it is not within specifications, replace the back-up light switch.

Gear shift position	Terminal No.	Specified resistance
Back-up position	2 and 4	Less than 1 $\Omega$
Other positions		More than 1 M $\Omega$



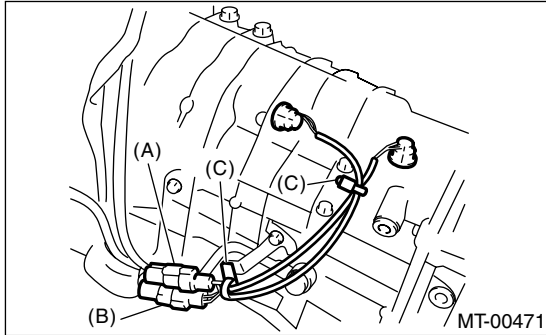
# Neutral Position Switch

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 11. Neutral Position Switch

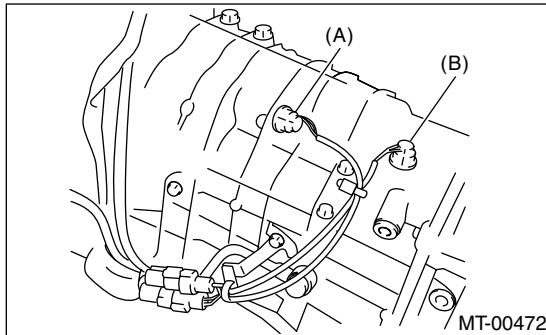
#### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Disconnect the neutral position switch connector and clip.



- (A) Back-up light switch connector (White)
- (B) Neutral position switch connector (Black)
- (C) Clip

- 3) Remove the neutral position switch.



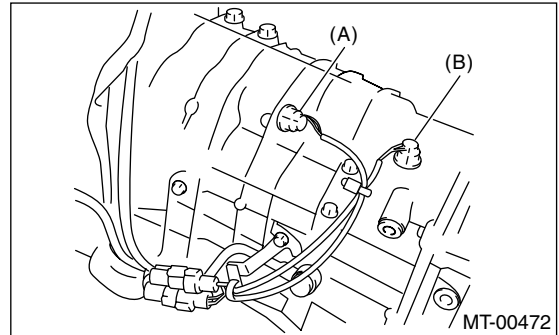
- (A) Back-up light switch
- (B) Neutral position switch

#### B: INSTALLATION

- 1) Install the neutral position switch.

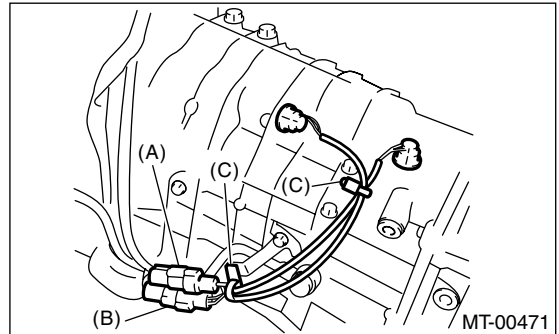
#### Tightening torque:

**32 N·m (3.3 kgf-m, 23.6 ft-lb)**



- (A) Back-up light switch
- (B) Neutral position switch

- 2) Connect the neutral position switch connector and clip.



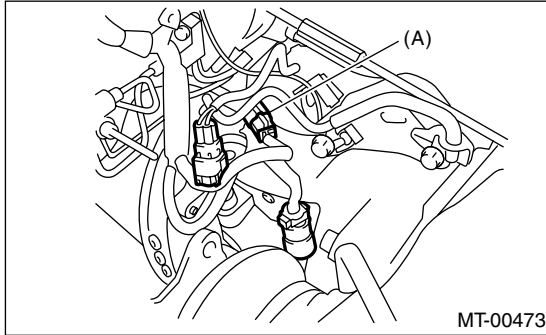
- (A) Back-up light switch connector (White)
- (B) Neutral position switch connector (Black)
- (C) Clip

- 3) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

# Neutral Position Switch

## C: INSPECTION

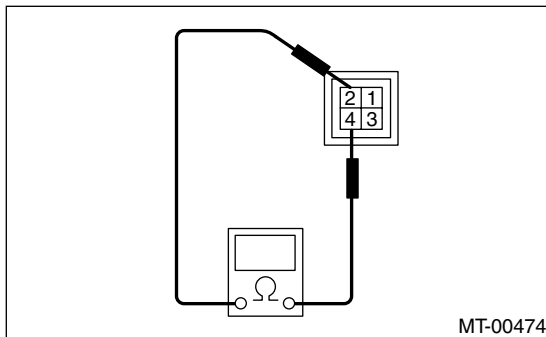
- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 3) Disconnect the transmission harness and chassis harness.



(A) Transmission connector

- 4) Measure the resistance between neutral position switch terminals. If it is not within specifications, replace the neutral position switch.

Gear shift position	Terminal No.	Specified resistance
Neutral position	1 and 3	Less than 1 $\Omega$
Other positions		More than 1 M $\Omega$





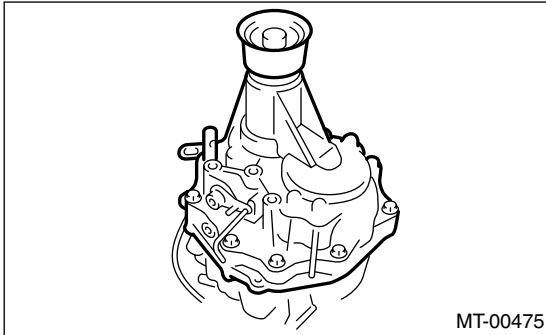
## Extension Case

### MANUAL TRANSMISSION AND DIFFERENTIAL

## 12.Extension Case

### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the extension case.



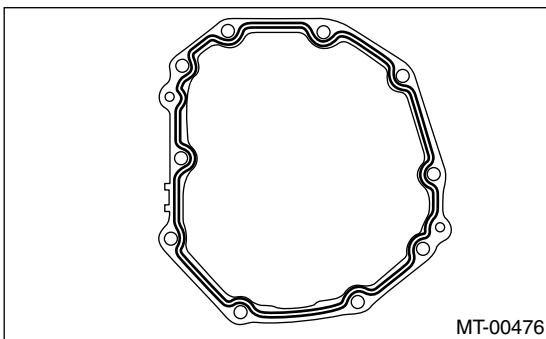
- 4) Completely remove the remaining liquid gasket from the extension case and transmission case.

### B: INSTALLATION

- 1) Select the transfer driven gear thrust washer, and then install it to extension case. <Ref. to 6MT-50, ADJUSTMENT, Extension Case.>
- 2) Apply oil lightly to the outer periphery of bearing cone, and then install it to extension case.
- 3) Select the thrust washer of transfer drive gear, and then install it to center differential.
- 4) Apply liquid gasket to the transmission case.

#### Liquid gasket:

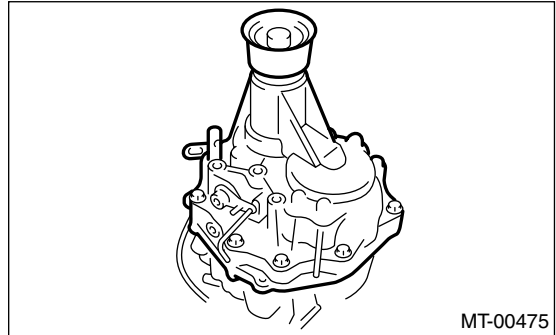
**THREE BOND 1215**



- 5) Install the extension case.

#### Tightening torque:

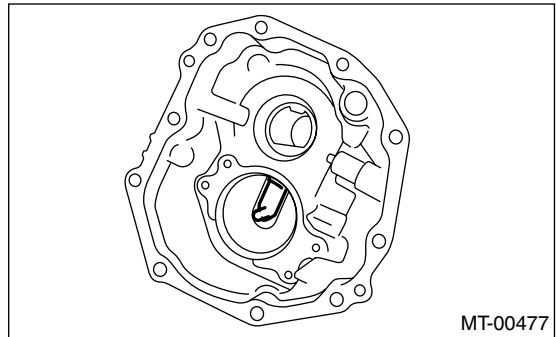
**48 N·m (4.9 kgf·m, 35.4 ft·lb)**



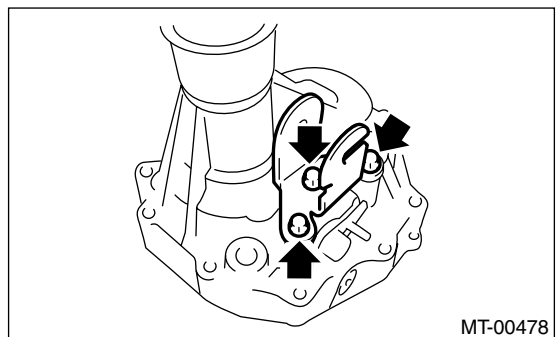
- 6) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

### C: DISASSEMBLY

- 1) Remove the transfer drive gear. <Ref. to 6MT-57, REMOVAL, Transfer Drive Gear.>
- 2) Remove the extension guide.



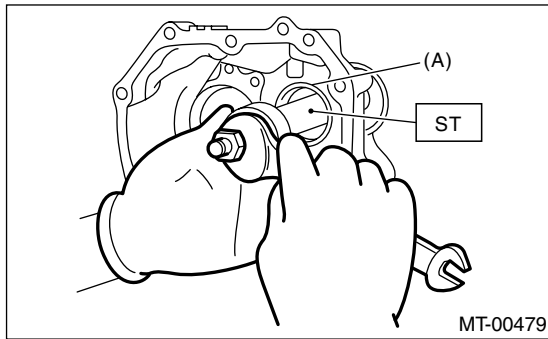
- 3) Remove the shift bracket.



## Extension Case

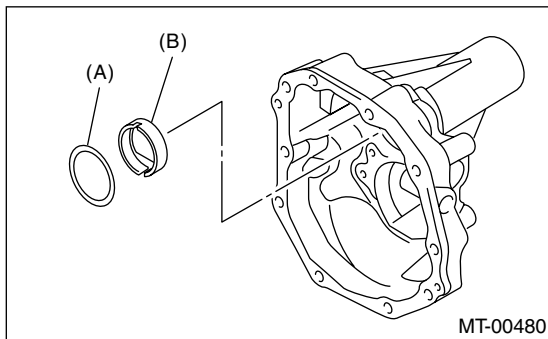
MANUAL TRANSMISSION AND DIFFERENTIAL

- 4) Using the ST, remove the bearing cone.  
ST 18758AA000 PULLER



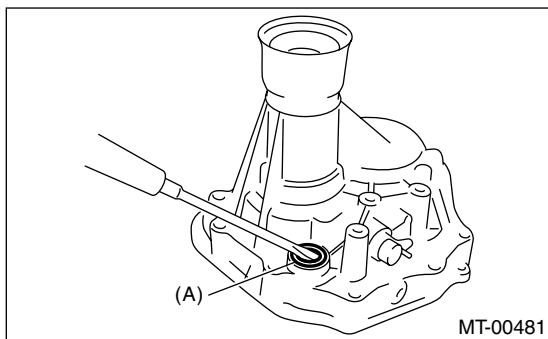
(A) Bearing cone

- 5) Remove the thrust washer and oil plate.



(A) Thrust washer  
(B) Oil plate

- 6) Remove the shifter arm oil seal.



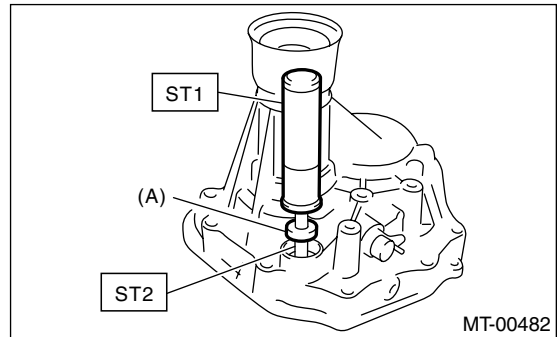
(A) Oil seal

- 7) Remove the reverse checking system. <Ref. to 6MT-54, REMOVAL, Reverse Checking System.>  
8) Remove the extension oil seal. <Ref. to 6MT-32, REPLACEMENT, Oil Seal.>

### D: ASSEMBLY

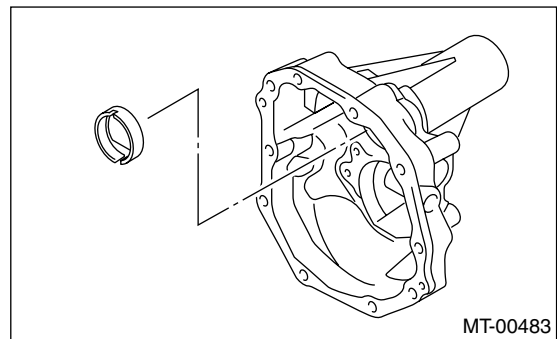
- 1) Install the reverse checking system. <Ref. to 6MT-55, INSTALLATION, Reverse Checking System.>  
2) Install the extension case oil seal. <Ref. to 6MT-32, REPLACEMENT, Oil Seal.>

- 3) Using the ST, install the shifter arm oil seal.  
ST1 18657AA000 INSTALLER  
ST2 18671AA000 OIL SEAL GUIDE



(A) Oil seal

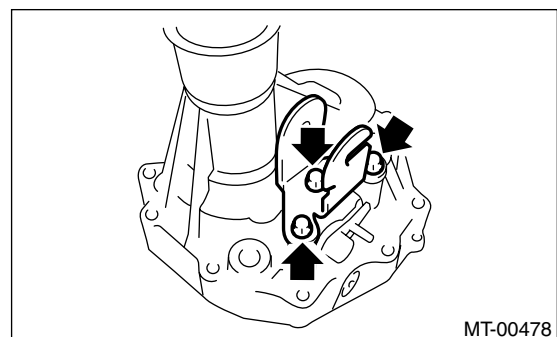
- 4) Install the oil plate.



- 5) Select the bearing thrust washer, and then install it to extension case. <Ref. to 6MT-50, ADJUSTMENT, Extension Case.>  
6) Apply oil lightly to the outer periphery of bearing cone, and then install it to extension case.  
7) Install the shift bracket.

### Tightening torque:

**25 N·m (2.5 kgf·m, 18.1 ft·lb)**



- 8) Install the extension guide, and then install the transfer driven gear. <Ref. to 6MT-57, INSTALLATION, Transfer Drive Gear.>

### E: INSPECTION

- 1) Make sure there is no damage or crack on extension case. If there is damage or crack, replace the extension case.

# Extension Case

## MANUAL TRANSMISSION AND DIFFERENTIAL

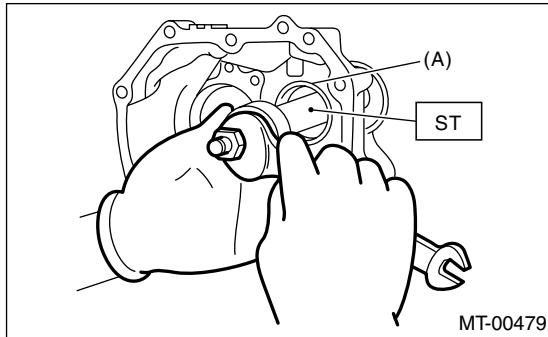
2) Check each oil seal and joint part of extension case and transmission case for oil leakage. If there is oil leakage, replace the oil seal and liquid gasket.

### F: ADJUSTMENT

#### 1. TRANSFER DRIVEN GEAR BEARING THRUST WASHER ADJUSTMENT

1) Using the ST, remove the bearing cone from extension case.

ST 18758AA000 PULLER



(A) Bearing cone

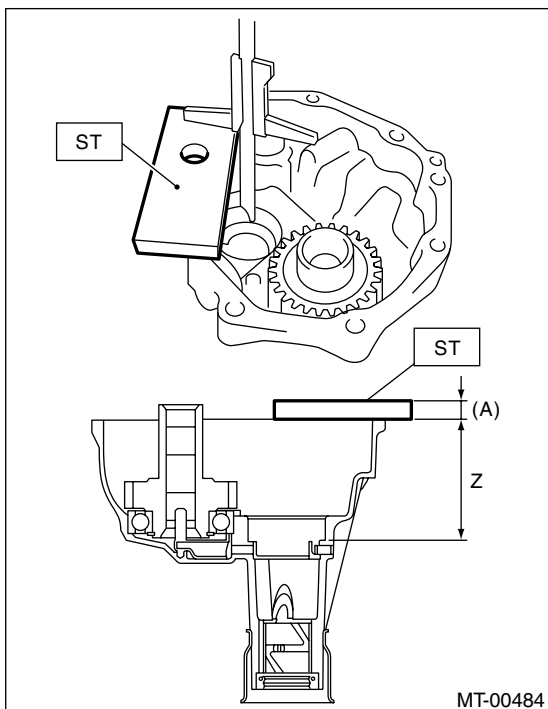
2) Remove the thrust washer.

3) Measure the depth "Z" between end of extension case and contact point of bearing cone.

ST 398643600 GAUGE

#### NOTE:

To measure the depth "Z", subtract the thickness of ST [15 mm (0.59 in)] from the measured value.

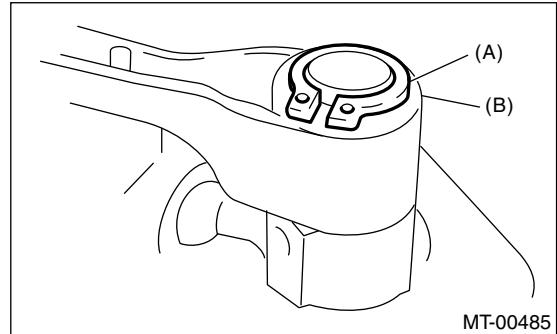


(A) 15 mm (0.59 in)

4) Remove the transfer driven gear. <Ref. to 6MT-59, REMOVAL, Transfer Driven Gear.>

5) Remove the center differential. <Ref. to 6MT-61, REMOVAL, Center Differential.>

6) Remove the snap ring and support from selector arm part.



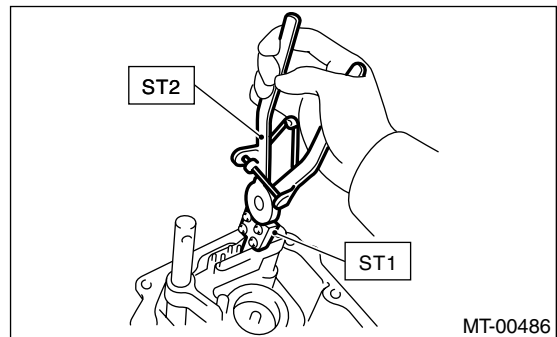
(A) Snap ring

(B) Support

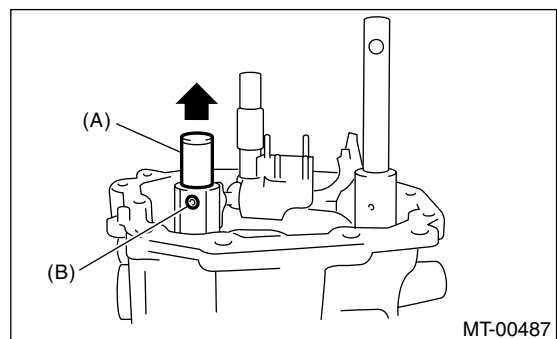
7) Using the ST, remove the neutral set spring and support.

ST1 18756AA000 CLAW

ST2 398663600 PLIERS



8) Lift-up the striking rod and remove spring pin.



(A) Striking rod

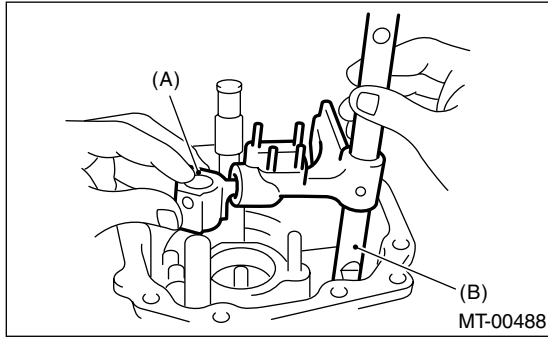
(B) Spring pin

# Extension Case

MANUAL TRANSMISSION AND DIFFERENTIAL

9) Remove the selector arm No. 2 and shifter arm.

ST 18831AA000 GAUGE

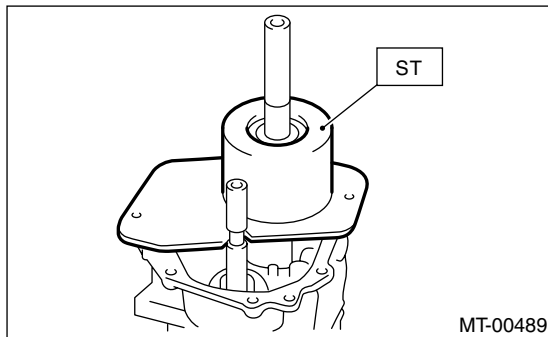


- (A) Selector arm No. 2
- (B) Shifter arm

10) Install the bearing cone to transfer driven gear.

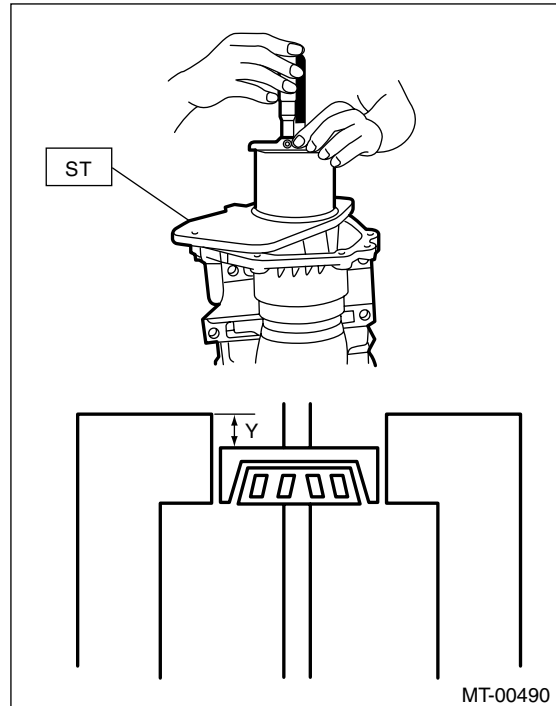
11) Set the ST.

ST 18831AA000 GAUGE



12) Rotate the transfer driven gear approx. ten times to get the bearing accustomed.

13) Measure the depth "Y" between end of ST and bearing cone.



14) Calculate the value "t" of transfer driven gear bearing thrust washer using the following equation.

$$t = Z - (100 - Y) - \{ -0.04 \text{ to } 0.11 \text{ mm } ( -0.0016 \text{ to } 0.0043 \text{ in} ) \}$$

t mm (in)	Thickness of transfer driven gear bearing thrust washer.
Y mm (in)	Depth from end of ST to bearing cone.
Z mm (in)	Depth from end of extension case to contact point of bearing cone.
-0.04 — 0.11 mm (-0.0016 — 0.0043 in)	Standard clearance between thrust washer and taper roller bearing.
100 mm (3.94 in)	Height of ST.

15) Select the nearest thrust washer from the following table, according to the calculated value "t".

**Standard clearance between thrust washer and taper roller bearing:**

$$-0.04 \text{ — } 0.11 \text{ mm } T ( -0.0016 \text{ — } 0.0043 \text{ in } T)$$

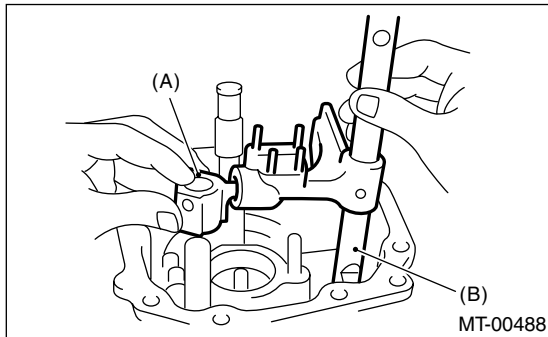
## Extension Case

### MANUAL TRANSMISSION AND DIFFERENTIAL

NOTE:  
T: Tight

Thrust washer (50 × 61 × t)	
Part No.	Thickness t mm (in)
803050060	0.50 (0.0197)
803050062	0.60 (0.0236)
803050064	0.70 (0.0276)
803050066	0.80 (0.0315)
803050068	0.90 (0.0354)
803050070	1.00 (0.0394)
803050072	1.10 (0.0433)
803050074	1.20 (0.0472)
803050076	1.30 (0.0512)
803050078	1.40 (0.0551)

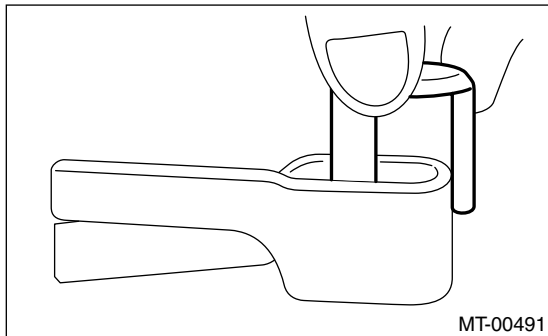
16) Install the selector arm No. 2 and shifter arm.



- (A) Selector arm No. 2
- (B) Shifter arm

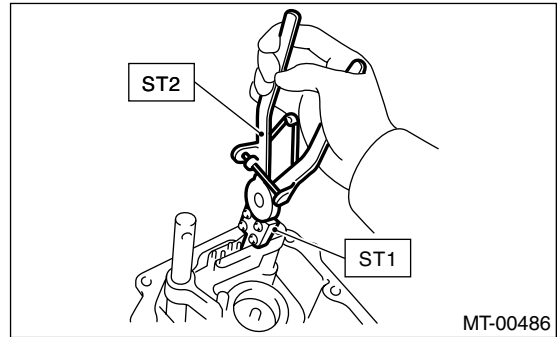
17) Install a new spring pin.  
18) Install the support to neutral set spring.

NOTE:  
Make sure to install the support in proper direction.



19) Using the ST, install the neutral set spring and support.

ST1 18756AA000 CLAW  
ST2 398663600 PLIERS

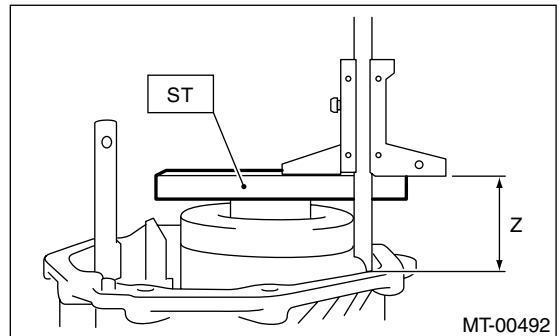


20) Install the snap ring.  
21) Install the center differential.

### 2. SELECTING THE TRANSFER DRIVE GEAR THRUST WASHER

1) Measure the height "Z" between end of transmission case and end of ST.

ST 398643600 GAUGE

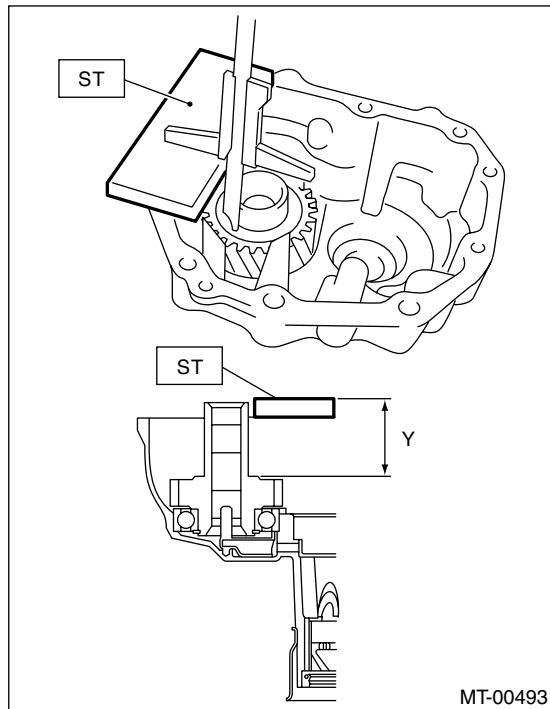


## Extension Case

MANUAL TRANSMISSION AND DIFFERENTIAL

2) Measure the depth “Y” between end of ST and transfer drive gear.

ST 398643600 GAUGE



3) Calculate the value “t” of transfer drive gear thrust washer using the following equation.

$$t = \{Y - 15 \text{ mm (1.18 in)}\} - \{Z - 15 \text{ mm (1.18 in)}\} - 0.45 \text{ to } 0.65 \text{ mm (0.018 to 0.026 in)}$$

t mm (in)	Thickness of transfer drive gear thrust washer
Y mm (in)	Depth from end of ST to transfer drive gear
Z mm (in)	Height from end of transmission case to the end of ST
0.45 — 0.65 mm (0.018 — 0.026 in)	Standard clearance between thrust washer and transfer drive gear.
15 mm (1.18 in)	Thickness of ST

4) Select the nearest thrust washer from the following table, according to the calculated value “t”.

**Standard clearance between thrust washer and transfer drive gear:**

**0.45 — 0.65 mm (0.018 — 0.026 in)**

Thrust washer (36.3 × 52 × t)	
Part No.	Thickness mm (in)
803036070	0.80 (0.0315)
803036071	0.95 (0.0374)
803036072	1.10 (0.0433)
803036073	1.25 (0.0492)
803036074	1.40 (0.0551)
803036075	0.65 (0.0256)

5) Install the selected thrust washer.

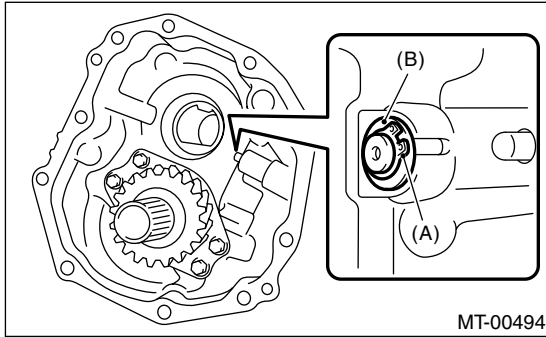
# Reverse Checking System

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 13.Reverse Checking System

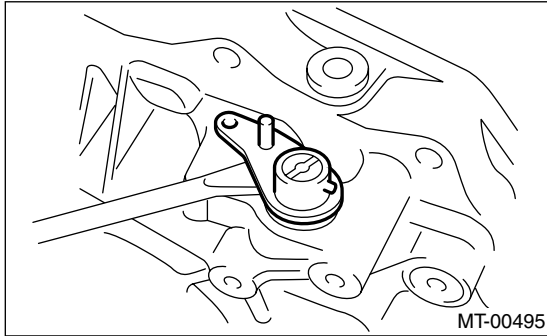
#### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-48, REMOVAL, Extension Case.>
- 4) Remove the snap ring and washer from reverse check shaft.



- (A) Snap ring
- (B) Washer

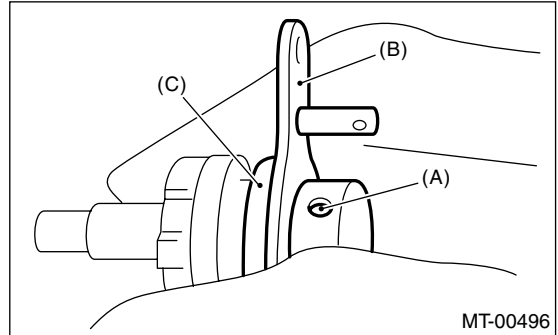
- 5) Remove the reverse check shaft and spring from extension case.



- 6) Remove the spring pin, and then remove the reverse check lever and oil seal from reverse check shaft.

#### NOTE:

Do not reuse the oil seal.

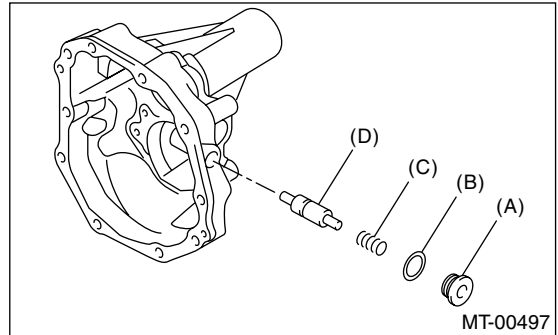


- (A) Spring pin
- (B) Reverse check lever
- (C) Oil seal

- 7) Remove the plug from extension case, then remove the gasket, spring and plunger.

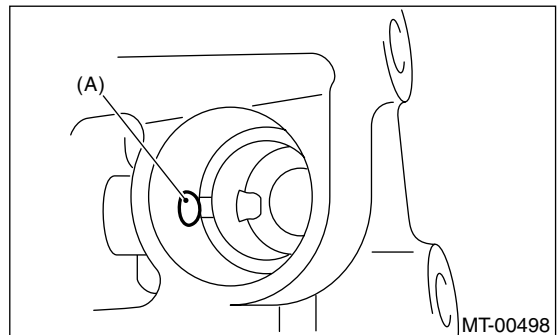
#### NOTE:

Do not reuse the gasket.



- (A) Plug
- (B) Gasket
- (C) Spring
- (D) Plunger

- 8) Remove the reverse lock plunger.



- (A) Reverse lock plunger

# Reverse Checking System

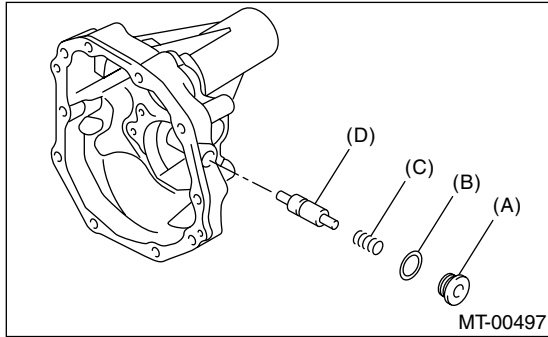
MANUAL TRANSMISSION AND DIFFERENTIAL

## B: INSTALLATION

- 1) Insert the reverse lock plunger.
- 2) Install in the order of reverse check plug, spring, gasket and plug.

### Tightening torque:

**41 N·m (4.2 kgf-m, 30.2 ft-lb)**

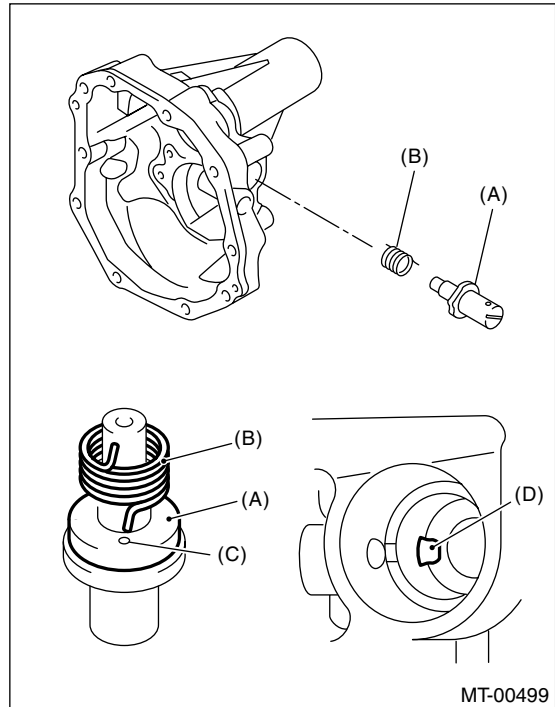


- (A) Plug
- (B) Gasket
- (C) Spring
- (D) Reverse check plug

- 3) Install the spring and reverse check shaft to extension case.

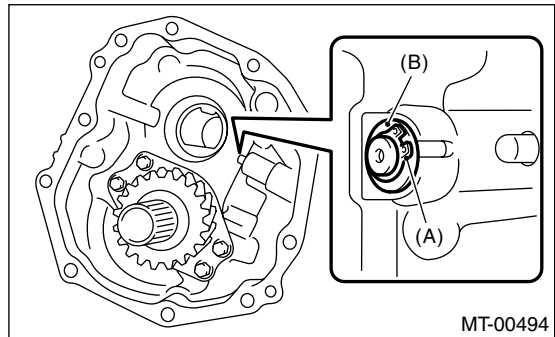
### NOTE:

Be sure the spring end aligns with the hole of reverse check shaft and cutout portion of extension case.



- (A) Reverse check shaft
- (B) Spring
- (C) Hole
- (D) Cutout portion

- 4) Install the washer and snap ring.



- (A) Snap ring
- (B) Washer

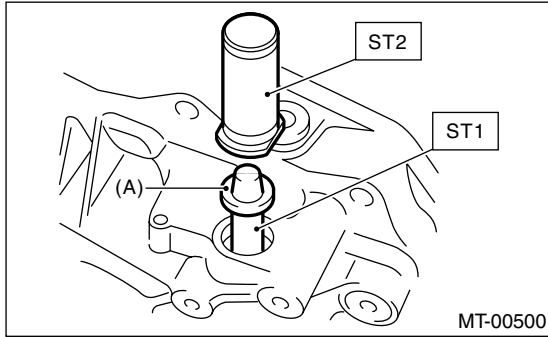
- 5) Set the ST1 to reverse check shaft. Install a new oil seal, then press with ST2.



# Reverse Checking System

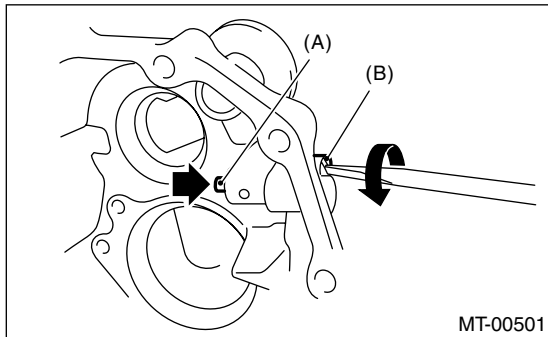
## MANUAL TRANSMISSION AND DIFFERENTIAL

ST1 18671AA000 OIL SEAL GUIDE  
ST2 18657AA010 INSTALLER



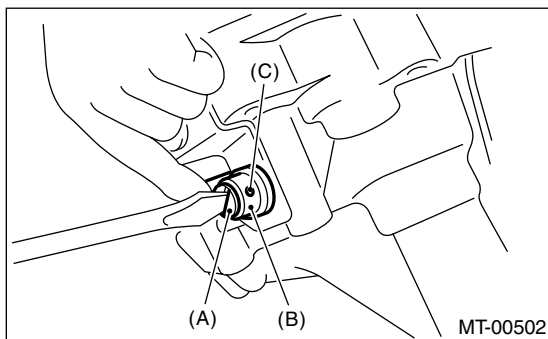
(A) Oil seal

6) Insert the reverse check lever, then rotate the reverse check shaft until the plunger can be pushed in first.



(A) Plunger  
(B) Reverse check shaft

7) Align the hole of reverse check lever and reverse check shaft, then install the spring pin.



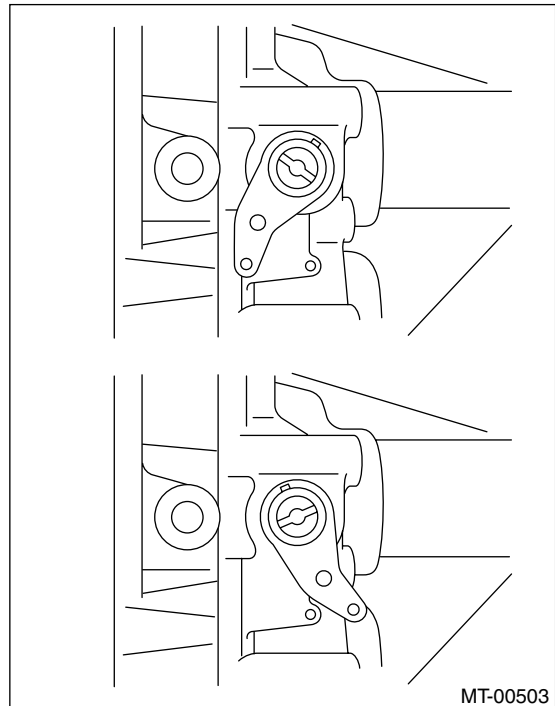
(A) Reverse check shaft  
(B) Reverse check lever  
(C) Hole

8) Make sure the reverse check operates correctly. <Ref. to 6MT-56, INSPECTION, Reverse Checking System.>  
9) Install the extension case. <Ref. to 6MT-48, INSTALLATION, Extension Case.>

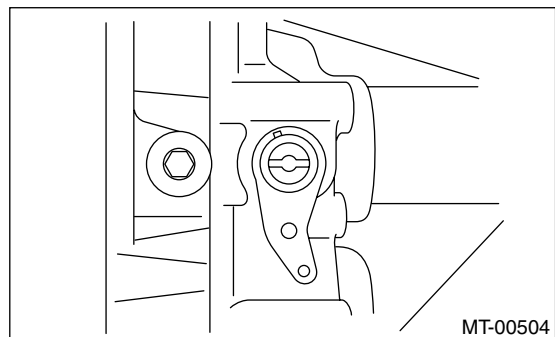
10) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

### C: INSPECTION

- 1) Make sure there is no damage on each parts.
- 2) Make sure the reverse check lever operates smoothly.
- 3) Make sure there is no oil leakage on oil seal part of reverse check shaft. If there is oil leakage, replace the oil seal.
- 4) Inspect the reverse check operation.
  - (1) The plunger can be pushed or the gear can be shifted to reverse, when reverse check lever is in the following position.



(2) The plunger cannot be pushed or the gear cannot be shifted to reverse, when reverse check lever is in the following position.



5) If not as specified, reassemble the reverse check system.

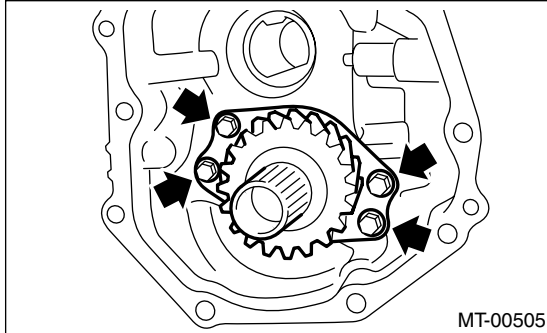
# Transfer Drive Gear

MANUAL TRANSMISSION AND DIFFERENTIAL

## 14. Transfer Drive Gear

### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-48, REMOVAL, Extension Case.>
- 4) Remove the transfer drive gear.

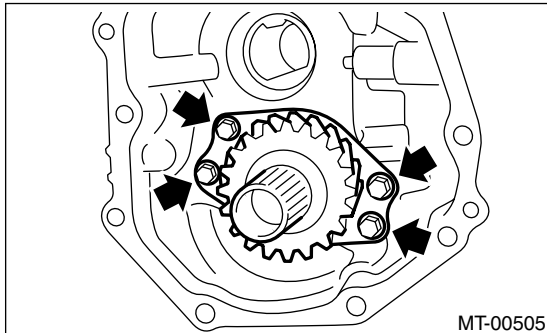


### B: INSTALLATION

- 1) Install the transfer drive gear.

#### Tightening torque:

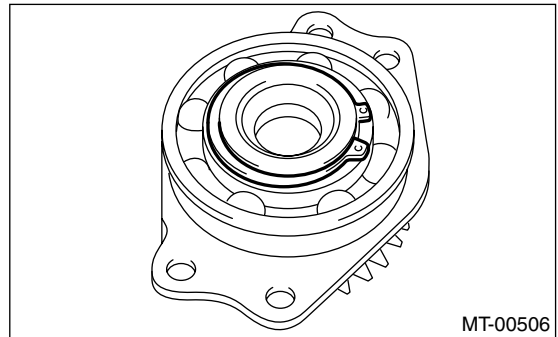
25 N·m (2.5 kgf·m, 18.1 ft·lb)



- 2) If the ball bearing, transfer drive gear or snap ring is replaced, select the transfer drive gear thrust washer. <Ref. to 6MT-49, ASSEMBLY, Extension Case.>
- 3) Install the extension case. <Ref. to 6MT-48, INSTALLATION, Extension Case.>
- 4) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

### C: DISASSEMBLY

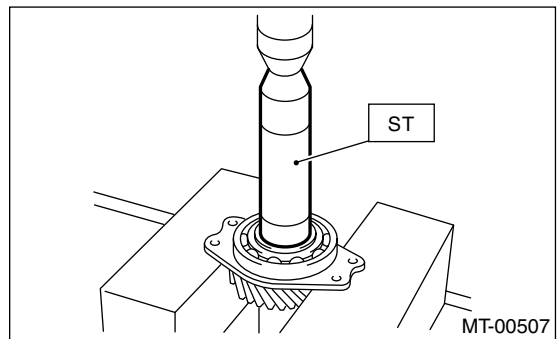
- 1) Remove the snap ring.



- 2) Using the ST, remove the ball bearing.  
ST 499877000 RACE 4-5 INSTALLER

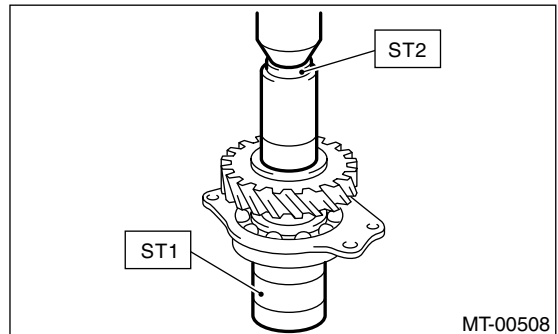
#### NOTE:

Do not reuse the ball bearing.



### D: ASSEMBLY

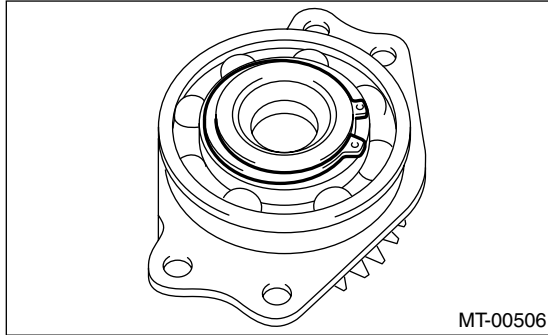
- 1) Using the ST, install the ball bearing.  
ST1 499247400 INSTALLER  
ST2 398497701 SEAT



# Transfer Drive Gear

## MANUAL TRANSMISSION AND DIFFERENTIAL

2) Install the snap ring.



3) Inspect the clearance between snap ring and ball bearing. <Ref. to 6MT-58, INSPECTION, Transfer Drive Gear.>

### E: INSPECTION

1) Bearings

Replace the bearings in the following cases.

- Broken or rusty bearings
- Worn or damaged
- Bearings that fail to turn smoothly or make abnormal noise.

2) Drive gear

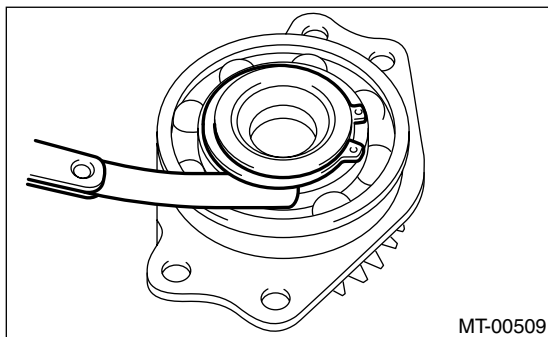
Replace the drive gear in the following cases.

- If their tooth surface and shaft are excessively broken or damaged.

3) Measure the clearance between snap ring and inner race of ball bearing with a thickness gauge.

**Standard clearance between snap ring and inner race:**

**0 — 0.15 mm (0 — 0.0059 in)**



4) If the measurement is not within specifications, select suitable snap ring.

Thrust washer	
Part No.	Thickness mm (in)
805045050	1.76 (0.069)
805045060	1.88 (0.074)
805045070	2.00 (0.079)

After replacement of the snap ring, inspect the clearance again.

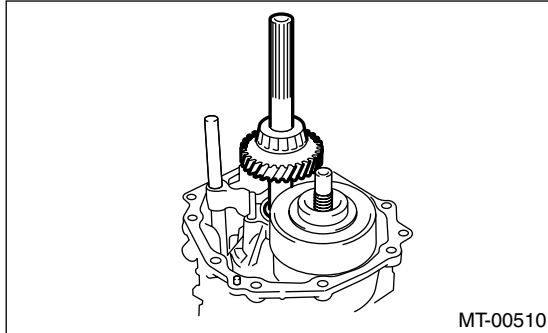
# Transfer Driven Gear

MANUAL TRANSMISSION AND DIFFERENTIAL

## 15. Transfer Driven Gear

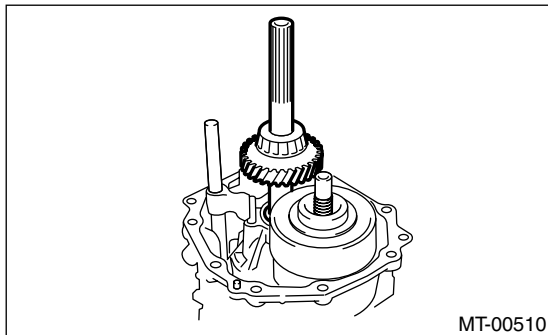
### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-48, REMOVAL, Extension Case.>
- 4) Remove the transfer driven gear.



### B: INSTALLATION

- 1) Install the transfer driven gear.

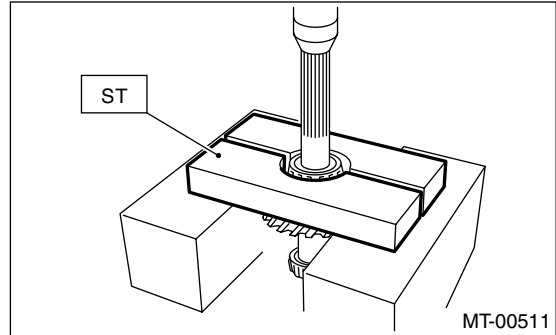


- 2) If the bearing or transfer driven gear is replaced, select the transfer driven thrust washer. <Ref. to 6MT-50, ADJUSTMENT, Extension Case.>
- 3) Install the extension case. <Ref. to 6MT-48, INSTALLATION, Extension Case.>
- 4) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

### C: DISASSEMBLY

- 1) Using the ST, remove the roller bearing of extension case side.

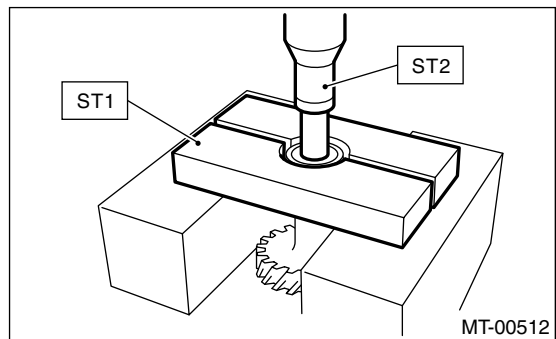
ST 498515700 REMOVER



- 2) Using the ST, remove the roller bearing of transmission case side.

ST1 899858600 REMOVER

ST2 899864100 REMOVER



### D: ASSEMBLY

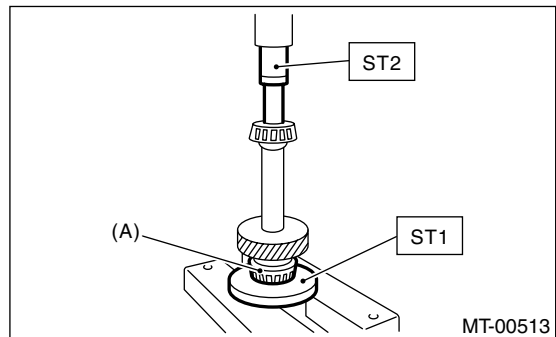
- 1) Using the ST, install the roller bearing of extension case side.

ST1 398177700 INSTALLER

ST2 899864100 REMOVER

#### CAUTION:

Do not apply pressure in excess of 10 kN (1 ton, 1.1 US ton, 1.0 Imp ton).



(A) Roller bearing

- 2) Using the ST, install the roller bearing of transmission case side.

ST 499757002 INSTALLER

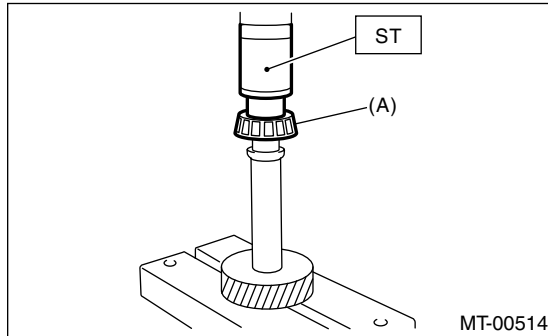
# Transfer Driven Gear

MANUAL TRANSMISSION AND DIFFERENTIAL

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## CAUTION:

Do not apply pressure in excess of 10 kN (1 ton, 1.1 US ton, 1.0 Imp ton).



(A) Roller bearing

## E: INSPECTION

### 1) Bearings

Replace the bearing in following cases.

- Broken or rusty bearings
- Worn or damaged
- Bearings that fail to turn smoothly or make abnormal noise when turned after gear oil lubrication.

### 2) Driven gear

Replace the driven gear in following case.

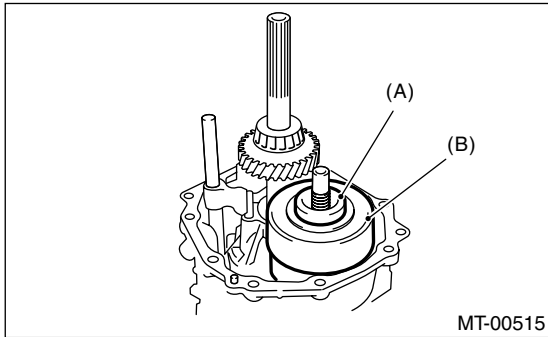
- If their tooth surfaces and shaft are excessively broken or damaged.

# Center Differential

## 16.Center Differential

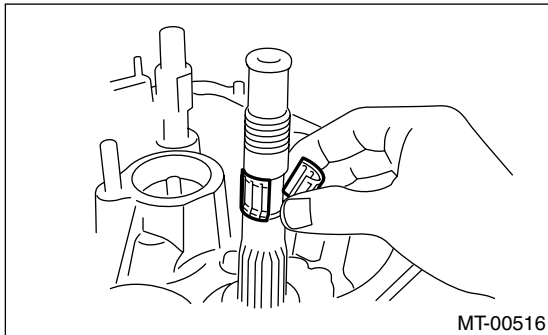
### A: REMOVAL

- 1) Remove the manual transmission case assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-48, REMOVAL, Extension Case.>
- 4) Remove the transfer driven gear. <Ref. to 6MT-59, REMOVAL, Transfer Driven Gear.>
- 5) Remove the thrust washer and center differential.



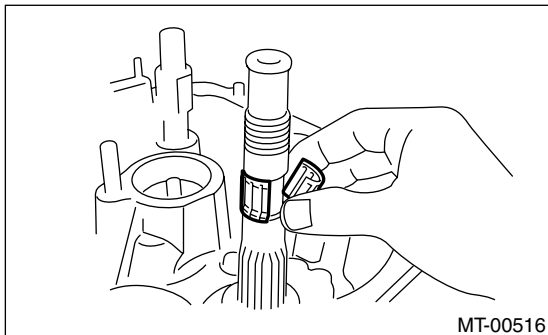
- (A) Thrust washer
- (B) Center differential

- 6) Remove the needle bearing.

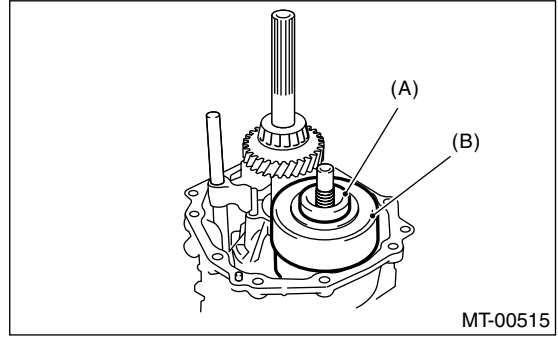


### B: INSTALLATION

- 1) Install the needle bearing.



- 2) Install the thrust washer and center differential.



- (A) Thrust washer
- (B) Center differential

- 3) If replacing the center differential, select the transfer drive gear and thrust washer and install. <Ref. to 6MT-50, ADJUSTMENT, Extension Case.>
- 4) Install the transfer driven gear. <Ref. to 6MT-59, INSTALLATION, Transfer Driven Gear.>
- 5) Install the extension case. <Ref. to 6MT-48, INSTALLATION, Extension Case.>
- 6) Install the manual transmission case assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

### C: INSPECTION

Make sure there is no damage on the center differential. Replace if damaged.

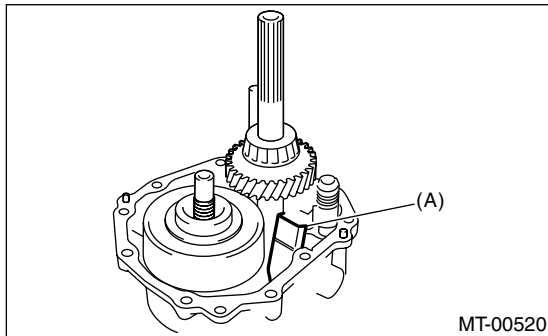
# Oil Pump

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 17.Oil Pump

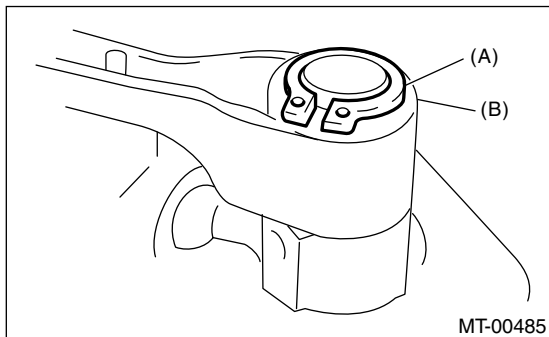
#### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-48, REMOVAL, Extension Case.>
- 4) Remove the transfer driven gear. <Ref. to 6MT-59, REMOVAL, Transfer Driven Gear.>
- 5) Remove the center differential. <Ref. to 6MT-61, REMOVAL, Center Differential.>
- 6) Remove the oil guide.



(A) Oil guide

- 7) Remove the snap ring.

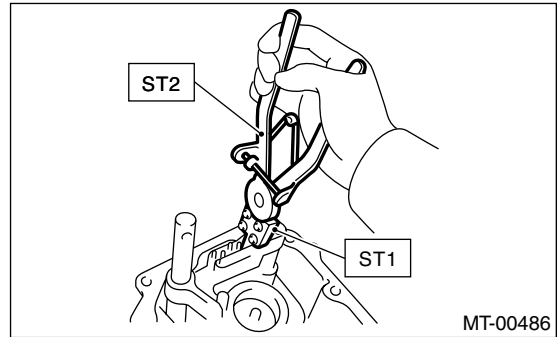


(A) Snap ring  
(B) Support

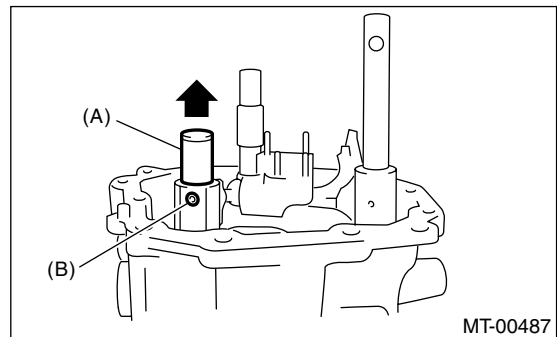
- 8) Using the ST, remove the neutral set spring and support.

ST1 18756AA000 CLAW

ST2 398663600 PLIERS

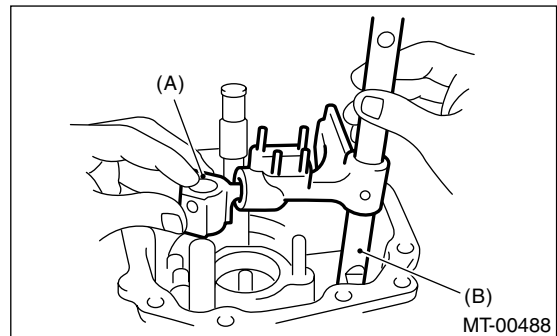


- 9) Raise the striking rod up, and then remove the spring pin.



(A) Striking rod  
(B) Spring pin

- 10) Remove the selector arm No. 2 and shifter arm.



(A) Selector arm No. 2  
(B) Shifter arm

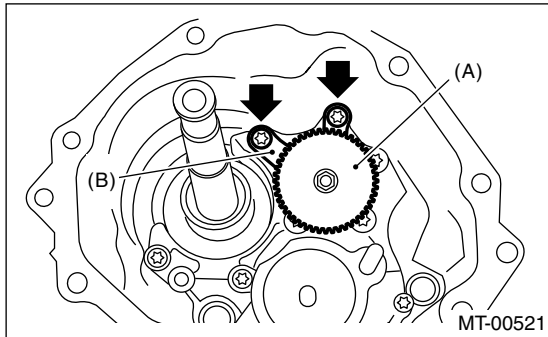
# Oil Pump

11) Remove the oil pump shaft assembly and plate.

**NOTE:**

Remove the bolts using ST, because tool may break if general tool is used.

ST 18663AA000 SOCKET



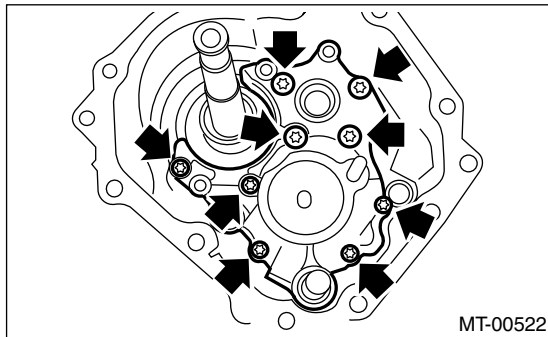
- (A) Oil pump shaft assembly
- (B) Plate

12) Remove the oil pump cover assembly.

**NOTE:**

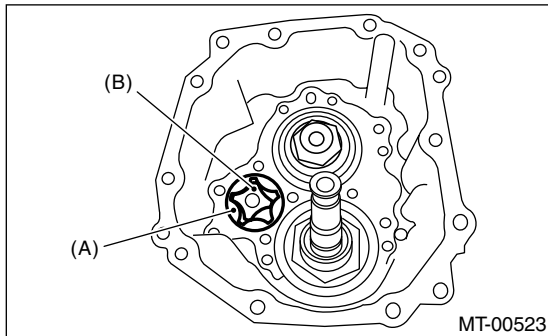
Remove the bolts using ST, because tool may break if general tool is used.

ST 18663AA000 SOCKET



13) Remove the thrust washer on main shaft part.

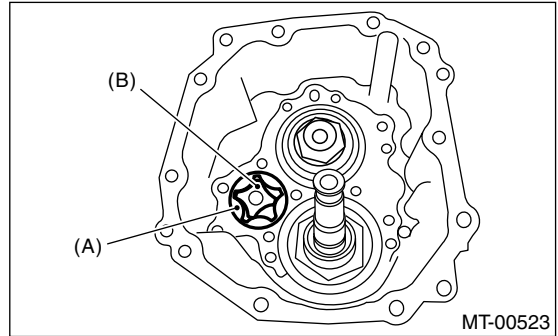
14) Remove the oil pump rotor.



- (A) Outer rotor
- (B) Inner rotor

## B: INSTALLATION

1) Apply oil to the outer periphery of outer rotor, then install to transmission case.



- (A) Outer rotor
- (B) Inner rotor

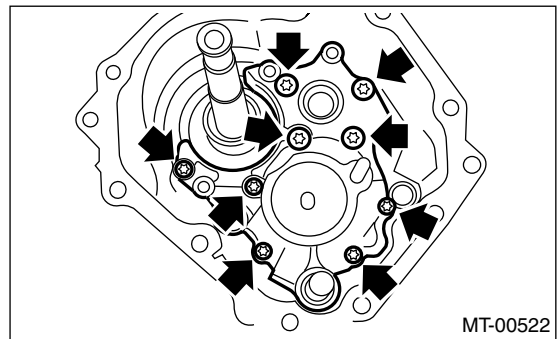
2) Install the thrust washer to main shaft part.

3) Install the oil pump cover assembly.

**Tightening torque:**

**25 N·m (2.5 kgf-m, 18.1 ft-lb)**

ST 18663AA000 SOCKET

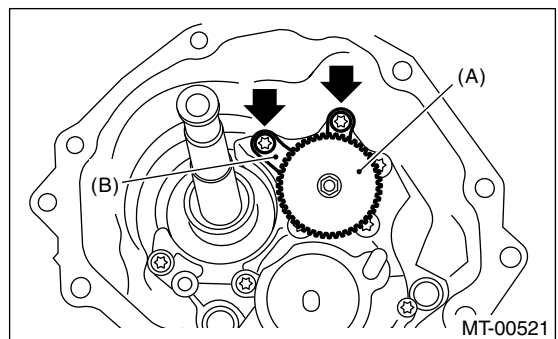


4) Install the oil pump shaft assembly and plate.

**Tightening torque:**

**25 N·m (2.5 kgf-m, 18.1 ft-lb)**

ST 18663AA000 SOCKET



- (A) Oil pump shaft assembly
- (B) Plate

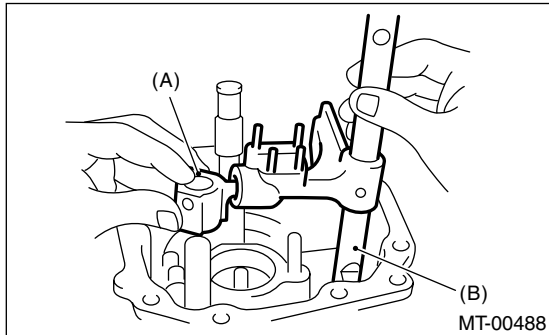


# Oil Pump

## MANUAL TRANSMISSION AND DIFFERENTIAL

5) If replacing the oil pump cover assembly, select the transfer driven gear and thrust washer, then install them to the extension case. <Ref. to 6MT-50, ADJUSTMENT, Extension Case.>

6) Install the selector arm No. 2 and shifter arm.



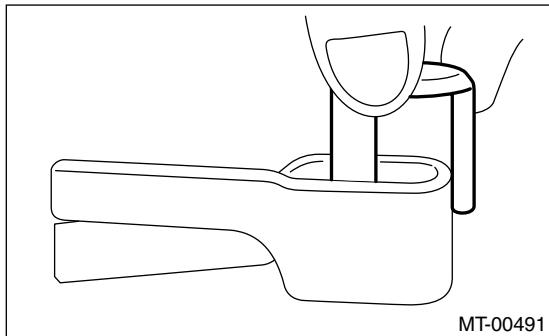
- (A) Selector arm No. 2
- (B) Shift arm

7) Install a new spring pin.

8) Install the support to neutral set spring.

### NOTE:

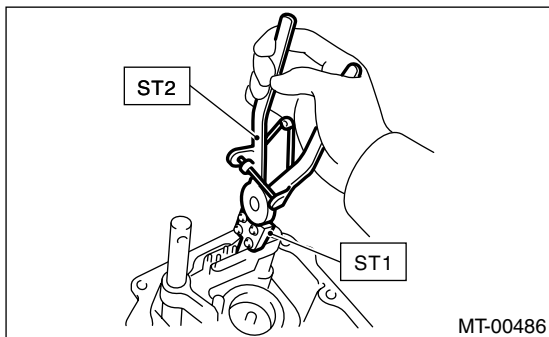
Make sure to install the support in proper direction.



9) Using the ST, install the neutral set spring and support.

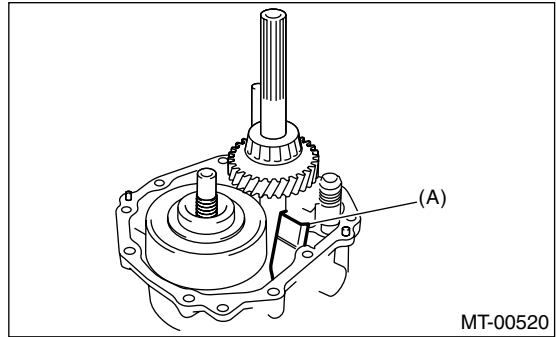
ST1 18756AA000 CLAW

ST2 398663600 PLIERS



10) Install the snap ring.

11) Install the oil guide.



- (A) Oil guide

12) Install the center differential. <Ref. to 6MT-61, INSTALLATION, Center Differential.>

13) Install the transfer driven gear. <Ref. to 6MT-59, INSTALLATION, Transfer Driven Gear.>

14) Install the extension case. <Ref. to 6MT-48, INSTALLATION, Extension Case.>

15) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

## C: INSPECTION

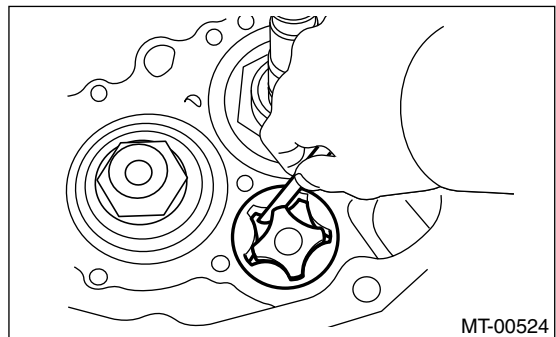
1) Make sure there is no damage on the inner rotor and outer rotor. Replace the inner rotor and outer rotor as assembly if damaged.

2) Clearance at tip

Install the inner rotor and outer rotor to transmission case. Align tip of the inner rotor and outer rotor, then measure the clearance. Replace the inner rotor and outer rotor as a set if clearance exceeds specification.

### Specification of clearance at tip:

**Less than 0.15 mm (0.0059 in)**

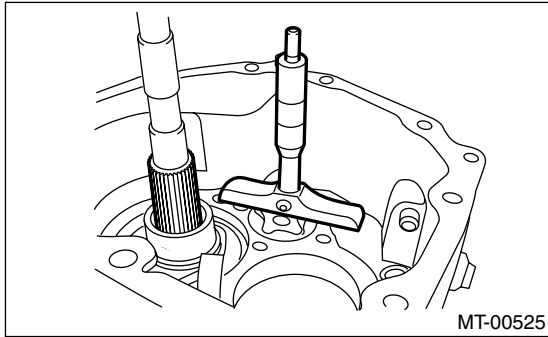


3) Side clearance

Measure to the transmission case and rotor. Replace the inner rotor and outer rotor as a set if clearance exceeds specification.

**Specification of side clearance:**

**0.03 — 0.10 mm (0.0012 — 0.0039 in)**



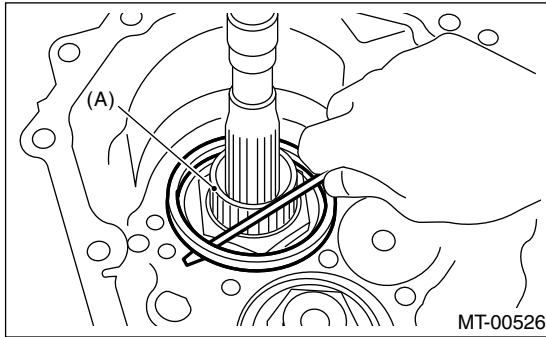
# Transmission Case

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 18. Transmission Case

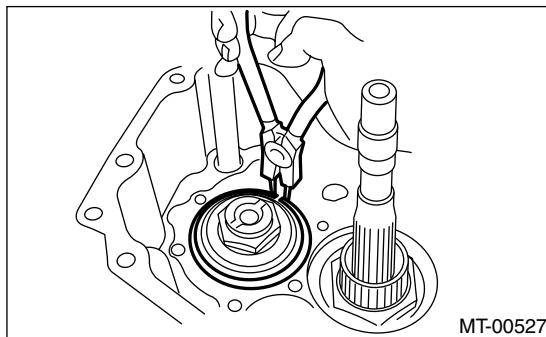
#### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-36, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-41, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-43, REMOVAL, Oil Pipe.>, <Ref. to 6MT-46, REMOVAL, Neutral Position Switch.>, <Ref. to 6MT-44, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-48, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-59, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-61, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-62, REMOVAL, Oil Pump.>
- 8) Remove the shim and spacer of driven gear assembly.

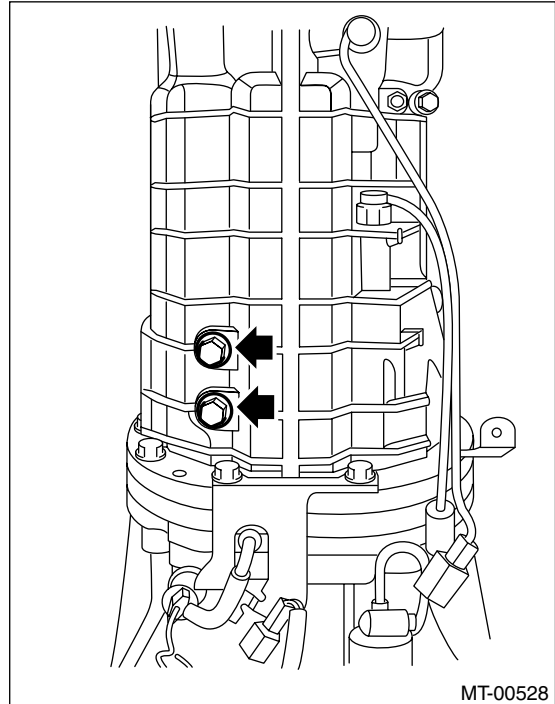


(A) Driven gear assembly

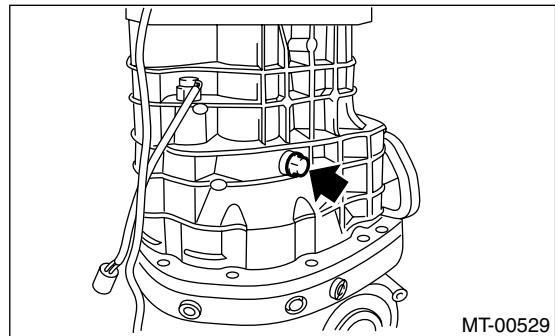
- 9) Remove the snap ring.



- 10) Remove the pilot bolt.



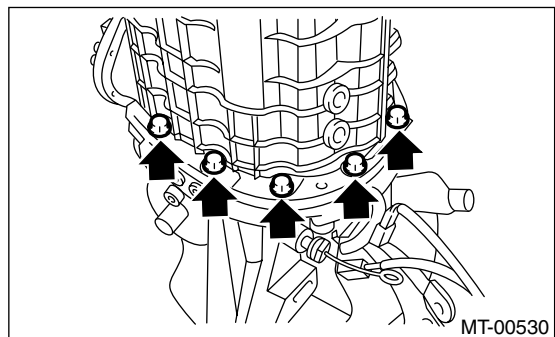
- 11) Remove the holder reverse bolt.



- 12) Remove the transmission case.

#### NOTE:

If the oil guide catches on shift fork, the transmission case may be difficult to be removed. Move the oil guide and oil pipe to remove. Do not pull the transmission case by force.



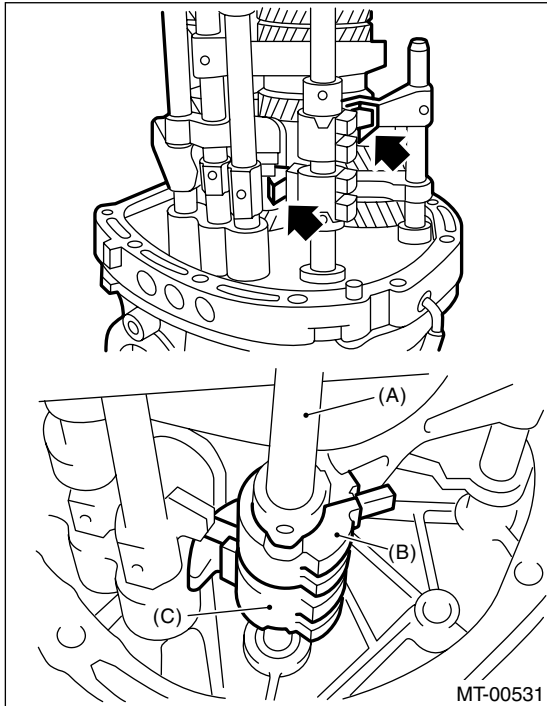
- 13) Completely remove the remaining liquid gasket on transmission case and adapter plate.

# Transmission Case

MANUAL TRANSMISSION AND DIFFERENTIAL

## B: INSTALLATION

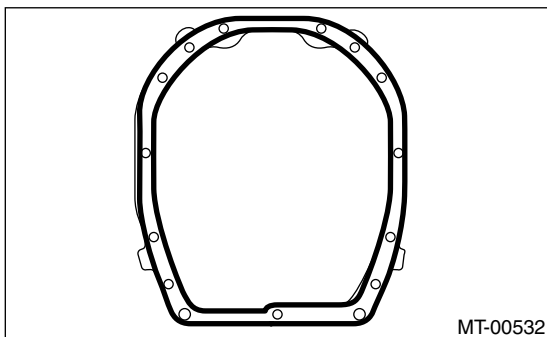
1) Make sure that each shifter fork and interlock block is shifted to neutral position. If not, shift to neutral position.



- (A) Striking rod
- (B) Reverse interlock block
- (C) Interlock block

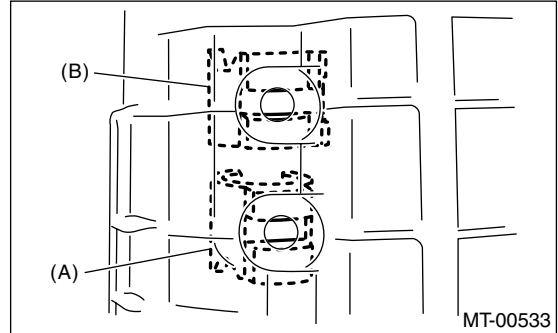
2) Apply liquid gasket to the adapter plate.

**Liquid gasket:**  
**THREE BOND 1215**



3) Install the transmission case.

4) Make sure the interlock block and reverse interlock block are aligned in neutral position by inspecting through the pilot bolt installation hole. If not aligned, remove the transmission case, then shift each shifter fork and interlock block to neutral position.



- (A) Interlock block
- (B) Reverse interlock block

5) Using a new gasket, install the pilot bolts temporarily.

6) Tighten the transmission case with bolts and nuts.

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

7) Tighten the pilot bolts.

**Tightening torque:**  
**34 N·m (3.5 kgf-m, 25.1 ft-lb)**

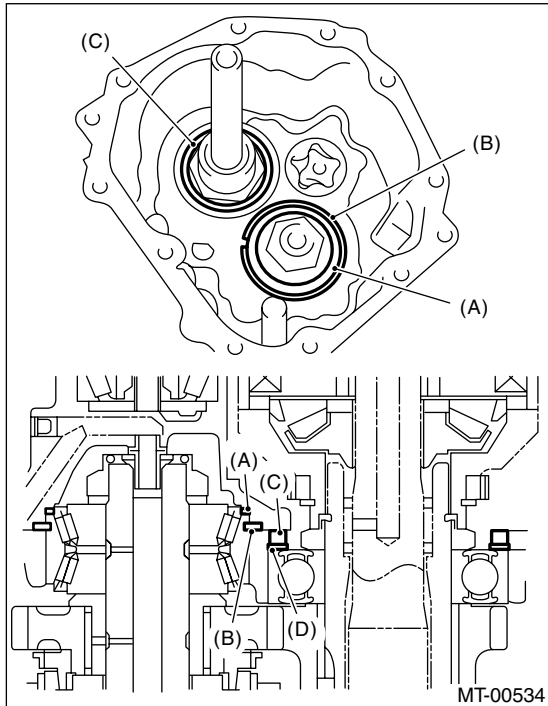
8) Tighten the holder reverse bolt.

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

# Transmission Case

## MANUAL TRANSMISSION AND DIFFERENTIAL

9) Install the snap ring, washer and collar of driven gear assembly.



- (A) Washer
- (B) Snap ring
- (C) Collar
- (D) Washer

10) Install the oil pump. <Ref. to 6MT-63, INSTALLATION, Oil Pump.>

11) Install the center differential. <Ref. to 6MT-61, INSTALLATION, Center Differential.>

12) Install the transfer driven gear. <Ref. to 6MT-59, INSTALLATION, Transfer Driven Gear.>

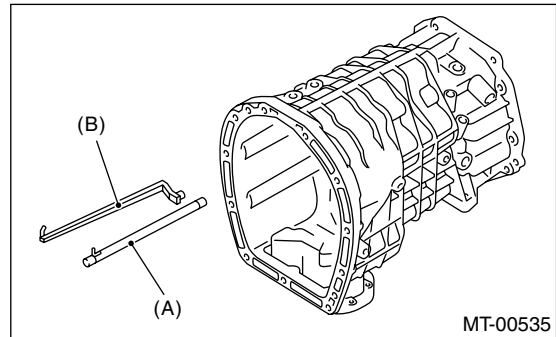
13) Install the extension case. <Ref. to 6MT-48, INSTALLATION, Extension Case.>

14) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-43, INSTALLATION, Oil Pipe.>, <Ref. to 6MT-46, INSTALLATION, Neutral Position Switch.>, <Ref. to 6MT-44, INSTALLATION, Back-up Light Switch.>

15) Install the manual transmission assembly to vehicle. <Ref. to 6MT-38, INSTALLATION, Manual Transmission Assembly.>

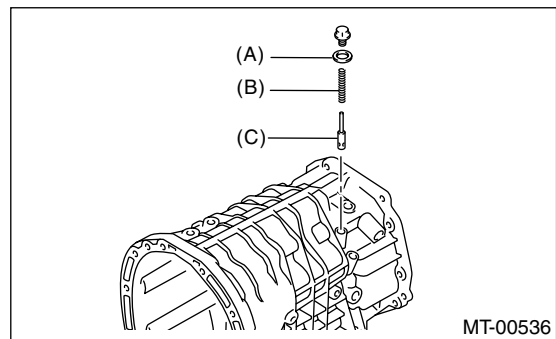
## C: DISASSEMBLY

1) Remove the oil pipe and oil guide.



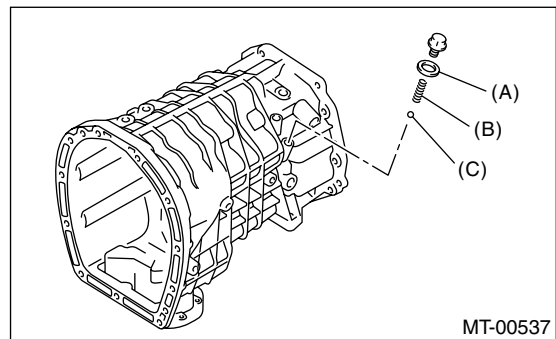
- (A) Oil pipe
- (B) Oil guide

2) Remove the bolt, and then remove the O-ring, relief spring and relief valve.



- (A) O-ring
- (B) Relief valve spring
- (C) Relief valve

3) Remove the bolt, and then remove the O-ring, valve spring and ball.

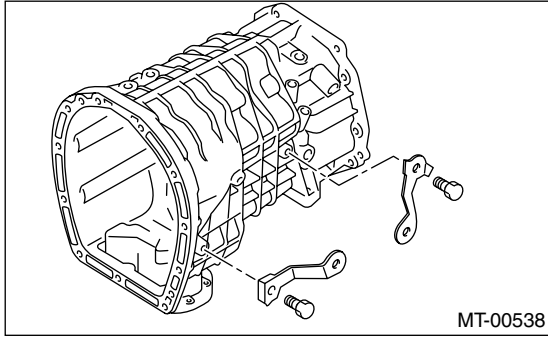


- (A) O-ring
- (B) Valve spring
- (C) Ball

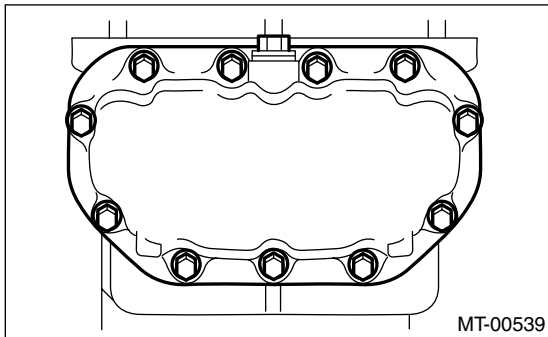
# Transmission Case

MANUAL TRANSMISSION AND DIFFERENTIAL

4) Remove the harness bracket.

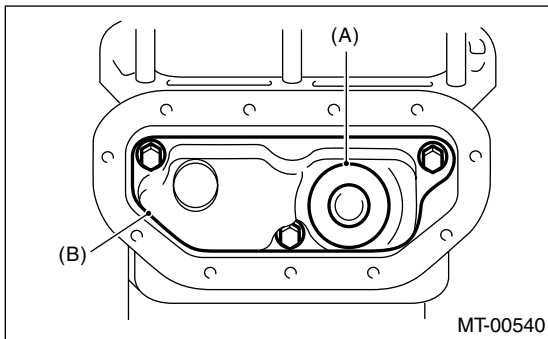


5) Remove the oil pan.



6) Completely remove the remaining liquid gasket on transmission case and oil pan.

7) Remove the oil pan magnet, and then remove the oil strainer.



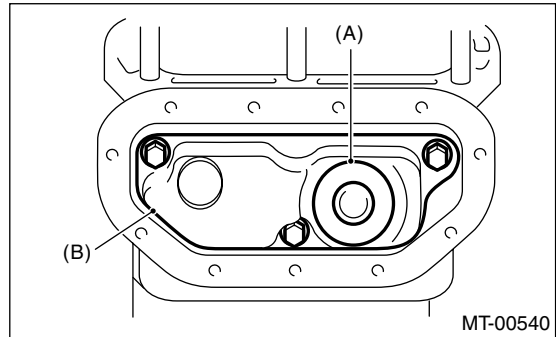
- (A) Oil pan magnet
- (B) Oil strainer

## D: ASSEMBLY

1) Install the oil strainer and magnet.

**Tightening torque:**

**10 N·m (1.0 kgf·m, 7.4 ft·lb)**

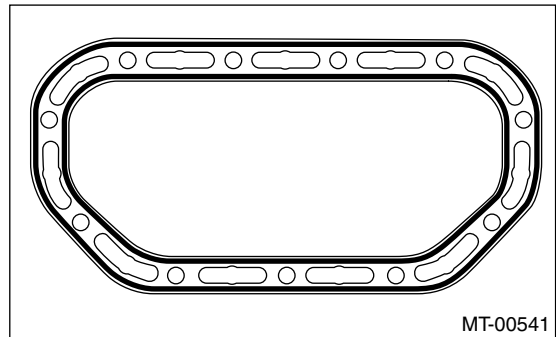


- (A) Oil pan magnet
- (B) Oil strainer

2) Apply liquid gasket to the oil pan.

**Liquid gasket:**

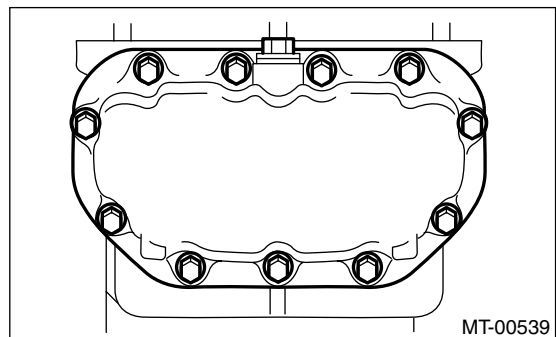
**THREE BOND 1215**



3) Install the oil pan.

**Tightening torque:**

**6.4 N·m (0.65 kgf·m, 4.7 ft·lb)**



4) Install the relief valve, relief valve spring and new O-ring.

# Transmission Case

## MANUAL TRANSMISSION AND DIFFERENTIAL

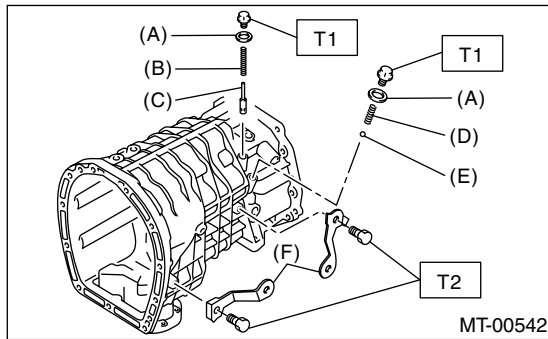
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5) Install the ball, valve spring and new O-ring.

### **Tightening torque:**

**T1: 13 N·m (1.3 kgf-m, 9.6 ft-lb)**

**T2: 16 N·m (1.6 kgf-m, 11.8 ft-lb)**



- (A) O-ring
- (B) Relief valve spring
- (C) Relief valve
- (D) Valve spring
- (E) Ball
- (F) Harness bracket

## **E: INSPECTION**

- 1) Completely remove with shop cloth if sludge is adhered to the oil pan magnet.
- 2) Make sure there is no clog on the oil strainer. If clogged, remove clog or replace the oil strainer.
- 3) Make sure there is no damage on each parts.  
Replace damaged parts with new parts.