

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 1. General Description

#### A: SPECIFICATION

##### 1. MANUAL TRANSMISSION AND DIFFERENTIAL

|                                |                         |   |         |       |
|--------------------------------|-------------------------|---|---------|-------|
| Model                          |                         | Non-turbo   | Turbo   |       |
| Type                           |                         | 5-forward speeds with synchromesh and 1-reverse                           |         |       |
| Transmission gear ratio        |                         | 1st   | 3.454   |       |
|                                |                         | 2nd   | 2.062   | 1.947 |
|                                |                         | 3rd   | 1.448   | 1.366 |
|                                |                         | 4th   | 1.088   | 0.972 |
|                                |                         | 5th   | 0.780   | 0.738 |
|                                |                         | Rev.  | 3.333   |       |
| Front reduction gear           | Final                   | Type of gear  | Hypoid  |       |
|                                |                         | Gear ratio  | 4.111   | 4.444 |
| Rear reduction gear            | Transfer                | Type of gear  | Helical |       |
|                                |                         | Gear ratio  | 1.000   |       |
|                                | Final                   | Type of gear  | Hypoid  |       |
|                                |                         | Gear ratio  | 4.111   | 4.444 |
| Front differential             | Type and number of gear | Straight bevel gear (Bevel pinion: 2, Bevel gear: 2)                      |         |       |
| Center differential            | Type and number of gear | Straight bevel gear (Bevel pinion: 2, Bevel gear: 2 and viscous coupling) |         |       |
| Transmission gear oil          |                         | GL-5  |         |       |
| Transmission gear oil capacity |                         | 3.5 ℓ (3.7 US qt, 3.1 Imp qt)   |         |       |

##### 2. TRANSMISSION GEAR OIL

###### Recommended oil

|      |                           |
|------|---------------------------|
| (1)  |                           |
| (2)  |                           |
| (3)  | GL-5                      |
| (4)  |                           |
| (°C) | -30 -26 -15 -5 0 15 25 30 |
| (°F) | -22 -15 5 23 32 59 77 86  |
|      |                           |
|      | MT-00001                  |

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

##### 3. TRANSMISSION CASE ASSEMBLY

###### Drive pinion shim adjustment

###### Hypoid gear backlash:

**0.13 — 0.18 mm (0.0051 — 0.0071 in)**

| Drive pinion shim |                   |            |                   |
|-------------------|-------------------|------------|-------------------|
| Part No.          | Thickness mm (in) | Part No.   | Thickness mm (in) |
| 32295AA031        | 0.150<br>(0.0059) | 32295AA071 | 0.250<br>(0.0098) |
| 32295AA041        | 0.175<br>(0.0069) | 32295AA081 | 0.275<br>(0.0108) |
| 32295AA051        | 0.200<br>(0.0079) | 32295AA091 | 0.300<br>(0.0118) |
| 32295AA061        | 0.225<br>(0.0089) | 32295AA101 | 0.500<br>(0.0197) |

###### Selection of main shaft rear plate

| Main shaft rear plate            |            |      |
|----------------------------------|------------|------|
| Dimension "A" mm (in)            | Part No.   | Mark |
| 4.00 — 4.13<br>(0.1575 — 0.1626) | 32294AA041 | 1    |
| 3.87 — 3.99<br>(0.1524 — 0.1571) | 32294AA051 | 2    |

# General Description

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## 4. DRIVE PINION ASSEMBLY

Preload adjustment of thrust bearing

### Starting torque:

**0.3 — 0.8 N·m (0.03 — 0.08 kgf·m, 0.2 — 0.6 ft·lb)**

| Adjusting washer No. 1 |                   |
|------------------------|-------------------|
| Part No.               | Thickness mm (in) |
| 803025051              | 3.925 (0.1545)    |
| 803025052              | 3.950 (0.1555)    |
| 803025053              | 3.975 (0.1565)    |
| 803025054              | 4.000 (0.1575)    |
| 803025055              | 4.025 (0.1585)    |
| 803025056              | 4.050 (0.1594)    |
| 803025057              | 4.075 (0.1604)    |

| Adjusting washer No. 2 |                   |
|------------------------|-------------------|
| Part No.               | Thickness mm (in) |
| 803025059              | 3.850 (0.1516)    |
| 803025054              | 4.000 (0.1575)    |
| 803025058              | 4.150 (0.1634)    |

## 5. REVERSE IDLER GEAR

Adjustment of reverse idler gear position

### Reverse idler gear to transmission case (LH) wall clearance

**6.0 — 7.5 mm (0.236 — 0.295 in)**

| Reverse shifter lever |      |                         |
|-----------------------|------|-------------------------|
| Part No.              | Mark | Remarks                 |
| 32820AA070            | 7    | Further from case wall  |
| 32820AA080            | 8    | Standard                |
| 32820AA090            | 9    | Closer to the case wall |

After installing a suitable reverse shifter lever, adjust the clearance using washers.

### Reverse idler gear to transmission case wall clearance

**0 — 0.5 mm (0 — 0.020 in)**

| Washer (20.5 × 26 × t) |                   |           |                   |
|------------------------|-------------------|-----------|-------------------|
| Part No.               | Thickness mm (in) | Part No.  | Thickness mm (in) |
| 803020151              | 0.4 (0.016)       | 803020154 | 1.9 (0.075)       |
| 803020152              | 1.1 (0.043)       | 803020155 | 2.3 (0.091)       |
| 803020153              | 1.5 (0.059)       | —         | —                 |

## 6. SHIFTER FORK AND ROD

Select a suitable shifter fork so that both the coupling sleeve and reverse driven gear are positioned in the center of their synchromesh mechanisms.

### Rod end clearance

#### A: 3rd-4th — 5th

**0.5 — 1.3 mm (0.020 — 0.051 in)**

#### B: 1st-2nd — 3rd-4th

**0.4 — 1.4 mm (0.016 — 0.055 in)**

| 1st-2nd shifter fork |         |   |
|----------------------|---------|---|
| Part No.             | Mark    | Remarks                                   |
| 32804AA060           | 1       | Approaches 1st gear by 0.2 mm (0.008 in). |
| 32804AA070           | No mark | Standard                                  |
| 32804AA080           | 3       | Approaches 2nd gear by 0.2 mm (0.008 in)  |

| 3rd-4th shifter fork |         |   |
|----------------------|---------|---|
| Part No.             | Mark    | Remarks                                   |
| 32810AA061           | 1       | Approaches 4th gear by 0.2 mm (0.008 in). |
| 32810AA071           | No mark | Standard                                  |
| 32810AA101           | 3       | Approaches 3rd gear by 0.2 mm (0.008 in)  |

| 5th shifter fork (non-turbo) / Identifying paint (pink) |         |  |
|---|---------|--|
| Part No.  | Mark    | Remarks  |
| 32812AA201  | 7       | Approaches 5th gear by 0.2 mm (0.008 in).      |
| 32812AA211  | No mark | Standard                                       |
| 32812AA221  | 9       | Moves away from 5th gear by 0.2 mm (0.008 in). |

| 5th shifter fork (turbo) / Identifying paint (blue) |         |  |
|---|---------|--|
| Part No.  | Mark    | Remarks  |
| 32812AA231  | 7       | Approaches 5th gear by 0.2 mm (0.008 in).      |
| 32812AA241  | No mark | Standard                                       |
| 32812AA251  | 9       | Moves away from 5th gear by 0.2 mm (0.008 in). |

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## MANUAL TRANSMISSION AND DIFFERENTIAL

### 7. TRANSFER CASE

#### Neutral position adjustment

| Adjusting shim |                   |
|----------------|-------------------|
| Part No.       | Thickness mm (in) |
| 32190AA000     | 0.15 (0.0059)     |
| 32190AA010     | 0.30 (0.0118)     |

| Reverse accent shaft |      |   |
|----------------------|------|---|
| Part No.             | Mark | Remarks                                     |
| 32188AA130           | S    | Neutral position is closer to 1st.          |
| 32188AA140           | T    | Standard                                    |
| 32188AA150           | U    | Neutral position is closer to reverse gear. |

#### Reverse check plate adjustment

| Reverse check plate |      |                |                                   |
|---------------------|------|----------------|-----------------------------------|
| Part No.            | Mark | Angle $\theta$ | Remarks                           |
| 32189AA000          | 0    | 28°            | Arm stops closer to 5th gear.     |
| 32189AA010          | 1    | 31°            | Arm stops closer to 5th gear.     |
| 33189AA020          | 2    | 34°            | Arm stops in the center.          |
| 32189AA030          | 3    | 37°            | Arm stops closer to reverse gear. |
| 32189AA040          | 4    | 40°            | Arm stops closer to reverse gear. |

### 8. EXTENSION ASSEMBLY

#### *Tapered roller bearing preload (amount of standard protrusion):*

**0.2 — 0.3 mm (0.0008 — 0.012 in)**

#### NOTE:

Make sure to set between the preload range.

| Thrust washer (50 × 61 × t) |                   |
|-----------------------------|-------------------|
| Part No.                    | Thickness mm (in) |
| 803050060                   | 0.50 (0.0197)     |
| 803050061                   | 0.55 (0.0217)     |
| 803050062                   | 0.60 (0.0236)     |
| 803050063                   | 0.65 (0.0256)     |
| 803050064                   | 0.70 (0.0276)     |
| 803050065                   | 0.75 (0.0295)     |
| 803050066                   | 0.80 (0.0315)     |
| 803050067                   | 0.85 (0.0335)     |
| 803050068                   | 0.90 (0.0354)     |
| 803050069                   | 0.95 (0.0374)     |
| 803050070                   | 1.00 (0.0394)     |
| 803050071                   | 1.05 (0.0413)     |
| 803050072                   | 1.10 (0.0433)     |
| 803050073                   | 1.15 (0.0453)     |

| Thrust washer (50 × 61 × t) |                   |
|-----------------------------|-------------------|
| Part No.                    | Thickness mm (in) |
| 803050074                   | 1.20 (0.0472)     |
| 803050075                   | 1.25 (0.0492)     |
| 803050076                   | 1.30 (0.0512)     |
| 803050077                   | 1.35 (0.0531)     |
| 803050078                   | 1.40 (0.0551)     |
| 803050079                   | 1.45 (0.0571)     |

#### **Thrust washer to center differential side clearance:**

**0.15 — 0.35 mm (0.0059 — 0.0138 in)**

| Thrust washer |                   |
|---------------|-------------------|
| Part No.      | Thickness mm (in) |
| 803036050     | 0.9 (0.035)       |
| 803036054     | 1.0 (0.039)       |
| 803036051     | 1.1 (0.043)       |
| 803036055     | 1.2 (0.047)       |
| 803036052     | 1.3 (0.051)       |
| 803036056     | 1.4 (0.055)       |
| 803036053     | 1.5 (0.059)       |
| 803036057     | 1.6 (0.063)       |
| 803036058     | 1.7 (0.067)       |

### 9. FRONT DIFFERENTIAL

#### **Bevel gear to pinion backlash:**

**0.13 — 0.18 mm (0.0051 — 0.0071 in)**

| Washer (38.1 × 50 × t) |  |           |  |
|------------------------|--|-----------|--|
| Part No.               | Thickness mm (in)                        | Part No.  | Thickness mm (in)                        |
| 803038021              | 0.925 —<br>0.950<br>(0.0364 —<br>0.0374) | 803038023 | 1.025 —<br>1.050<br>(0.0404 —<br>0.0413) |
| 803038022              | 0.975 —<br>1.000<br>(0.0384 —<br>0.0394) | —         | —  |

### 10. TRANSFER DRIVE GEAR

#### **Snap ring (Outer-30) to ball bearing inner race clearance:**

**0.01 — 0.15 mm (0.0004 — 0.0059 in)**

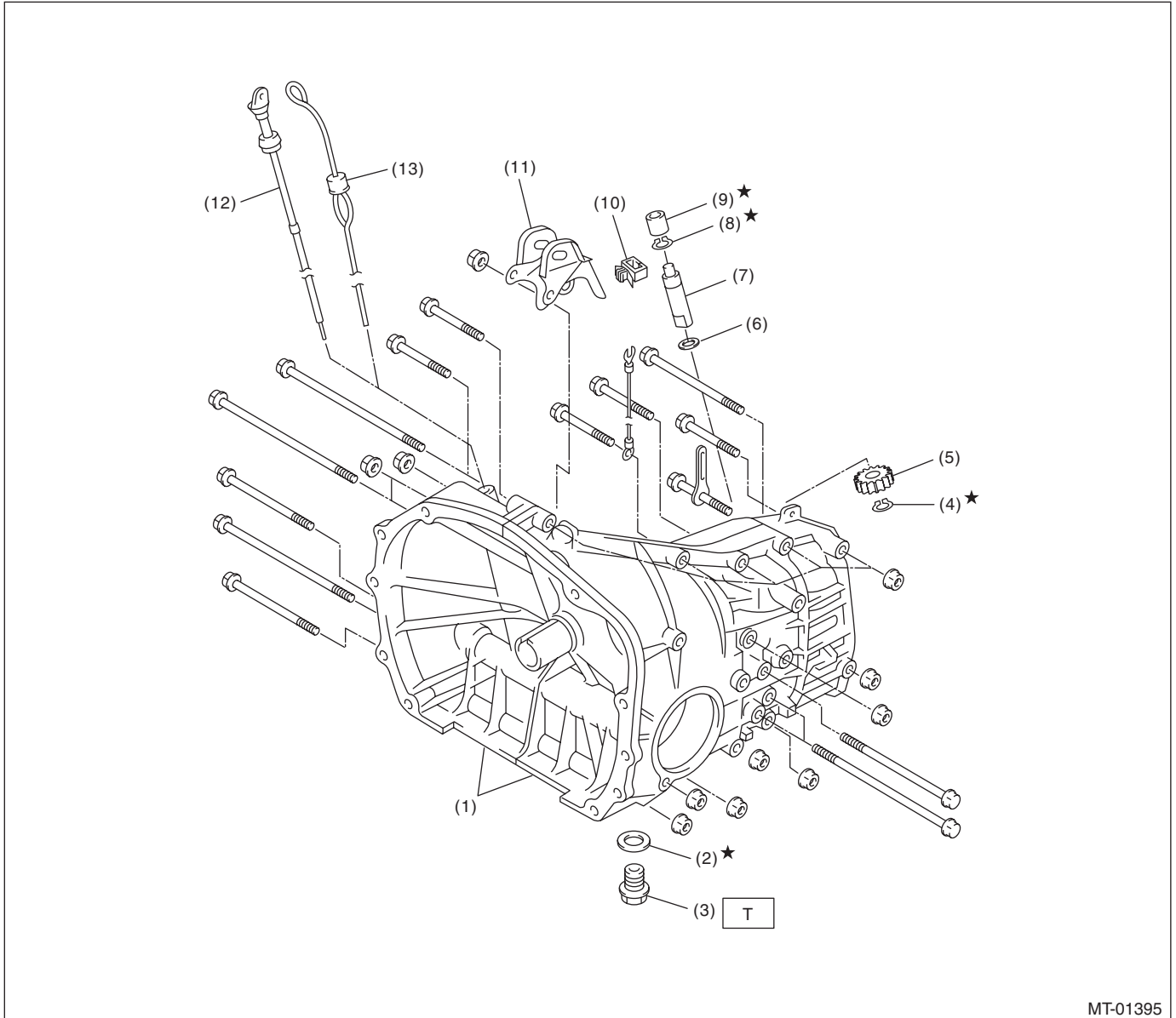
| Snap ring (Outer-30) |                   |
|----------------------|-------------------|
| Part No.             | Thickness mm (in) |
| 805030041            | 1.53 (0.0602)     |
| 805030042            | 1.65 (0.0650)     |
| 805030043            | 1.77 (0.0697)     |

# General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

## B: COMPONENT

### 1. TRANSMISSION CASE



(1) Transmission case ASSY

(2) Gasket

(3) Drain plug

(4) Snap ring (Outer)

(5) Speedometer driven gear

(6) Washer

(7) Speedometer shaft

(8) Snap ring (Outer)

(9) Oil seal

(10) Clamp

(11) Pitching stopper bracket

(12) Oil level gauge (Non-turbo model)

(13) Oil level gauge (Turbo model)

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

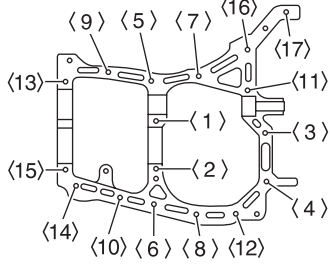
**T: 44 (4.5, 32.5) (Aluminum gasket)**

**70 (7.1, 51.6) (Copper gasket)**

# General Description

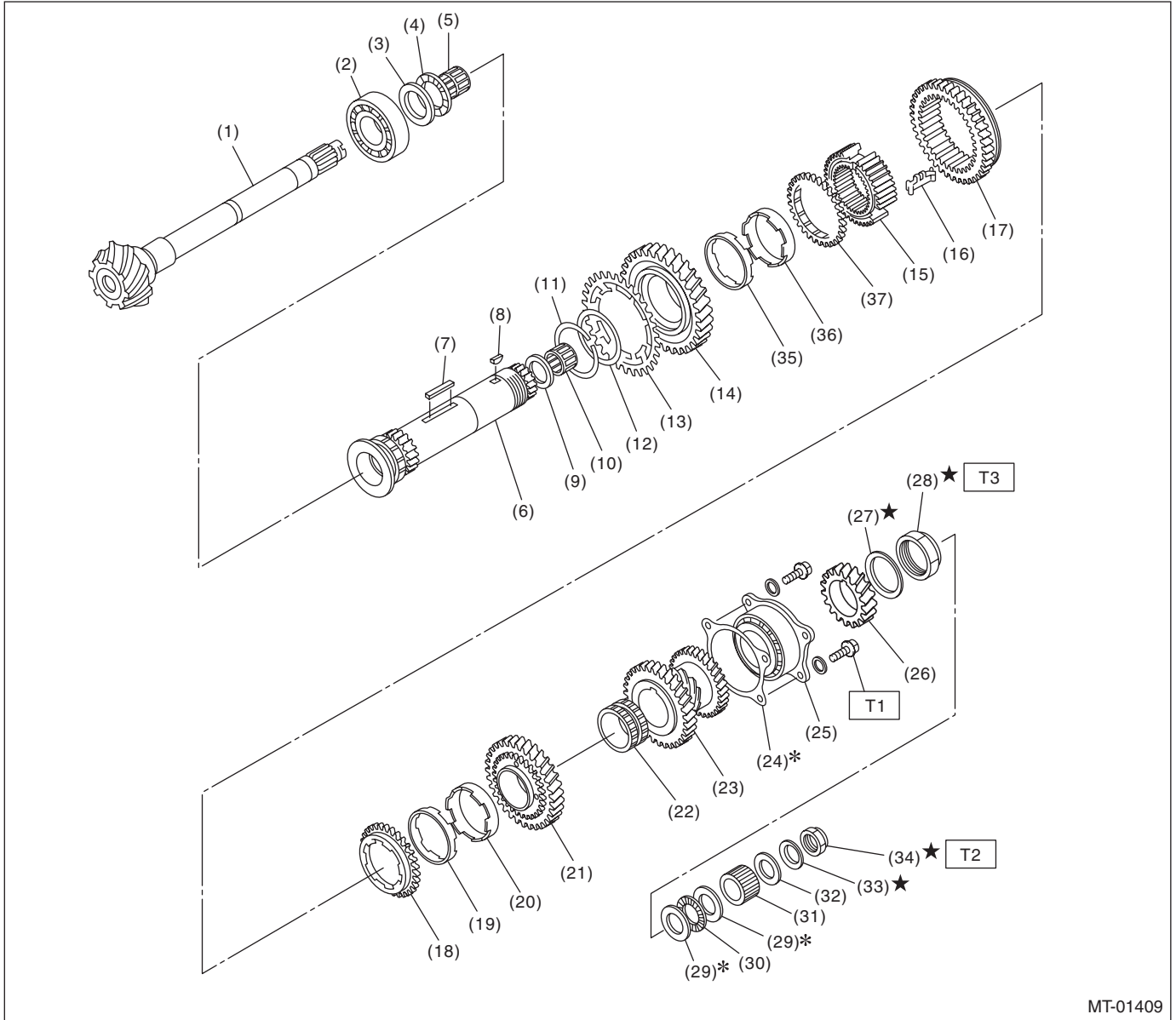
## MANUAL TRANSMISSION AND DIFFERENTIAL

### TRANSMISSION CASE TIGHTENING TORQUE

|  <p>MT-00003</p> | Bolt No.   | Bolt size      | Tightening torque: N-m<br>(kgf-m, ft-lb) |
|---|------------|----------------|--|
|   | <5> — <15> | 8 mm           | 25 (2.5, 18.1)                           |
| <1> — <4><br><16>, <17>   | 10 mm      | 39 (4.0, 28.9) |  |

# General Description

## 2. DRIVE PINION ASSEMBLY



MT-01409

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

- |  |                               |                                     |
|--|-------------------------------|-------------------------------------|
| (1) Drive pinion shaft                 | (15) 1st-2nd synchronizer hub | (29) Washer                         |
| (2) Roller bearing                     | (16) Insert key               | (30) Thrust bearing                 |
| (3) Washer                             | (17) Reverse driven gear      | (31) Differential bevel gear sleeve |
| (4) Thrust bearing                     | (18) Outer baulk ring         | (32) Washer                         |
| (5) Needle bearing                     | (19) Synchro cone             | (33) Lock washer                    |
| (6) Driven shaft                       | (20) Inner baulk ring         | (34) Lock nut                       |
| (7) Key                                | (21) 2nd driven gear          | (35) Inner baulk ring               |
| (8) Woodruff key                       | (22) 2nd driven gear bushing  | (36) Synchro cone                   |
| (9) Drive pinion collar                | (23) 3rd-4th driven gear      | (37) Outer baulk ring               |
| (10) Needle bearing                    | (24) Driven pinion shim       |                                     |
| (11) Snap ring/outer (Non-turbo model) | (25) Roller bearing           |                                     |
| (12) Washer (Non-turbo model)          | (26) 5th driven gear          |                                     |
| (13) Sub-gear (Non-turbo model)        | (27) Lock washer              |                                     |
| (14) 1st driven gear                   | (28) Lock nut                 |                                     |

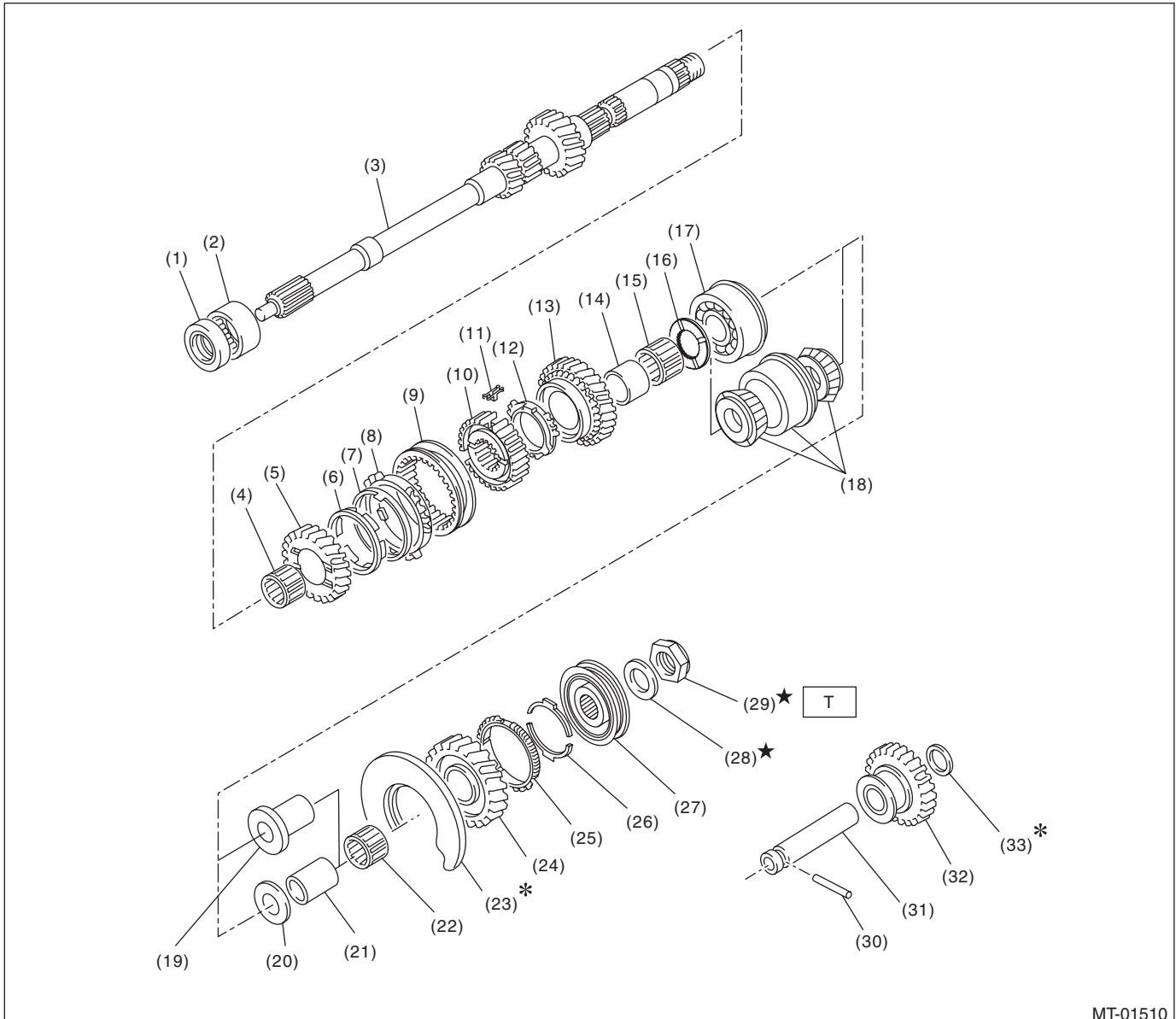
**Tightening torque: N·m (kgf·m, ft·lb)**

**T1: 30 (3.1, 22.1)**

**T2: 120 (12.2, 88.5)**

**T3: 260 (26.5, 192)**

### 3. MAIN SHAFT ASSEMBLY (SINGLE-RANGE)



MT-01510

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

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- |                                  |  |                               |
|----------------------------------|--|-------------------------------|
| (1) Oil seal                     | (15) Needle bearing                            | (24) 5th drive gear           |
| (2) Needle bearing               | (16) 4th gear thrust washer                    | (25) 5th baulk ring           |
| (3) Transmission main shaft      | (17) Ball bearing (Non-turbo model)            | (26) Baulk lever              |
| (4) Needle bearing               | (18) Taper roller bearing (Turbo model)        | (27) 5th hub & sleeve No. 2   |
| (5) 3rd drive gear               | (19) 5th needle bearing race (Turbo model)     | (28) Lock washer              |
| (6) Inner baulk ring             | (20) 5th gear thrust washer (Non-turbo model)  | (29) Lock nut                 |
| (7) 3rd synchro cone             | (21) 5th needle bearing race (Non-turbo model) | (30) Straight pin             |
| (8) Outer baulk ring             | (22) Needle bearing                            | (31) Reverse idler gear shaft |
| (9) 3rd-4th coupling sleeve      | (23) Main shaft rear plate                     | (32) Reverse idler gear       |
| (10) 3rd-4th synchronizer hub    |  | (33) Washer                   |
| (11) 3rd-4th shifting insert key |  |                               |
| (12) 4th baulk ring              |  |                               |
| (13) 4th drive gear              |  |                               |
| (14) 4th needle bearing race     |  |                               |

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

**T: 120 (12.2, 88.5)**

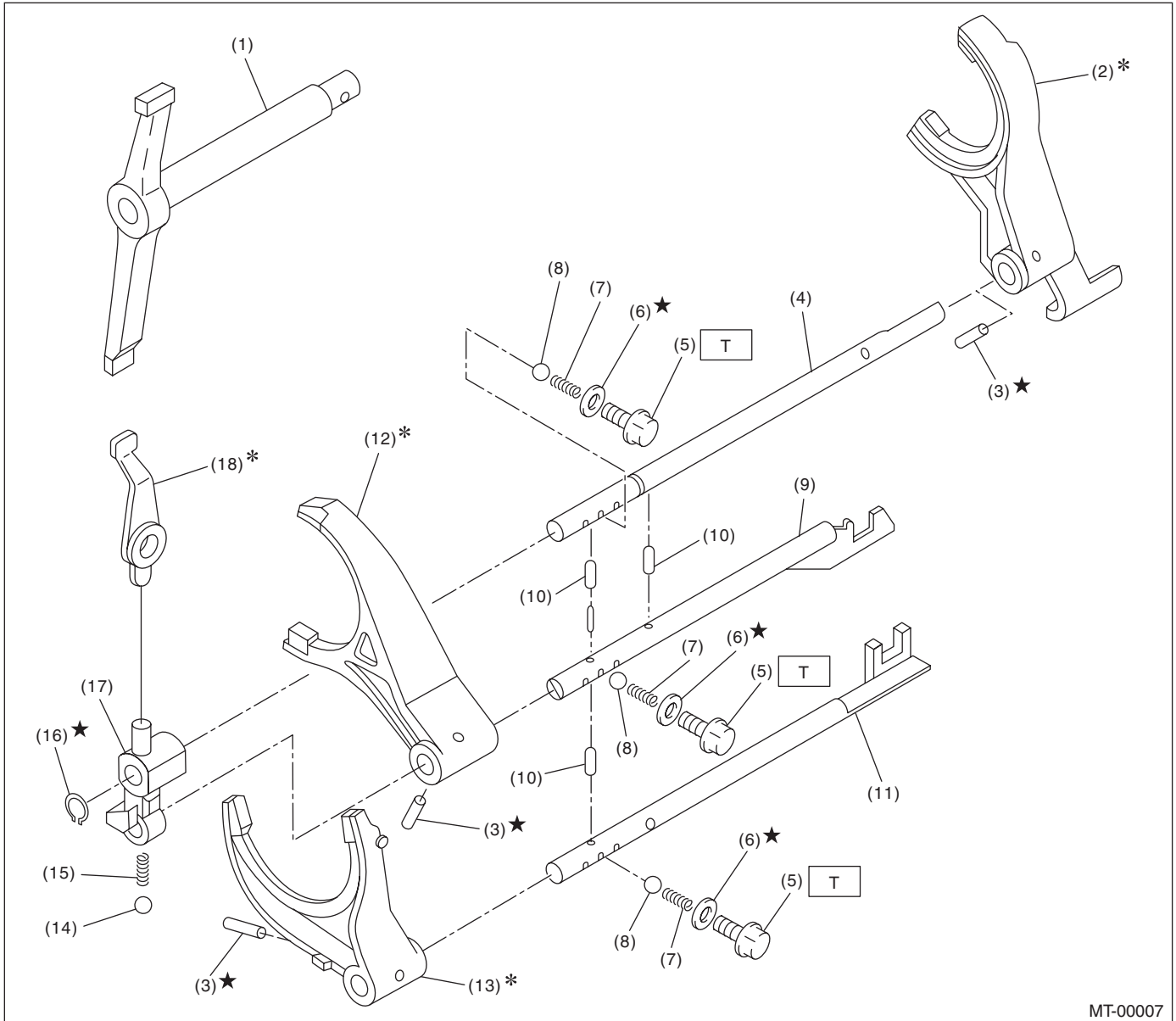
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# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 4. SHIFTER FORK AND SHIFTER ROD



MT-00007

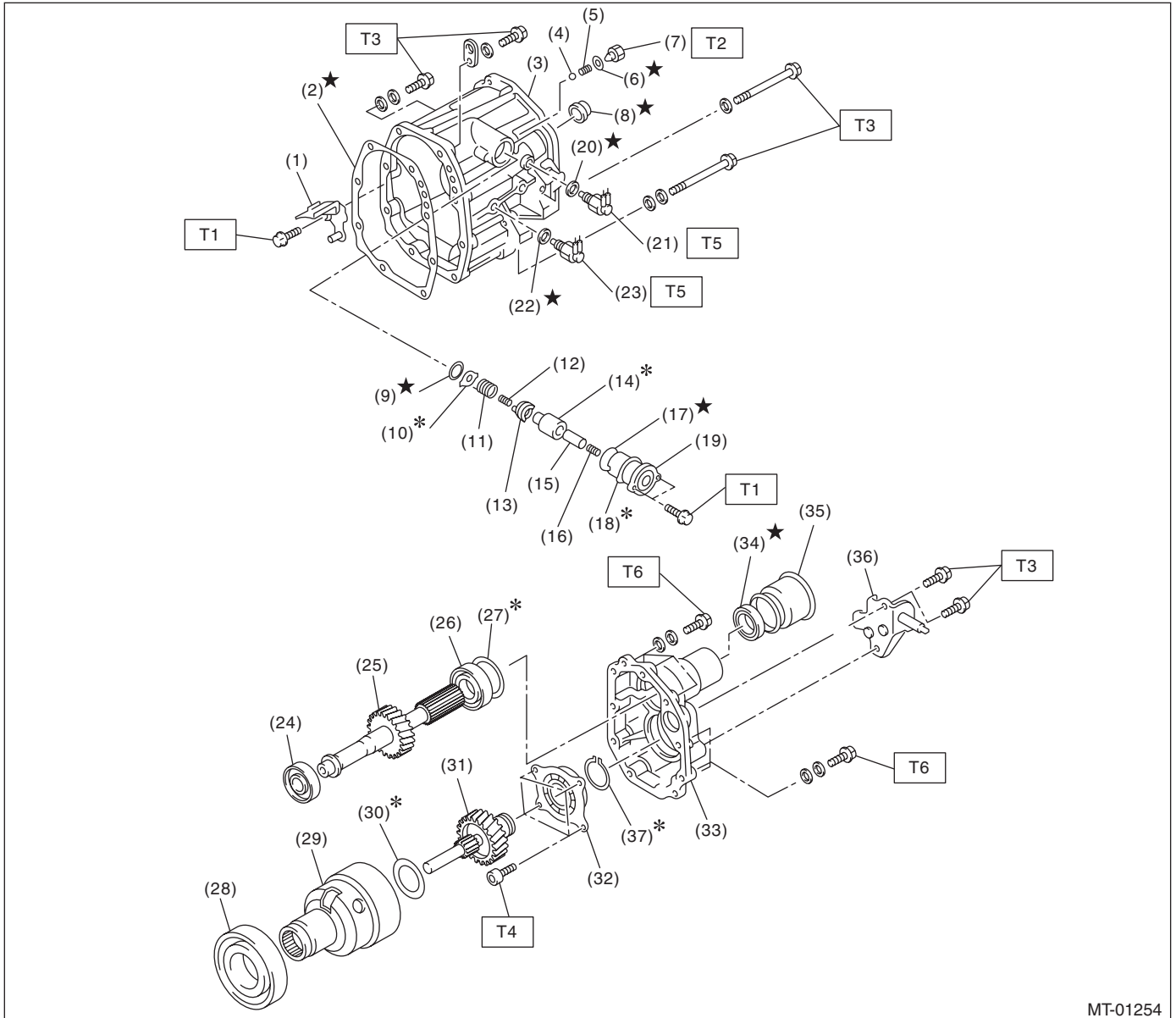
- |                          |                           |                            |
|--------------------------|---------------------------|----------------------------|
| (1) Shifter arm          | (8) Ball                  | (15) Spring                |
| (2) 5th shifter fork     | (9) 3rd-4th fork rod      | (16) Snap ring (Outer)     |
| (3) Straight pin         | (10) Interlock plunger    | (17) Reverse fork rod arm  |
| (4) Reverse fork rod     | (11) 1st-2nd fork rod     | (18) Reverse shifter lever |
| (5) Checking ball plug   | (12) 3rd-4th shifter fork |                            |
| (6) Gasket               | (13) 1st-2nd shifter fork |                            |
| (7) Checking ball spring | (14) Ball                 |                            |

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

**T: 20 (2.0, 14.5)**

# General Description

## 5. TRANSFER CASE AND EXTENSION



MT-01254

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

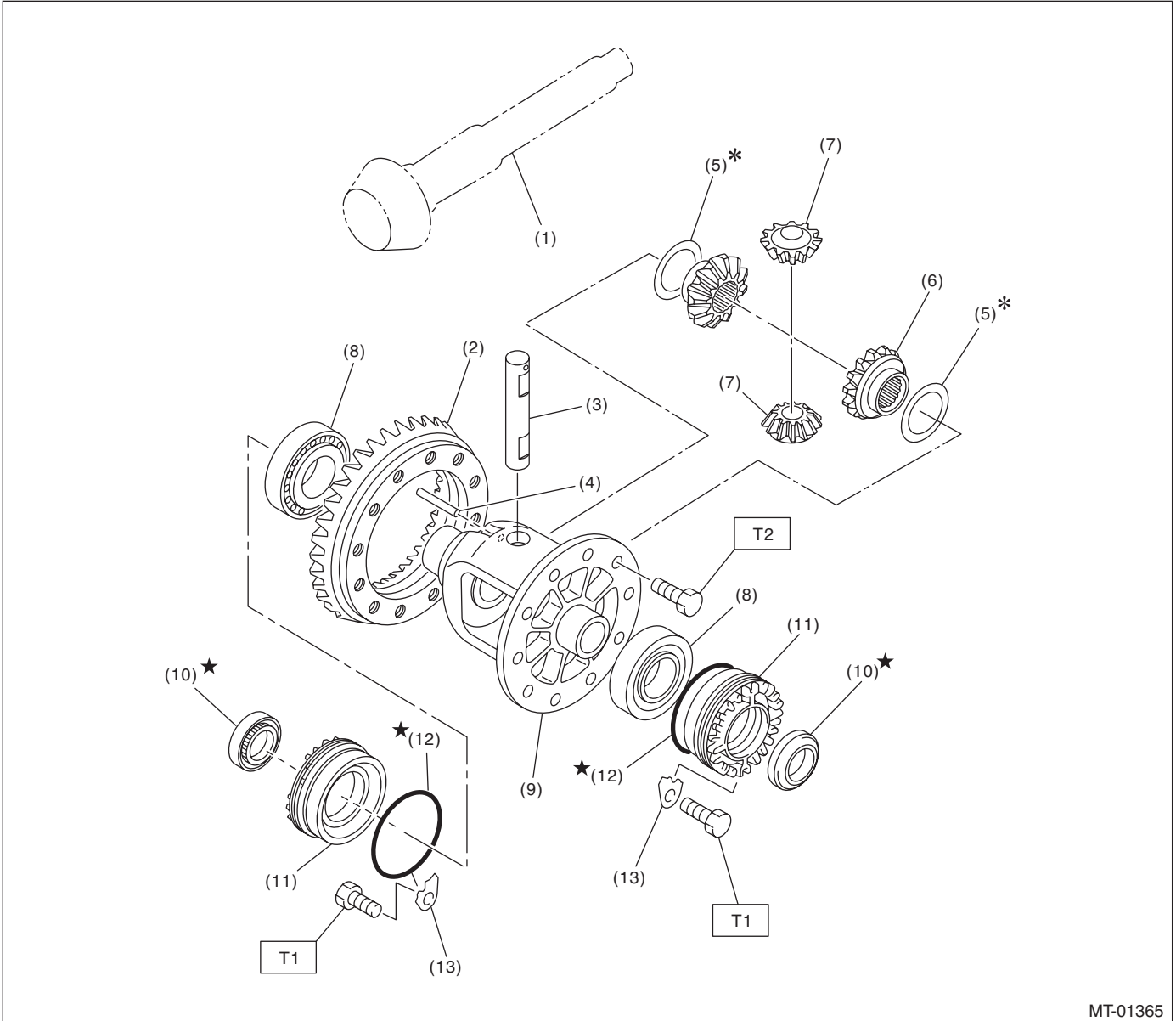
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|                            |                              |  |
|----------------------------|------------------------------|--|
| (1) Oil guide              | (16) Return spring           | (31) Transfer drive gear                           |
| (2) Gasket                 | (17) O-ring                  | (32) Ball bearing                                  |
| (3) Transfer case          | (18) Adjusting select shim   | (33) Extension case                                |
| (4) Ball                   | (19) Reverse check sleeve    | (34) Oil seal                                      |
| (5) Reverse accent spring  | (20) Gasket                  | (35) Dust cover                                    |
| (6) Gasket                 | (21) Neutral position switch | (36) Shift bracket                                 |
| (7) Plug                   | (22) Gasket                  | (37) Snap ring                                     |
| (8) Oil seal               | (23) Back-up light switch    |  |
| (9) Snap ring (Inner)      | (24) Roller bearing          | <hr/> <b>Tightening torque: N·m (kgf-m, ft-lb)</b> |
| (10) Reverse check plate   | (25) Transfer driven gear    | <b>T1: 6.4 (0.65, 4.7)</b>                         |
| (11) Reverse check spring  | (26) Roller bearing          | <b>T2: 9.75 (1.0, 7.2)</b>                         |
| (12) Reverse return spring | (27) Adjusting washer        | <b>T3: 24.5 (2.5, 18.1)</b>                        |
| (13) Reverse check cam     | (28) Ball bearing            | <b>T4: 26 (2.7, 20)</b>                            |
| (14) Reverse accent shaft  | (29) Center differential     | <b>T5: 32.3 (3.3, 23.8)</b>                        |
| (15) Return spring cap     | (30) Adjusting washer        | <b>T6: 40 (4.1, 30)</b>                            |

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# General Description

## 6. FRONT DIFFERENTIAL



MT-01365

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

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

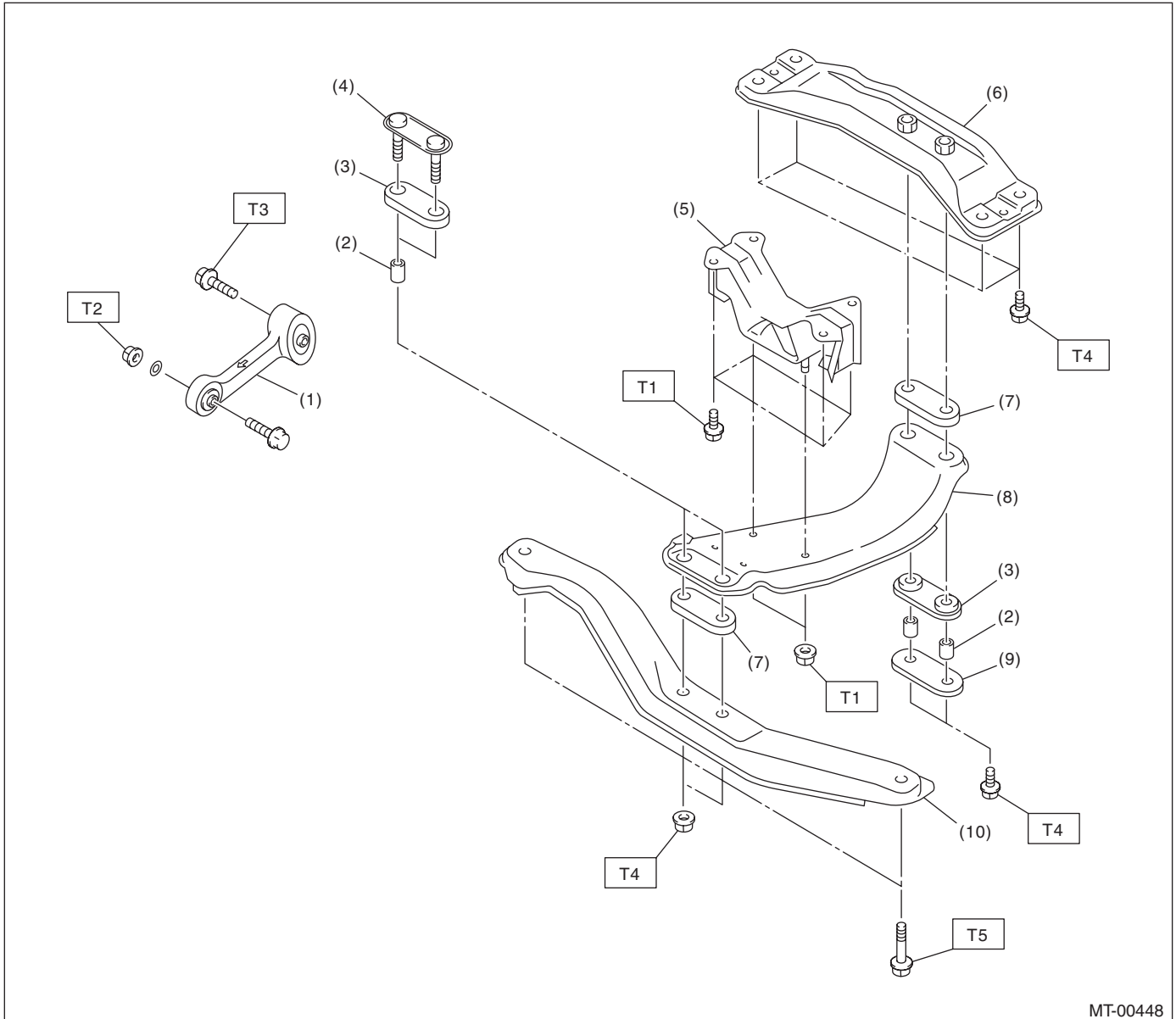
**T1: 25 (2.5, 18.1)**

**T2: 62 (6.3, 45.6)**

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 7. TRANSMISSION MOUNTING



MT-00448

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

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

**T1: 35 (3.6, 26)**

**T2: 50 (5.1, 36.9)**

**T3: 58 (5.9, 43)**

**T4: 70 (7.1, 51)**

**T5: 140 (14.3, 103)**

### **C: CAUTION**

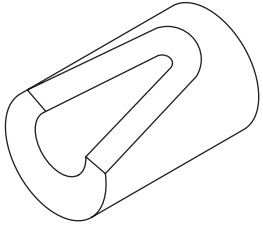
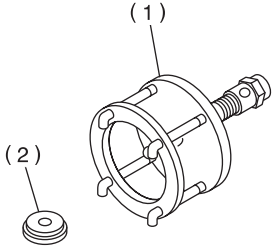
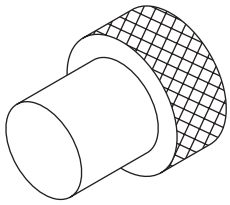
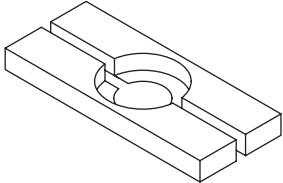
- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, 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 apart with screwdrivers or other tools.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Use SUBARU genuine gear oil, grease or the equivalent. Do not mix gear oil, grease, etc. with those of different grades 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 revolving surfaces before installation.
- Replace deformed or damaged snap rings with new parts.
- 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 liquid gasket, completely remove the liquid gasket.

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## MANUAL TRANSMISSION AND DIFFERENTIAL

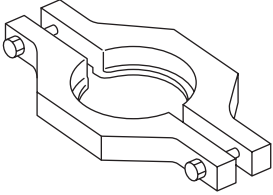
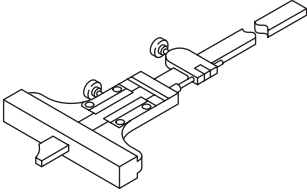
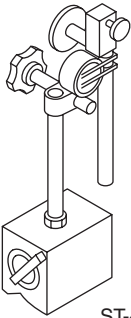
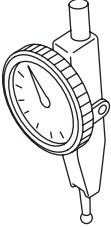
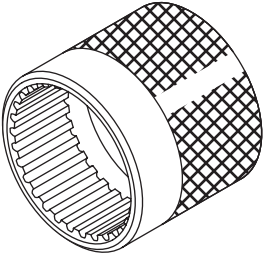
### D: PREPARATION TOOL

#### 1. SPECIAL TOOL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION           | REMARKS  |
|---|-------------|-----------------------|--|
|  <p style="text-align: center;">ST-399411700</p>   | 399411700   | ACCENT BALL INSTALLER | Used for installing reverse shifter rail arm.  |
|  <p style="text-align: center;">ST-899524100</p>   | 899524100   | PULLER SET            | Used for removing and installing the roller bearing (Differential).<br>(1) Puller<br>(2) Cap |
|  <p style="text-align: center;">ST-399780104</p> | 399780104   | WEIGHT                | Used for measuring preload on the roller bearing.  |
|  <p style="text-align: center;">ST-498077000</p> | 498077000   | REMOVER               | Used for removing the roller bearing of the drive pinion shaft.                              |

# General Description

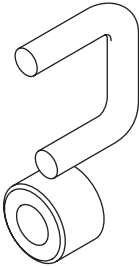
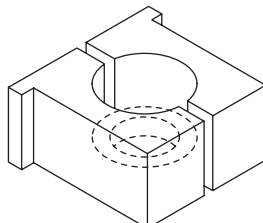
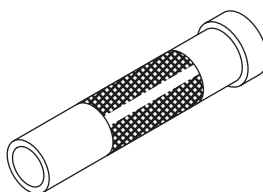
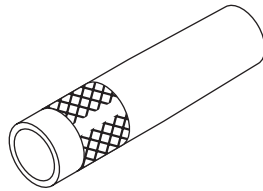
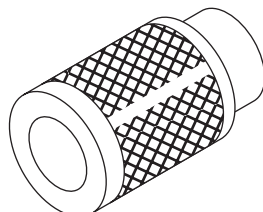
## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION                         | REMARKS   |
|---|-------------|-------------------------------------|---|
|  <p data-bbox="337 520 467 541">ST-498077300</p>     | 498077300   | CENTER DIFFERENTIAL BEARING REMOVER | Used for removing the center differential cover ball bearing.   |
|  <p data-bbox="337 871 467 892">ST-498147000</p>     | 498147000   | DEPTH GAUGE                         | Used for adjusting the main shaft axial end play.   |
|  <p data-bbox="337 1222 467 1243">ST-498247001</p>  | 498247001   | MAGNET BASE                         | <ul style="list-style-type: none"> <li>• Used for measuring backlash between the side gear and pinion, and the hypoid gear.</li> <li>• Used together with DIAL GAUGE (498247100).</li> </ul>  |
|  <p data-bbox="337 1572 467 1593">ST-498247100</p> | 498247100   | DIAL GAUGE                          | <ul style="list-style-type: none"> <li>• Used for measuring backlash between the side gear and pinion, and the hypoid gear.</li> <li>• Used together with MAGNET BASE (498247001).</li> </ul> |
|  <p data-bbox="337 1923 467 1944">ST-498247400</p> | 498427400   | STOPPER                             | Used for securing the drive pinion shaft assembly and the driven gear assembly when removing the drive pinion shaft assembly lock nut.  |



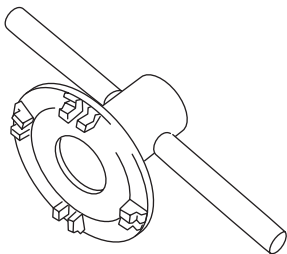
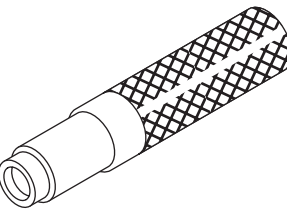
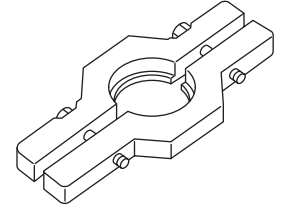
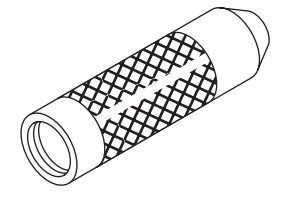
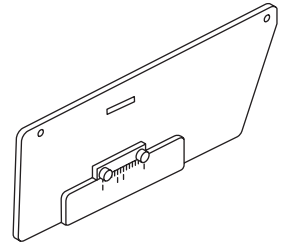
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION           | REMARKS  |
|---|-------------|-----------------------|--|
|  <p>ST-498787100</p>   | 498787100   | MAIN SHAFT STOPPER    | Used for removing and installing the lock nut of the transmission main shaft.  |
|  <p>ST-498937000</p>   | 498937000   | TRANSMISSION HOLDER   | Used for removing and installing the lock nut of the transmission main shaft.  |
|  <p>ST-499277100</p>  | 499277100   | BUSHING 1-2 INSTALLER | <ul style="list-style-type: none"> <li>• Used for installing the 1st driven gear thrust plate and the 1st-2nd driven gear bushing.</li> <li>• Used for installing the roller bearing outer race to the differential case.</li> </ul> |
|  <p>ST-499277200</p> | 499277200   | INSTALLER             | Used for press-fitting the 2nd driven gear, roller bearings and the 5th driven gear onto the driven shaft.   |
|  <p>ST-499757002</p> | 499757002   | INSTALLER             | <ul style="list-style-type: none"> <li>• Used for installing the snap ring (OUT 25), and ball bearing (25 × 26 × 17).</li> <li>• Used for installing the bearing cone of the transfer driven gear (extension core side).</li> </ul>  |

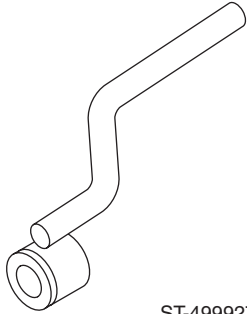
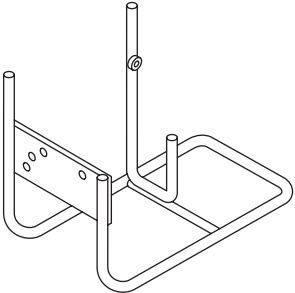
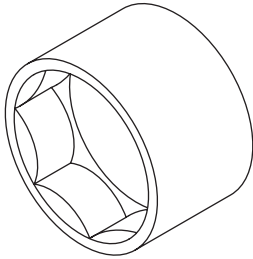
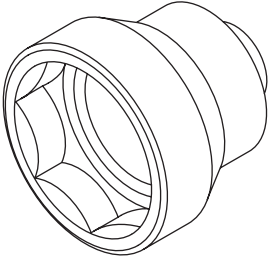
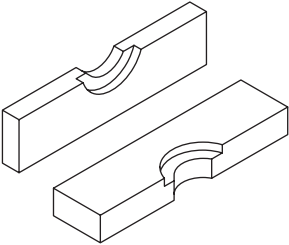
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION                | REMARKS   |
|---|-------------|----------------------------|---|
|  <p data-bbox="324 514 462 535">ST18630AA010</p>     | 18630AA010  | WRENCH COMPL<br>RETAINER   | <ul style="list-style-type: none"> <li>• Used for removing and installing the differential side retainer.</li> <li>• WRENCH ASSEMBLY (499787000) can also be used.</li> </ul>                             |
|  <p data-bbox="324 871 462 892">ST-499827000</p>     | 499827000   | PRESS                      | Used for installing the speedometer oil seal when attaching the speedometer cable to the transmission.  |
|  <p data-bbox="324 1222 462 1243">ST-499857000</p>  | 499857000   | 5TH DRIVEN GEAR<br>REMOVER | Used for removing the 5th driven gear.  |
|  <p data-bbox="324 1572 462 1593">ST-499877000</p> | 499877000   | RACE 4-5<br>INSTALLER      | <ul style="list-style-type: none"> <li>• Used for installing the 4th needle bearing race and ball bearing onto the transmission main shaft.</li> <li>• Used together with REMOVER (899714110).</li> </ul> |
|  <p data-bbox="324 1923 462 1944">ST-499917500</p> | 499917500   | DRIVE PINION<br>GAUGE ASSY | Used for adjusting the drive pinion shim.   |

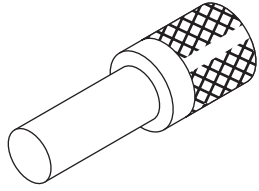
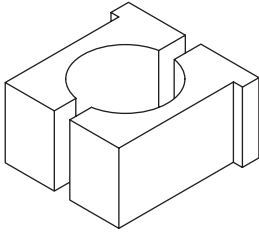
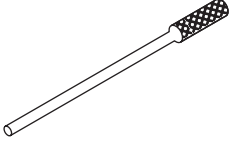
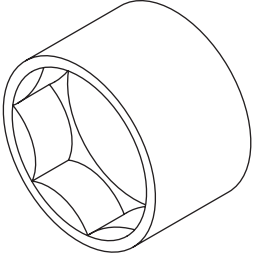
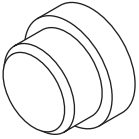
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION        | REMARKS  |
|---|-------------|--------------------|--|
|  <p>ST-499927100</p>   | 499927100   | HANDLE             | Used for fitting the transmission main shaft.  |
|  <p>ST-499937100</p>   | 499937100   | TRANSMISSION STAND | Used for disassembling and assembling the transmission.                              |
|  <p>ST-499987003</p>  | 499987003   | SOCKET WRENCH (35) | Used for removing and installing the driven pinion lock nut and main shaft lock nut. |
|  <p>ST-499987300</p> | 499987300   | SOCKET WRENCH (50) | Used for removing and installing the driven gear assembly lock nut.                  |
|  <p>ST-899714110</p> | 899714110   | REMOVER            | Used for fixing the transmission main shaft, drive pinion, rear drive shaft.         |

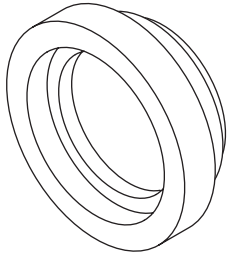
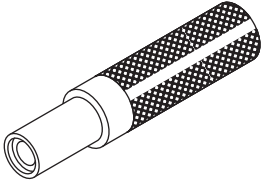
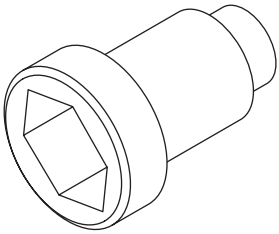
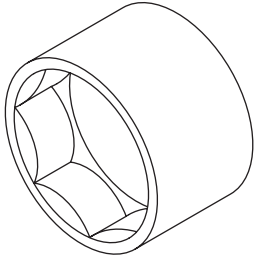
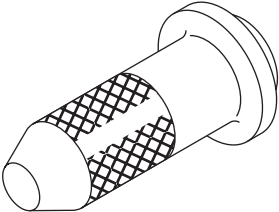
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION           | REMARKS   |
|---|-------------|-----------------------|---|
|  <p>ST-899864100</p>   | 899864100   | REMOVER               | Used for removing transmission main shaft and drive pinion parts.   |
|  <p>ST-899884100</p>   | 899884100   | HOLDER                | Used for tightening the lock nut on the sleeve.   |
|  <p>ST-899904100</p> | 899904100   | REMOVER               | Used for removing and installing the straight pin.  |
|  <p>ST-899988608</p> | 899988608   | SOCKET WRENCH<br>(27) | Used for removing and installing the drive pinion lock nut.   |
|  <p>ST-398497701</p> | 398497701   | ADAPTER               | <ul style="list-style-type: none"> <li>• Used for installing roller bearing onto the differential case.</li> <li>• Used together with INSTALLER (499277100).</li> </ul> |

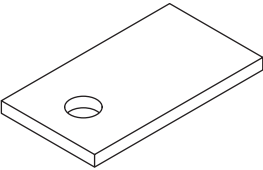
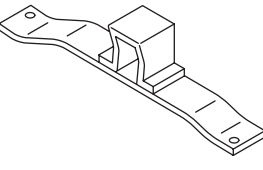
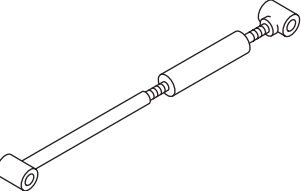
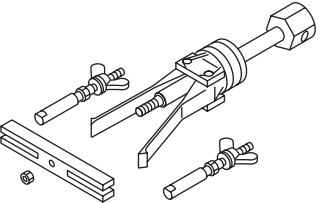
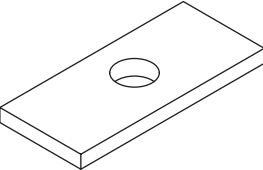
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION           | REMARKS   |
|---|-------------|-----------------------|---|
|  <p style="text-align: center;">ST-499587000</p>   | 499587000   | INSTALLER             | Used for installing the driven gears to the driven shaft.   |
|  <p style="text-align: center;">ST-899824100</p>   | 899824100   | PRESS                 | Used for installing the speedometer shaft oil seal.         |
|  <p style="text-align: center;">ST-499987100</p>  | 499987100   | SOCKET WRENCH<br>(35) | Used for removing and installing the drive pinion lock nut. |
|  <p style="text-align: center;">ST-899984103</p> | 899984103   | SOCKET WRENCH<br>(35) | Used for removing and installing the drive pinion lock nut. |
|  <p style="text-align: center;">ST-498057300</p> | 498057300   | INSTALLER             | Used for installing the extension oil seal.                 |

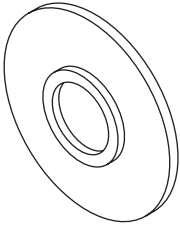
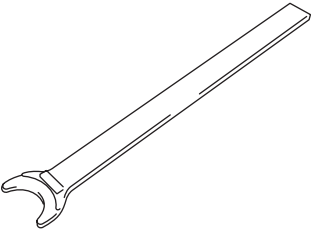
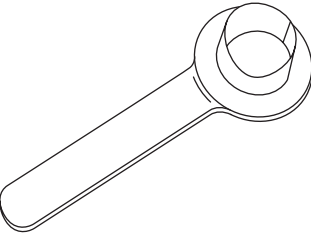
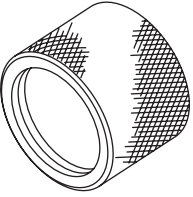
# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION            | REMARKS  |
|---|-------------|------------------------|--|
|  <p data-bbox="337 520 467 541">ST-498255400</p>     | 498255400   | PLATE                  | Used for measuring backlash.   |
|  <p data-bbox="337 871 467 892">ST41099AA010</p>     | 41099AA010  | ENGINE SUPPORT BRACKET | Used for supporting the engine.  |
|  <p data-bbox="337 1222 467 1243">ST41099AA020</p>  | 41099AA020  | ENGINE SUPPORT         | Used for supporting the engine.  |
|  <p data-bbox="337 1572 467 1593">ST-398527700</p> | 398527700   | PULLER ASSY            | <ul style="list-style-type: none"> <li>• Used for removing the extension case roller bearing.</li> <li>• Used for removing the front differential side retainer bearing outer race.</li> <li>• Used for removing the front differential side retainer oil seal.</li> </ul> |
|  <p data-bbox="337 1923 467 1944">ST-398643600</p> | 398643600   | GAUGE                  | Used for measuring the total end play, extension end play and drive pinion height.   |

# General Description

## MANUAL TRANSMISSION AND DIFFERENTIAL

| ILLUSTRATION  | TOOL NUMBER | DESCRIPTION                          | REMARKS  |
|---|-------------|--------------------------------------|--|
| <br>ST-398177700   | 398177700   | INSTALLER                            | <ul style="list-style-type: none"> <li>• Used for installing the bearing cone of transfer driven gear (transfer case side).</li> <li>• Used for installing the ball bearing of the transfer drive gear.</li> </ul> |
| <br>ST28399SA000   | 28399SA000  | FRONT DRIVE SHAFT REMOVER            | Used for removing the front drive shaft. (common for the MT model, and the AT model)   |
| <br>ST28399SA010  | 28399SA010  | FRONT DRIVE SHAFT OIL SEAL PROTECTOR | Used for protecting the oil seal from damage when inserting the front drive shaft.   |
| <br>ST18675AA000 | 18675AA000  | DIFFERENTIAL SIDE OIL SEAL INSTALLER | Used for installing the differential side retainer oil seal.   |

## 2. GENERAL TOOL

| TOOL NAME      | REMARKS   |
|----------------|---|
| Circuit tester | Used for measuring resistance, voltage and current. |