



# SECTION MT

## MANUAL TRANSMISSION

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#### 5-SPEED TRANSMISSION

##### (Model : FS5W71B)

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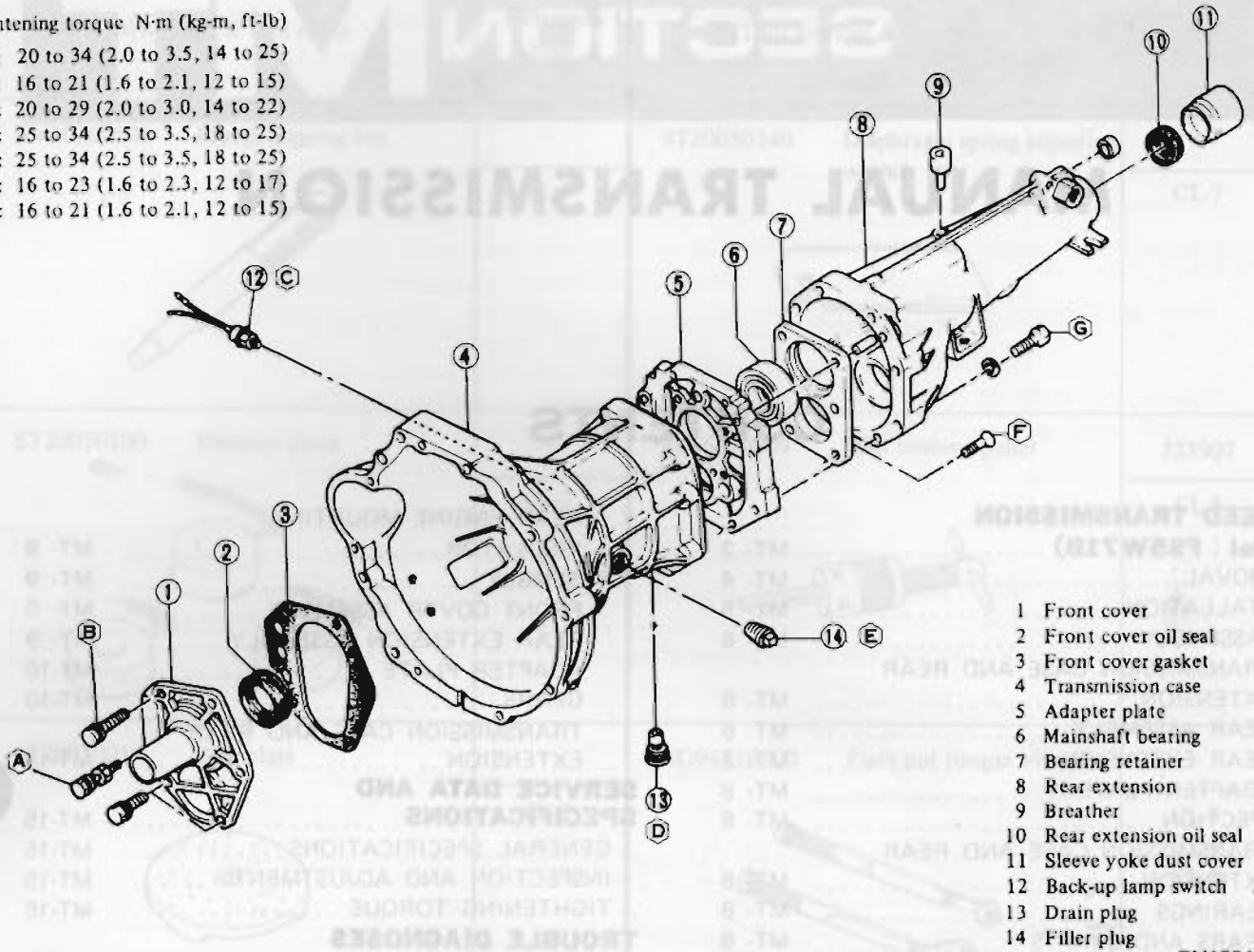
MT

1. Drive shaft gear	
2. Drive shaft bearing	
3. Yoke	
4. Mandrel key	
5. Drive shaft mandrel bearing	
6. Intermediate drive gear	
7. Intermediate front bearing	
8. Intermediate rear bearing	
9. Intermediate drive gear	
10. Intermediate	
11. Countershaft	
12. Countershaft bearing	
13. Reverse idler gear	
14. Reverse idler bearing	
15. Reverse idler gear	
16. Reverse idler bearing	
17. Reverse idler gear	
18. Reverse idler gear bearing	
19. Reverse idler drive shaft	

# 5-SPEED TRANSMISSION (Model : FS5W71B)

Tightening torque N·m (kg·m, ft·lb)

- A : 20 to 34 (2.0 to 3.5, 14 to 25)
- B : 16 to 21 (1.6 to 2.1, 12 to 15)
- C : 20 to 29 (2.0 to 3.0, 14 to 22)
- D : 25 to 34 (2.5 to 3.5, 18 to 25)
- E : 25 to 34 (2.5 to 3.5, 18 to 25)
- F : 16 to 23 (1.6 to 2.3, 12 to 17)
- G : 16 to 21 (1.6 to 2.1, 12 to 15)

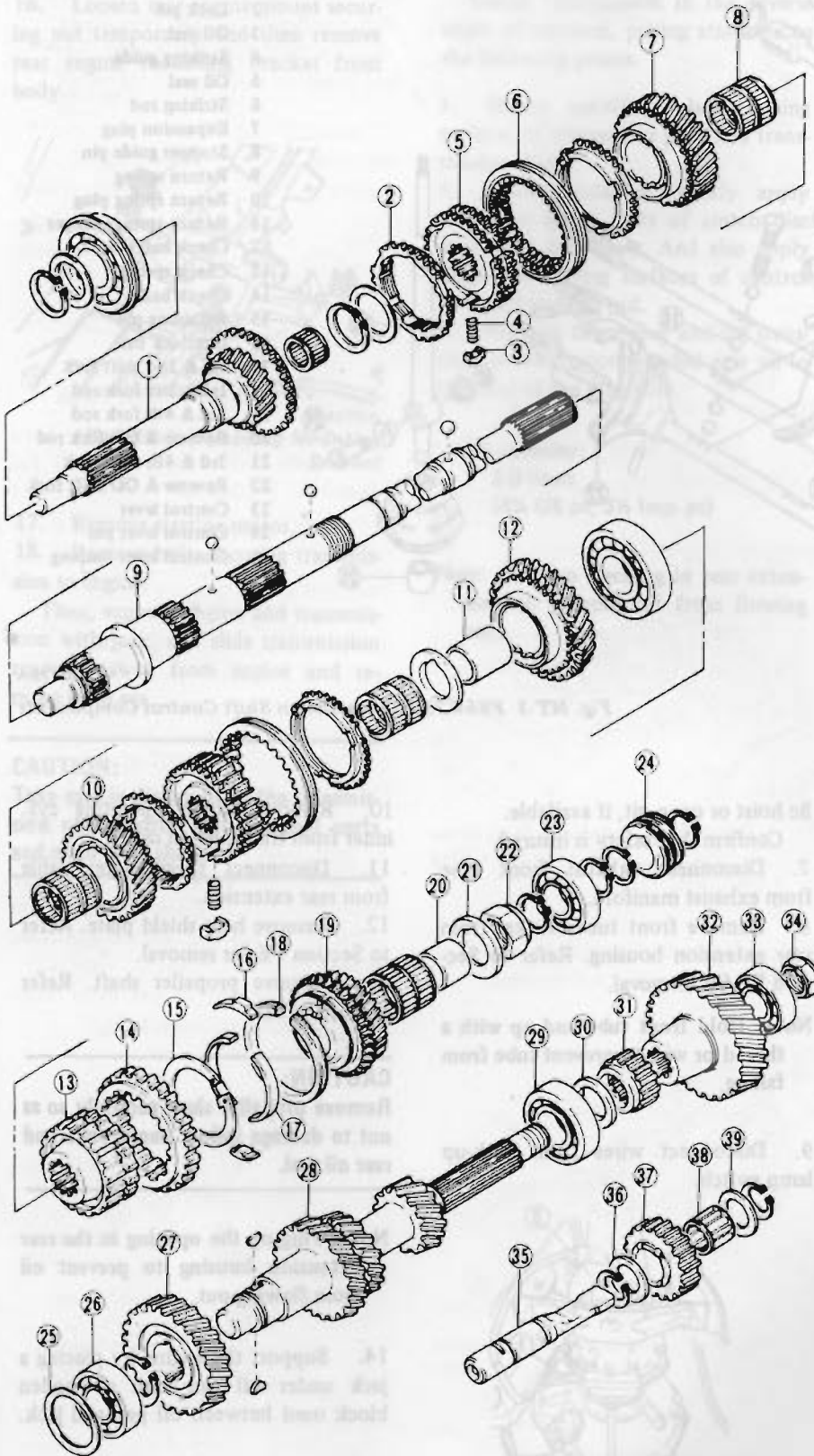


- 1 Front cover
- 2 Front cover oil seal
- 3 Front cover gasket
- 4 Transmission case
- 5 Adapter plate
- 6 Mainshaft bearing
- 7 Bearing retainer
- 8 Rear extension
- 9 Breather
- 10 Rear extension oil seal
- 11 Sleeve yoke dust cover
- 12 Back-up lamp switch
- 13 Drain plug
- 14 Filler plug

TM177A

Fig. MT-1 FS5W71B Transmission Case Components

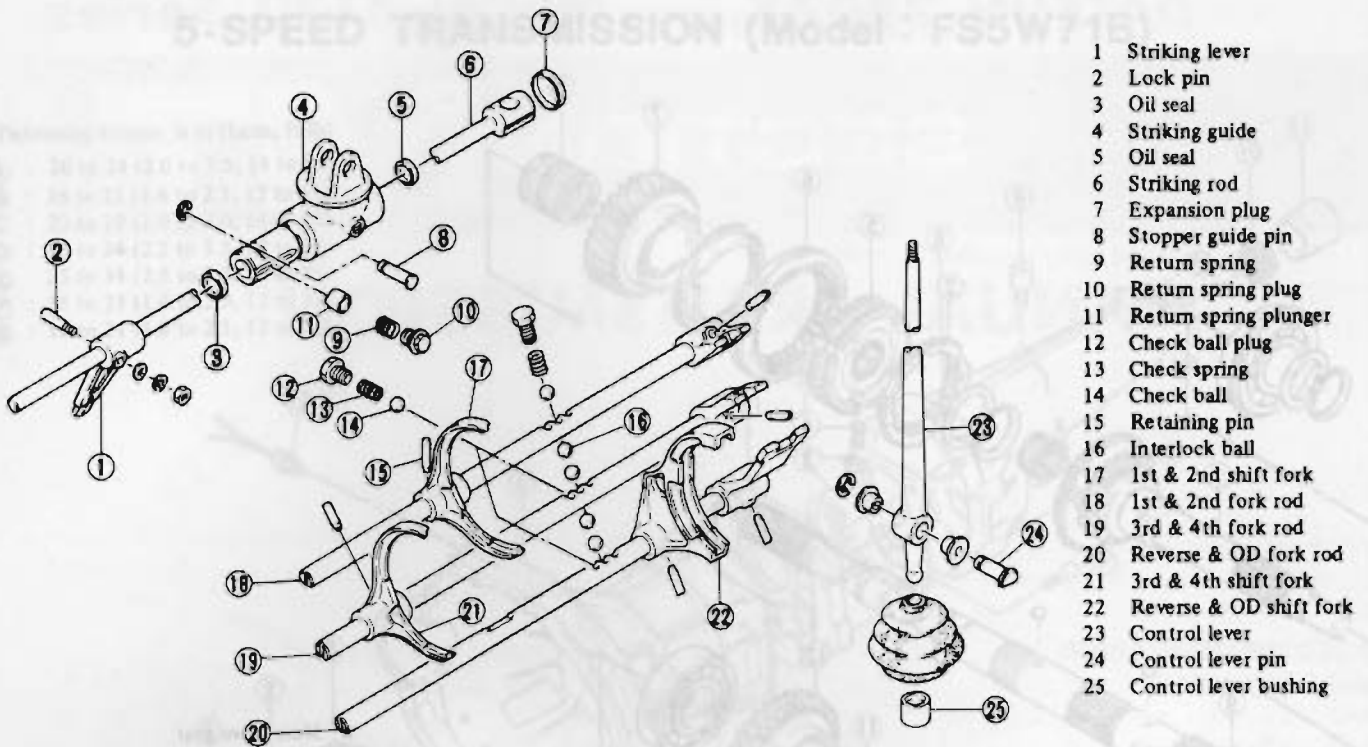
# Manual Transmission



- 1 Main drive gear
- 2 Bulk ring
- 3 Shifting insert
- 4 Shifting insert spring
- 5 Synchronizer hub
- 6 Coupling sleeve
- 7 3rd main gear
- 8 Needle bearing
- 9 Mainshaft
- 10 2nd main gear
- 11 Bushing
- 12 1st main gear
- 13 OD-reverse synchronizer hub
- 14 Reverse gear
- 15 Circlip
- 16 Thrust block
- 17 Brake band
- 18 Synchronizer ring
- 19 Overdrive main gear
- 20 Overdrive gear bushing
- 21 Washer
- 22 Mainshaft nut
- 23 Overdrive mainshaft bearing
- 24 Speedometer drive gear
- 25 Countershaft front bearing shim
- 26 Countershaft front bearing
- 27 Countershaft drive gear
- 28 Countershaft
- 29 Countershaft bearing
- 30 Reverse counter gear spacer
- 31 Reverse counter gear
- 32 Overdrive counter gear
- 33 Countershaft rear bearing
- 34 Countershaft nut
- 35 Reverse idler shaft
- 36 Reverse idler thrust washer
- 37 Reverse idler gear
- 38 Reverse idler gear bearing
- 39 Reverse idler thrust washer

TM178A

Fig. MT-2 FS5W71B Transmission Gear Components



- 1 Striking lever
- 2 Lock pin
- 3 Oil seal
- 4 Striking guide
- 5 Oil seal
- 6 Striking rod
- 7 Expansion plug
- 8 Stopper guide pin
- 9 Return spring
- 10 Return spring plug
- 11 Return spring plunger
- 12 Check ball plug
- 13 Check spring
- 14 Check ball
- 15 Retaining pin
- 16 Interlock ball
- 17 1st & 2nd shift fork
- 18 1st & 2nd fork rod
- 19 3rd & 4th fork rod
- 20 Reverse & OD fork rod
- 21 3rd & 4th shift fork
- 22 Reverse & OD shift fork
- 23 Control lever
- 24 Control lever pin
- 25 Control lever bushing

TM279A

Fig. MT-3 FS5W71B Transmission Shift Control Components

## REMOVAL

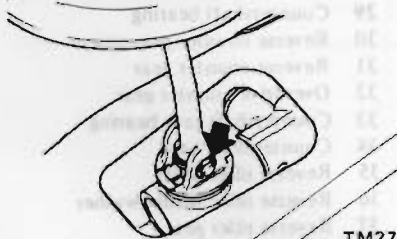
In dismantling transmission from the car, proceed as follows:

1. Disconnect battery ground cable from terminal.
2. Disconnect accelerator linkage.
3. Remove console.

Refer to Console (Section BF) for removal and installation.

4. Remove control lever boots.
5. Place transmission control lever in neutral position.

Remove E-ring and control lever pin from transmission striking rod guide, and remove control lever.



TM277A

Fig. MT-4 Removing Control Lever

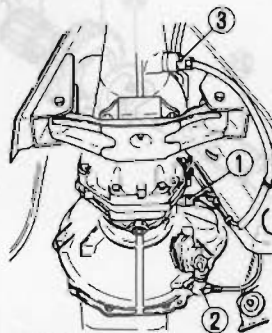
6. Jack up the car and support its weight on safety stands. Use a hydraulic hoist or open pit, if available.

Confirm that safety is insured.

7. Disconnect exhaust front tube from exhaust manifold.
8. Remove front tube bracket from rear extension housing. Refer to Section FE for Removal.

**Note:** Hold front tube end up with a thread or wire to prevent tube from falling.

9. Disconnect wires from back-up lamp switch.



- 1 Back-up lamp switch
- 2 Clutch operating cylinder
- 3 Speedometer cable

TM144A

Fig. MT-5 Bottom View of Car

10. Remove clutch operating cylinder from transmission case.
11. Disconnect speedometer cable from rear extension.
12. Remove heat shield plate. Refer to Section FE for removal.
13. Remove propeller shaft. Refer to Section PD.

### CAUTION:

Remove propeller shaft carefully so as not to damage spline, sleeve yoke and rear oil seal.

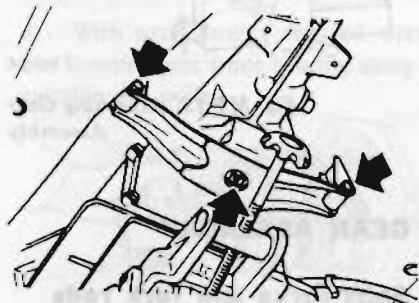
**Note:** Plug up the opening in the rear extension housing to prevent oil from flowing out.

14. Support the engine by placing a jack under oil pan with a wooden block used between oil pan and jack.

### CAUTION:

Do not place the jack under the oil pan drain plug.

15. Support transmission with a transmission jack.
16. Loosen rear engine mount securing nut temporarily and then remove rear engine mounting bracket from body.



TM278A

Fig. MT-6 Removing Mounting Bracket

17. Remove starting motor.
18. Remove bolts securing transmission to engine.

Then, support engine and transmission with jack, and slide transmission rearward away from engine and remove from car.

### CAUTION:

Take care in dismantling the transmission not to strike any adjacent parts and main drive shaft.

## INSTALLATION

Install transmission in the reverse order of removal, paying attention to the following points.

1. Before installing, clean mating surfaces of engine rear plate and transmission case.
2. Before installing, lightly apply grease to spline parts of clutch disc and main drive gear. And also apply grease to moving surfaces of control lever and striking rod.
3. Remove filler plug and fill transmission with recommended gear oil to the level of the plug hole.

### Oil capacity:

2.0 liters  
(4¼ US pt, 3⅓ Imp pt)

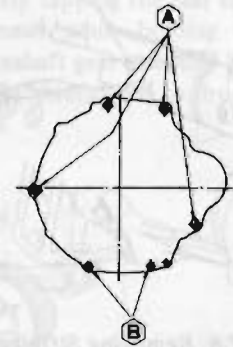
**Note:** Plug up opening in rear extension to prevent oil from flowing out.

4. Apply sealant to threads of filler plug, and install filler plug to transmission case.

Ⓣ : Filler plug  
25 - 34 N·m  
(2.5 - 3.5 kg-m,  
18 - 25 ft-lb)

5. Tighten bolts securing transmission to engine to specifications.

Ⓣ : Ⓐ 43 - 58 N·m  
(4.4 - 5.9 kg-m,  
32 - 43 ft-lb)  
Ⓑ 8.8 - 11.8 N·m  
(0.9 - 1.2 kg-m,  
6.5 - 8.7 ft-lb)



TM773

Fig. MT-7 Tightening Torque

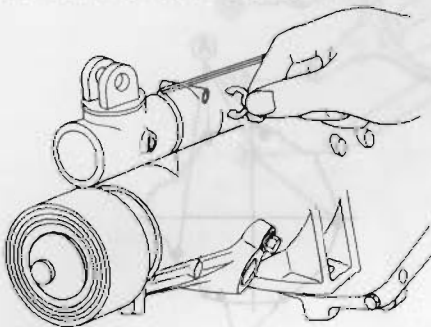
## DISASSEMBLY

### TRANSMISSION CASE AND REAR EXTENSION

1. Prior to disassembling transmission, thoroughly wipe off dirt and grease from it.
2. Drain oil thoroughly.
3. Remove dust cover from transmission case.

Remove release bearing and withdrawal lever.

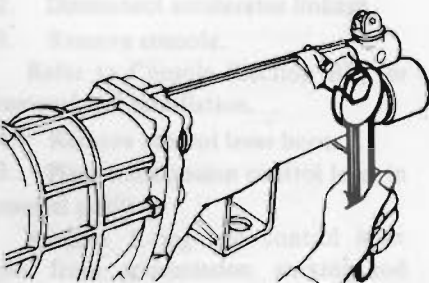
4. Remove back-up lamp switch.
5. Move gear to Neutral.
6. Remove speedometer pinion.
7. Remove E-ring and stopper guide pin from rear end of rear extension.



TM182A

Fig. MT-8 Removing Striking Rod E-ring and Stopper Pin

8. Remove return spring plug, return spring, reverse check spring, and plunger from rear extension.

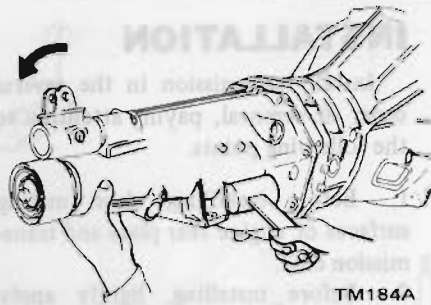


TM183A

Fig. MT-9 Removing Return Spring Plug

9. Remove rear extension securing bolts and turn the striking rod toward left.

Drive out rear extension backward by lightly tapping around it with a soft hammer.



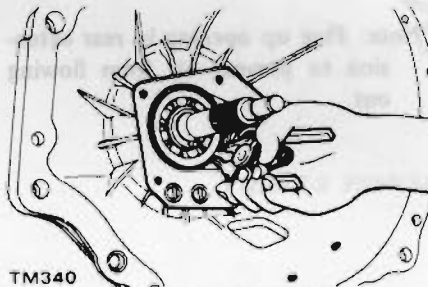
TM184A

Fig. MT-10 Removing Rear Extension

10. Remove front cover securing bolts and remove front cover.

Detach countershaft front bearing shim.

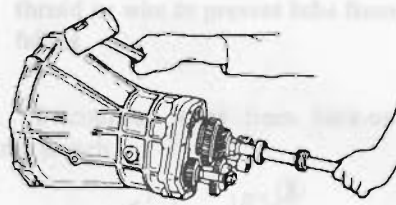
11. Remove main drive bearing snap ring with expander.



TM340

Fig. MT-11 Removing Main Drive Bearing Snap Ring

12. Separate transmission case from adapter plate with a soft hammer.

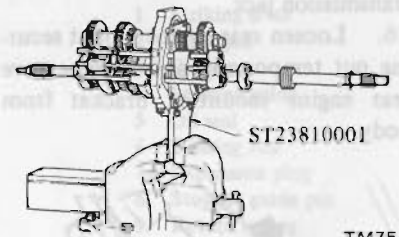


TM753

Fig. MT-12 Removing Transmission Case

13. Set up Adapter Setting Plate ST23810001 on adapter plate.

With countershaft side up, place the above assembly in a vise.



ST23810001

TM754

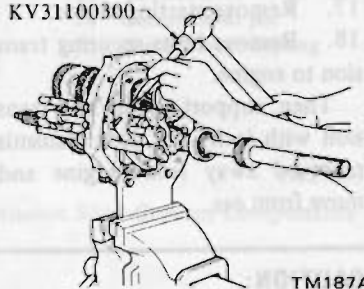
Fig. MT-13 Attaching Gear Assembly

## GEAR ASSEMBLY

### Shift forks and fork rods

1. Drive out retaining pins from each fork rod with Fork Rod Pin Punch KV31100300.

KV31100300

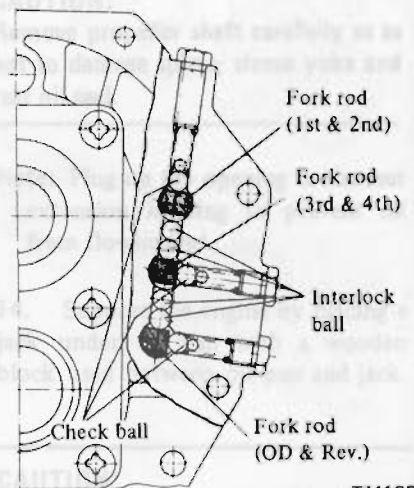


TM187A

Fig. MT-14 Drive Out Retaining Pins

2. Remove three check ball plugs, and drive out fork rods from adapter plate by lightly tapping on the front end.

Be careful not to lose three check balls and four interlock balls.



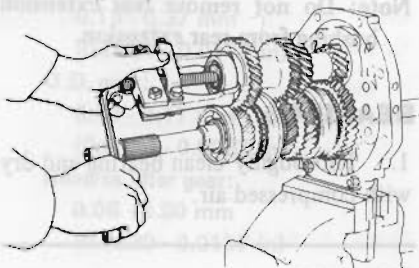
TM198A

Fig. MT-15 Check Ball and Interlock Ball

## Gear assembly

**Note:** It is necessary to measure end play before disassembling mainshaft and after reassembling mainshaft. Refer to "Inspection of gears and shaft".

1. With gears doubly engaged, draw out counter gear front bearing using a suitable gear puller.

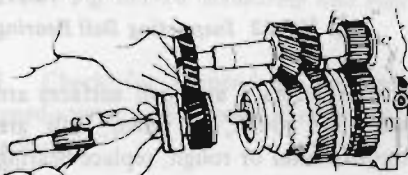


TM398

Fig. MT-16-1 Removing Countershaft Front Bearing

2. Remove counter drive gear snap ring.
3. Draw out counter drive gear with main drive gear by means of a gear puller.

When drawing out main drive gear assembly, be careful not to drop pilot needle bearing onto floor from the front end of mainshaft.



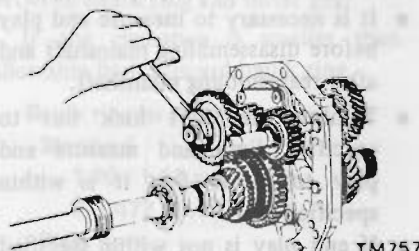
TM345

Fig. MT-16-2 Removing Counter Drive Gear and Main Drive Gear

4. Release staking on counter gear nut and mainshaft nut then loosen them.

Remove counter gear nut.

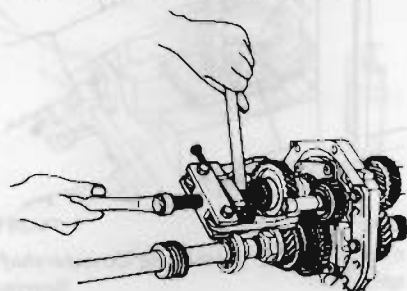
**Note:** Counter gear nut and mainshaft nut should be discarded and should not be reused.



TM757

Fig. MT-16-3 Removing Counter Gear Nut

5. Draw out counter overdrive gear and bearing from countershaft rear end by using a suitable gear puller.

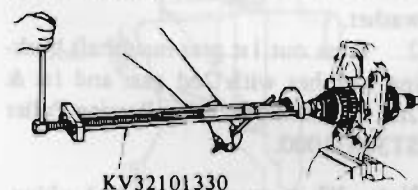


TM758

Fig. MT-17 Removing Counter Overdrive Gear and Bearing

6. Remove reverse counter gear and spacer.
7. Remove snap ring from reverse idler shaft, and remove reverse idler gear.
8. Remove snap rings and then draw out speedometer gear and bearing from mainshaft rear side. When draw-

ing out mainshaft rear bearing, use Mainshaft Rear Bearing Puller KV32101330.



KV32101330

TM760

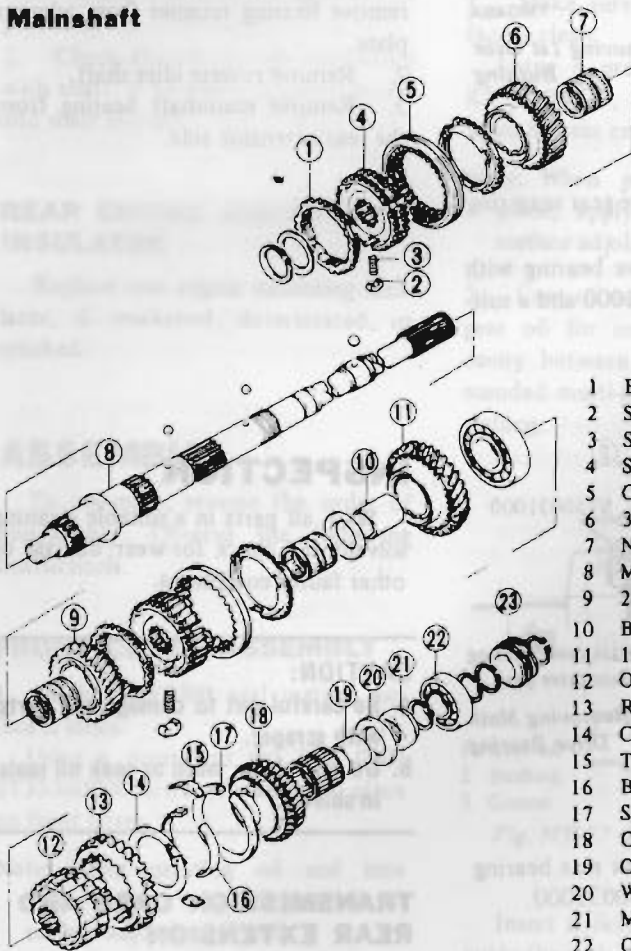
Fig. MT-18 Removing Mainshaft Rear Bearing

9. Remove mainshaft nut, thrust washer, reverse main gear, OD synchronizer and overdrive gear.

10. Draw out mainshaft gear assembly together with countershaft by lightly tapping the rear end with a soft hammer while holding the front of mainshaft gear assembly by hand.

Be careful not to drop off counter gear.

## Mainshaft



- 1 Bulk ring
- 2 Shifting insert
- 3 Shifting insert spring
- 4 Synchronizer hub
- 5 Coupling sleeve
- 6 3rd main gear
- 7 Needle bearing
- 8 Mainshaft
- 9 2nd main gear
- 10 Bushing
- 11 1st main gear
- 12 OD-reverse synchronizer hub
- 13 Reverse gear
- 14 Circlip
- 15 Thrust block
- 16 Brake band
- 17 Synchronizer ring
- 18 Overdrive main gear
- 19 Overdrive gear bushing
- 20 Washer
- 21 Mainshaft nut
- 22 Overdrive mainshaft bearing
- 23 Speedometer drive gear

TM204A

Fig. MT-19 Mainshaft Assembly

1. Remove thrust washer, steel ball, 1st gear and needle bearing. Be careful not to lose steel ball retaining thrust washer.
2. Press out 1st gear mainshaft bushing together with 2nd gear and 1st & 2nd synchronizer using Bearing Puller ST30031000.

**Note:** When pressing out bushing, hold mainshaft by hand so as not to drop it.

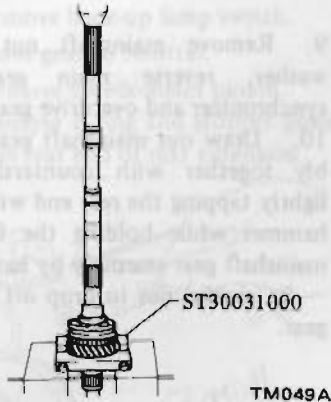
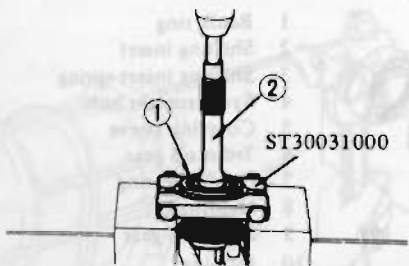


Fig. MT-20 Removing 1st Gear Bushing

### Main drive gear

1. Remove main drive gear snap ring and spacer.
2. Remove main drive bearing with Bearing Puller ST30031000 and a suitable press.



1 Main drive bearing  
2 Main drive gear

Fig. MT-21 Removing Main Drive Bearing

### Counter gear

Press out counter gear rear bearing using Bearing Puller ST30031000.

**Note:** When pressing out bearing, hold shaft by hand so as not to drop shaft onto floor.

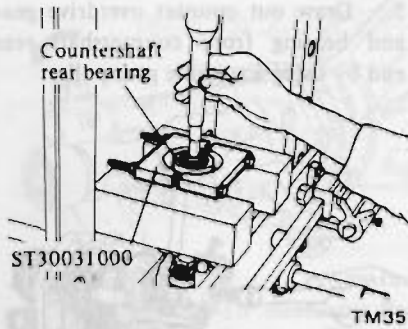


Fig. MT-22 Removing Countershaft Bearing

### REAR EXTENSION

Remove lock pin from striking lever, and remove striking rod.

**Note:** Do not disassemble rear extension bushing from rear extension.

### ADAPTER PLATE

1. Remove bearing retainer attaching screws with an impact wrench and remove bearing retainer from adapter plate.
2. Remove reverse idler shaft.
3. Remove mainshaft bearing from the rear extension side.

### INSPECTION

Wash all parts in a suitable cleaning solvent and check for wear, damage or other faulty conditions.

#### CAUTION:

- a. Be careful not to damage any parts with scraper.
- b. Do not clean, wash or soak oil seals in solvent.

### TRANSMISSION CASE AND REAR EXTENSION

1. Clean with solvent thoroughly and check for cracks which might cause oil leak or other faulty con-

ditions.

2. Check mating surface of the case to engine or adapter plate for small nicks, projection or sealant.

Remove all nicks, projection or sealant with a fine stone.

3. If rear extension bushing is worn or cracked, replace it as an assembly of bushing and rear extension.

**Note:** Do not remove rear extension bushing from rear extension.

### BEARINGS

1. Thoroughly clean bearing and dry with compressed air.

#### CAUTION:

Do not allow the bearings to spin. Because it will damage the race and balls. Turn them slowly by hand.

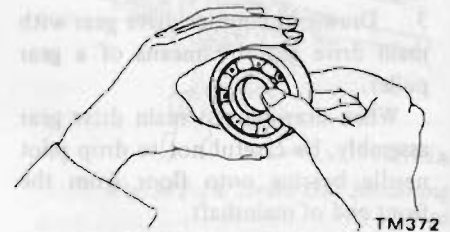


Fig. MT-23 Inspecting Ball Bearing

2. When race and ball surfaces are worn or rough, or when balls are out-of-round or rough, replace bearing with a new one.
3. Replace needle bearing if worn or damaged.

### GEARS AND SHAFTS

1. Check all gears for excessive wear, chips or cracks; replace as required.
2. Check shaft for bending, crack, wear, and worn spline; if necessary, replace.
3. Measure gear end play:
  - It is necessary to measure end play before disassembling mainshaft and after reassembling mainshaft.
  - Tighten mainshaft lock nut to specified limit and measure end play to insure that it is within specified limit.
  - If end play is not within specified limit, disassemble and check parts for condition.



- Replace any part which is worn or damaged.

### Standard end play:

#### 1st gear:

0.27 - 0.34 mm  
(0.0106 - 0.0134 in)

#### 2nd gear:

0.12 - 0.19 mm  
(0.0047 - 0.0075 in)

#### 3rd gear:

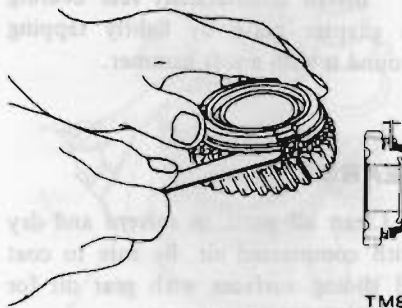
0.13 - 0.37 mm  
(0.0051 - 0.0146 in)

#### O.D. gear:

0.10 - 0.17 mm  
(0.0039 - 0.0067 in)

#### Reverse idler gear:

0.05 - 0.50 mm  
(0.0020 - 0.0197 in)



TM806

Fig. MT-25 Baulk Ring to Gear Gap

## SHIFTING INSERT

Replace, if worn excessively, worn unevenly, deformed, or damaged.

## OIL SEALS

1. Discard O-ring or oil seal which is once removed. Replace oil seal if sealing lip is deformed or cracked. Also discard oil seal if spring is out of position.
2. Check the oil seal lip contacting with shaft; if necessary replace oil seal and shaft as a set.

## REAR ENGINE MOUNTING INSULATOR

Replace rear engine mounting insulator, if weakened, deteriorated, or cracked.

## ASSEMBLY

To assemble, reverse the order of disassembly. Observe the following instructions.

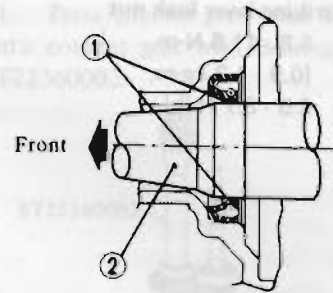
### FRONT COVER ASSEMBLY

1. Make sure that seal mating surface is clean.

Using a press and Oil Seal Drift ST35360000 drive new seal into place on front cover.

Note: When pressing oil seal into place, apply coat of gear oil to surface adjoining oil seal.

2. Lubricate seal lip and main drive shaft with gear oil when installing front cover.



- 1 Gear oil
- 2 Main drive shaft

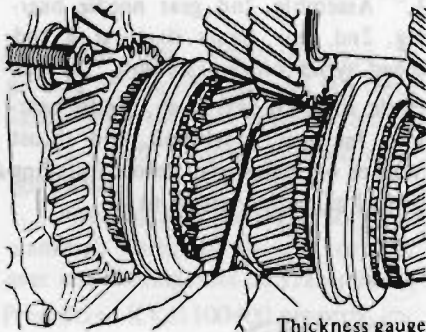
TM105A

Fig. MT-26 Front Cover Oil Seal

3. Apply sealant to withdrawal lever ball pin screw. Install it to front cover.

⊕ : Ball pin

20 - 34 N·m  
(2.0 - 3.5 kg·m,  
14 - 25 ft·lb)



Thickness gauge

TM374

Fig. MT-24 Measuring End Play

4. Check for stripped or damaged speedometer pinion gear. If necessary, replace.

## BALK RING

1. Replace baulk ring if found to be deformed, cracked or otherwise damaged excessively.
2. Place baulk ring in position on gear cone.

While holding baulk ring against gear as far as it will go, measure gap between baulk ring and outer gear.

If the clearance is smaller than allowable limit, discard baulk ring.

### Baulk ring to cone clearance:

#### Standard

1.20 - 1.60 mm  
(0.0472 - 0.0630 in)

#### Wear limit

Less than 0.8 mm  
(0.031 in)

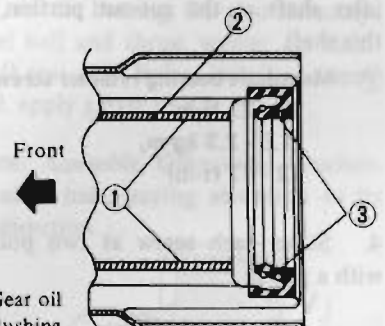
## REAR EXTENSION ASSEMBLY

1. Make sure that seal mating surface is clean.

Using a press and Oil Seal Drift KV38104010, drive new seal into place on rear extension.

Note: When pressing oil seal into place, apply coat of gear oil to surface adjoining oil seal

2. Coat oil seal lip and bushing with gear oil for initial lubrication. Pack cavity between seal lips with recommended multi-purpose grease when installing.



- 1 Gear oil
- 2 Bushing
- 3 Grease

TM214A

Fig. MT-27 Rear Extension Oil Seal

Insert striking rod with striking rod guide through rear extension.

3. Install striking lever on front end of striking rod. Install lock pin and nut, and tighten it.

- Ⓣ : Striking lever lock nut  
8.8 - 11.8 N·m  
(0.9 - 1.2 kg·m,  
6.5 - 8.7 ft·lb)

5. Install countershaft rear bearing in adapter plate by lightly tapping around it with a soft hammer.

**GEARS**

Clean all parts in solvent and dry with compressed air. Be sure to coat all sliding surfaces with gear oil for initial lubrication.

**1st & 2nd and 3rd & 4th gear synchronizer**

Position shifting insert springs and shifting inserts in three slots in synchronizer hub; put coupling sleeve on synchronizer hub.

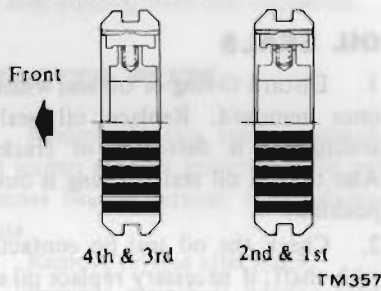


Fig. MT-30 Installing Synchronizer Hub

**OD gear synchronizer**

Position synchronizer ring, band brake, thrust block and anchor block on overdrive clutch gear; install circlip.

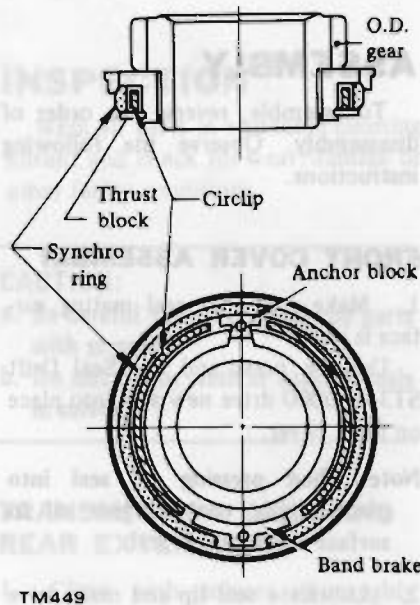


Fig. MT-31 Installing Overdrive Gear Assembly

**Main drive gear**

1. Using Transmission Adapter ST23800000, press main drive bearing onto the shaft of main drive gear.

**Note:** Make sure that snap ring groove on shaft clears bearing.

2. Place main drive bearing spacer on main drive bearing and secure main drive bearing with thicker snap ring that will eliminate end play.

**Main drive gear snap ring:**  
Refer to Service Data and Specifications.

**Gear assembly**

1. Assemble 2nd gear needle bearing, 2nd gear, baulk ring, 1st & 2nd speed synchronizer assembly, 1st gear baulk ring, 1st gear bush, needle bearing, 1st gear, steel ball, and thrust washer on mainshaft. Before installing a steel ball, apply grease to it.

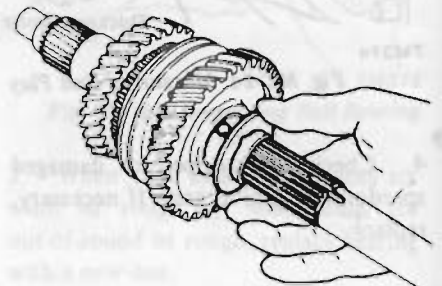


Fig. MT-32 Installing Thrust Washer

2. Set Transmission Press Stand KV31100400 and place adapter plate assembly on it.

For counter gear and reverse idler shaft  
For mainshaft and reverse idler shaft

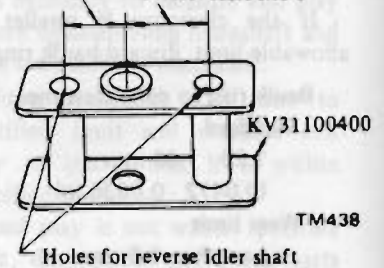


Fig. MT-33 Transmission Press Stand

**ADAPTER PLATE**

- Place dowel pin and mainshaft bearing on adapter plate.
- Insert reverse idler shaft in adapter plate.

**Note:** Make sure that the cut-out portion of reverse idler shaft is lined up with inner face of adapter plate.

3. Install bearing retainer in adapter plate.

Align bearing retainer with reverse idler shaft at the cut-out portion of this shaft.

- Ⓣ : Mainshaft bearing retainer screw  
16 - 23 N·m  
(1.6 - 2.3 kg·m,  
12 - 17 ft·lb)

4. Stake each screw at two points with a punch.

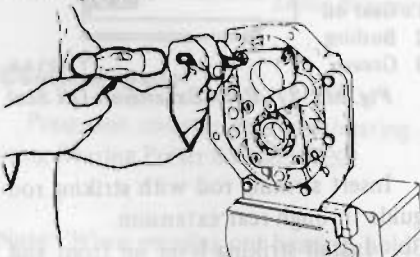


Fig. MT-29 Staking Screw

3. Install mainshaft assembly to adapter plate assembly. Be sure to place bearing squarely against shaft and press it into place on shaft gradually.

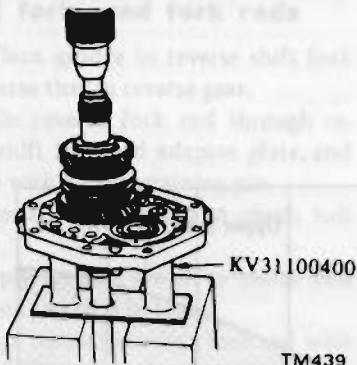


Fig. MT-34 Installing Mainshaft Assembly

4. Place new woodruff keys in grooves in counter gear and tap them lightly until they are seated securely.

Use a soft hammer to avoid damaging keys.

5. Place adapter plate assembly and mainshaft assembly so that counter gear rear bearing rests on Transmission Press Stand KV31100400 properly.

6. Install counter gear into adapter plate by pressing it.

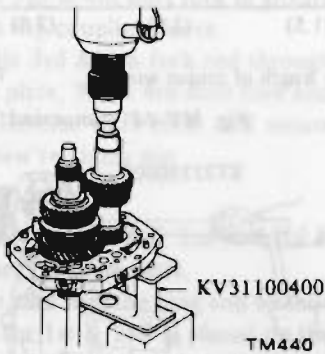


Fig. MT-35 Installing Counter Gear

7. Position needle bearing, 3rd main gear, baulk ring and 3rd & 4th synchronizer assembly on the front of mainshaft.

8. Install thrust washer on mainshaft and secure it with snap ring of proper thickness that will minimize clearance of groove in mainshaft.

**Mainshaft front snap ring:**  
Refer to Service Data and Specifications.

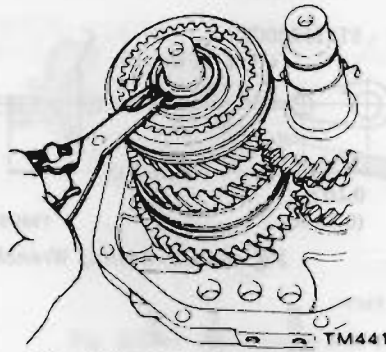


Fig. MT-36 Installing Snap Ring

9. Position baulk ring on cone surface of main drive gear. Apply gear oil to mainshaft pilot bearing and install it on mainshaft.

Assemble main drive gear assembly on the front end of mainshaft.

10. Press counter drive gear onto counter gear with Counter Gear Drift ST23860000 by meshing gears and secure counter drive gear with thicker snap ring.

**Counter drive gear snap ring:**  
Refer to Service Data and Specifications.

**Note:** Be sure to drive in counter drive gear and main drive gear simultaneously.

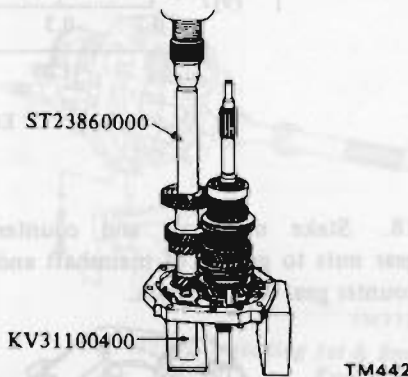


Fig. MT-37 Installing Counter Drive Gear

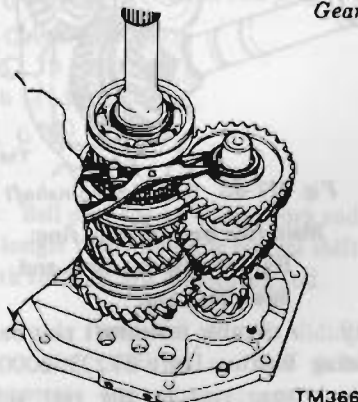


Fig. MT-38 Installing Snap Ring

11. Press counter gear front bearing onto counter gear with Bearing Drift ST22360002.

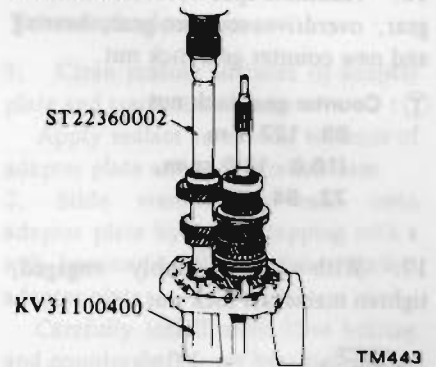


Fig. MT-39 Installing Counter Gear Front Bearing

12. Support adapter plate in a vise with Setting Plate Adapter ST23810001, with mainshaft facing down.

13. After front side is assembled, assemble snap ring, spacer, needle bearing, reverse idler gear, spacer and snap ring.

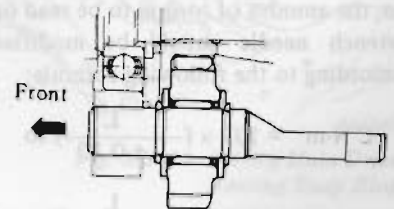


Fig. MT-40 Reverse Idler Gear

14. Assemble OD-reverse synchronizer hub, reverse gear, OD gear bushing, needle bearing, OD gear assembly, steel ball and thrust washer on mainshaft rear side. Before installing a steel ball, apply grease to it.

**Note:** Assemble OD-reverse synchronizer hub, paying attention to its direction.

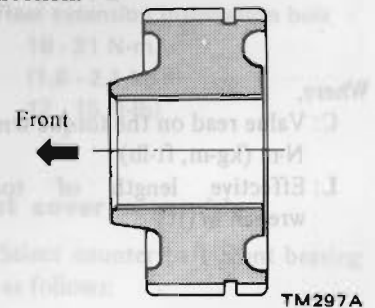


Fig. MT-41 Installing OD-reverse Synchronizer Hub

# Manual Transmission

15. Assemble new mainshaft nut, and tighten it temporarily.
16. Assemble spacer, reverse counter gear, overdrive counter gear, bearing and new counter gear lock nut.

Ⓣ : Counter gear lock nut  
 98 - 127 N·m  
 (10.0 - 13.0 kg·m,  
 72 - 94 ft·lb)

17. With gears doubly engaged, tighten mainshaft lock nut.

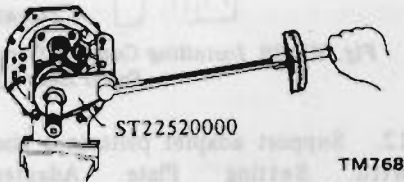


Fig. MT-42 Tightening Mainshaft Nut

### Explanation of converted torque

Mainshaft nut should be tightened to 137 to 167 N·m (14 to 17 kg·m, 101 to 123 ft·lb) torque with the aid of Wrench ST22520000. When doing so, the amount of torque to be read on wrench needle should be modified according to the following formula:

$$C \text{ N·m} = 137 \times \left( \frac{L}{L + 0.10} \right) \text{ to}$$

$$167 \times \left( \frac{L}{L + 0.10} \right)$$

$$C \text{ (kg·m)} = 14 \times \left( \frac{L}{L + 0.10} \right) \text{ to}$$

$$17 \times \left( \frac{L}{L + 0.10} \right)$$

$$C \text{ (ft·lb)} = 101 \times \left( \frac{L}{L + 0.33} \right) \text{ to}$$

$$123 \times \left( \frac{L}{L + 0.33} \right)$$

Where,

C: Value read on the torque wrench  
 N·m (kg·m, ft·lb)

L: Effective length of torque wrench  
 m (ft)

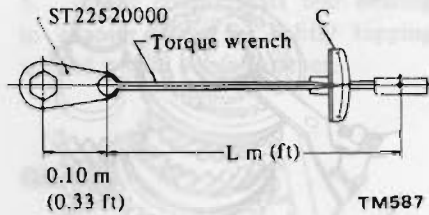
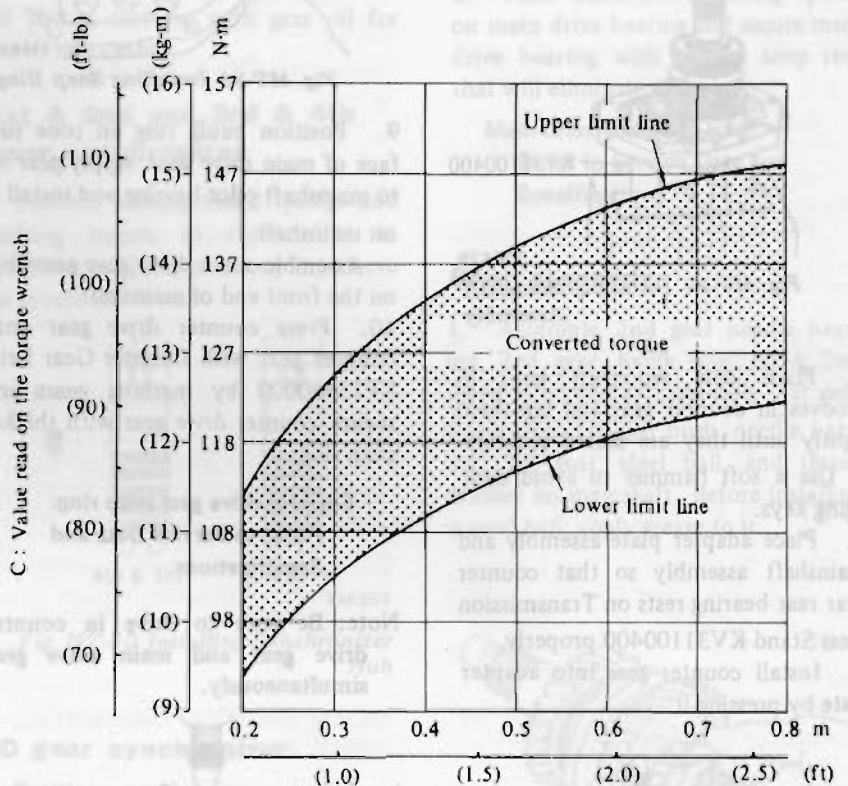


Fig. MT-43 Setting Wrench

Example,

When a 0.40 m (1.31 ft)-long torque wrench is used, the "C" in Fig. MT-44 will be 110 to 133 N·m (11.2 to 13.6 kg·m, 81 to 98 ft·lb).



L: Effective length of torque wrench TM185A

Fig. MT-44 Converted Torque

18. Stake mainshaft and counter gear nuts to groove of mainshaft and counter gear with a punch.

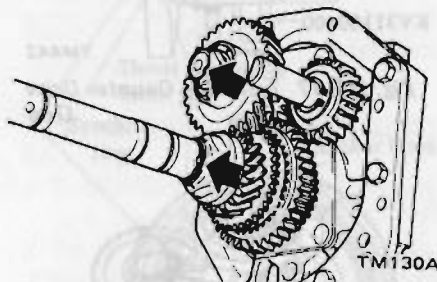
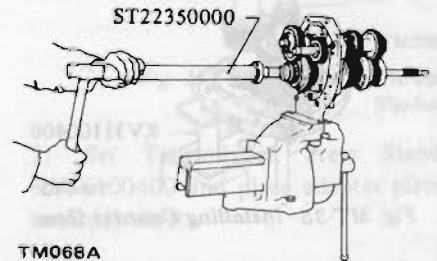


Fig. MT-45 Staking Mainshaft Nuts

**Main rear bearing snap ring:**

**Refer to Service Data and Specifications.**

19. Assemble mainshaft rear bearing using Bearing Drift ST22350000. Fit thick snap ring to the rear side of bearing to eliminate end play.



TM068A

Fig. MT-46 Assembling Mainshaft Rear Bearing

20. Fit snap ring to front of speedometer drive gear.
21. Assemble steel ball, speedometer drive gear and rear snap ring.

**Note:** Main drive gear and counter drive gear, and main OD gear and counter OD gear should be handled as a matched set respectively.

**When replacing main drive gear or counter drive gear and main OD**

gear or counter OD gear, be sure to replace as a set of main drive gear and counter drive gear, and a set of main OD gear and counter OD gear.

## Shift forks and fork rods

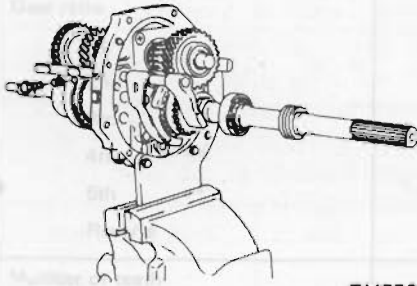
1. Place groove in reverse shift fork or reverse that in reverse gear.

Slide reverse fork rod through reverse shift fork and adapter plate, and secure with a new retaining pin.

2. Install check ball and check ball spring.

Apply locking sealer to check ball plug and install it in place.

Align notch in reverse fork rod with check ball.



TM770

Fig. MT-47 Installing Fork Rod

Place 3rd & 4th shift fork in groove in 3rd & 4th coupling sleeve.

3. Slide 3rd & 4th fork rod through adapter plate, 3rd & 4th shift fork and OD & Reverse shift fork, and secure with a new retaining pin.

Note:

a. Shift forks for 1st & 2nd and 3rd & 4th are the same parts.

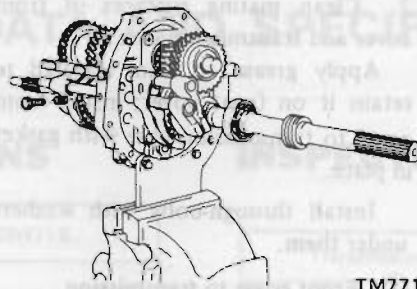
Make sure that the long end of shift fork for 1st & 2nd is placed on the counter gear side and the long end for 3rd & 4th is on the opposite side.

b. Prior to assembling 3rd & 4th fork rod, install two(2) interlock balls into adapter plate as shown in Fig. MT-15.

4. Install check ball and check ball spring.

5. Apply locking sealer to check ball plug and install it in place.

6. Align notch in 3rd & 4th fork rod with check ball by sliding 3rd & 4th fork rod as necessary.



TM771

Fig. MT-48 Installing 3rd & 4th Fork Rod

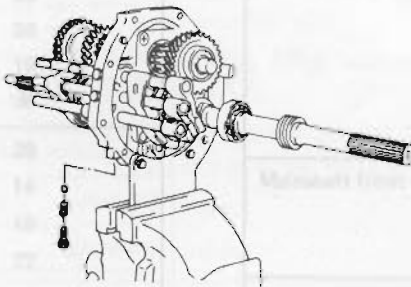
7. Place 1st & 2nd shift fork in groove in 1st & 2nd coupling sleeve, and slide 1st & 2nd fork rod through adapter plate and 1st & 2nd shift fork.

Note: Prior to assembling 1st & 2nd fork rod, install two(2) interlock balls into adapter plate as shown in Fig. MT-15.

8. Secure 1st & 2nd fork rod to shift fork with a new retaining pin.

9. Install check ball, check ball spring, and check ball plug. Prior to tightening check ball plug, apply locking sealer to check ball plug.

10. Align notch in 1st & 2nd fork rod with check ball.



TM772

Fig. MT-49 Installing 1st & 2nd Fork Rod

11. Tighten each check ball plug.

⊕ : Check ball plug  
 19 - 25 N·m  
 (1.9 - 2.5 kg-m,  
 14 - 18 ft-lb)

Note: Ball plug for 1st & 2nd fork rod is longer than those for reverse shift fork rod and 3rd & 4th fork rod.

12. Apply gear oil to all sliding surfaces and check to see that shift rods operate correctly and gears are engaged smoothly.

## TRANSMISSION CASE AND REAR EXTENSION

### Transmission case

1. Clean mating surfaces of adapter plate and transmission case.

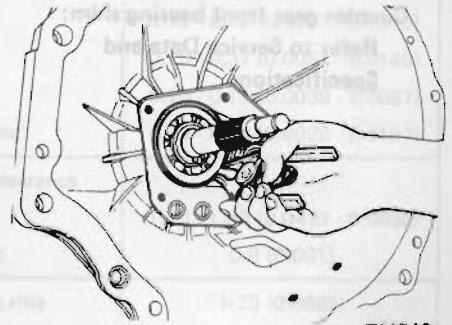
Apply sealant to mating surfaces of adapter plate and transmission case.

2. Slide transmission case onto adapter plate by lightly tapping with a soft hammer until case bears against adapter plate.

Carefully install main drive bearing and countershaft front bearing.

Make certain that mainshaft rotates freely.

3. Fit main drive bearing snap ring to groove in main drive bearing by using Expander.



TM340

Fig. MT-50 Fitting Main Drive Bearing Snap Ring

### Rear extension

1. Clean mating surfaces of adapter plate and rear extension.

Apply sealant to mating surfaces of adapter plate and rear extension.

2. With fork rods in their neutral positions, gradually slide rear extension onto adapter plate, making sure that striking lever engages with fork rod brackets correctly.

3. Install washers and through-bolts.

⊕ : Rear extension installation bolt  
 16 - 21 N·m  
 (1.6 - 2.1 kg-m,  
 12 - 15 ft-lb)

### Front cover assembly

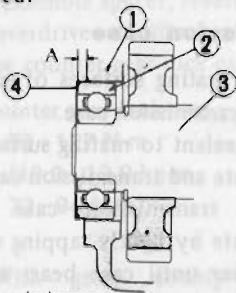
1. Select countershaft front bearing shim as follows:

(1) Measure height "A" from front end of transmission case to counter-

## Manual Transmission

shaft front bearing.

- (2) Select a shim of thickness "A" measured.



- 1 Transmission case
- 2 Counter gear front bearing
- 3 Counter gear
- 4 Shim

TM371

**Fig. MT-51 Selecting Counter Gear Front Bearing Shim**

**Counter gear front bearing shim:**  
Refer to Service Data and Specifications.

2. Clean mating surfaces of front cover and transmission case.

Apply grease to shim selected to retain it on front cover; install front cover to transmission case with gasket in place.

Install through-bolts with washers under them.

- ⊕ : Front cover to transmission  
16 - 21 N·m  
(1.6 - 2.1 kg·m,  
12 - 15 ft·lb)

Apply sealant to threads of through-bolts before installation.

3. Install speedometer pinion.
4. Install back-up lamp switch.

- ⊕ : Back-up lamp switch  
20 - 29 N·m  
(2.0 - 3.0 kg·m,  
14 - 22 ft·lb)

Be sure to apply locking sealer before installation.

5. Apply a light coat of multi-purpose grease to withdrawal lever, release bearing and bearing sleeve; install them on clutch housing.

After connecting them with holder spring, install dust cover on clutch housing.

6. Install control lever temporarily, and shift control lever through all gears to make sure that gears operate smoothly.

**Note:** Install drain plug and filler plug with sealant in place after installation and refilling with lubricant.

# SERVICE DATA AND SPECIFICATIONS

## GENERAL SPECIFICATIONS

Transmission model	FS5W71B	
Shift pattern		
Synchromesh type	1st to 4th Warner, 5th Servo	
Gear ratio		
1st	3.062	
2nd	1.858	
3rd	1.308	
4th	1.000	
5th	0.773	
Reverse	3.026	
Number of teeth		
Main drive gear	23	
Main gear		
1st	34	
2nd	28	
3rd	28	
5th	19	
Reverse	36	
Counter drive gear	29	
Counter gear		
1st	14	
2nd	19	
3rd	27	
5th	31	
Reverse	15	
Reverse idler gear	23	
Oil capacity	liter (US pt, Imp pt)	2.0 (4-1/4, 3-1/2)
Speedometer gear ratio	17/6, 19/6*	
Final gear ratio	3.545, 3.900*	
Tire size	195/70HR-14	

\*: 2 seater GL and 2+2 seater

## INSPECTION AND ADJUSTMENT

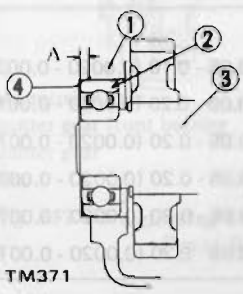
Unit: mm (in)

Transmission model	FS5W71B	
Gear backlash		
Main drive gear	0.05 - 0.10 (0.0020 - 0.0039)	
1st gear	0.05 - 0.20 (0.0020 - 0.0079)	
2nd gear	0.05 - 0.20 (0.0020 - 0.0079)	
3rd gear	0.05 - 0.20 (0.0020 - 0.0079)	
5th gear	0.05 - 0.20 (0.0020 - 0.0079)	
Reverse idler gear	0.05 - 0.20 (0.0020 - 0.0079)	
Gear end play		
1st gear	0.27 - 0.34 (0.0106 - 0.0134)	
2nd gear	0.12 - 0.19 (0.0047 - 0.0075)	
3rd gear	0.13 - 0.37 (0.0051 - 0.0146)	
5th gear	0.10 - 0.17 (0.0039 - 0.0067)	
Reverse idler gear	0.05 - 0.50 (0.0020 - 0.0197)	
Baulk ring to cone clearance		
Standard	1.20 - 1.60 (0.0472 - 0.0630)	
Allowable limit	0.8 (0.031)	
Main drive gear snap ring		
	1.73 (0.0681)	
	1.80 (0.0709)	
	1.87 (0.0736)	
	1.94 (0.0764)	
	2.01 (0.0791)	
	2.08 (0.0819)	
Mainshaft front snap ring		
	1.4 (0.055)	
	1.5 (0.059)	
	1.6 (0.063)	
Mainshaft rear bearing snap ring		
	1.1 (0.043)	
	1.2 (0.047)	
	1.3 (0.051)	
	1.4 (0.055)	
Counter drive gear snap ring		
	1.4 (0.055)	
	1.5 (0.059)	
	1.6 (0.063)	

Unit: mm (in)

## TIGHTENING TORQUE

Transmission model	FS5W71B	
Counter gear front bearing shim	"A"	Counter gear front bearing shim
	3.42 - 3.51 (0.1346 - 0.1382)	0.1 (0.004)
	3.32 - 3.41 (0.1307 - 0.1343)	0.2 (0.008)
	3.22 - 3.31 (0.1268 - 0.1303)	0.3 (0.012)
	3.12 - 3.21 (0.1228 - 0.1264)	0.4 (0.016)
	3.02 - 3.11 (0.1189 - 0.1224)	0.5 (0.020)
	2.92 - 3.01 (0.1150 - 0.1185)	0.6 (0.024)



TM371

- 1 Transmission case
- 2 Counter gear front bearing
- 3 Counter gear
- 4 Shim

## TRANSMISSION INSTALLATION

Unit	N·m	kg·m	ft·lb
Clutch operating cylinder	30 - 40	3.1 - 4.1	22 - 30
Transmission to engine	43 - 58	4.4 - 5.9	32 - 43
Engine rear plate to transmission	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7
Crossmember to body	31 - 42	3.2 - 4.3	23 - 31
Rear mounting insulator to crossmember	31 - 42	3.2 - 4.3	23 - 31
Rear mounting insulator to rear extension	31 - 42	3.2 - 4.3	23 - 31
Transmission case to rear extension	16 - 21	1.6 - 2.1	12 - 15
Starter motor to transmission	29 - 39	3.0 - 4.0	22 - 29

## GEAR ASSEMBLY


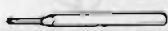
Unit	N·m	kg·m	ft·lb
Bearing retainer to adapter plate	16 - 23	1.6 - 2.3	12 - 17
Mainshaft lock nut	137 - 167	14.0 - 17.0	101 - 123
Counter gear lock nut	98 - 127	10.0 - 13.0	72 - 94
Rear extension to transmission case	16 - 21	1.6 - 2.1	12 - 15
Front cover to transmission case	16 - 21	1.6 - 2.1	12 - 15
Filler plug	25 - 34	2.5 - 3.5	18 - 25
Drain plug	25 - 34	2.5 - 3.5	18 - 25
Ball pin	20 - 34	2.0 - 3.5	14 - 25
Striking lever lock nut	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7
Check ball plug	19 - 25	1.9 - 2.5	14 - 18
Speedometer sleeve installation	3.9 - 4.9	0.4 - 0.5	2.9 - 3.6
Back-up lamp switch	20 - 29	2.0 - 3.0	14 - 22
Return spring plug	7.8 - 9.8	0.8 - 1.0	5.8 - 7.2




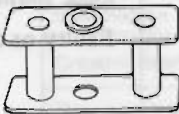


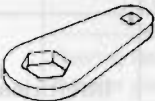
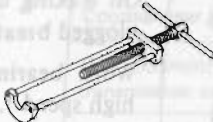



## TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
<p><b>Difficult to intermesh gears</b> Causes for difficult gear shifting are classified to troubles concerning control system and transmission. When gear shift lever is heavy and it is difficult to shift gears, clutch disengagement may also be unsmooth. First, make sure that clutch operates correctly, and inspect transmission.</p>	<p>Worn gears, shaft, and/or bearing. Insufficient operating stroke due to worn or loose sliding part. Faulty or damaged synchronizer.</p>	<p>Replace. Repair or replace. Replace.</p>
<p><b>Gear slips out of mesh.</b> In most cases, this trouble occurs, when interlock ball, check ball, and/or spring is worn or weakened, or when control system is faulty. In this case, the trouble cannot be corrected by replacing gears, and therefore, trouble shooting must be carried out carefully. It should also be noted that gear slips out of mesh due to vibration generated by weakened front and rear engine mounts.</p>	<p>Worn interlock ball. Worn check ball and/or weakened or broken spring. Worn fork rod ball groove. Worn or damaged bearing. Worn or damaged gear.</p>	<p>Replace. Replace. Replace. Replace. Replace.</p>
<p><b>Noise</b> When noise occurs with engine idling and ceases when clutch is disengaged, or when noise occurs while shifting gears, it is an indication that the noise is from transmission.</p> <p>( Transmission may rattle during engine idling. Check air-fuel mixture and ignition timing. After above procedure, readjust engine idling. )</p>	<p>Insufficient or improper lubricant. Oil leaking due to faulty oil seal or sealant, clogged breather, etc. Worn bearing (High humming occurs at a high speed.). Damaged bearing (Cyclic knocking sound occurs also at a low speed.). Worn spline. Worn bushing.</p>	<p>Add oil or replace with designated oil. Clean or replace. Replace. Replace. Replace. Replace.</p>

## SPECIAL SERVICE TOOLS

Tool number (Kent-Moore No.)	Tool name
ST23810001 (J25693)	Setting plate adapter 
KV31100300 ( - )	Fork rod pin punch 

# Manual Transmission

Tool number (Kent-Moore No.)	Tool name
ST30031000 (J25733-1)	Bearing puller 
KV31100401 ( - )	Transmission press stand 
ST23860000 ( - )	Counter gear drift 
ST22360002 (J25679)	Bearing drift 
ST22520000 ( - )	Wrench 
KV32101330 ( - )	Bearing puller 
ST22350000 (J25678)	Mainshaft bearing drift 
ST23800000 (J25691)	Transmission adapter 
KV38104010 ( - )	Oil seal drift 
ST35360000 ( - )	Oil seal drift 