

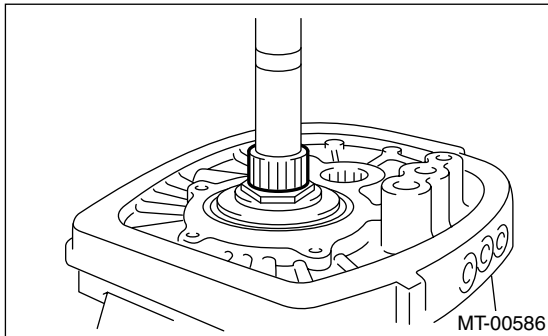
# DRIVEN GEAR ASSEMBLY

## MANUAL TRANSMISSION AND DIFFERENTIAL

### 20. Driven Gear Assembly

#### A: REMOVAL

- 1) Remove the manual transmission assembly from vehicle. <Ref. to 6MT-35, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT-40, Preparation for Overhaul.>
- 3) Remove the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-42, REMOVAL, Oil Pipe.>, <Ref. to 6MT-45, REMOVAL, Neutral Position Switch.>, <Ref. to 6MT-43, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT-47, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT-58, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT-60, REMOVAL, Center Differential.>
- 7) Remove the oil pump. <Ref. to 6MT-61, REMOVAL, Oil Pump.>
- 8) Remove the transmission case. <Ref. to 6MT-65, REMOVAL, Transmission Case.>
- 9) Remove the driven gear assembly. <Ref. to 6MT-70, REMOVAL, Main Shaft Assembly.>
- 10) Remove the needle bearing.



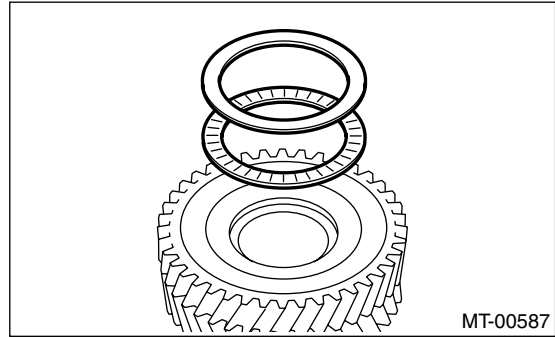
- 11) Remove the thrust needle bearing.

#### B: INSTALLATION

- 1) Adjust the main shaft snap ring. <Ref. to 6MT-82, ADJUSTMENT, Main Shaft Assembly.>
- 2) Adjust the 1st-2nd shifter rod. <Ref. to 6MT-117, ADJUSTMENT, Shifter Fork and Rod.>
- 3) Install the thrust needle bearing.

#### NOTE:

Make sure to install the thrust needle bearing in proper direction.



- 4) Install the 1st needle bearing.
- 5) Install the driven gear assembly. <Ref. to 6MT-71, INSTALLATION, Main Shaft Assembly.>
- 6) Install the transmission case. <Ref. to 6MT-66, INSTALLATION, Transmission Case.>
- 7) Adjust backlash at axial direction of driven gear assembly. <Ref. to 6MT-91, ADJUSTMENT, Driven Gear Assembly.>
- 8) Install the oil pump. <Ref. to 6MT-62, INSTALLATION, Oil Pump.>
- 9) Install the center differential. <Ref. to 6MT-60, INSTALLATION, Center Differential.>
- 10) Install the transfer driven gear. <Ref. to 6MT-58, INSTALLATION, Transfer Driven Gear.>
- 11) Install the extension case. <Ref. to 6MT-47, INSTALLATION, Extension Case.>
- 12) Install the oil pipe, neutral position switch, back-up light switch and harness. <Ref. to 6MT-42, INSTALLATION, Oil Pipe.>, <Ref. to 6MT-45, INSTALLATION, Neutral Position Switch.>, <Ref. to 6MT-43, INSTALLATION, Back-up Light Switch.>
- 13) Install the manual transmission assembly to vehicle. <Ref. to 6MT-37, INSTALLATION, Manual Transmission Assembly.>

#### C: DISASSEMBLY

#### NOTE:

Each sleeve and hub engage at a specified point. Mark an engagement point on the sleeve and hub before disassembly.

- 1) Secure the ST on workbench.  
ST 18664AA000 BASE
- 2) Lift the caulking of lock nut.

# DRIVEN GEAR ASSEMBLY

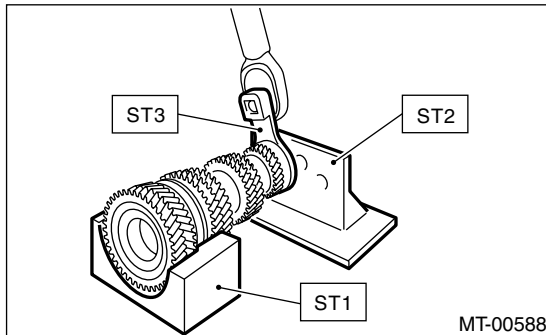
MANUAL TRANSMISSION AND DIFFERENTIAL

3) Install the ST3 to lock nut, set the driven gear assembly on ST, then remove the lock nut.

ST1 18666AA000 HOLDER

ST2 18664AA000 BASE

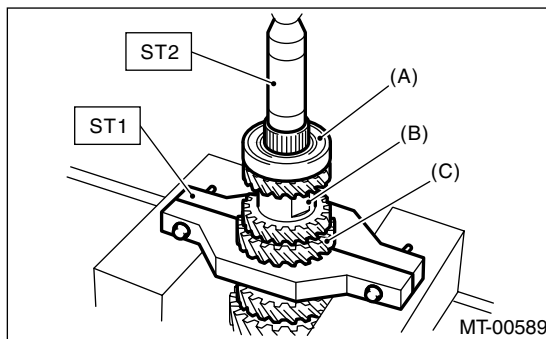
ST3 18620AA000 ADAPTER WRENCH



4) Install the ST1 to 4th gear, then remove the ball bearing, 5th-6th driven gear and 3rd-4th driven gear.

ST1 18723AA000 REMOVER

ST2 499877000 REMOVER

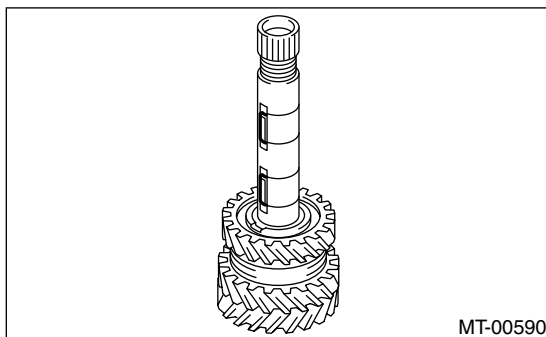


(A) Ball bearing

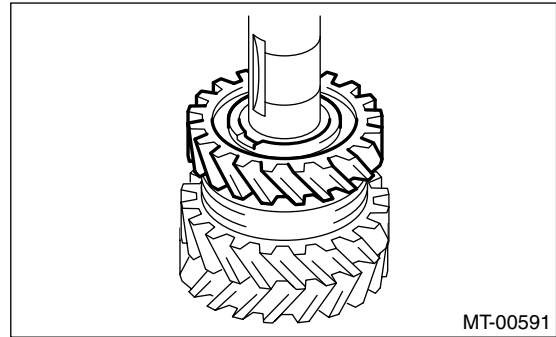
(B) 5th-6th driven gear

(C) 3rd-4th driven gear

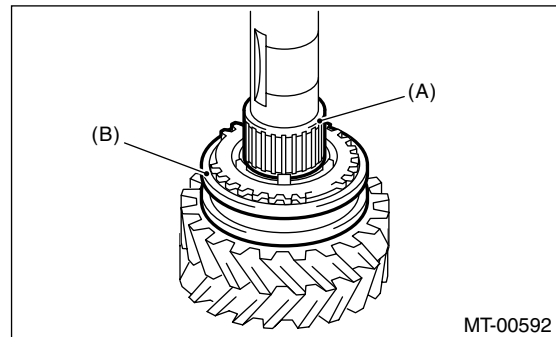
5) Remove the driven gear key.



6) Remove the 2nd gear.



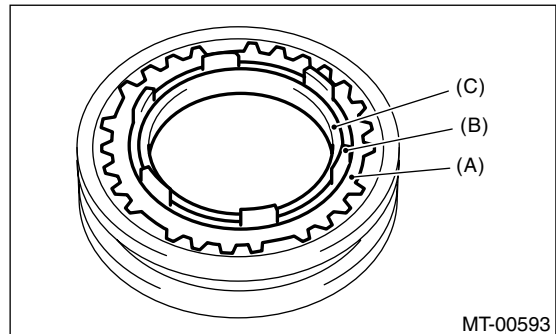
7) Remove the needle bearing and 1st-2nd sleeve.



(A) Needle bearing

(B) 1st-2nd sleeve

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



(A) Outer baulk ring

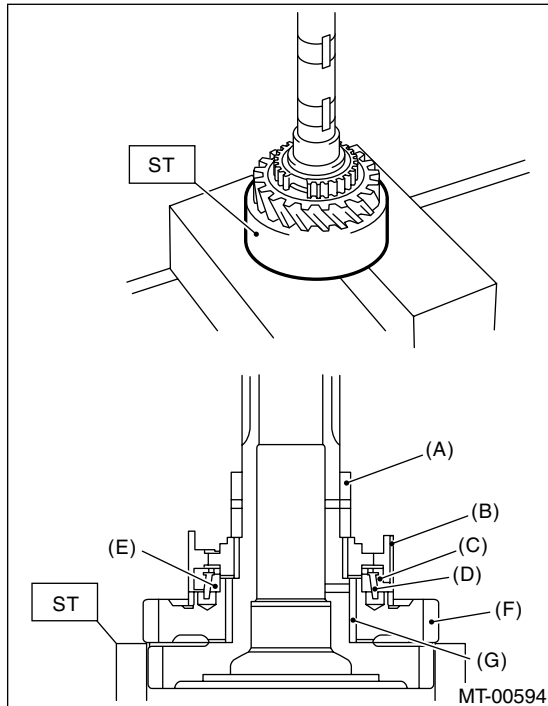
(B) 2nd synchro cone

(C) Inner baulk ring

# DRIVEN GEAR ASSEMBLY

## MANUAL TRANSMISSION AND DIFFERENTIAL

9) Using the ST, remove each part.  
ST 18754AA000 REMOVER



- (A) 2nd bush
- (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

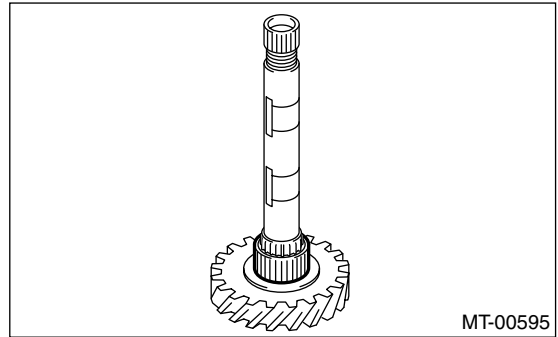
### NOTE:

Replace the following parts as a set.

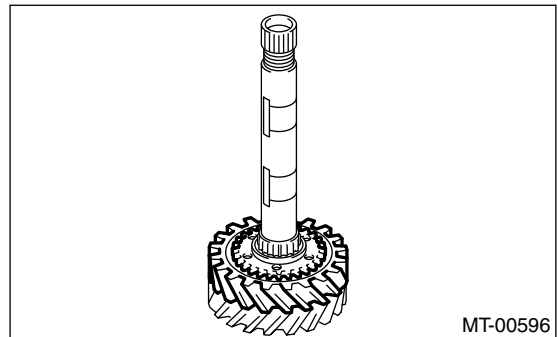
- Sleeve and hub
- Outer baulk ring, 1st synchro cone, inner baulk ring
- Outer baulk ring, 2nd synchro cone, inner baulk ring

1) Sufficiently apply gear oil to the drive shaft, 1st needle bearing and inner periphery of 1st driven gear.

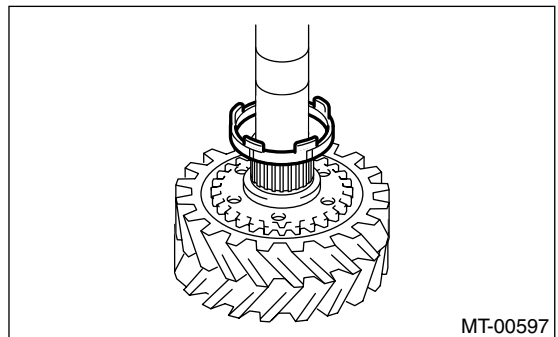
2) Install the 1st needle bearing.



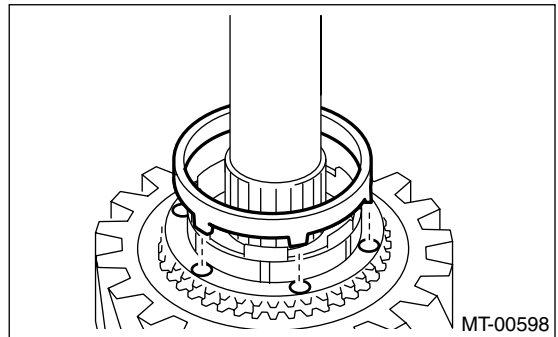
3) Install the 1st driven gear to driven shaft.



4) Install the inner baulk ring.



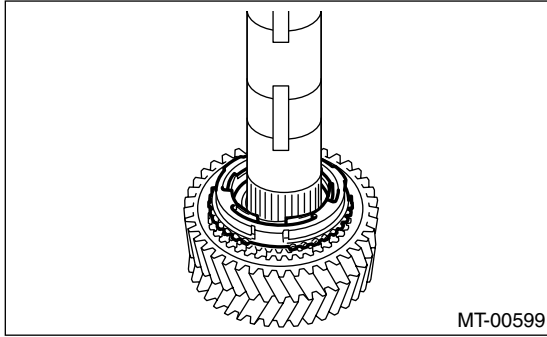
5) Align protrusion portions of the 1st synchro cone to the holes of 1st drive gear to install.



# DRIVEN GEAR ASSEMBLY

MANUAL TRANSMISSION AND DIFFERENTIAL

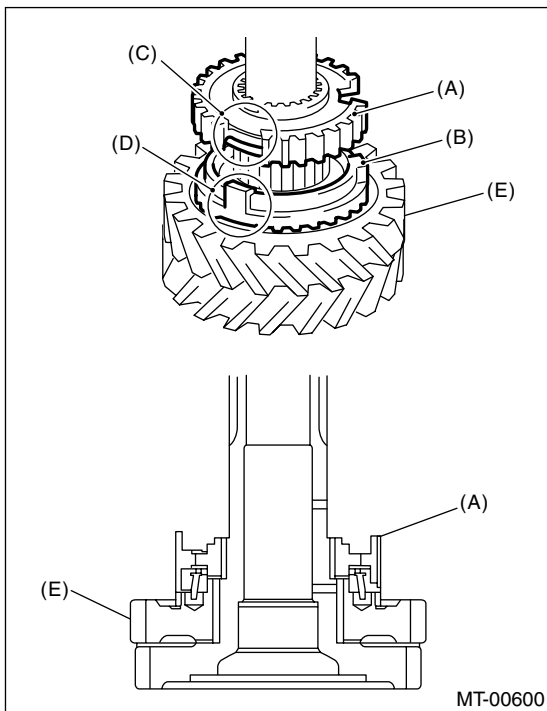
6) Install the outer baulk ring.



7) Install the 1st-2nd hub.

NOTE:

- Align the protrusion portion of outer baulk ring and cutout portion of 1st-2nd hub, then install.
- Make sure to install the 1st-2nd hub in proper direction.



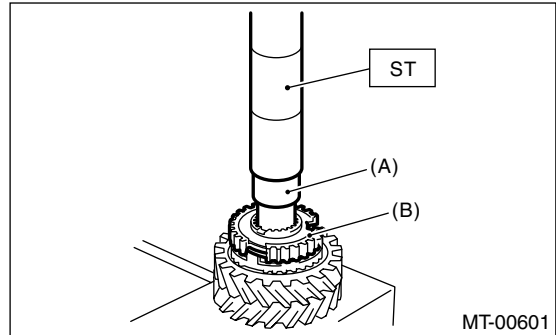
- (A) 1st-2nd hub
- (B) Outer baulk ring
- (C) Cutout portion of 1st-2nd hub
- (D) Protrusion portion of outer baulk ring
- (E) 1st driven gear

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).



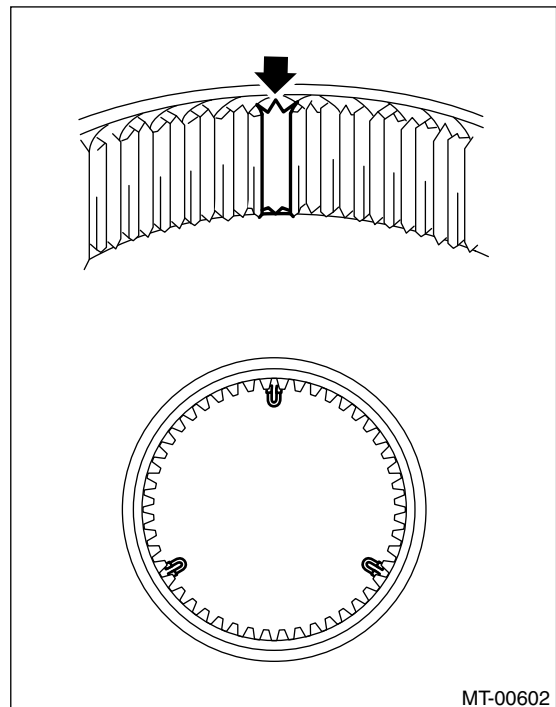
- (A) 2nd bush
- (B) 1st-2nd hub

9) Make sure the 1st drive gear is smoothly turned by hand. If not, reassemble.

10) Install the shifting insert key in proper place of 1st-2nd sleeve.

NOTE:

Angle of each shifting insert key is 120° apart.



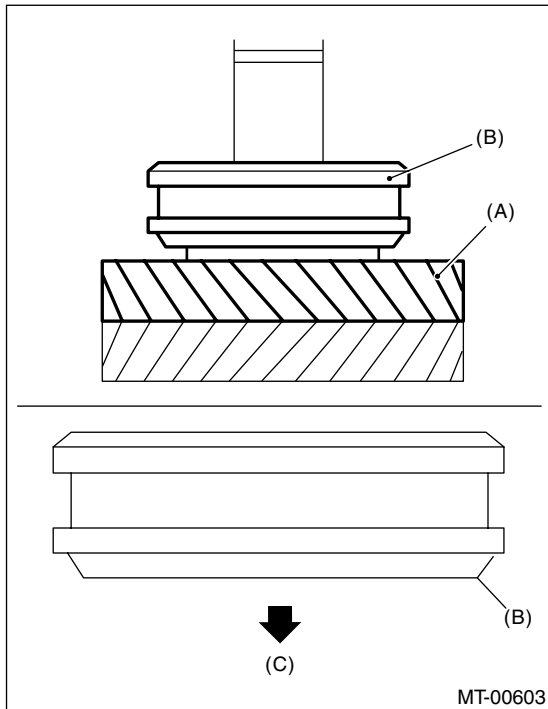
# DRIVEN GEAR ASSEMBLY

## MANUAL TRANSMISSION AND DIFFERENTIAL

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

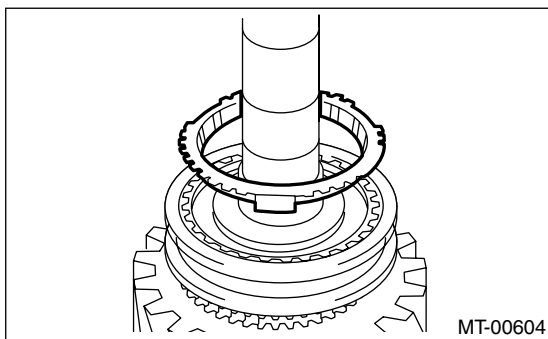
**NOTE:**

Make sure to install the 1st-2nd sleeve in proper direction.

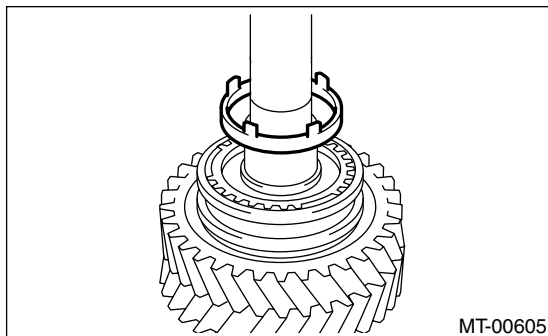


- (A) 1st driven gear
- (B) 1st-2nd sleeve
- (C) 1st driven gear side

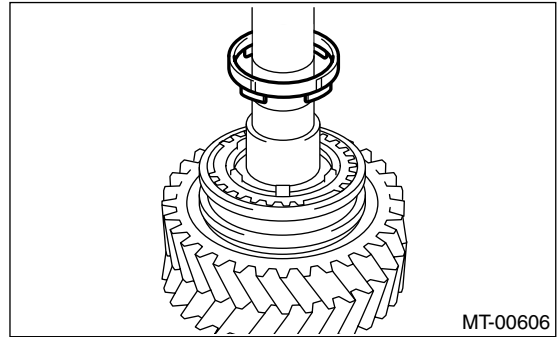
12) Install the outer baulk ring.



13) Install the 2nd synchro cone.



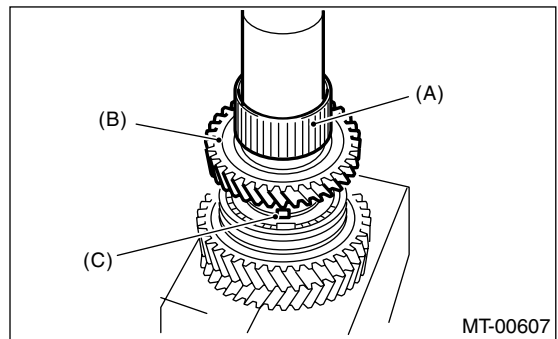
14) Install the inner baulk ring.



15) Sufficiently apply gear oil to the bush, 2nd needle bearing and inner periphery of 2nd drive gear.  
16) Install the 2nd needle bearing and 2nd driven gear.

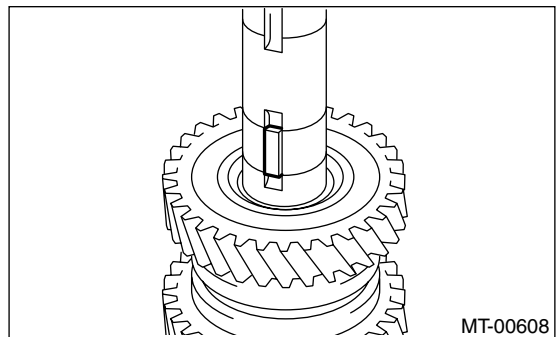
**NOTE:**

Align the protrusion portion of 2nd synchro cone with 2nd driven gear hole, then install them.



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

17) Install the key.



# DRIVEN GEAR ASSEMBLY

## MANUAL TRANSMISSION AND DIFFERENTIAL

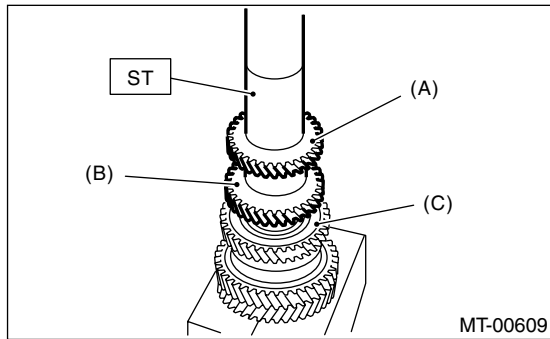
18) Using the ST, install the 3rd-4th driven gear.  
ST 18654AA000 INSTALLER

**CAUTION:**

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

**NOTE:**

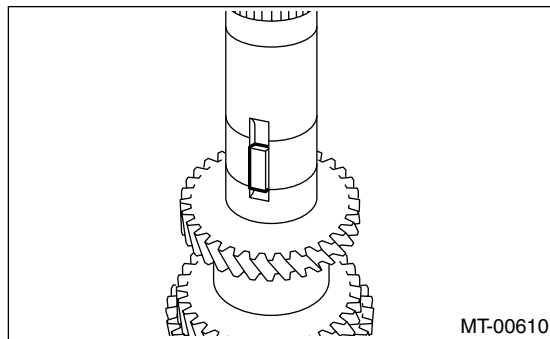
- Make sure to install the 3rd-4th driven gear in proper direction.
- Align the groove of 3rd-4th driven gear with key.



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

19) Make sure the 2nd driven gear is smoothly turned by hand. If not, reassemble.

20) Install the key.



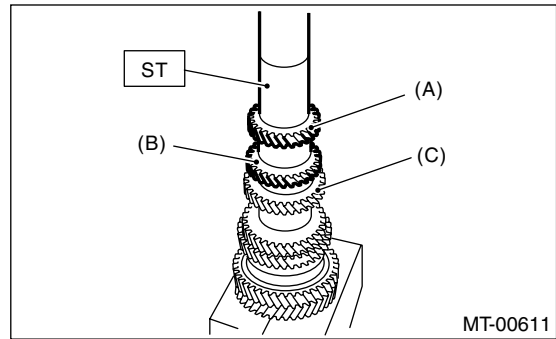
21) Using the ST, install the 5th-6th driven gear.  
ST 18654AA000 INSTALLER

**CAUTION:**

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

**NOTE:**

- Make sure to install the 5th-6th driven gear in proper direction.
- Align the groove of 5th-6th driven gear with key.



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

22) Using the ST, install the ball bearing.

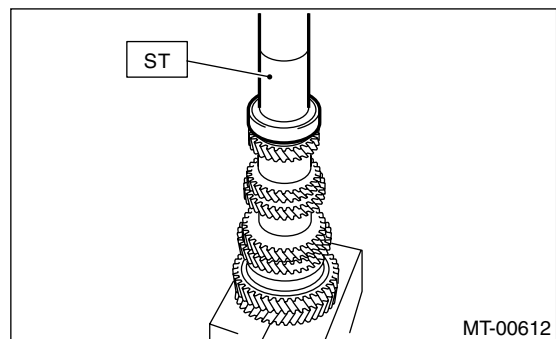
ST 18654AA000 INSTALLER

**CAUTION:**

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

**NOTE:**

Make sure to install the ball bearing in proper direction.



23) Make sure the ball bearing is smoothly turned by hand. If not, reassemble.

24) Install a new lock nut.

# DRIVEN GEAR ASSEMBLY

## MANUAL TRANSMISSION AND DIFFERENTIAL

25) Install the ST3 to lock nut, then install the ST to driven gear assembly and tighten lock nut.

ST1 18666AA000 HOLDER

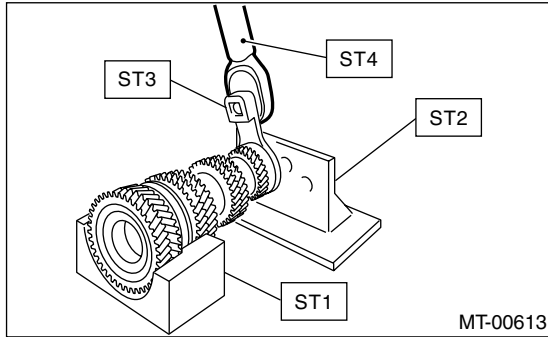
ST2 18664AA000 BASE

ST3 18620AA000 ADAPTER WRENCH

ST4 18852AA000 TORQUE WRENCH

### Tightening torque:

**530 N·m (54.0 kgf·m, 391 ft·lb)**

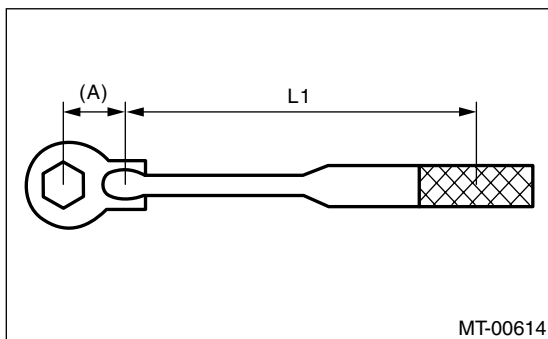


### NOTE:

If torque wrench except ST4 is used, calculate the following equation, then tighten the lock nut.

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

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



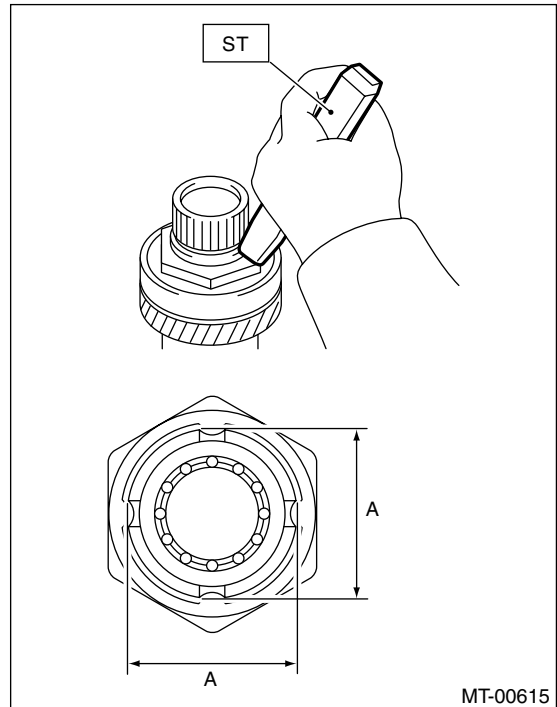
(A) 0.1 m (3.94 in)

26) Using the ST, caulk four portions on the lock nut to obtain dimension A  $44 \pm 0.5$  mm ( $1.73 \pm 0.02$  in).

ST1 18669AA000 PUNCH DRIVEN SHAFT

### NOTE:

Do not crack the caulking part of lock nut.



# DRIVEN GEAR ASSEMBLY

MANUAL TRANSMISSION AND DIFFERENTIAL

## E: INSPECTION

Disassembled parts should be washed clean first and then inspected carefully.

### 1) Bearing

Replace the bearings in the following cases.

- Worn, rusted and damaged bearing
- Bearings that fail to turn smoothly or make abnormal noise when turned
- Bearings having other defects

### 2) Bushing (each gear)

Replace the bushings in the following case.

- When the sliding surface is damaged or abnormally worn.

### 3) Gears

Replace the gears in the following cases.

- Gear teeth surfaces are broken or excessively worn.
- Parts that contact the baulk ring is damaged.
- The inner surface of gear is damaged.

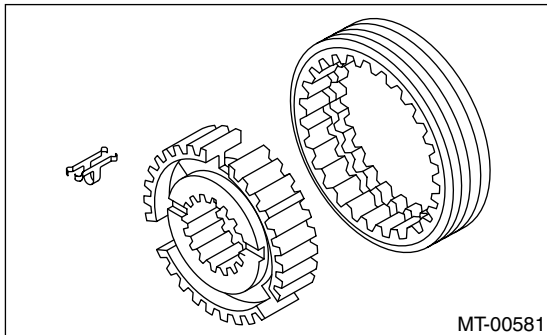
### 4) Baulk ring, synchro cone

Replace the baulk ring and synchro cone in the following case:

- Worn, rusted and damaged baulk ring

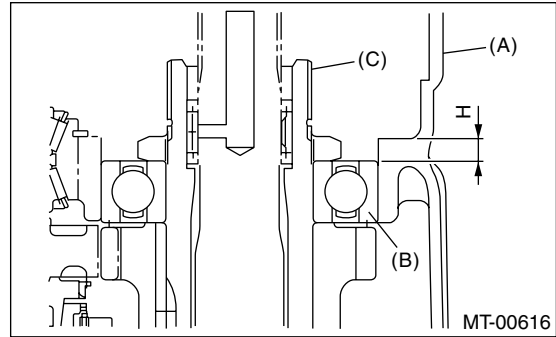
### 5) Shifting insert key

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



## F: ADJUSTMENT

1) Measure length "H", which is from transmission case and oil pump cover mating surface to ball bearing edge.



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

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

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

t	Thickness of washer
H	Length from transmission case and oil pump cover mating surface to ball bearing edge
5.8±0.05 mm (0.23±0.002 in)	Thickness of collar
0.1 to 0.3 mm (0.0039 to 0.0118 in)	Backlash specification at axial direction of driven gear assembly

3) Select 0 to 3 washers from the following table to adjust backlash closest to specification.

**Backlash specification at axial direction of driven gear assembly:**

$$0.1 - 0.3 \text{ mm (} 0.0039 - 0.0118 \text{ in)}$$

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)