

G52 MANUAL TRANSMISSION

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PRECAUTION

When working with FIPG material, you must observe the following.

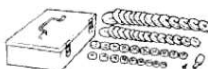
MX323-18

- Using a razor blade and gasket scraper, remove all the old FIPG material from the gasket surfaces.
- Thoroughly clean all components to remove all the loose material.
- Clean both sealing surfaces with a non-residue solvent.
- Apply FIPG in an approx. 1 mm (0.04 in.) wide bead along the sealing surface.
- Parts must be assembled within 10 minutes of application. Otherwise, the FIPG material must be removed and reapplied.

PREPARATION

SST (SPECIAL SERVICE TOOLS)

MT013-0W

	09316-60011 Transmission & Transfer Bearing Replacer	
	(09316-00011) Replacer Pipe	Counter gear rear bearing
	09506-35010 Differential Drive Pinion Rear Bearing Replacer	Output shaft rear bearing 5th gear Input shaft bearing
	09950-00020 Bearing Remover	Counter gear front bearing
	09950-40010 Puller B Set	Counter gear rear bearing
	09950-50010 Puller C Set	Gear spline piece No.5
	09950-60010 Replacer Set	
	(09951-00440) Replacer 44	Front bearing retainer oil seal
	(09951-00570) Replacer 57	Transfer adaptor oil seal
	09950-70010 Handle Set	

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 (09951-07150) Handle 150	Front bearing retainer oil seal Transfer adaptor oil seal
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RECOMMENDED TOOLS

MT012-06

 09031-00030 Pin Punch .	
 09042-00020 Torx Socket T40 .	
 09905-00012 Snap Ring No.1 Expander .	

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EQUIPMENT

MX027-14

Calipers	
Dial indicator	
Micrometer	
Torque wrench	
Feeler gauge	
Magnetic finger	

LUBRICANT

MX028-10

Item	Capacity	Classification
Manual transmission oil	2.2 liters (2.3 US qts, 1.9 Imp. qts)	API GL-4 or GL-5 SAE 75W-90

SSM (SPECIAL SERVICE MATERIALS)

MX029-02

08826-00090 Seal Packing 1281, THREE BOND 1281 or equivalent (FIG)	Intermediate plate x Transmission case Intermediate plate x Transfer adaptor
08833-00080 Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent	Straight screw plug Front bearing retainer set bolt

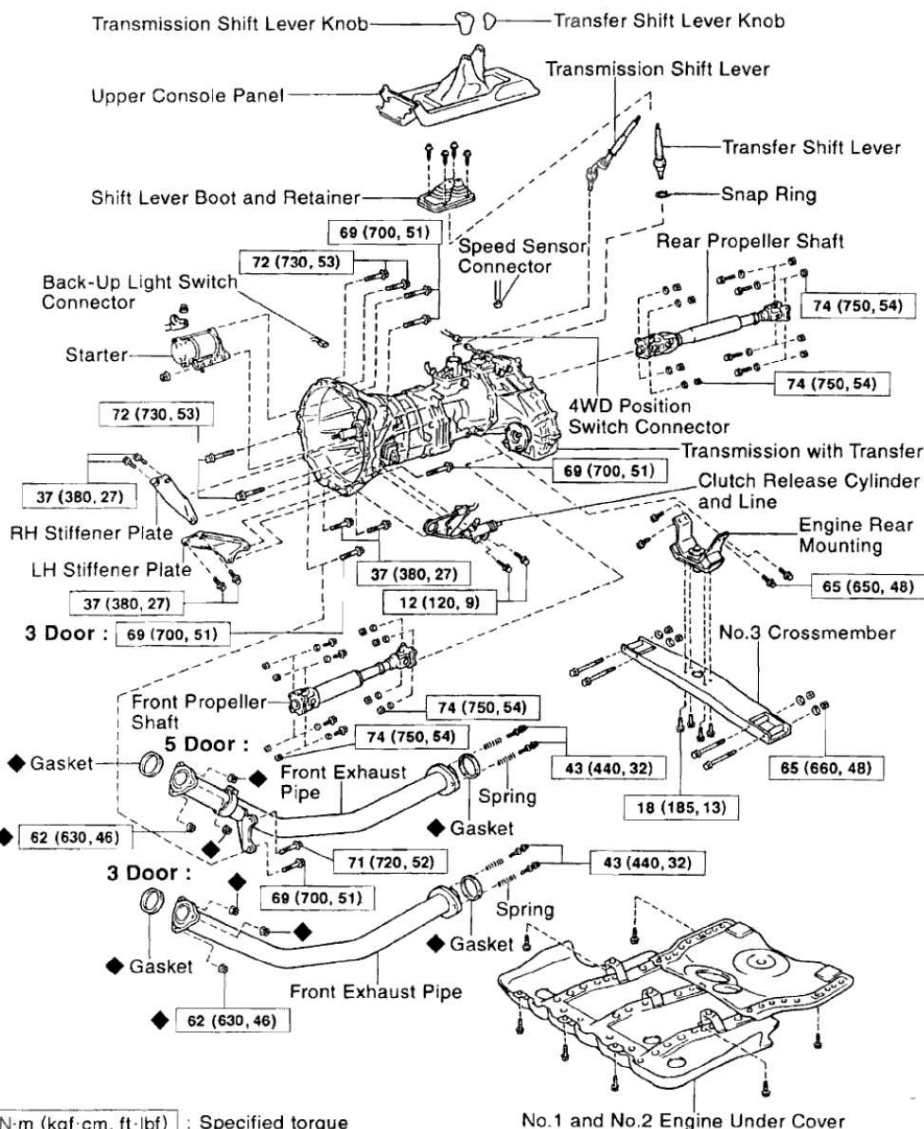
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ASSEMBLY REMOVAL AND INSTALLATION COMPONENTS

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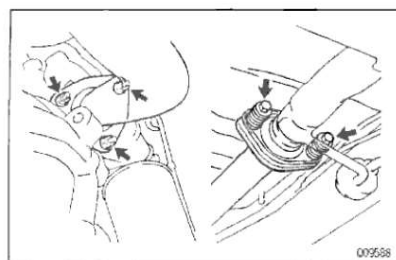
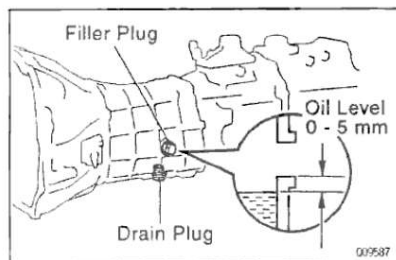
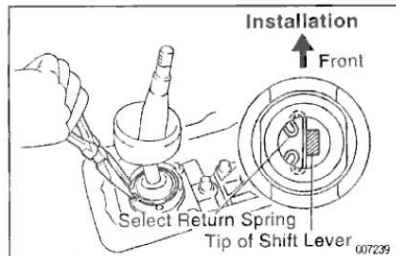
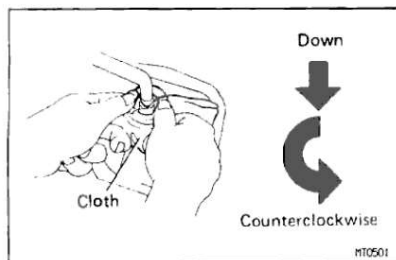
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N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

009586



TRANSMISSION REMOVAL

1. REMOVE TRANSMISSION SHIFT LEVER

- Remove the upper console panel.
- Remove the 4 screws, shift lever boot and retainer.
- Cover the shift lever cap with a cloth.
- Pressing down on the shift lever cap and rotate it counterclockwise to remove.
- Pull out the shift lever.

INSTALLATION HINT: Apply MP grease to the tip of the shift lever.

2. REMOVE TRANSFER SHIFT LEVER

Using pliers, remove the snap ring and pull out the shift lever.

HINT: Shift the transfer shift lever to the "H4" position.

INSTALLATION HINT: Apply MP grease to the tip of the shift lever.

3. RAISE VEHICLE AND DRAIN TRANSMISSION OIL

Oil grade: API GL-4 or GL-5

Viscosity: SAE 75W-90

Capacity: 2.2 liters (2.3 US qts, 1.9 Imp. qts)

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

4. REMOVE NO.1 AND NO.2 ENGINE UNDER COVERS

5. REMOVE FRONT AND REAR PROPELLER SHAFTS

(See page PR-3)

6. REMOVE CLUTCH RELEASE CYLINDER

Remove the 2 bolts and release cylinder.

Torque: 12 N·m (120 kgf·cm, 9 ft·lbf)

7. DISCONNECT THESE CONNECTORS:

- Back-up light switch connector
- Speed sensor connector
- 4WD position switch connector

8. REMOVE FRONT EXHAUST PIPE

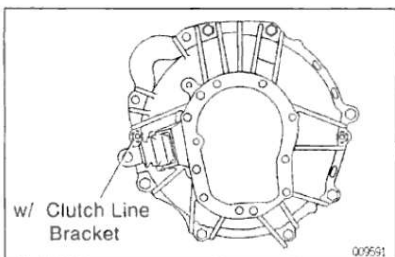
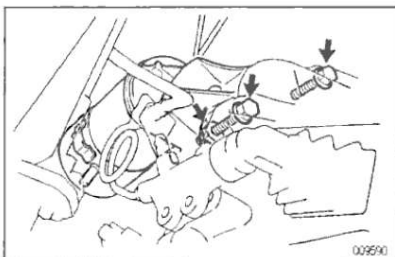
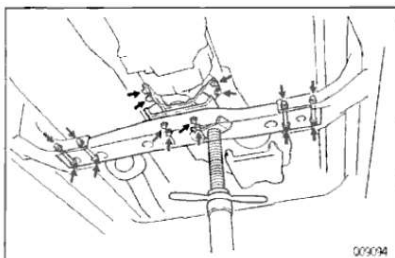
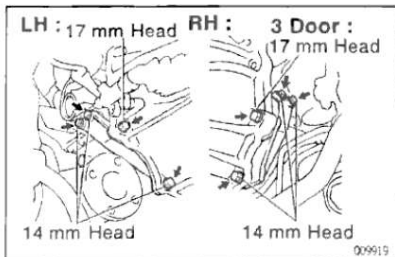
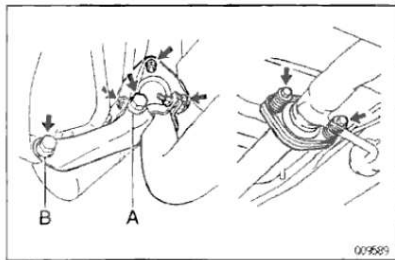
3 Door:

- Remove the 3 nuts and gasket from the exhaust manifold.

Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

- Remove the 2 bolts, springs, gasket and pipe.

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

**5 Door:**

- (a) Remove the 2 bolts from the clutch housing.

Torque:

Bolt A: 71 N·m (720 kgf·cm, 52 ft·lbf)

Bolt B: 69 N·m (700 kgf·cm, 51 ft·lbf)

- (b) Remove the 3 nuts and gasket from the exhaust manifold.

Torque: 62 N·m (630 kgf·cm, 46 ft·lbf)

- (c) Remove the 2 bolts, springs, gasket and pipe.

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

9. REMOVE LH AND RH STIFFENER PLATES

- (a) Remove the 4 bolts and LH stiffener plate.

Torque:

17 mm head: 69 N·m (700 kgf·cm, 51 ft·lbf)

14 mm head: 37 N·m (380 kgf·cm, 27 ft·lbf)

- (b) Remove the 3 (5 door) or 4 (3 door) bolts and RH stiffener plate.

Torque:

17 mm head: 69 N·m (700 kgf·cm, 51 ft·lbf)

14 mm head: 37 N·m (380 kgf·cm, 27 ft·lbf)

10. REMOVE NO.3 CROSSMEMBER

- (a) Support the transmission rear side.

- (b) Remove the 4 set bolts of the engine rear mounting.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

- (c) Remove the 4 bolts, nuts and crossmember.

Torque: 65 N·m (660 kgf·cm, 48 ft·lbf)

11. REMOVE ENGINE REAR MOUNTING

Remove the 4 bolts and engine rear mounting from the transmission.

Torque: 65 N·m (650 kgf·cm, 48 ft·lbf)

12. JACK UP TRANSMISSION SLIGHTLY

Using a transmission jack, support the transmission.

13. REMOVE STARTER

- (a) Remove the nut and disconnect the wire from the starter.

- (b) Remove the 2 bolts, nut and starter.

Torque: 69 N·m (700 kgf·cm, 51 ft·lbf)

14. REMOVE TRANSMISSION WITH TRANSFER

- (a) Disconnect the wire harness from the transmission.

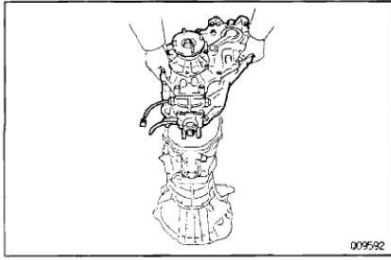
- (b) Remove the 4 transmission mounting bolts from the engine.

Torque: 72 N·m (730 kgf·cm, 53 ft·lbf)

- (c) Pull out the transmission with the transfer down and toward the rear.

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**15. REMOVE TRANSFER FROM TRANSMISSION**

- (a) Disconnect the breather hose and remove the 8 transfer adaptor rear mounting bolts.

Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)

- (b) Pull the transfer straight up and remove it from the transmission.

HINT: Take care not to damage the transfer adaptor oil seal with the transfer input gear spline.

INSTALLATION HINT: Apply MP grease to the transfer adaptor oil seal.

TRANSMISSION INSTALLATION

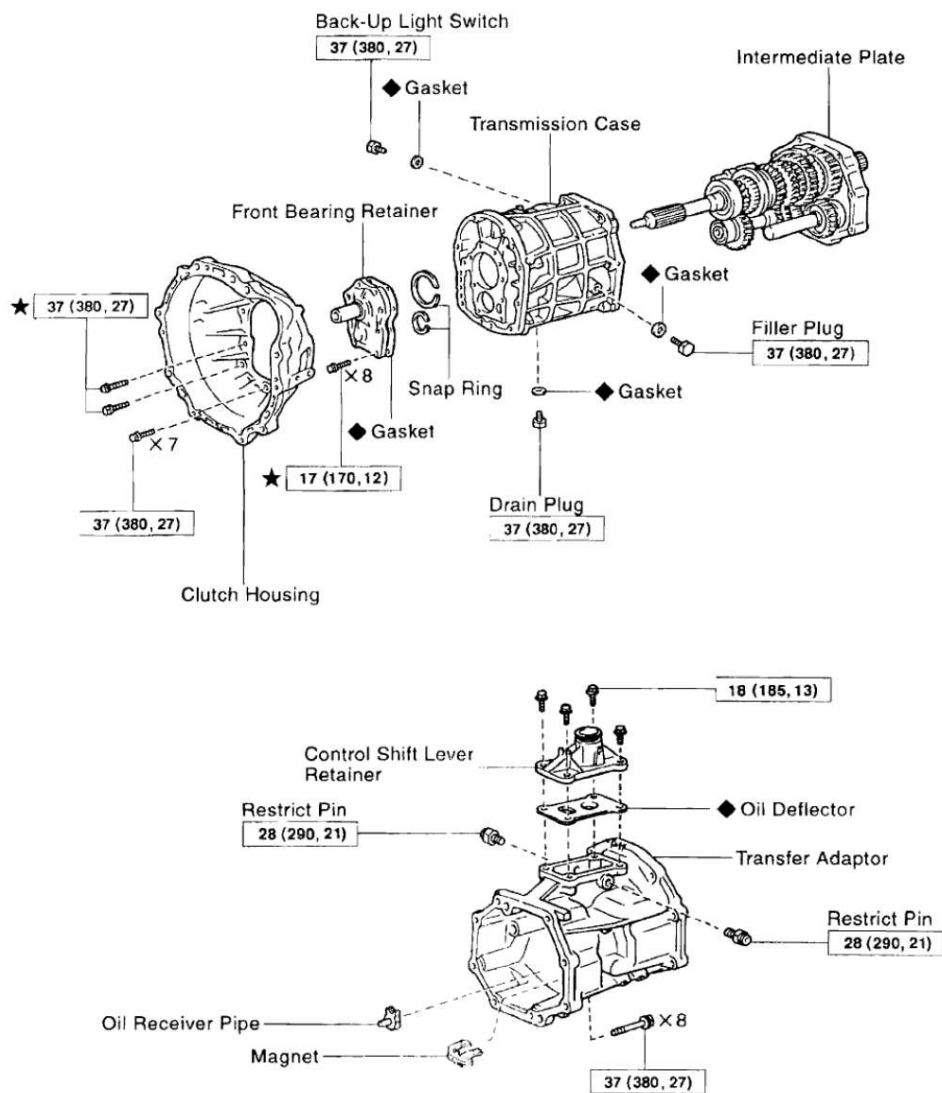
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Installation is in the reverse order of removal.

HINT: After installation, do the road test.

COMPONENT PARTS REMOVAL AND INSTALLATION COMPONENTS

MT00E-03



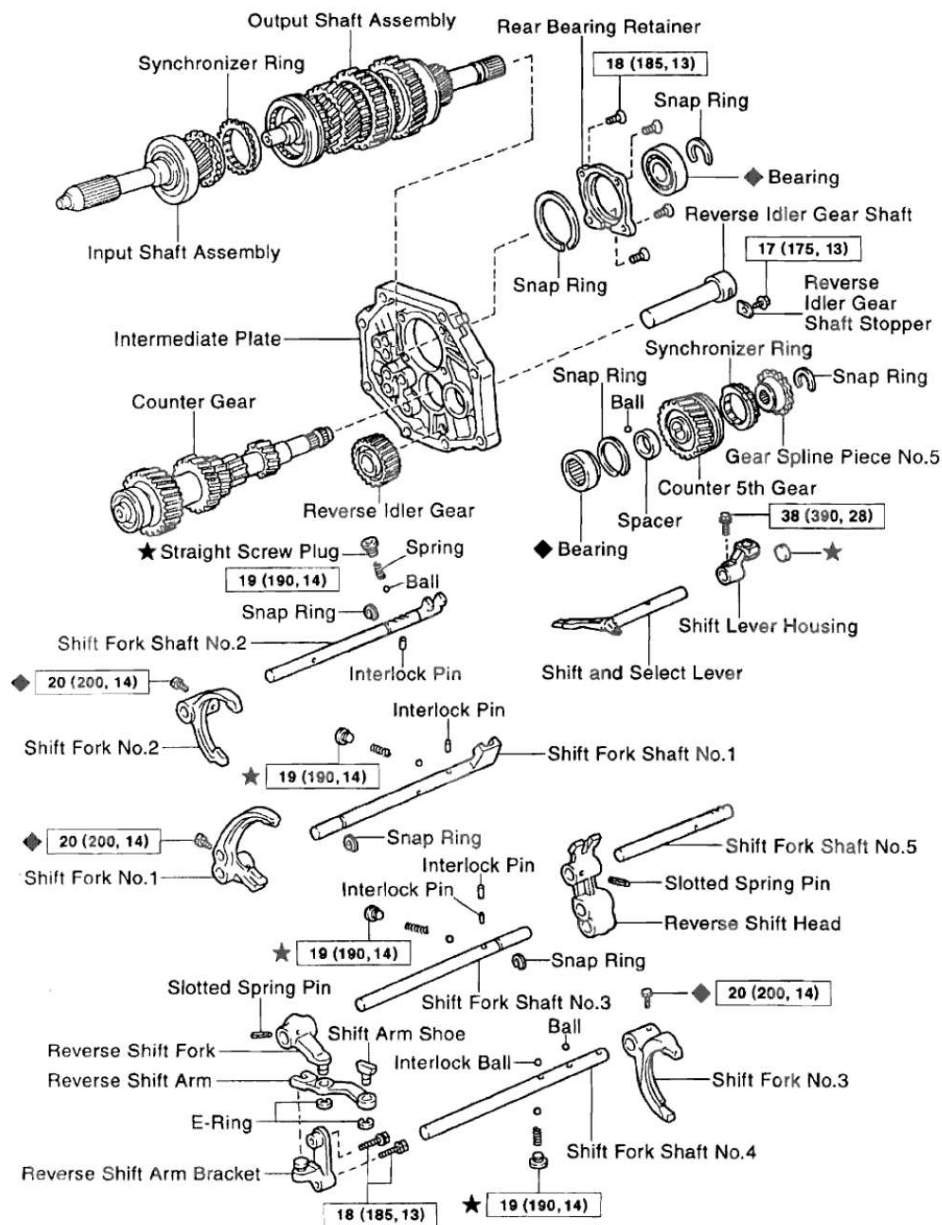
N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

★ Precoated part

009499

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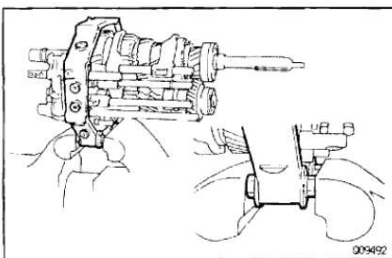
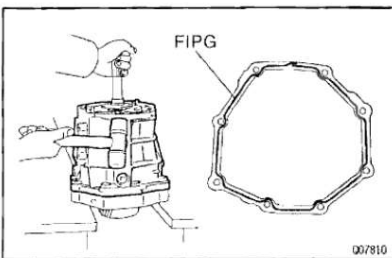
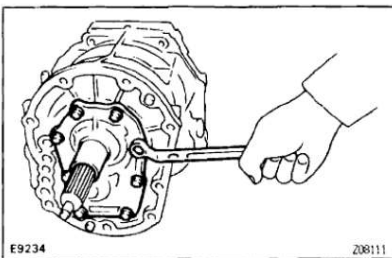
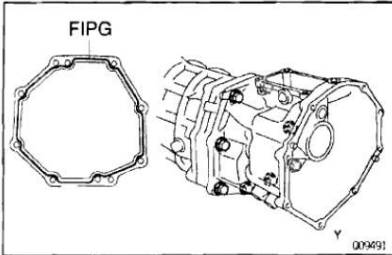
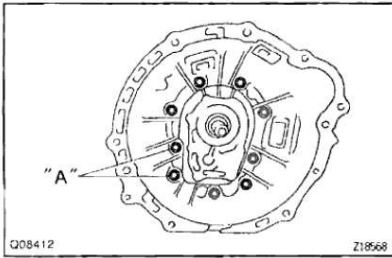


N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

★ Precoated part

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BASIC SUBASSEMBLY SEPARATION

1. REMOVE BACK-UP LIGHT SWITCH AND GASKET

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

2. REMOVE CLUTCH HOUSING

Remove the 9 bolts and clutch housing.

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

INSTALLATION HINT: Apply liquid sealer to the "A" bolt threads.

Sealant: Part No. 08833 — 00080, THREE BOND 1344,

LOCTITE 242 or equivalent

3. REMOVE CONTROL SHIFT LEVER RETAINER

Remove the 4 bolts, retainer and oil deflector.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

4. REMOVE 2 RESTRICT PINS

Torque: 28 N·m (290 kgf·cm, 21 ft·lbf)

5. REMOVE TRANSFER ADAPTOR

(a) Remove the shift lever housing set bolt.

Torque: 38 N·m (390 kgf·cm, 28 ft·lbf)

(b) Remove the 8 bolts.

Torque: 37 N·m (380 kgf·cm, 27 ft·lbf)

(c) Using a plastic hammer, tap the transfer adaptor and remove it.

FIPG: Part No. 08826—00090, THREE BOND 1281 or equivalent

6. REMOVE FRONT BEARING RETAINER

Remove the 8 bolts, gasket and retainer.

Sealant: Part No. 08833 — 00080, THREE BOND 1344,

LOCTITE 242 or equivalent

Torque: 17 N·m (170 kgf·cm, 12 ft·lbf)

7. SEPARATE INTERMEDIATE PLATE FROM TRANSMISSION CASE

(a) Using a snap ring expander, remove the 2 snap rings from the input shaft and counter gear.

(b) Stand the transmission, as shown.

(c) Using a plastic hammer, carefully tap the transmission case and remove it.

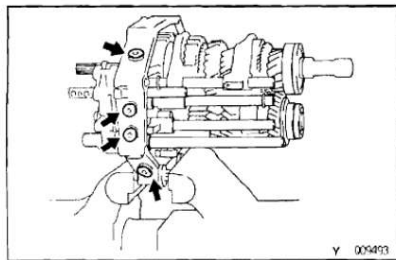
FIPG: Part No. 08826—00090, THREE BOND 1281 or equivalent

8. MOUNT INTERMEDIATE PLATE IN VISE

(a) Using the 2 clutch housing bolts, plate washers and suitable nuts, as shown.

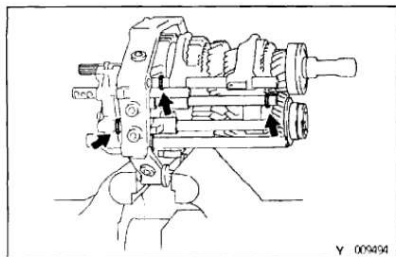
INSTALLATION NOTICE: Increase or decrease plate washers so that the bolt tip does not protrude from the nut.

(b) Mount the intermediate plate in a vise.



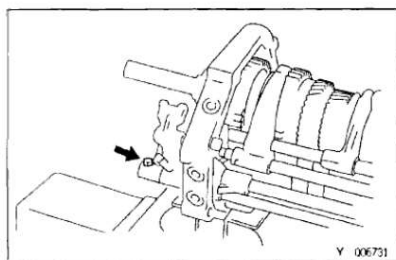
9. REMOVE STRAIGHT SCREW PLUG, SPRING AND BALL

- (a) Using a torx socket wrench (T40), remove the 4 screw plugs from the intermediate plate.
Sealant: Part No.08833 – 00080, THREE BOND 1344, LOCTITE 242 or equivalent
Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)
- (b) Using a magnetic finger, remove the 4 springs and balls.



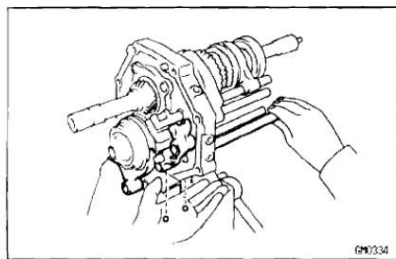
10. REMOVE SHIFT FORK SHAFT SNAP RING

Using 2 screwdrivers and a hammer, drive out the 3 snap rings.



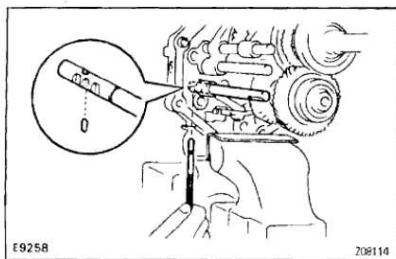
11. REMOVE SHIFT FORK NO.3, SHIFT FORK SHAFT NO.4 AND REVERSE SHIFT HEAD

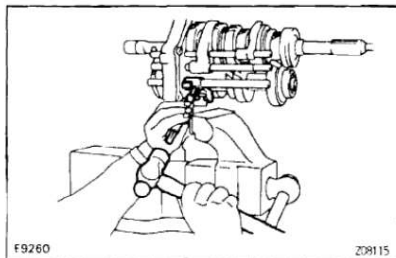
- (a) Remove the shift fork No.3 set bolt.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)
- (b) Remove the shift fork No.3, shift fork shaft No.4, reverse shift head and 2 balls.



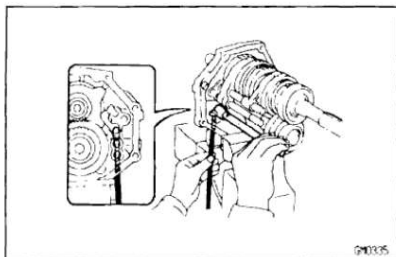
12. REMOVE REVERSE SHIFT ARM, REVERSE SHIFT FORK AND SHIFT FORK SHAFT NO.3

- (a) Using a magnetic finger, remove the interlock pin from the shift fork shaft No.3.

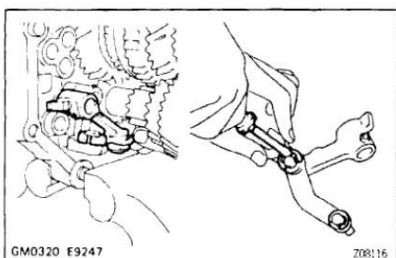




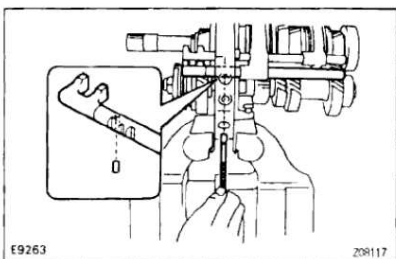
- (b) Using a pin punch and hammer, drive out the slotted spring pin.



- (c) Remove the shift fork shaft No.3.
(d) Using a magnetic finger, remove the interlock pin.

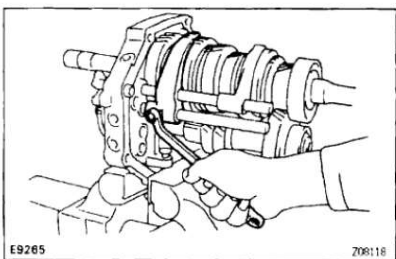


- (e) Remove the reverse shift arm and fork.
(f) Using a screwdriver, remove the 2 E-rings.
(g) Separate the shift arm, fork and shoe.



13. REMOVE SHIFT FORK SHAFTS NO.1, NO.2 AND SHIFT FORKS NO.1, NO.2

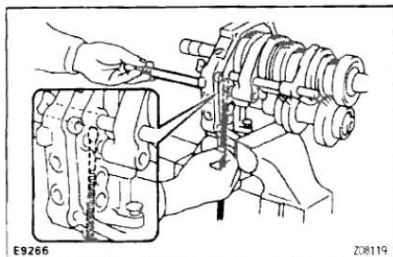
- (a) Using a magnetic finger, remove the interlock pin from the shift fork shaft No.2.



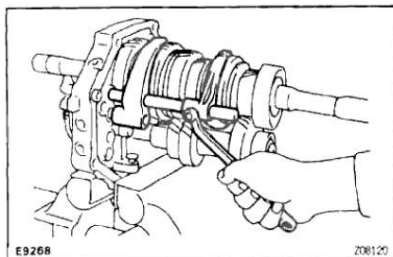
- (b) Remove the shift fork No.1 set bolt.
Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)

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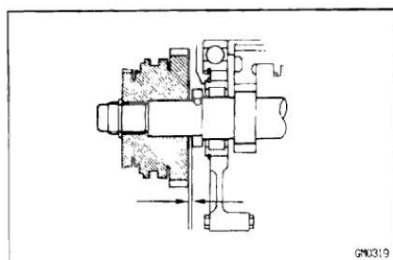
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- (c) Remove the shift fork shaft No.1.
 (d) Using a magnetic finger, remove the interlock pin.



- (e) Remove the shift fork No.2 set bolt.
 Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)
 (f) Remove the shift forks No.1, No.2 and shift fork shaft No.2.

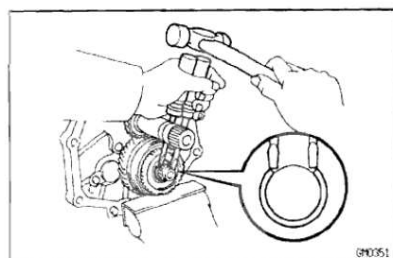


14. MEASURE COUNTER 5TH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the counter 5th gear thrust clearance.

Standard clearance: 0.10–0.30 mm (0.0039–0.0118 in.)

Maximum clearance: 0.35 mm (0.0138 in.)

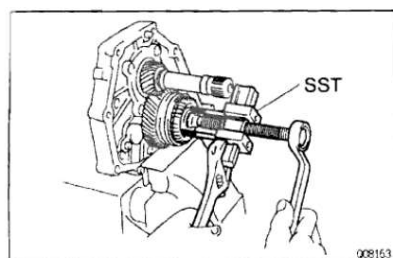


15. REMOVE GEAR SPLINE PIECE NO.5, SYNCHRONIZER RING, NEEDLE ROLLER BEARING AND COUNTER 5TH GEAR WITH HUB SLEEVE NO.3

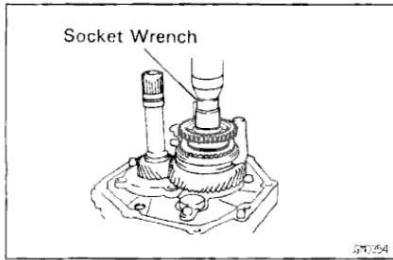
- (a) Using 2 screwdrivers and a hammer, tap out the snap ring.

INSTALLATION HINT: Select a snap ring that will allow minimum axial play.

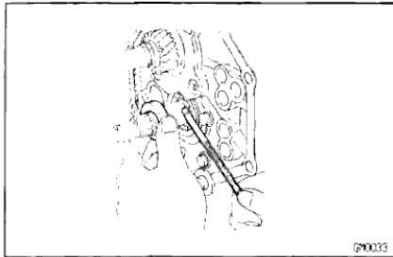
Mark	Thickness mm (in.)
A	2.80–2.85 (0.110–0.112)
B	2.85–2.90 (0.112–0.114)
C	2.90–2.95 (0.114–0.116)
D	2.95–3.00 (0.116–0.118)
E	3.00–3.05 (0.118–0.120)
F	3.05–3.10 (0.120–0.122)
G	3.10–3.15 (0.122–0.124)



- (b) Using SST, remove the gear spline piece No.5.
 SST 09950–50010
 (c) Remove the synchronizer ring, needle roller bearing and counter 5th gear.

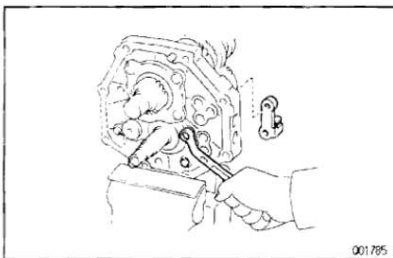


INSTALLATION HINT: Using a press and socket wrench, install the gear spline piece No.5 with the synchronizer ring slots aligned with the shifting keys.



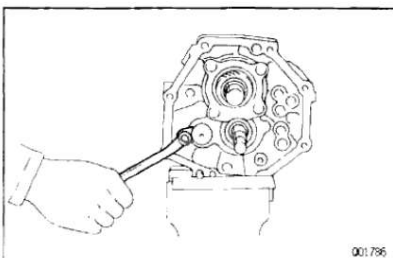
16. REMOVE SPACER AND BALL

- (a) Remove the spacer.
- (b) Using a magnetic finger, remove the ball.



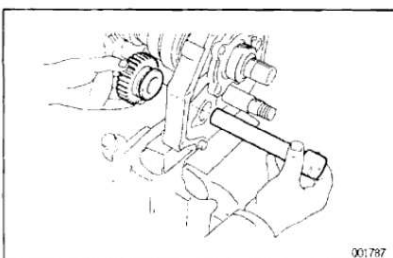
17. REMOVE REVERSE SHIFT ARM BRACKET

Remove the 2 bolts and reverse shift arm bracket.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

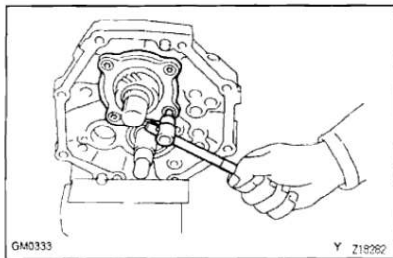


18. REMOVE REVERSE IDLER GEAR AND SHAFT

- (a) Remove the reverse idler gear shaft stopper set bolt and stopper.
Torque: 17 N·m (175 kgf·cm, 13 ft·lbf)

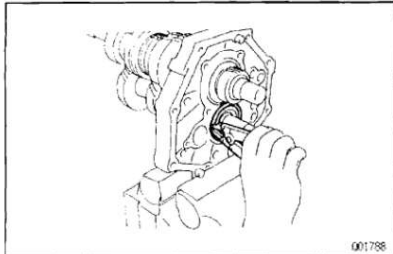


- (b) Remove the reverse idler gear and shaft.

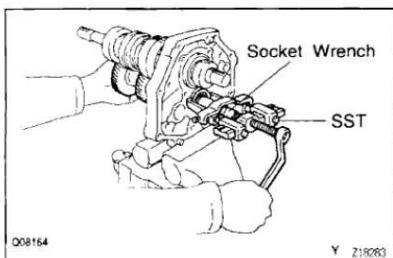
**19. REMOVE REAR BEARING RETAINER**

Using a torx socket wrench (T40), remove the 4 screw plugs and retainer.

Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)

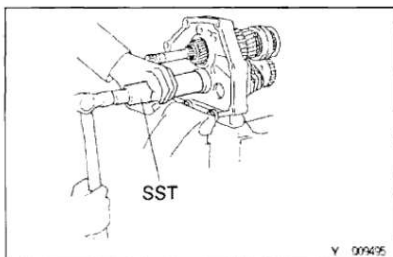
**20. REMOVE COUNTER GEAR**

- (a) Using a snap ring expander, remove the counter gear rear bearing snap ring.

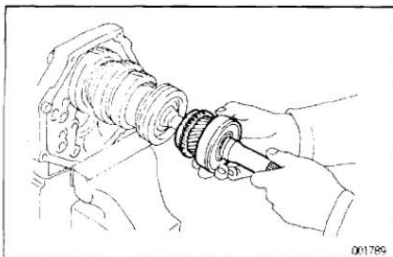


- (b) Using SST and a socket wrench, remove the counter gear rear bearing.
SST 09950-40010

- (c) Remove the counter gear.

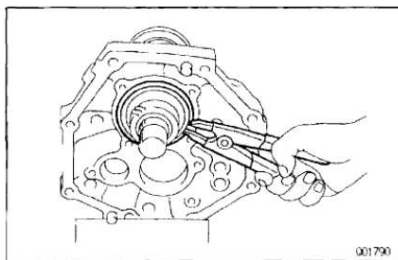


INSTALLATION HINT: Install the counter gear into the intermediate plate while holding the counter gear, and installing the counter rear bearing with SST.
SST 09316-60011 (09316-00011)

**21. REMOVE INPUT SHAFT ASSEMBLY**

Remove the input shaft with the 13 needle roller bearings and synchronizer ring from the output shaft.

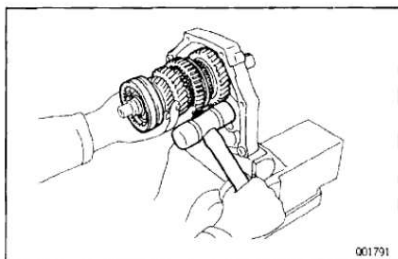
INSTALLATION HINT: Install the input shaft to the output shaft with the synchronizer ring slots aligned with the shifting keys.



22. REMOVE OUTPUT SHAFT ASSEMBLY

- (a) Using a snap ring expander, remove the output shaft center bearing snap ring.

INSTALLATION HINT: Be sure the snap ring is flush with the intermediate plate surface.



- (b) Remove the output shaft from the intermediate plate by pulling on the output shaft and tapping on the intermediate plate with a plastic hammer.

MT

BASIC SUBASSEMBLY REASSEMBLY

MT01L-01

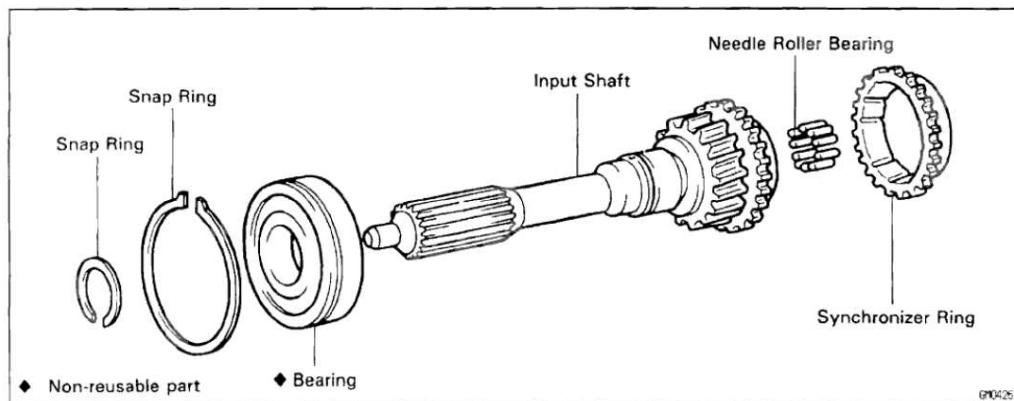
Reassembly is in the reverse order of separation.

HINT: Coat all of the sliding and rotating surfaces with gear oil before assembly.

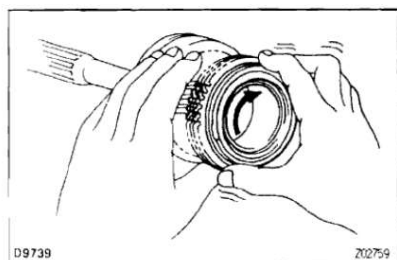
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INPUT SHAFT COMPONENTS

MT017-04

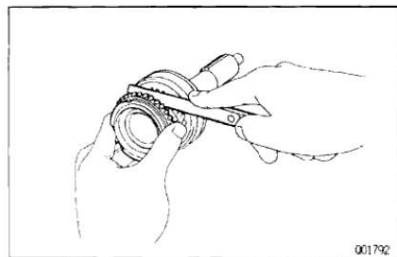


G70426



D9739

202759



001792

INPUT SHAFT INSPECTION

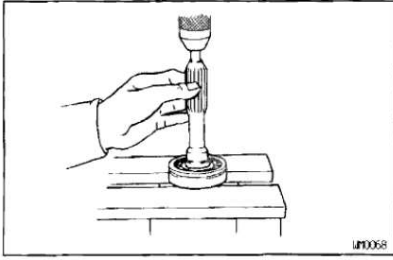
INSPECT SYNCHRONIZER RING

- Check for wear or damage.
- Check the braking effect of the synchronizer ring. Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks. If the braking effect is insufficient, apply a small amount of fine lapping compound between the synchronizer ring and gear cone. Lightly rub the synchronizer ring and gear cone together.
NOTICE: Ensure the fine lapping compound is completely washed off after rubbing.
- Check again the braking effect of the synchronizer ring.
- Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.
Minimum clearance: 0.8 mm (0.031 in.)

If the clearance is less than the minimum, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Ensure the fine lapping compound is completely washed off after rubbing.

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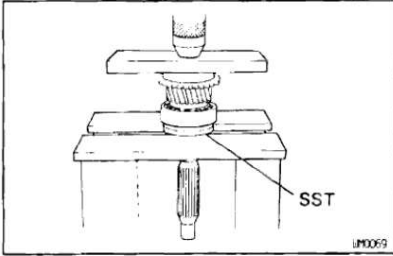


UM10068

BEARING REPLACEMENT

IF NECESSARY, REPLACE INPUT SHAFT BEARING

- (a) Using a snap ring expander, remove the snap ring.
- (b) Using a press, remove the bearing.



UM10069

- (c) Using SST and a press, install a new bearing.
SST 09506-35010
- (d) Select a snap ring that will allow minimum axial play.

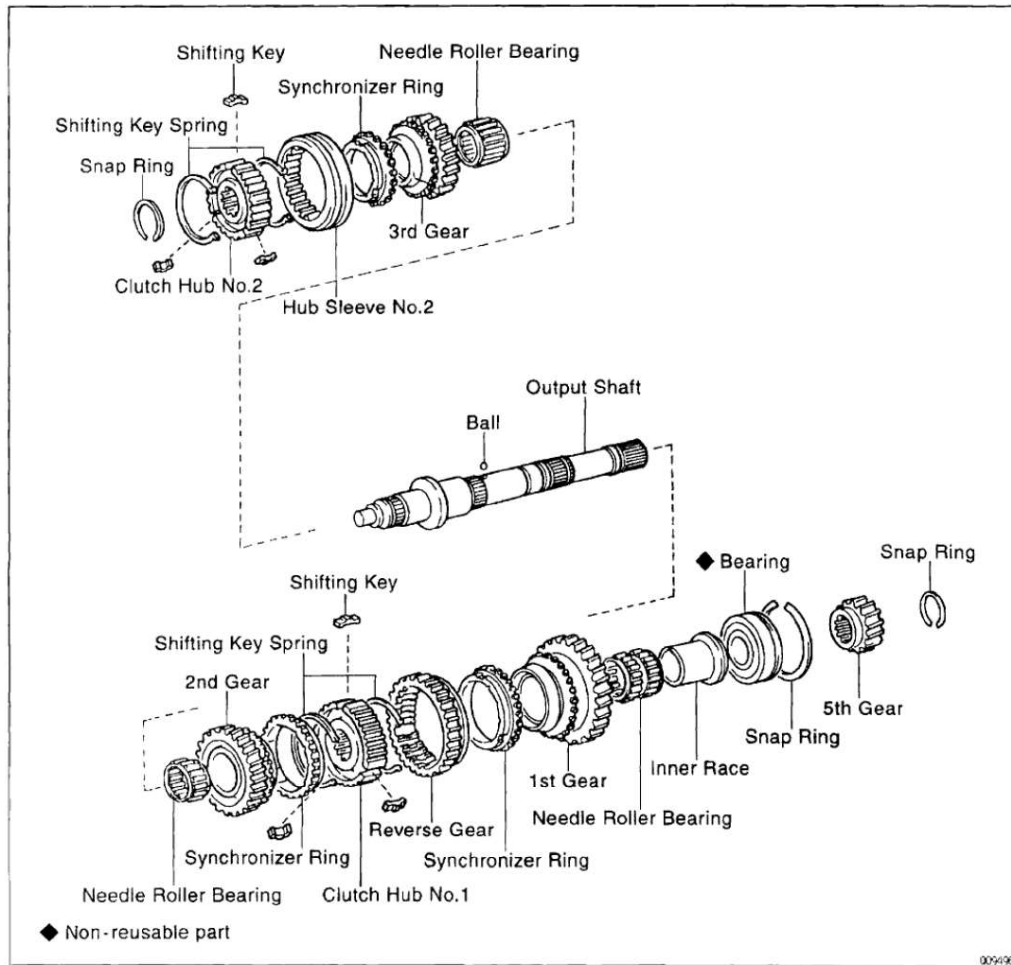
Mark	Thickness mm (in.)
0	2.05-2.10 (0.0807-0.0827)
1	2.10-2.15 (0.0827-0.0846)
2	2.15-2.20 (0.0846-0.0866)
3	2.20-2.25 (0.0866-0.0886)
4	2.25-2.30 (0.0886-0.0906)
5	2.30-2.35 (0.0906-0.0925)

- (e) Using a snap ring expander, install the snap ring.

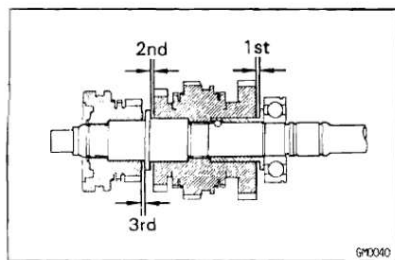
MT

OUTPUT SHAFT COMPONENTS

MT01J-0A



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OUTPUT SHAFT DISASSEMBLY

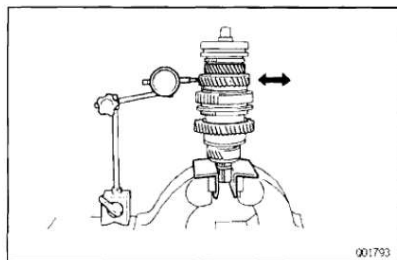
MT01H-01

1. MEASURE EACH GEAR THRUST CLEARANCE

Using a feeler gauge, measure the thrust clearance of each gear.

Standard clearance: 0.10–0.25 mm (0.0039–0.0098 in.)

Maximum clearance: 0.30 mm (0.0118 in.)



2. MEASURE EACH GEAR RADIAL CLEARANCE

Using a dial indicator, measure the radial clearance of each gear.

Standard clearance:

2nd and 3rd gears:

0.009–0.033 mm (0.0004–0.0013 in.)

1st gear: 0.009–0.032 mm (0.0004–0.0013 in.)

Maximum clearance:

2nd and 3rd gears: 0.033 mm (0.0013 in.)

1st gear: 0.032 mm (0.0013 in.)

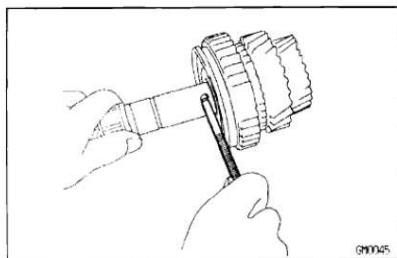
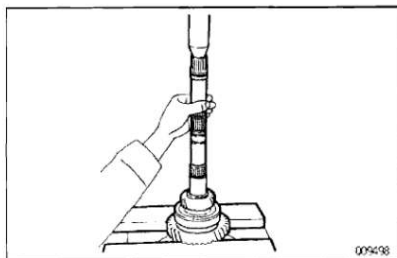
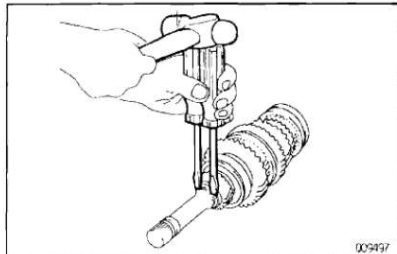
If the clearance exceeds the maximum, replace the gear, needle roller bearing or shaft.

3. REMOVE 5TH GEAR, REAR BEARING, 1ST GEAR, INNER RACE AND NEEDLE ROLLER BEARING

(a) Using 2 screwdrivers and a hammer, tap out the snap ring.

(b) Using a press, remove the 5th gear, rear bearing, 1st gear and inner race.

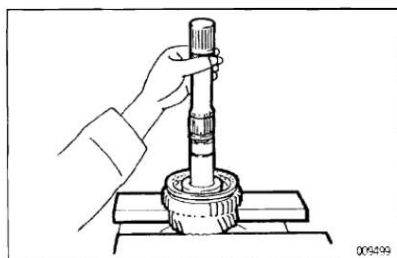
(c) Remove the needle roller bearing.



4. REMOVE SYNCHRONIZER RING

5. REMOVE LOCKING BALL

Using a magnetic finger, remove the locking ball.



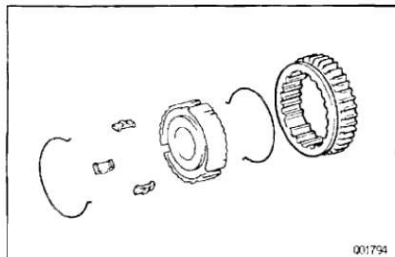
6. REMOVE REVERSE GEAR ASSEMBLY, SYNCHRONIZER RING, 2ND GEAR AND NEEDLE ROLLER BEARING

(a) Using a press, remove the reverse gear assembly, synchronizer ring and 2nd gear.

(b) Remove the needle roller bearing.

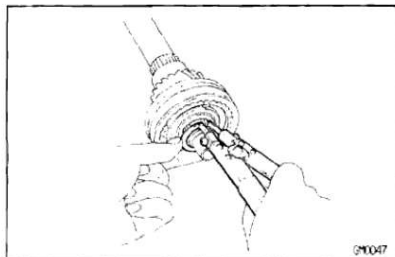
MT

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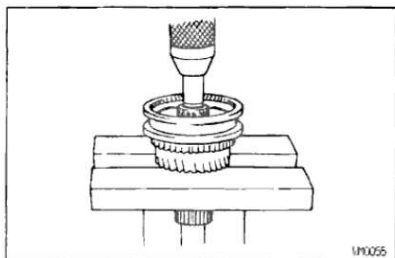
7. REMOVE REVERSE GEAR, SHIFTING KEY AND SPRING FROM CLUTCH HUB NO.1.

Using a screwdriver, remove the 3 shifting keys and 2 springs from the clutch hub No.1.



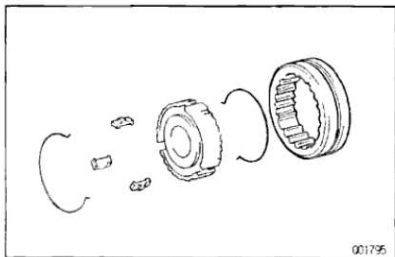
8. REMOVE HUB SLEEVE NO.2 ASSEMBLY, SYNCHRONIZER RING, 3RD GEAR AND NEEDLE ROLLER BEARING

(a) Using a snap ring expander, remove the snap ring.



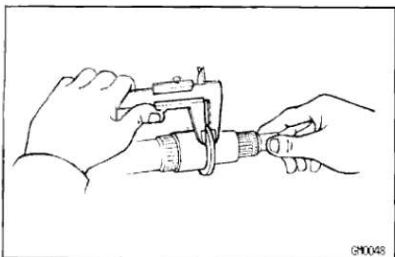
(b) Using a press, remove the hub sleeve No.2 assembly, synchronizer ring and 3rd gear.

(c) Remove the needle roller bearing.



9. REMOVE HUB SLEEVE NO.2, SHIFTING KEY AND SPRING FROM CLUTCH HUB NO.2

Using a screwdriver, remove the 3 shifting keys and springs from the clutch hub No.2.



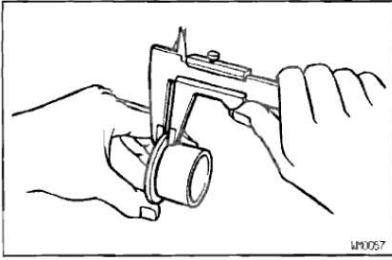
OUTPUT SHAFT COMPONENT PARTS INSPECTION

1. INSPECT OUTPUT SHAFT AND INNER RACE

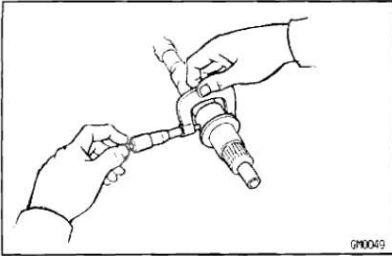
(a) Using calipers, measure the output shaft flange thickness.

Minimum thickness: 4.70 mm (0.1850 in.)

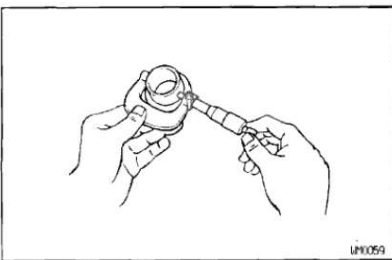
If the thickness is less than the minimum, replace the output shaft.



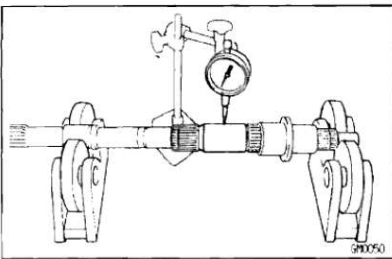
- (b) Using calipers, measure the inner race flange thickness.
Minimum thickness: 3.99 mm (0.1571 in.)
 If the thickness is less than the minimum, replace the inner race.



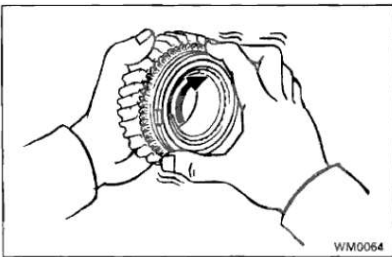
- (c) Using a micrometer, measure the outer diameter of the output shaft journal.
Minimum diameter:
2nd gear: 37.86 mm (1.4905 in.)
3rd gear: 34.86 mm (1.3724 in.)
 If the outer diameter is less than the minimum, replace the output shaft.



- (d) Using a micrometer, measure the outer diameter of the inner race.
Minimum diameter: 38.985 mm (1.5348 in.)
 If the outer diameter is less than the minimum, replace the inner race.



- (e) Using a dial indicator, check the shaft runout.
Maximum runout: 0.06 mm (0.0024 in.)
 If the runout exceeds the maximum, replace the output shaft.

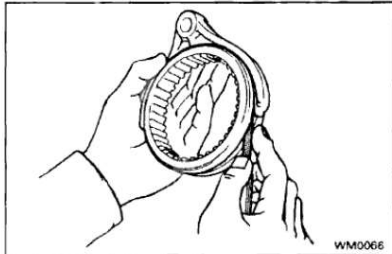
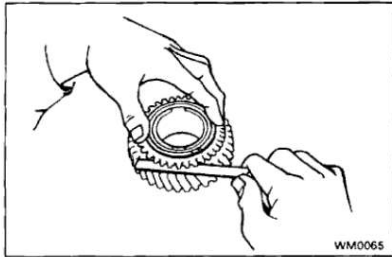


2. INSPECT SYNCHRONIZER RING

- (a) Check for wear or damage.
 (b) Check the braking effect of the synchronizer ring.
 Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks.
 If the braking effect is insufficient, apply a small amount of fine lapping compound between the synchronizer ring and gear cone. Lightly rub the synchronizer ring and gear cone together.

MT

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NOTICE: Ensure the fine lapping compound is completely washed off after rubbing.

- (c) Check again the braking effect of the synchronizer ring.
- (d) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.
Minimum clearance: 0.8 mm (0.031 in.)

If the clearance is less than the minimum, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.

NOTICE: Ensure the fine lapping compound is completely washed off after rubbing.

3. MEASURE SHIFT FORK AND HUB SLEEVE CLEARANCE

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

If the clearance exceeds the maximum, replace the shift fork or hub sleeve.

OUTPUT SHAFT ASSEMBLY

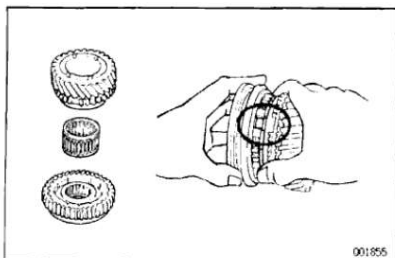
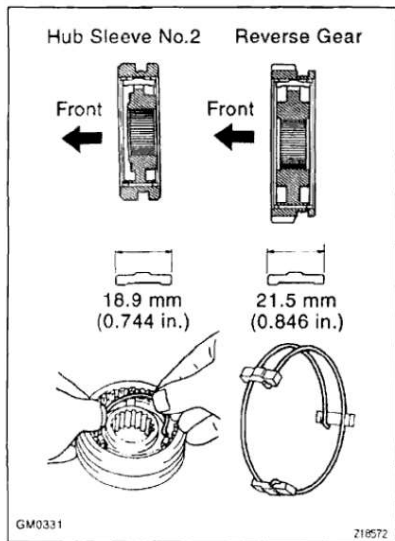
MT09P-01

HINT: Coat all of the sliding and rotating surfaces with gear oil before assembly.

1. INSTALL CLUTCH HUBS NO.1 AND NO.2 INTO REVERSE GEAR AND HUB SLEEVE NO.2

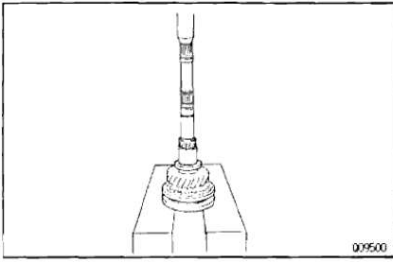
- (a) Install the clutch hub No.2 and shifting keys to the hub sleeve No.2.
- (b) Install the clutch hub No.1 and shifting keys to the reverse gear.

- (c) Install the shifting key springs under the shifting keys.
NOTICE: Install the key springs so that their end gaps are not in line.



2. INSTALL 3RD GEAR AND HUB SLEEVE NO.2 ON OUTPUT SHAFT

- (a) Apply gear oil to the shaft and needle roller bearing.
- (b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
- (c) Install the needle roller bearing in the 3rd gear.



- (d) Using a press, install the 3rd gear and hub sleeve No.2.

3. INSTALL SNAP RING

- (a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)
C-1	1.75–1.80 (0.0689–0.0709)
D	1.80–1.85 (0.0709–0.0728)
D-1	1.85–1.90 (0.0728–0.0748)
E	1.90–1.95 (0.0748–0.0768)
E-1	1.95–2.00 (0.0768–0.0787)
F	2.00–2.05 (0.0787–0.0807)
F-1	2.05–2.10 (0.0807–0.0827)

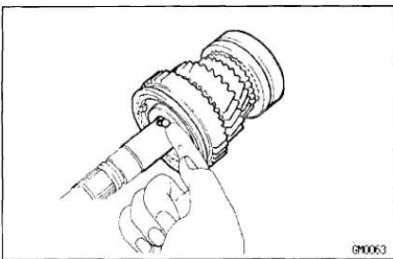
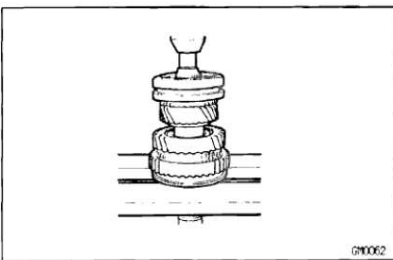
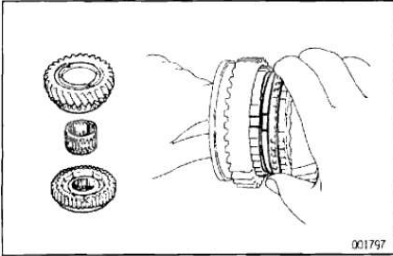
- (b) Using a snap ring expander, install the snap ring.

4. MEASURE 3RD GEAR THRUST CLEARANCE (See page MT-20)

5. INSTALL 2ND GEAR AND REVERSE GEAR ASSEMBLY

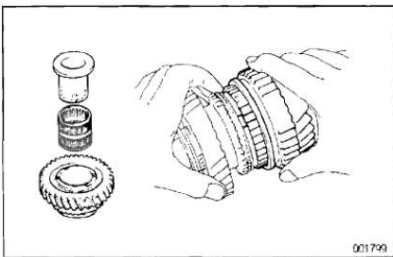
- (a) Apply gear oil to the shaft and needle roller bearing.
 (b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
 (c) Install the needle roller bearing in the 2nd gear.
 (d) Using a press, install the 2nd gear and reverse gear assembly.

6. MEASURE 2ND GEAR THRUST CLEARANCE (See page MT-20)



7. INSTALL LOCKING BALL AND 1ST GEAR ASSEMBLY

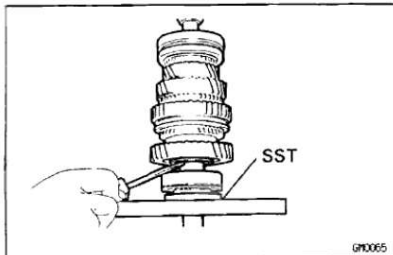
- (a) Install the locking ball in the shaft.



- (b) Apply gear oil to the needle roller bearing.
 (c) Assemble the 1st gear, synchronizer ring, needle roller bearing and bearing inner race.
 (d) Install the assembly on the output shaft with the synchronizer ring slots aligned with the shifting keys.
 (e) Turn the inner race to align it with the locking ball.

MT

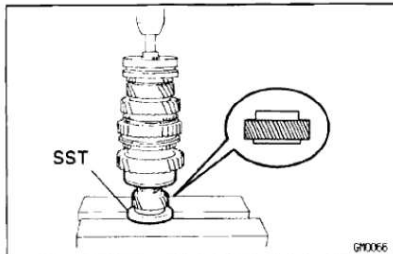
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**8. INSTALL OUTPUT SHAFT REAR BEARING**

Using SST and a press, install the bearing on the output shaft with the outer race snap ring groove toward the rear.

HINT: Hold the 1st gear inner race to prevent it from falling, as shown.

SST 09506-35010

**9. INSTALL 5TH GEAR**

Using SST and a press, install the 5th gear.

SST 09506-35010

10. INSTALL SNAP RING

(a) Select a snap ring that will allow minimum axial play.

Mark	Thickness mm (in.)
A	2.67-2.72 (0.1051-0.1071)
B	2.73-2.78 (0.1075-0.1094)
C	2.79-2.84 (0.1098-0.1118)
D	2.85-2.90 (0.1122-0.1142)
E	2.91-2.96 (0.1146-0.1165)
F	2.97-3.02 (0.1169-0.1189)
G	3.03-3.08 (0.1193-0.1213)
H	3.09-3.14 (0.1217-0.1236)
J	3.15-3.20 (0.1240-0.1260)
K	3.21-3.26 (0.1264-0.1283)
L	3.27-3.32 (0.1287-0.1307)

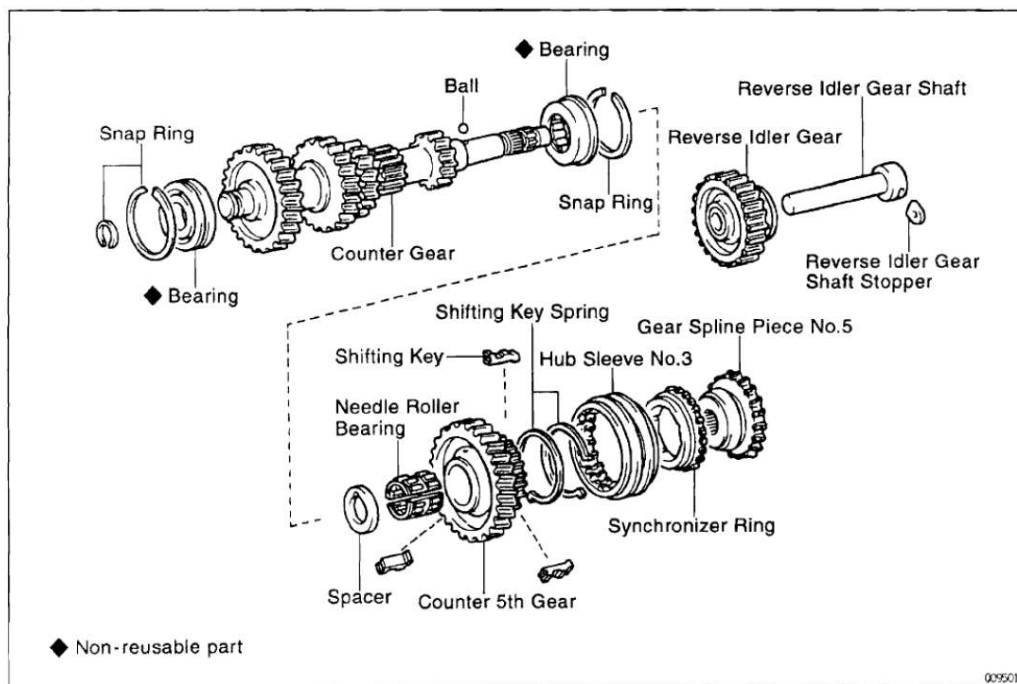
(b) Using a screwdriver and hammer, tap in the snap ring.

11. MEASURE 1ST GEAR THRUST CLEARANCE

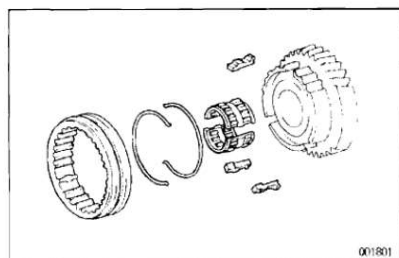
(See page MT-20)

COUNTER GEAR AND REVERSE IDLER GEAR COMPONENTS

MT018-06



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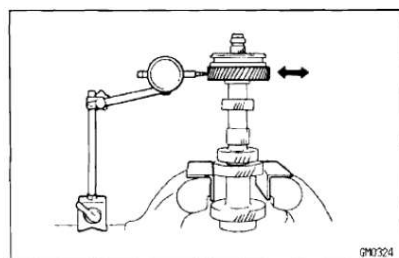


COUNTER GEAR COMPONENT PARTS DISASSEMBLY

MT017-06

REMOVE HUB SLEEVE NO.3, SHIFTING KEY AND SPRING

- Remove the hub sleeve No.3.
- Using a screwdriver, remove the 3 shifting keys and 2 springs.

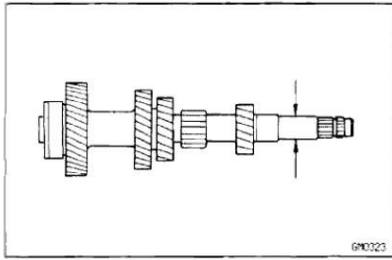


COUNTER GEAR AND REVERSE IDLER GEAR COMPONENT PARTS INSPECTION

MT010-06

1. MEASURE COUNTER 5TH GEAR RADIAL CLEARANCE

- Install the spacer, needle roller bearing and counter 5th gear to the counter gear.
- Using a dial indicator, measure the counter 5th gear radial clearance.

**Standard clearance:**

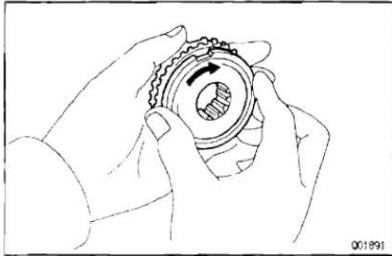
0.009–0.032 mm (0.0004–0.0013 in.)

Maximum clearance: 0.032 mm (0.0013 in.)**2. INSPECT COUNTER GEAR**

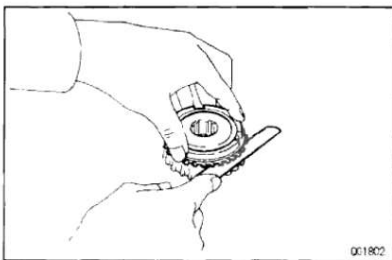
Using a micrometer, measure the outer diameter of needle roller bearing race.

Standard outer diameter:

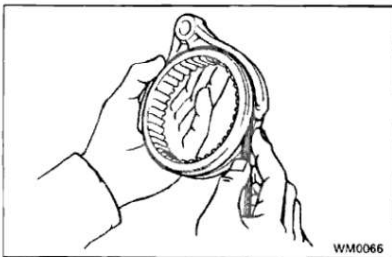
25.98–26.00 mm (1.0228–1.0236 in.)

Minimum outer diameter: 25.86 mm (1.0181 in.)**3. INSPECT SYNCHRONIZER RING**

- (a) Check for wear or damage.
- (b) Check the braking effect of the synchronizer ring.
Turn the synchronizer ring in one direction while pushing it to the gear cone. Check that the ring locks. If the braking effect is insufficient, apply a small amount of fine lapping compound between the synchronizer ring and gear cone. Lightly rub the synchronizer ring and gear cone together.
NOTICE: Ensure the fine lapping compound is completely washed off after rubbing.



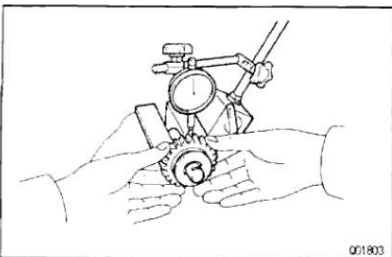
- (c) Check again the braking effect of the synchronizer ring.
- (d) Using a feeler gauge, measure the clearance between the synchronizer ring back and gear spline end.
Minimum clearance: 0.8 mm (0.031 in.)
If the clearance is less than the minimum, replace the synchronizer ring and gear cone by applying a small amount of fine lapping compound.
NOTICE: Ensure the fine lapping compound is completely washed off after rubbing.

**4. MEASURE SHIFT FORK AND HUB SLEEVE CLEARANCE**

Using a feeler gauge, measure the clearance between the hub sleeve and shift fork.

Maximum clearance: 1.0 mm (0.039 in.)

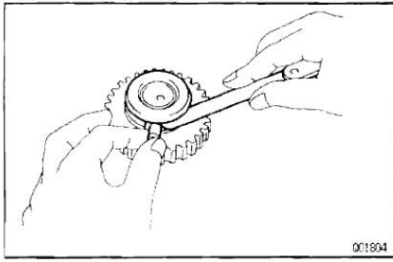
If the clearance exceeds the maximum, replace the shift fork or hub sleeve.

**5. MEASURE REVERSE IDLER GEAR RADIAL CLEARANCE**

Using a dial indicator, measure the reverse idler gear radial clearance.

Standard clearance: 0.04–0.08 mm (0.0016–0.0031 in.)**Maximum clearance:** 0.13 mm (0.0051 in.)

If the clearance exceeds the maximum, replace the reverse idler gear or reverse idler gear shaft.



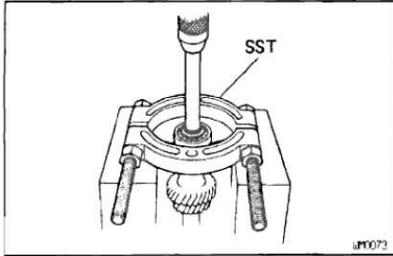
6. MEASURE REVERSE IDLER GEAR AND SHIFT ARM SHOE CLEARANCE

Using a feeler gauge, measure the clearance between the reverse idler gear and shift arm shoe.

Standard clearance: 0.05–0.28 mm (0.0020–0.0110 in.)

Maximum clearance: 0.50 mm (0.0197 in.)

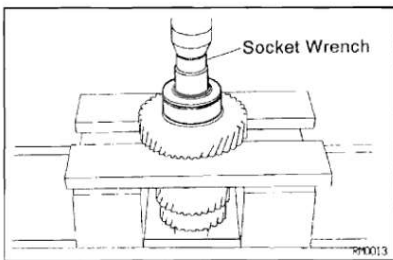
If the clearance exceeds the maximum, replace the shift arm or reverse idler gear.



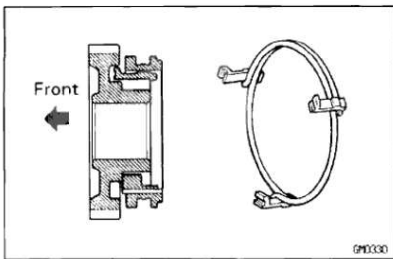
BEARING REPLACEMENT

IF NECESSARY, REPLACE COUNTER GEAR FRONT BEARING

- Using a snap ring expander, remove the snap ring.
- Using SST and a press, remove the bearing.
SST 09950–00020
- Replace the side race.
- Using a press and socket wrench, install the bearing, side race and innerrace.
- Select a snap ring that will allow minimum axial play.



Mark	Thickness mm (in.)
1	2.05–2.10 (0.0807–0.0827)
2	2.10–2.15 (0.0827–0.0846)
3	2.15–2.20 (0.0846–0.0866)
4	2.20–2.25 (0.0866–0.0886)
5	2.25–2.30 (0.0886–0.0906)
6	2.30–2.35 (0.0906–0.0925)



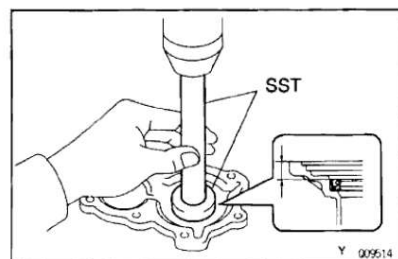
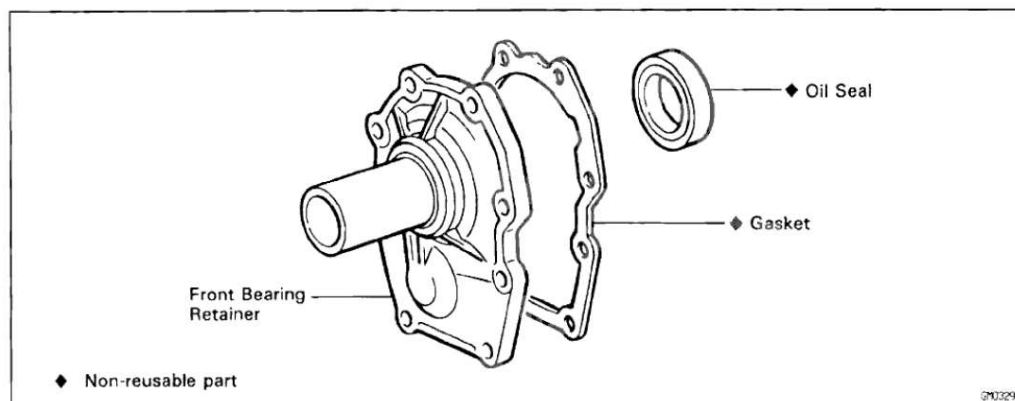
COUNTER GEAR COMPONENT PARTS ASSEMBLY

INSTALL HUB SLEEVE NO.3, SHIFTING KEY AND SPRING

- Install the hub sleeve No.3 and shifting keys to the counter 5th gear.
- Install the shifting key springs under the shifting keys.
NOTICE: Position the key springs so that their end gaps are not in line.

FRONT BEARING RETAINER COMPONENTS

MT01X-06



OIL SEAL REPLACEMENT

MT02R-08

IF NECESSARY, REPLACE FRONT BEARING RETAINER OIL SEAL

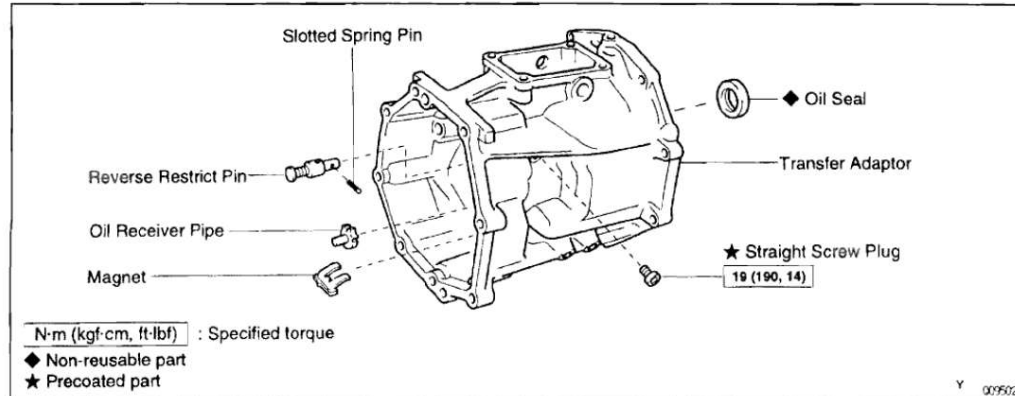
- Using a screwdriver, remove the oil seal.
- Using SST and a press, install a new oil seal.

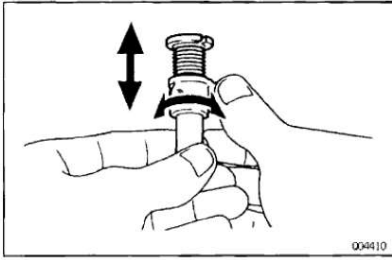
SST 09950-60010 (09951-00440),
09950-70010 (09951-07150)

Drive in depth: 12.7 ± 0.5 mm (0.500 ± 0.020 in.)
from retainer end

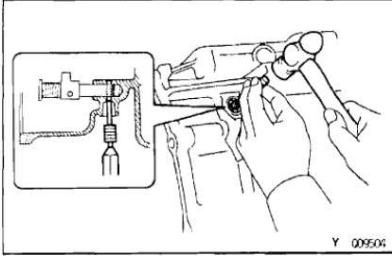
TRANSFER ADAPTOR COMPONENTS

MT01Z-07





004410



Y 009506

REVERSE RESTRICT PIN REPLACEMENT

MTORG-01

1. REMOVE REVERSE RESTRICT PIN

- Using a torx socket wrench (T40), remove the screw plug.
- Using a pin punch and hammer, drive out the slotted spring pin.
- Remove the reverse restrict pin.

2. INSPECT REVERSE RESTRICT PIN

Turn and push the reverse restrict pin by hand. Check for smooth operation.

MT

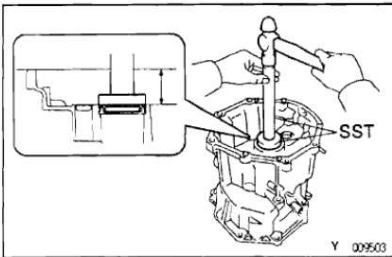
3. INSTALL REVERSE RESTRICT PIN

- Install the reverse restrict pin to the transfer adaptor.
- Using a pin punch and hammer, drive in the slotted spring pin, as shown.
- Apply sealant to the plug threads.

Sealant: Part No. 08833 — 00080, THREE BOND 1344, LOCTITE 242 or equivalent

- Using a torx socket wrench (T40), install and torque the screw plug.

Torque: 19 N·m (190 kgf·cm, 14 ft·lbf)



Y 009503

OIL SEAL REPLACEMENT

MTORG-01

IF NECESSARY, REPLACE TRANSFER ADAPTOR OIL SEAL

- Using a screwdriver, remove the oil seal.
- Using SST and a hammer, install a new oil seal.

SST 09950-60010 (09951-00570),
09950-70010 (09951-07150)

Drive in depth: 45.5 ± 0.5 mm (1.791 ± 0.020 in.)

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SERVICE SPECIFICATIONS

SERVICE DATA

MT022 - 08

Output shaft 2nd gear journal diameter	Min.	37.86 mm (1.4905 in.)
Output shaft 3rd gear journal diameter	Min.	34.86 mm (1.3724 in.)
Output shaft flange thickness	Min.	4.70 mm (0.1850 in.)
Output shaft runout	Max.	0.06 mm (0.0024 in.)
Inner race flange thickness	Min.	3.99 mm (0.1571 in.)
Inner race outer diameter	Min.	38.985 mm (1.5348 in.)
Gear thrust clearance 1st, 2nd & 3rd	STD	0.10–0.25 mm (0.0039–0.0098 in.)
	Max.	0.30 mm (0.0118 in.)
Gear radial clearance 1st	STD	0.009–0.032 mm (0.0004–0.0013 in.)
	Max.	0.032 mm (0.0013 in.)
Gear radial clearance 2nd & 3rd	STD	0.009–0.033 mm (0.0004–0.0013 in.)
	Max.	0.033 mm (0.0013 in.)
Shift fork to hub sleeve clearance	Max.	1.0 mm (0.039 in.)
Synchronizer ring to gear clearance	Min.	0.8 mm (0.031 in.)
Input shaft snap ring thickness	Mark 0	2.05–2.10 mm (0.0807–0.0827 in.)
	Mark 1	2.10–2.15 mm (0.0827–0.0846 in.)
	Mark 2	2.15–2.20 mm (0.0846–0.0866 in.)
	Mark 3	2.20–2.25 mm (0.0866–0.0886 in.)
	Mark 4	2.25–2.30 mm (0.0886–0.0906 in.)
	Mark 5	2.30–2.35 mm (0.0906–0.0925 in.)
Output shaft snap ring thickness Front	Mark C–1	1.75–1.80 mm (0.0689–0.0709 in.)
	Mark D	1.80–1.85 mm (0.0709–0.0728 in.)
	Mark D–1	1.85–1.90 mm (0.0728–0.0748 in.)
	Mark E	1.90–1.95 mm (0.0748–0.0768 in.)
	Mark E–1	1.95–2.00 mm (0.0768–0.0787 in.)
	Mark F	2.00–2.05 mm (0.0787–0.0807 in.)
	Mark F–1	2.05–2.10 mm (0.0807–0.0827 in.)
Output shaft snap ring thickness Rear	Mark A	2.87–2.72 mm (0.1051–0.1071 in.)
	Mark B	2.73–2.78 mm (0.1075–0.1094 in.)
	Mark C	2.79–2.84 mm (0.1098–0.1118 in.)
	Mark D	2.85–2.90 mm (0.1122–0.1142 in.)
	Mark E	2.91–2.96 mm (0.1146–0.1165 in.)
	Mark F	2.97–3.02 mm (0.1169–0.1189 in.)
	Mark G	3.03–3.08 mm (0.1193–0.1213 in.)
	Mark H	3.09–3.14 mm (0.1217–0.1236 in.)
	Mark J	3.15–3.20 mm (0.1240–0.1260 in.)
	Mark K	3.21–3.26 mm (0.1264–0.1283 in.)
	Mark L	3.27–3.32 mm (0.1287–0.1307 in.)
Counter gear needle roller bearing race diameter	STD	25.98–26.00 mm (1.0228–1.0236 in.)
	Min.	25.86 mm (1.0181 in.)
Counter 5th gear thrust clearance	STD	0.10–0.30 mm (0.0039–0.0118 in.)
	Max.	0.35 mm (0.0138 in.)

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Counter 5th gear radial clearance	STD	0.009–0.032 mm (0.0004–0.0013 in.)
	Max.	0.032 mm (0.0013 in.)
Reverse idler gear radial clearance	STD	0.04–0.08 mm (0.0016–0.0031 in.)
	Max.	0.13 mm (0.0051 in.)
Reverse idler gear to shift arm shoe clearance	STD	0.05–0.28 mm (0.0020–0.0110 in.)
	Max.	0.50 mm (0.0197 in.)
Counter gear snap ring thickness		
Front bearing	Mark 1	2.05–2.10 mm (0.0807–0.0827 in.)
	Mark 2	2.10–2.15 mm (0.0827–0.0846 in.)
	Mark 3	2.15–2.20 mm (0.0846–0.0866 in.)
	Mark 4	2.20–2.25 mm (0.0866–0.0886 in.)
	Mark 5	2.25–2.30 mm (0.0886–0.0906 in.)
	Mark 6	2.30–2.35 mm (0.0906–0.0925 in.)
Counter gear snap ring thickness		
Gear spline piece No.5	Mark A	2.80–2.85 mm (0.110–0.112 in.)
	Mark B	2.85–2.90 mm (0.112–0.114 in.)
	Mark C	2.90–2.95 mm (0.114–0.116 in.)
	Mark D	2.95–3.00 mm (0.116–0.118 in.)
	Mark E	3.00–3.05 mm (0.118–0.120 in.)
	Mark F	3.05–3.10 mm (0.120–0.122 in.)
	Mark G	3.10–3.15 mm (0.122–0.124 in.)
Oil seal drive in depth		
Front bearing retainer (from retainer end)		12.7 ± 0.5 mm (0.500 ± 0.020 in.)
Transfer adaptor		45.5 ± 0.5 mm (1.791 ± 0.020 in.)

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TORQUE SPECIFICATIONS

MT028-06

Part tightened		N·m	kgf·cm	ft·lbf
Transmission x Engine		72	730	53
Clutch release cylinder x Transmission		12	120	9
Front exhaust pipe x Exhaust manifold		62	630	46
Front exhaust pipe x Center exhaust pipe		43	440	32
Front exhaust pipe bracket x Clutch housing (5 door) (See page MT-7)	Bolt A	71	720	52
	Bolt B	69	700	51
LH and RH stiffener plate	17 mm head	69	700	51
	14 mm head	37	380	27
No.3 crossmember x Engine rear mounting		18	185	13
No.3 crossmember x Frame		65	660	48
Engine rear mounting x Transmission		65	650	48
Starter x Transmission		69	700	51
Transfer x Transmission		24	240	17
Straight screw plug		19	190	14
Transfer adaptor x Transmission case		37	380	27
Front bearing retainer x Transmission case		17	170	12
Rear bearing retainer x Intermediate plate		18	185	13
Reverse shift arm bracket		18	185	13
Shift fork x Shift fork shaft		20	200	14
Back-up light switch		37	380	27
Reverse idler gear shaft stopper bolt		17	175	13

Clutch housing x Transmission case	37	380	27
Control shift lever retainer x Transfer adaptor	18	185	13
Restrict pin	28	290	21
Shift lever housing x Shift and select lever	38	390	28
Filler and drain plug	37	380	27