

21. Reverse Idler Gear Assembly

A: REMOVAL

- 1) Remove the manual transmission assembly from the vehicle. <Ref. to 6MT(TY85)-31, REMOVAL, Manual Transmission Assembly.>
- 2) Prepare the transmission for overhaul. <Ref. to 6MT(TY85)-38, Preparation for Overhaul.>
- 3) Remove the neutral position switch, back-up light switch and harness. <Ref. to 6MT(TY85)-41, REMOVAL, Neutral Position Switch.> <Ref. to 6MT(TY85)-40, REMOVAL, Back-up Light Switch.>
- 4) Remove the extension case. <Ref. to 6MT(TY85)-42, REMOVAL, Extension Case.>
- 5) Remove the transfer driven gear. <Ref. to 6MT(TY85)-54, REMOVAL, Transfer Driven Gear.>
- 6) Remove the center differential. <Ref. to 6MT(TY85)-56, REMOVAL, Center Differential.>
- 7) Remove the transmission case. <Ref. to 6MT(TY85)-57, REMOVAL, Transmission Case.>
- 8) Remove the reverse idler gear assembly. <Ref. to 6MT(TY85)-63, REMOVAL, Main Shaft Assembly.>

B: INSTALLATION

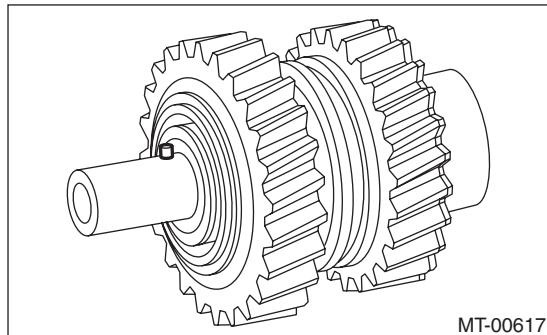
- 1) Select the reverse fork rod. <Ref. to 6MT(TY85)-110, ADJUSTMENT, Shifter Fork and Rod.>
- 2) Install the reverse idler gear assembly. <Ref. to 6MT(TY85)-64, INSTALLATION, Main Shaft Assembly.>
- 3) Install the transmission case. <Ref. to 6MT(TY85)-59, INSTALLATION, Transmission Case.>
- 4) Install the center differential. <Ref. to 6MT(TY85)-56, INSTALLATION, Center Differential.>
- 5) Install the transfer driven gear. <Ref. to 6MT(TY85)-54, INSTALLATION, Transfer Driven Gear.>
- 6) Install the extension case. <Ref. to 6MT(TY85)-42, INSTALLATION, Extension Case.>
- 7) Install the neutral position switch, back-up light switch and harness. <Ref. to 6MT(TY85)-41, INSTALLATION, Neutral Position Switch.> <Ref. to 6MT(TY85)-40, INSTALLATION, Back-up Light Switch.>
- 8) Install the manual transmission assembly to the vehicle. <Ref. to 6MT(TY85)-33, INSTALLATION, Manual Transmission Assembly.>

C: DISASSEMBLY

NOTE:

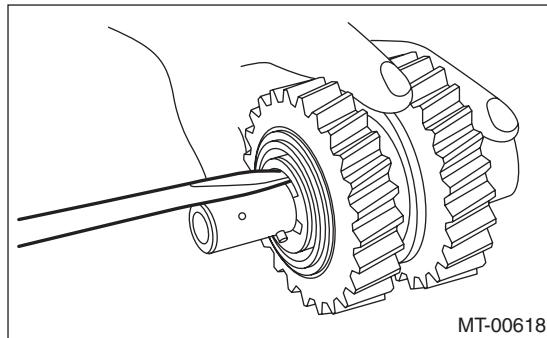
Sleeves and reverse gears meet at a specified position. Before disassembly, mark the meeting position of the sleeve and hub.

- 1) Remove the straight pin.



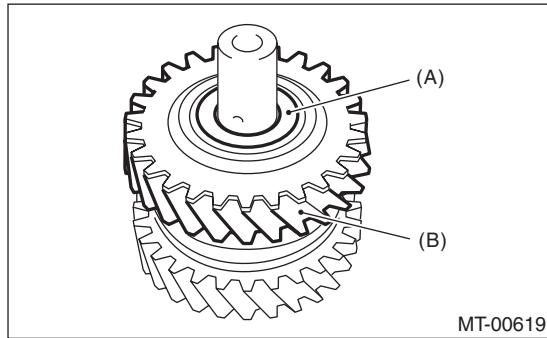
MT-00617

- 2) Remove the snap ring and washer.



MT-00618

- 3) Remove the counter high & low washer and reverse idler gear.



MT-00619

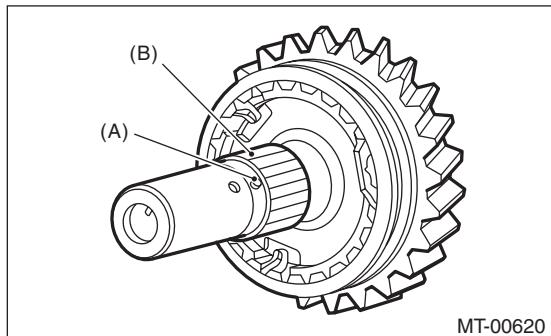
(A) Counter high and low washer

(B) Reverse idler gear

Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

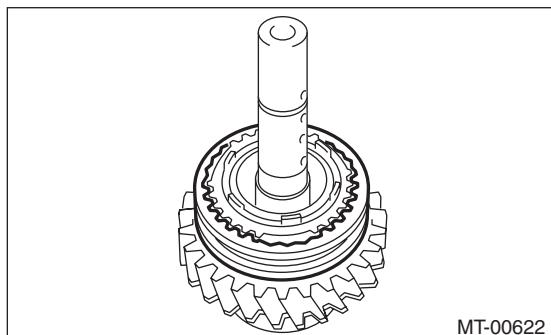
4) Remove the knock pin and reverse idler gear needle bearing.



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

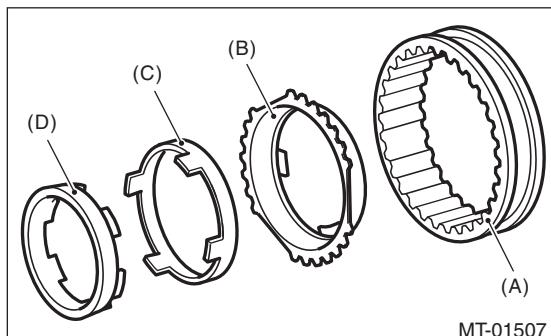
5) Remove the collar.

6) Remove the reverse sleeve.



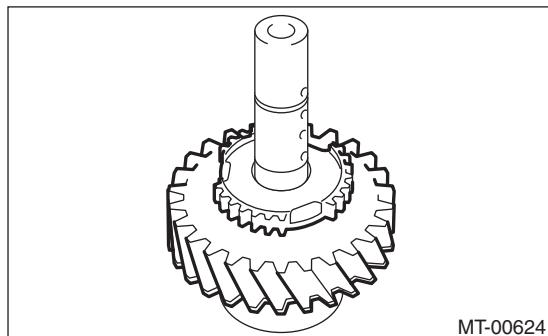
MT-00622

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



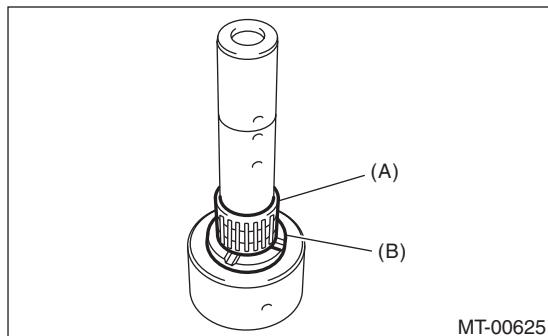
(A) Reverse sleeve
(B) Outer baulk ring
(C) Reverse synchro cone
(D) Inner baulk ring

8) Remove reverse idler gear No. 2.



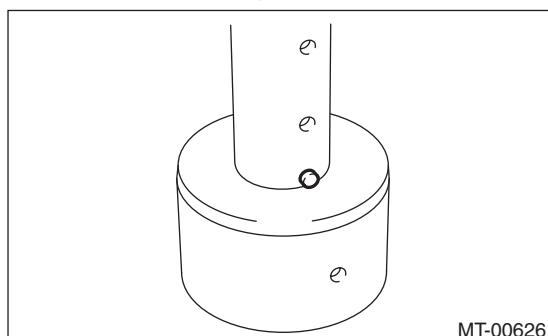
MT-00624

9) Remove the counter high & low washer and needle bearing.



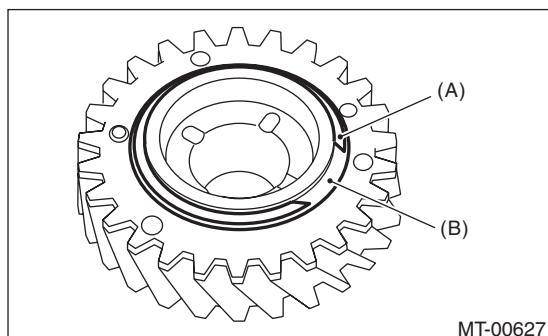
(A) Needle bearing
(B) Counter high and low washer

10) Remove the knock pin.



MT-00626

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

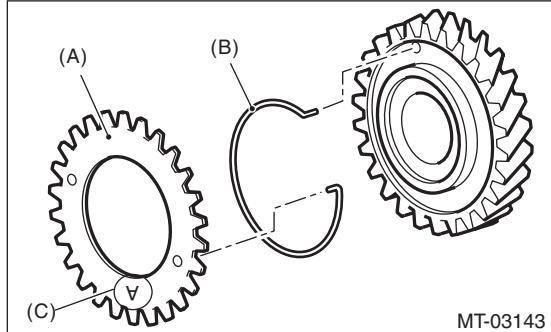


(A) Snap ring
(B) Friction plate

Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

12) Remove the reverse idler sub gear and spring.



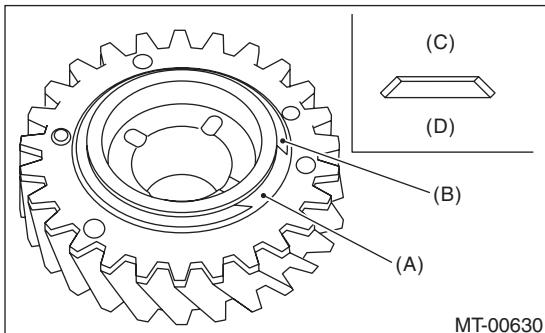
MT-03143

- (A) Reverse idler sub gear
- (B) Spring
- (C) Stamp (marking A)

2) Install the friction plate and snap ring.

NOTE:

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



MT-00630

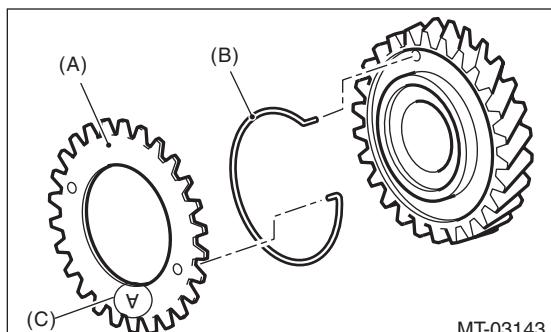
- (A) Friction plate
- (B) Snap ring
- (C) Snap ring side
- (D) Reverse idler sub gear side

D: ASSEMBLY

1) Attach the reverse idler sub gear and spring.

NOTE:

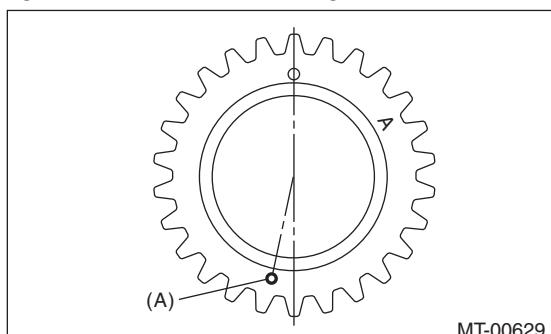
- Point the stamp (marking A) towards the outside, and install the reverse idler sub gear.



MT-03143

- (A) Reverse idler sub gear
- (B) Spring
- (C) Stamp (marking A)

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

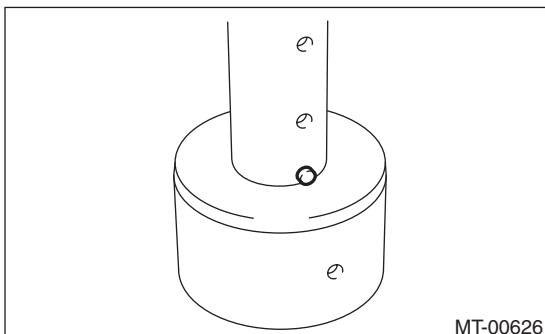


MT-00629

- (A) Attachment hole

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

4) Install the knock pin.

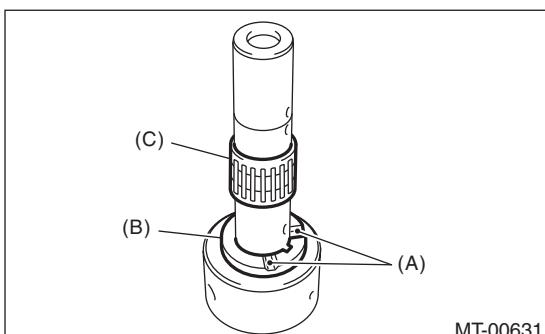


MT-00626

5) Install the counter high & low washer and needle bearing.

NOTE:

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



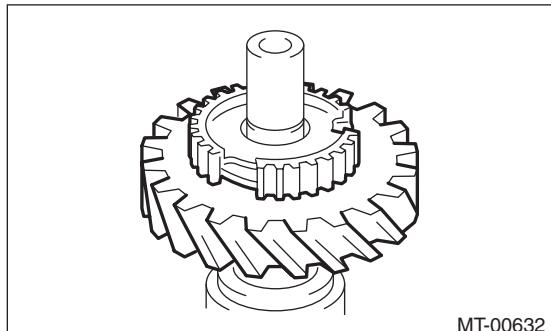
MT-00631

- (A) Groove
- (B) Counter high and low washer
- (C) Needle bearing

Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

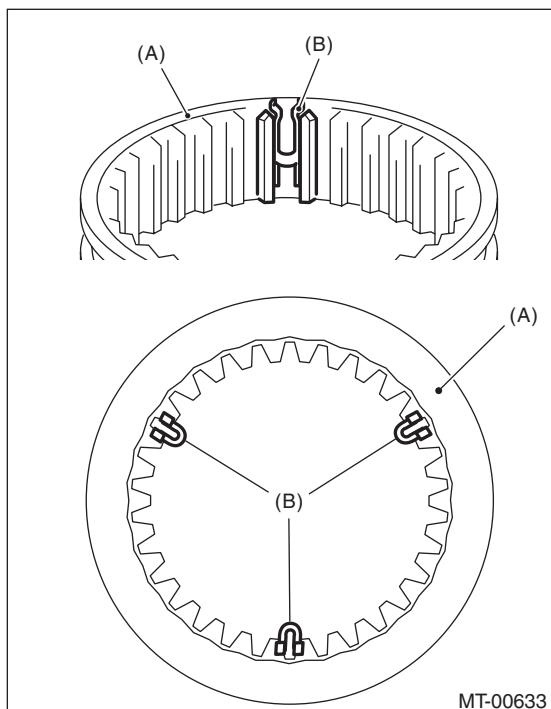
6) Install the reverse idler gear No. 2.



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

NOTE:

- The location angle of each shifting insert is 120°.
- Refer to the following figure to install the shifting insert.

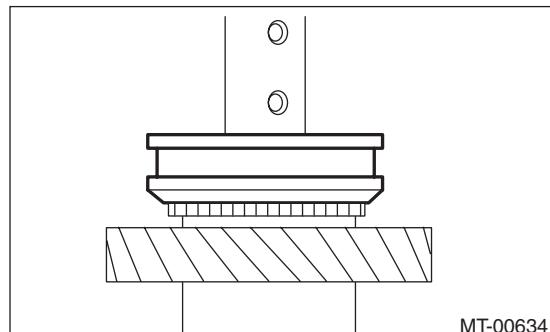


(A) Reverse sleeve
(B) Shifting insert

8) Install the reverse coupling sleeve to the reverse idler gear No. 2.

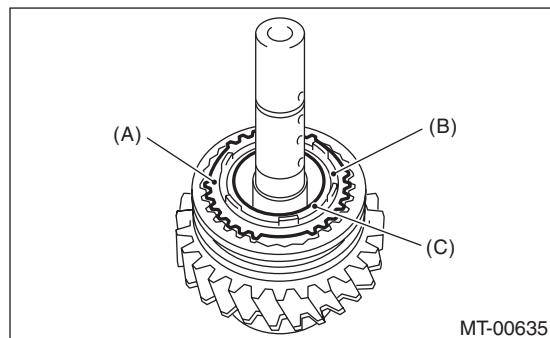
NOTE:

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



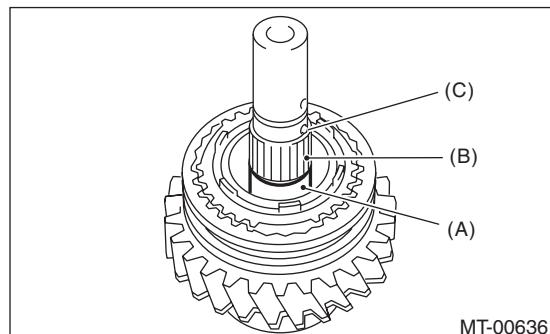
9) Apply adequate transmission gear oil to the collar, needle bearing and reverse drive gear inner surface.

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



(A) Reverse outer baulk ring
(B) Reverse synchro cone
(C) Reverse inner baulk ring

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

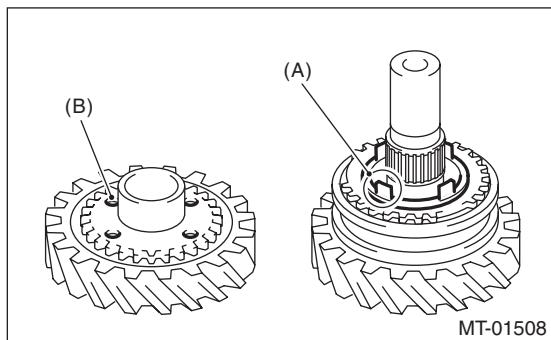


(A) Collar
(B) Needle bearing
(C) Knock pin

Reverse Idler Gear Assembly

MANUAL TRANSMISSION AND DIFFERENTIAL

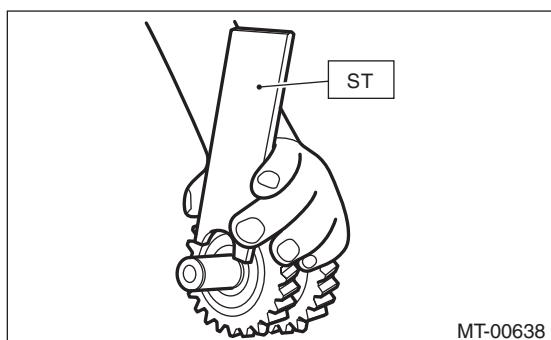
12) Match the protrusion of the reverse synchro cone to the hole on the reverse idler gear, and install the reverse idler gear.



(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 counter high & low washer and the washer.

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(TY85)-91, INSPECTION, Reverse Idler Gear Assembly.>
16) Install a new straight pin.

E: INSPECTION

Disassembled parts should be washed with cleaning solvent first, then inspected carefully.

1) Bearing

Replace the bearings in the following cases.

- Wear, rusting or damage of the bearings
- The bearing does not rotate smoothly or an abnormal noise is emitted when turning.
- The bearing has other defects.

2) Bushing (each gear)

Replace the bushing in following cases.

- The sliding surface is damaged or abnormally worn.

3) Gear

Replace gears in the following cases.

- The gear teeth surface is damaged or excessively worn.

- The contact area of the baulk ring is damaged.

- The inner face of the gear is worn.

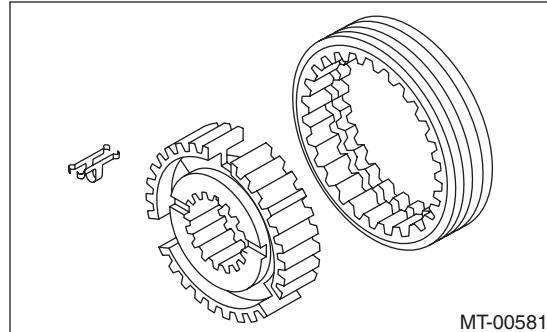
4) Baulk ring, synchro cone

Replace the baulk ring and synchro cone in the following cases.

- Wear, rusting or damage of the baulk ring

5) Shifting insert

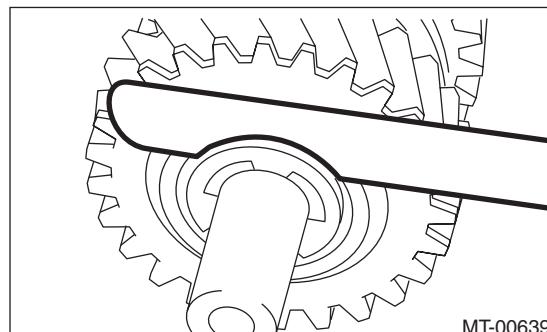
Replace the shifting insert if deformed, excessively worn or defective in any way.



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 replace it.

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.