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NOT FOR RESALE

MANUAL TRANSMISSION AND DIFFERENTIAL 6-SPEED (6MT)

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

1. General Description

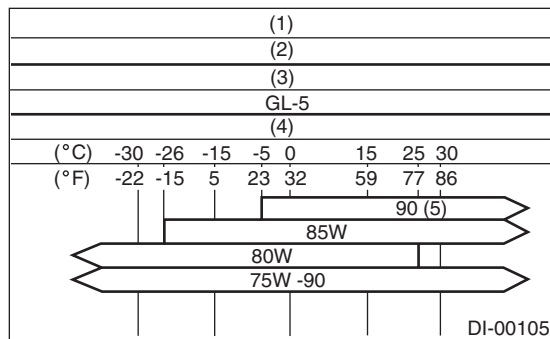
A: SPECIFICATION

1. MANUAL TRANSMISSION AND DIFFERENTIAL

Type		6-forward speeds and 1-reverse	
Transmission gear ratio		1st	3.636
		2nd	2.235
		3rd	1.521
		4th	1.137
		5th	0.971
		6th	0.756
		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
	Final	Type of gear	Hypoid
		Gear ratio	3.545
Front differential	Type and number of gear		Planetary gear (pinion gear: 8, gear: 2)
	LSD type		Helical
Center differential	Type and number of gear		Planetary gear (Internal gear: 1, pinion gear: 6, sun gear: 1, and solenoid compression variable control multiplate clutch)
Transmission gear oil		GL-5	
Transmission gear oil capacity		4.1 ℓ (4.3 US qt, 3.6 Imp qt)	

2. TRANSMISSION GEAR OIL

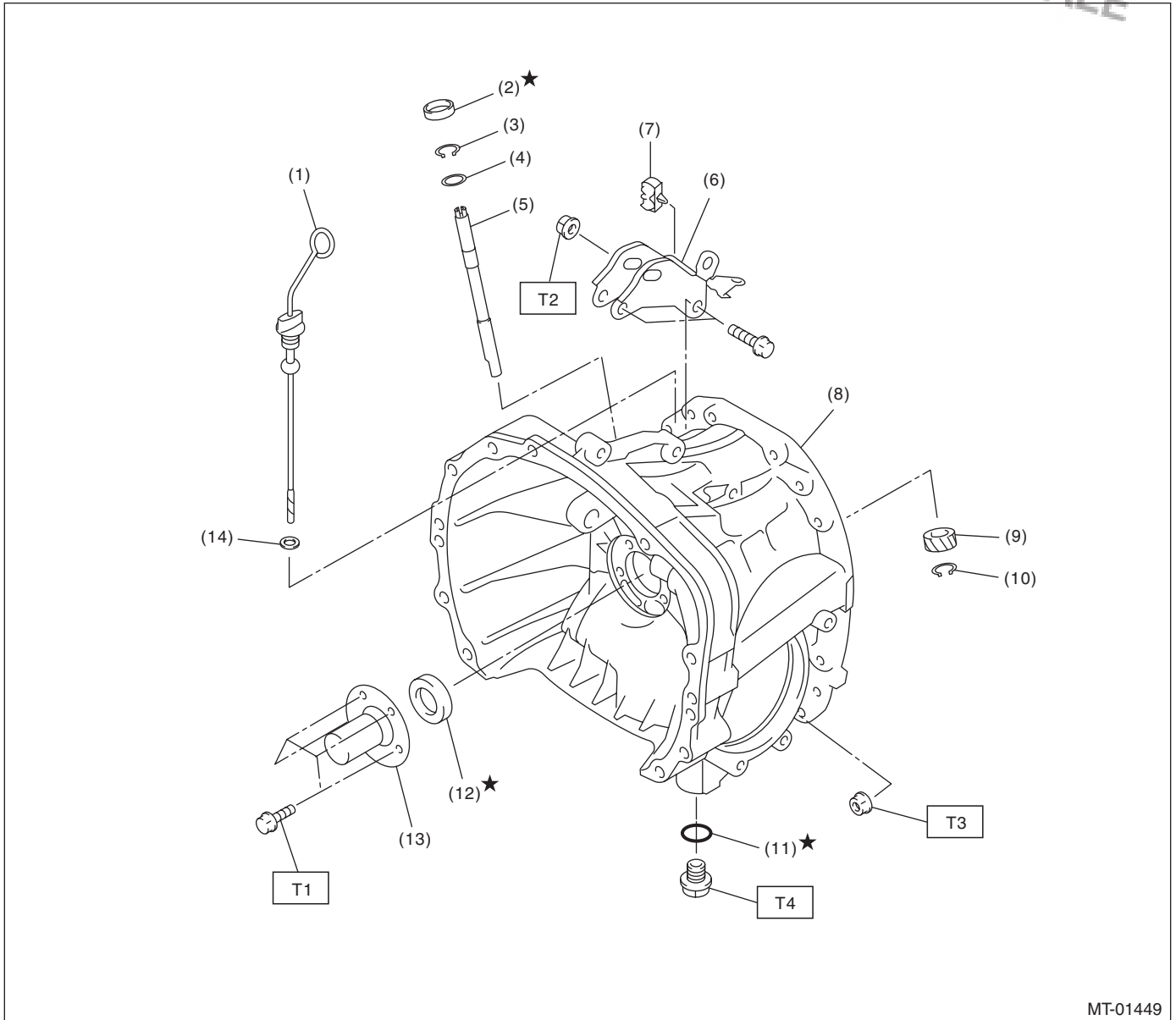
Recommended oil:



- (1) Item
- (2) Transmission gear oil
- (3) API standard
- (4) SAE viscosity No. and applicable temperature
- (5) STI model

B: COMPONENT

1. CLUTCH HOUSING



MT-01449

- | | |
|-----------------------------------|-----------------------------------|
| (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 driven gear shaft | (12) Oil seal |
| (6) Pitching stopper bracket | (13) Clutch release bearing guide |
| (7) Clip | (14) O-ring |

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)

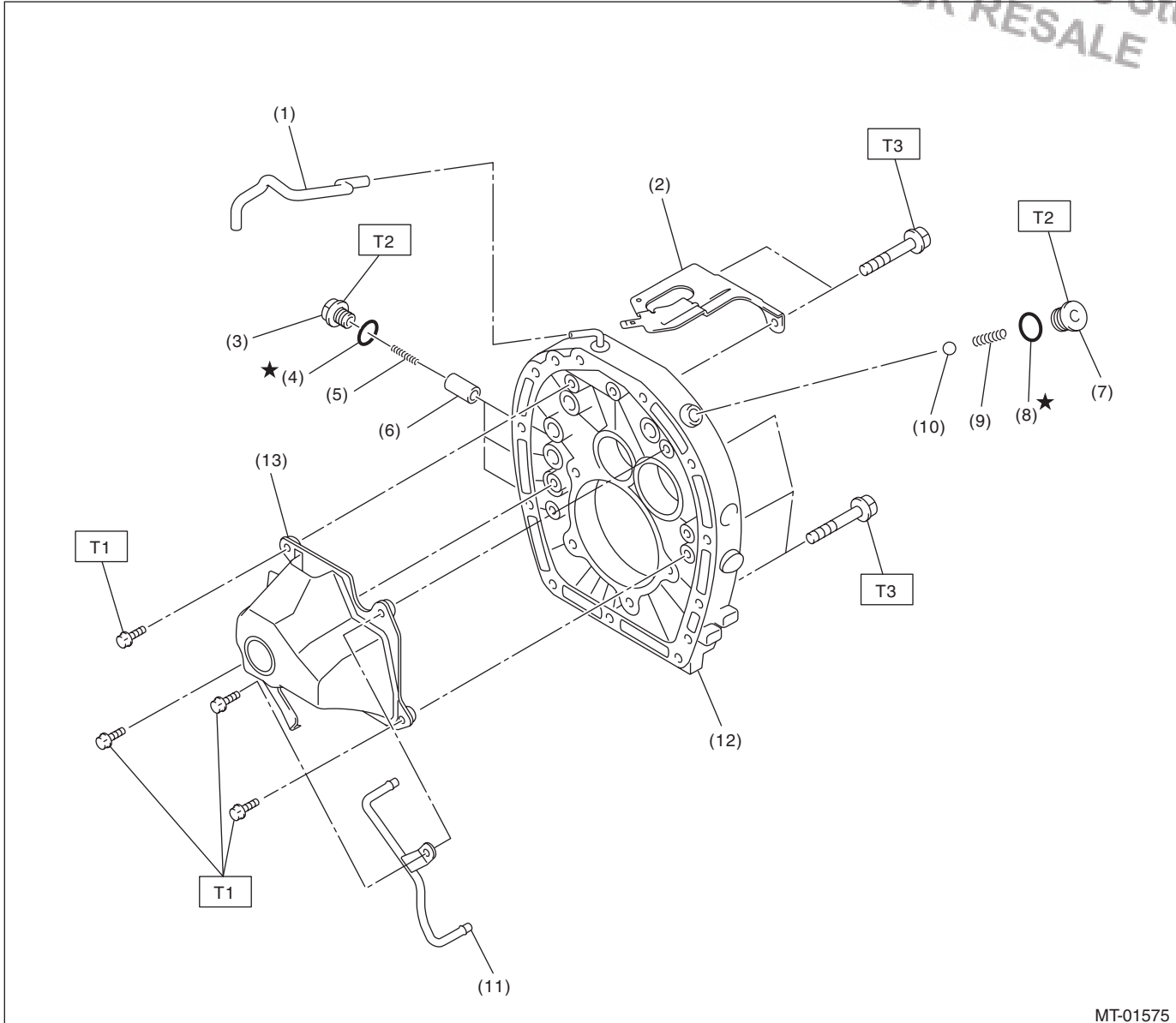
T4: 70 (7.1, 51.6)

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

2. ADAPTER PLATE

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MT-01575

- | | | |
|-------------------------------|-----------------------|------------------|
| (1) Air breather hose | (7) Plug | (13) Oil chamber |
| (2) Transmission harness stay | (8) O-ring | |
| (3) Plug | (9) Spring | |
| (4) O-ring | (10) Ball | |
| (5) Spring | (11) Lubrication pipe | |
| (6) Plunger | (12) Adapter plate | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 6.4 (0.65, 4.7)

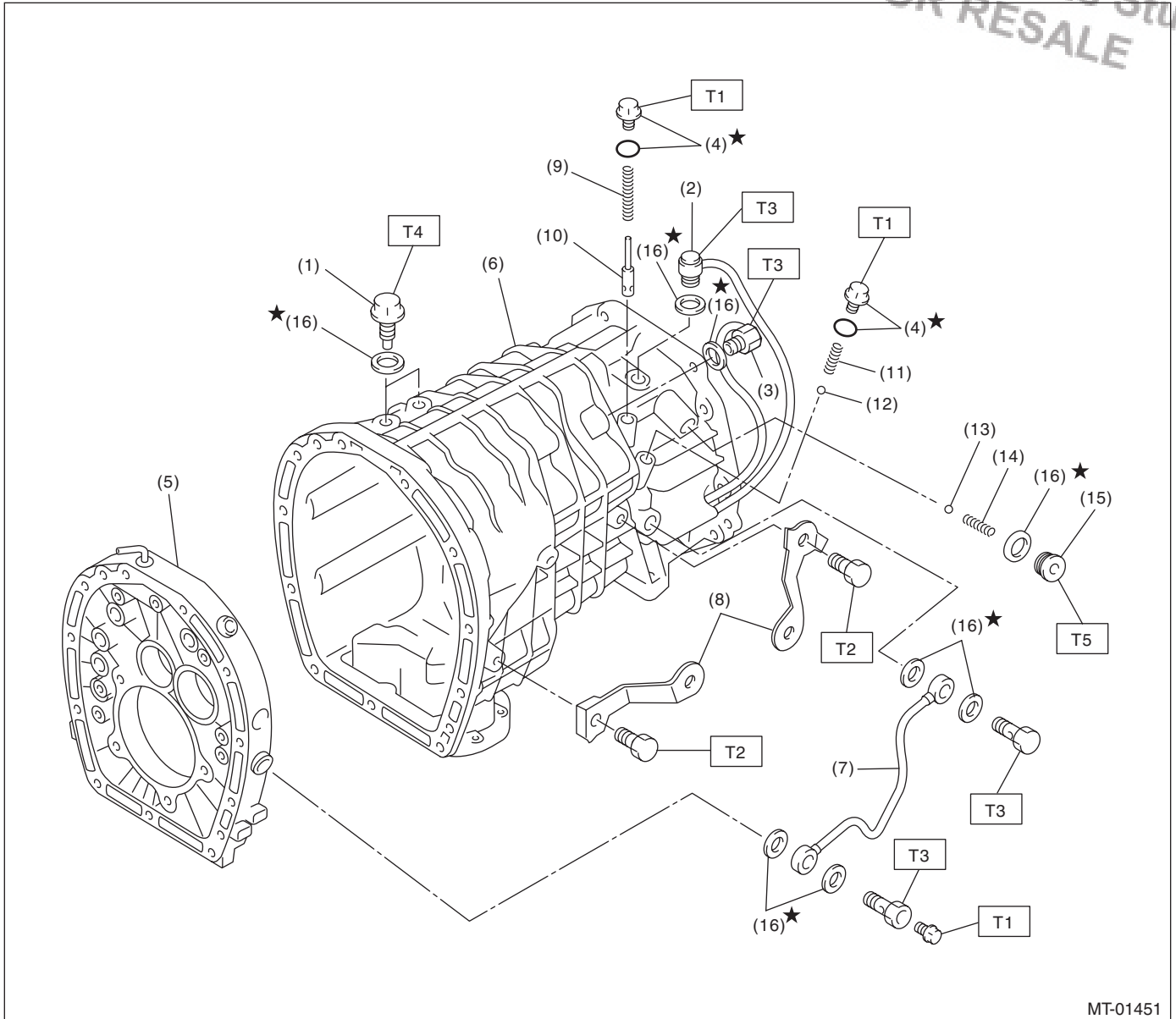
T2: 25 (2.5, 18.4)

T3: 50 (5.1, 36.9)

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

3. TRANSMISSION CASE



MT-01451

- | | |
|-----------------------------|----------------------------|
| (1) Pilot bolt | (9) Return spring |
| (2) Neutral position switch | (10) Pressure relief valve |
| (3) Back-up light switch | (11) Return spring |
| (4) O-ring | (12) Ball |
| (5) Adapter plate | (13) Ball |
| (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)

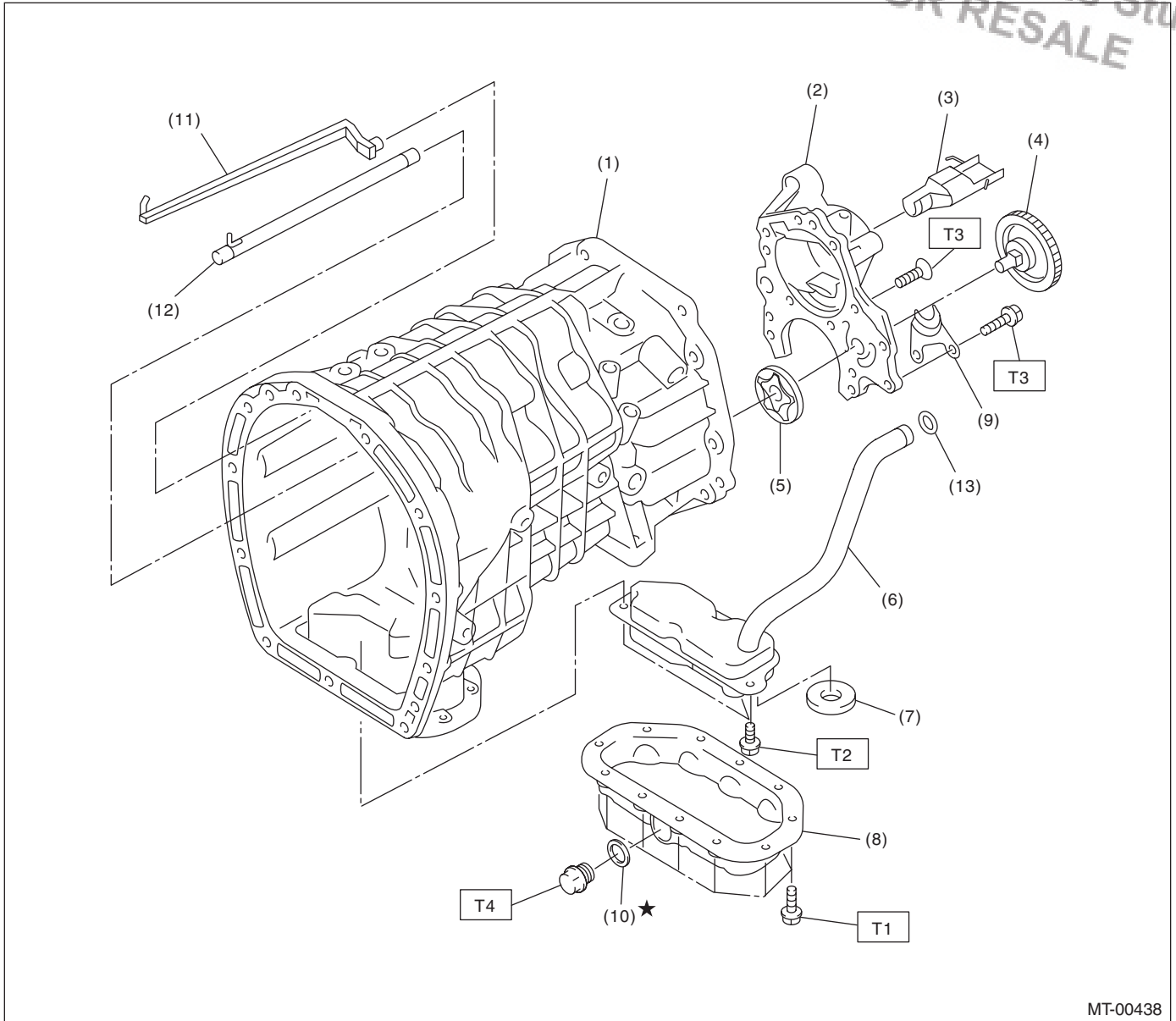
T4: 34 (3.5, 25.1)

T5: 41 (4.2, 30.2)

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

4. OIL PAN AND OIL PUMP



MT-00438

- | | |
|-------------------------------|----------------|
| (1) Transmission 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)

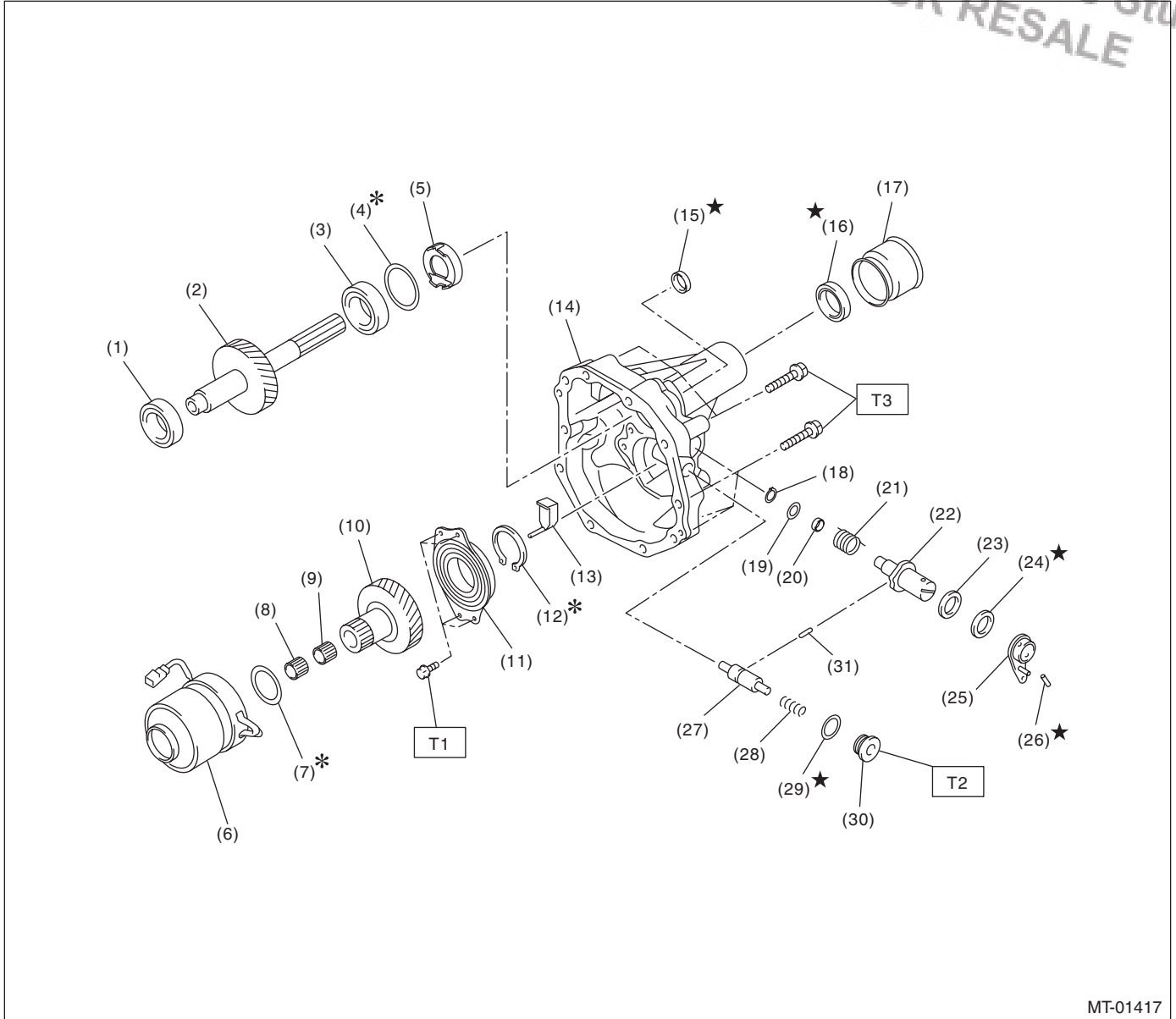
T3: 25 (2.5, 18.1)

T4: 44 (4.5, 32.5)

General Description

5. EXTENSION CASE AND CENTER DIFFERENTIAL

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MT-01417

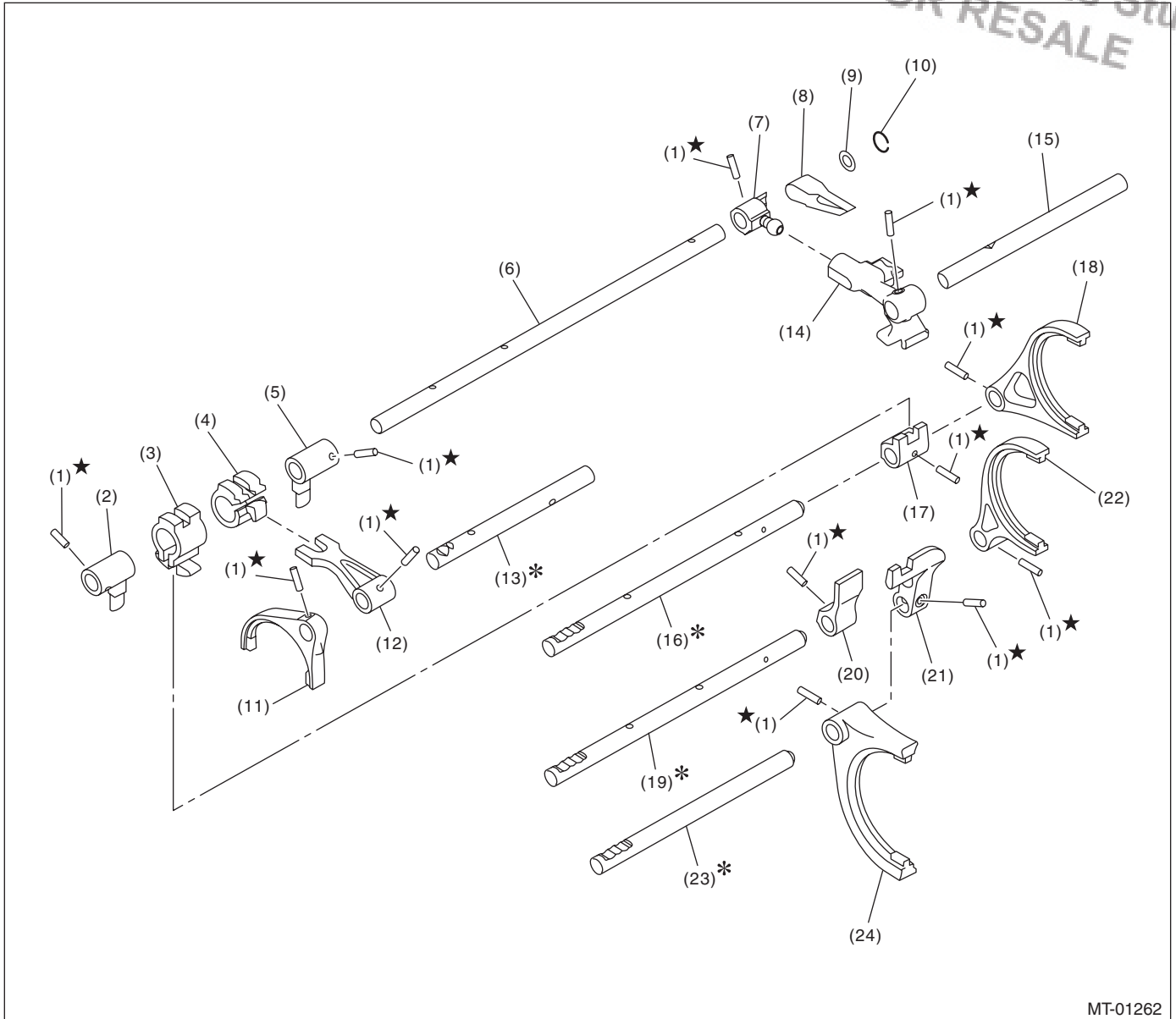
- | | | |
|---------------------------------|--------------------------|--------------------------------|
| (1) Taper roller bearing | (13) Extension guide | (25) Reverse check lever COMPL |
| (2) Transfer driven gear | (14) Extension case | (26) Straight pin |
| (3) Taper roller bearing | (15) Oil seal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



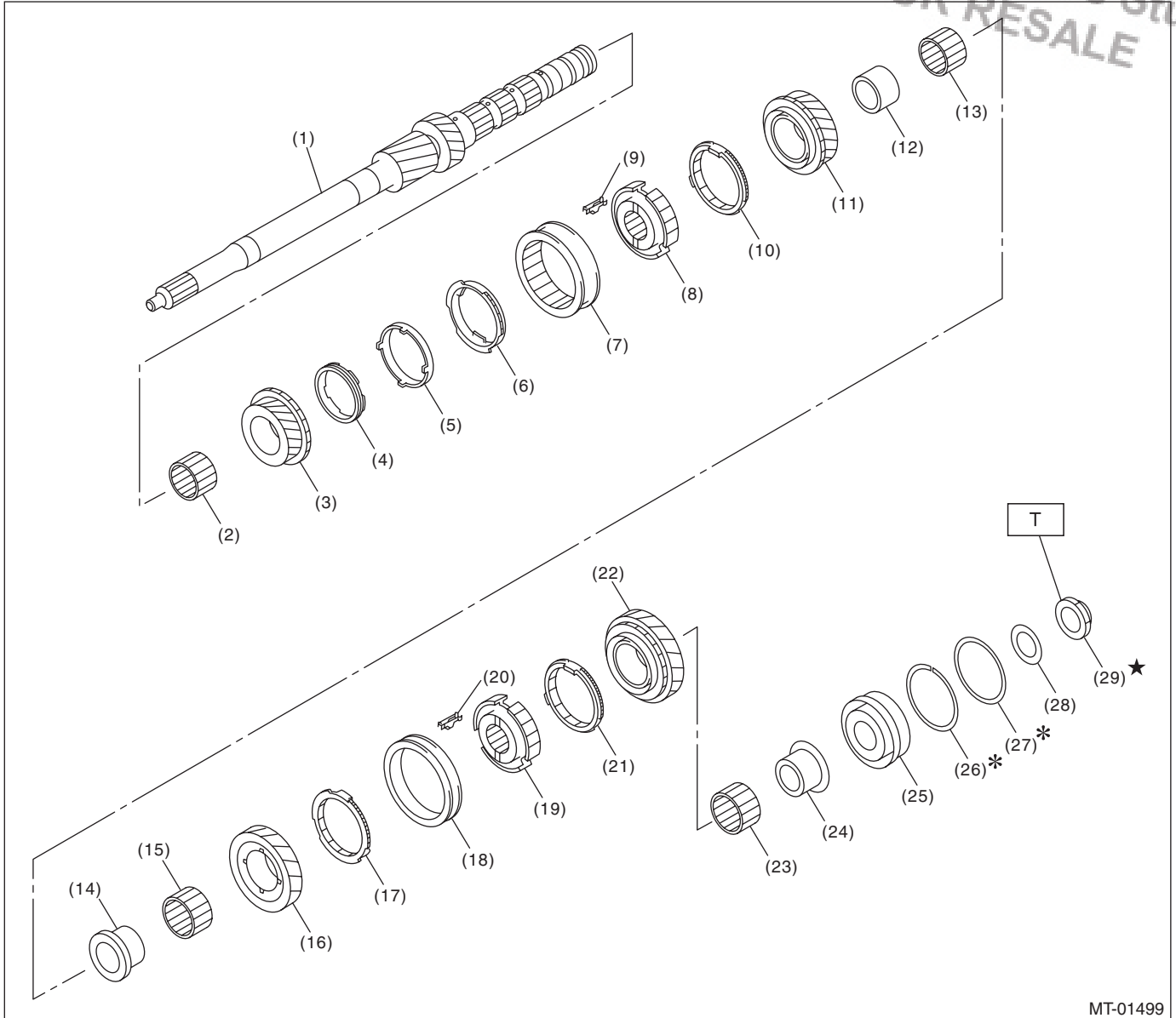
MT-01262

- | | | |
|-----------------------------|--------------------------|--------------------------|
| (1) Spring pin | (9) Washer | (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 ASSEMBLY



MT-01499

- | | | |
|-------------------------|--------------------------|---------------------------|
| (1) Main shaft | (12) 4th bushing | (23) Needle bearing |
| (2) Needle bearing | (13) Needle bearing | (24) 6th bushing |
| (3) 3rd drive gear | (14) 5th bushing | (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 key | (20) Shifting insert key | |
| (10) 4th baulk ring | (21) 6th baulk ring | |
| (11) 4th gear | (22) 6th drive gear | |

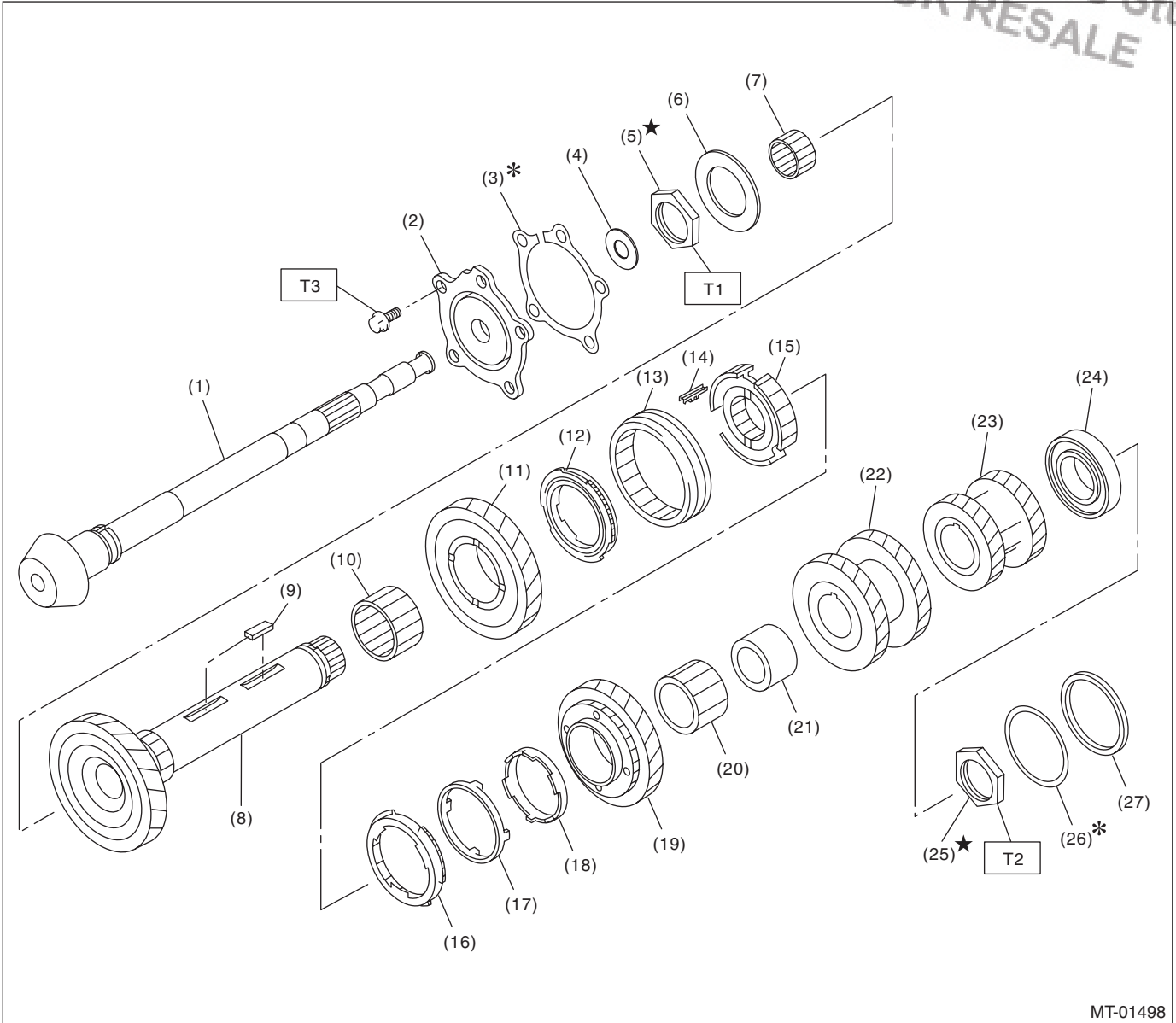
Tightening torque: N·m (kgf·m, ft·lb)

T: 392 (40.0, 289)

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

8. DRIVE PINION AND DRIVE SHAFT ASSEMBLY



MT-01498

- (1) Drive pinion shaft
- (2) Taper roller bearing
- (3) Shim
- (4) Washer
- (5) Lock nut
- (6) Thrust bearing
- (7) Needle bearing
- (8) Driven shaft
- (9) Key
- (10) Needle bearing
- (11) 1st driven gear
- (12) 1st synchro ring ASSY

- (13) 1st-2nd sleeve
- (14) Shifting insert key
- (15) 1st-2nd hub
- (16) Outer baulk ring
- (17) Synchro cone
- (18) Inner baulk ring
- (19) 2nd driven gear
- (20) Needle bearing
- (21) 2nd bushing
- (22) 3rd-4th driven gear
- (23) 5th-6th driven gear
- (24) Ball bearing

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

Tightening torque:N·m (kgf·m, ft·lb)

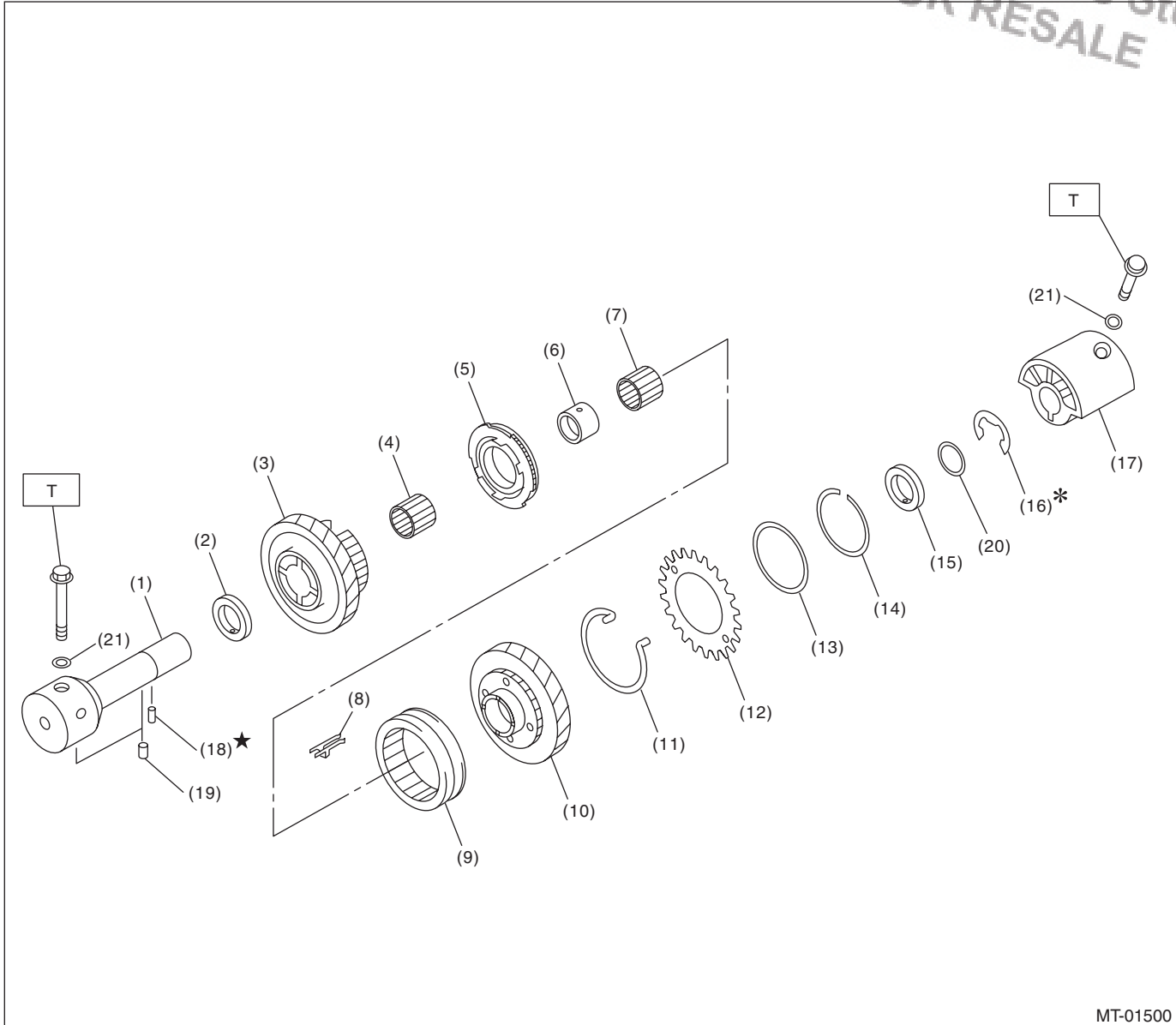
T1: 285 (29.1, 210)
* 265 (27.0, 195)

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

T3: 54 (5.5, 39.8)

* Tightening torque when using the ST

9. REVERSE IDLER GEAR ASSEMBLY



MT-01500

- | | | |
|--------------------------------|-----------------------------|---------------------------|
| (1) Base | (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 | (20) Washer |
| (5) Reverse idler synchro set | (13) Friction plate | (21) Gasket |
| (6) Reverse idler gear bushing | (14) Snap ring | |
| (7) Needle bearing | (15) Washer | |
| (8) Shifting insert key | (16) Snap ring | |

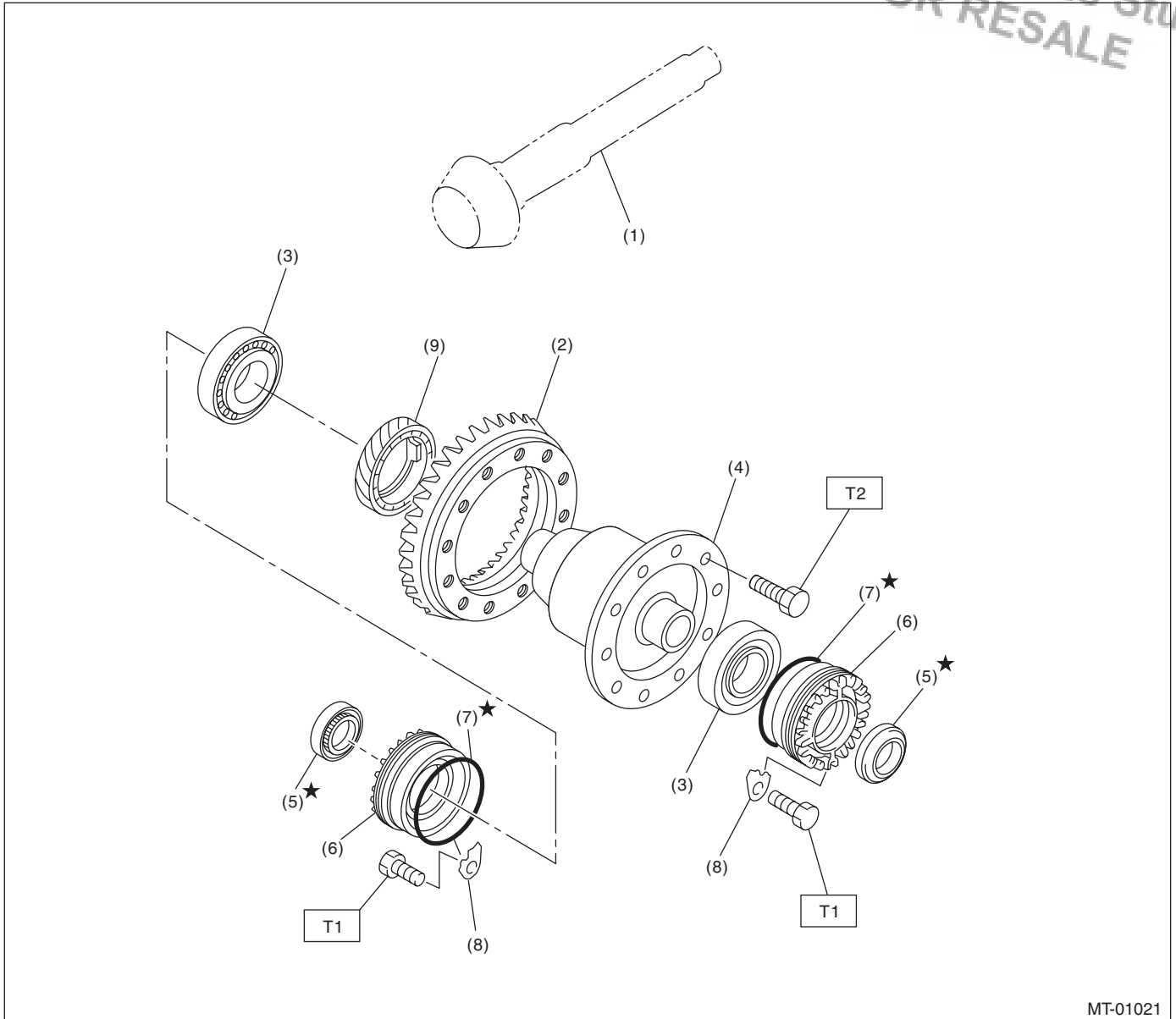
Tightening torque: N·m (kgf·m, ft·lb)

T: 25 (2.5, 18.1)

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

10.FRONT DIFFERENTIAL



MT-01021

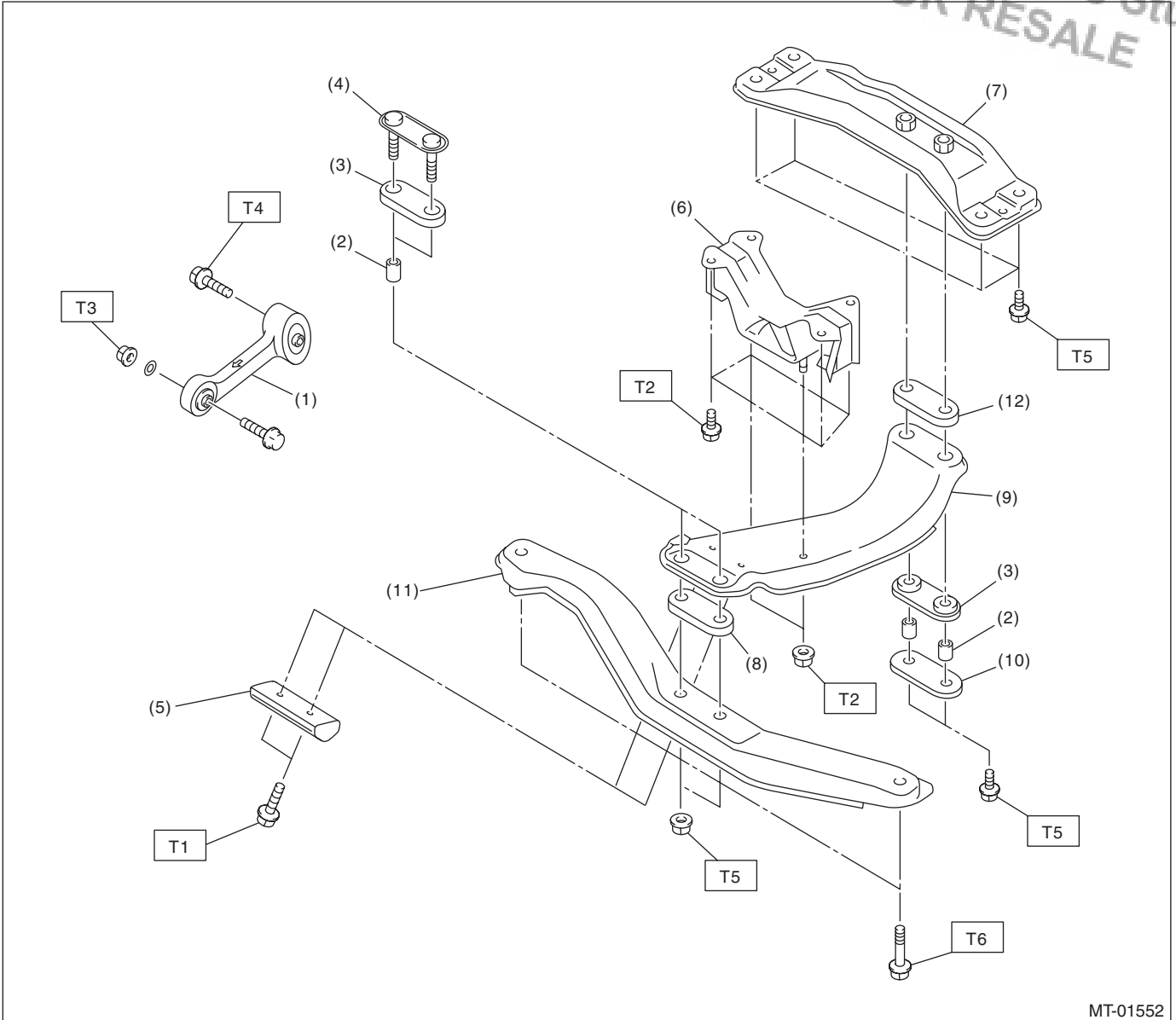
- | | |
|------------------------|--------------------------------|
| (1) Drive pinion shaft | (6) Differential side retainer |
| (2) Hypoid driven gear | (7) O-ring |
| (3) Roller bearing | (8) Retainer lock plate |
| (4) Differential ASSY | (9) Speedometer drive gear |
| (5) Oil seal | |

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

T1: 25 (2.5, 18.1)

T2: 69 (7.0, 50.9)

11. TRANSMISSION MOUNTING



MT-01552

- | | |
|---------------------------------|--------------------------|
| (1) Pitching stopper | (8) Upper cushion rubber |
| (2) Spacer | (9) Center crossmember |
| (3) Lower cushion rubber | (10) Rear plate |
| (4) Front plate | (11) Front crossmember |
| (5) Dynamic damper | (12) Rear cushion rubber |
| (6) Transmission cushion rubber | |
| (7) Rear crossmember | |

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)

C: CAUTION

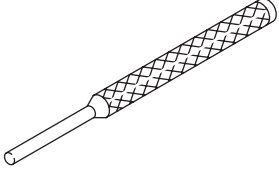
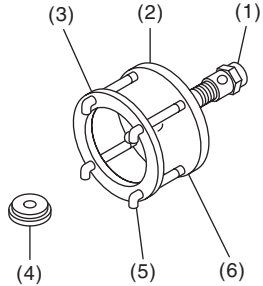
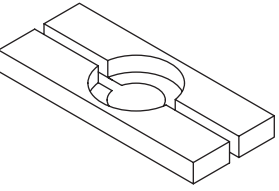
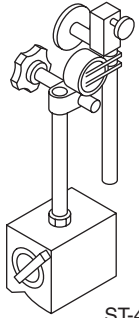
- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the abnormal condition. Avoid unnecessary removal, installation, disassembly and replacement.
- When disassembling the case and other light alloy parts, open the cases by using a plastic hammer. Do not pry apart with screwdrivers or other tools.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Use SUBARU genuine gear oil, grease or the equivalent. Do not mix fluid, grease, etc. of different grades or 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.
- Always replace deformed or damaged snap rings.
- 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 parts.
- Before securing a part on a vise, place cushioning material such as wood blocks, aluminum plate, or cloth between the part and the vise.
- Avoid damaging the mating surface of the case.
- Before applying liquid gasket, completely remove the old gasket.

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

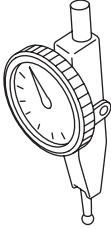
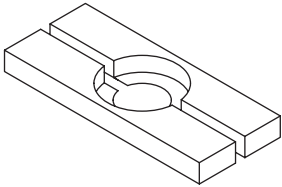
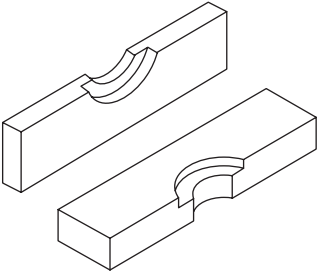
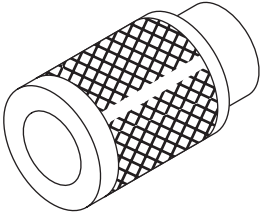
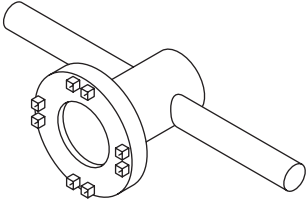
D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST-398791700</p>	398791700	REMOVER	Used for removing and installing the spring pin (6 mm).
 <p>ST-399527700</p>	399527700	PULLER SET	Used for removing and installing the roller bearing (Differential). (1) Bolt (2) Puller (3) Holder (4) Adapter (5) Bolt (6) Nut
 <p>ST-498515700</p>	498515700	REMOVER	Used for removing the roller bearing of the drive pinion shaft.
 <p>ST-498247001</p>	498247001	MAGNET BASE	<ul style="list-style-type: none"> Used for measuring backlash between the side gear, pinion, and hypoid gear. Used together with the DIAL GAUGE (498247100).

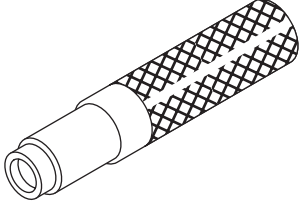
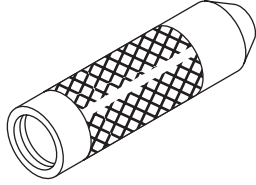
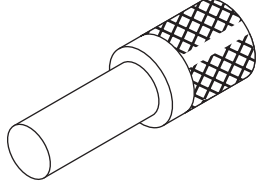
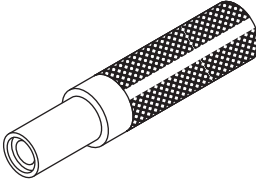
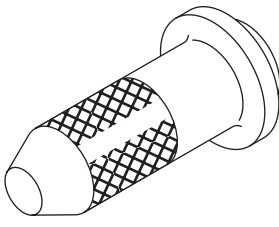
General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-498247100</p>	498247100	DIAL GAUGE	<ul style="list-style-type: none"> • Used for measuring backlash between the side gear, pinion, and hypoid gear. • Used together with the MAGNET BASE (498247001).
 <p style="text-align: center;">ST-498077000</p>	498077000	REMOVER	Used for removing the differential taper roller bearing.
 <p style="text-align: center;">ST-899858600</p>	899858600	REMOVER	Used for removing the roller bearing.
 <p style="text-align: center;">ST-499757002</p>	499757002	INSTALLER	Used for installing the bearing cone of the transfer driven gear (extension core side).
 <p style="text-align: center;">ST-499787000</p>	499787000	WRENCH ASSY	Used for removing and installing the differential side retainer RH.

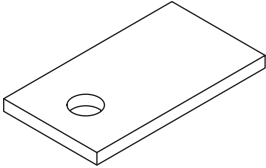
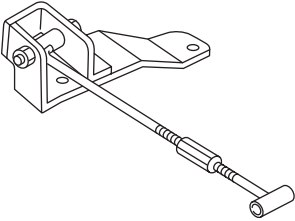
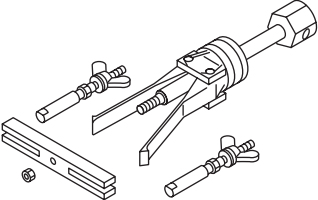
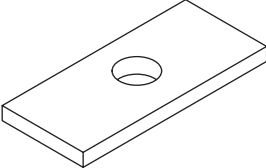
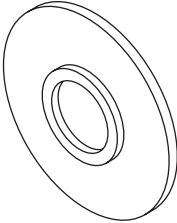
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MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p data-bbox="337 520 467 541">ST-499827000</p>	499827000	PRESS	Used for installing the speedometer oil seal when attaching the speedometer cable to the transmission.
 <p data-bbox="337 877 467 898">ST-499877000</p>	499877000	RACE 4-5 INSTALLER	Used for disassembling the driven shaft and transfer driven gear.
 <p data-bbox="337 1234 467 1255">ST-899864100</p>	899864100	REMOVER	Used for removing the transmission main shaft and drive pinion parts.
 <p data-bbox="337 1591 467 1612">ST-899824100</p>	899824100	PRESS	Used for installing the speedometer shaft oil seal.
 <p data-bbox="337 1948 467 1969">ST-498057300</p>	498057300	INSTALLER	Used for installing the extension oil seal.

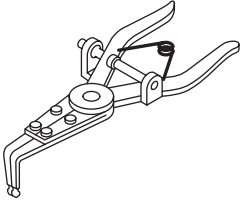
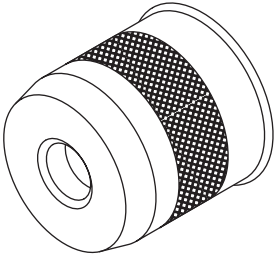
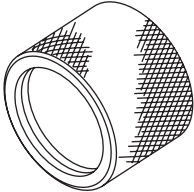
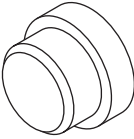
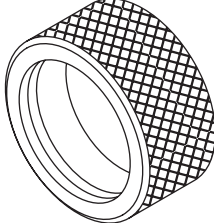
General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-498255400</p>	498255400	PLATE	Used for measuring backlash.
 <p style="text-align: center;">ST41099AC000</p>	41099AC000	ENGINE SUPPORT	Used for supporting engine.
 <p style="text-align: center;">ST-398527700</p>	398527700	PULLER ASSY	Used for removing the extension case oil seal and clutch housing oil seal.
 <p style="text-align: center;">ST-499575500</p>	499575500	GAUGE	Used for measuring the total end play, extension end play and drive pinion height.
 <p style="text-align: center;">ST-398177700</p>	398177700	INSTALLER	Used for assembling the main shaft.

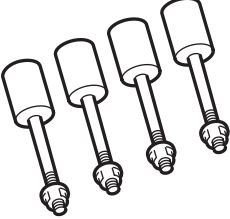

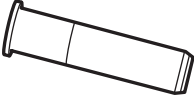
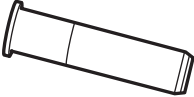
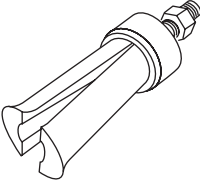
General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p data-bbox="337 520 467 541">ST-399893600</p>	399893600	PLIER	<ul style="list-style-type: none"> • Used for removing and installing the neutral set spring. • Used together with the CLAW (18756AA000).
 <p data-bbox="337 877 467 898">ST-499247400</p>	499247400	INSTALLER	Used for installing the ball bearing of the transfer drive gear.
 <p data-bbox="326 1234 467 1255">ST18675AA000</p>	18675AA000	DIFFERENTIAL SIDE OIL SEAL INSTALLER	Used for installing the differential side retainer oil seal.
 <p data-bbox="337 1591 467 1612">ST-398497701</p>	398497701	SEAT	Used for installing the ball bearing of the transfer drive gear.
 <p data-bbox="337 1948 467 1969">ST-398437700</p>	398437700	INSTALLER	Used for installing the front differential side bearing.

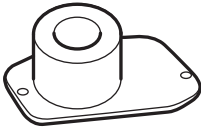

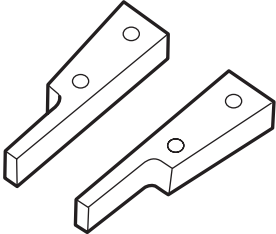


General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18632AA000</p>	18632AA000	STAND ASSY	Used for disassembling and assembling the transmission.
 <p style="text-align: center;">ST18671AA000</p>	18671AA000	OIL SEAL GUIDE	<ul style="list-style-type: none"> • Used for installing the oil seal to the reverse check. • Used together with the INSTALLER (18657AA010).
 <p style="text-align: center;">ST18657AA010</p>	18657AA010	INSTALLER	<ul style="list-style-type: none"> • Used for installing the oil seal to the reverse check. • Used together with the OIL SEAL GUIDE (18671AA000).
 <p style="text-align: center;">ST18657AA000</p>	18657AA000	INSTALLER	Used for installing the oil seal to the shift rod.
 <p style="text-align: center;">ST18758AA000</p>	18758AA000	PULLER	Used for removing the extension taper roller bearing outer race.

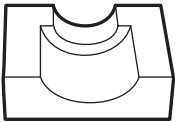
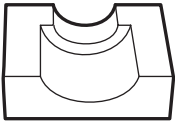
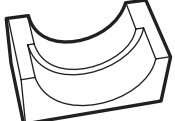
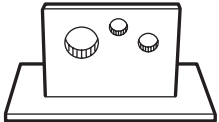

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p data-bbox="326 516 467 537">ST18831AA000</p>	18831AA000	GAUGE	Used for measuring the extension taper roller bearing.
 <p data-bbox="326 873 467 894">ST18631AA000</p>	18631AA000	HANDLE	Used for measuring the front differential backlash.
 <p data-bbox="326 1230 467 1251">ST18756AA000</p>	18756AA000	CLAW	<ul style="list-style-type: none"> • Used for removing and installing the neutral set spring. • Used together with PLIER (399893600).
 <p data-bbox="326 1587 467 1608">ST18754AA000</p>	18754AA000	REMOVER	Used to remove parts of the driven gear.
 <p data-bbox="326 1944 467 1965">ST18757AA000</p>	18757AA000	STRAIGHT PIN REMOVER	Used for installing the reverse idler gear.

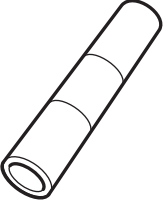
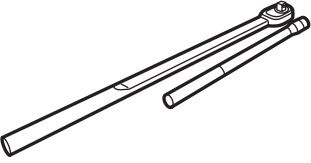



General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18665AA000</p>	18665AA000	HOLDER	<ul style="list-style-type: none"> • Used for removing and installing the main shaft lock nut. • Used together with the BASE (18664AA000).
 <p style="text-align: center;">ST18666AA000</p>	18666AA000	HOLDER	<ul style="list-style-type: none"> • Used for removing and installing the driven shaft lock nut. • Used together with the BASE (18664AA000).
 <p style="text-align: center;">ST18667AA000</p>	18667AA000	HOLDER	<ul style="list-style-type: none"> • Used for removing and installing the drive pinion shaft lock nut. • Used together with the BASE (18664AA000).
 <p style="text-align: center;">ST18664AA000</p>	18664AA000	BASE	<ul style="list-style-type: none"> • Used for removing and installing the main shaft lock nut. • Used for removing and installing the drive pinion shaft lock nut. • Used for removing and installing the driven shaft lock nut.
 <p style="text-align: center;">ST18722AA010</p>	18722AA010	REMOVER	Used for disassembling the main shaft.

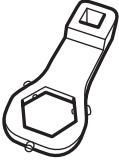
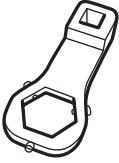
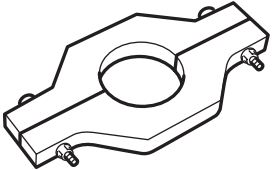
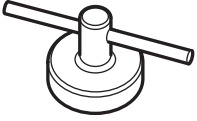
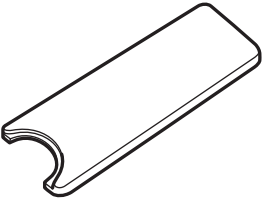
General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p data-bbox="326 520 467 541">ST18651AA000</p>	18651AA000	INSTALLER	Used for assembling the main shaft.
 <p data-bbox="326 877 467 898">ST18852AA000</p>	18852AA000	TORQUE WRENCH	<ul style="list-style-type: none"> • Used to tighten the main shaft lock nut. • Used to tighten the drive pinion shaft lock nut. • Used to tighten the driven shaft lock nut.
 <p data-bbox="326 1234 467 1255">ST18668AA000</p>	18668AA000	PUNCH	Used to crimp the main shaft lock nut.
 <p data-bbox="326 1591 467 1612">ST18669AA000</p>	18669AA000	PUNCH	Used to crimp the driven shaft lock nut.
 <p data-bbox="326 1948 467 1969">ST18670AA000</p>	18670AA000	PUNCH	Used to crimp the drive pinion shaft lock nut.


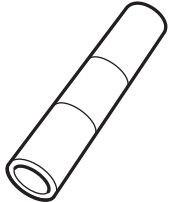
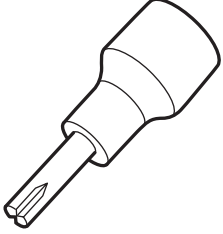
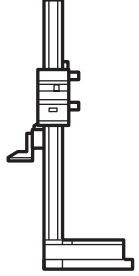
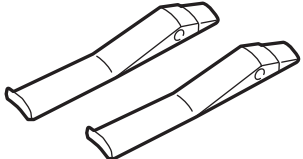
General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18620AA000</p>	18620AA000	ADAPTER WRENCH	Used for removing and installing the driven gear shaft lock nut.
 <p style="text-align: center;">ST18621AA000</p>	18621AA000	ADAPTER WRENCH	Used for removing and installing the drive pinion shaft lock nut.
 <p style="text-align: center;">ST18723AA000</p>	18723AA000	REMOVER	Used for disassembling the driven shaft.
 <p style="text-align: center;">ST18630AA000</p>	18630AA000	WRENCH ASSY	Used for removing and installing the differential side retainer LH.
 <p style="text-align: center;">ST18672AA000</p>	18672AA000	GUIDE CLIP	Used for installing the reverse idler snap ring.

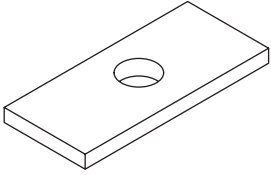
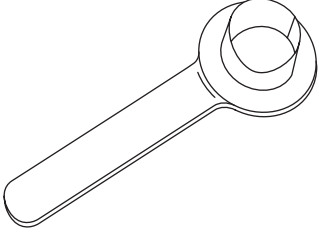
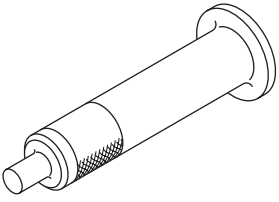
General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p data-bbox="324 514 462 541">ST18720AA000</p>	18720AA000	REMOVER	Used for disassembling the main shaft.
 <p data-bbox="324 871 462 898">ST18654AA000</p>	18654AA000	INSTALLER	Used for assembling the driven shaft.
 <p data-bbox="324 1228 462 1255">ST18663AA000</p>	18663AA000	SOCKET	Used for removing and installing the oil pump cover.
 <p data-bbox="324 1585 462 1612">ST18853AA000</p>	18853AA000	HEIGHT GAUGE	Used for selecting the shift rod.
 <p data-bbox="324 1942 462 1969">ST18760AA000</p>	18760AA000	CLAW	<ul style="list-style-type: none"> • Used for removing the front side retainer bearing outer race. • Used together with PULLER ASSY (398527700).

General Description

MANUAL TRANSMISSION AND DIFFERENTIAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-398643600</p>	398643600	GAUGE	Used for measuring the drive pinion size.
 <p style="text-align: center;">ST28399SA010</p>	28399SA010	OIL SEAL PROTECTOR	Used for protecting oil seal when installing front drive shaft.
 <p style="text-align: center;">ST18657AA020</p>	18657AA020	OIL SEAL INSTALLER	Used for installing the oil seal.

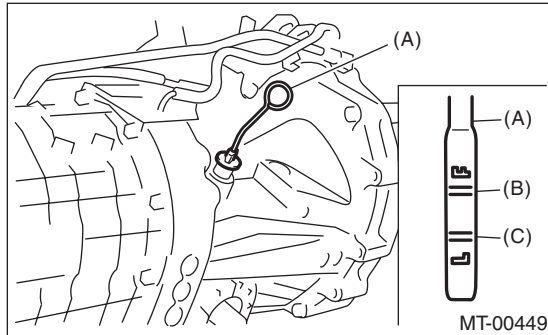
2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance, voltage and current.
Crowbar	Use to pull out the drive shaft.
TORX® bit T70	Used for removing and installing transmission gear oil drain plug.

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 in the proper direction.
- 5) Pull out the oil level gauge again, and record the oil level. If it is the lower level or below, 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 transmission gear oil completely.

CAUTION:

Immediately after the vehicle has been running or after idling for a long time, the ATF will be hot. Be careful not to receive burns.

NOTE:

- Tighten the drain plug of the transmission gear oil after draining the transmission gear oil.
- Use a new gasket.
- For removing and installing the drain plug on the clutch housing side, use TORX® bit T70.

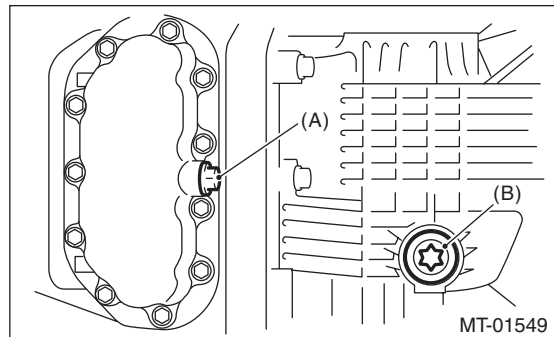
Tightening torque:

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 the 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 the transmission gear, align the protrusion on the top 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.

3. Oil Seal

A: INSPECTION

Check that there is no oil leaking from the oil seal. If there is any deformation, hardening, wear or other problems of the oil seal, replace the oil seal.

B: REPLACEMENT

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

NOTE:

- Tighten the drain plug after draining the gear oil.
- Use a new gasket.
- For removing and installing the drain plug on the clutch housing side, use TORX® bit T70.

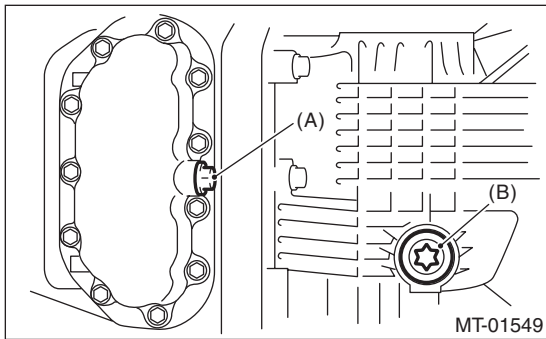
Tightening torque:

Oil pan side

44 N·m (4.5 kgf·m, 32.5 ft·lb)

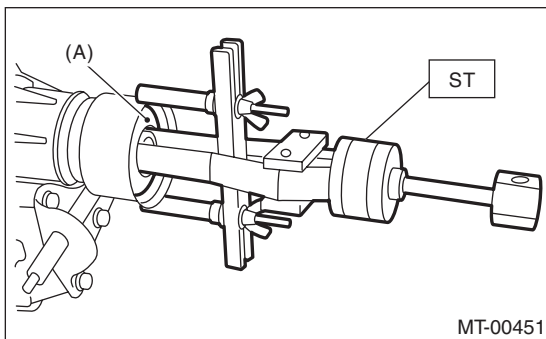
Clutch housing side

70 N·m (7.1 kgf·m, 51.6 ft·lb)



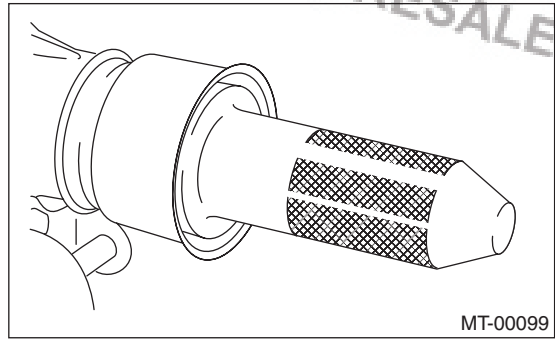
- (A) Drain plug (oil pan side)
- (B) Drain plug (clutch housing side)

- 3) Remove the rear exhaust pipe and muffler.
 - 4) Remove the propeller shaft. <Ref. to DS-15, REMOVAL, Propeller Shaft.>
 - 5) Remove the oil seal using ST.
- 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-16, INSTALLATION, Propeller Shaft.>
- 8) Install the rear exhaust pipe and muffler.
- 9) Pour in gear oil and check the oil level. <Ref. to 6MT-27, REPLACEMENT, Transmission Gear Oil.>

4. Differential Side Retainer Oil Seal

A: INSPECTION

Check that there is no oil leaking from the differential side retainer oil seal. If there is oil leakage, perform the following procedures.

- Replace the oil seal.
- Check the front drive shaft.

B: REPLACEMENT

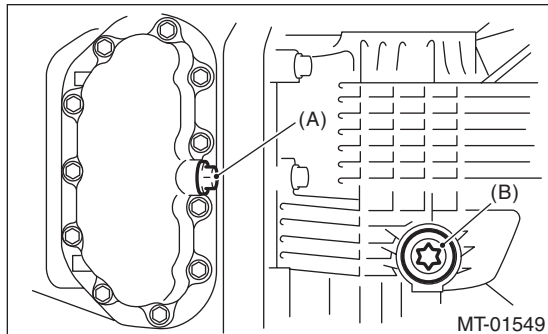
- 1) Lift up the vehicle.
- 2) Remove the front exhaust pipe and center exhaust pipe. <Ref. to EX(H4DOTC)-8, REMOVAL, Front Exhaust Pipe.>
- 3) Drain the gear oil from the drain plug.

CAUTION:

- **Immediately after the vehicle has been running or after idling for a long time, the differential gear oil will be hot. Be careful not to burn yourself.**
- **Be careful not to spill the differential gear oil on exhaust pipe to prevent it from emitting smoke or causing fires. If differential gear oil is spilled on the exhaust pipe, wipe it off completely.**

NOTE:

For removing the drain plug on the clutch housing side, use TORX® bit T70.



- (A) Drain plug (oil pan side)
 (B) Drain plug (clutch housing side)

- 4) Tighten the drain plug.

NOTE:

- Use a new gasket.
- For installing the drain plug on the clutch housing side, use TORX® bit T70.

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)

- 5) Separate the front drive shaft from the transmission. <Ref. to DS-31, REMOVAL, Front Drive Shaft.>

- 6) Remove the differential side retainer oil seal by using a flat tip screwdriver or similar tools.

- 7) Using the ST, install the differential side retainer oil seal by lightly tapping with a hammer.

ST 18675AA000 DIFFERENTIAL SIDE OIL SEAL INSTALLER

- 8) Apply gear oil to the oil seal lip.

- 9) Set the ST to the side retainer.

ST 28399SA010 OIL SEAL PROTECTOR

- 10) Install the front drive shaft into the transmission.

NOTE:

Replace the circlip of drive shaft with a new part.

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

ST 28399SA010 OIL SEAL PROTECTOR

- 12) Install the front exhaust pipe and the center exhaust pipe. <Ref. to EX(H4DOTC)-8, REMOVAL, Front Exhaust Pipe.>

- 13) Lower the vehicle.

- 14) Pour gear oil through the oil level gauge hole.

Recommended gear oil:

<Ref. to 6MT-2, TRANSMISSION GEAR OIL, SPECIFICATION, General Description.>

Gear oil capacity:

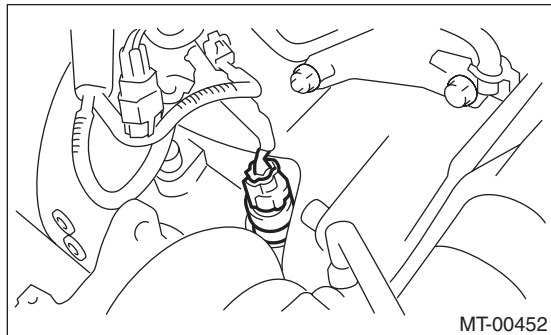
4.1 ℓ (4.3 US qt, 3.6 Imp qt)

- 15) Check the gear oil level. <Ref. to 6MT-27, INSPECTION, Transmission Gear Oil.>

5. Vehicle Speed Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-13, REMOVAL, Intercooler.>
- 3) Disconnect the vehicle speed sensor connector.



- 4) Remove the vehicle speed sensor.

B: INSTALLATION

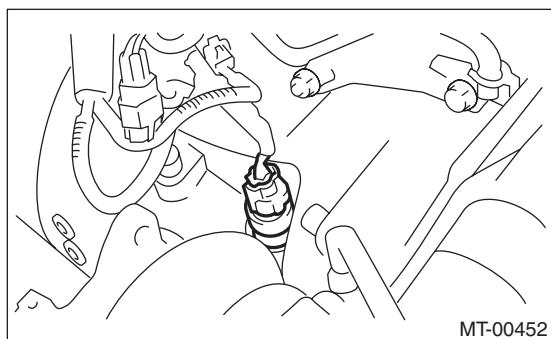
- 1) Match the end of the vehicle speed sensor key into the key groove at the end of the speed meter driven shaft to install.

Tightening torque:

5.9 N·m (0.6 kgf-m, 4.4 ft-lb)

NOTE:

- Make sure to keep the sensor attachment hole clean and free of foreign objects.
- Discard the vehicle speed sensor after removal, and replace with a new sensor.



- 2) Connect the connector to the vehicle speed sensor.
- 3) Install the intercooler. <Ref. to IN(H4DOTC)-14, INSTALLATION, Intercooler.>

C: INSPECTION

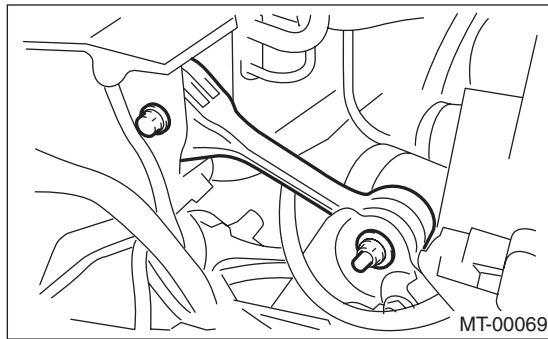
Because the vehicle speed sensor cannot be inspected by itself, check whether the speedometer is operating properly. If it is not operating properly, check the combination meter system. <Ref. to IDI-3, INSPECTION, Combination Meter System.>

6. Transmission Mounting System

A: REMOVAL

1. PITCHING STOPPER

- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-13, REMOVAL, Intercooler.>
- 3) Remove the pitching stopper.



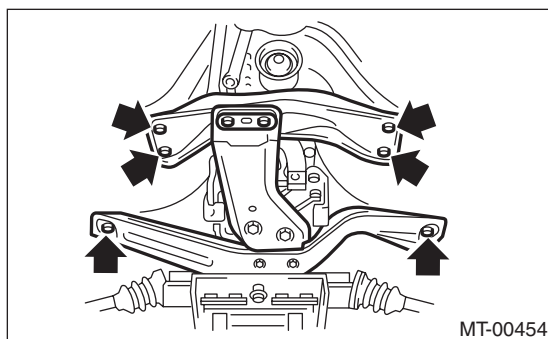
2. CROSSMEMBER AND CUSHION RUBBER

- 1) Disconnect the ground cable from battery.
- 2) Lift up the vehicle.
- 3) Remove the center exhaust pipe. <Ref. to EX(H4DOTC)-10, REMOVAL, Center Exhaust Pipe.>
- 4) Remove the rear exhaust pipe and muffler.
- 5) Set the transmission jack under the transmission body.

CAUTION:

Always support the transmission case with a transmission jack.

- 6) Remove the rear crossmember.



- 7) Remove the transmission cushion rubber.

B: INSTALLATION

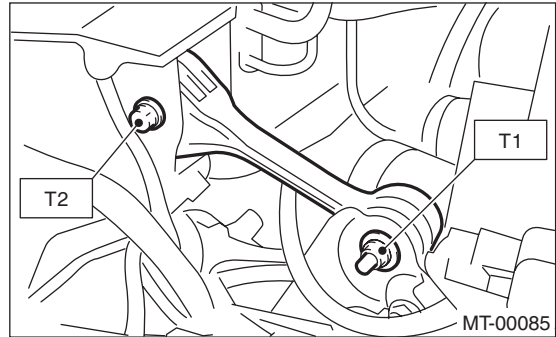
1. PITCHING STOPPER

- 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)-14, INSTALLATION, Intercooler.>
- 3) Connect the ground cable to battery.

2. CROSSMEMBER AND CUSHION RUBBER

- 1) Install the transmission cushion rubber.

Tightening torque:

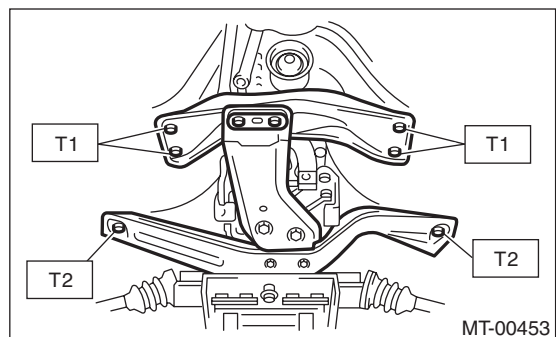
35 N·m (3.6 kgf-m, 25.8 ft-lb)

- 2) Install the cross member.

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)-11, INSTALLATION, Center Exhaust Pipe.>
- 5) Install the rear exhaust pipe and muffler. <Ref. to EX(H4DOTC)-15, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-17, INSTALLATION, Muffler.>

Transmission Mounting System

MANUAL TRANSMISSION AND DIFFERENTIAL

C: INSPECTION

If the following inspection results are unsatisfactory, repair or replace the parts.

1. PITCHING STOPPER

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

Manual Transmission Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

7. Manual Transmission Assembly

A: REMOVAL

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

NOTE:

Set the hood stay into the specified hole.

2) Remove the front wheels.

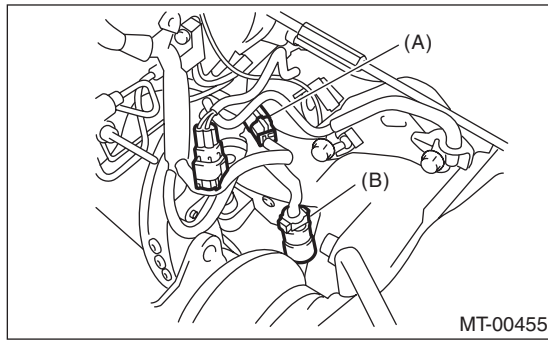
3) Disconnect the ground cable from battery.

4) Remove the intercooler assembly.

<Ref. to IN(H4DOTC)-13, REMOVAL, Intercooler.>

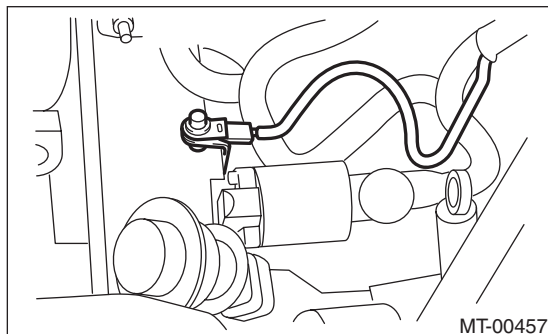
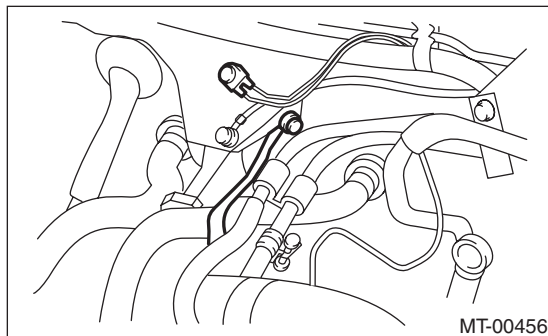
5) Lift up the vehicle, and remove the under cover.

6) Lower the vehicle and disconnect the connector on top of the transmission.



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

7) Disconnect the ground cable on the upper side of the transmission case and body.

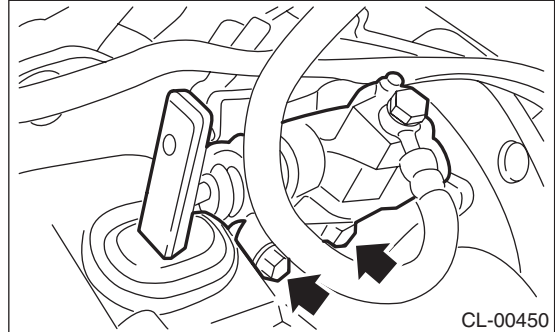


8) Remove the starter assembly. <Ref. to SC(H4SO)-8, REMOVAL, Starter.>

9) Remove the operating cylinder.

NOTE:

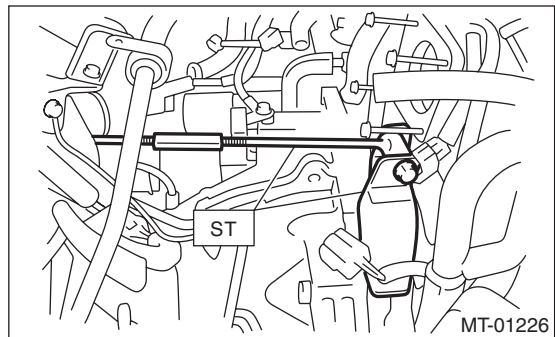
Hang the removed operating cylinder with a piece of wire.



10) Remove the pitching stopper and pitching stopper bracket.

11) Set the ST.

ST 41099AC000 ENGINE SUPPORT

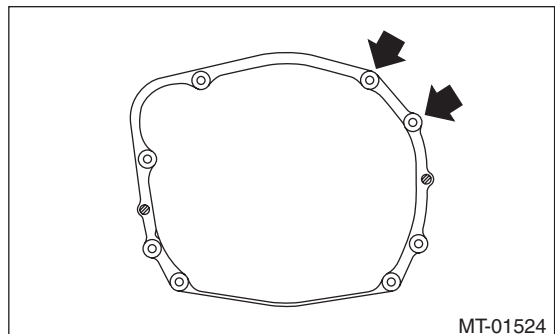


12) Remove the clutch release shaft.

- (1) Remove the plug using a hexagon wrench.
- (2) Attach a 6 mm (0.24 in) bolt to the release shaft, and pull out the release shaft.
- (3) Lift the release fork, and remove from the claw of the release bearing. Pull the release fork to the engine side, and make it so that it moves freely.

13) Remove the throttle body. <Ref. to FU(H4DOTC)-16, REMOVAL, Throttle Body.>

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



15) Lift up the vehicle.

Manual Transmission Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

16) Remove the center and rear exhaust pipes and the muffler. <Ref. to EX(H4DOTC)-10, REMOVAL, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-15, REMOVAL, Rear Exhaust Pipe.>, <Ref. to EX(H4DOTC)-17, REMOVAL, Muffler.>

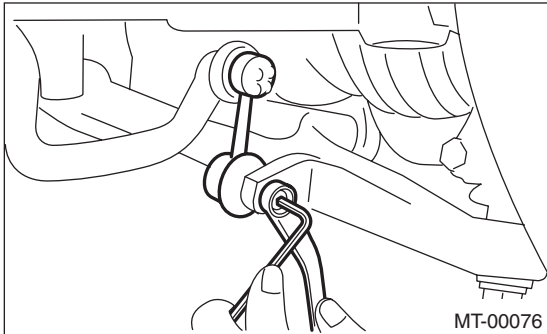
CAUTION:

When removing the exhaust pipes, be careful each exhaust pipe does not drop out.

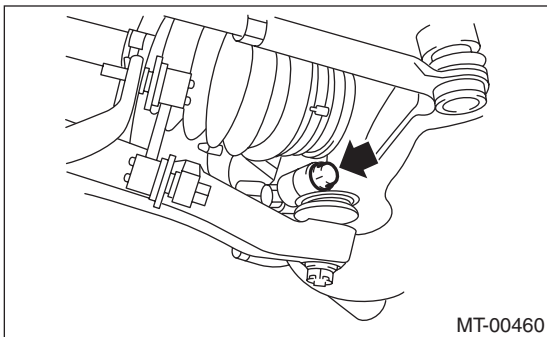
17) Drain the transmission gear oil. <Ref. to 6MT-27, Transmission Gear Oil.>

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

19) Remove the front stabilizer bolt.



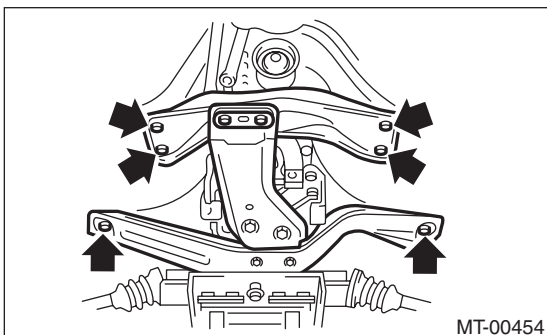
20) Remove the ball joint of the transverse link from the housing.



21) Remove the front drive shaft. <Ref. to DS-31, REMOVAL, Front Drive Shaft.>

22) Hang the front drive shaft with string.

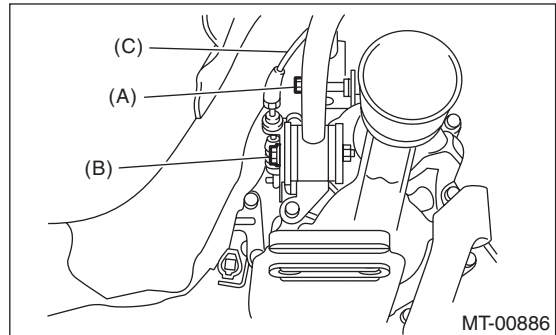
23) Set the transmission jack under the transmission, and remove the front crossmember and rear crossmember.



24) Move the transmission to the right side of the vehicle, and remove the joint COMPL, stay bolts and reverse check cable.

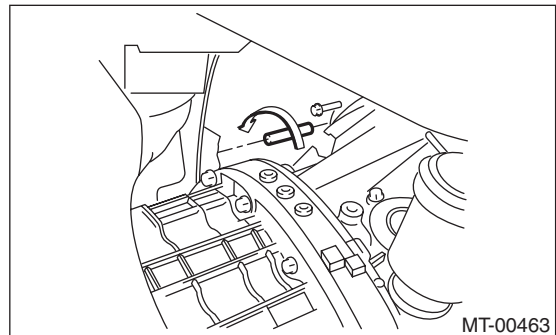
NOTE:

If the transmission is not moved aside, the joint COMPL and stay bolts may contact the body and cause damage.



- (A) Joint COMPL bolt
- (B) Stay bolt
- (C) Reverse check cable

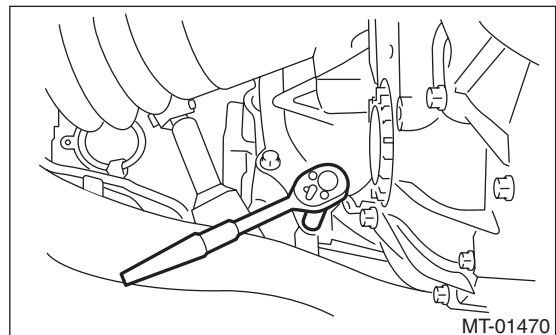
25) Tighten the turnbuckle of the ST to tilt the engine assembly towards the back.



26) Remove the bolts holding the engine and transmission together, and remove the transmission from the vehicle.

NOTE:

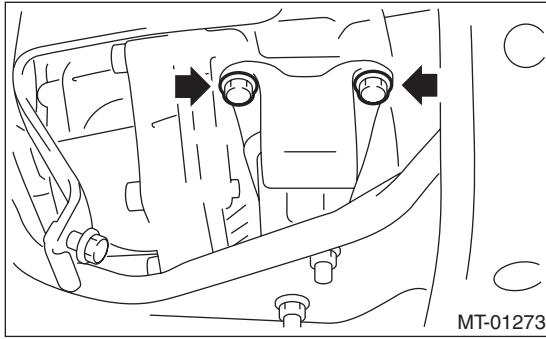
- When pulling towards the rear during removal, be careful not to hit the transmission against the body.
- The clutch pipe and breather pipe may interfere with each other. Remove carefully.



Manual Transmission Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

27) Remove the transmission cushion rubber from transmission.



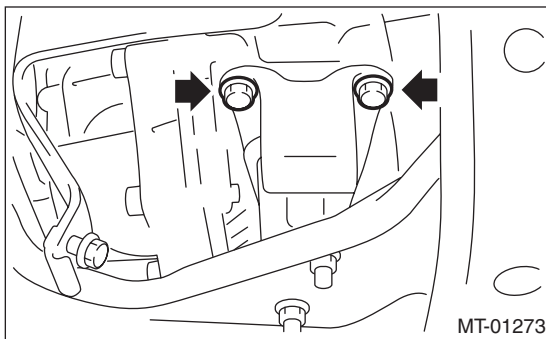
B: INSTALLATION

1) Set the release fork, release bearing and release shaft to the transmission. <Ref. to CL-18, INSTALLATION, Release Bearing and Lever.>

2) Install the transmission cushion rubber to the transmission.

Tightening torque:

35 N·m (3.6 kgf·m, 25.8 ft·lb)



3) Replace the front differential side retainer oil seal.

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

(2) Apply gear oil to the lip of new oil seals.

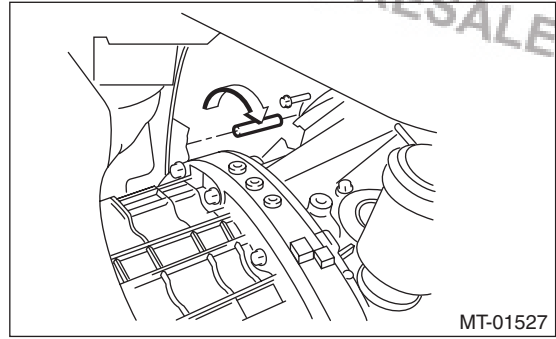
(3) Install a new oil seal using ST.

ST 18675AA000 DIFFERENTIAL SIDE OIL SEAL INSTALLER

NOTE:

Be sure to replace the differential side oil seal after the procedure of removing front drive shaft from transmission.

4) Loosen the turnbuckle of ST to return the engine to its original position.



5) Install the transmission.

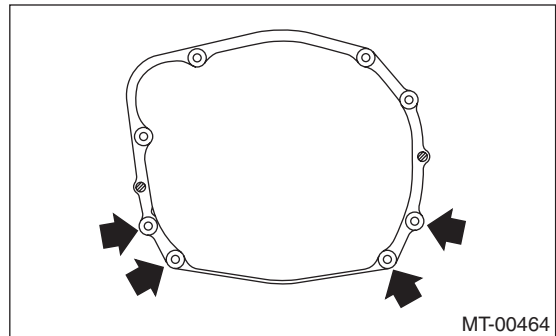
6) Tighten the bolts and nuts which hold the lower side of transmission to the engine.

NOTE:

- Make sure that the main shaft spline is completely inserted.
- Make sure that the rear end of the engine is set low.

Tightening torque:

50 N·m (5.1 kgf·m, 36.9 ft·lb)

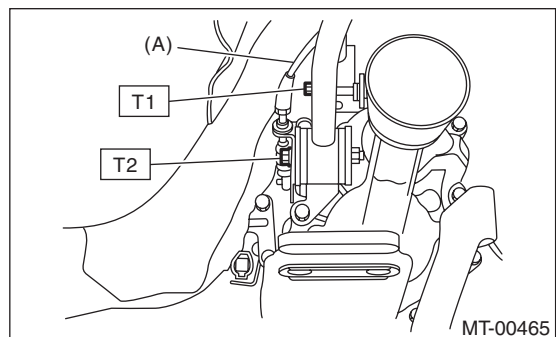


7) Move the transmission to the right side of the vehicle, and attach the joint COMPL, stay bolts and reverse check cable.

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

Manual Transmission Assembly

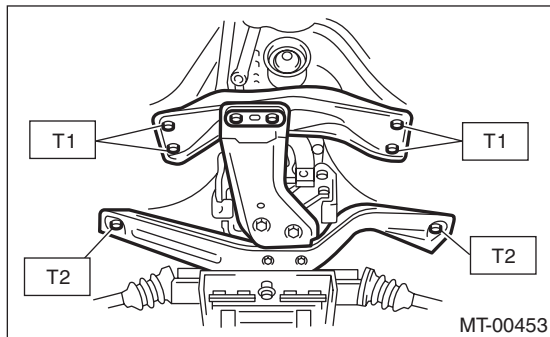
MANUAL TRANSMISSION AND DIFFERENTIAL

8) Install the front crossmember and rear crossmember.

Tightening torque:

T1: 70 N·m (7.1 kgf·m, 51.6 ft·lb)

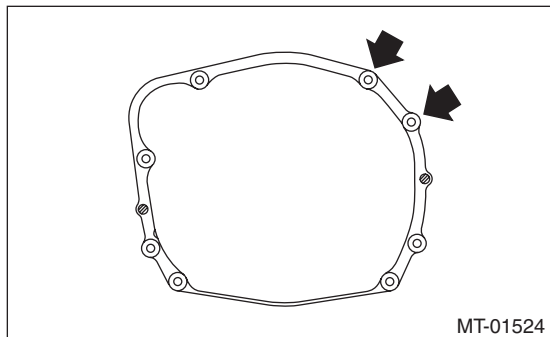
T2: 140 N·m (14.3 kgf·m, 103 ft·lb)



9) Tighten the bolts which hold the upper side of the transmission to the engine.

Tightening torque:

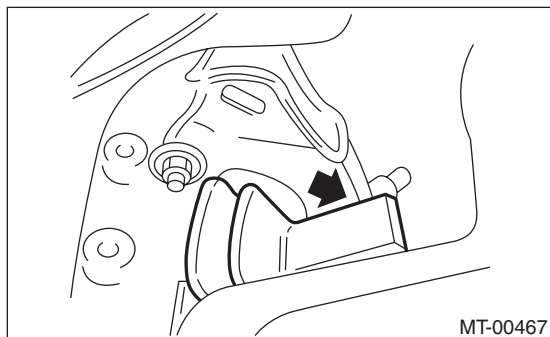
50 N·m (5.1 kgf·m, 36.9 ft·lb)



10) Make sure that the release bearing is completely inserted.

NOTE:

- Push the release fork towards the operating cylinder side until a clicking sound is heard. Pull the release fork towards the engine side. If the release fork is not in contact with the case, the setting is complete.
- Confirm that the boot cover is set securely.



11) Install the pitching stopper bracket.

Tightening torque:

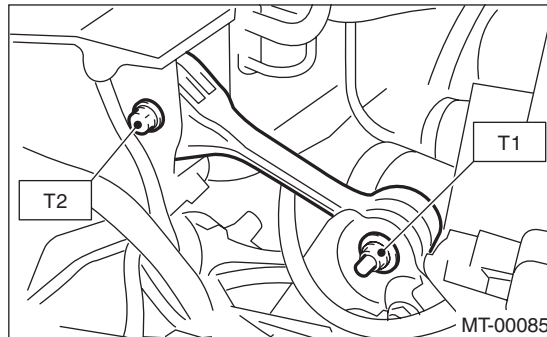
41 N·m (4.2 kgf·m, 30.2 ft·lb)

12) 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)



13) Install the throttle body. <Ref. to FU(H4DOTC)-

16, INSTALLATION, Throttle Body.>

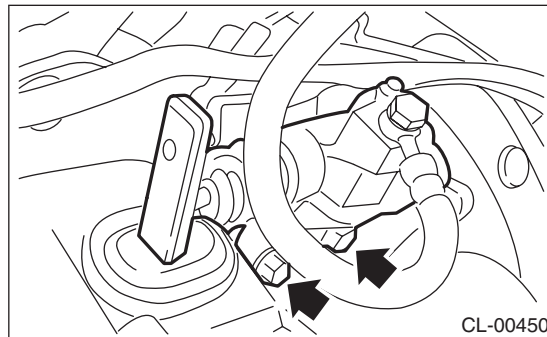
14) Install the operating cylinder.

Tightening torque:

41 N·m (4.2 kgf·m, 30.2 ft·lb)

NOTE:

Check that the clutch hose is routed properly.

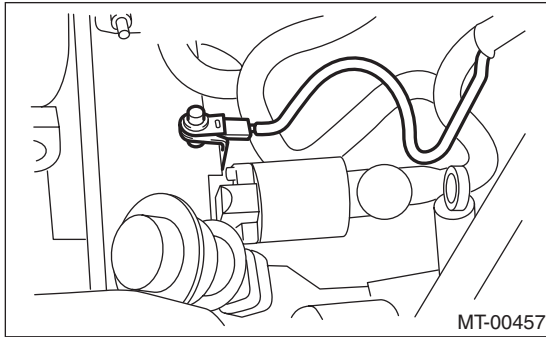
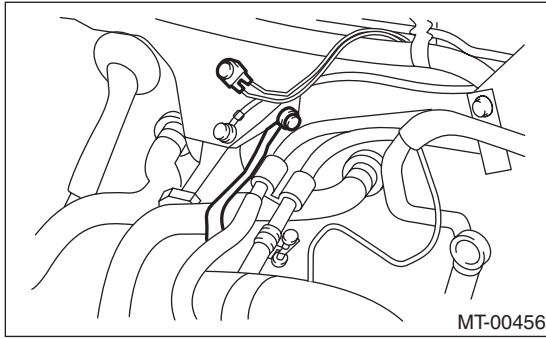


15) Install the starter assembly. <Ref. to SC(H4SO)-8, INSTALLATION, Starter.>

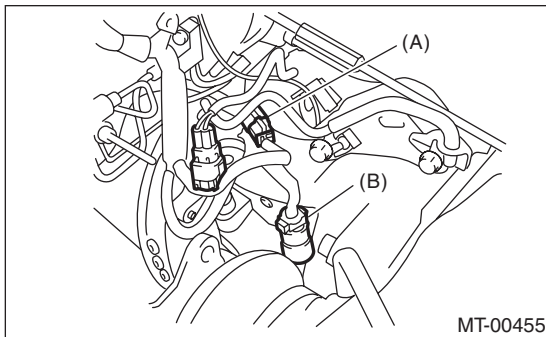
Manual Transmission Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

16) Attach the ground cable to the transmission and body.

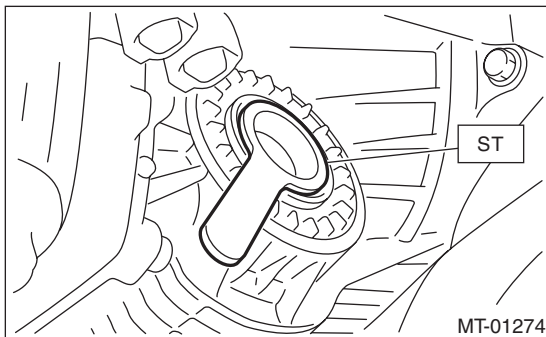


17) Connect the connector on the top of the transmission.



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

18) Set the ST to the differential side retainer.
ST 28399SA010 OIL SEAL PROTECTOR



19) Install the front drive shaft into the transmission.

NOTE:

Replace the circlip of drive shaft with a new part.

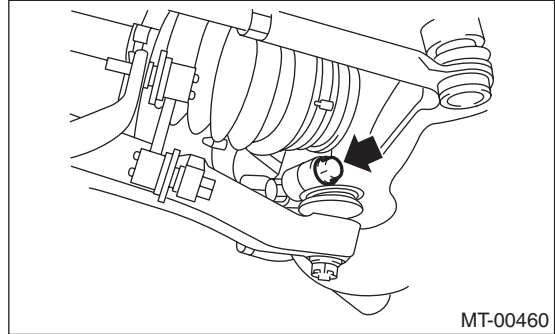
20) Install the front drive shaft into transmission, remove the ST and insert the drive shaft securely.

ST 28399SA010 OIL SEAL PROTECTOR

21) Install the ball joint of the transverse link into the housing.

Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)



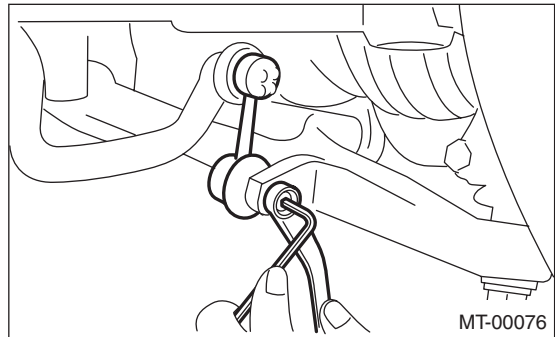
22) Install the front stabilizer nut.

Tightening torque:

45 N·m (4.6 kgf-m, 33.2 ft-lb)

NOTE:

Use a new self-locking nut.



23) Install the propeller shaft. <Ref. to DS-16, INSTALLATION, Propeller Shaft.>

24) Install the center exhaust pipe.

<Ref. to EX(H4DOTC)-11, INSTALLATION, Center Exhaust Pipe.>

25) Install the rear exhaust pipe and muffler. <Ref. to EX(H4DOTC)-15, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-17, INSTALLATION, Muffler.>

26) Install the under cover.

27) Install the intercooler assembly.

<Ref. to IN(H4DOTC)-14, INSTALLATION, Intercooler.>

28) Connect the ground cable to battery.

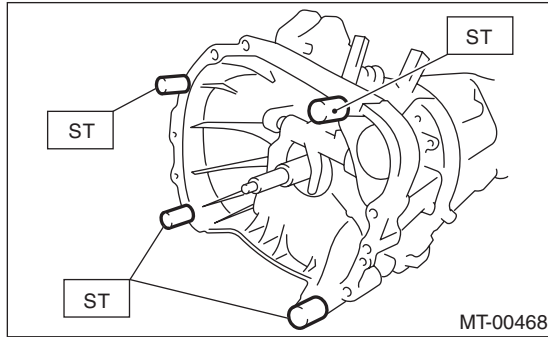
8. Preparation for Overhaul

A: PROCEDURE

1) Clean oil, grease, dirt and dust from the transmission.

2) Attach the transmission to the ST.

ST 18632AA000 STAND ASSY



3) Apply oil to rotating parts before assembly.

4) When reusing disassembled parts, reinstall in the original positions and directions.

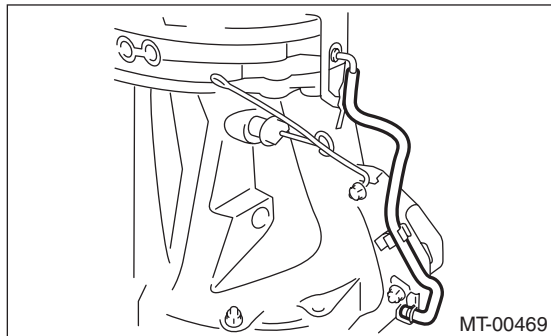
5) Gaskets, lock washers and lock nuts must always be replaced with new parts.

6) Apply liquid gasket to the specified areas to prevent leakage.

9. Air Breather Hose

A: REMOVAL

Disconnect the air breather hose.

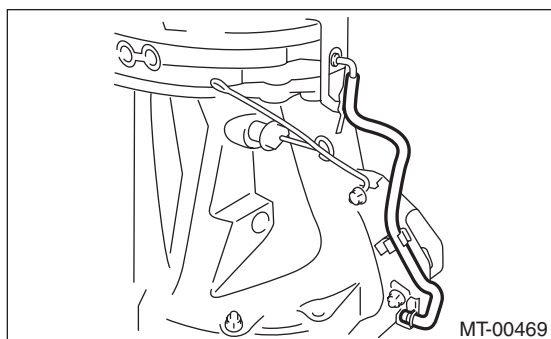


B: INSTALLATION

Install the air breather hose.

NOTE:

Install so that the hose is not folded over, excessively bent or twisted.



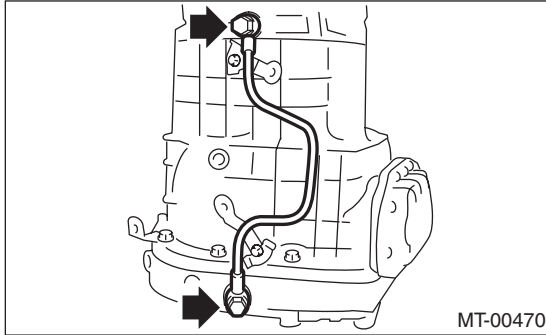
C: INSPECTION

Make sure the hose is not cracked or clogged.

10. Oil Pipe

A: REMOVAL

Remove the oil pipe.



B: INSTALLATION

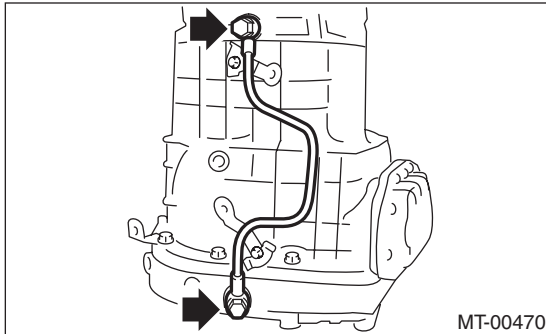
Install in the reverse order of removal.

NOTE:

Use a new gasket.

Tightening torque:

32 N·m (3.3 kgf·m, 23.6 ft·lb)



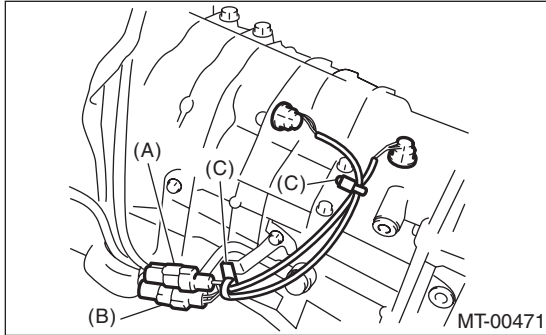
C: INSPECTION

- 1) Check that there is no damage on the pipe. Replace the pipe if there is damage.
- 2) Check the pipe connections for oil leakage. If there is oil leakage, replace the gasket.

11. Back-up Light Switch

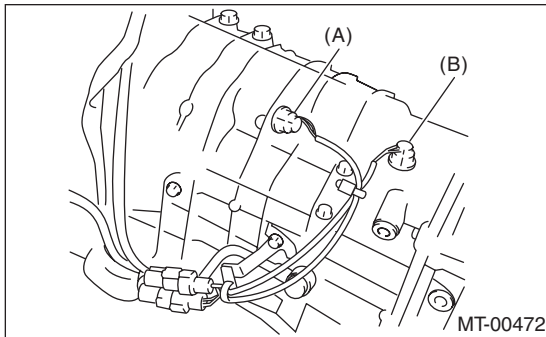
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, 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) Disconnect the back-up light switch.



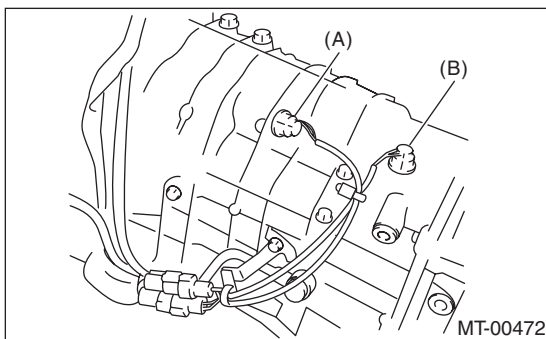
- (A) Back-up light switch
- (B) Neutral position switch

B: INSTALLATION

- 1) Install the back-up light switch.

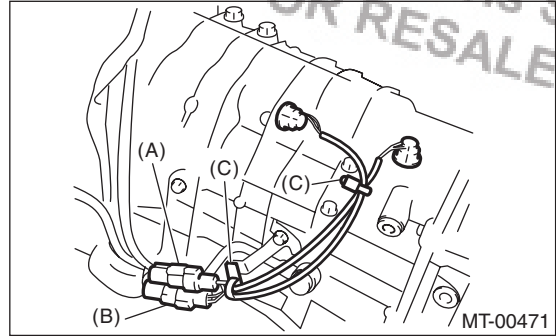
Tightening torque:

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.

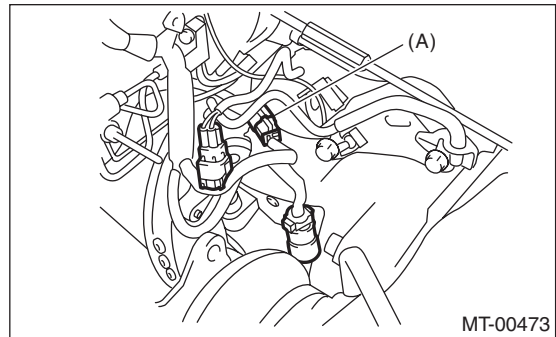


- (A) Back-up light switch connector (White)
- (B) Neutral position switch connector (Black)
- (C) Clip

- 3) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: INSPECTION

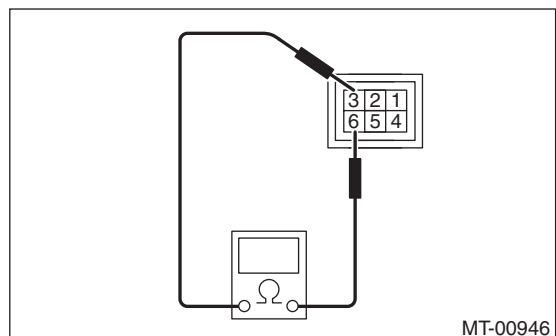
- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-13, REMOVAL, Intercooler.>
- 3) Disconnect the transmission harness and chassis harness.



- (A) Transmission connector

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

Gear shift position	Terminal No.	Specification
Back position	3 and 6	Less than 1 Ω
Other positions		1 MΩ or more



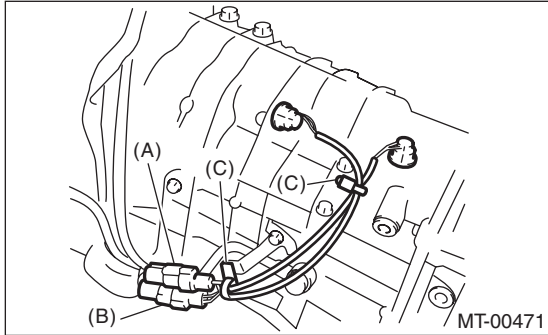
Neutral Position Switch

MANUAL TRANSMISSION AND DIFFERENTIAL

12. Neutral Position Switch

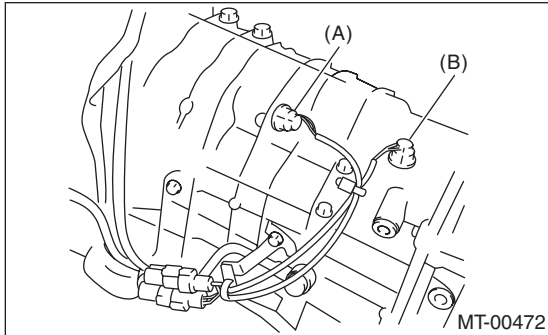
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Disconnect the connector and clip of the neutral position switch.



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

- 3) Remove the neutral position switch.



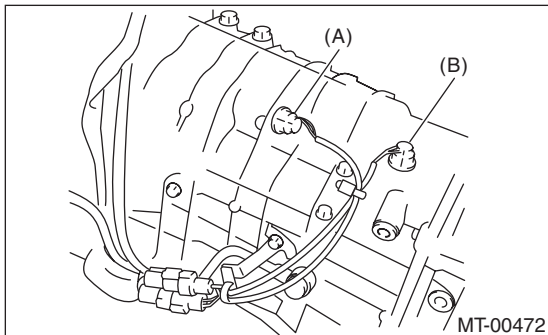
- (A) Back-up light switch
- (B) Neutral position switch

B: INSTALLATION

- 1) Install the neutral position switch.

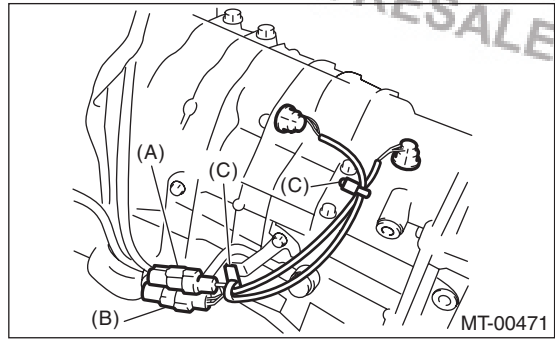
Tightening torque:

32 N·m (3.3 kgf·m, 23.6 ft·lb)



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

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

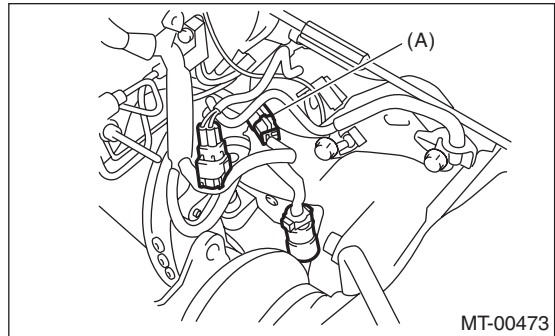


- (A) Back-up light switch connector (White)
- (B) Neutral position switch connector (Black)
- (C) Clip

- 3) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: INSPECTION

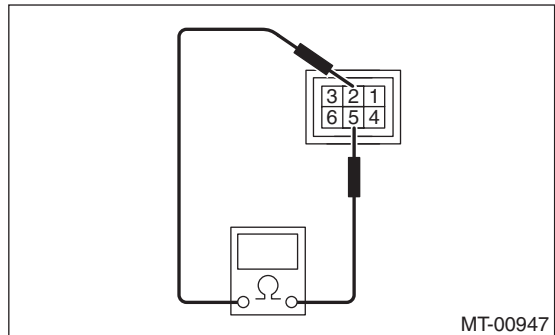
- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-13, REMOVAL, Intercooler.>
- 3) Disconnect the transmission harness and chassis harness.



- (A) Transmission connector

- 4) Measure the resistance between neutral position switch terminals. If not within the standard values, replace the neutral position switch.

Gear shift position	Terminal No.	Specification
Neutral position	2 and 5	Less than 1 Ω
Other positions		1 MΩ or more

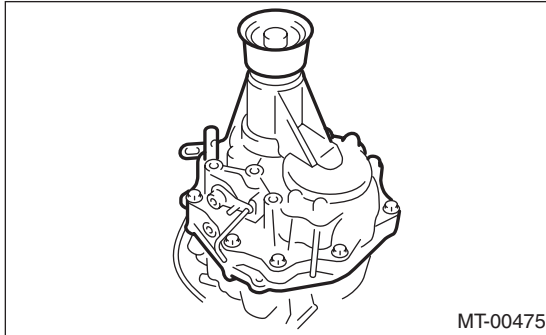


MT-00947

13.Extension Case

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the extension case.



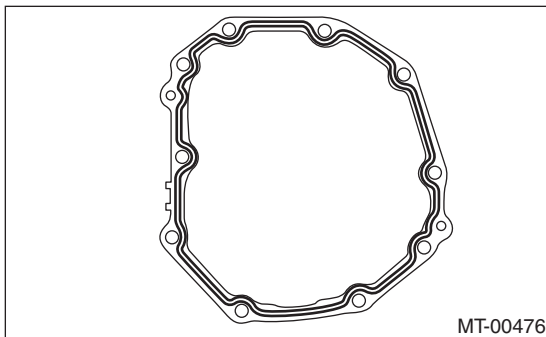
- 4) Remove any remaining liquid gasket from the extension case and transmission case.

B: INSTALLATION

- 1) Select the thrust washer of the transfer driven gear, and attach to the extension case. <Ref. to 6MT-45, ADJUSTMENT, Extension Case.>
- 2) Apply a thin coat of oil to the outer surface of the bearing cone, and attach to the extension case.
- 3) Select the thrust washer of the transfer drive gear, and attach to the center differential.
- 4) Apply liquid gasket to the transmission case.

Liquid gasket:

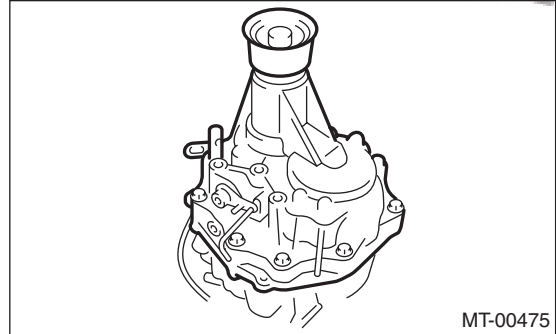
THREE BOND 1215 (Part No. 004403007)



- 5) Install the extension case.

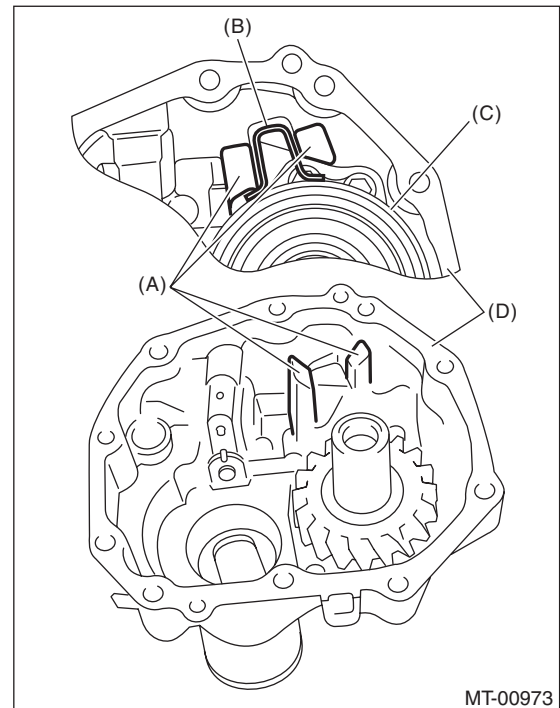
Tightening torque:

48 N·m (4.9 kgf-m, 35.4 ft-lb)



NOTE:

Insert the stopper section of the center differential between the extension guides.



- (A) Extension guide
- (B) Stopper
- (C) Center differential
- (D) Extension case

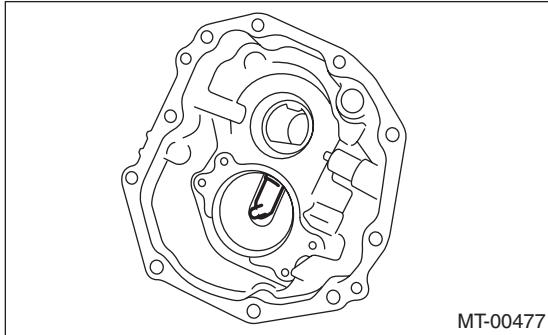
- 6) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

Extension Case

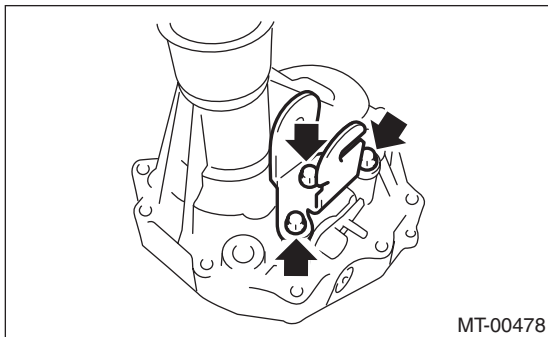
MANUAL TRANSMISSION AND DIFFERENTIAL

C: DISASSEMBLY

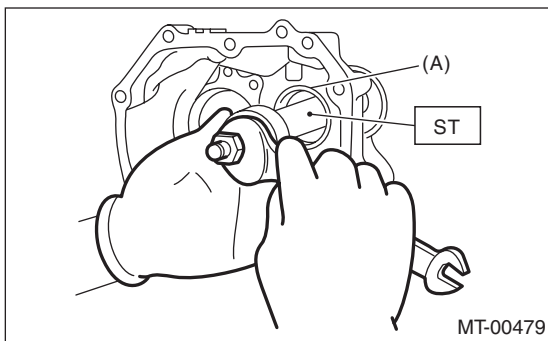
- 1) Remove the transfer drive gear. <Ref. to 6MT-52, REMOVAL, Transfer Drive Gear.>
- 2) Remove the extension guide.



- 3) Remove the shift bracket.

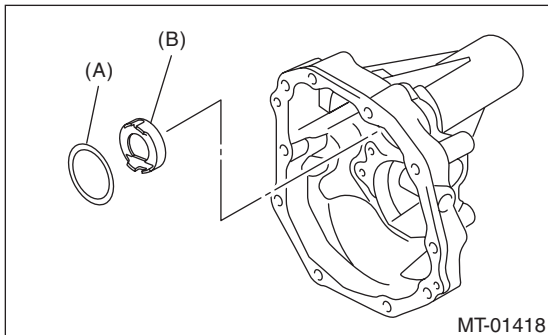


- 4) Remove the bearing cone using the ST.
ST 18758AA000 PULLER



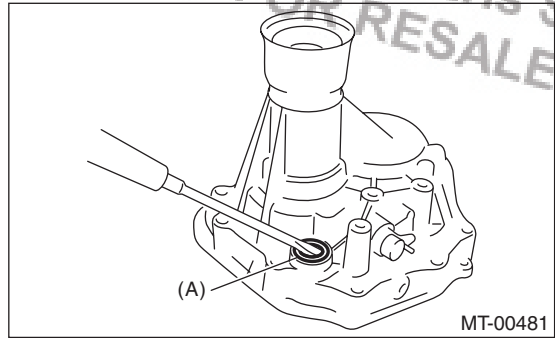
(A) Bearing cone

- 5) Remove the thrust washer and oil plate.



(A) Thrust washer
(B) Oil plate

- 6) Remove the shifter arm oil seal.

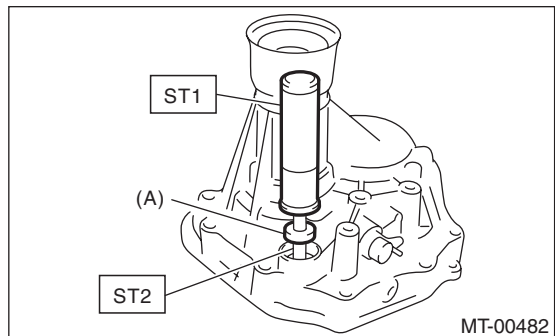


(A) Oil seal

- 7) Remove the reverse check system. <Ref. to 6MT-49, REMOVAL, Reverse Check System.>
- 8) Remove the extension oil seal. <Ref. to 6MT-28, REPLACEMENT, Oil Seal.>

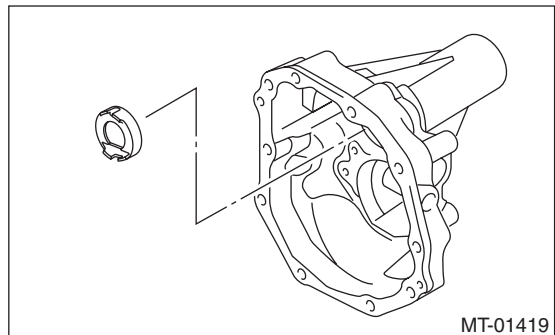
D: ASSEMBLY

- 1) Install the reverse check system. <Ref. to 6MT-50, INSTALLATION, Reverse Check System.>
- 2) Install the extension case oil seal. <Ref. to 6MT-28, REPLACEMENT, Oil Seal.>
- 3) Install a shifter arm oil seal using the ST.
ST1 18657AA000 INSTALLER
ST2 18671AA000 OIL SEAL GUIDE



(A) Oil seal

- 4) Install the oil plate.

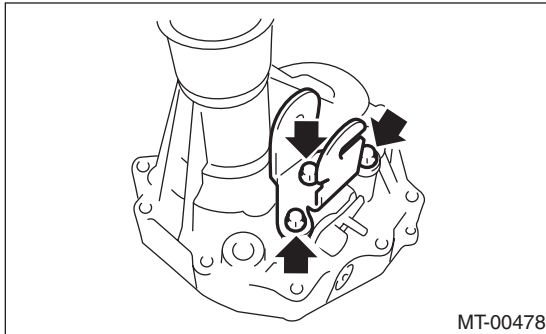


- 5) Select the thrust washer of the bearing, and attach to the extension case. <Ref. to 6MT-45, ADJUSTMENT, Extension Case.>

- 6) Apply a thin coat of oil to the outer surface of the bearing cone, and attach to the extension case.
- 7) Install the shift bracket.

Tightening torque:

25 N·m (2.5 kgf·m, 18.1 ft·lb)



MT-00478

- 8) Attach the extension guide and the transfer driven gear. <Ref. to 6MT-52, INSTALLATION, Transfer Drive Gear.>

E: INSPECTION

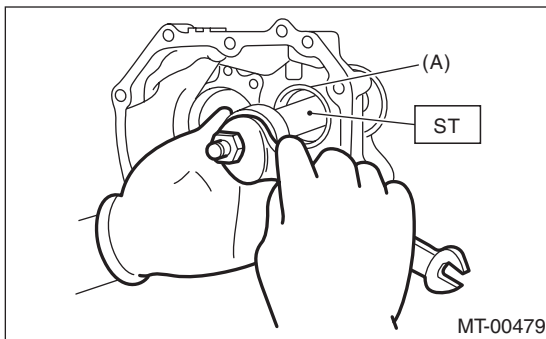
- 1) Check to make sure there is no damage or cracks on the extension case. If damage or cracking is found, replace the extension case.
- 2) Inspect for oil leaks at the extension case and transmission case oil seals and mating surfaces. If there are oil leaks, replace the oil seal and liquid gasket.

F: ADJUSTMENT

1. TRANSFER DRIVEN GEAR BEARING THRUST WASHER ADJUSTMENT

- 1) Remove the bearing cone from the extension case using the ST.

ST 18758AA000 PULLER



MT-00479

(A) Bearing cone

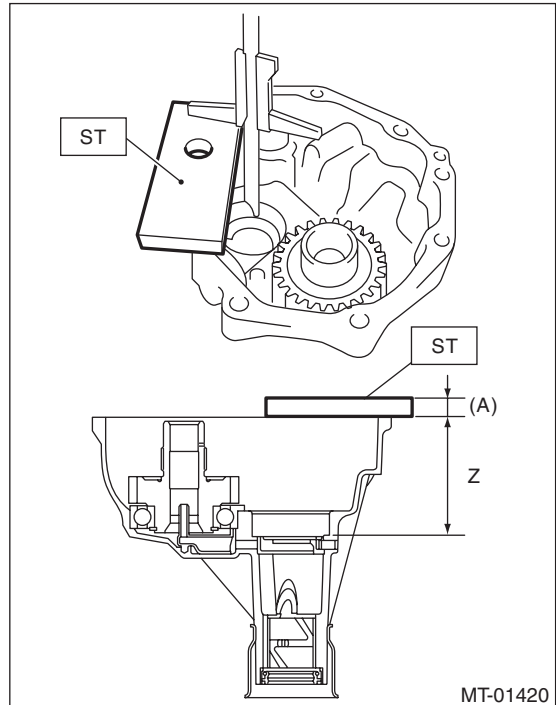
- 2) Remove the thrust washer.

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

ST 499575500 GAUGE

NOTE:

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



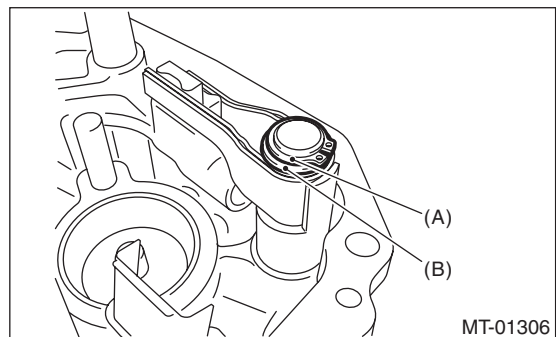
MT-01420

(A) 15 mm (0.59 in)

- 4) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>

- 5) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>

- 6) Remove the snap ring and flat washer from the selector arm area.



MT-01306

(A) Snap ring

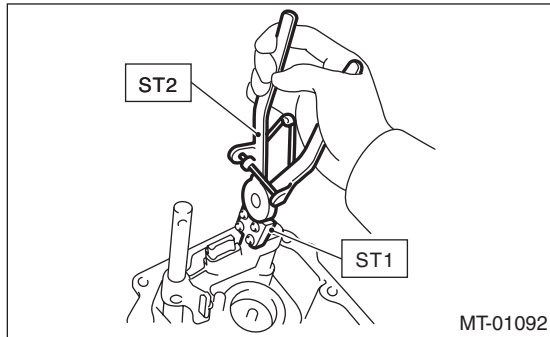
(B) Flat washer

Extension Case

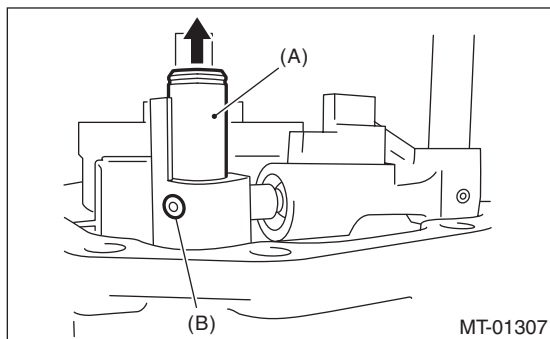
MANUAL TRANSMISSION AND DIFFERENTIAL

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

ST1 18756AA000 CLAW
ST2 399893600 PLIER

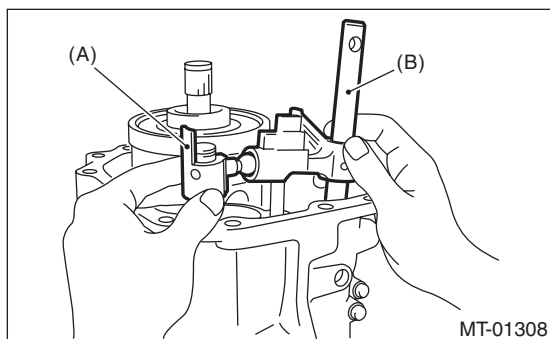


8) Lift the striking rod, and remove the spring pin.



(A) Striking rod
(B) Spring pin

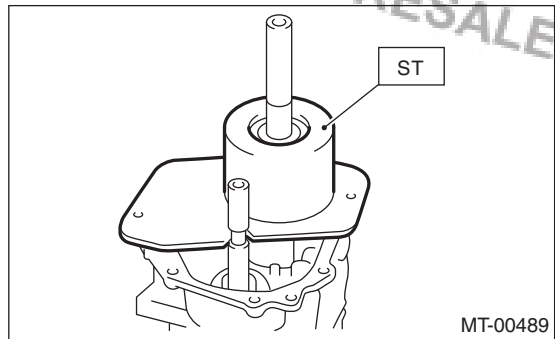
9) Remove the selector arm No. 2 and the shifter arm.



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

10) Attach the bearing cone to the transfer driven gear.

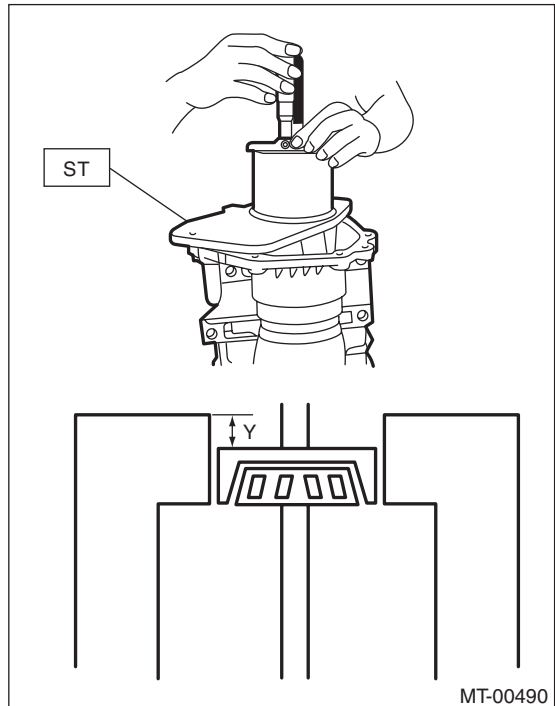
11) Set the ST.
ST 18831AA000 GAUGE



12) Turn the transfer driven gear 10 or more times to seat the bearing properly.

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

ST 18831AA000 GAUGE



14) Using the following calculation, calculate the transfer driven gear bearing thrust washer value t.
 $t = Z - (100 - Y) - \{0.02 - 0.11 \text{ mm} (0.0008 - 0.0043 \text{ in})\}$

t mm (in)	Transfer driven gear bearing thrust washer thickness
Y mm (in)	Depth between the end of the ST and the bearing cone.
Z mm (in)	Depth between the end of the extension case and the bearing cone contact area.
0.02 — 0.11 mm (0.0008 — 0.0043 in)	Standard clearance between the thrust washer and taper roller bearing
100 mm (3.94 in)	Height of ST

15) Refer to the calculated value t to select the closest thrust washer from the following table.

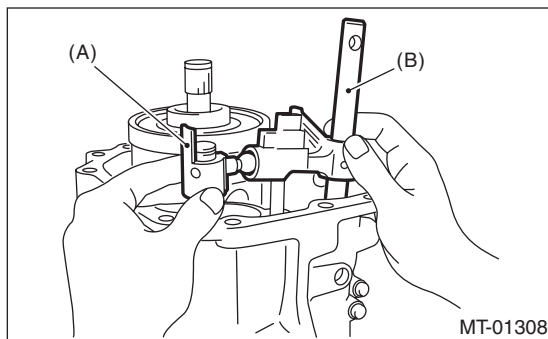
Standard clearance between the thrust washer and taper roller bearing
0.02 — 0.11 mm (0.0008 — 0.0043 in)

NOTE:

Match to be within the standard clearance 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)
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)

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

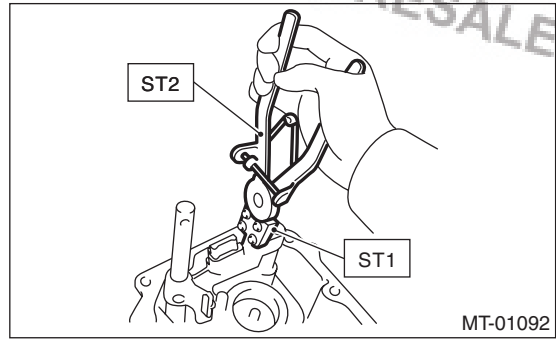


- (A) Selector arm No. 2
- (B) Shifter arm

17) Install a new spring pin.

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

- ST1 18756AA000 CLAW
- ST2 399893600 PLIER

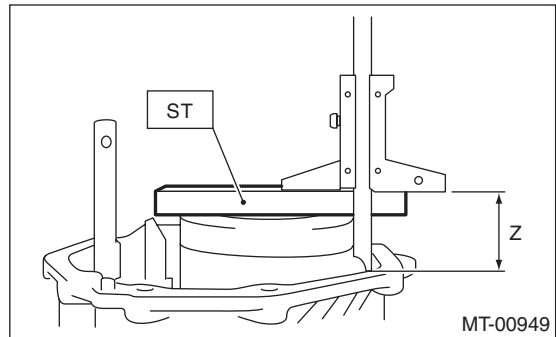


- 19) Install the flat washer and snap ring.
- 20) Install the center differential.

2. TRANSFER DRIVE GEAR THRUST WASHER SELECTION

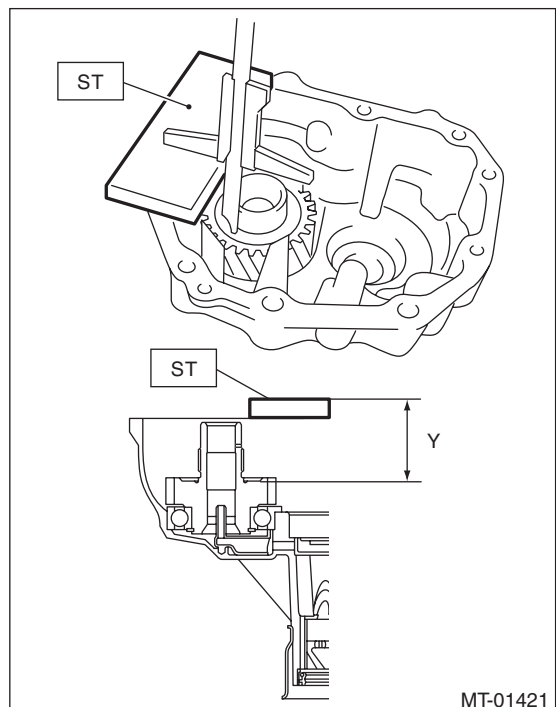
1) Measure height "Z" between the transmission case end area and ST.

- ST 499575500 GAUGE



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

- ST 499575500 GAUGE



Extension Case

MANUAL TRANSMISSION AND DIFFERENTIAL

3) Using the following calculation, calculate the transfer drive gear thrust washer value t .

$$t = \{Y - 15 \text{ mm (1.18 in)}\} - \{Z - 15 \text{ mm (1.18 in)}\} - 0.75 - 0.95 \text{ mm (0.030 - 0.037 in)}$$

t mm (in)	Transfer drive gear thrust washer thickness
Y mm (in)	Depth between the end of the ST and the transfer drive gear
Z mm (in)	Height from the end of the transmission case to the end of the ST.
0.75 — 0.95 mm (0.030 — 0.037 in)	Standard clearance between the thrust washer and transfer drive gear
15 mm (1.18 in)	Thickness of ST

4) Refer to the calculated value “ t ” to select the closest thrust washer from the following table.

Standard clearance between the thrust washer and transfer drive gear

0.75 — 0.95 mm (0.030 — 0.037 in)

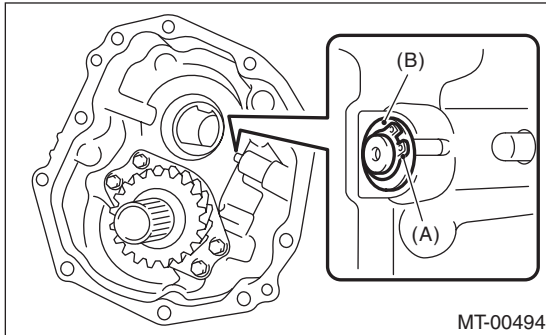
Thrust washer (36.3 × 52 × t)	
Part No.	Thickness mm (in)
803036070	0.80 (0.0315)
803036071	0.95 (0.0374)
803036072	1.10 (0.0433)
803036073	1.25 (0.0492)
803036074	1.40 (0.0551)
803036075	0.65 (0.0256)

5) Install the selected thrust washer.

14. Reverse Check System

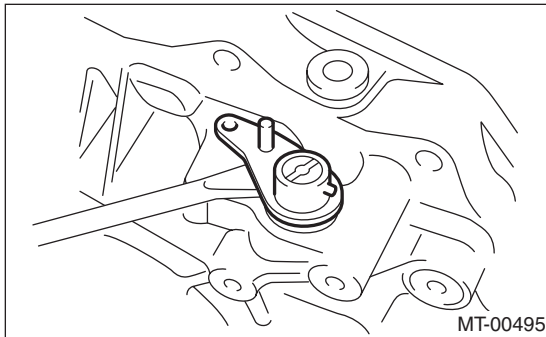
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 4) Remove the snap ring and washer from the reverse check shaft.



- (A) Snap ring
- (B) Washer

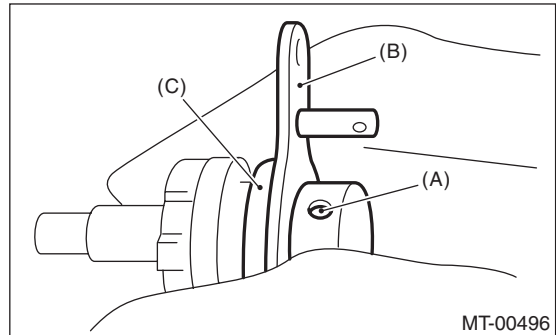
- 5) Remove the reverse check shaft and spring from the extension case.



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

NOTE:

Do not reuse the oil seal.

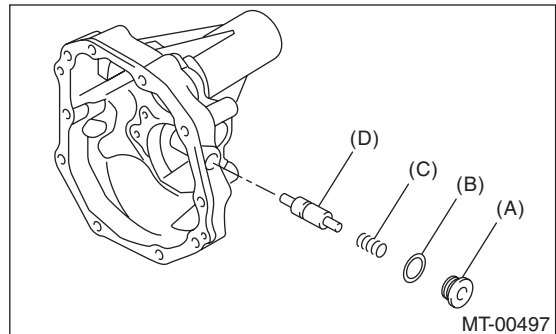


- (A) Spring pin
- (B) Reverse check lever
- (C) Oil seal

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

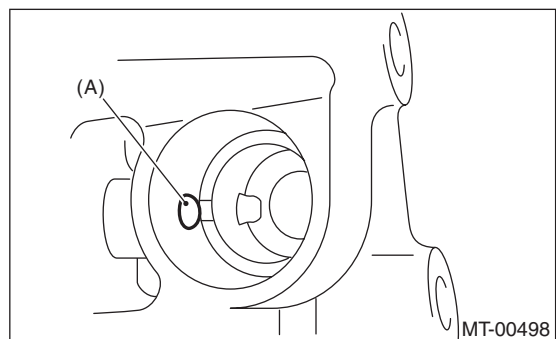
NOTE:

Do not reuse the gasket.



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

- 8) Remove the reverse lock plunger.



- (A) Reverse lock plunger

Reverse Check System

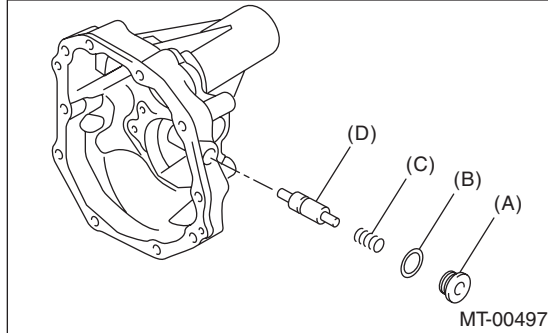
MANUAL TRANSMISSION AND DIFFERENTIAL

B: INSTALLATION

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

Tightening torque:

41 N·m (4.2 kgf-m, 30.2 ft-lb)

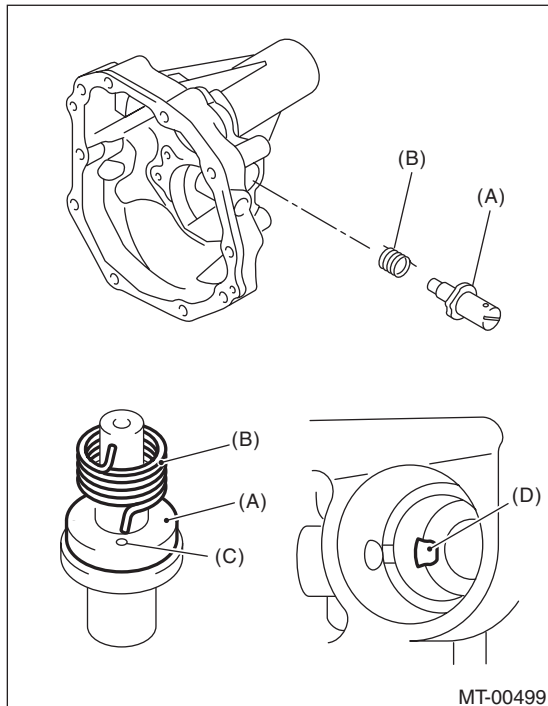


- (A) Plug
- (B) Gasket
- (C) Spring
- (D) Reverse check shaft

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

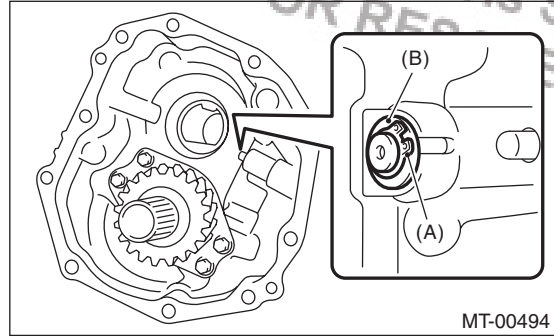
NOTE:

Confirm that the end of the spring matches the hole of the reverse check shaft and the cut out of the extension case.



- (A) Reverse check shaft
- (B) Spring
- (C) Hole
- (D) Cut out

- 4) Install the washer and snap ring.

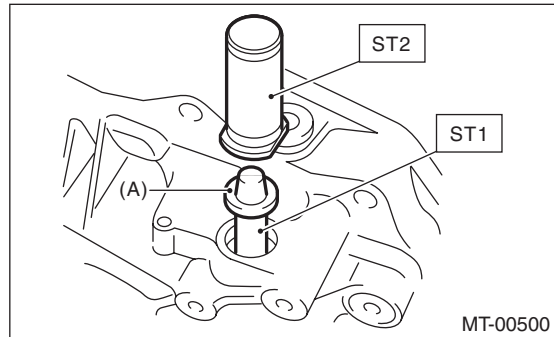


- (A) Snap ring
- (B) Washer

- 5) Attach ST1 to the reverse check shaft. Install the new oil seal, and push it in using ST2.

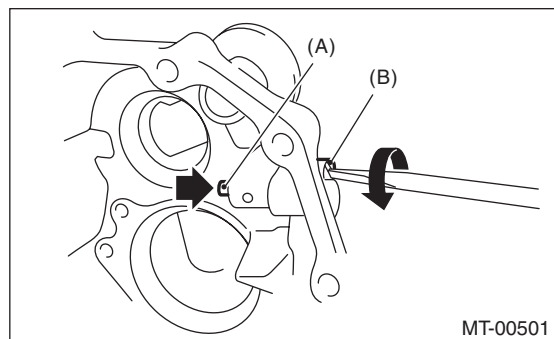
ST1 18671AA000 OIL SEAL GUIDE

ST2 18657AA010 INSTALLER



- (A) Oil seal

- 6) Insert the reverse check lever, and turn the reverse check shaft until the plunger is first pushed in.

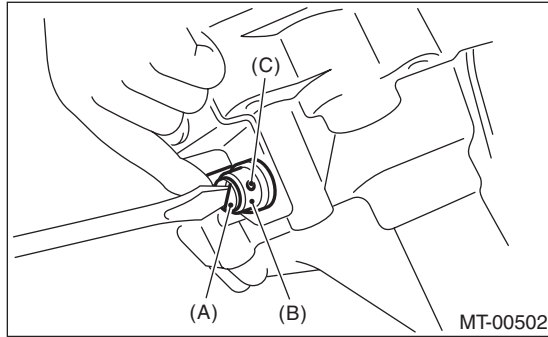


- (A) Plunger
- (B) Reverse check shaft

Reverse Check System

MANUAL TRANSMISSION AND DIFFERENTIAL

7) Match the hole of the reverse check lever and the reverse check shaft, and attach the spring pin.



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

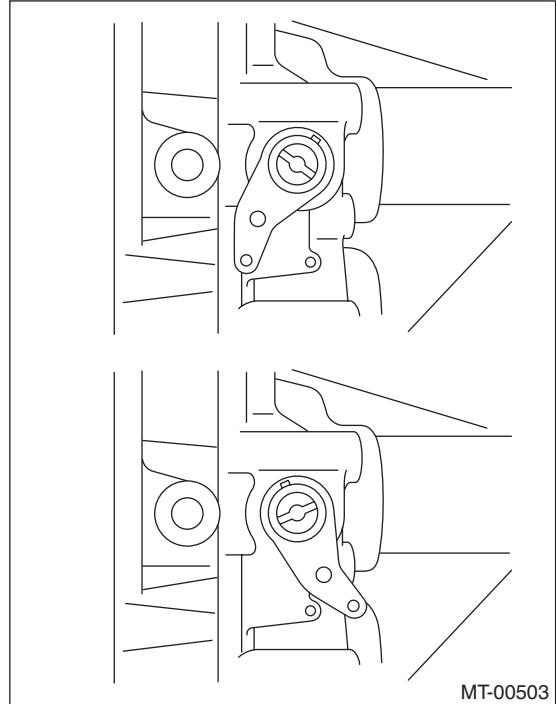
8) Check that the reverse check is operating correctly. <Ref. to 6MT-51, INSPECTION, Reverse Check System.>

9) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>

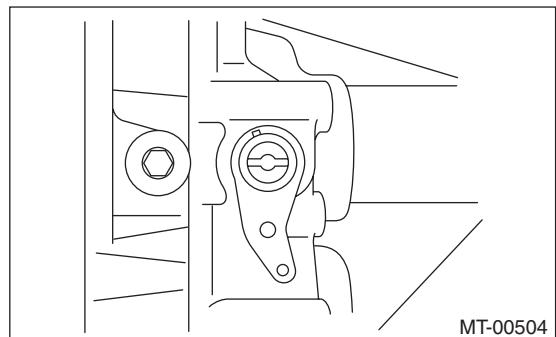
10) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: INSPECTION

- 1) Check that there is no damage on each part.
- 2) Check that the reverse check lever is operating smoothly.
- 3) Inspect that there is no oil leak at the oil seal section of the reverse check shaft. If there is oil leakage, replace the oil seal.
- 4) Check the operation of the reverse check.
 - (1) When the reverse check lever is in the following position, the plunger is pressed, or the gear can shift into reverse.



- (2) When the reverse check lever is in the following position, the plunger is not pressed, or the gear cannot shift into reverse.

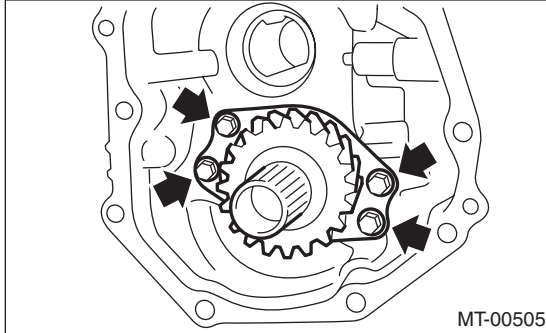


- 5) If not according to the standard, reassemble the reverse check system.

15. Transfer Drive Gear

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 4) Remove the transfer drive gear.

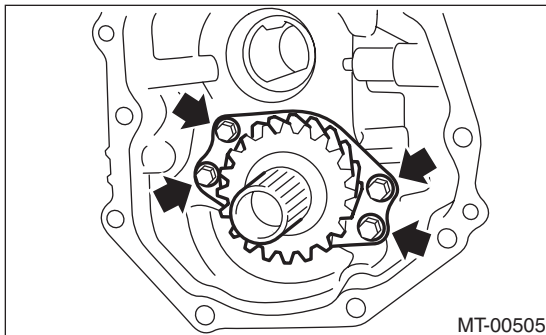


B: INSTALLATION

- 1) Install the transfer drive gear.

Tightening torque:

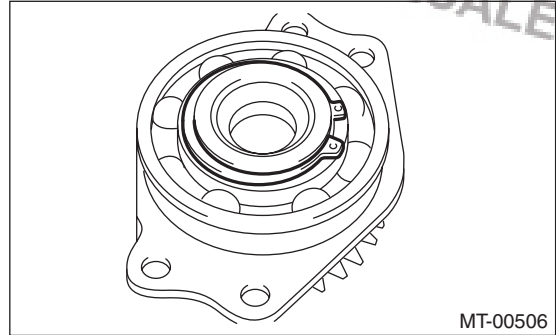
25 N·m (2.5 kgf·m, 18.1 ft·lb)



- 2) When the ball bearing, transfer drive gear or snap ring are replaced, select an appropriate thrust washer for the transfer drive gear. <Ref. to 6MT-44, ASSEMBLY, Extension Case.>
- 3) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 4) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

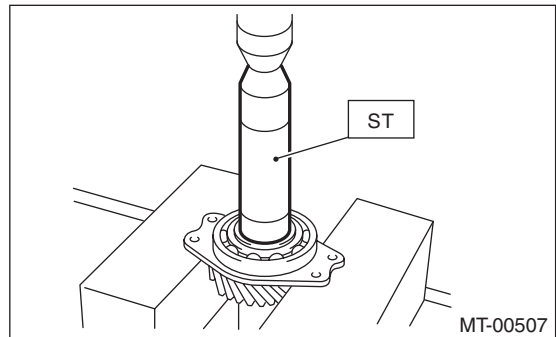
- 1) Remove the snap ring.



- 2) Remove the bearing using the ST.
ST 499877000 RACE 4-5 INSTALLER

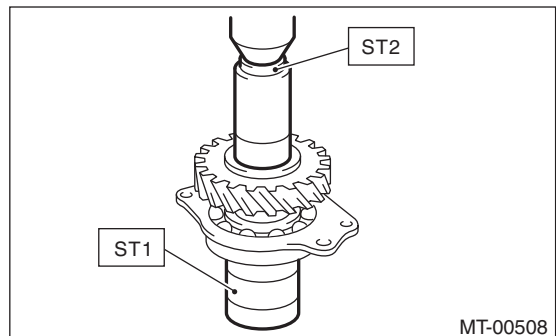
NOTE:

Do not reuse the ball bearing.

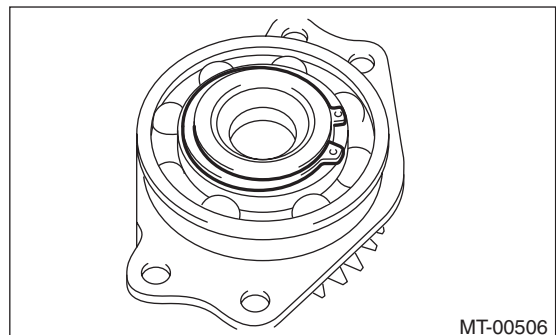


D: ASSEMBLY

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



- 2) Install the snap ring.



3) Inspect the clearance between the snap ring and the ball bearing. <Ref. to 6MT-53, INSPECTION, Transfer Drive Gear.>

E: INSPECTION

1) Bearing

Replace the bearings in the following cases.

- Damage or rust on the bearings
- Wear, or damage
- If the bearing does not rotate smoothly or an abnormal noise is emitted.

2) Drive gear

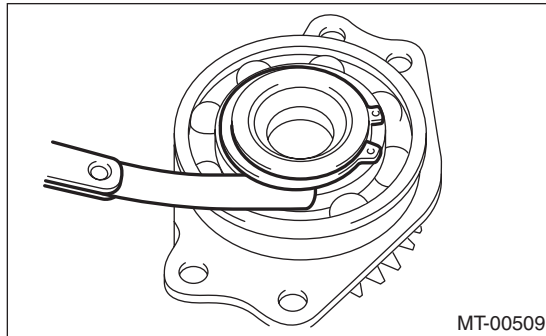
Replace the drive gear in following case:

- If the drive gear tooth surface and shaft are excessively damaged or broken.

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

Standard clearance between the snap ring and inner race:

0 — 0.15 mm (0 — 0.0059 in)



4) If the measurement is out of specifications, reselect an appropriate snap ring.

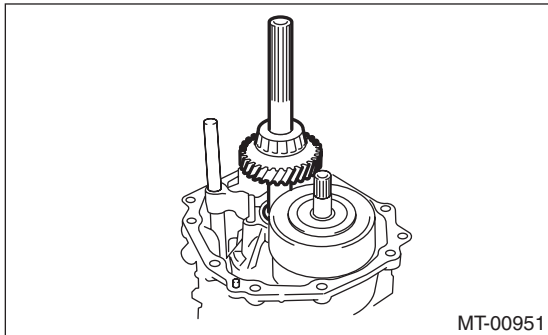
Thrust washer	
Part No.	Thickness mm (in)
805045050	1.76 (0.069)
805045060	1.88 (0.074)
805045070	2.00 (0.079)

After replacing the snap ring, reinspect the clearance.

16. Transfer Driven Gear

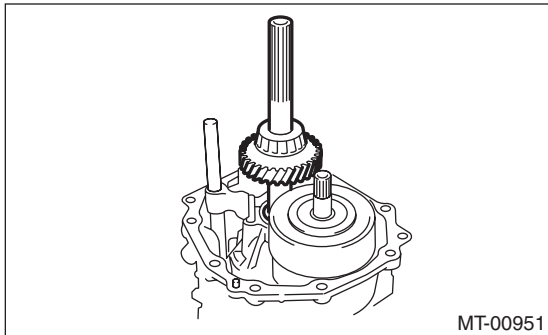
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 4) Remove the transfer driven gear.



B: INSTALLATION

- 1) Install the transfer driven gear.

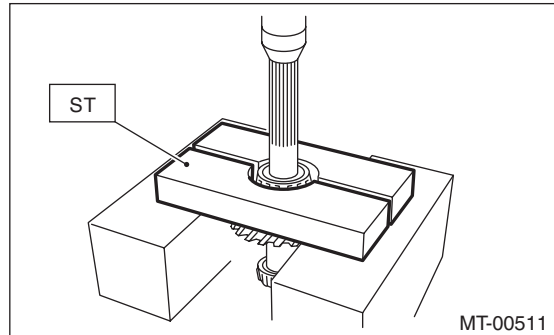


- 2) When the bearing or the transfer driven gear is replaced, select an appropriate thrust washer for the transfer driven gear. <Ref. to 6MT-45, ADJUSTMENT, Extension Case.>
- 3) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 4) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

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

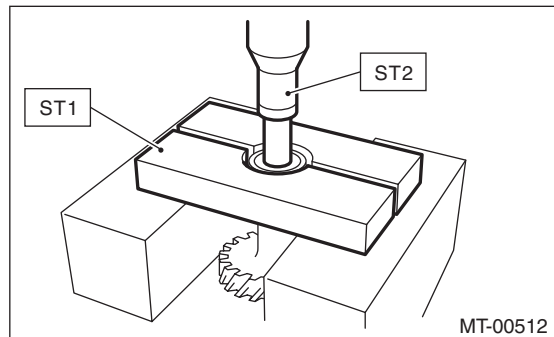
ST 498515700 REMOVER



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

ST1 899858600 REMOVER

ST2 899864100 REMOVER



D: ASSEMBLY

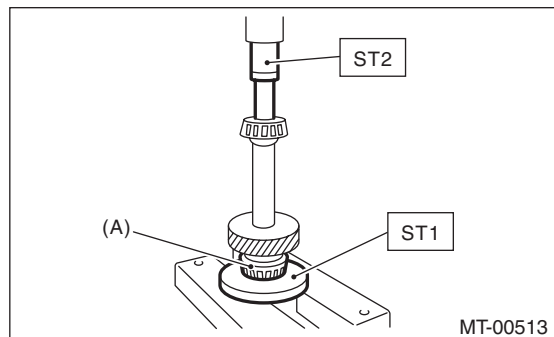
- 1) Using the ST, install the roller bearing (extension case side).

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).



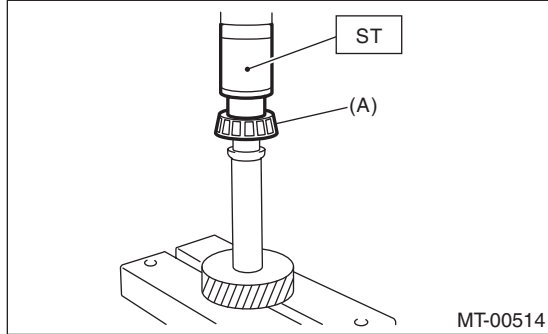
(A) Roller bearing

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

ST 499757002 INSTALLER

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) Bearing

Replace the bearings in the following cases.

- Damage or rust on the bearings
- Wear, or damage
- After applying gear oil, if the bearing does not rotate smoothly or an abnormal noise is emitted.

2) Driven gear

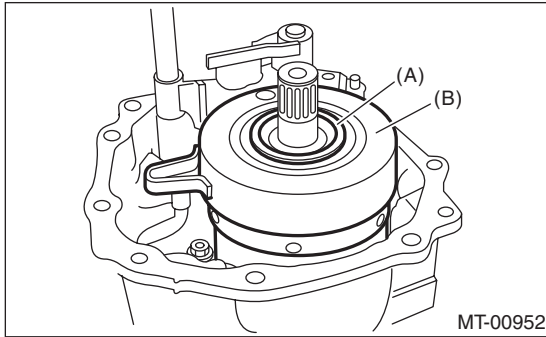
Replace the driven gear in the following cases.

If the driven gear tooth surface and shaft are excessively damaged or broken.

17.Center Differential

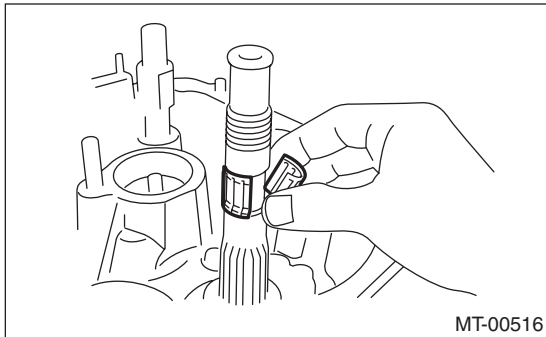
A: REMOVAL

- 1) Remove the manual transmission case from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 4) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 5) Disconnect the center differential connector.
- 6) Remove the thrust washer and center differential.



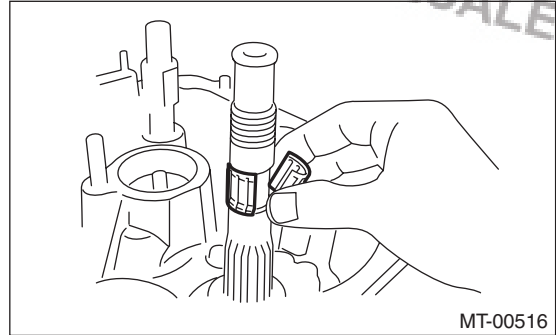
- (A) Thrust washer
- (B) Center differential

- 7) Remove the needle bearing.

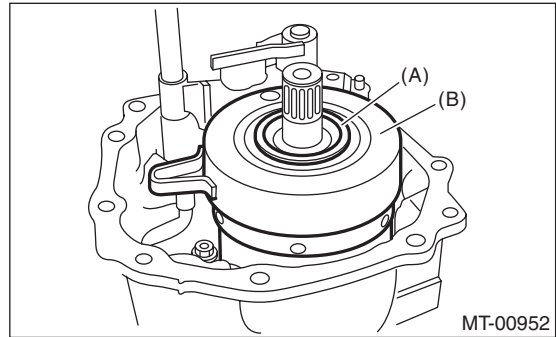


B: INSTALLATION

- 1) Install the needle bearing.



- 2) Install the thrust washer and center differential.



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

- 3) When replacing the center differential, select and install the appropriate transfer drive gear and thrust washer. <Ref. to 6MT-45, ADJUSTMENT, Extension Case.>
- 4) Connect the center differential connector, and affix to the oil guide.
- 5) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>
- 6) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 7) Install the manual transmission case assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

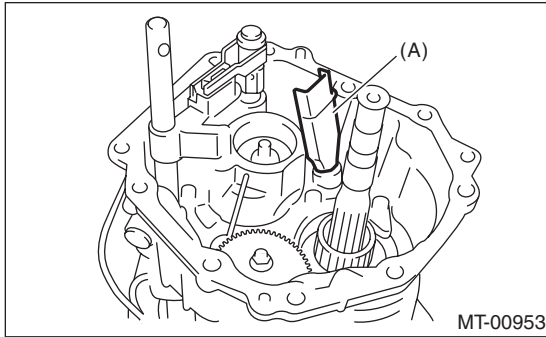
C: INSPECTION

Check that there is no damage to the center differential, ball bearing and oil pump drive gear. If damaged, replace the center differential assembly.

18.Oil Pump

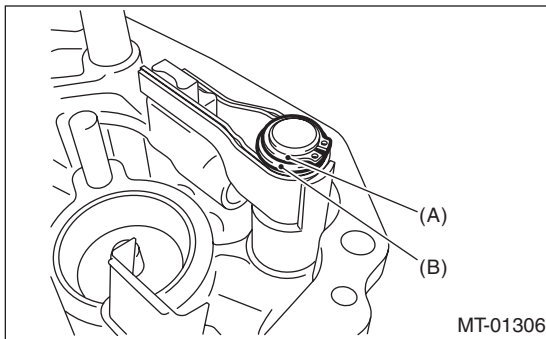
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 4) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 5) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 6) Remove the oil guide.



(A) Oil guide

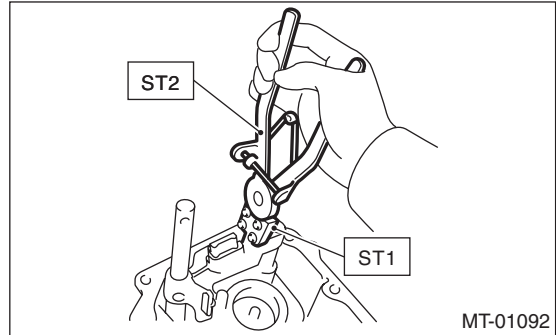
- 7) Remove the snap ring and flat washer.



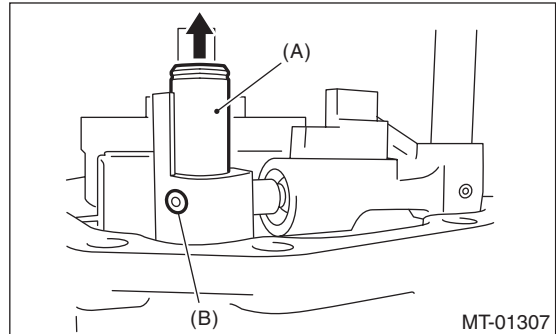
(A) Snap ring
(B) Flat washer

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

ST1 18756AA000 CLAW
ST2 399893600 PLIER

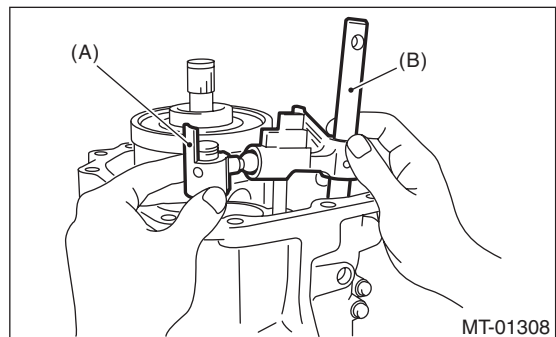


- 9) Lift the striking rod, and remove the spring pin.



(A) Striking rod
(B) Spring pin

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



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

Oil Pump

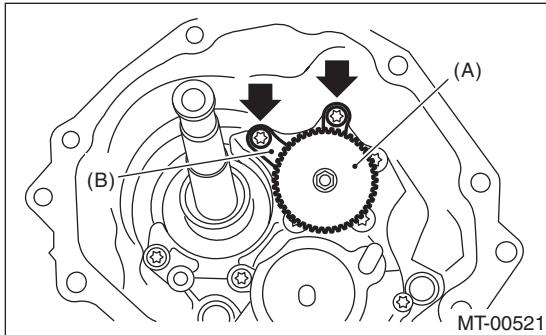
MANUAL TRANSMISSION AND DIFFERENTIAL

11) Remove the oil pump shaft assembly and plate.

NOTE:

Using a general tool may cause damage. Remove the bolt using the ST.

ST 18663AA000 SOCKET



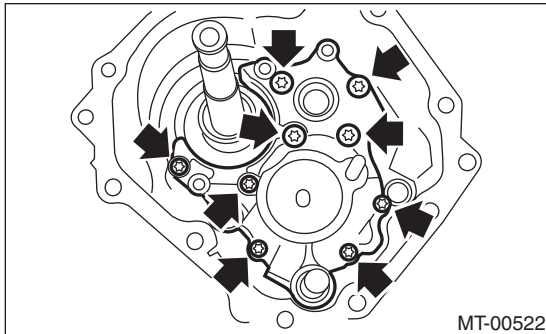
- (A) Oil pump shaft ASSY
- (B) Plate

12) Remove the oil pump cover assembly.

NOTE:

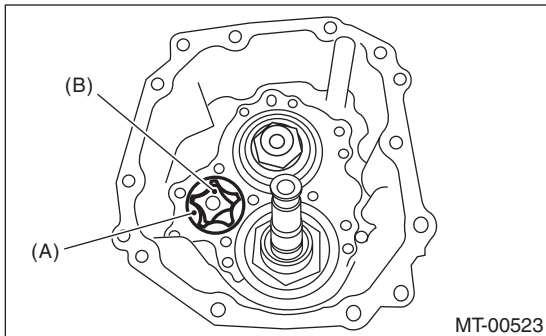
Using a general tool may cause damage. Remove the bolt using the ST.

ST 18663AA000 SOCKET



13) Remove the thrust washer on the main shaft section.

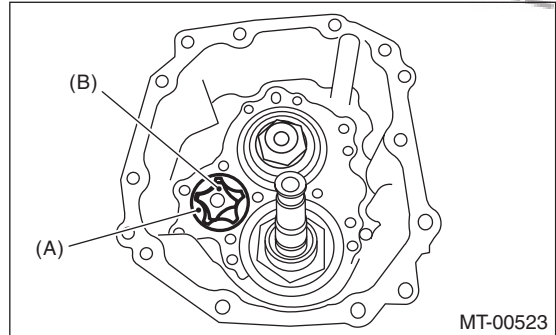
14) Remove the oil pump rotor.



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

B: INSTALLATION

1) Apply oil to the outer rotor surface, and install to the transmission case.



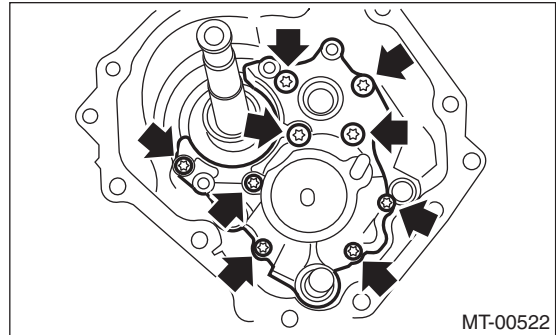
- (A) Outer rotor
- (B) Inner rotor

2) Attach the thrust washer to the main shaft.
3) Install the oil pump cover assembly.

Tightening torque:

25 N·m (2.5 kgf-m, 18.1 ft-lb)

ST 18663AA000 SOCKET

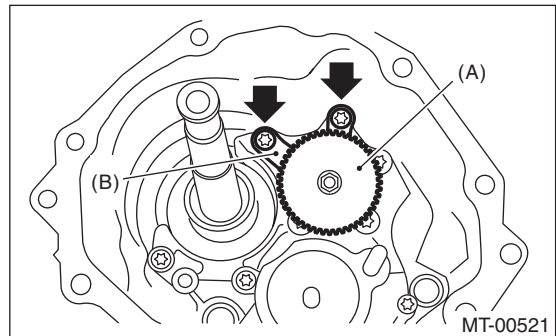


4) Remove the oil pump shaft assembly and plate.

Tightening torque:

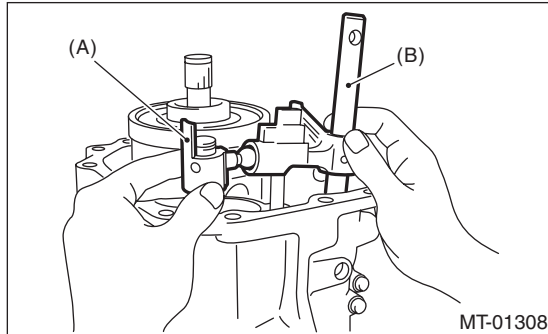
25 N·m (2.5 kgf-m, 18.1 ft-lb)

ST 18663AA000 SOCKET



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

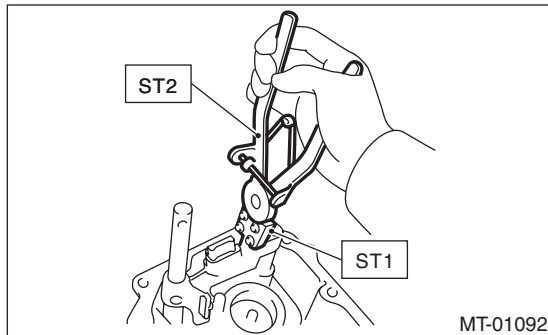
- 5) When replacing the oil pump cover assembly, select the appropriate transfer driven gear and thrust washer, and install to the extension case. <Ref. to 6MT-45, ADJUSTMENT, Extension Case.>
 6) Install the selector arm No. 2 and the shifter arm.



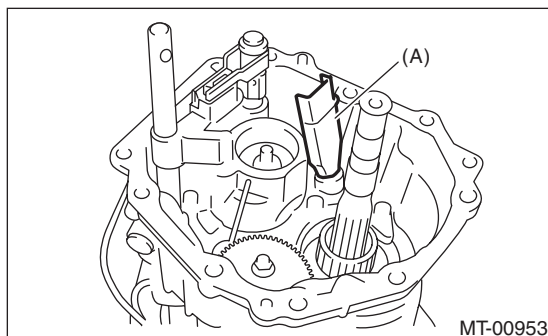
- (A) Selector arm No. 2
 (B) Shifter arm

- 7) Install a new spring pin.
 8) Using the ST, install the neutral set spring and support.

ST1 18756AA000 CLAW
 ST2 399893600 PLIER



- 9) Install the flat washer and snap ring.
 10) Install the oil guide.



- (A) Oil guide

- 11) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>
 12) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>

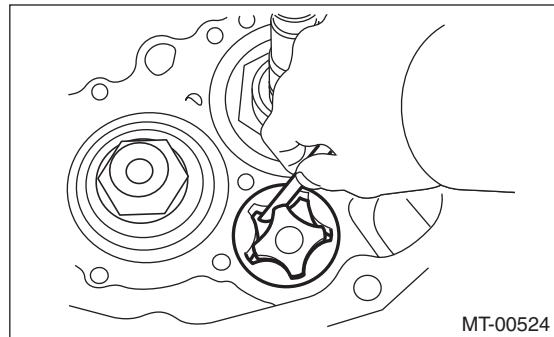
- 13) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
 14) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: INSPECTION

- 1) Check that there is no damage on the inner rotor and outer rotor. If damaged, replace the inner rotor and outer rotor as an assembly.
 2) Tip clearance
 Install the inner rotor and outer rotor to the transmission case. match the forward tip of the inner rotor and outer rotor, and measure the clearance. If the clearance exceeds specification, replace the inner rotor and outer rotor as a set.

Tip clearance specification:

Less than 0.15 mm (0.0059 in)

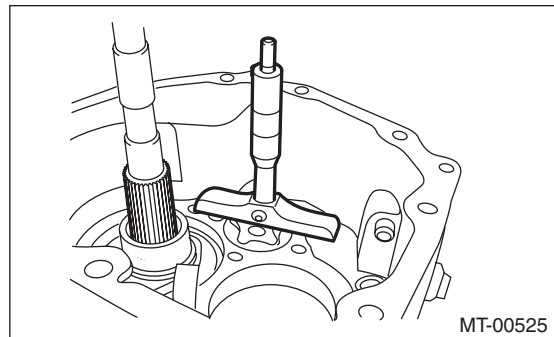


3) Side clearance

Measure from the transmission case to rotor. If the clearance exceeds specification, replace the inner rotor and outer rotor as a set.

Side clearance specification:

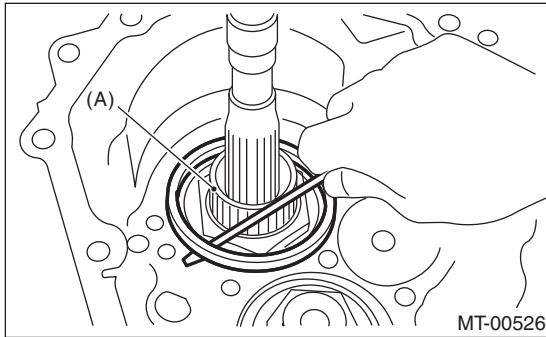
0.03 — 0.10 mm (0.0012 — 0.0039 in)



19. Transmission Case

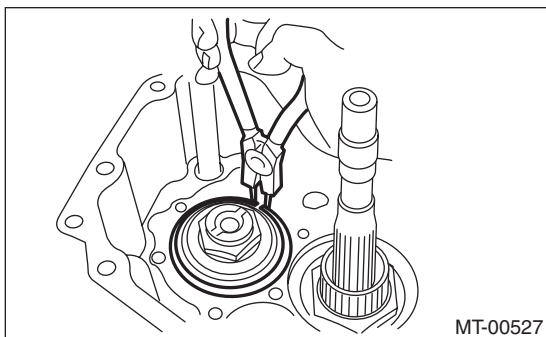
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the driven gear assembly shim and spacer.

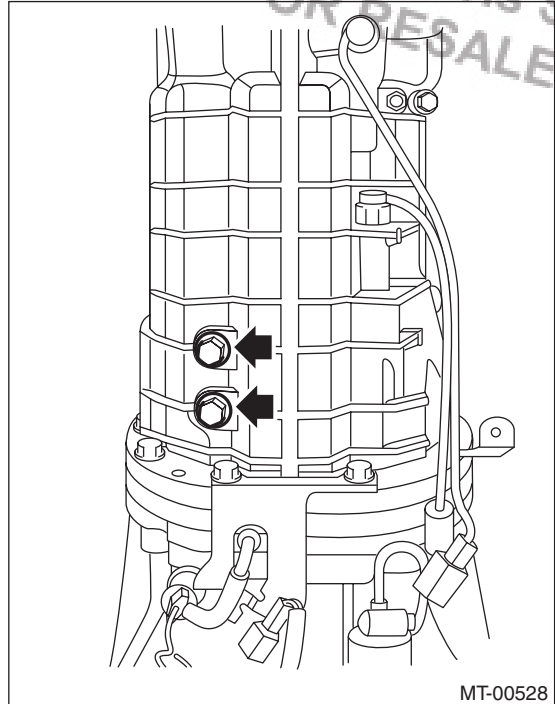


(A) Driven gear ASSY

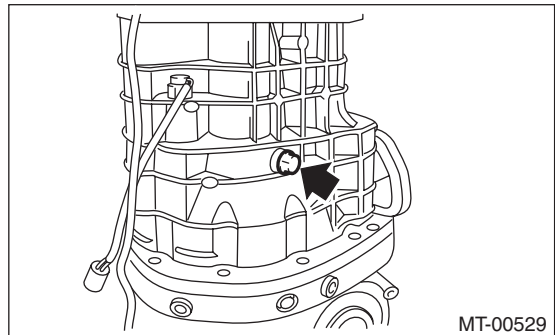
- 9) Remove the snap ring.



- 10) Remove the pilot bolt.



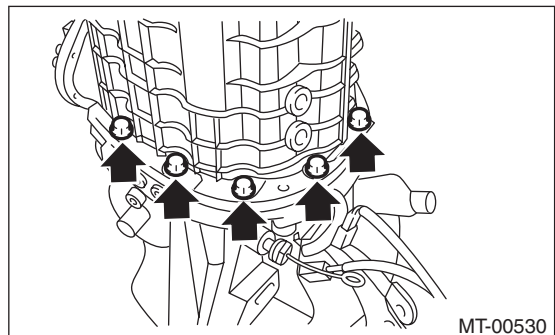
- 11) Remove the holder reverse bolt.



- 12) Remove the transmission case.

NOTE:

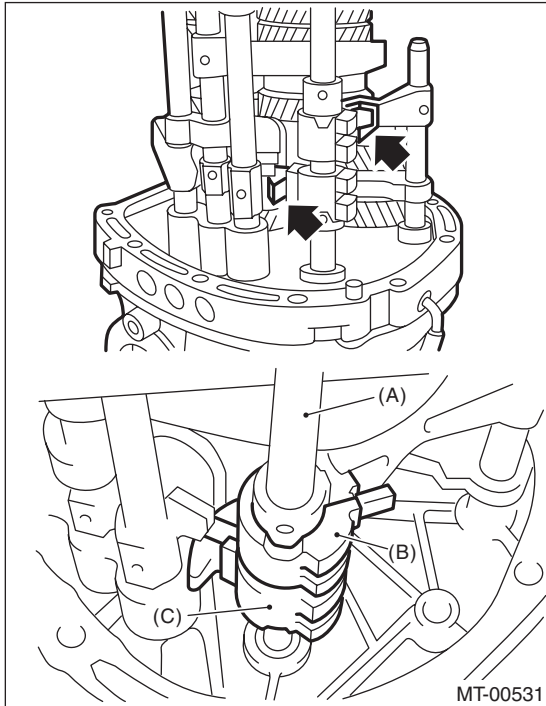
If the oil guide is caught between the shift fork, it may be difficult to remove the transmission case. Move the oil guide and oil pipe, then remove. Do not pull on the transmission case with excessive force.



- 13) Remove any remaining liquid gasket from the transmission case and adapter plate.

B: INSTALLATION

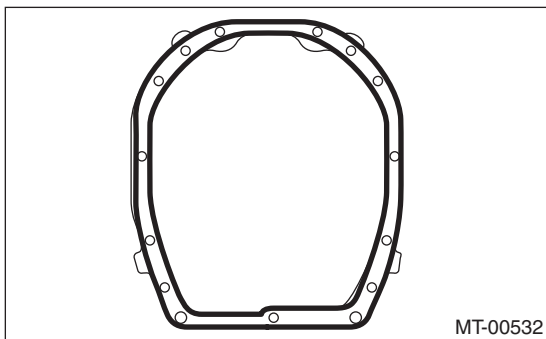
1) Check that the shifter fork and the interlock block are both shifted into the neutral position. If they are not, shift into the neutral position.



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

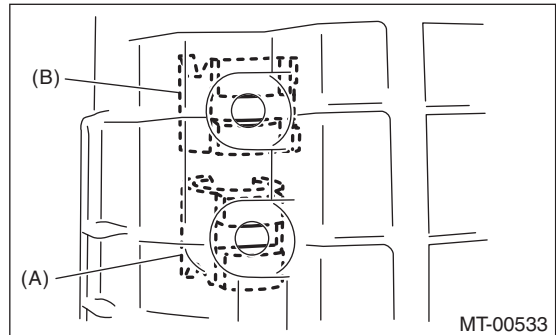
2) Apply liquid gasket to the adapter plate.

Liquid gasket:
THREE BOND 1215 (Part No. 004403007)



3) Install the transmission case.

4) By inspecting from the pilot bolt attachment hole, check that the interlock block and the reverse interlock block are aligned in the neutral position. If not aligned in neutral, remove the transmission case, and shift the shifter fork and interlock block to the neutral position.



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

5) Temporarily attach the pilot bolt with a new gasket.

6) Affix the transmission case with the bolts and nuts.

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

7) Tighten the pilot bolt.

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

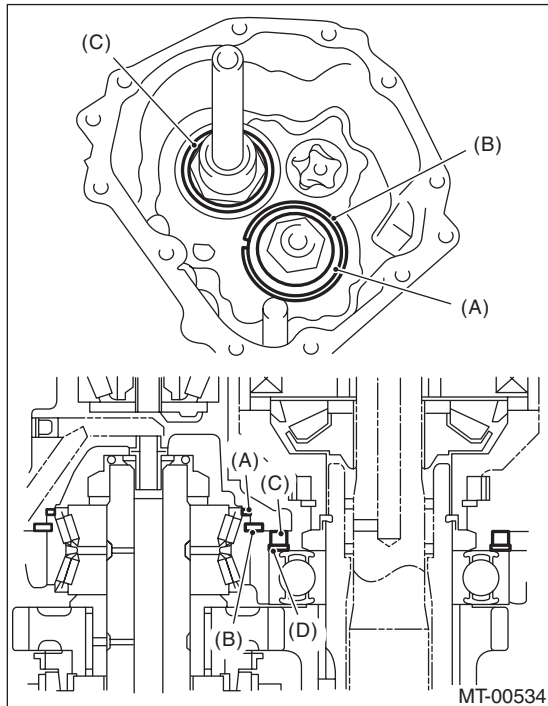
8) Tighten the holder reverse bolt.

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 the driven gear assembly.



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

10) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>

11) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>

12) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>

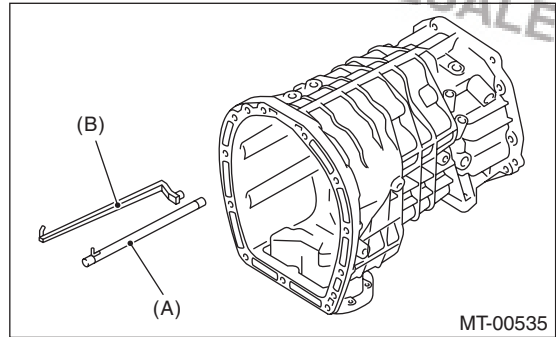
13) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>

14) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>

15) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

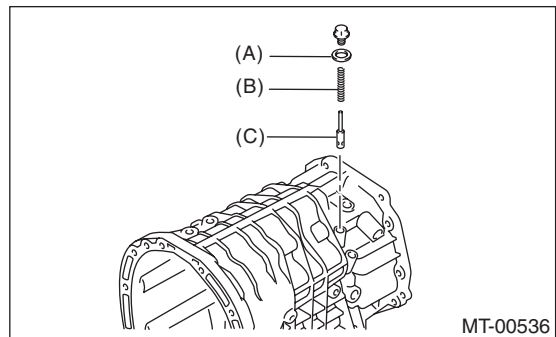
C: DISASSEMBLY

1) Remove the oil pipe and oil guide.



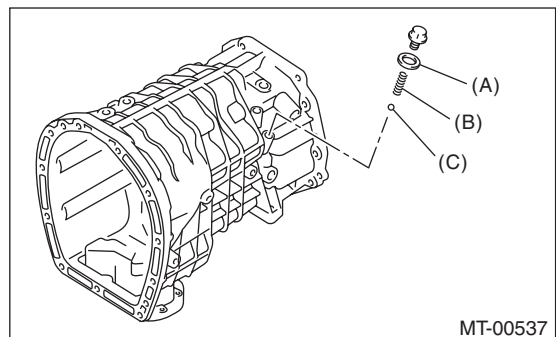
- (A) Oil pipe
- (B) Oil guide

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



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

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

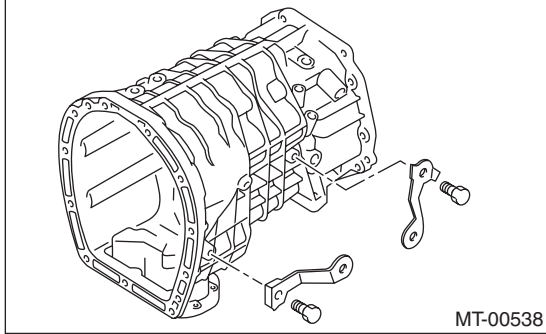


- (A) O-ring
- (B) Valve spring
- (C) Ball

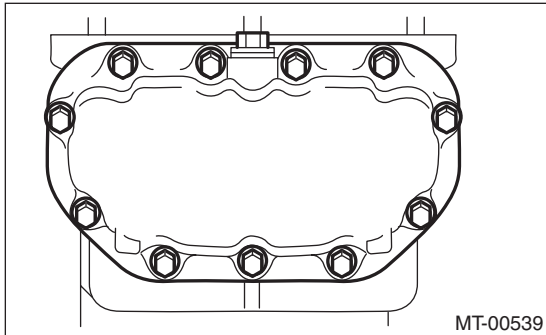
Transmission Case

MANUAL TRANSMISSION AND DIFFERENTIAL

4) Remove the harness bracket.

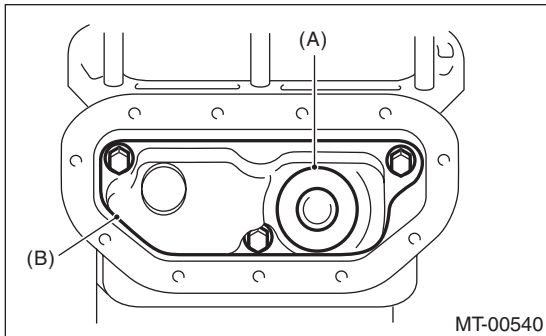


5) Remove the oil pan.



6) Remove any remaining liquid gasket from the transmission case and oil pan.

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



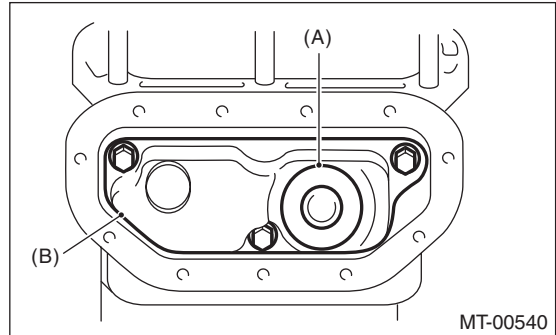
- (A) Oil pan magnet
- (B) Oil strainer

D: ASSEMBLY

1) Install the oil strainer and magnet.

Tightening torque:

10 N·m (1.0 kgf-m, 7.4 ft-lb)

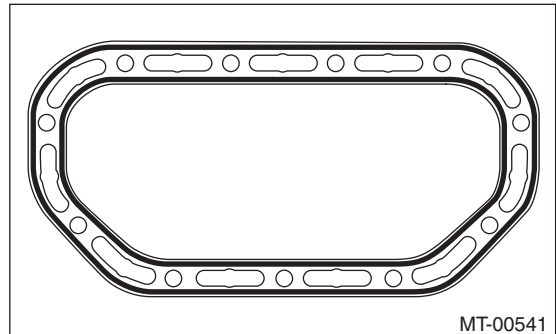


- (A) Oil pan magnet
- (B) Oil strainer

2) Apply liquid gasket to the oil pan.

Liquid gasket:

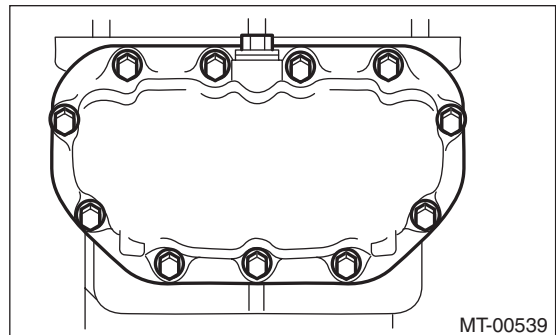
THREE BOND 1215 (Part No. 004403007)



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 a new O-ring.

Transmission Case

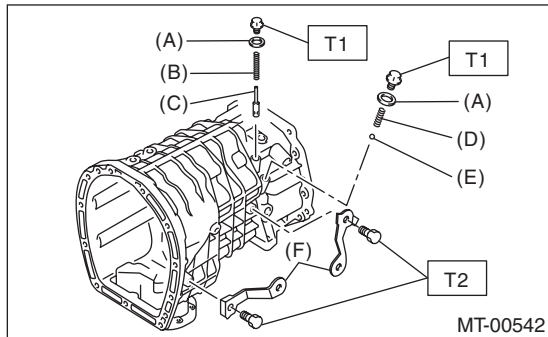
MANUAL TRANSMISSION AND DIFFERENTIAL

5) Install the ball, valve spring and a 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

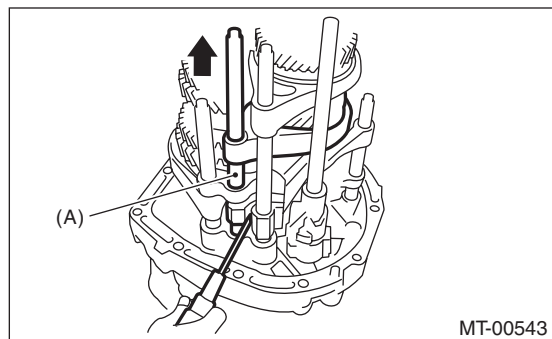
E: INSPECTION

- 1) If there is sludge on the oil pan magnet, use a waste cloth to wipe it off completely.
- 2) Inspect that the oil strainer is not clogged. If it is clogged, clean or replace the oil strainer.
- 3) Check that there is no damage on each part. Replace damaged parts with new parts.

20. Main Shaft Assembly

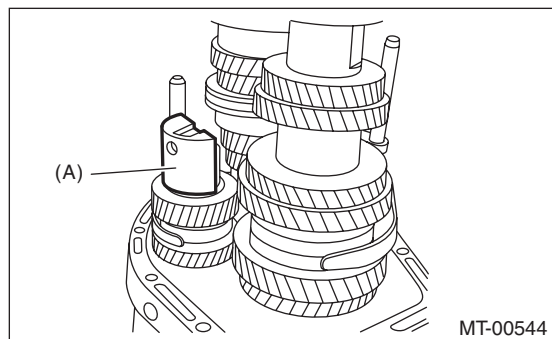
A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the striking rod.
- 10) Use a screw driver to shift to the 4th gear position.



(A) 3rd-4th shift rod

- 11) Remove the reverse idler holder.

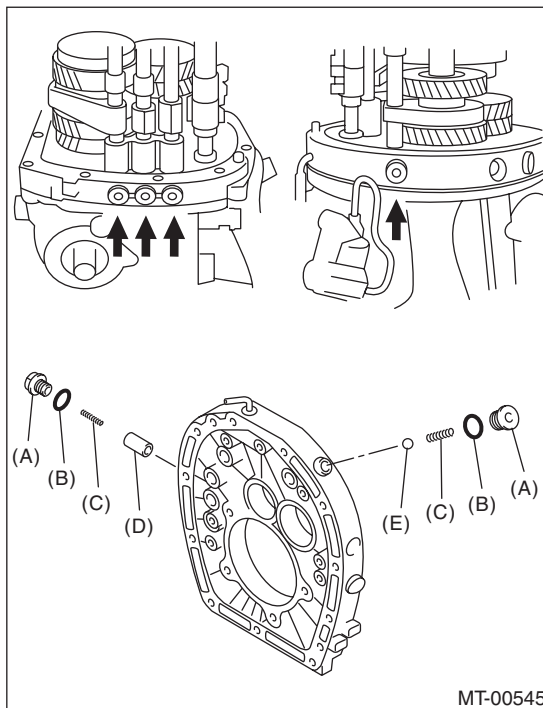


(A) Reverse idler holder

- 12) Remove the check plug, O-ring, check spring, plunger and check ball from the adapter plate.

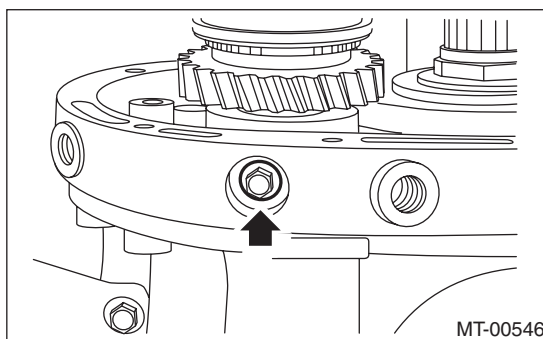
NOTE:

Do not reuse the O-ring.



- (A) Check plug
- (B) O-ring
- (C) Checking spring
- (D) Plunger
- (E) Check ball

- 13) Remove the bolt and gasket holding the reverse idler shaft.



- 14) Push the main shaft assembly, driven gear assembly, reverse idler gear and shifter forks to remove from the adapter plate all at once.

NOTE:

This work requires an assistant.

Main Shaft Assembly

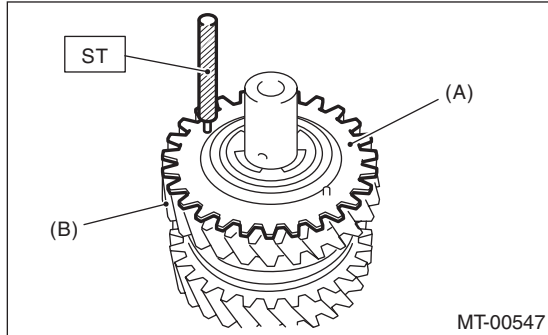
MANUAL TRANSMISSION AND DIFFERENTIAL

B: INSTALLATION

1) Adjust the 3rd-4th and 5th-6th shifter fork rods.
<Ref. to 6MT-110, ADJUSTMENT, Shifter Fork and Rod.>

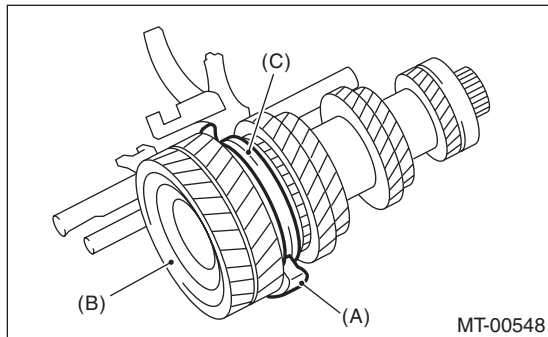
2) Turn the sub gear counterclockwise for approximately 3 teeth. Match the sub gear and reverse idler gear holes, and insert the ST.

ST 18757AA000 STRAIGHT PIN REMOVER



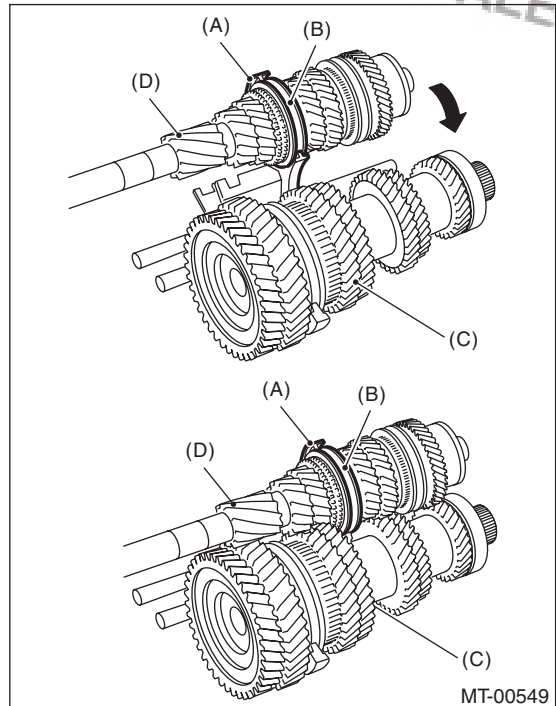
- (A) Sub gear
- (B) Reverse idler gear

3) Attach the driven gear assembly to the 1st-2nd shifter fork assembly.



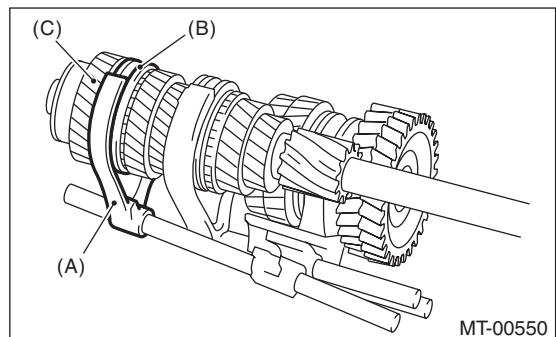
- (A) 1st-2nd shifter fork
- (B) Driven gear ASSY
- (C) 1st-2nd sleeve

4) Attach the main shaft assembly to the 3rd-4th shifter fork, and assemble to the driven gear assembly.



- (A) 3rd-4th shifter fork
- (B) 3rd-4th sleeve
- (C) Driven gear ASSY
- (D) Main shaft ASSY

5) Attach the 5th-6th shifter fork assembly to the main shaft assembly.

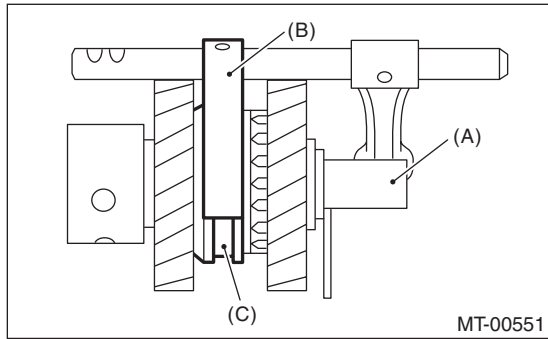


- (A) 5th-6th shifter fork
- (B) 5th-6th sleeve
- (C) Main shaft ASSY

Main Shaft Assembly

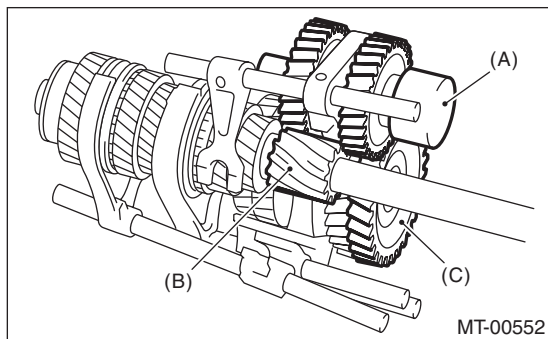
MANUAL TRANSMISSION AND DIFFERENTIAL

6) Attach the reverse shifter fork assembly to the reverse idler gear assembly.



- (A) Reverse idler gear ASSY
- (B) Reverse shifter fork
- (C) Reverse sleeve

7) Install the reverse idler gear assembly.



- (A) Reverse idler gear ASSY
- (B) 1st drive gear
- (C) Reverse gear

8) Install the thrust bearing of the driven gear assembly.

9) Push on the shifter forks, main shaft assembly, driven gear assembly and reverse idler gear assemblies, to attach to the adapter plate all at once.

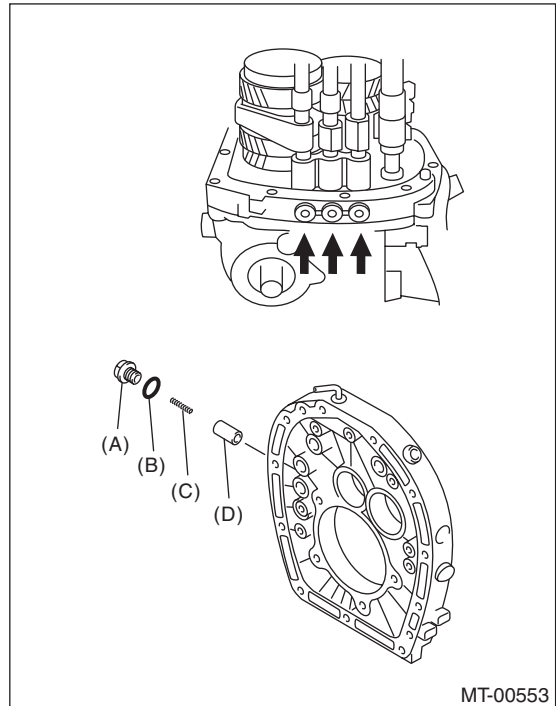
NOTE:

This work requires an assistant.

10) Install the plunger, check spring, new O-ring and check plugs.

Tightening torque:

25 N·m (2.5 kgf·m, 18.4 ft·lb)



- (A) Check plug
- (B) O-ring
- (C) Checking spring
- (D) Plunger

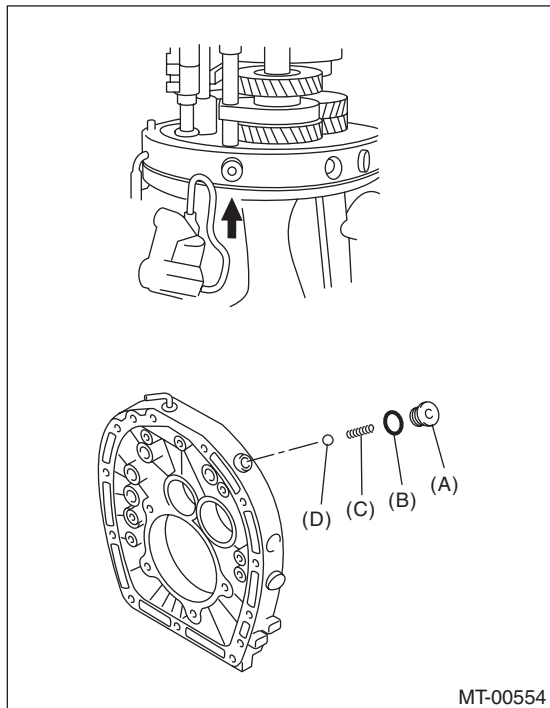
Main Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

11) Install the check ball, check spring, new O-ring and check plugs.

Tightening torque:

25 N·m (2.5 kgf·m, 18.4 ft·lb)

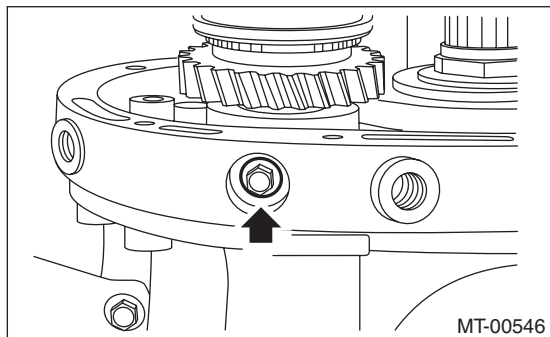


- (A) Check plug
- (B) O-ring
- (C) Checking spring
- (D) Check ball

12) Attach the bolt and a new gasket.

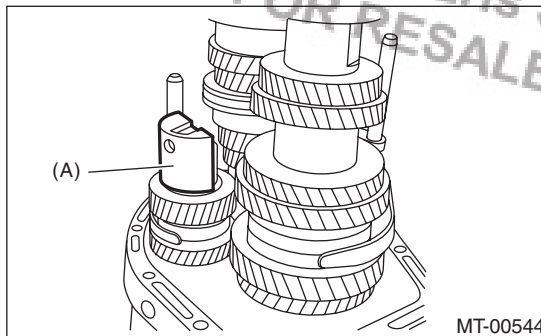
Tightening torque:

25 N·m (2.5 kgf·m, 18.1 ft·lb)



13) Use a screw driver to shift to the 4th gear position.

14) Install the reverse idler holder.



(A) Reverse idler holder

15) Install the striking rod.

16) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>

17) Install the selected main shaft snap ring and washers.

18) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>

19) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>

20) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>

21) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>

22) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>

23) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

NOTE:

Individual sleeves and hubs meet at a specified position. Before disassembly, mark the meeting position of the sleeve and hub.

1) Affix the ST to the work table.

ST 18664AA000 BASE

2) Flatten the nut tab.

Main Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

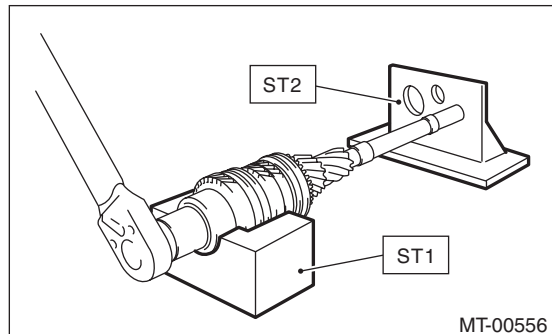
3) Set the main shaft assembly to the ST, and remove the lock nut and washer.

ST1 18665AA000 HOLDER

ST2 18664AA000 BASE

NOTE:

Use a 38 mm socket wrench.

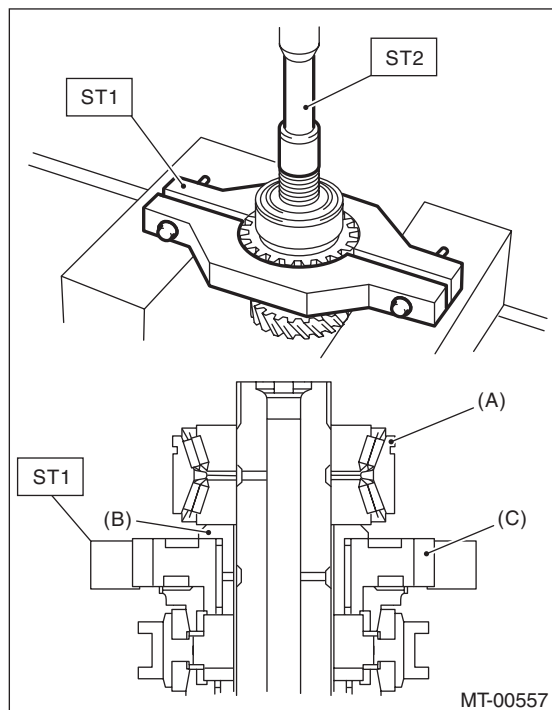


4) Remove the main shaft assembly from the ST.

5) Set the ST1 to the 6th drive gear, and use a press to remove the taper roller bearing, bushing and 6th drive gear.

ST1 18722AA010 REMOVER

ST2 899864100 REMOVER

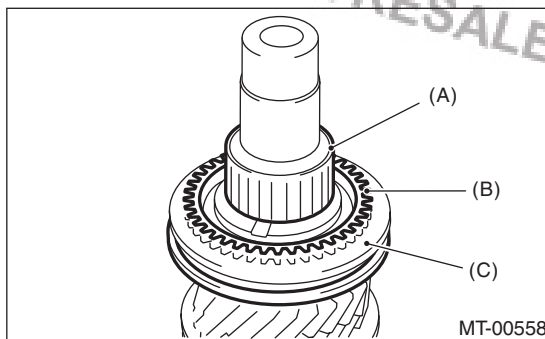


(A) Taper roller bearing

(B) Bushing

(C) 6th drive gear

6) Remove the 5th-6th sleeve, 6th needle bearing and 6th baulk ring.



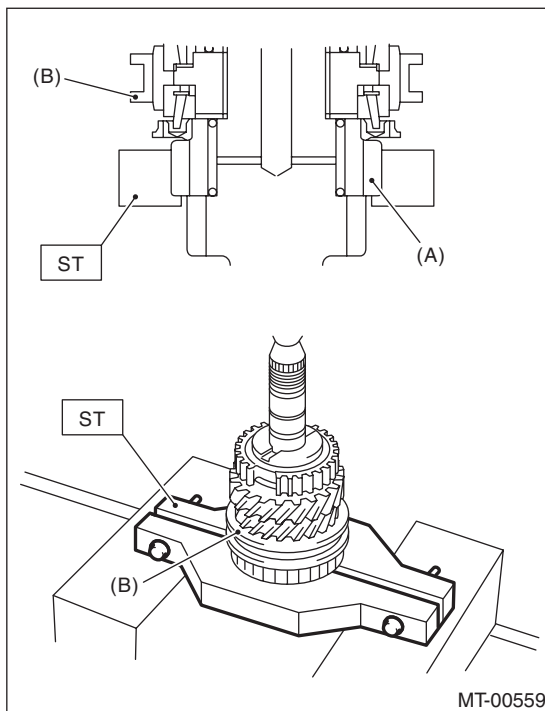
(A) Needle bearing

(B) 6th baulk ring

(C) 5th-6th sleeve

7) Set the ST to the 3rd drive gear, and use a press to remove individual parts.

ST 18720AA000 REMOVER



(A) 3rd drive gear

(B) 3rd-4th sleeve

D: ASSEMBLY

NOTE:

Replace the following parts as a set.

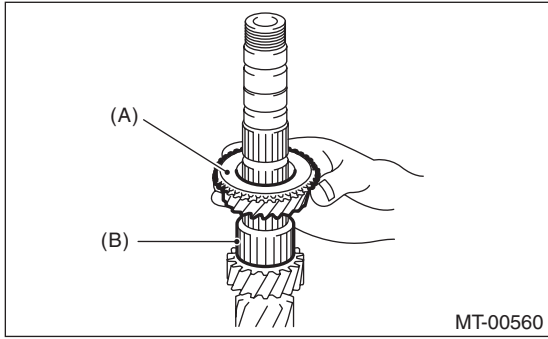
- Sleeve and hub
- Outer baulk ring, 3rd synchro cone and inner baulk ring
- Taper roller bearing

1) Apply adequate gear oil to the main shaft, 3rd needle bearing and 3rd drive gear inner surface.

Main Shaft Assembly

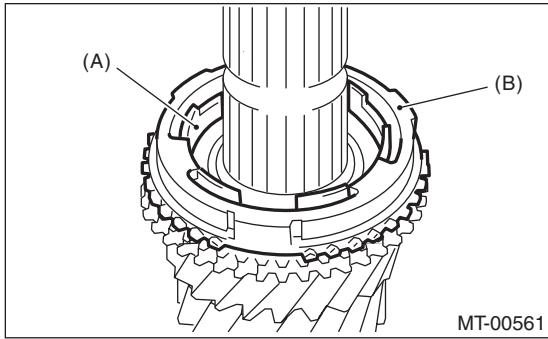
MANUAL TRANSMISSION AND DIFFERENTIAL

2) Install the 3rd needle bearing and 3rd drive gear to the main shaft.



- (A) 3rd needle bearing
- (B) 3rd drive gear

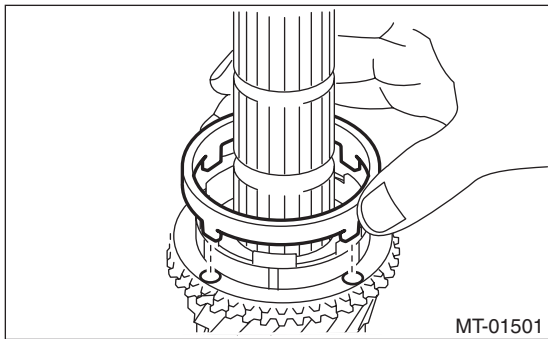
3) Install the inner baulk ring, 3rd synchro cone and outer baulk ring.



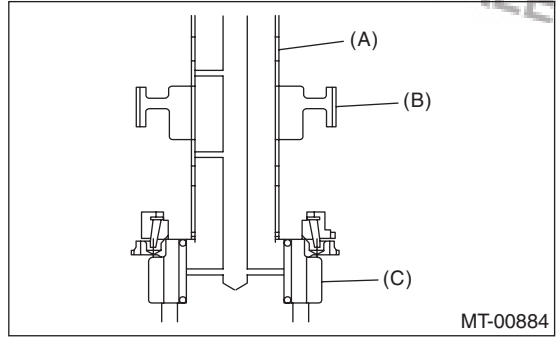
- (A) Inner baulk ring
- (B) Outer baulk ring

NOTE:

Install the 3rd synchro cone by aligning the protrusion of the 3rd synchro cone with the hole on the 3rd drive gear.

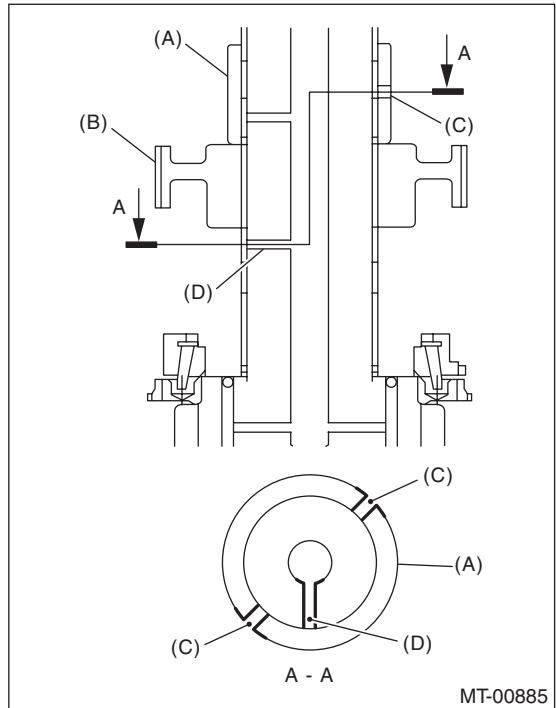


4) Install the 3rd-4th hub and 4th bushing.
 (1) Being careful of the install direction of the 3rd-4th hub, set to the main shaft.



- (A) Main shaft
- (B) 3rd-4th hub
- (C) 3rd drive gear

(2) Being careful not to cover the oil holes of the main shaft and 4th bushing, attach to the main shaft.



- (A) 4th bushing
- (B) 3rd-4th hub
- (C) 4th bushing oil hole
- (D) Main shaft oil hole

Main Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

(3) Using the ST, push in to the 3rd-4th hub and 4th bushing all at once.

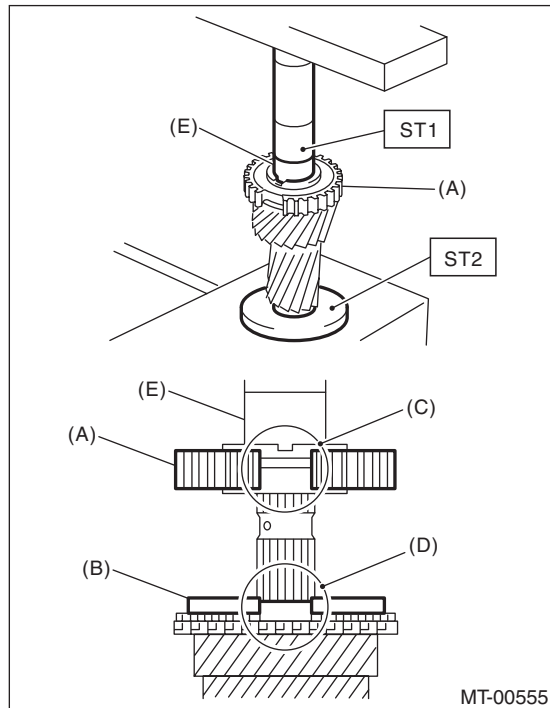
ST1 18651AA000 INSTALLER
ST2 398177700 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

NOTE:

When pushing into the 3rd-4th hub and 4th bushing, move the outer baulk ring to match the protrusion of the outer baulk ring and the cut out on the 3rd-4th bushing.



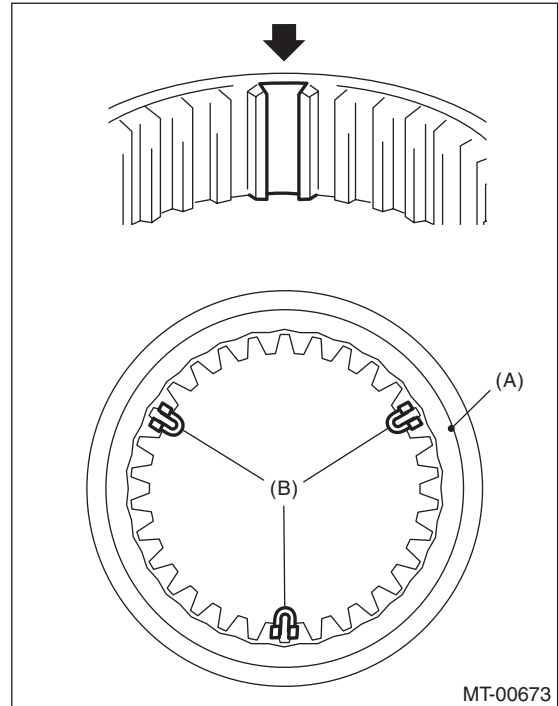
- (A) 3rd-4th hub
- (B) Outer baulk ring
- (C) Cut out on the 3rd-4th hub
- (D) Protrusion of the outer baulk ring
- (E) 4th bushing

5) Make sure that the 3rd drive gear can be turned smoothly by hand. If it does not turn smoothly, re-assemble.

6) Attach the 3rd-4th shifting insert key at the appropriate position of the 3rd-4th sleeve.

NOTE:

The angle of each shifting insert key is 120°.

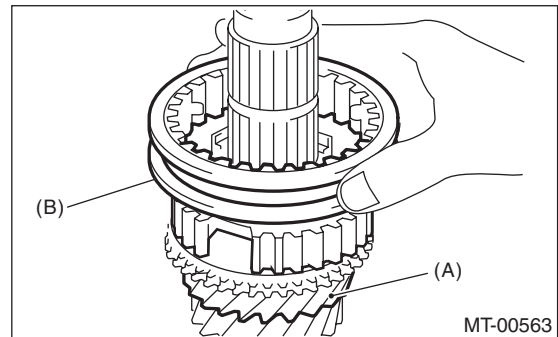


- (A) 3rd-4th sleeve
- (B) 3rd-4th shifting insert key

7) Attach the 3rd-4th sleeve to the 3rd-4th hub.

NOTE:

- There is an identification groove on the 3rd-4th sleeve.
- Place the groove towards the 3rd drive gear, and attach the 3rd-4th sleeve.

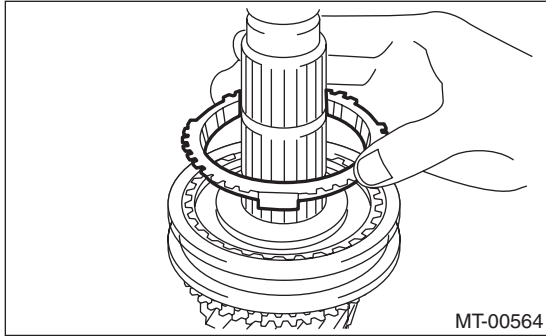


- (A) 3rd drive gear
- (B) 3rd-4th sleeve identification groove (1 groove)

Main Shaft Assembly

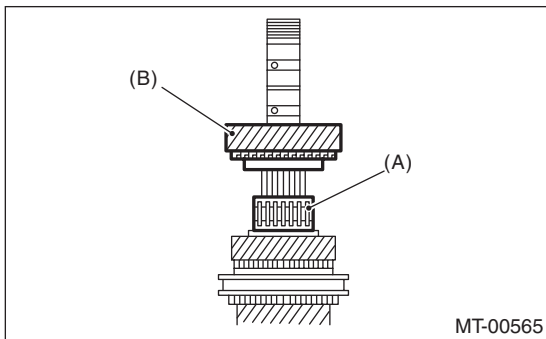
MANUAL TRANSMISSION AND DIFFERENTIAL

8) Install the 4th baulk ring.



9) Apply adequate gear oil to the main shaft, 4th needle bearing and 4th drive gear inner surface.

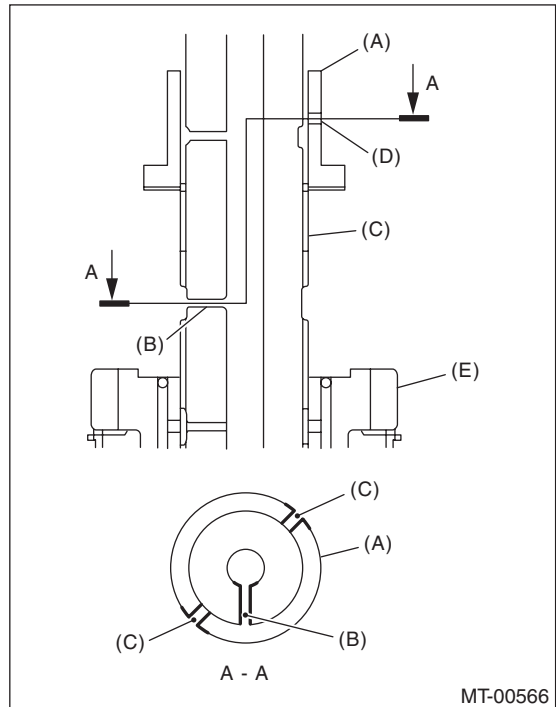
10) Install the 4th needle bearing and 4th drive gear.



- (A) 4th needle bearing
- (B) 4th drive gear

11) Install the 5th bushing.

(1) Being careful not to cover the oil holes of the main shaft and 5th bushing, attach to the main shaft.



- (A) 5th bushing
- (B) Main shaft oil hole
- (C) Main shaft
- (D) 5th bushing oil hole
- (E) 4th drive gear

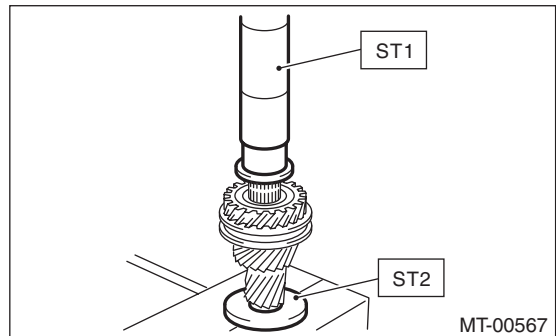
(2) Using the ST, push into the 5th bushing.

ST1 18651AA000 INSTALLER

ST2 398177700 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

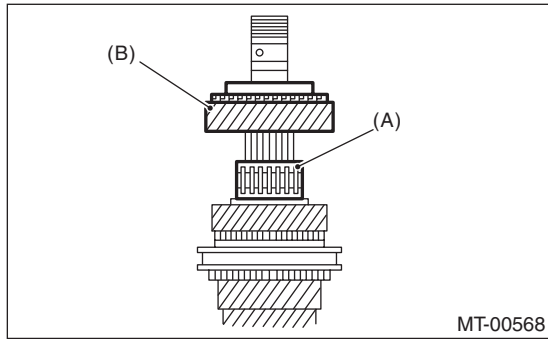


12) Make sure that the 4th drive gear can be turned smoothly by hand. If it does not turn smoothly, re-assemble.

13) Apply adequate gear oil to the main shaft, 5th needle bearing and 5th drive gear inner surface.

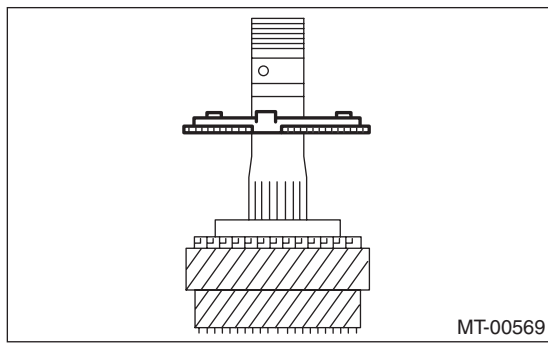
Main Shaft Assembly

14) Install the 5th needle bearing and 5th drive gear.



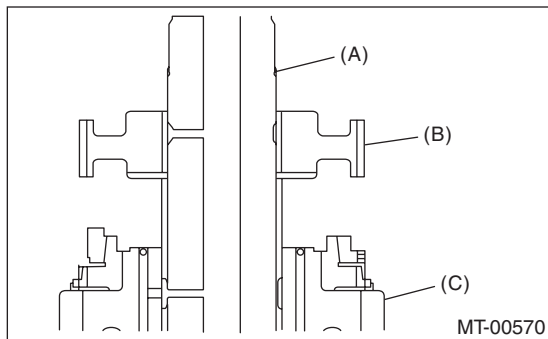
- (A) 5th needle bearing
- (B) 5th drive gear

15) Install the 5th baulk ring.



16) Install the 5th-6th hub.

(1) Being careful of the install direction of the 5th-6th hub, set to the main shaft.



- (A) Main shaft
- (B) 5th-6th hub
- (C) 5th drive gear

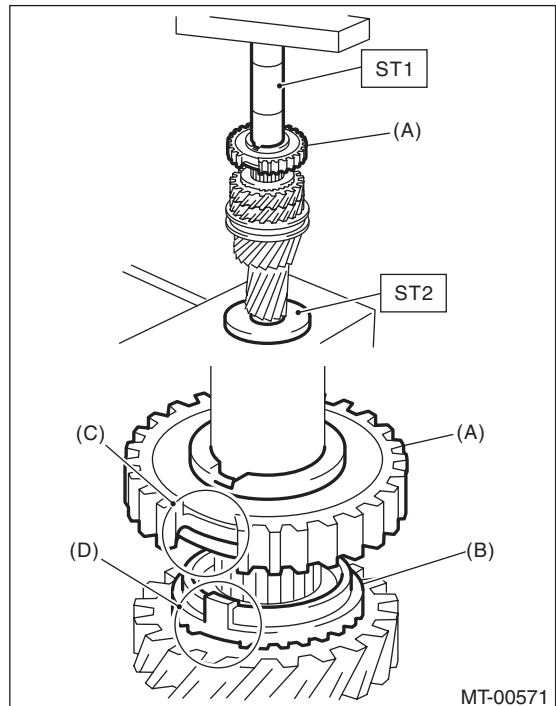
(2) Using the ST, push into the 5th-6th hub.
ST1 18651AA000 INSTALLER
ST2 398177700 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

NOTE:

When pushing into the 5th-6th hub, move the outer baulk ring to match the protrusion of the outer baulk ring and the cut out on the 5th-6th bushing.



- (A) 5th-6th hub
- (B) Outer baulk ring
- (C) Cut out on the 5th-6th hub
- (D) Protrusion of the outer baulk ring

17) Make sure that the 5th drive gear can be turned smoothly by hand. If it does not turn smoothly, re-assemble.

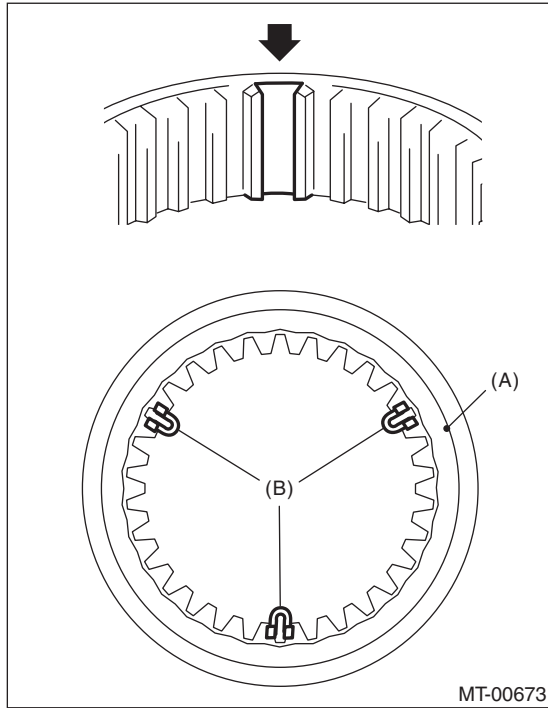
Main Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

18) Attach the 5th-6th shifting insert key at the appropriate position of the 5th-6th sleeve.

NOTE:

The angle of each shifting insert key is 120°.

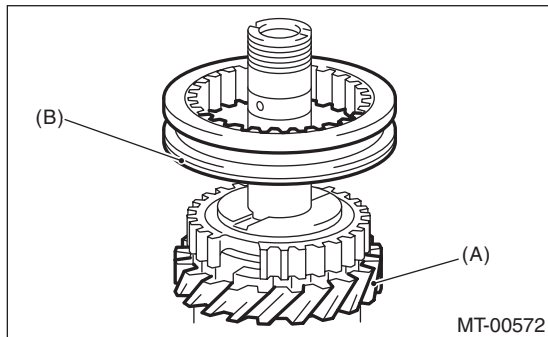


- (A) 5th-6th sleeve
- (B) Shifting insert key

19) Attach the 5th-6th sleeve to the 5th-6th hub.

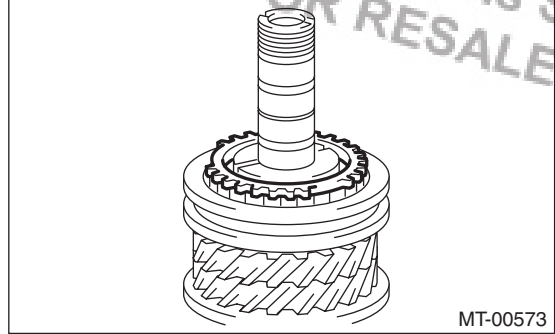
NOTE:

- There are two identification grooves on the 5th-6th sleeve.
- Place the grooves towards the 5th drive gear, and attach the 5th-6th sleeve.



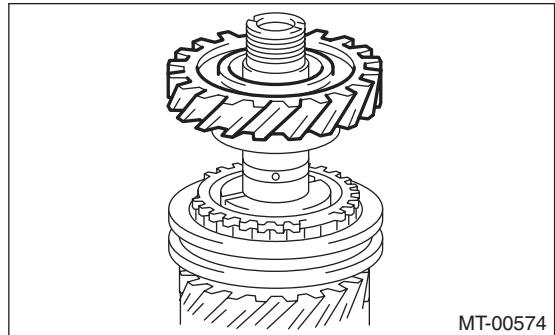
- (A) 5th drive gear
- (B) 5th-6th sleeve identification groove (2 grooves)

20) Install the 6th baulk ring.

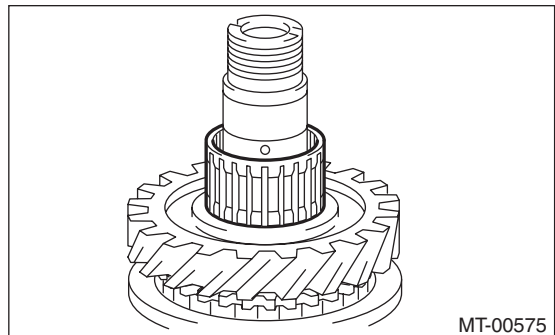


21) Apply adequate gear oil to the main shaft, 6th needle bearing and 6th drive gear inner surface.

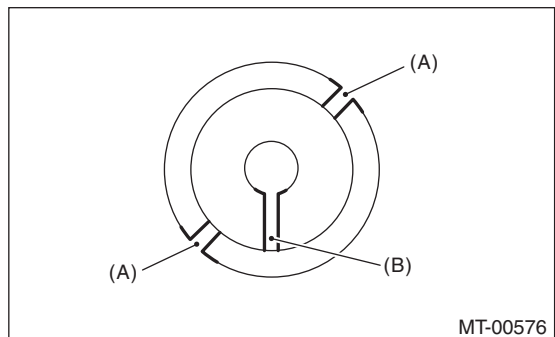
22) Install the 6th drive gear.



23) Install the 6th needle bearing.



24) Being careful not to cover the oil holes of the 6th bushing and the main shaft, set the 6th bushing to the main shaft.



- (A) 6th bushing oil hole
- (B) Main shaft oil hole

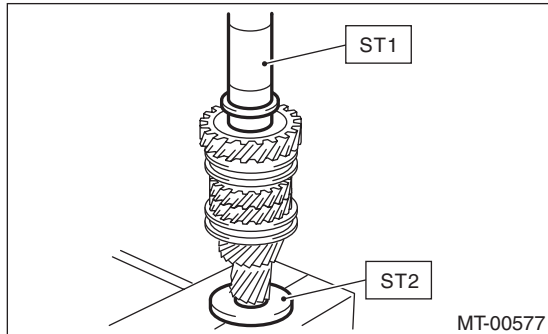
Main Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

25) Using the ST, install the 6th bushing.
ST1 18651AA000 INSTALLER
ST2 398177700 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).



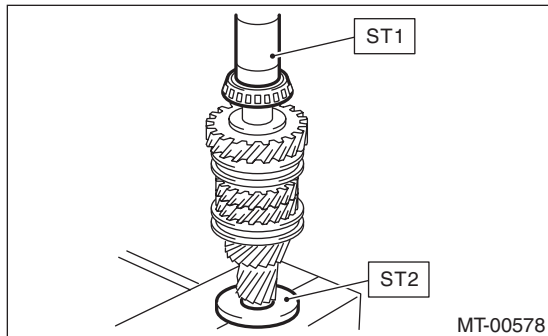
26) Make sure that the 6th drive gear can be turned smoothly by hand. If it does not turn smoothly, re-assemble.

27) Using the ST, install the inner race of the inner bearing.

ST1 18651AA000 INSTALLER
ST2 398177700 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).



28) Using the ST, install the retainer and inner race of the outer bearing.

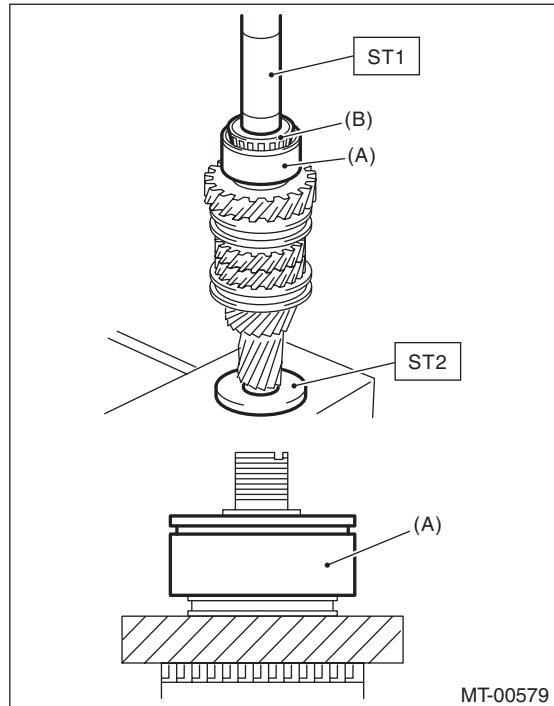
ST1 18651AA000 INSTALLER
ST2 398177700 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

NOTE:

- Confirm that the retainer is installed in the proper direction.
- Push in until there is no backlash on the retainer, or the bearing turns smoothly by hand.



- (A) Retainer
- (B) Outer bearing inner race

29) Make sure that the taper roller bearing turns smoothly by hand. If it does not rotate smoothly, replace the taper roller bearing as a set, and re-assemble.

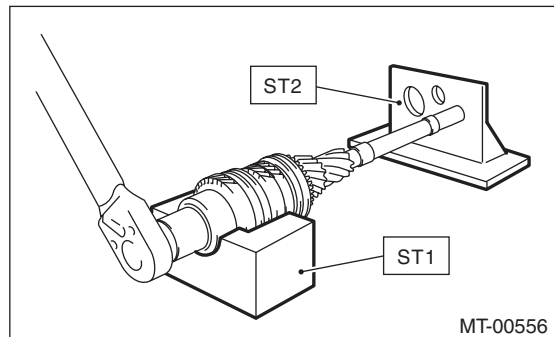
30) Attach the lock washer and a new lock nut.

31) Set the main shaft assembly to the ST, and tighten the lock nut.

ST1 18665AA000 HOLDER
ST2 18664AA000 BASE

Tightening torque:

392 N·m (40.0 kgf·m, 289 ft·lb)



Main Shaft Assembly

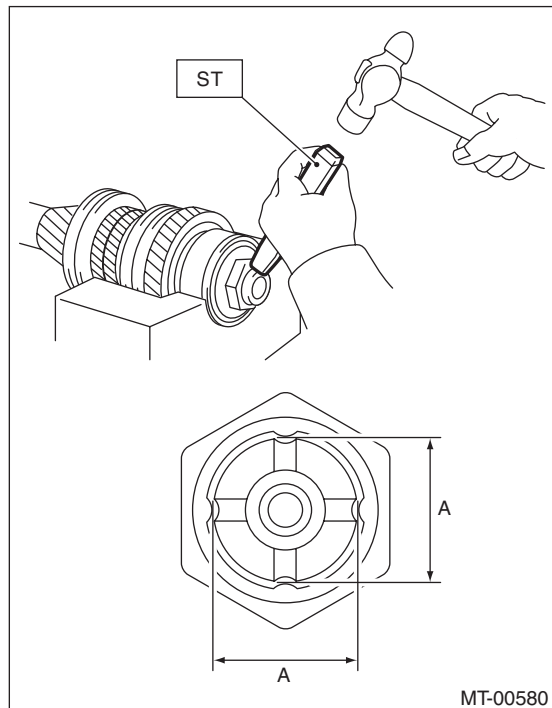
MANUAL TRANSMISSION AND DIFFERENTIAL

32) Using the ST, crimp the lock nut in 4 locations, with dimensions within $A 27 \pm 0.3$ mm (1.06 ± 0.01 in).

ST 18668AA000 PUNCH

NOTE:

Do not damage the crimp area of the lock nut.



E: INSPECTION

Disassembled parts should be washed with water first and then inspected carefully.

1) Bearing

Replace the bearings in the following cases.

- Bearing wear, rusting or damage
- If the bearing does not rotate smoothly or an abnormal noise is emitted when turning.
- When the bearing has other defects

2) Bushing (each gear)

Replace the bushing in following cases.

- When gear sliding surfaces are damaged or excessively worn.

3) Gear

Replace gears in the following cases.

- When gear teeth are damaged or excessively worn.
- If the contact area of the baulk ring is damaged.
- If the inner face of the gear is worn.

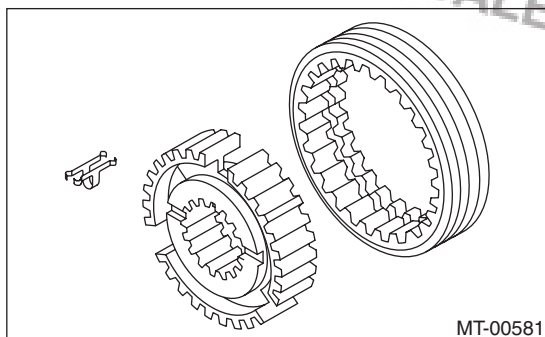
4) Baulk ring, synchro cone

Replace the baulk ring and synchro cone in following cases:

- Baulk ring wear, rusting or damage

5) Shifting insert key

Replace the shifting insert key if deformed, excessively worn or defective in any way.



F: ADJUSTMENT

1. MAIN SHAFT SNAP RING & WASHER SELECTION

NOTE:

In the following conditions, perform the procedures below.

- 1st to 6th driven gear replacement
- 1st and 2nd synchro ring assembly replacement
- Ball bearing replacement
- Adapter plate replacement
- Driven shaft replacement

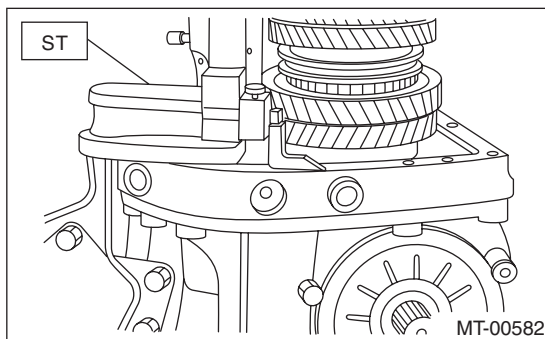
1) Insert the drive pinion assembly into the adapter plate.

NOTE:

Confirm that the thrust bearing outer race has not been removed and the drive pinion is not lifted.

2) Set the height gauge to the adapter plate. Lower the height gauge indicator to the mating surface of the adapter plate and case, and set to zero points.

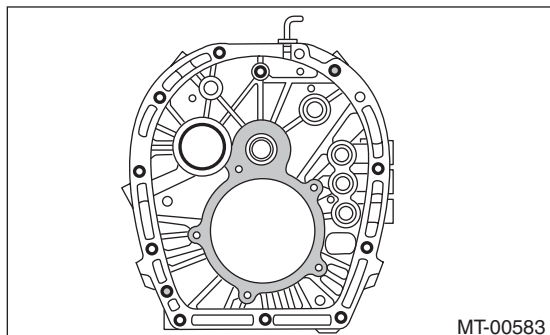
ST 18853AA000 HEIGHT GAUGE



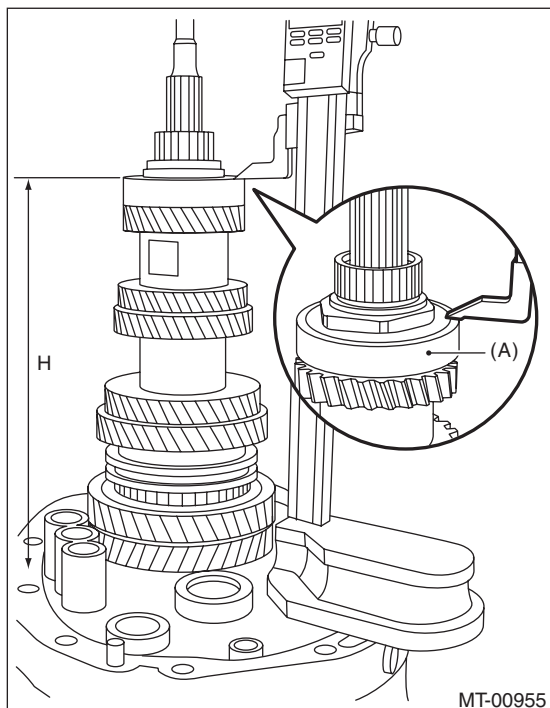
Main Shaft Assembly

NOTE:

- The adapter plate will be the base point for the measurement. Use a scraper to remove any gasket material remaining on the end face.
- During measurement, do not place the height gauge in the shaded area shown in the figure.



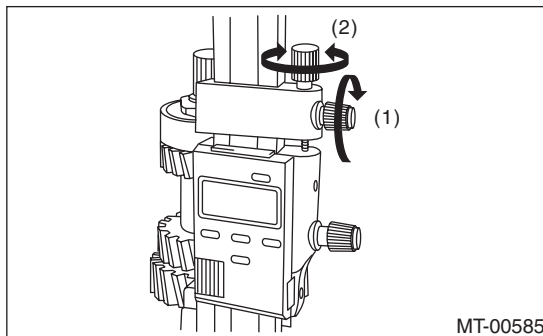
3) Measure the height to the ball bearing end face (height H).



(A) Ball bearing

NOTE:

Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the end face of the bearing.



Turn approximately 120° at a time, and measure the ball bearing in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.

4) According to the measurement value, select the snap ring and washer from the following table.

Snap ring

H: mm (in)	Part No.	Thickness: mm (in)
270.83 — 271.40 (10.66 — 10.69)	805072010	1.65 (0.065)
271.41 — 271.98 (10.69 — 10.71)	805072011	1.95 (0.077)
271.99 — 272.56 (10.71 — 10.73)	805072012	2.25 (0.089)

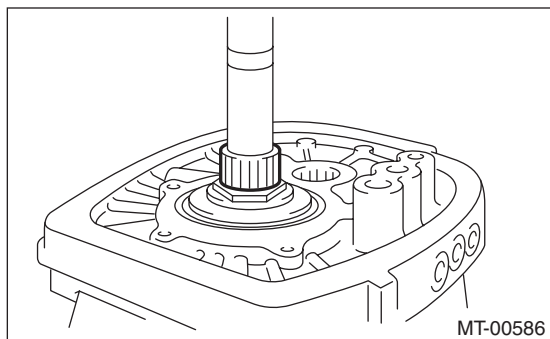
Washer

H: mm (in)	Part No.	Thickness: mm (in)
270.83 — 271.40 (10.66 — 10.69)	803067012	1.6 (0.063)
271.41 — 271.98 (10.69 — 10.71)	803067011	1.3 (0.051)
271.99 — 272.56 (10.71 — 10.73)	803067010	1.0 (0.039)

21. Driven Gear Assembly

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the driven gear assembly. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>
- 10) Remove the needle bearing.



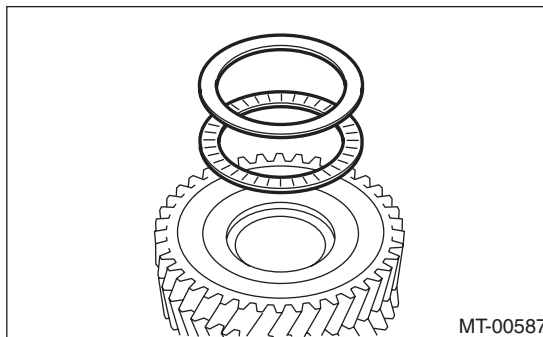
- 11) Remove the thrust needle bearing.

B: INSTALLATION

- 1) Adjust the main shaft snap ring. <Ref. to 6MT-76, ADJUSTMENT, Main Shaft Assembly.>
- 2) Adjust the 1st-2nd shifter rod. <Ref. to 6MT-110, ADJUSTMENT, Shifter Fork and Rod.>
- 3) Install the thrust needle bearing.

NOTE:

Confirm that the thrust needle bearing is installed in the proper direction.



- 4) Install the 1st needle bearing.
- 5) Install the driven gear assembly. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>
- 6) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>
- 7) Adjust the backlash of the driven gear assembly in the axial direction. <Ref. to 6MT-85, ADJUSTMENT, Driven Gear Assembly.>
- 8) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>
- 9) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>
- 10) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>
- 11) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 12) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>
- 13) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

NOTE:

Individual sleeves and hubs meet at a specified position. Before disassembly, mark the meeting position of the sleeve and hub.

- 1) Affix the ST to the work table.
ST 18664AA000 BASE
- 2) Flatten the nut tab.

Driven Gear Assembly

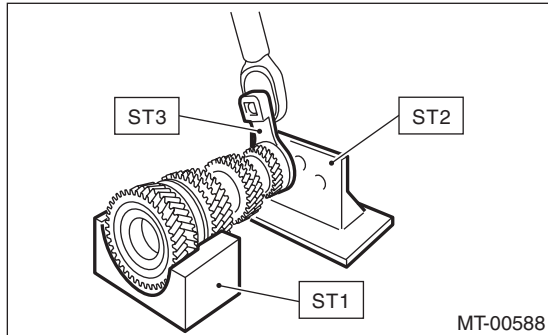
MANUAL TRANSMISSION AND DIFFERENTIAL

3) Attach ST3 to the lock nut, set the driven gear assembly to the ST, and remove the lock nut.

ST1 18666AA000 HOLDER

ST2 18664AA000 BASE

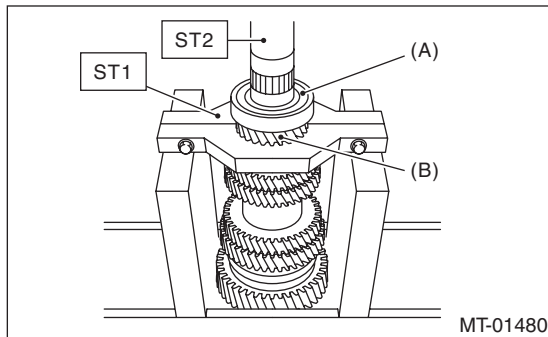
ST3 18620AA000 ADAPTER WRENCH



4) Attach ST1 to the 6th gear, then remove the ball bearing and 5th-6th driven gear.

ST1 18723AA000 REMOVER

ST2 499877000 RACE 4-5 INSTALLER



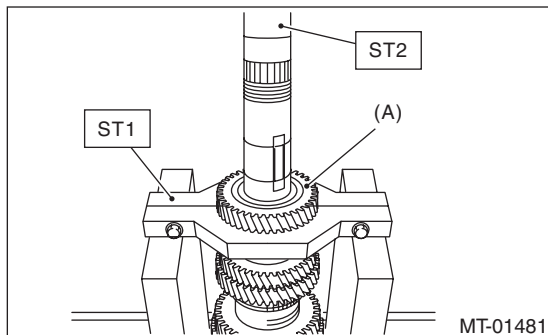
(A) Ball bearing

(B) 5th-6th driven gear

5) Attach ST1 to the 4th gear, then remove the 3rd-4th driven gear.

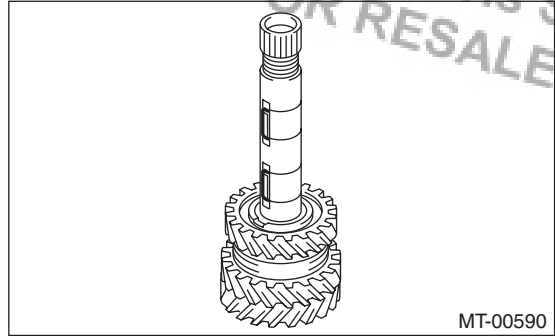
ST1 18723AA000 REMOVER

ST2 499877000 RACE 4-5 INSTALLER

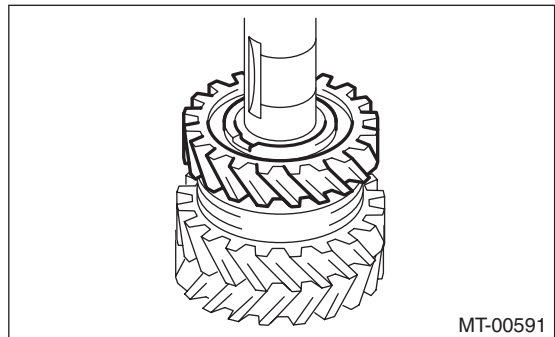


(A) 3rd-4th driven gear

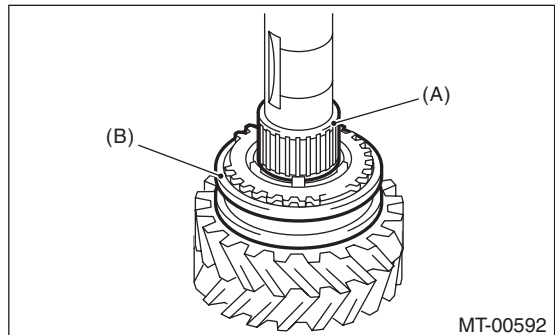
6) Remove the driven gear key.



7) Remove the 2nd gear.



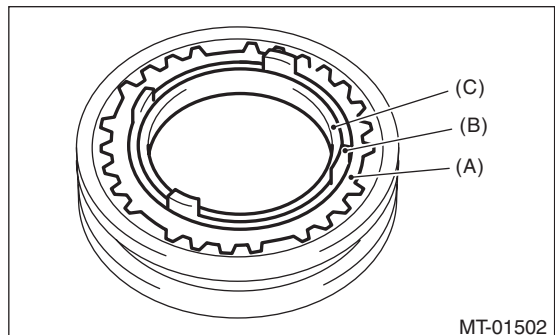
8) Remove the needle bearing and 1st-2nd sleeve.



(A) Needle bearing

(B) 1st-2nd sleeve

9) Remove the outer baulk ring, 2nd synchro cone and inner baulk ring.



(A) Outer baulk ring

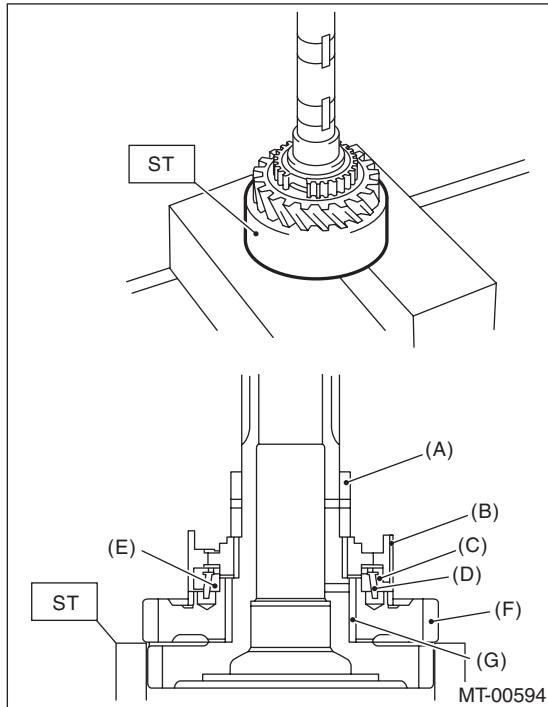
(B) 2nd synchro cone

(C) Inner baulk ring

Driven Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

10) Using the ST, remove individual parts.
ST 18754AA000 REMOVER



- (A) 2nd bushing
- (B) 1st-2nd hub
- (C) Outer baulk ring
- (D) 1st synchro cone
- (E) Inner baulk ring
- (F) 1st driven gear
- (G) 1st needle bearing

D: ASSEMBLY

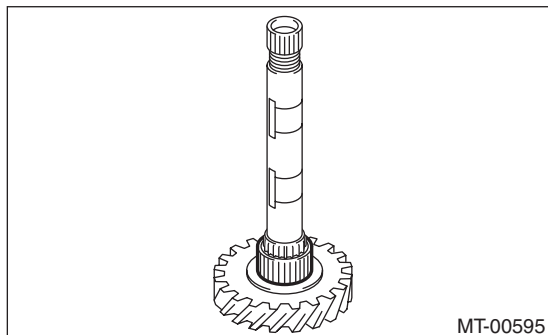
NOTE:

Replace the following parts as a set.

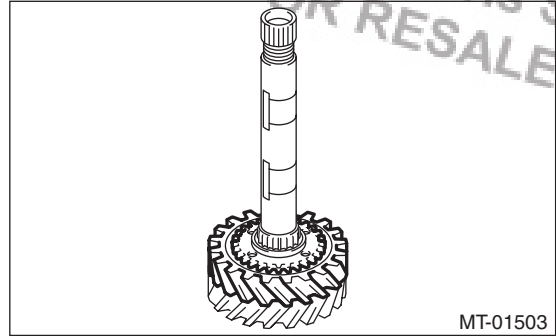
- Sleeve and hub
- Outer baulk ring, 1st synchro cone and inner baulk ring
- Outer baulk ring, 2nd synchro cone and inner baulk ring

1) Apply adequate gear oil to the main shaft, 1st needle bearing and 1st drive gear inner surface.

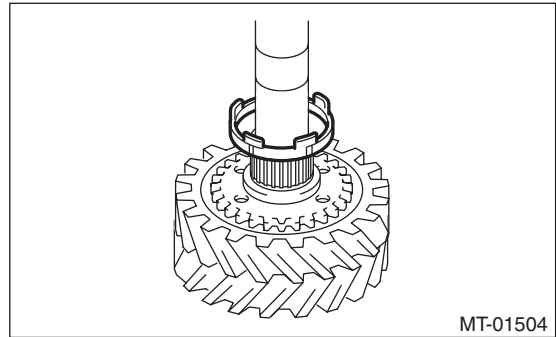
2) Install the 1st needle bearing.



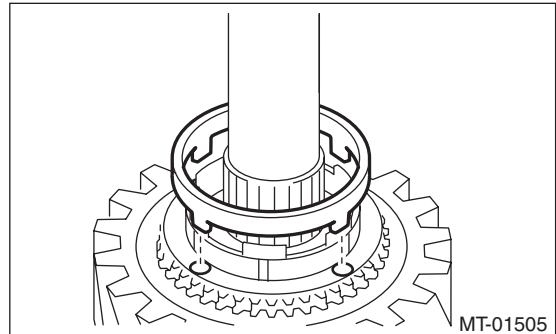
3) Attach the 1st driven gear to the driven shaft.



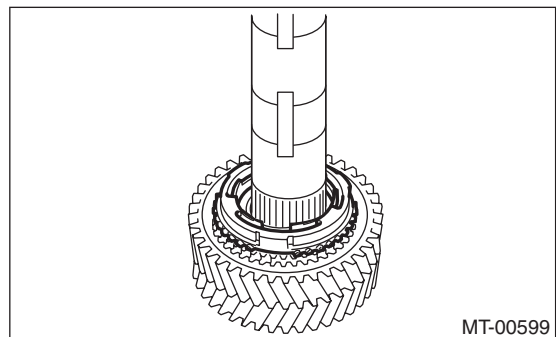
4) Install the inner baulk ring.



5) Match the protrusion of the 1st synchro cone to the hole of the 1st drive gear, then install.



6) Install the outer baulk ring.



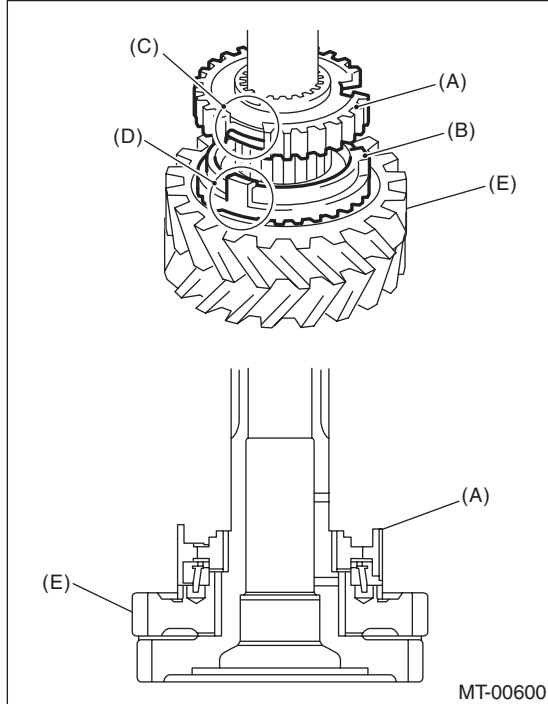
Driven Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

7) Install the 1st-2nd hub.

NOTE:

- Match the cut out of the 1st-2nd hub with the protrusion on the outer baulk ring, then install.
- Make sure that the 1st-2nd hub is installed in the correct direction.



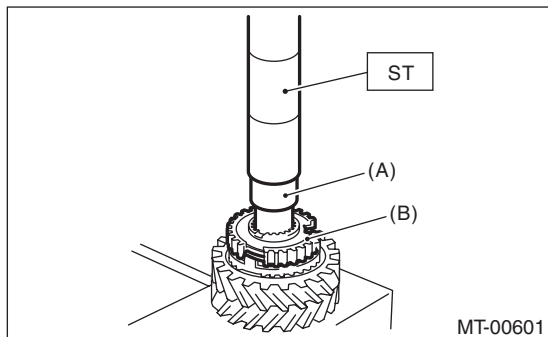
- (A) 1st-2nd hub
- (B) Outer baulk ring
- (C) 1st-2nd hub cut out section
- (D) Protrusion of the outer baulk ring
- (E) 1st driven gear

8) Using the ST, install the 2nd hub.

ST 18654AA000 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).



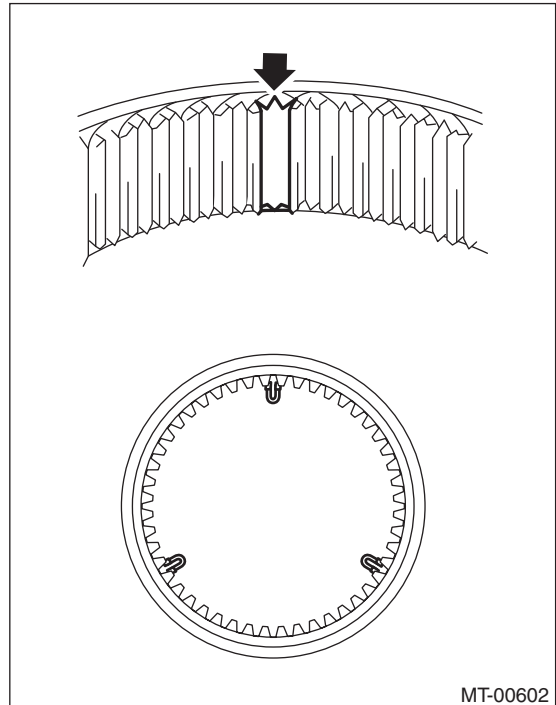
- (A) 2nd bushing
- (B) 1st-2nd hub

9) Make sure that the 1st drive gear can be turned smoothly by hand. If it does not turn smoothly, re-assemble.

10) Attach the shifting insert key to the appropriate position of the 1st-2nd sleeve.

NOTE:

The angle of each shifting insert key is 120°.



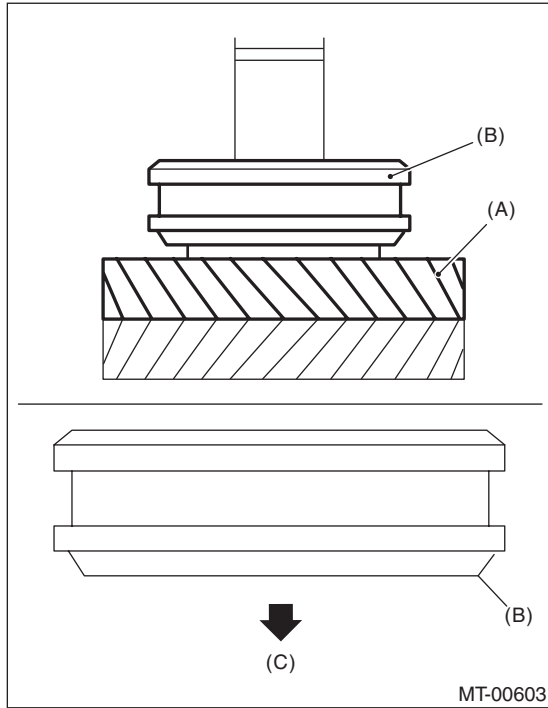
Driven Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

11) Attach the 1st-2nd sleeve to the 1st-2nd hub.

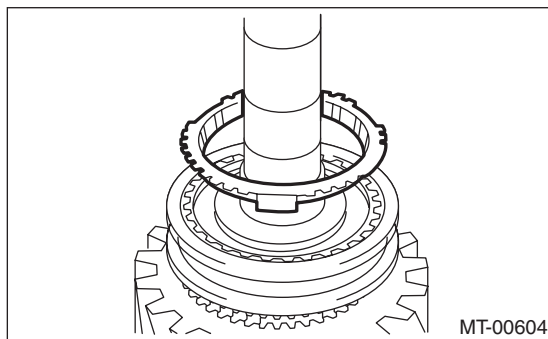
NOTE:

Make sure that the 1st-2nd sleeve is installed in the correct direction.

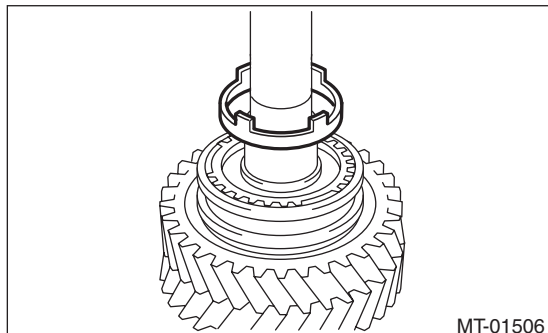


- (A) 1st driven gear
- (B) 1st-2nd sleeve
- (C) 1st driven gear side

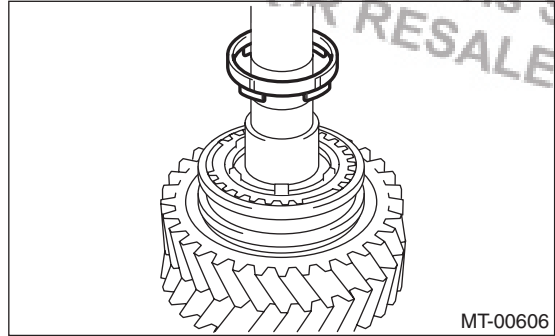
12) Install the outer baulk ring.



13) Install the 2nd synchro cone.



14) Install the inner baulk ring.

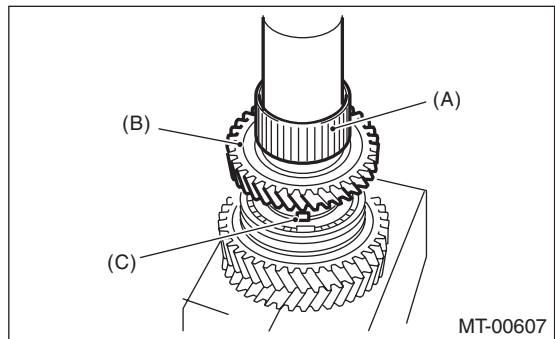


15) Apply adequate gear oil to the bushing, 2nd needle bearing and 2nd drive gear inner surface.

16) Install the 2nd needle bearing and 2nd driven gear.

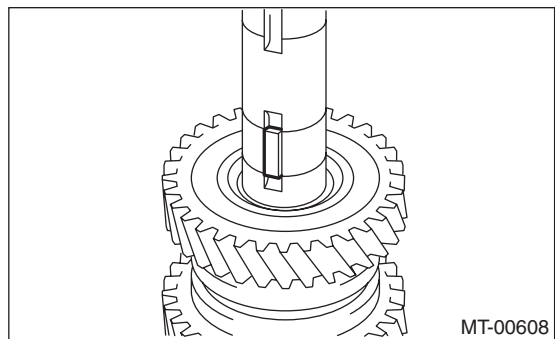
NOTE:

Match the protrusion of the 2nd synchro cone to the hole of the 2nd driven gear, then install.



- (A) 2nd needle bearing
- (B) 2nd driven gear
- (C) Protrusion of the 2nd synchro cone

17) Attach the key.



Driven Gear Assembly

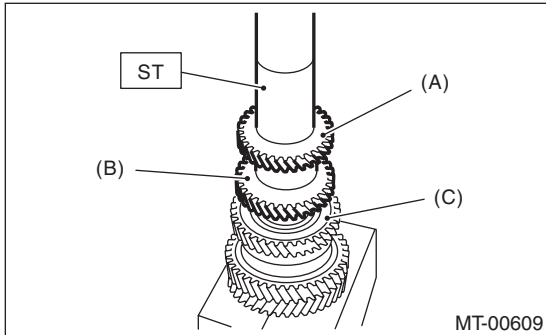
18) Using the ST, install the 3rd-4th driven gear.
ST 18654AA000 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

NOTE:

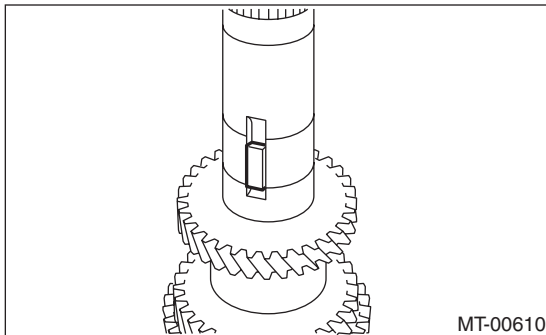
- Make sure that the 3rd-4th driven gear is installed in the correct direction.
- Match the groove on the 3rd-4th driven gear to the key.



- (A) 4th gear
- (B) 3rd gear
- (C) 2nd gear

19) Make sure that the 2nd driven gear can be turned smoothly by hand. If it does not turn smoothly, reassemble.

20) Attach the key.



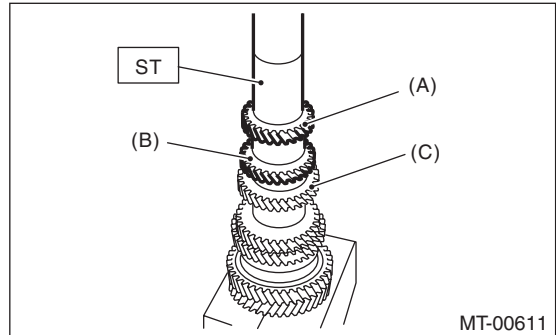
21) Using the ST, install the 5th-6th driven gear.
ST 18654AA000 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

NOTE:

- Make sure that the 5th-6th driven gear is installed in the correct direction.
- Match the groove on the 5th-6th driven gear to the key.



- (A) 6th gear
- (B) 5th gear
- (C) 4th gear

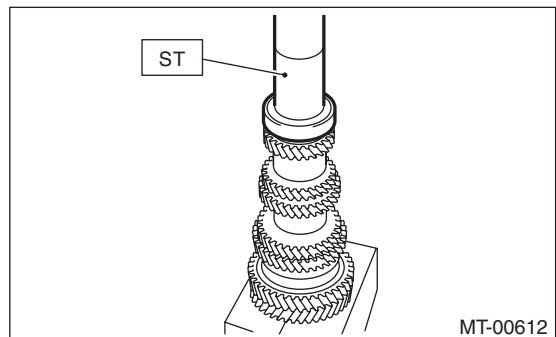
22) Using the ST, install the ball bearing.
ST 18654AA000 INSTALLER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

NOTE:

Confirm that the ball bearing is installed in the proper direction.



23) Make sure that the ball bearing turns smoothly by hand. If it does not turn smoothly, reassemble.

24) Install a new lock nut.

Driven Gear Assembly

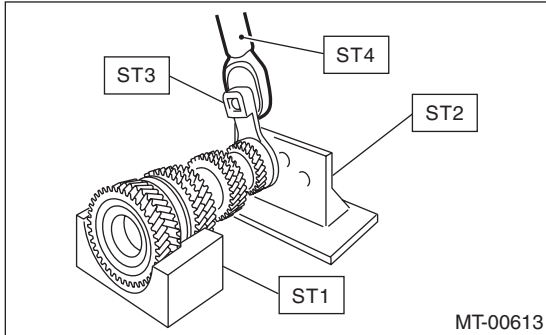
MANUAL TRANSMISSION AND DIFFERENTIAL

25) Attach ST3 to the lock nut, attach ST to the driven gear assembly, and tighten the lock nut.

- ST1 18666AA000 HOLDER
- ST2 18664AA000 BASE
- ST3 18620AA000 ADAPTER WRENCH
- ST4 18852AA000 TORQUE WRENCH

Tightening torque:

530 N·m (54.0 kgf·m, 391 ft·lb)

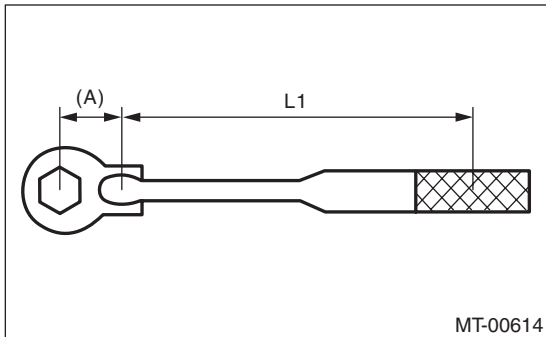


NOTE:

When using a torque wrench other than ST4, use the calculation below to calculate and tighten the lock nut.

$$T = L1 / (0.1 + L1) \times 570$$

T	N·m (kgf·m, ft·lb)	Torque wrench setting
L1	m (in)	Torque wrench length
0.1 m (3.94 in)		Length of ST
570 N·m (58.1 kgf·m, 420 ft·lb)		Tightening torque (lock nut):



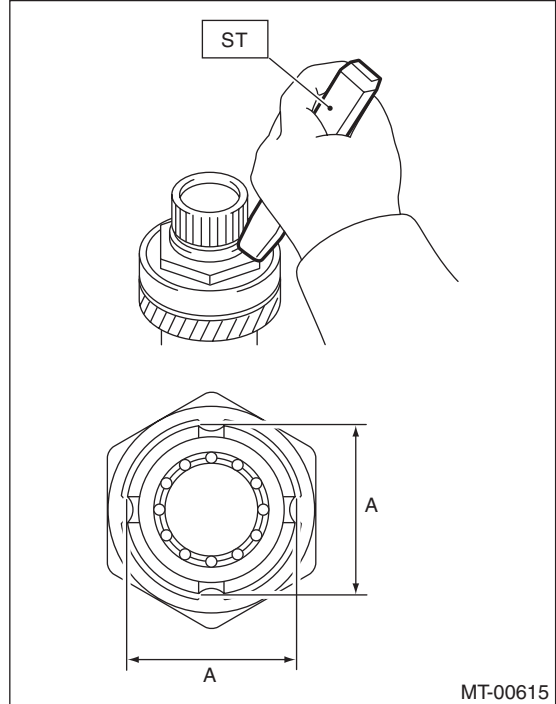
(A) 0.1 m (3.94 in)

26) Using the ST, crimp the lock nut in 4 locations, with dimensions within A 44 ± 0.5 mm (1.73 ± 0.02 in).

- ST 18669AA000 PUNCH

NOTE:

Do not damage the crimp area of the lock nut.



E: INSPECTION

Disassembled parts should be washed with water first and then inspected carefully.

1) Bearing

Replace the bearings in the following cases.

- Bearing wear, rusting or damage
- If the bearing does not rotate smoothly or an abnormal noise is emitted when turning.
- When the bearing has other defects

2) Bushing (each gear)

Replace the bushing in following cases.

- When gear sliding surfaces are damaged or excessively worn.

3) Gear

Replace gears in the following cases.

- When gear teeth are damaged or excessively worn.
- If the contact area of the baulk ring is damaged.
- If the inner face of the gear is worn.

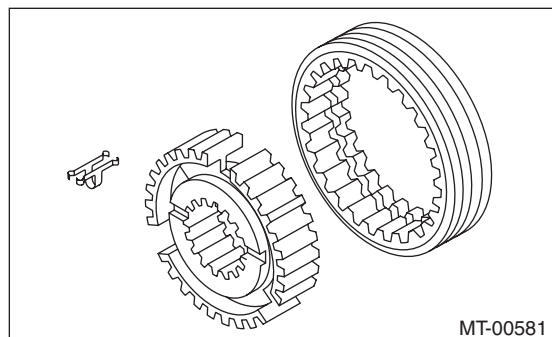
4) Baulk ring, synchro cone

Replace the baulk ring and synchro cone in following cases:

- Baulk ring wear, rusting or damage

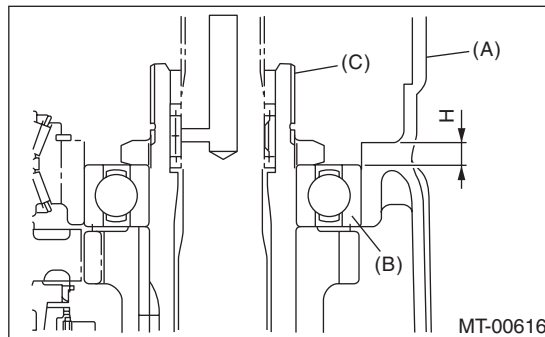
5) Shifting insert key

Replace the shifting insert key if deformed, excessively worn or defective in any way.



F: ADJUSTMENT

1) Measure the length "H" from the transmission case and oil pump cover mating surface, to the end face of the ball bearing.



- (A) Transmission case
- (B) Ball bearing
- (C) Driven gear ASSY

2) Using the following calculation, calculate the thickness of the driven gear assembly washer.

$$T = H - \{5.8 \pm 0.05 \text{ mm (} 0.23 \pm 0.002 \text{ in)}\} - \{0.1 - 0.3 \text{ mm (} 0.0039 - 0.0118 \text{ in)}\}$$

t	Washer thickness
H	Length from the transmission case and oil pump cover mating surface to the end face of the ball bearing
5.8±0.05 mm (0.23±0.002 in)	Collar thickness
0.1 — 0.3 mm (0.0039 — 0.0118 in)	Driven gear assembly axial direction backlash standard

3) Select 0 to 3 washers from the following table, and adjust to the backlash that is closest to the standard value.

Driven gear assembly axial direction backlash standard:

0.1 — 0.3 mm (0.0039 — 0.0118 in)

Washer	
Part No.	Thickness t mm (in)
803072030	0.15 (0.0059)
803072031	0.30 (0.0118)
803072032	0.45 (0.0177)
803072033	0.60 (0.0236)

Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

22.Reverse Idler Gear Assembly

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the reverse idler gear assembly. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>

B: INSTALLATION

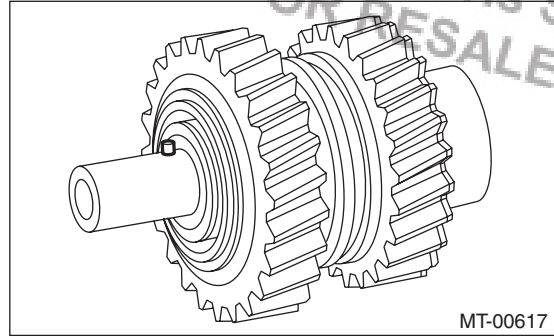
- 1) Select the reverse fork rod. <Ref. to 6MT-110, ADJUSTMENT, Shifter Fork and Rod.>
- 2) Install the reverse idler gear assembly. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>
- 3) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>
- 4) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>
- 5) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>
- 6) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>
- 7) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 8) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>
- 9) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

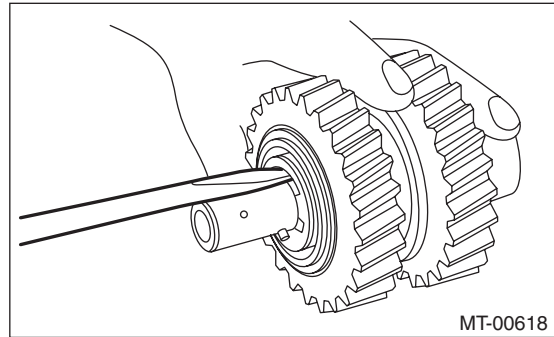
NOTE:

Sleeves and reverse gears meet at a specified position. Before disassembly, mark the meeting position of the sleeve and hub.

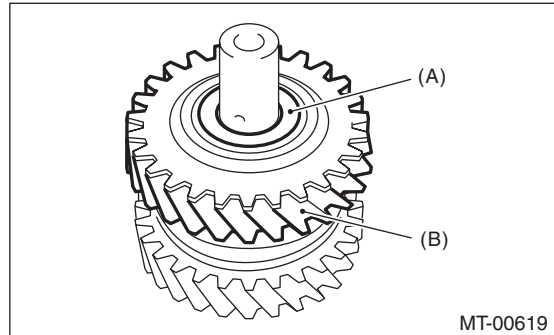
- 1) Remove the spring pin.



- 2) Remove the snap ring.

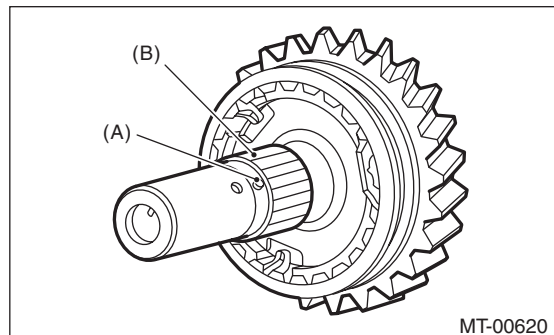


- 3) Remove the washer and reverse idler gear.



- (A) Washer
- (B) Reverse idler gear

- 4) Remove the knock pin and reverse idler gear needle bearing.



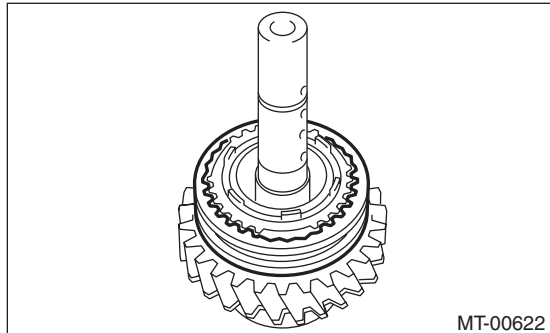
- (A) Knock pin
- (B) Reverse idler gear needle bearing

- 5) Remove the collar.

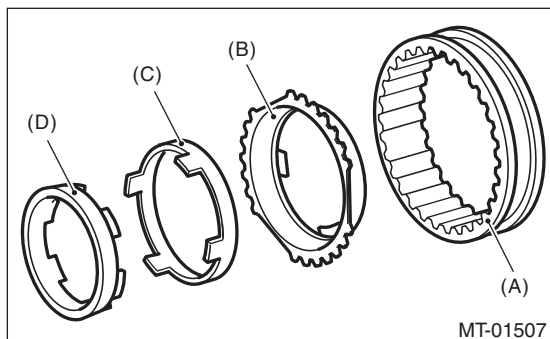
Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

6) Remove the reverse sleeve.

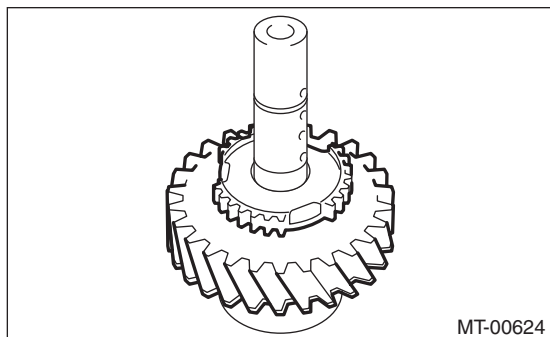


7) Remove the outer baulk ring, reverse synchro cone and inner baulk ring from the reverse sleeve.

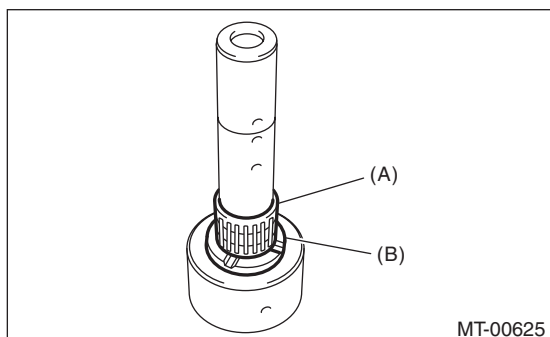


- (A) Reverse sleeve
- (B) Outer baulk ring
- (C) Reverse synchro cone
- (D) Inner baulk ring

8) Remove reverse idler gear No. 2.

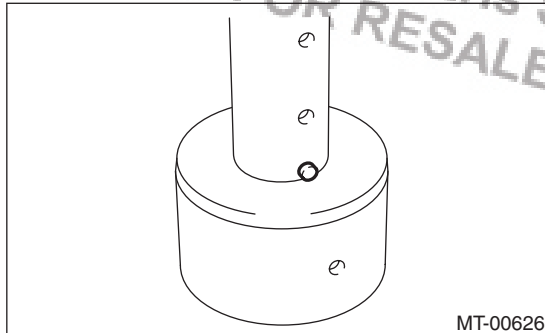


9) Remove the washer and needle bearing.

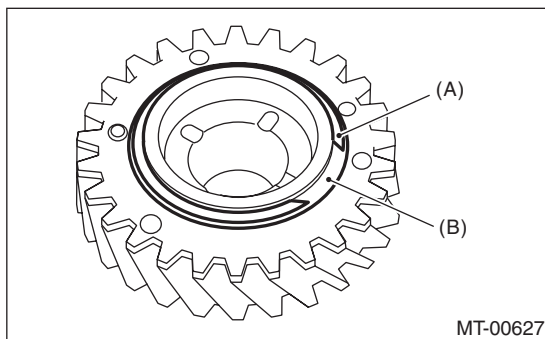


- (A) Needle bearing
- (B) Washer

10) Remove the knock pin.

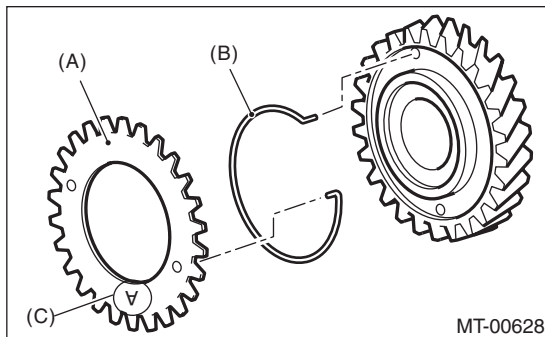


11) Remove the snap ring and friction plate from reverse gear.



- (A) Snap ring
- (B) Friction plate

12) Remove the sub gear and spring.



- (A) Sub gear
- (B) Spring
- (C) Stamp (Marking A)

Reverse Idler Gear Assembly

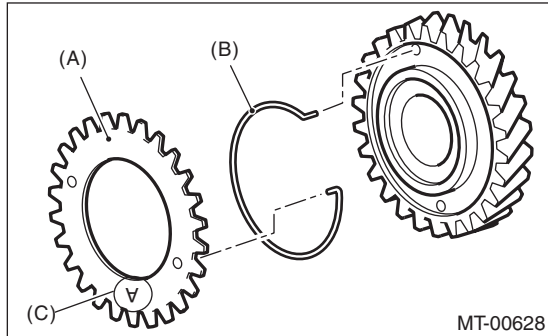
MANUAL TRANSMISSION AND DIFFERENTIAL

D: ASSEMBLY

1) Attach the sub gear and spring.

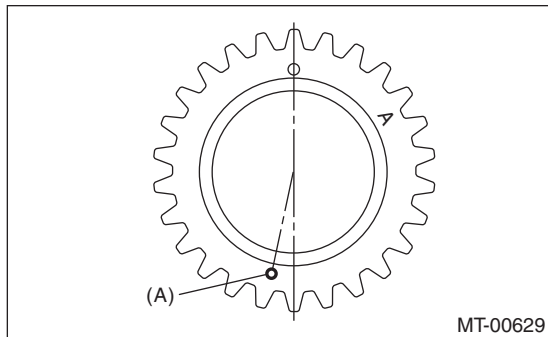
NOTE:

- Turn the white marking on the hook section towards the sub gear side, and attach the spring.
- Point the stamp (marking A) towards the outside, and install the sub gear.



- (A) Sub gear
- (B) Spring
- (C) Stamp (Marking A)

- While paying attention to the direction of the sub gear attachment hole, attach the spring and sub gear.

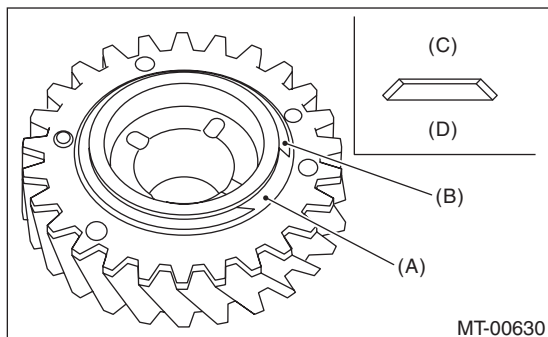


- (A) Attachment hole

2) Install the friction plate and snap ring.

NOTE:

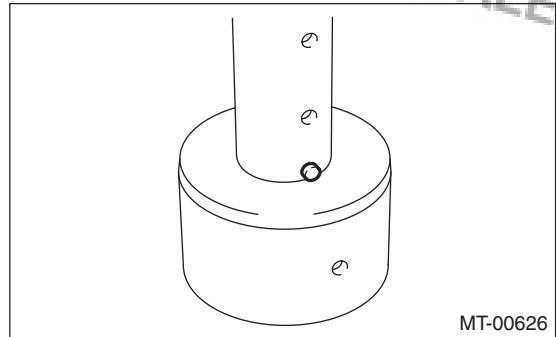
Confirm that the friction plate is installed in the proper direction.



- (A) Friction plate
- (B) Snap ring
- (C) Snap ring side
- (D) Sub gear side

3) Apply adequate gear oil to the shaft, needle bearing and reverse drive gear inner surface.

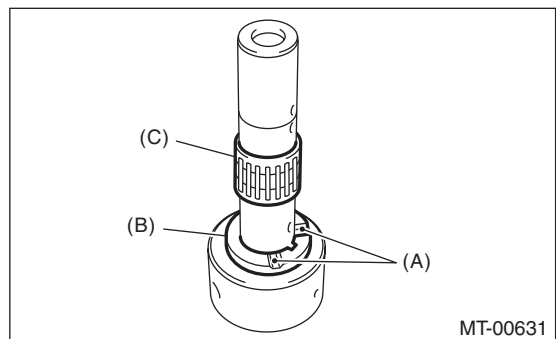
4) Install the knock pin.



5) Install the washer and the needle bearing.

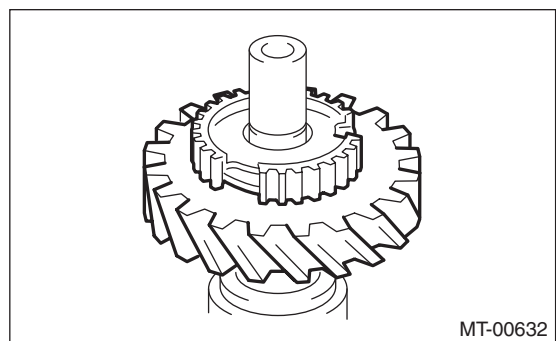
NOTE:

Point the groove towards the reverse idler gear, and attach the washer.



- (A) Groove
- (B) Washer
- (C) Needle bearing

6) Install the reverse idler gear No. 2.



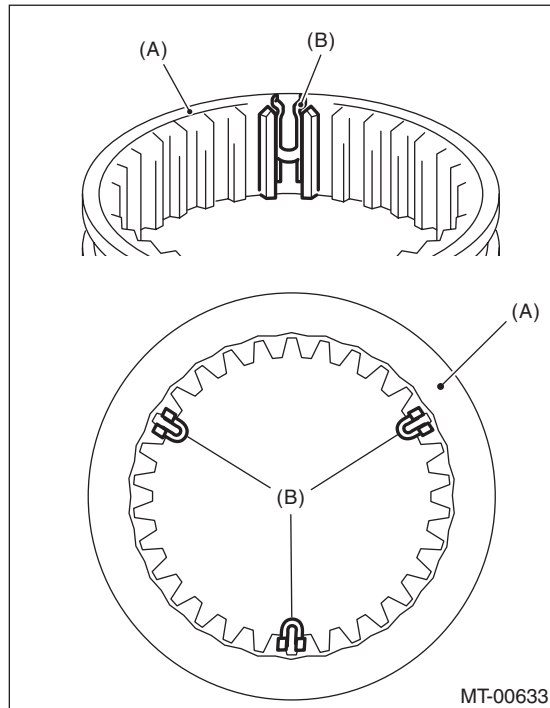
Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

7) Attach the shifting insert key to the appropriate location of the reverse sleeve.

NOTE:

The angle of each shifting insert key is 120°.

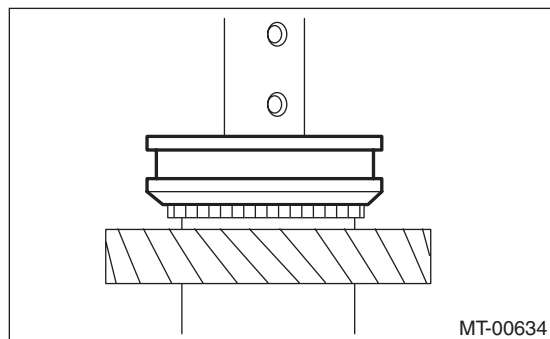


- (A) Reverse sleeve
- (B) Shifting insert key

8) Attach the reverse sleeve to the reverse idler gear No. 2.

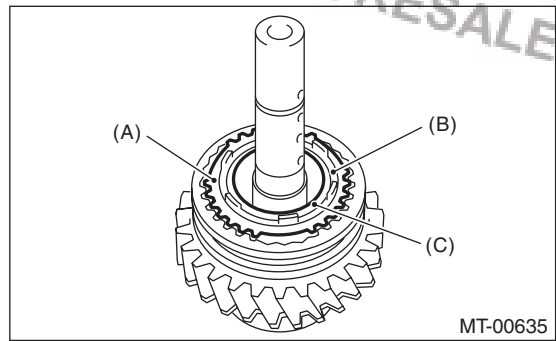
NOTE:

Confirm that the reverse sleeve is installed in the proper direction.



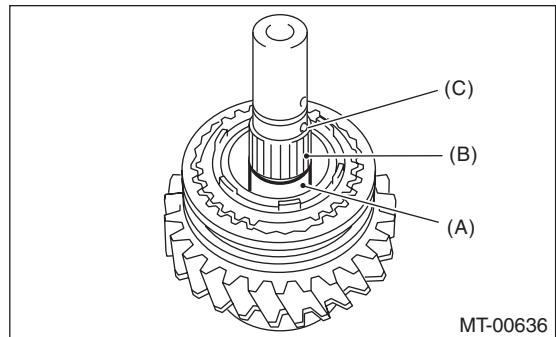
9) Apply adequate gear oil to the collar, needle bearing and reverse drive gear inner surface.

10) Install the outer baulk ring, reverse synchro cone and inner baulk ring.



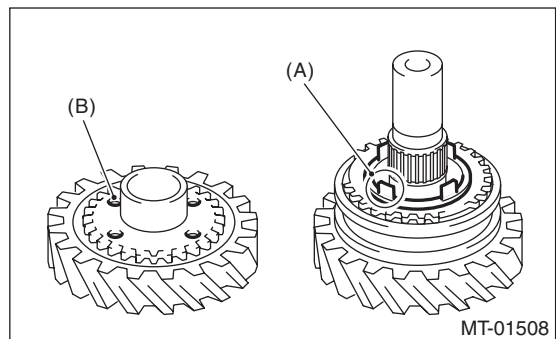
- (A) Outer baulk ring
- (B) Reverse synchro cone
- (C) Inner baulk ring

11) Install the collar and needle bearing, then the knock pin.



- (A) Collar
- (B) Needle bearing
- (C) Knock pin

12) Match the protrusion of the reverse synchro cone to the hole on the reverse idler gear, and install the reverse idler gear.



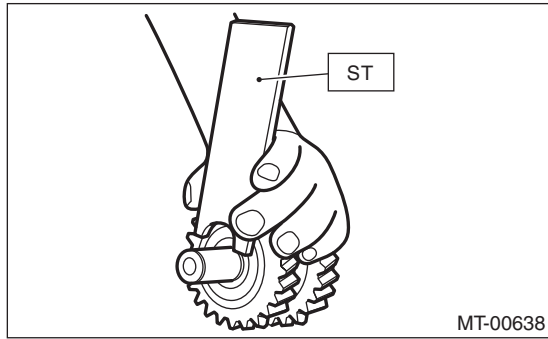
- (A) Protrusion on the reverse synchro cone
- (B) Hole of the reverse idler gear

13) Point the groove towards the reverse idler gear, and attach the washer.

Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

- 14) Using the ST, install the snap ring.
ST 18672AA000 GUIDE CLIP



- 15) Inspect and adjust the clearance between the snap ring and the washer. <Ref. to 6MT-90, INSPECTION, Reverse Idler Gear Assembly.>

- 16) Install a new spring pin.

E: INSPECTION

Disassembled parts should be washed with water first and then inspected carefully.

1) Bearing

Replace the bearings in the following cases.

- Bearing wear, rusting or damage
- If the bearing does not rotate smoothly or an abnormal noise is emitted when turning.
- When the bearing has other defects

2) Bushing (each gear)

Replace the bushing in following cases.

- When gear sliding surfaces are damaged or excessively worn.

3) Gear

Replace gears in the following cases.

- When gear teeth are damaged or excessively worn.
- If the contact area of the baulk ring is damaged.
- If the inner face of the gear is worn.

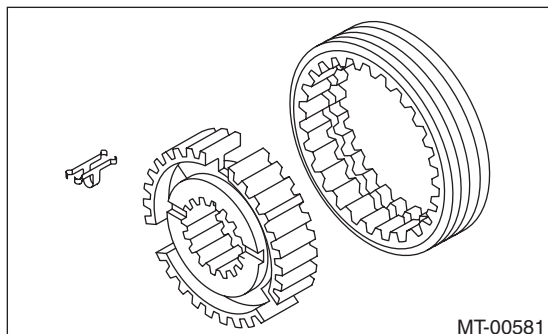
4) Baulk ring, synchro cone

Replace the baulk ring and synchro cone in following cases:

Baulk ring wear, rusting or damage

5) Shifting insert key

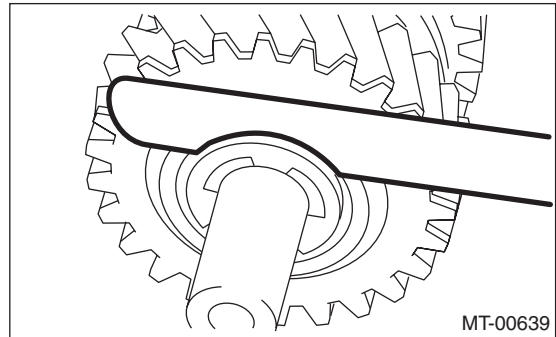
Replace the shifting insert key if deformed, excessively worn or defective in any way.



- 6) Check clearance between the snap ring and washer.

Clearance specification:

0.1 — 0.3 mm (0.0039 — 0.0118 in)



If the clearance is out of the specification, select a snap ring from the following table and perform replacement.

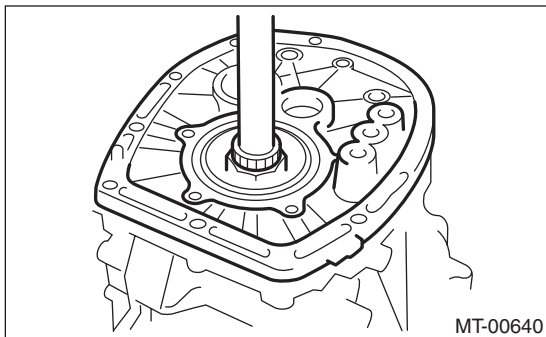
Snap ring	
Part No.	Thickness mm (in)
031319000	1.50 (0.059)
805019030	1.60 (0.062)
805019010	1.72 (0.068)

After replacing the snap ring, inspect the clearance.

23. Drive Pinion Shaft Assembly

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the individual gear assemblies. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>
- 10) Remove the drive pinion shaft assembly.

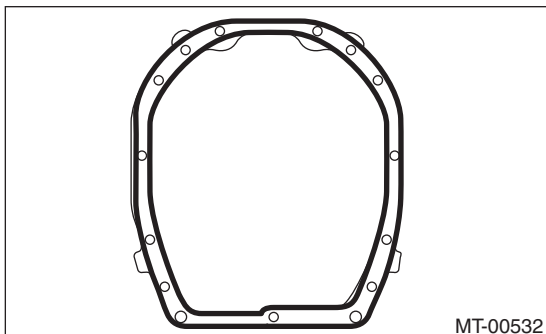


B: INSTALLATION

- 1) Remove any remaining gasket material from the drive plate and clutch housing.
- 2) Apply liquid gasket to the clutch housing.

Liquid gasket:

THREE BOND 1215 (Part No. 004403007)



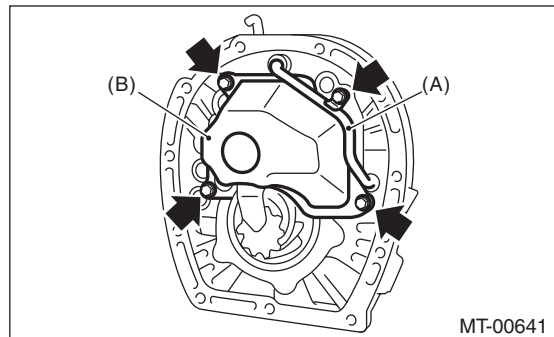
- 3) Install the individual gear assemblies. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>
- 4) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>
- 5) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>
- 6) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>
- 7) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>
- 8) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 9) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>
- 10) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

NOTE:

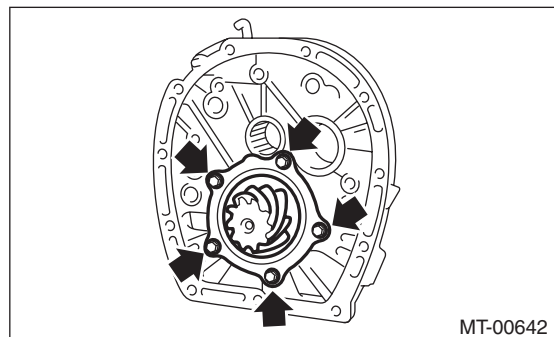
Replace the drive pinion shaft and the hypoid driven gear as a set.

- 1) Remove the pipe and oil chamber.



- (A) Pipe
(B) Oil chamber

- 2) Remove the drive pinion shaft and shim from the adapter plate.



- 3) Affix the ST to the work table.
ST 18664AA000 BASE
- 4) Flatten the nut tab.

Drive Pinion Shaft Assembly

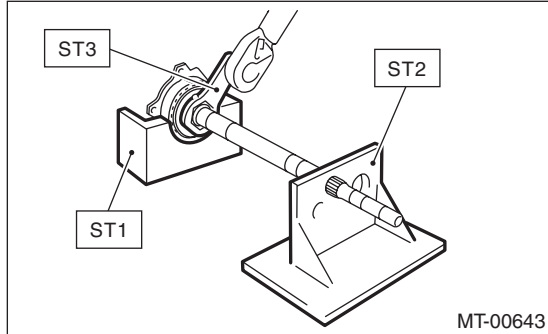
MANUAL TRANSMISSION AND DIFFERENTIAL

5) Attach ST3 to the locknut, and set the drive pinion shaft to the ST. Remove the lock nut and washer.

ST1 18667AA000 HOLDER

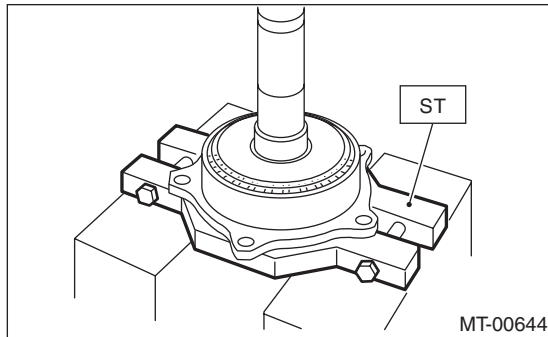
ST2 18664AA000 BASE

ST3 18621AA000 ADAPTER WRENCH



6) Using the ST, remove the taper roller bearing assembly.

ST 18723AA000 REMOVER



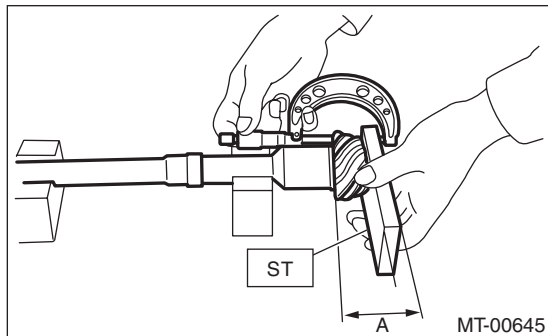
D: ASSEMBLY

1) Using the ST, measure drive pinion measurement "A".

NOTE:

When selecting the drive pinion shim, refer to measurement "A".

ST 398643600 GAUGE

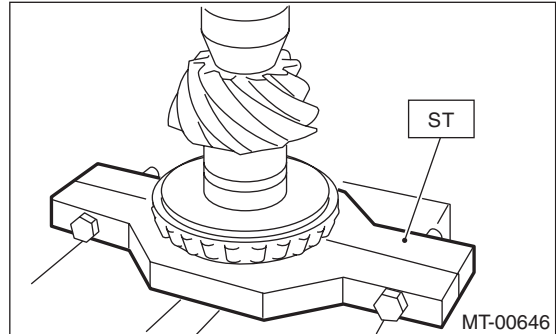


2) Using the ST and a press, attach the inner bearing inner race to the drive pinion shaft.

ST 18723AA000 REMOVER

CAUTION:

Do not apply pressure in excess of 40 kN (4.0 ton, 4.4 US ton, 3.9 Imp ton).

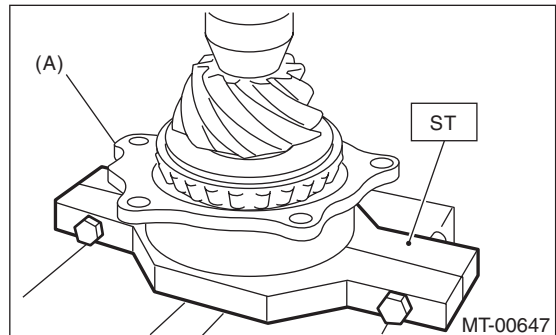


3) Using the ST and a press, attach the retainer and outer bearing inner race to the drive pinion shaft.

ST 18723AA000 REMOVER

NOTE:

Push in to a position where the bearing rotates smoothly.



(A) Retainer

4) Attach the washer and a new lock nut.

Drive Pinion Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

5) Set the ST to the drive pinion, and tighten the lock nut.

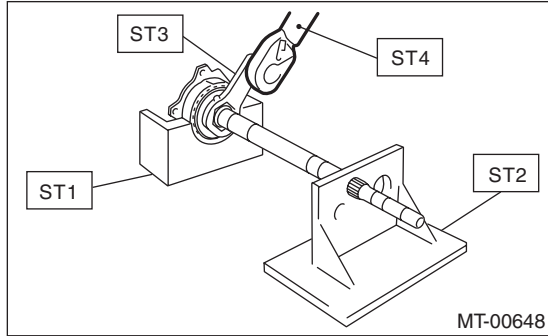
- ST1 18667AA000 HOLDER
- ST2 18664AA000 BASE
- ST3 18621AA000 ADAPTER WRENCH
- ST4 18852AA000 TORQUE WRENCH

NOTE:

Tighten using the ST and the straight line torque wrench.

Tightening torque:

265 N·m (27.0 kgf·m, 195 ft·lb)

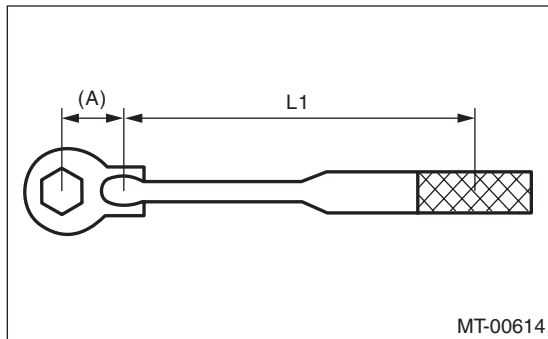


NOTE:

- When using a torque wrench other than ST4, use the calculation below to calculate and tighten the lock nut.
- Tighten using the ST and the straight line torque wrench.

$$T = L1 / (0.1 + L1) \times 285$$

T	N·m (kgf·m, ft·lb)	Torque wrench setting
L1	m (in)	Torque wrench length
0.1 m (3.94 in)		Length of ST
285 N·m (29.0 kgf·m, 210 ft·lb)		Tightening torque (lock nut):



(A) 0.1 m (3.94 in)

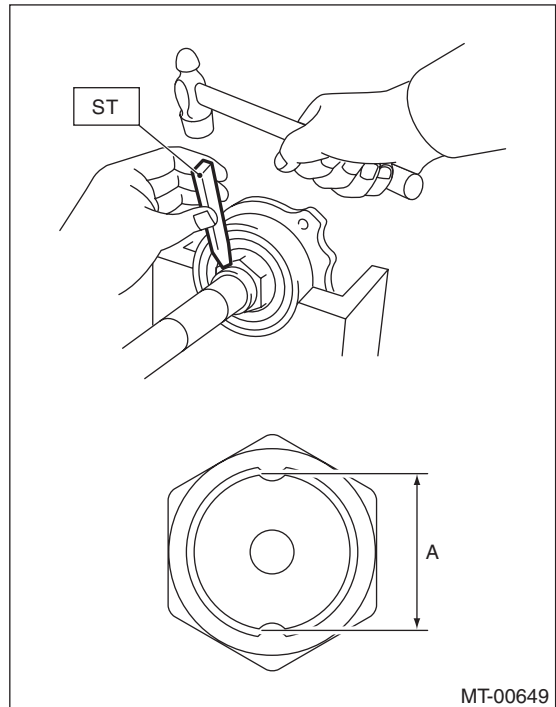
6) Measure the starting torque. <Ref. to 6MT-94, INSPECTION, Drive Pinion Shaft Assembly.>

7) Using the ST, crimp the lock nut in two locations, with dimensions within "A" 37±0.5 mm (1.46±0.02 in).

ST 18670AA000 PUNCH

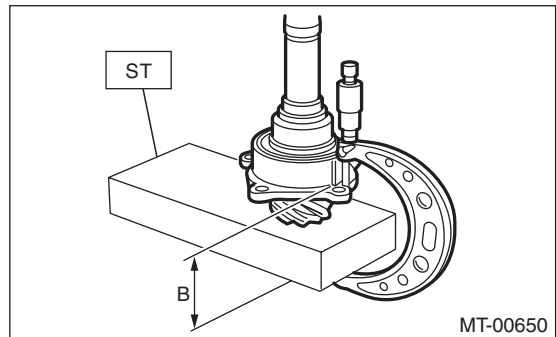
NOTE:

Do not damage the crimp area of the lock nut.



8) Using the ST, measure drive pinion measurement "B".

ST 398643600 GAUGE



9) Calculate from the calculation below to select 1 or 2 drive pinion shims from the following table.

$$6.5 \pm 0.0625 \text{ mm} - (B - A) [0.26 \pm 0.0025 \text{ in} - (B - A)]$$

NOTE:

A: Measurement value in step 1)

B: Measurement value in step 8)

Drive pinion shim	
Part No.	Thickness mm (in)
32295AA270	0.15 (0.0059)
32295AA280	0.175 (0.0069)
32295AA290	0.20 (0.0079)
32295AA300	0.225 (0.0089)
32295AA310	0.25 (0.0098)
32295AA320	0.275 (0.0108)

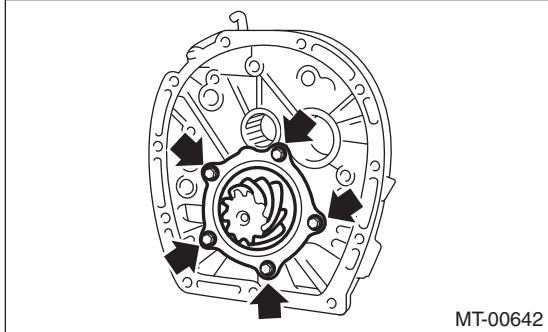
Drive Pinion Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

10) Apply gear oil to the side face of the taper roller bearing, and attach the drive pinion shaft and the selected shims to the adapter plate.

Tightening torque:

54 N·m (5.5 kgf-m, 39.8 ft-lb)

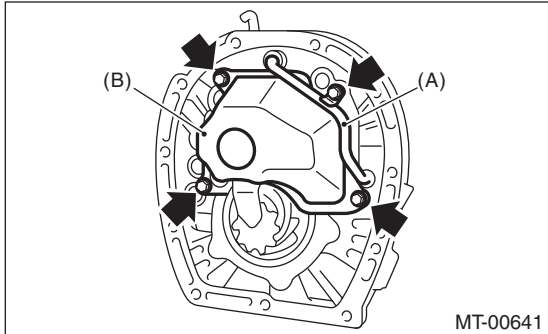


MT-00642

11) Install the oil chamber and pipe.

Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



MT-00641

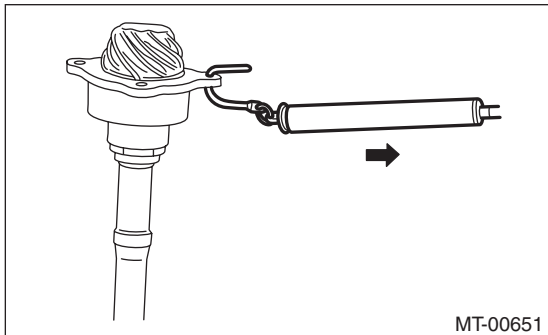
- (A) Pipe
- (B) Oil chamber

E: INSPECTION

1) Using a spring scale, measure the starting torque. If the starting torque is outside the specification range, replace the taper roller bearing.

Starting torque:

0 — 0.95 N (0 — 0.097 kgf, 0 — 0.21 lbf)



MT-00651

2) Gear

Replace gears in the following cases.

- When gear teeth are damaged or excessively worn.

3) Bearing

Replace the bearings in the following cases.

- Bearing wear, rusting or damage
- If the bearing does not rotate smoothly or an abnormal noise is emitted when turning.

4) Adapter plate

Replace the adapter plate in the following cases:

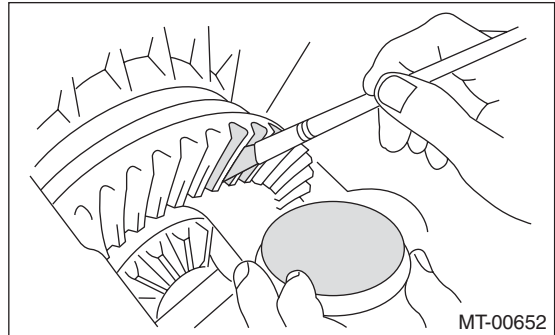
- Bearing wear, rusting or damage
- Damage of the adapter plate

5) Check that the pipes and pipe chambers are not damaged or clogged. Repair or replace if damaged or clogged.

F: ADJUSTMENT

1) Inspect and adjust the hypoid driven gear-to-drive pinion backlash. <Ref. to 6MT-101, HYPOID GEAR BACKLASH, ADJUSTMENT, Front Differential Assembly.>

2) Apply a thin uniform coat of red lead on the surfaces of 3 or 4 hypoid driven gear teeth.



MT-00652

3) Attach the drive pinion shaft assembly to the clutch housing, and tighten with at least 4 bolts.

NOTE:

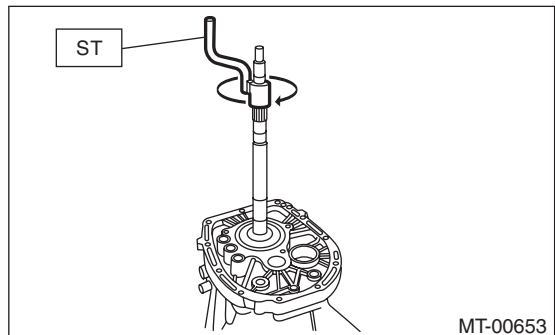
Install with the remaining liquid gasket, so that the clutch housing and the adapter plate will not be damaged.

Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

4) Turn a few times using the ST.

ST 18631AA000 HANDLE



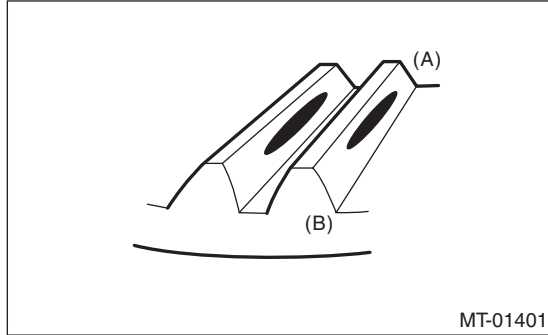
MT-00653

Drive Pinion Shaft Assembly

5) Remove the drive pinion shaft assembly, and inspect the mating condition of the teeth. If the mating is not correct, change shim thickness to adjust backlash.

- Correct tooth contact

Check item: Tooth contact surface is slightly shifted toward the toe side under a no-load condition. (When driving, it moves towards the heel side.)

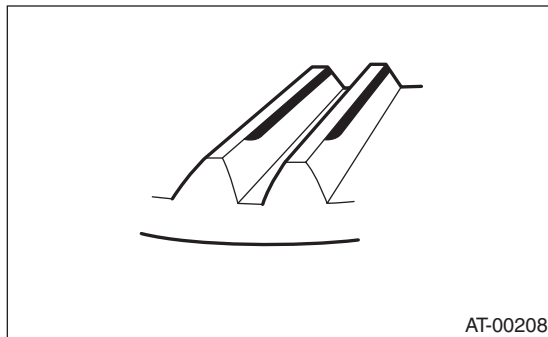


(A) Toe side
(B) Heel side

- Face contact

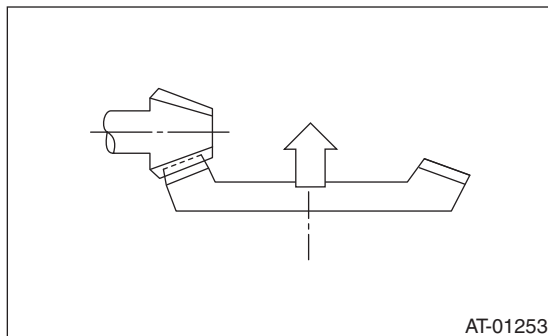
Check item: Backlash is too large.

Contact pattern



AT-00208

Corrective action: Reconfirm and adjust backlash.

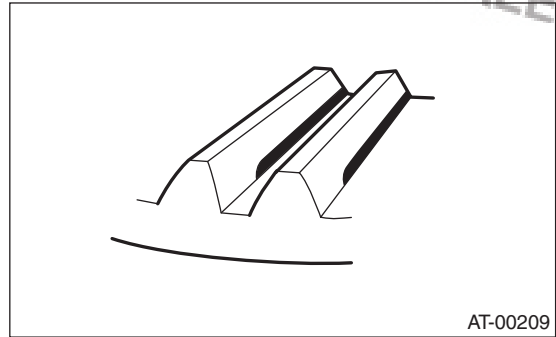


AT-01253

- Flank contact

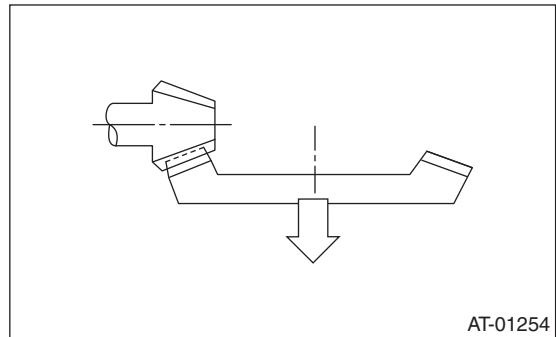
Check item: Backlash is too small.

Contact pattern



AT-00209

Corrective action: Reconfirm and adjust backlash.

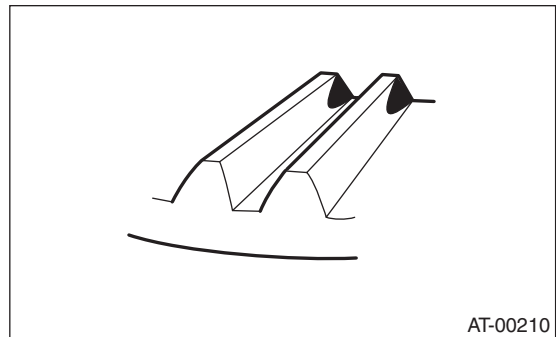


AT-01254

- Toe contact (inside contact)

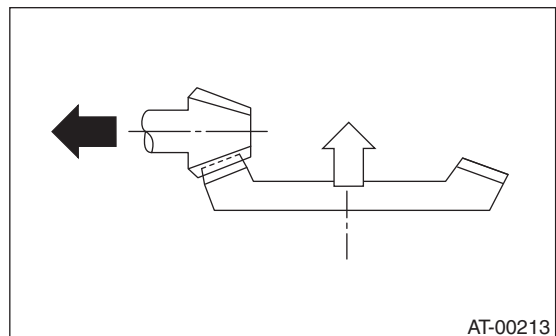
Check item: Teeth contact area is too small.

Contact pattern



AT-00210

Corrective action: Reduce the thickness of the drive pinion shim according to the procedure for moving the drive pinion away from the driven gear.

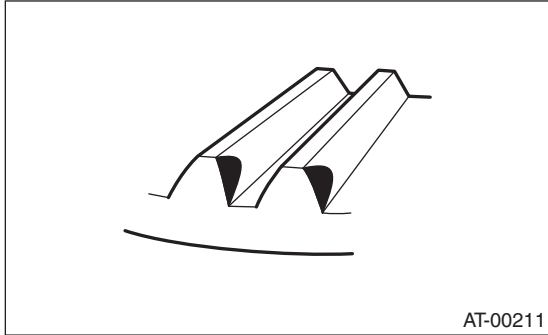


AT-00213

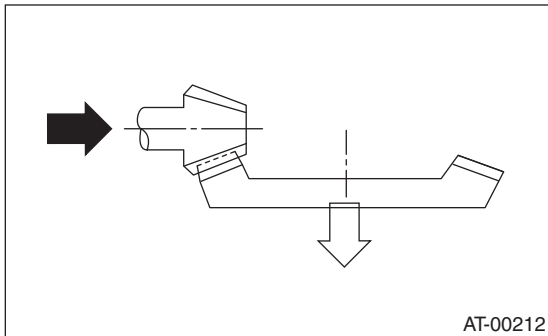
Drive Pinion Shaft Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

- Heel contact (outside end contact)
- Check item: Teeth contact area is too small.**
Contact pattern



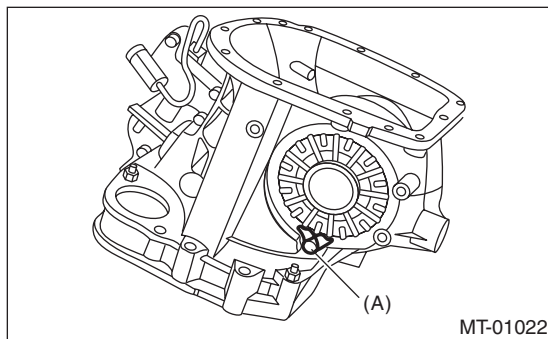
Corrective action: Increase thickness of the drive pinion shim according to the procedures for moving the drive pinion closer to the driven gear.



24. Front Differential Assembly

A: REMOVAL

- 1) Remove the manual transmission assembly. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the individual gear assemblies. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>
- 10) Remove the drive pinion shaft assembly. <Ref. to 6MT-91, REMOVAL, Drive Pinion Shaft Assembly.>
- 11) Remove the retainer lock plates on both sides.



(A) Retainer lock plate

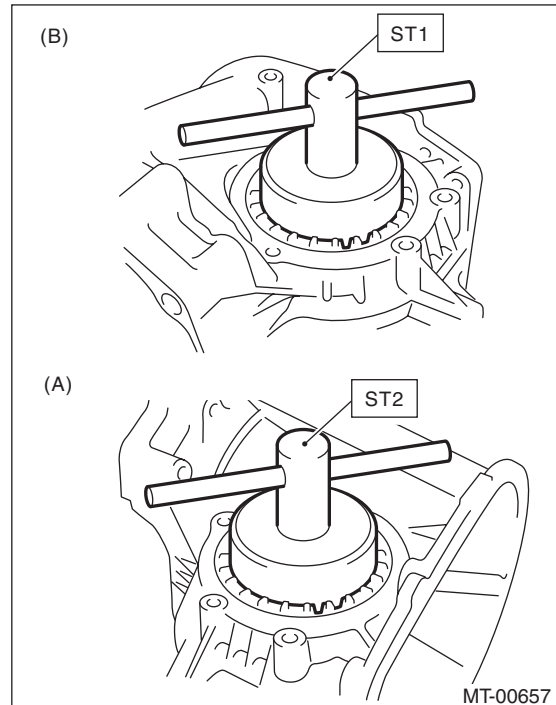
- 12) Remove the differential side retainers on both sides using the ST.

ST1 499787000 WRENCH ASSY (RH SIDE)

ST2 18630AA000 WRENCH ASSY (LH SIDE)

NOTE:

Be careful not to damage the section where the clutch case retainer will be attached.



(A) LH side

(B) RH side

- 13) Remove the front differential.

B: INSTALLATION

- 1) Install the differential assembly to the clutch housing.
- 2) Apply oil to the screw threads of the differential side retainer.
- 3) Remove the O-rings on both sides of the differential side retainer.

Front Differential Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

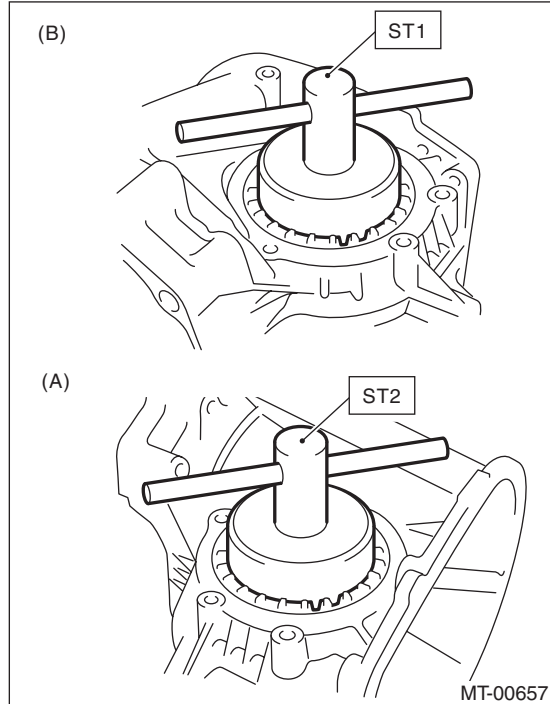
4) Install the differential side retainers to both sides, using the ST.

ST1 499787000 WRENCH ASSY (RH SIDE)

ST2 18630AA000 WRENCH ASSY (LH SIDE)

NOTE:

Be careful not to damage the oil seal.



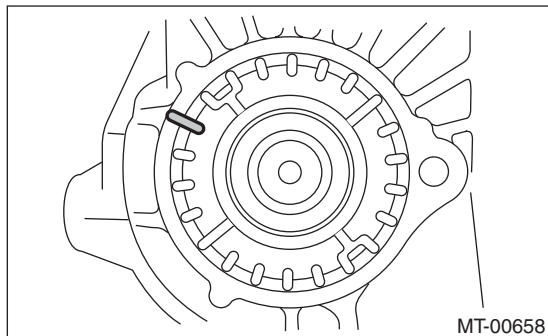
(A) LH side

(B) RH side

5) Inspect and adjust the hypoid gear backlash. <Ref. to 6MT-101, HYPOID GEAR BACKLASH, INSPECTION, Front Differential Assembly.>

6) Inspect and adjust the tooth contact. <Ref. to 6MT-94, ADJUSTMENT, Drive Pinion Shaft Assembly.>

7) Mark the mating positions of the left and right side retainers and the clutch housing.



8) Remove the differential side retainers from both sides.

NOTE:

When removing the differential side retainer, record how many times it was turned to remove.

9) Install O-rings to the differential side retainers on both sides.

10) Attach the differential side retainers to both sides.

NOTE:

When attaching, turn the differential side retainer the same number of turns it took to remove, and align the marks.

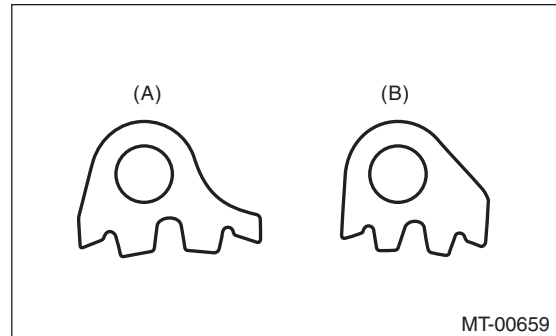
11) Install the retainer lock plate.

Tightening torque:

25 N·m (2.5 kgf·m, 18.1 ft·lb)

NOTE:

Be careful not to confuse the left and right side retainer lock plates.



(A) LH

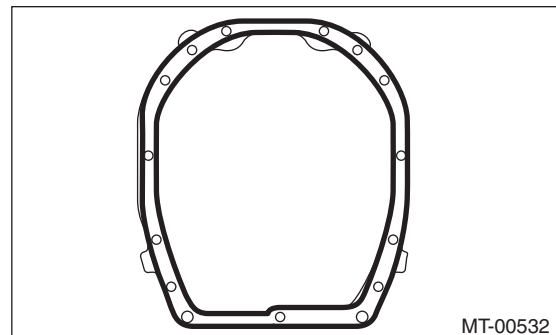
(B) RH

12) Remove any remaining liquid gasket from the clutch housing and adapter plate.

13) Apply liquid gasket to the clutch housing.

Liquid gasket:

THREE BOND 1215 (Part No. 004403007)



14) Install the drive pinion shaft assembly. <Ref. to 6MT-91, INSTALLATION, Drive Pinion Shaft Assembly.>

15) Install the individual gear assemblies all at once. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>

16) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>

17) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>

Front Differential Assembly

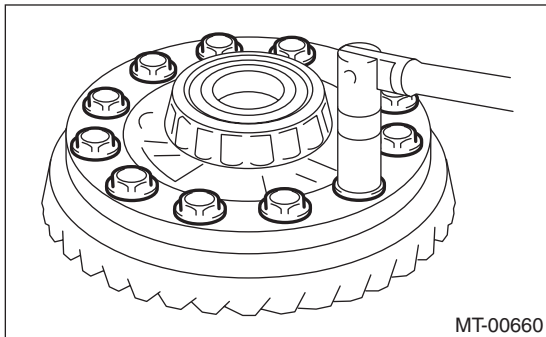
MANUAL TRANSMISSION AND DIFFERENTIAL

- 18) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>
- 19) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>
- 20) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 21) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>
- 22) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

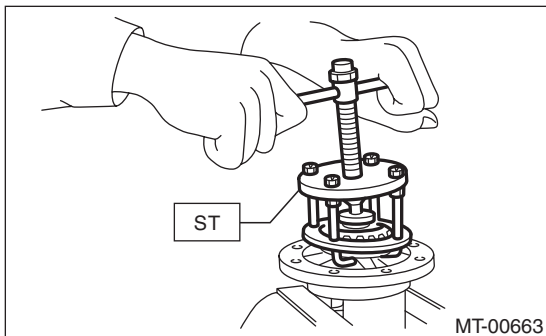
1. DIFFERENTIAL CASE

- 1) Fix the differential assembly on a vice, and remove the hypoid driven gear.



- 2) Remove the side bearing of the hypoid driven gear using the ST.

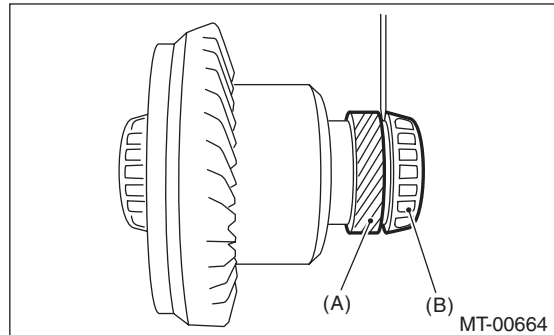
ST 399527700 PULLER SET



- 3) Use a flat tip screw driver to make a 2-3 mm (0.079 — 0.118 in) clearance between the speedometer drive gear and the roller bearing.

NOTE:

Be careful not to damage the differential case.

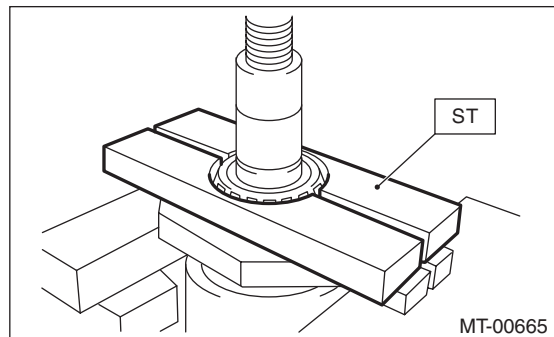


(A) Speedometer drive gear

(B) Roller bearing

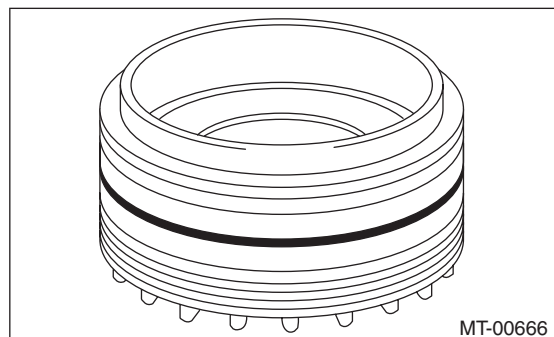
- 4) Using the ST, remove the roller bearing.

ST 498077000 REMOVER



2. DIFFERENTIAL SIDE RETAINER

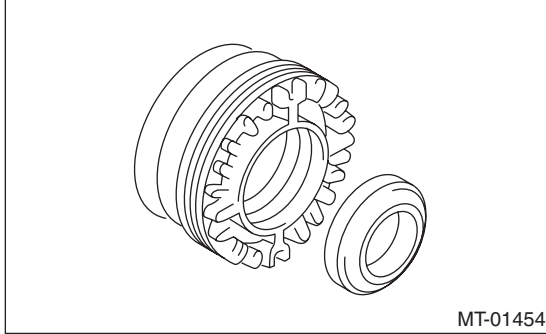
- 1) Remove the O-rings on both sides of the differential side retainer.



Front Differential Assembly

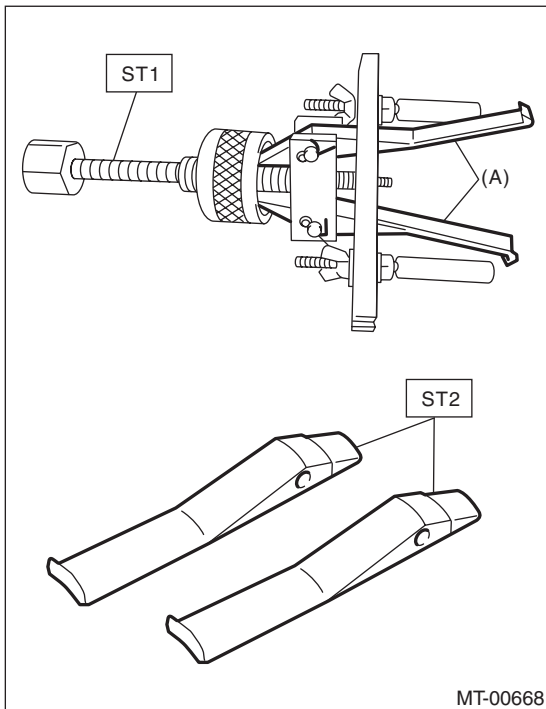
MANUAL TRANSMISSION AND DIFFERENTIAL

2) Remove the oil seal from the differential side retainer.



3) Remove the claw of ST1, and attach the claw of ST2.

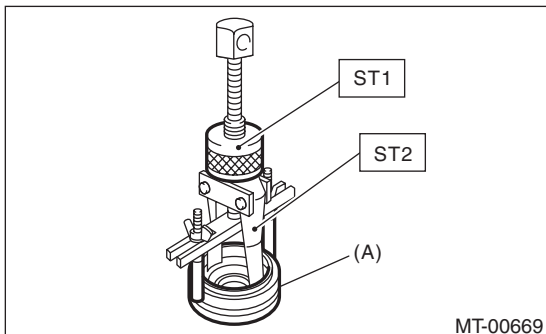
ST1 398527700 PULLER ASSY
ST2 18760AA000 CLAW



(A) CLAW

4) Remove the bearing outer race from the differential side retainer.

ST1 398527700 PULLER ASSY
ST2 18760AA000 CLAW



(A) Differential side retainer

D: ASSEMBLY

1. DIFFERENTIAL CASE

1) Use the ST to attach the new speedometer drive gear and RH and LH bearing inner races to the differential case.

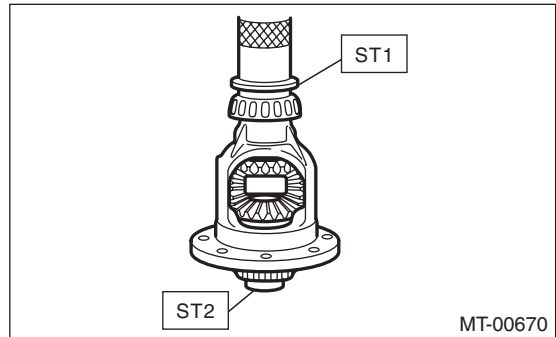
ST1 398437700 INSTALLER
ST2 398497701 SEAT

CAUTION:

Do not apply pressure in excess of 20 kN (2.0 ton, 2.2 US ton, 2.0 Imp ton).

NOTE:

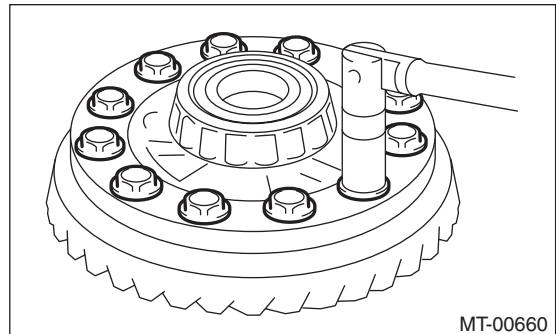
Always replace inner races and outer races as a set.



2) Attach the hypoid driven gear to the differential case.

Tightening torque:

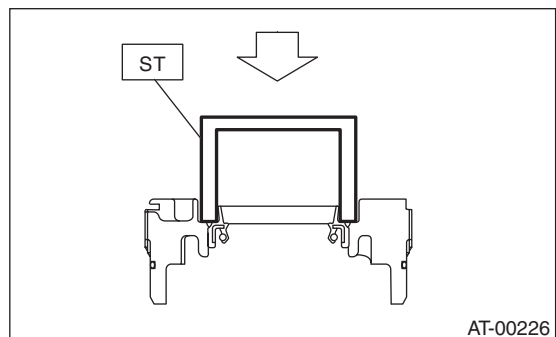
69 N·m (7.0 kgf·m, 50.9 ft·lb)



2. DIFFERENTIAL SIDE RETAINER

1) Using the ST, install the oil seal.

ST 18675AA000 DIFFERENTIAL SIDE OIL SEAL INSTALLER



- 2) Attach the bearing outer race to the differential side retainers on both sides.
- 3) Install O-rings to the differential side differential side retainers on both sides.

NOTE:

Be careful not to damage the O-ring.

E: INSPECTION

Repair or replace the differential in the following cases:

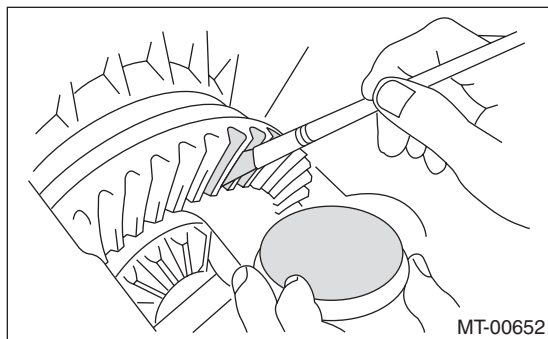
- Damage, seizure, or excessively wear of each gear.
- Differential case sliding surface damage, seizure or excessive wear.
- Bearing and bearing section damage, rusting or wear
- If the bearing does not rotate smoothly or an abnormal noise is emitted when turning.

1. HYPOID GEAR BACKLASH

Inspect the hypoid gear backlash. Adjust if out of standard. <Ref. to 6MT-101, HYPOID GEAR BACKLASH, ADJUSTMENT, Front Differential Assembly.>

2. TOOTH CONTACT OF HYPOID GEAR

- 1) Check that the hypoid gear backlash is within the standard value. Adjust if out of standard. <Ref. to 6MT-101, HYPOID GEAR BACKLASH, ADJUSTMENT, Front Differential Assembly.>
- 2) Apply a thin uniform coat of red lead on the surfaces of 3 or 4 hypoid driven gear teeth.



- 3) Attach the drive pinion shaft assembly, and affix with 5 bolts.

NOTE:

Use old gaskets and washers to prevent the mating surfaces of the housing from becoming damaged.

Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

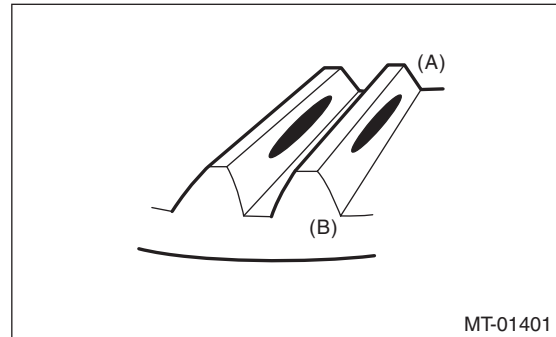
- 4) Turn the drive pinion shaft to the left and right for several turns.

- 5) Remove the drive pinion shaft assembly, and inspect the mating condition of the teeth. If tooth contact is not correct, perform adjustment. <Ref. to 6MT-94, ADJUSTMENT, Drive Pinion Shaft Assembly.>

- Correct tooth contact

NOTE:

In a no load condition, the tooth contact from the center to the toe side is 50-60% (While driving, the tooth contact will shift towards the heel side).



- (A) Toe side
- (B) Heel side

F: ADJUSTMENT

1. HYPOID GEAR BACKLASH

- 1) Attach the RH and LH differential side retainers.
 - ST1 18630AA010 WRENCH COMPL RETAINER (RH side)
 - ST2 18630AA000 WRENCH ASSY (LH side)

NOTE:

Screw in the RH differential side retainer a little further than the LH side.

- 2) Attach the drive pinion shaft assembly, and affix with 5 bolts.

NOTE:

Use old gaskets and washers to prevent the mating surfaces of the housing from becoming damaged.

Tightening torque:

50 N·m (5.1 kgf-m, 36.9 ft-lb)

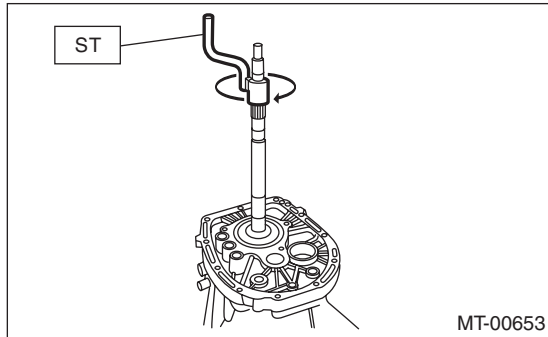
- 3) Using the ST, loosen the differential side retainer RH, and twist in the differential side retainer LH until the hypoid driven gear just contacts the drive pinion.
 - ST1 18630AA010 WRENCH COMPL RETAINER (RH side)
 - ST2 18630AA000 WRENCH ASSY (LH side)

Front Differential Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

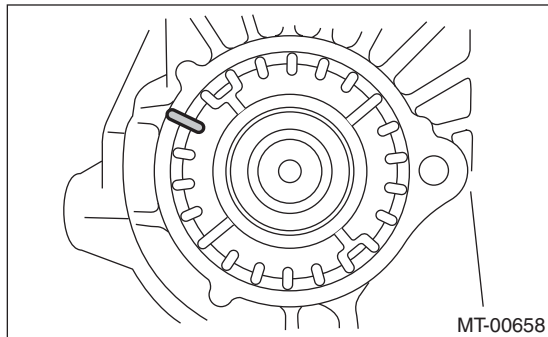
4) Use the ST to turn the drive pinion shaft a few times.

ST 18631AA000 HANDLE



5) Repeat steps 3) and 4) until differential side retainer LH does not turn anymore. For differential side retainer RH, screw in until the inner race and outer race just comes into contact. This is the “zero” backlash state.

6) Mark the mating positions of the left and right side retainers and the clutch housing.



7) Turn the back differential side retainer LH by 3 notches, and screw in the differential side retainer RH by 3 notches.

8) Temporarily attach the LH side retainer lock plate.

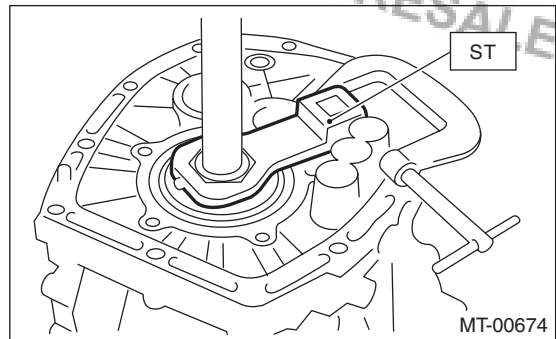
9) Turn the differential side retainer RH by 1.25 notches.

10) Temporarily attach the RH side retainer lock plate.

NOTE:

- If the lock plate cannot be aligned, adjust the position toward the tightened side.
- The notch on the lock plate moves by 0.5 notch if the lock plate is turned upside down when installed.

11) Use the ST to fix the drive pinion shaft in place.
ST 18621AA000 ADAPTER WRENCH



12) Attach the axle shafts to the right and left sides of the front differential.

Part No. 38415AA000 AXLE SHAFT

13) Move the axle shaft, and measure the hypoid gear backlash.

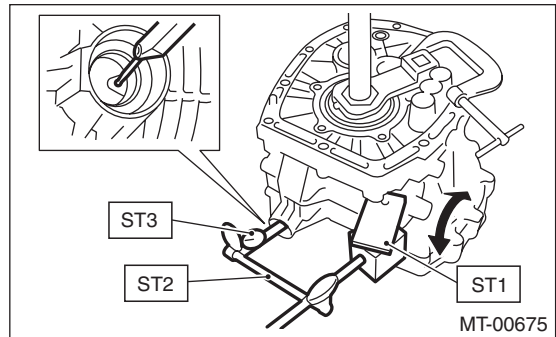
ST1 498255400 PLATE

ST2 498247001 MAGNET BASE

ST3 498247100 DIAL GAUGE

Hypoid gear backlash:

0.13 — 0.18 mm (0.0051 — 0.0071 in)



14) If the backlash is out of specified range, remove the left and right retainer lock plates and loosen RH side differential side retainer. Then, adjust the LH side differential side retainer by turning it, and attach the LH side retainer lock plate.

15) Screw in the RH side differential side retainer until the inner race and outer race just come into contact.

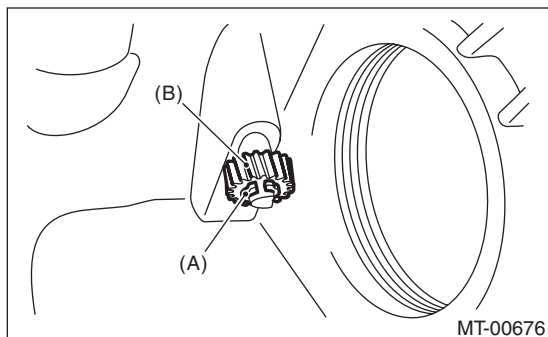
2. TOOTH CONTACT OF HYPOID GEAR

Regarding teeth contact conditions, refer to the drive pinion section. <Ref. to 6MT-101, TOOTH CONTACT OF HYPOID GEAR, INSPECTION, Front Differential Assembly.>

25.Speedometer Gear

A: REMOVAL

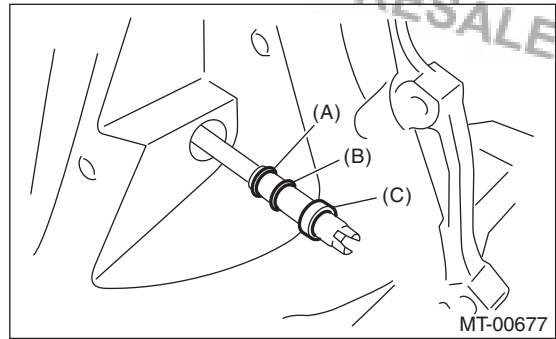
- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the individual gear assemblies. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>
- 10) Remove the drive pinion shaft assembly. <Ref. to 6MT-91, REMOVAL, Drive Pinion Shaft Assembly.>
- 11) Remove the front differential assembly. <Ref. to 6MT-97, REMOVAL, Front Differential Assembly.>
- 12) Remove the vehicle speed sensor. <Ref. to 6MT-30, REMOVAL, Vehicle Speed Sensor.>
- 13) Remove the snap ring and remove the speedometer driven gear.



- (A) Snap ring
- (B) Speedometer driven gear

- 14) Remove the speedometer driven gear shaft from the clutch housing.

- 15) Remove the oil seal, speedometer driven gear shaft and washer.



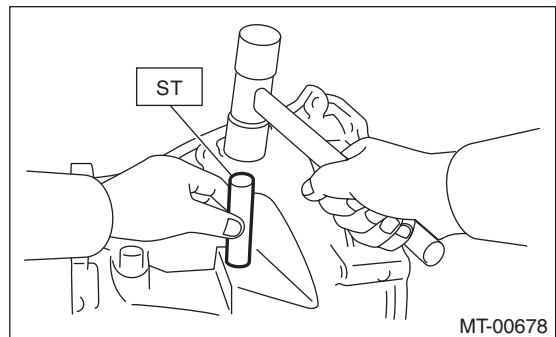
- (A) Washer
- (B) Snap ring
- (C) Oil seal

- 16) Remove the snap ring from the speedometer driven gear shaft.

B: INSTALLATION

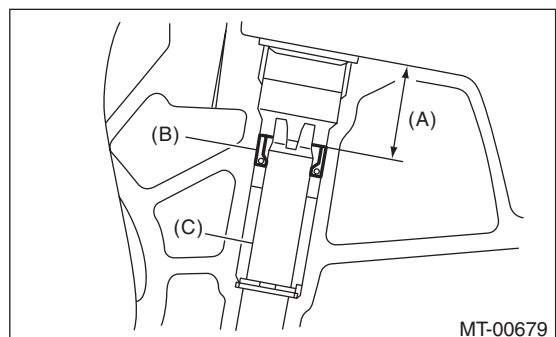
- 1) Install the oil seal, washer and snap ring to the speedometer driven gear shaft.
- 2) Insert the speedometer driven gear shaft. Using the ST, push in the oil seal.

ST 899824100 or 499827000PRESS



NOTE:

- Replace the oil seal with a new part.
- Insert the oil seat approximately 24 mm (0.94 in) from the end of the clutch case.

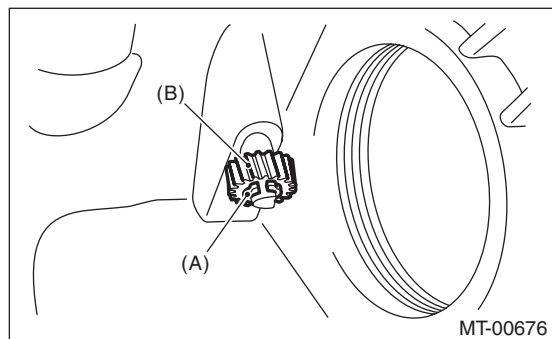


- (A) Approximately 24 mm (0.94 in)
- (B) Oil seal
- (C) Speedometer driven gear shaft

Speedometer Gear

MANUAL TRANSMISSION AND DIFFERENTIAL

3) Install the speedometer driven gear and snap ring.



- (A) Snap ring
- (B) Speedometer driven gear

4) Install the vehicle speed sensor. <Ref. to 6MT-30, INSTALLATION, Vehicle Speed Sensor.>

5) Install the front differential assembly. <Ref. to 6MT-97, INSTALLATION, Front Differential Assembly.>

6) Install the drive pinion shaft assembly. <Ref. to 6MT-91, INSTALLATION, Drive Pinion Shaft Assembly.>

7) Install the individual gear assemblies all at once. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>

8) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>

9) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>

10) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>

11) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>

12) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>

13) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>

14) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

26. Shifter Fork and Rod

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the individual gear assemblies. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>

B: INSTALLATION

- 1) Install the individual gear assemblies all at once. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>
- 2) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>
- 3) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>
- 4) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>
- 5) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>
- 6) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>
- 7) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>
- 8) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

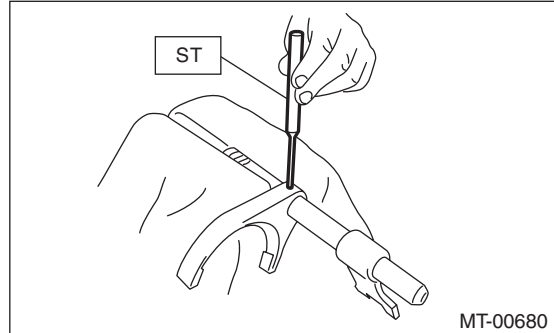
C: DISASSEMBLY

NOTE:

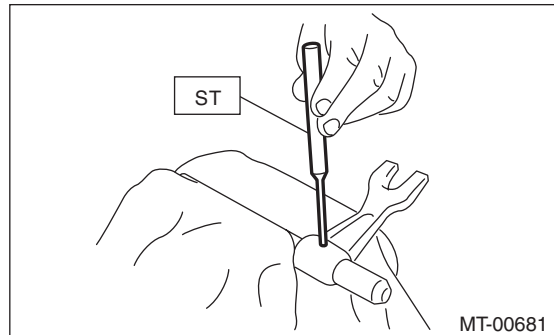
Discard the removed spring pin, and replace with a new part.

1. REVERSE SHIFTER FORK

- 1) Remove the reverse fork using the ST.
ST 398791700 REMOVER

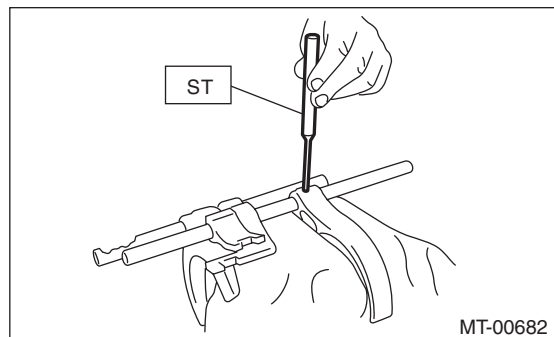


- 2) Remove the reverse shifter arm using the ST.
ST 398791700 REMOVER



2. 1ST-2ND, 3RD-4TH SHIFTER FORK

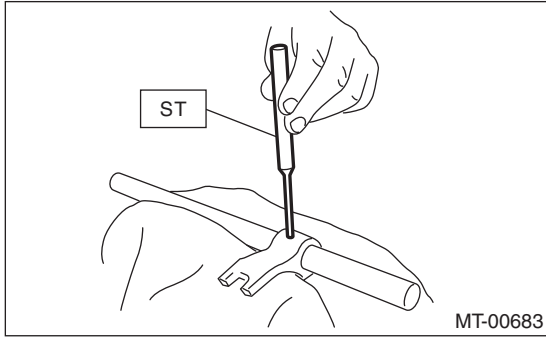
- 1) Using the ST, remove the 3rd-4th shifter fork.
ST 398791700 REMOVER



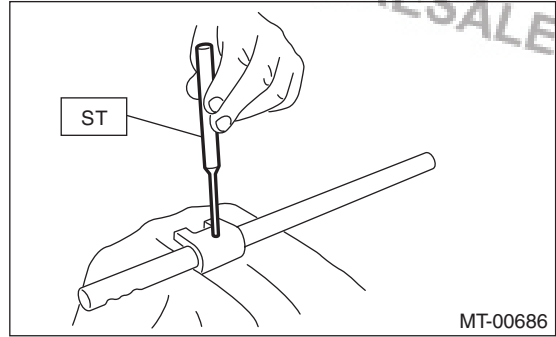
Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

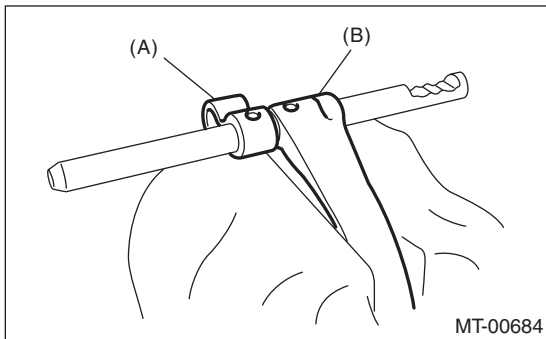
2) Using the ST, remove the 3rd-4th shifter arm.
ST 398791700 REMOVER



2) Using the ST, remove the 5th-6th shifter arm.
ST 398791700 REMOVER



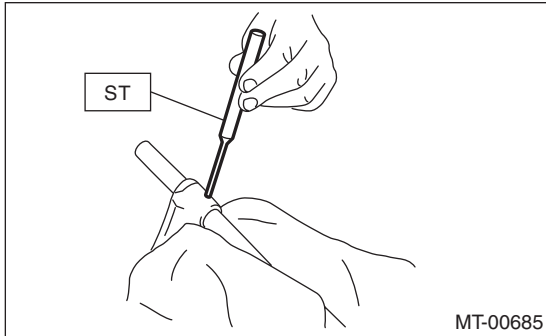
3) Using the ST, remove the 1st-2nd shifter arm and 1st-2nd shifter fork.
ST 398791700 REMOVER



- (A) 1st-2nd shifter arm
- (B) 1st-2nd shifter fork

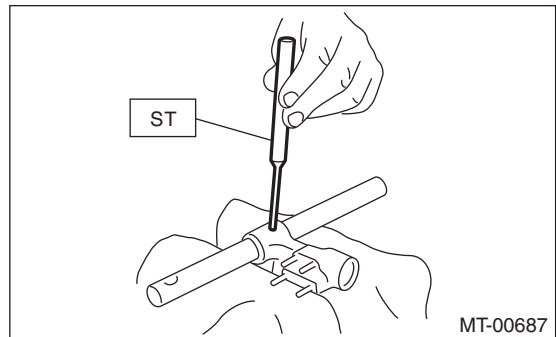
3. 5TH-6TH SHIFTER FORK

1) Using the ST, remove the 5th-6th shifter fork.
ST 398791700 REMOVER



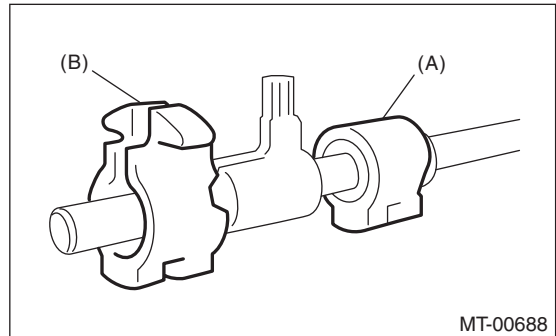
4. SHIFTER ARM SHAFT

Remove the selector arm using the ST.
ST 398791700 REMOVER



5. STRIKING ROD

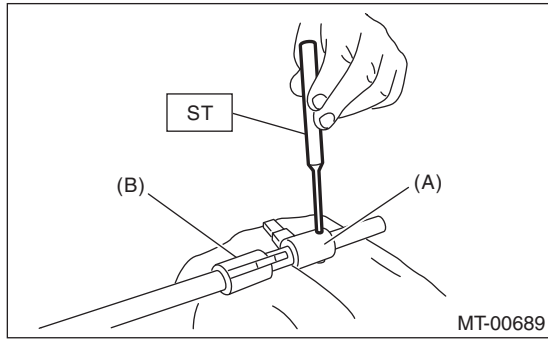
1) Remove the reverse interlock block and the interlock block from the striking rod.



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

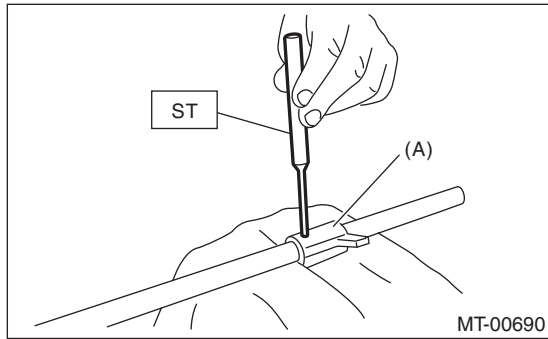
Shifter Fork and Rod

2) Remove the reverse interlock arm using the ST.
ST 398791700 REMOVER



(A) Reverse interlock arm
(B) Interlock arm

3) Remove the interlock arm using the ST.
ST 398791700 REMOVER

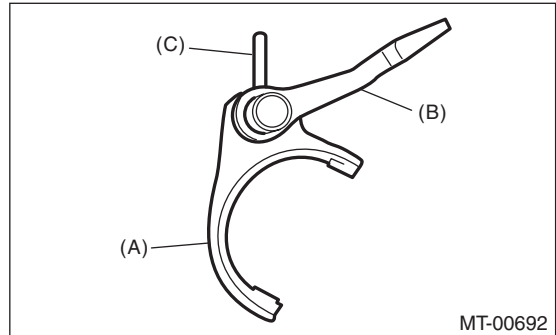


(A) Interlock arm

2) Using the ST, install the reverse arm.
ST 398791700 REMOVER

NOTE:

Confirm that the reverse arm and rod are installed in the proper direction.



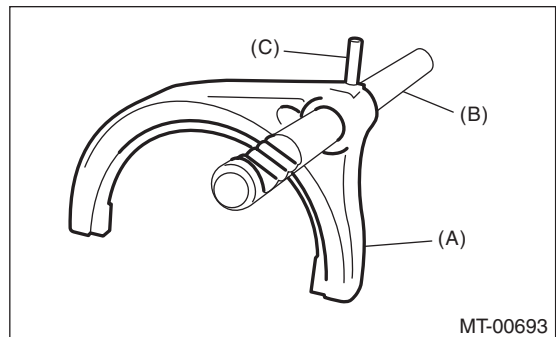
(A) Reverse arm
(B) Reverse fork rod
(C) Spring pin

2. 1ST-2ND, 3RD-4TH SHIFTER FORK

1) Using the ST, install the 1st-2nd shifter fork.
ST 398791700 REMOVER

NOTE:

Make sure that the 1st-2nd shifter fork and rod are installed in the correct direction.



(A) 1st-2nd shifter fork
(B) 1st-2nd fork rod
(C) Spring pin

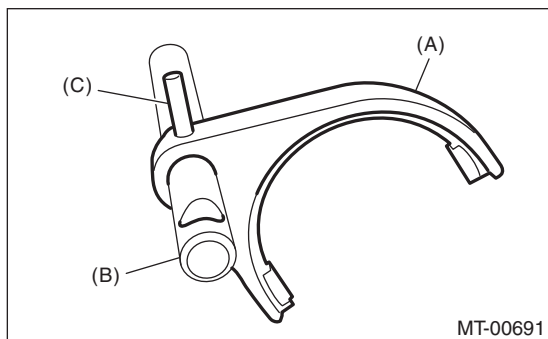
D: ASSEMBLY

1. REVERSE SHIFTER FORK

1) Using the ST, install the reverse fork.
ST 398791700 REMOVER

NOTE:

Confirm that the reverse fork and rod are installed in the proper direction.



(A) Reverse fork
(B) Reverse fork rod
(C) Spring pin

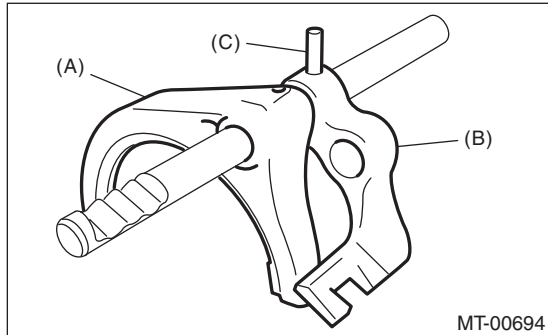
Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

2) Using the ST, install the 1st-2nd shifter arm.
ST 398791700 REMOVER

NOTE:

Make sure that the 1st-2nd shifter arm and fork are installed in the correct direction.

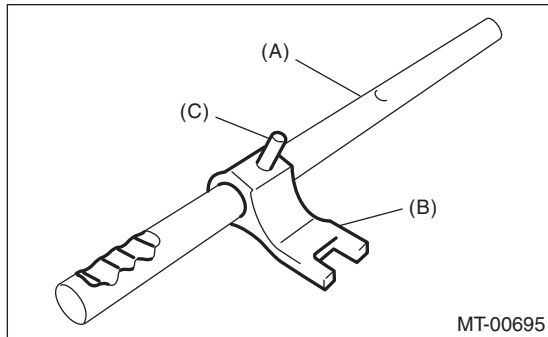


- (A) 1st-2nd shifter fork
- (B) 1st-2nd fork arm
- (C) Spring pin

3) Using the ST, install the 3rd-4th shifter arm.
ST 398791700 REMOVER

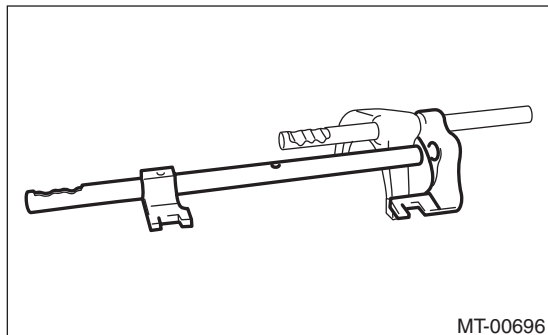
NOTE:

Make sure that the 3rd-4th shifter arm and rod are installed in the correct direction.



- (A) 3rd-4th fork rod
- (B) 3rd-4th shifter arm
- (C) Spring pin

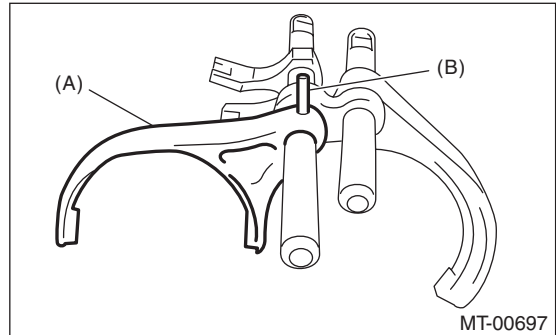
4) Attach the 3rd-4th fork rod to the 1st-2nd shifter arm.



5) Using the ST, install the 3rd-4th shifter fork.
ST 398791700 REMOVER

NOTE:

Make sure that the 3rd-4th shifter fork is installed in the correct direction.



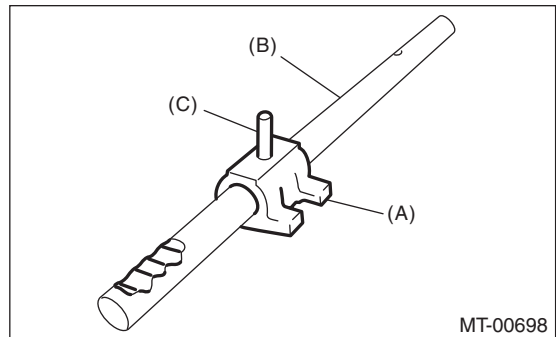
- (A) 3rd-4th shifter fork
- (B) Spring pin

3. 5TH-6TH SHIFTER FORK

1) Using the ST, install the 5th-6th shifter arm.
ST 398791700 REMOVER

NOTE:

Make sure that the 5th-6th shifter arm and rod are installed in the correct direction.



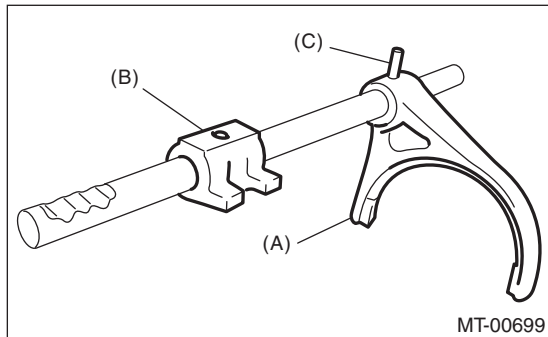
- (A) 5th-6th shifter arm
- (B) 5th-6th fork rod
- (C) Spring pin

Shifter Fork and Rod

2) Using the ST, install the 5th-6th shifter fork.
ST 398791700 REMOVER

NOTE:

Check that the 5th-6th shifter fork and arm are installed.



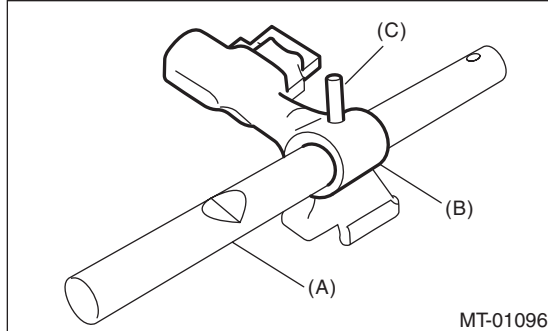
- (A) 5th-6th shifter fork
- (B) 5th-6th shifter arm
- (C) Spring pin

4. SHIFTER ARM SHAFT

Using the ST, install the selector arm.
ST 398791700 REMOVER

NOTE:

Confirm that the selector arm and rod are installed in the proper direction.



- (A) Selector rod
- (B) Selector arm
- (C) Spring pin

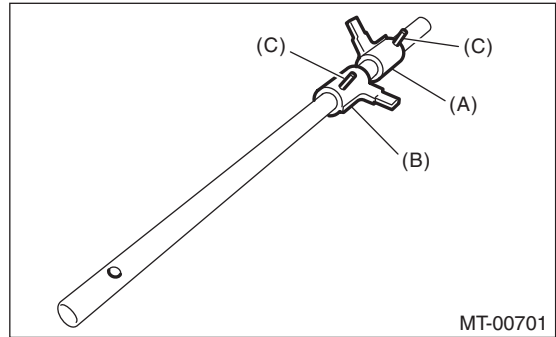
5. STRIKING ROD

1) Using the ST, install the reverse interlock arm and interlock arm.
ST 398791700 REMOVER

ST 398791700 REMOVER

NOTE:

- Confirm that the reverse interlock arm and rod are installed in the proper direction.
- Confirm that the interlock arm and rod are installed in the proper direction.

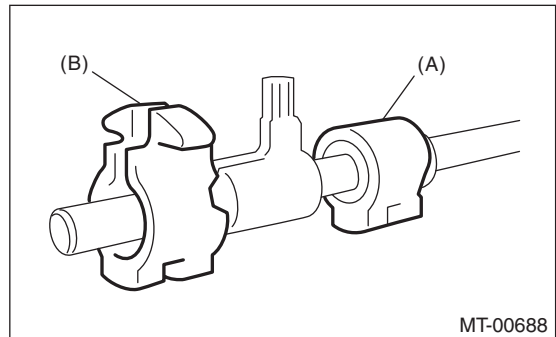


- (A) Reverse interlock arm
- (B) Interlock arm
- (C) Spring pin

2) Attach the reverse interlock block and interlock block to the striking rod.

NOTE:

Confirm that the reverse interlock block and interlock block are installed in the proper direction.



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

E: INSPECTION

- 1) Check the shift shaft and shift rod for damage. Replace if damaged.
- 2) Repair or replace the gearshift mechanism if excessively worn, bent or defective in any way.

Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

F: ADJUSTMENT

1. 1ST-2ND FORK ROD SELECTION

NOTE:

In the following conditions, perform the procedures below.

- Replacement of the 1st and 2nd driven gear
- 1st and 2nd synchro ring assembly replacement
- Adapter plate replacement
- Driven shaft replacement
- 1st-2nd hub and sleeve assembly replacement.

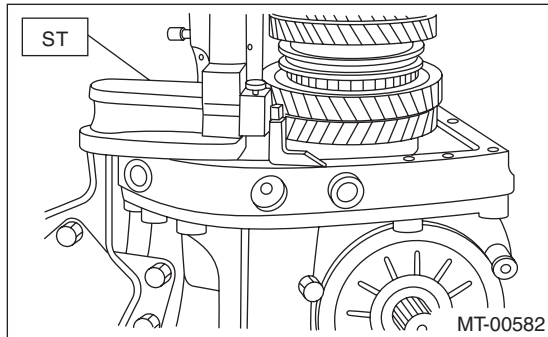
1) Insert the drive pinion assembly into the adapter plate.

NOTE:

Confirm that the thrust bearing outer race has not been removed and the drive pinion is not lifted.

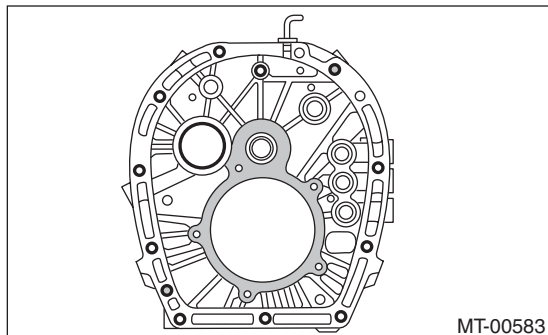
2) Set the height gauge to the adapter plate. Lower the height gauge indicator to the mating surface of the adapter plate and case, and set to zero points.

ST 18853AA000 HEIGHT GAUGE



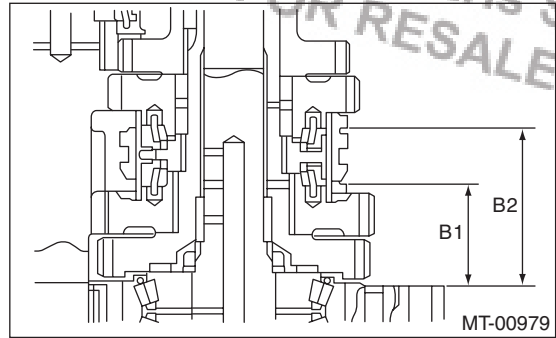
NOTE:

- The adapter plate will be the base point for the measurement. Use a scraper to remove any gasket material remaining on the end face.
- During measurement, do not place the height gauge in the shaded area shown in the figure.

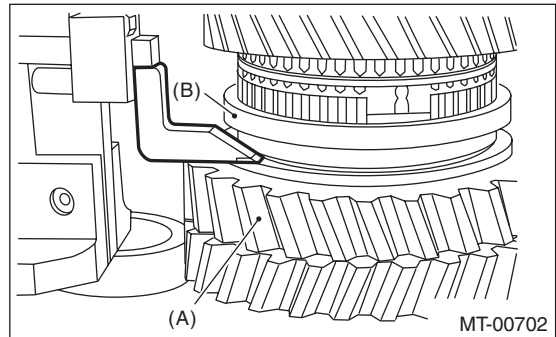


3) Select the main shaft snap ring. <Ref. to 6MT-76, ADJUSTMENT, Main Shaft Assembly.>

4) Measure "B1" and "B2" as shown in the figure.



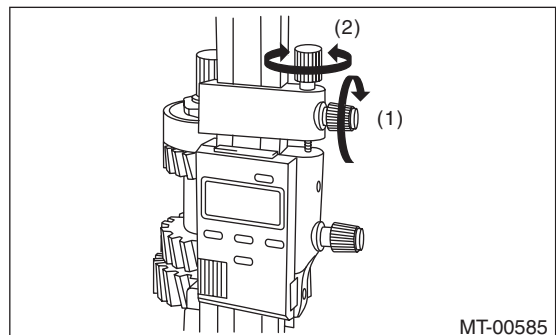
(1) Shift the 1st-2nd sleeve to the 1st driven gear side, push down to the stopper, and measure "B1".



- (A) 1st driven gear
- (B) 1st-2nd sleeve

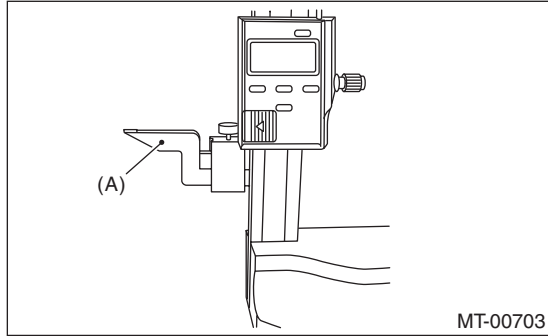
NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the 1st side end surface of the sleeve.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



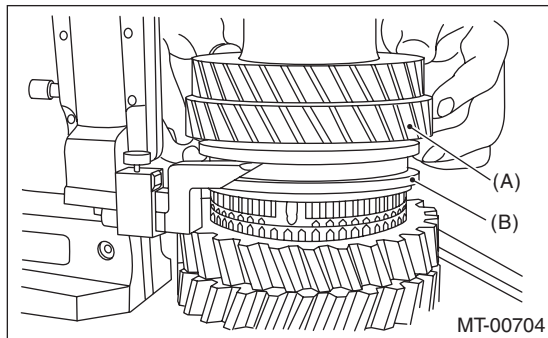
Shifter Fork and Rod

(2) Set the height gauge indicator upside down.



(A) Indicator

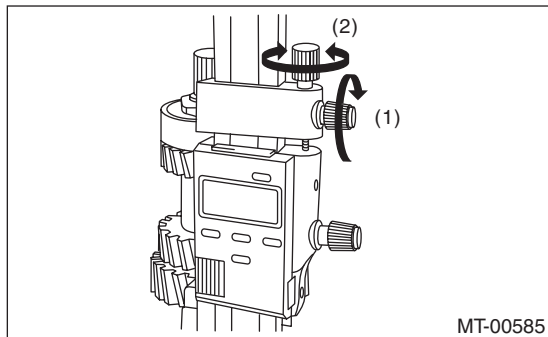
(3) Shift the 1st-2nd sleeve to the 2nd driven gear side, push up on the stopper, and measure "B2".



(A) 2nd driven gear
(B) 1st-2nd sleeve

NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the 2nd side end surface of the sleeve.
- The measurement is to be performed with two persons, while holding the sleeve straight.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



(4) According to both of the measurements, calculate the neutral position of the 1st-2nd sleeve. From the following calculation, select a fork rod which matches the calculated value.

Calculation: $T = (B1 + B2) / 2$

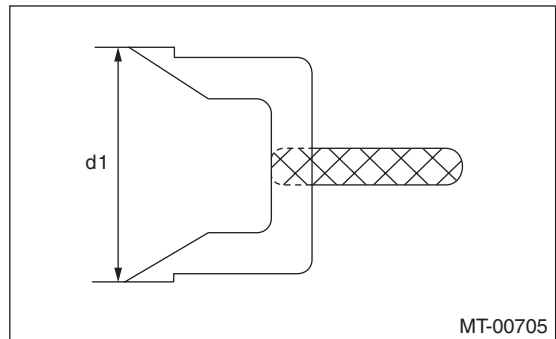
T: 1st-2nd sleeve center position

B1: Height from the adapter plate end to the sleeve end, when shifted to 1st gear

B2: Measured height from the adapter plate end to the sleeve end, when shifted to 2nd gear: +55 mm (2.17 in)

NOTE:

Attach the indicator upside down in comparison to the setting procedures for the zero point. Add "d1" [Value: 55 mm (2.17 in)] from the figure below to "B2", and measure "B2".



T	mm (in)	Lot No. (marking)
62.93 — 63.23 (2.4776 — 2.4894)		32801AA111 (1)
63.23 — 63.53 (2.4894 — 2.5012)		32801AA131 (none)
63.53 — 63.83 (2.5012 — 2.5130)		32801AA141 (2)

Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

2. 3RD-4TH FORK ROD SELECTION

NOTE:

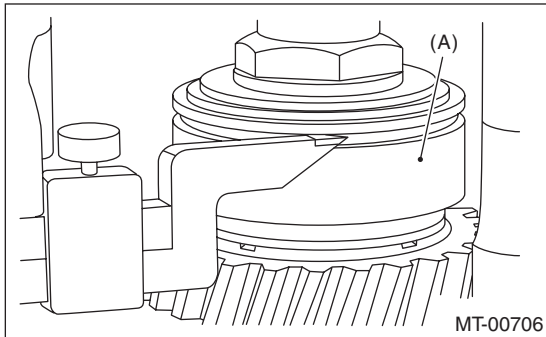
In the following conditions, perform the procedures below.

- Main shaft replacement
- 3rd, and 3rd to 6th drive gear and bushing replacement
- 3rd, and 3rd to 6th synchro assembly replacement
- 3rd-4th hub and sleeve assembly replacement

1) Insert the main shaft assembly into the adapter plate.

2) Set the height gauge to the adapter plate. Lower the height gauge indicator to the top surface of the snap ring groove, and set to the zero point on the upper side of the main rear bearing.

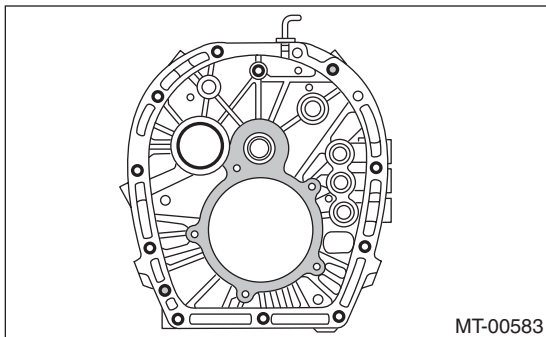
ST 18853AA000 HEIGHT GAUGE



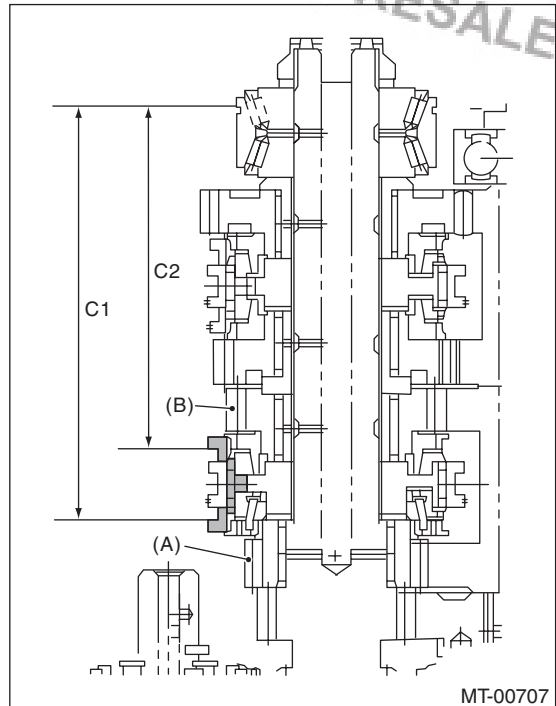
(A) Roller bearing

NOTE:

- The height gauge will be set on the adapter plate during the measurement. Use a scraper to remove any gasket material remaining on the end face.
- During measurement, do not place the height gauge in the shaded area shown in the figure.



3) Use a height gauge to measure "C1" and "C2" as shown in the figure.



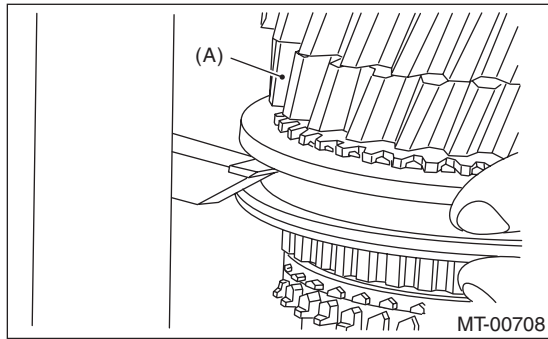
(A) 3rd drive gear

(B) 4th drive gear

Shifter Fork and Rod

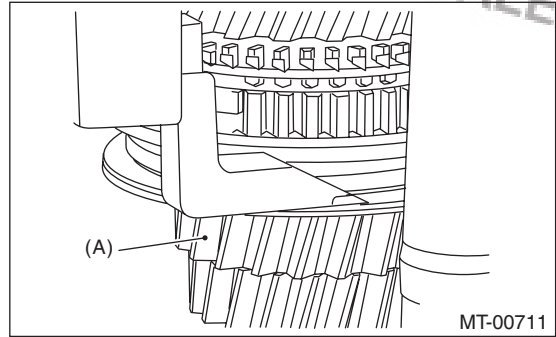
MANUAL TRANSMISSION AND DIFFERENTIAL

(1) Shift the 3rd-4th sleeve to the 4th gear side, push up on the stopper, and measure "C2".



(A) 4th drive gear

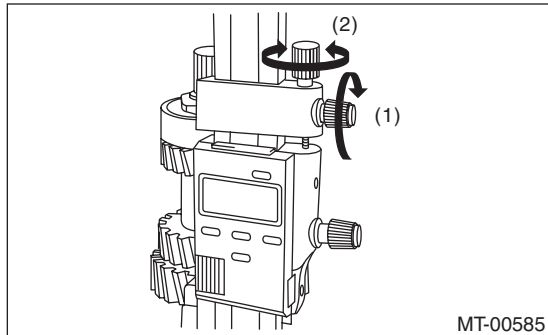
(3) Shift the 3rd-4th sleeve to the 3rd drive gear side, push down to the stopper, and measure "C1".



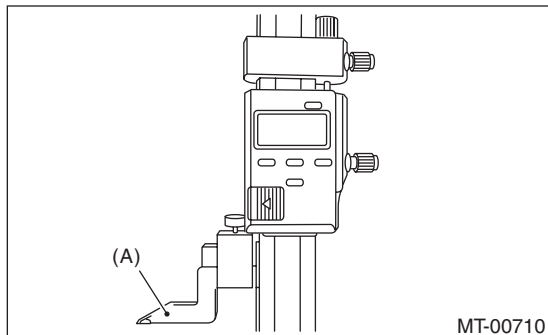
(A) 3rd drive gear

NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure.
- Turn dial (2), and set the indicator to the 4th side end surface of the sleeve.
- The measurement is to be performed with two persons, while holding the sleeve straight.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



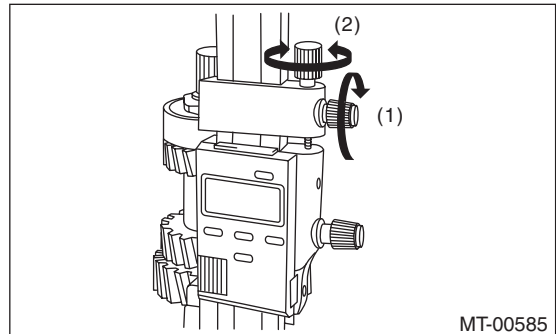
(2) Set the height gauge indicator upside down.



(A) Indicator

NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the 3rd side end surface of the sleeve.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

4) According to both of the measurements, calculate the neutral position of the 3rd-4th sleeve. From the following calculation, select a fork rod which matches the calculated value.

Calculation: $T = (C1 + C2) / 2$

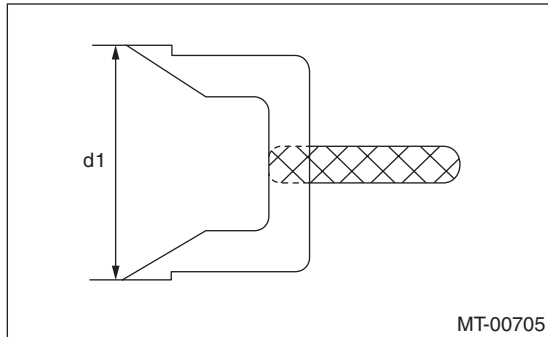
T: 3rd-4th sleeve center position

C1: Measured depth from the main shaft rear bearing snap ring groove to the sleeve end, when shifted to 3rd gear: +55 mm (2.17 in)

C2: Measured depth from the main shaft rear bearing snap ring groove to the sleeve end, when shifted to 4th gear

NOTE:

Attach the indicator upside down in comparison to the setting procedures for the zero point. Add "d1" [Value: 55 mm (2.17 in)] from the figure below to "C1", and measure "C1".



3. 5TH-6TH FORK ROD SELECTION

NOTE:

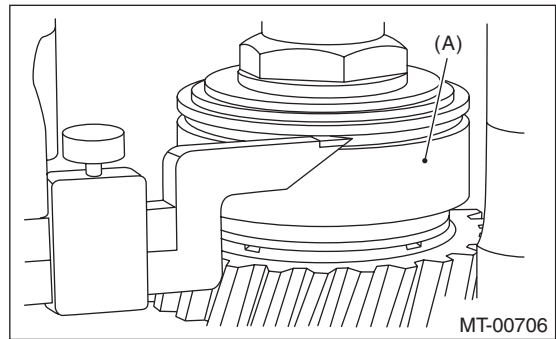
In the following conditions, perform the procedures below.

- Main shaft replacement
- 3rd to 6th drive gear and bushing replacement
- 3rd to 6th synchro ring assembly replacement
- 3rd-4th hub and sleeve assembly replacement
- 5th-6th hub and sleeve assembly replacement

1) Insert the main shaft assembly into the adapter plate.

2) Set the height gauge to the adapter plate. Lower the height gauge indicator to the upper face of the snap ring groove or the upper side of the main rear bearing. Set to zero point.

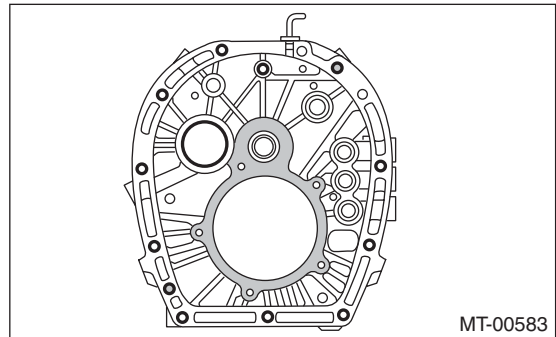
ST 18853AA000 HEIGHT GAUGE



(A) Ball bearing

NOTE:

- The height gauge will be set on the adapter plate during the measurement. Use a scraper to remove any gasket material remaining on the end face.
- During measurement, do not place the height gauge in the shaded area shown in the figure.

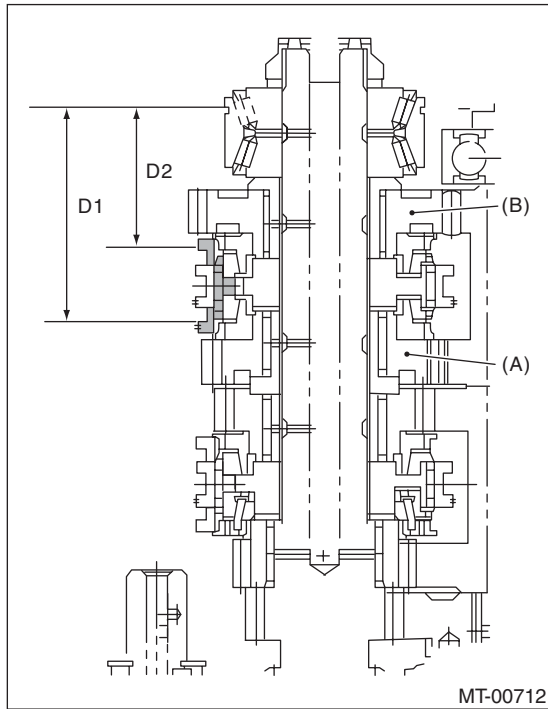


T mm (in)	Lot No. (marking)		
	M.SFT Snap ring 805072010 [t = 1.65 mm (0.065 in)]	M.SFT Snap ring 805072011 [t = 1.95 mm (0.077 in)]	M.SFT Snap ring 805072012 [t = 2.25 mm (0.089 in)]
137.22 — 137.52 (5.4024 — 5.4142)	32809AA171 (none)	32809AA181 (2)	32809AA191 (4)
137.52 — 137.82 (5.4142 — 5.4260)	32809AA161 (1)	32809AA171 (none)	32809AA181 (2)
137.82 — 138.12 (5.4260 — 5.4379)	32809AA141 (3)	32809AA161 (1)	32809AA171 (none)

T = Thickness

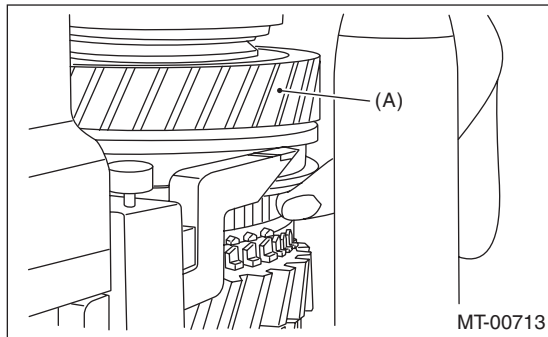
Shifter Fork and Rod

3) Use a height gauge to measure “D1” and “D2” as shown in the figure.



- (A) 5th main gear
- (B) 6th main gear

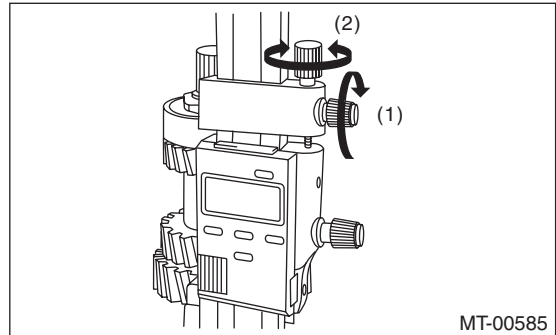
(1) Shift the 5th-6th sleeve to the 6th main gear side, push up on the stopper, and measure “D2”.



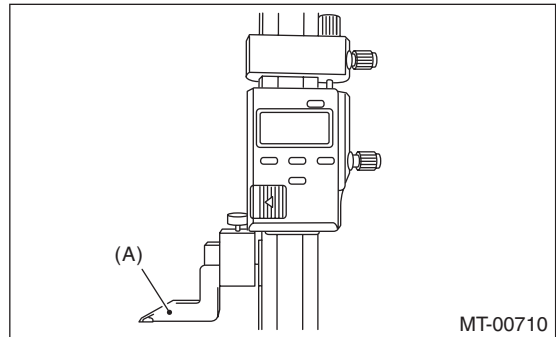
- (A) 6th main gear

NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the 6th side end surface of the sleeve.
- The measurement is to be performed with two persons, while holding the sleeve straight.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



(2) Set the height gauge indicator upside down.

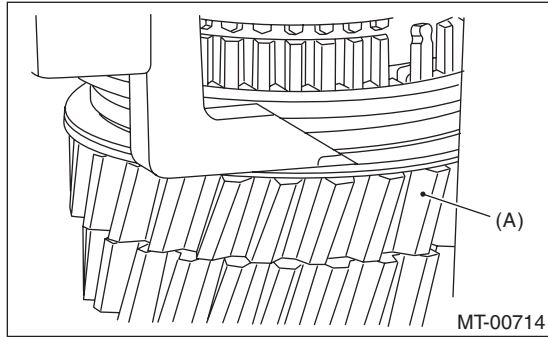


- (A) Indicator

Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

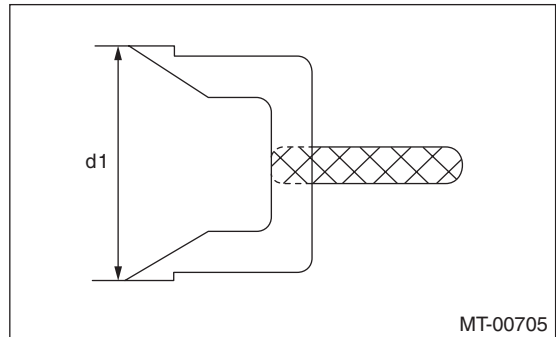
(3) Shift the 5th-6th sleeve to the 5th main gear side, push down to the stopper, and measure "D1".



(A) 5th main gear

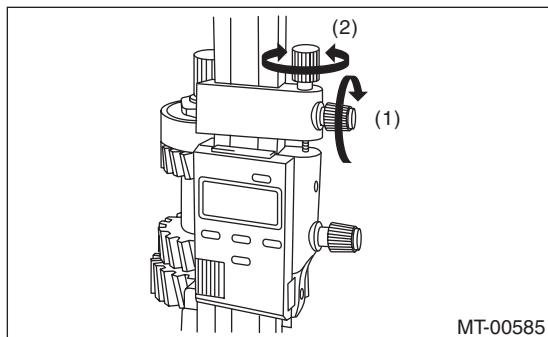
NOTE:

Attach the indicator upside down in comparison to the setting procedures for the zero point. Add "d1" [Value: 55 mm (2.17 in)] from the figure below to "D1", and measure "D1".



NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the 5th side end surface of the sleeve.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



4) According to both of the measurements, calculate the neutral position of the 5th-6th sleeve. From the following calculation, select a fork rod which matches the calculated value.

Calculation: $T = (D1 + D2) / 2$

T: 5th-6th sleeve center position

D1: Measured length from the shaft rear bearing snap ring groove to the sleeve groove end, when shifted to 5th gear [Value: +55 mm (2.17 in)]

D2: Measured length from the main shaft rear bearing snap ring groove to the sleeve groove end, when shifted to 6th gear

T mm (in)	Lot No. (marking)		
	M.SFT Snap ring 805072010 [t = 1.65 mm (0.065 in)]	M.SFT Snap ring 805072011 [t = 1.95 mm (0.077 in)]	M.SFT Snap ring 805072012 [t = 2.25 mm (0.089 in)]
64.12 — 64.42 (2.5244 — 2.5362)	32945AA021 (none)	32945AA031 (2)	32945AA041 (4)
64.42 — 64.72 (2.5362 — 2.5480)	32945AA011 (1)	32945AA021 (none)	32945AA031 (2)
64.72 — 65.02 (2.5480 — 2.5598)	32945AA001 (3)	32945AA011 (1)	32945AA021 (none)

T = Thickness

4. REVERSE FORK ROD SELECTION

NOTE:

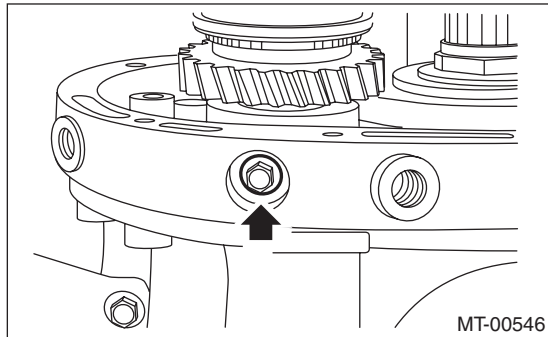
In the following conditions, perform the procedures below.

- Reverse idler gear replacement.
- Reverse idler gear No. 2 replacement.
- Adapter plate replacement.
- Base replacement.

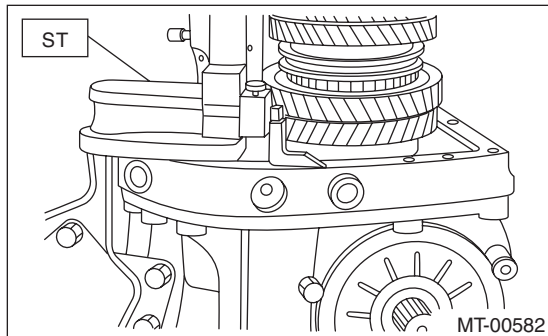
- 1) Insert the reverse idler gear assembly into the adapter plate.
- 2) Tighten the base COMPL attachment bolts.

Tightening torque:

25 N·m (2.5 kgf·m, 18.1 ft·lb)

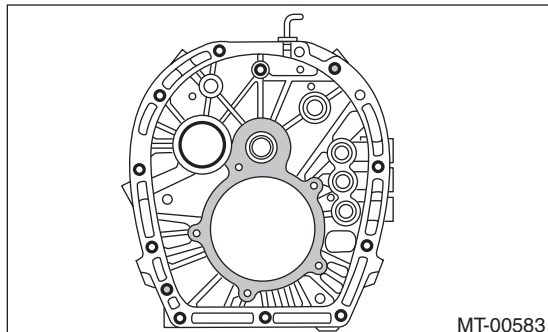


- 3) Set the height gauge to the adapter plate. Lower the height gauge indicator to the mating surface of the adapter plate and case, and set to zero points.
ST 18853AA000 HEIGHT GAUGE

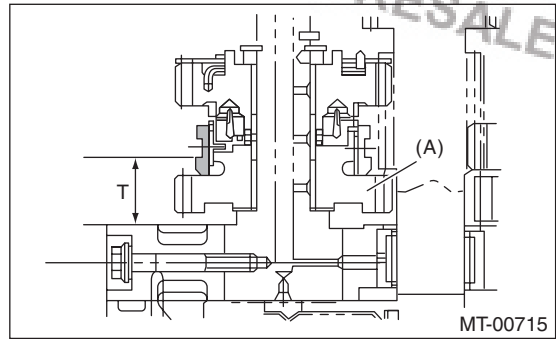


NOTE:

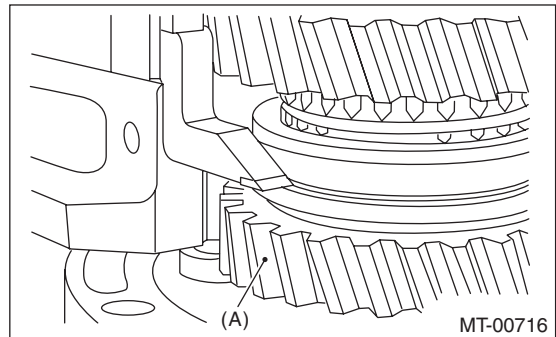
- The adapter plate will be the base point for the measurement. Use a scraper to remove any gasket material remaining on the end face.
- During measurement, do not place the height gauge in the shaded area shown in the figure.



- 4) Press fit the reverse sleeve to the reverse idler gear No. 2, and measure "T".



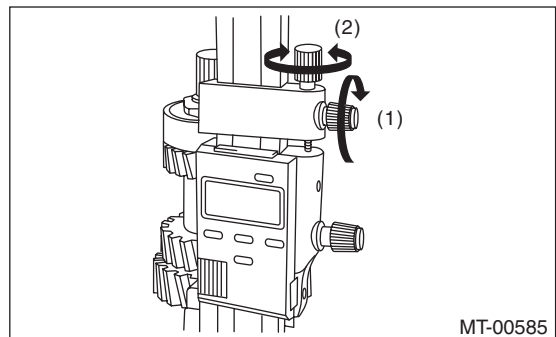
(A) Reverse idler gear No. 2



(A) Reverse idler gear No. 2

NOTE:

- Set the height gauge indicator near the measurement target, and lock dial (1) as shown in the figure. Turn dial (2), and set the indicator to the end face of the reverse sleeve side.
- Turn approximately 72° at a time, and measure the sleeve in 5 locations. Round off the two highest and two lowest measurement values. The remaining center value is used as the measurement value.



Shifter Fork and Rod

MANUAL TRANSMISSION AND DIFFERENTIAL

5) Calculate the neutral position of the reverse sleeve according to the measurement. From the following calculation, select a fork rod which matches the calculated value.

Calculation: $T + 4.8 \text{ mm}$ (0.189 in)

T + 4.8 mm (0.189 in)	Lot No. (marking)
33.50 — 33.80 (1.3189 — 1.3307)	32816AA110 (1)
33.80 — 34.10 (1.3307 — 1.3425)	32816AA130 (none)
34.10 — 34.40 (1.3425 — 1.3543)	32816AA140 (2)

T = Thickness

27. Clutch Housing

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT-33, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-38, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, REMOVAL, Oil Pipe.> <Ref. to 6MT-42, REMOVAL, Neutral Position Switch.> <Ref. to 6MT-41, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-43, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-56, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-57, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-60, REMOVAL, Transmission Case.>
- 9) Remove the individual gear assemblies. <Ref. to 6MT-65, REMOVAL, Main Shaft Assembly.>
- 10) Remove the drive pinion shaft assembly. <Ref. to 6MT-91, REMOVAL, Drive Pinion Shaft Assembly.>
- 11) Remove the front differential assembly. <Ref. to 6MT-97, REMOVAL, Front Differential Assembly.>
- 12) Remove the vehicle speed sensor. <Ref. to 6MT-30, REMOVAL, Vehicle Speed Sensor.>
- 13) Remove the speedometer gear. <Ref. to 6MT-103, REMOVAL, Speedometer Gear.>

B: INSTALLATION

- 1) Install the pitching stopper bracket.

Tightening torque:

41 N·m (4.2 kgf·m, 30.2 ft·lb)

- 2) Install the speedometer gear. <Ref. to 6MT-103, INSTALLATION, Speedometer Gear.>
- 3) Install the vehicle speed sensor. <Ref. to 6MT-30, INSTALLATION, Vehicle Speed Sensor.>
- 4) Install the front differential assembly. <Ref. to 6MT-97, INSTALLATION, Front Differential Assembly.>
- 5) Install the drive pinion shaft assembly. <Ref. to 6MT-91, INSTALLATION, Drive Pinion Shaft Assembly.>
- 6) Install the individual gear assemblies all at once. <Ref. to 6MT-66, INSTALLATION, Main Shaft Assembly.>
- 7) Install the transmission case. <Ref. to 6MT-61, INSTALLATION, Transmission Case.>

- 8) Install the oil pump. <Ref. to 6MT-58, INSTALLATION, Oil Pump.>

- 9) Install the center differential. <Ref. to 6MT-56, INSTALLATION, Center Differential.>

- 10) Install the transfer driven gear. <Ref. to 6MT-54, INSTALLATION, Transfer Driven Gear.>

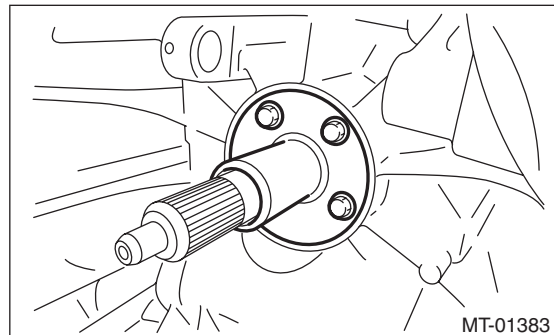
- 11) Install the extension case. <Ref. to 6MT-43, INSTALLATION, Extension Case.>

- 12) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-40, INSTALLATION, Oil Pipe.> <Ref. to 6MT-42, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT-41, INSTALLATION, Back-up Light Switch.>

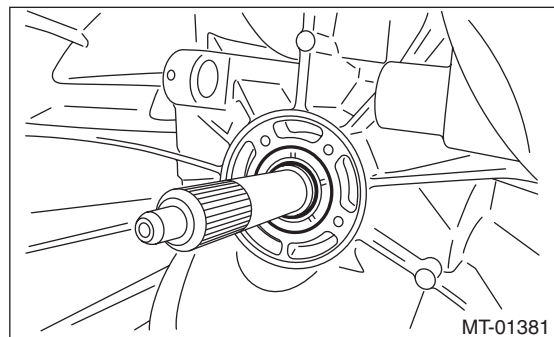
- 13) Install the manual transmission assembly to the vehicle. <Ref. to 6MT-35, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

- 1) Remove the clutch release bearing guide.



- 2) Remove the oil seal.



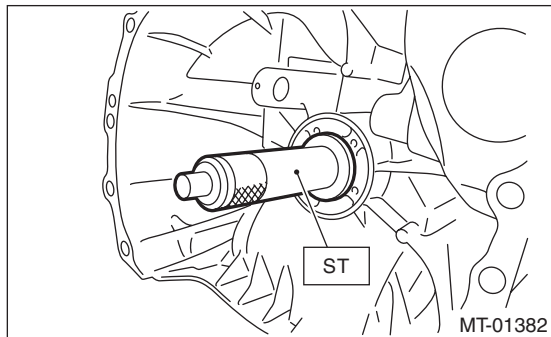
Clutch Housing

MANUAL TRANSMISSION AND DIFFERENTIAL

D: ASSEMBLY

1) Attach the oil seal to the clutch housing, being careful not to damage the seal.

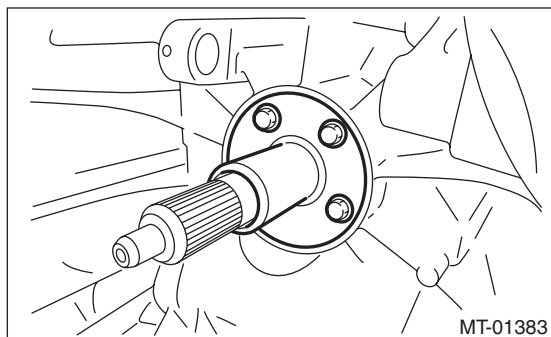
ST 18657AA020 OIL SEAL INSTALLER



2) Install the clutch release bearing guide.

Tightening torque:

6.4 N·m (0.65 kgf-m, 4.7 ft-lb)



E: INSPECTION

1) Check to make sure there are no damage or cracks on the clutch housing. If there is excessive damage, replace the clutch housing.

2) Inspect the clutch housing for gear oil leakage. If any oil leaks are found, repair or replace the applicable part.

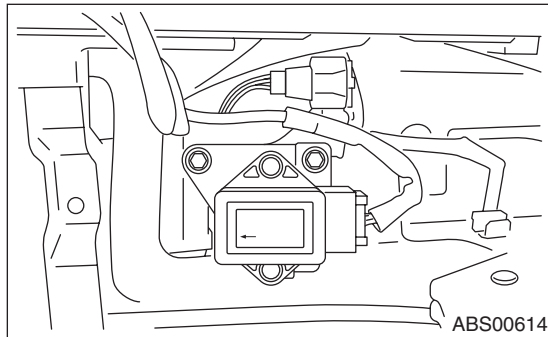
28. Yaw Rate and Lateral G Sensor

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the console cover.
<Ref. to EI-46, Console Box.>
- 3) Disconnect the connector from the yaw rate & lateral G sensor.
- 4) Remove the yaw rate & lateral G sensor from the body.

CAUTION:

Do not drop or hit the yaw rate & lateral G sensor.



B: INSTALLATION

Install in the reverse order of removal.

CAUTION:

Do not drop or hit the yaw rate & lateral G sensor.

Tightening torque:

18 N·m (1.8 kgf·m, 13 ft·lb)

Driver's Control Center Differential Control Module

MANUAL TRANSMISSION AND DIFFERENTIAL

29. Driver's Control Center Differential Control Module

A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Remove the glove box.
<Ref. to EI-43, REMOVAL, Glove Box.>
- 3) Remove the bolts from inside the glove box, and disconnect the connectors to remove the control unit.

B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:

44 N·m (4.5 kgf-m, 32.5 ft-lb)

30. Steering Angle Sensor

A: REPLACEMENT

CAUTION:

- Do not remove except when performing replacement.
- If the sensor needs replacement, replace along with the combination switch assembly once every three times for the protection of the threaded portion.

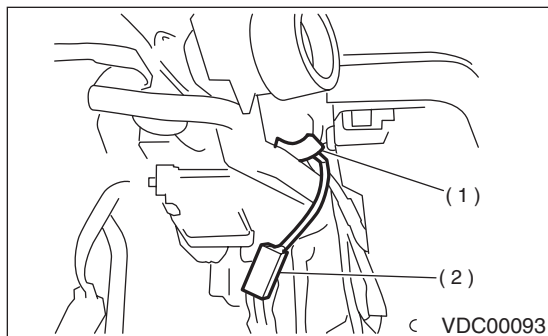
- 1) Set the steering wheel to the straight-ahead position.
- 2) Disconnect the ground cable from battery.
- 3) Remove the airbag module.
<Ref. to AB-13, REMOVAL, Driver's Airbag Module.>

WARNING:

Always refer to "Airbag System" when servicing the airbag module.

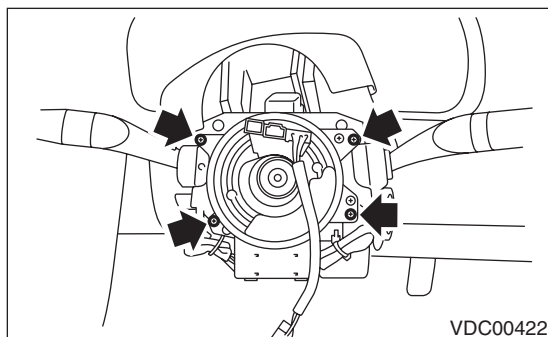
<Ref. to AB-3, CAUTION, General Description.>

- 4) Remove the steering wheel.
<Ref. to PS-18, REMOVAL, Steering Wheel.>
- 5) Remove the screws, and remove the steering column lower cover.
- 6) Remove the two screws holding the steering column upper cover.
- 7) Unlock the harness band lock, and disconnect the steering angle sensor connector.

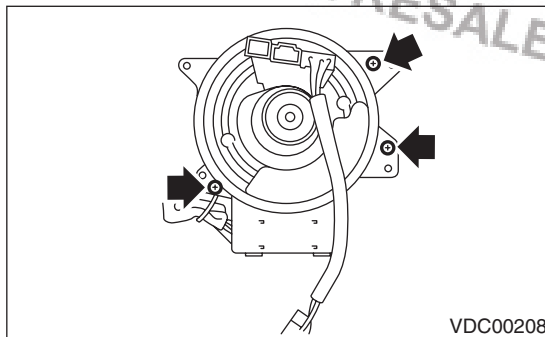


- (1) Harness band
- (2) Connector

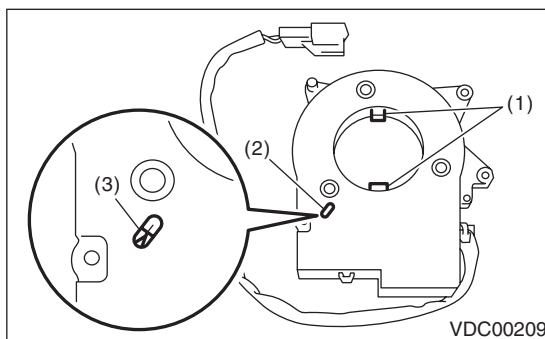
- 8) Remove the screws holding the roll connector to the steering column.



- 9) Remove the steering angle sensor from the roll connector.



- 10) Turn the protrusion portion of new steering angle sensor to match the alignment mark of inspection hole.

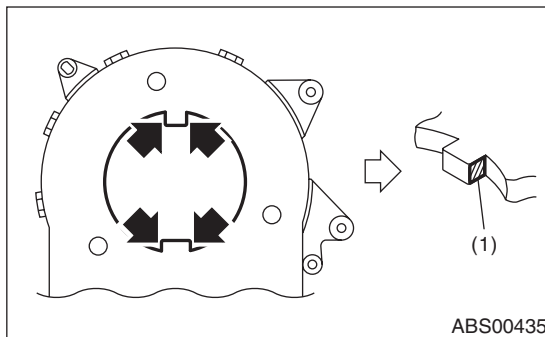


- (1) Protrusion
- (2) Inspection hole
- (3) Alignment mark

CAUTION:

Be careful not to allow any foreign objects to enter the inspection hole.

- 11) Align the center of roll connector.
<Ref. to AB-19, INSTALLATION, Roll Connector.>
- 12) Apply the grease provided with the new part on the 4 locations of the protrusion on the steering angle sensor.



- (1) Grease application location

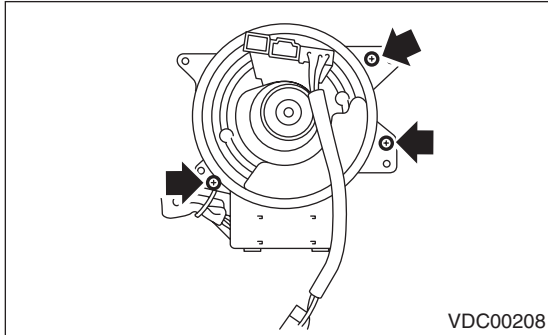
Steering Angle Sensor

MANUAL TRANSMISSION AND DIFFERENTIAL

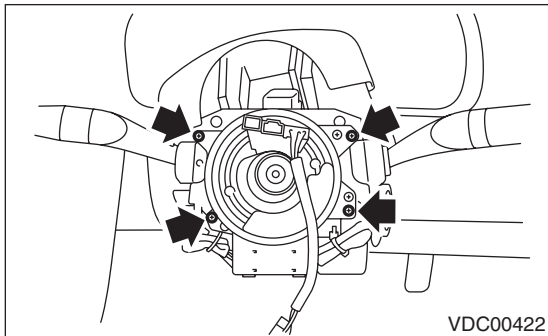
13) Match the position of the protrusion, and attach the steering angle sensor to the roll connector.

Tightening torque:

0.5 N·m (0.05 kgf-m, 0.36 ft-lb)



14) Attach the roll connector to the combination switch.



15) Install the steering wheel.

<Ref. to PS-18, INSTALLATION, Steering Wheel.>

Tightening torque:

44 N·m (4.5 kgf-m, 32.5 ft-lb)

16) Install the airbag module onto the steering wheel.

<Ref. to AB-13, INSTALLATION, Driver's Airbag Module.>

WARNING:

Always refer to "Airbag System" before performing the service operation.

<Ref. to AB-3, CAUTION, General Description.>

17) Connect the ground cable to the battery.

31. General Diagnostic Table

A: INSPECTION

1. MANUAL TRANSMISSION

Symptom	Possible cause	Corrective action
1. Gears are difficult to intermesh. NOTE: If it is difficult to shift, there are two possible causes. One is a defective gear shift system and the other is defective transmission. However, if the operation is heavy and engagement of the gears is difficult, a defective clutch disengagement may also be responsible. Check whether the clutch is correctly functioning, before checking the gear shift system and transmission.	(a) Worn, damaged or burred chamfer at internal spline of the sleeve and reverse driven gear	Replace.
	(b) Gear spline wear, damage, dents	Replace.
	(c) Worn or scratched bushings	Replace.
	(d) Incorrect contact or wear between synchronizer ring and gear cone	Repair or replace.
2. The gear is slipping out • Gear slips out when coasting on rough road. • The gear slips out when accelerating	(a) Defective pitching stopper adjustment	Adjust.
	(b) Loose engine mounting bolts	Tighten or replace.
	(c) Worn fork shifter, broken shifter fork rail spring	Replace.
	(d) Worn or damaged ball bearing	Replace.
	(e) Excessive clearance between splines of synchronizer hub and synchronizer sleeve	Replace.
	(f) Worn teeth steps on synchronizer hub (caused by slippage of 3rd gear)	Replace.
	(g) Worn 1st driven gear, needle bearing and race	Replace.
	(h) Worn 2nd driven gear, needle bearing and race	Replace.
	(i) Worn 3rd drive gear and bushing	Replace.
	(j) Worn 4th drive gear and bushing	Replace.
	(k) Worn 5th drive gear and bushing	Replace.
	(l) Worn 6th drive gear and bushing	Replace.
	(m) Worn reverse idler gear and bushing	Replace.
3. Abnormal noise is emitted from the transmission NOTE: If a noise is heard when the vehicle is parked with its engine idling and if a noise ceases when the clutch is disengaged, it may be considered that the noise is coming from the transmission.	(a) Insufficient or improper lubrication	Lubricate with specified oil or replace.
	(b) Worn or damaged gears and bearings NOTE: If the trouble is only wear of the gear teeth surfaces, only a high whirring noise will occur at high speeds, but if any part is broken, rhythmical clicking sounds will be heard even at low speeds.	Replace.

General Diagnostic Table

MANUAL TRANSMISSION AND DIFFERENTIAL

2. DIFFERENTIAL

Symptom	Possible cause	Corrective action
1. Broken differential (case, gear, bearing, etc.) NOTE: Noise will occur, and eventually the differential will not be able to operate due to broken pieces obstructing the gear revolution.	(a) Insufficient or improper oil	Replace.
	(b) Use of vehicle under severe conditions such as excessive load and improper use of the clutch	Replace.
	(c) Improper adjustment of taper roller bearing	Adjust.
	(d) Improper adjustment of the drive pinion and the hypoid driven gear	Adjust.
	(e) Loose hypoid driven gear clamping bolts	Tighten.
2. Differential and hypoid gear noise Troubles of the differential and hypoid gear always appear as noise problems. Therefore noise is the first indication of trouble. However, noise from the engine, muffler, tire, exhaust gas, bearing, body, etc. are easily mistaken for noise from the differential. Pay special attention to the hypoid gear noise because it is easily confused with other gear noises. There are the following four kinds of noises. <ul style="list-style-type: none"> • Gear noise while driving: If noise increases as the vehicle speed increases, it may be due to insufficient gear oil, incorrect gear engagement, damaged gears, etc. • Gear noise during coasting: Damaged gears due to misadjusted bearings and incorrect shim adjustment. • Noise from bearings during driving or during coasting: Bearing cracked, damaged. • Noise occurring mainly during a turn: Noise from the differential side gear, differential pinion, differential pinion shaft 	(a) Insufficient oil	Lubricate.
	(b) Improper adjustment of hypoid driven gear and drive pinion	Check the tooth contact.
	(c) Worn teeth of hypoid driven gear and drive pinion	Replace as a set. Readjust the bearing preload.
	(d) Loose roller bearing	Readjust the backlash of the hypoid driven gear to drive pinion, and check the tooth contact.
	(e) Distorted hypoid driven gear or differential case	Replace.
	(f) LSD broken, damaged, etc.	Replace.