

DATSUN

Model S110 Series

SECTION **MT**

MANUAL TRANSMISSION

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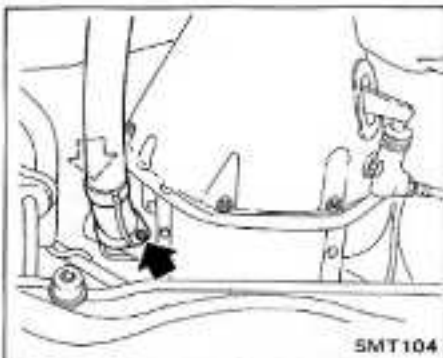
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MT

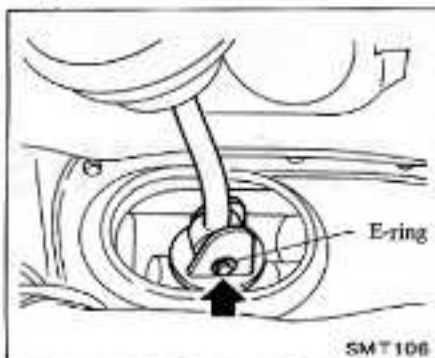
REMOVAL AND INSTALLATION

REMOVAL

1. Disconnect battery ground cable.
2. Remove accelerator linkage. Refer to Accelerator Linkage (Section FE) for removal.
3. Jack up car and support its weight on safety stands. Use a hydraulic hoist or open pit, if available.
Make sure that safety is insured.
4. Disconnect front exhaust tube.



5-speed



9. Remove propeller shaft. Refer to Propeller Shaft (Section PD) for removal.

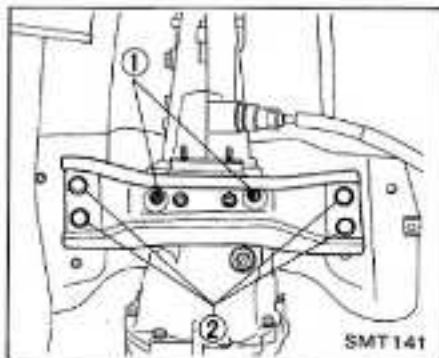
Plug up opening in rear extension to prevent oil from flowing out.

10. Remove clutch operating cylinder.
11. Support engine by placing a jack under oil pan with a wooden block used between oil pan and jack.

CAUTION:

Do not place jack under oil pan drain plug.

12. Support transmission with a transmission jack.
13. Remove rear engine mounting insulator securing nuts ① and member securing bolts ②.



14. Remove starter motor.
15. Remove bolts securing transmission to engine.

16. Then, support engine and transmission with jacks, and slide transmission away from engine and remove from car.

CAUTION:

Take care in dismounting transmission not to strike any adjacent part and main drive gear.

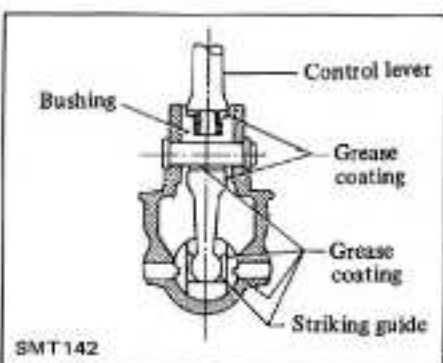
INSTALLATION

Install transmission in reverse order of removal, paying attention to 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. 5-speed for Europe

When installing control lever, be sure to apply multi-purpose grease to sliding parts as shown below.

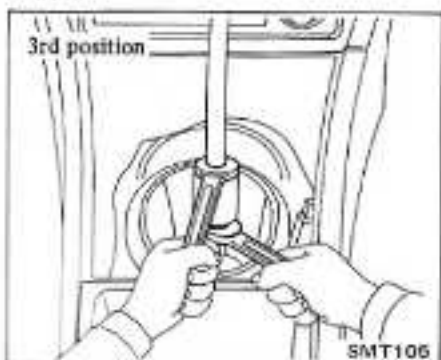


4. Remove filler plug and fill transmission with recommended gear oil to the level of the plug hole.

Oil capacity:

- 4-speed 1.5 liters
(2-5/8 Imp pt)
- 5-speed 2.0 liters
(3-1/2 Imp pt)

4-speed



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

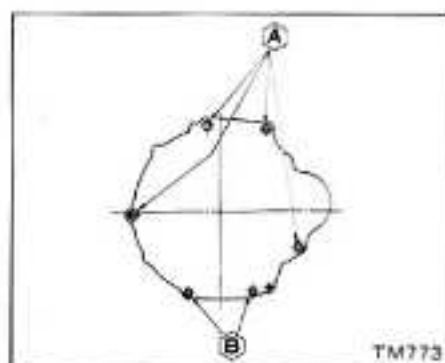
⑤ : Filler plug
25 - 34 N·m
(2.5 - 3.5 kg-m,
18 - 25 ft-lb)

6. Tighten bolts securing transmission to engine.

⑤ : ④ : 4-speed
39 - 47 N·m
(4.0 - 4.8 kg-m,
29 - 35 ft-lb)

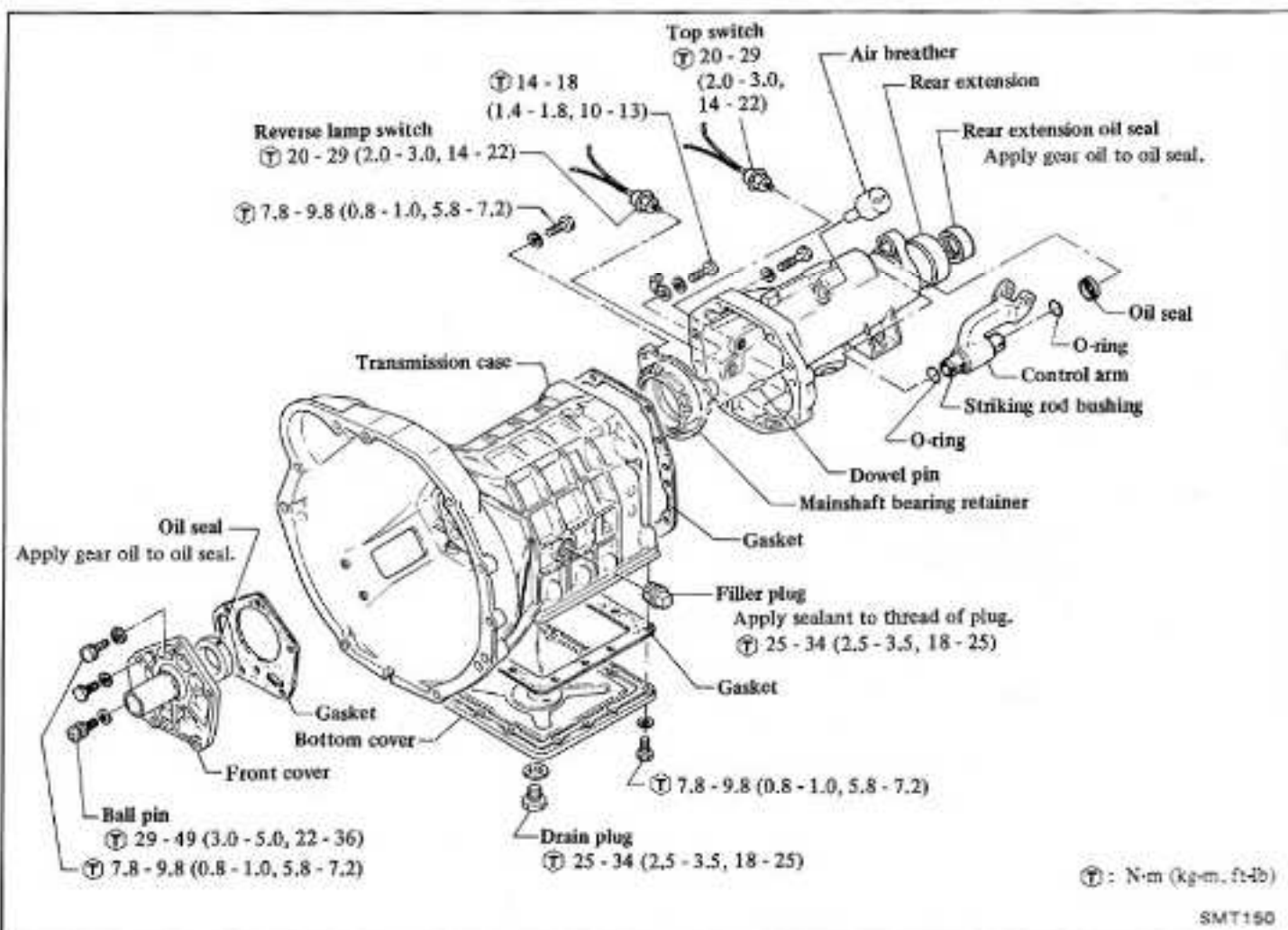
5-speed
36 - 49 N·m
(3.7 - 5.0 kg-m,
27 - 36 ft-lb)

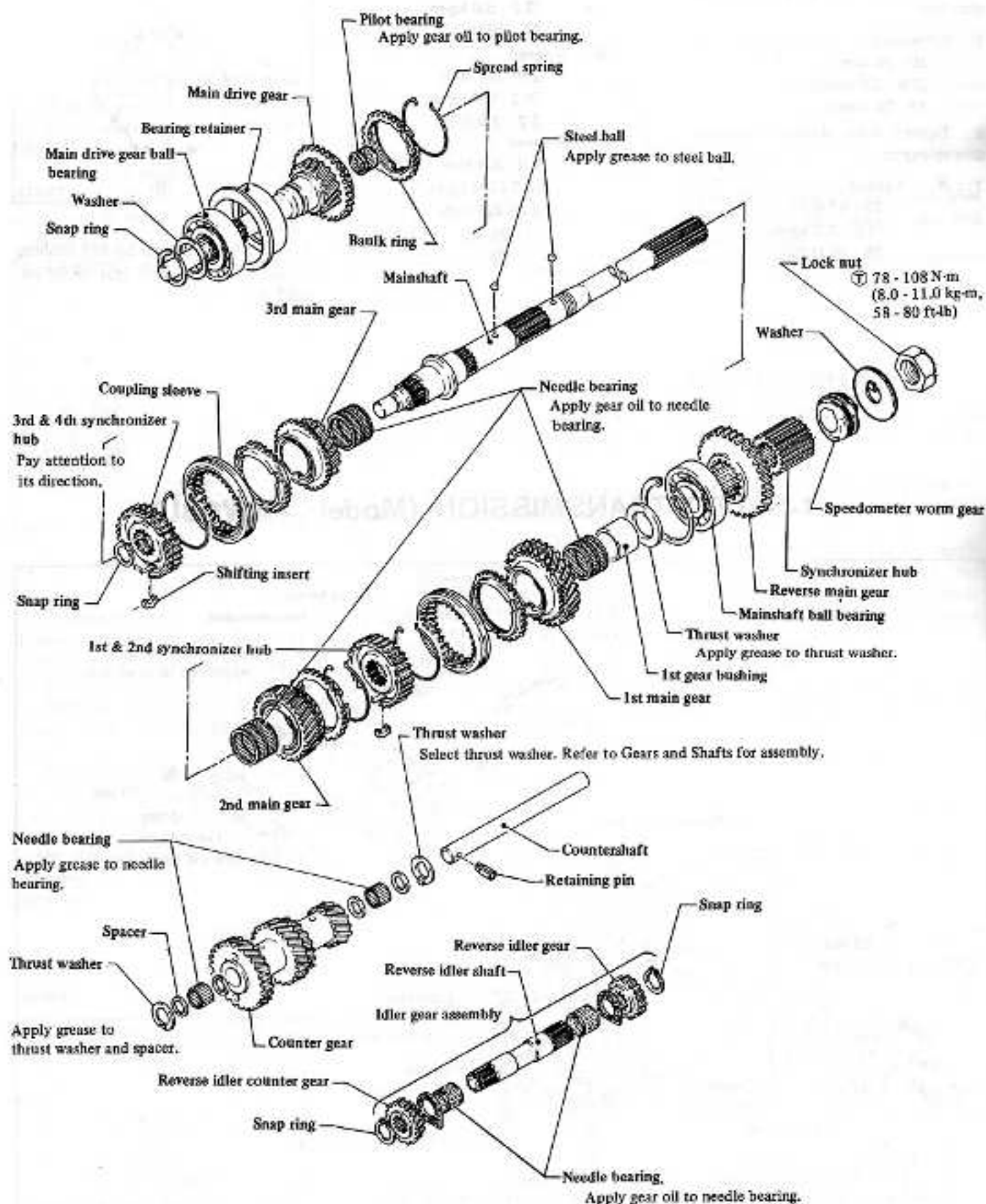
⑥ : 4-speed
2.9 - 3.9 N·m
(0.3 - 0.4 kg-m,
2.2 - 2.9 ft-lb)
5-speed
2.9 - 3.9 N·m
(0.3 - 0.4 kg-m,
2.2 - 2.9 ft-lb)



7. Lubricate oil seal lip and bushing on rear extension with gear oil for initial lubrication.

4-SPEED TRANSMISSION (Model : F4W63L)

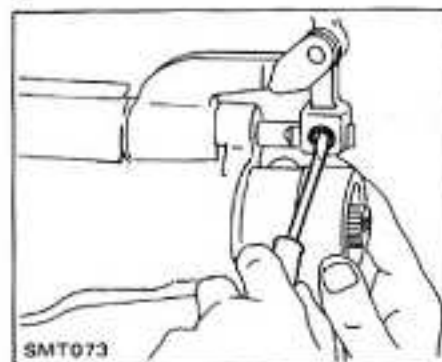




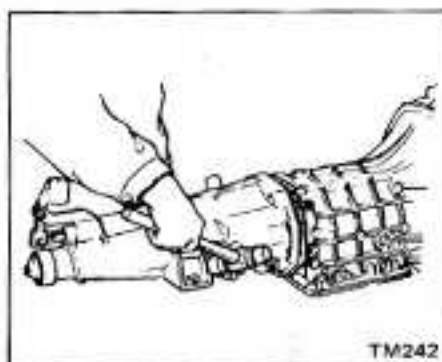
REAR EXTENSION

DISASSEMBLY

1. Wipe off dirt and grease.
2. Drain oil.
3. Remove reverse (back-up) lamp switch.
4. Move gear to Neutral position, then remove E-ring and striking rod pin.



5. Remove rear extension.



6. Remove striking rod.

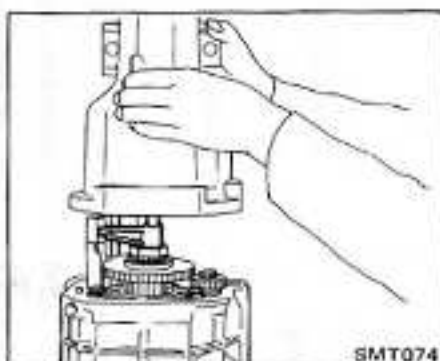
INSPECTION

1. Clean with solvent and check for cracks or cavities by means of dyeing test.
2. Check mating surface of rear extension for small nicks, projection or sealant.
3. If rear extension bushing is worn or cracked, replace it as an assembly of bushing and rear extension housing.

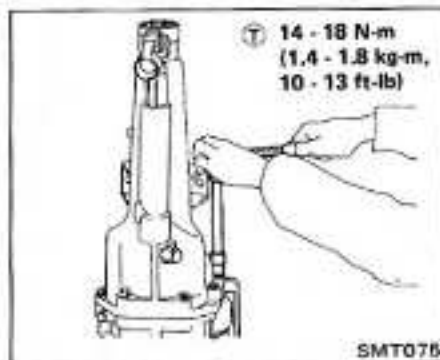
ASSEMBLY

1. Stand transmission case assembly on wooden plates of more than 20 mm (0.79 in) thick.

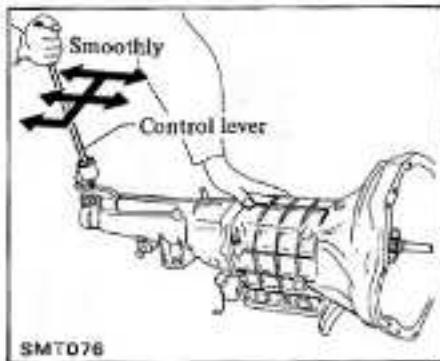
2. Clean mating surfaces of transmission case and rear extension.
3. Install new gasket.
4. Align striking lever with shift rod brackets, then install rear extension.



5. Apply sealant to through-bolts, then tighten rear extension securing bolts.



6. Align striking lever with control lever bracket then install striking rod pin and E-ring.
7. Make sure that gears operate smoothly.



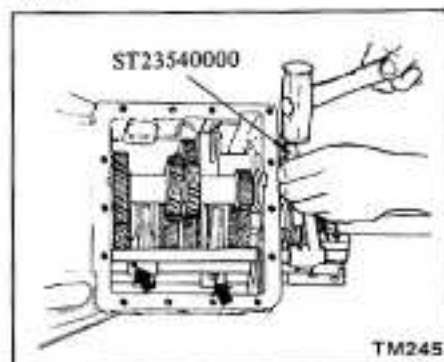
8. Install drain plug.

⊕: 25 - 34 N-m
(2.5 - 3.5 kg-m,
18 - 25 ft-lb)

FORKS AND FORK RODS

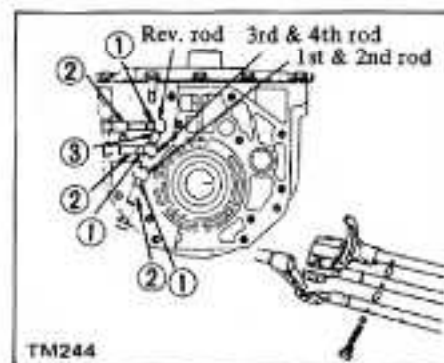
DISASSEMBLY

1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove bottom over.
3. Drive out retaining pins and remove check ball plugs and check springs.



4. Remove interlock plungers and check balls and then remove fork rods and forks.

Be careful not to lose three check balls and two (2) interlock plungers.

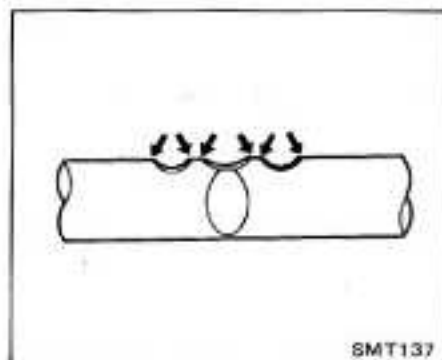


- 1 Check ball
- 2 Check ball spring
- 3 Interlock plunger

INSPECTION

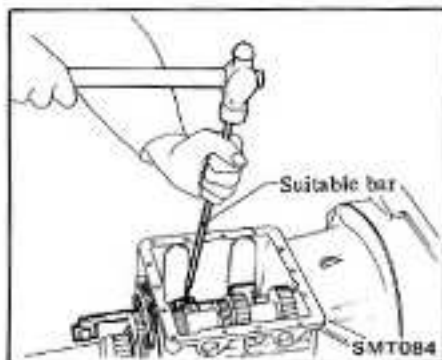
Clean with solvent and check for wear, scratches, projection, damage or

other faulty conditions. Replace any part which is worn or damaged.

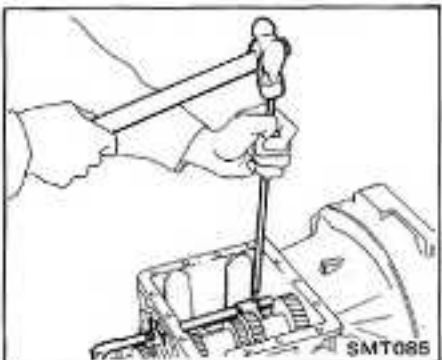


ASSEMBLY

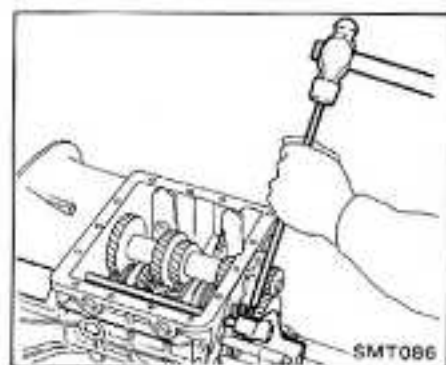
1. Install 1st & 2nd and 3rd & 4th shift forks and 1st & 2nd fork rod, then secure with retaining pin.



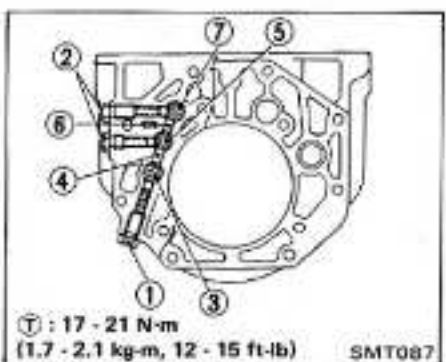
2. Install interlock plunger.
3. Install 3rd & 4th fork rod, then secure with retaining pin.



4. Install interlock plunger.
5. Install reverse shift fork and fork rod, then secure with retaining pin.



6. Install check balls and check springs.
7. Apply locking sealer to check ball plugs and install them.



- 1 Check ball plug
- 2 Check ball plug
- 3 1st & 2nd fork rod
- 4 Interlock plunger
- 5 3rd & 4th fork rod
- 6 Interlock plunger
- 7 Rev. fork rod

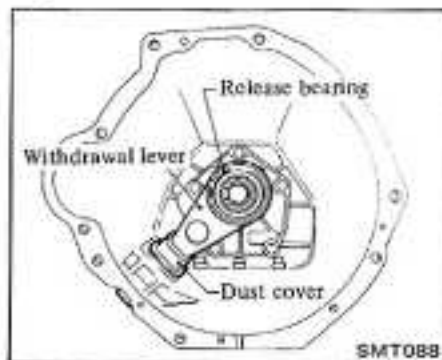
- a. Check ball plug for 3rd & 4th fork rod is shorter than those for reverse fork rod and 1st & 2nd fork rod.
- b. To insure that interlock plunger is installed properly, slide 3rd & 4th fork rod and operate the other fork rod. Make sure that the gear except 3rd or 4th gear does not mesh.

8. Install bottom cover.
9. Install rear extension. Refer to Rear Extension for assembly.

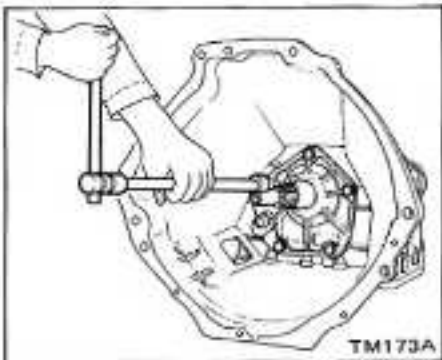
TRANSMISSION CASE

DISASSEMBLY

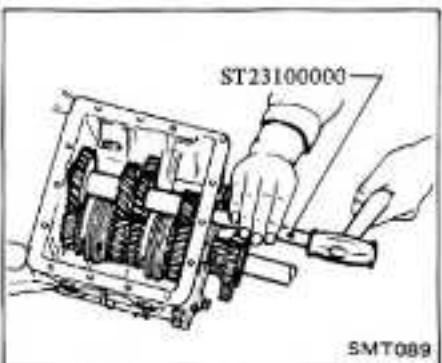
1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove dust cover, release bearing and withdrawal lever.



3. Remove front cover and gasket.



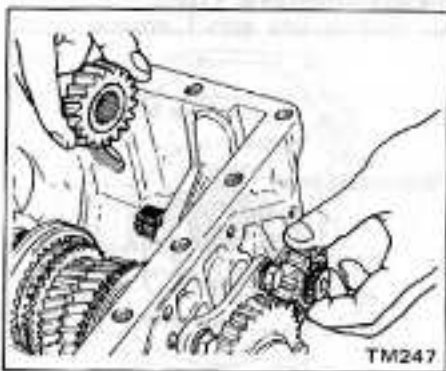
4. Remove forks and fork rods. Refer to Forks and Fork Rods for disassembly.
5. Measure gear end plays. Refer to Gears and Shafts for inspection.
6. Mesh 1st and reverse gear. Release stating on mainshaft nut and remove nut and speedometer drive gear.
7. Push out countershaft. Take care not to drop needle bearing into place.



8. Remove counter gear together with needle bearings and washers from transmission case.

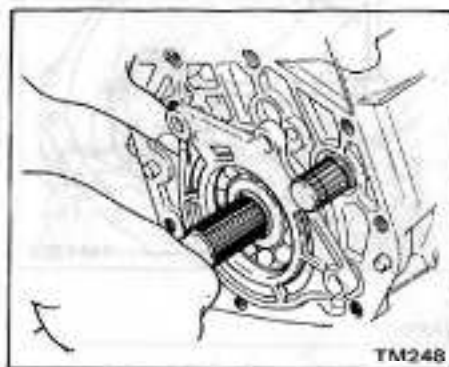
Make sure that washers used between counter gear and transmission case are removed.

9. Remove reverse idler counter gear. Withdraw idler gear shaft.



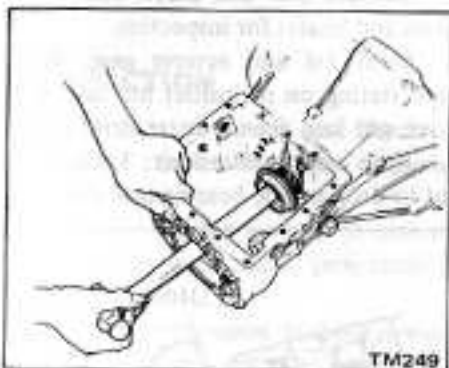
TM247

10. Remove bolts securing mainshaft bearing retainer, withdraw mainshaft assembly, then take out baulk ring and needle bearing.



TM248

11. Drive out main drive gear.



TM249

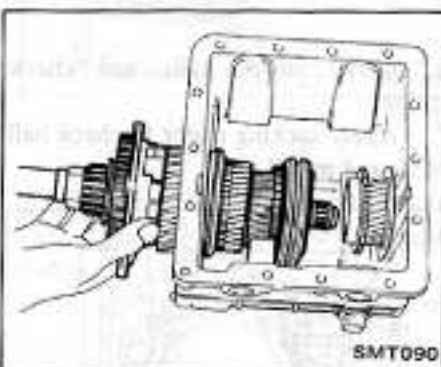
INSPECTION

1. Clean with solvent and check for cracks or pits by means of dyeing test.

2. Check mating surface of transmission case for small nicks, projection or sealant.

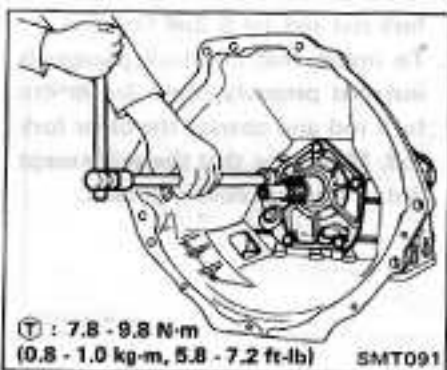
ASSEMBLY

1. Install main drive gear.
2. Apply gear oil to pilot bearing, then install it in place.
3. Install mainshaft assembly and baulk ring.

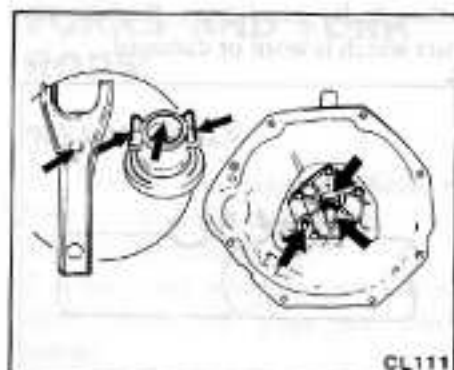


SMT090

4. Install reverse idler shaft. Refer to Reverse Idler Shaft for assembly.
5. Install counter gear. Refer to Counter Gear for assembly.
6. Install forks and fork rods. Refer to Forks and Fork rods for assembly.
7. Clean mating surfaces of front cover and transmission case.
8. Lubricate seal lip and main drive shaft with gear oil, then install new gasket and front cover.
9. Apply sealant to threads of through-bolts and tighten them to transmission case.


T : 7.8 - 9.8 N·m
(0.8 - 1.0 kg-m, 5.8 - 7.2 ft-lb) SMT091

10. Apply a light coat of multipurpose grease.



CL111

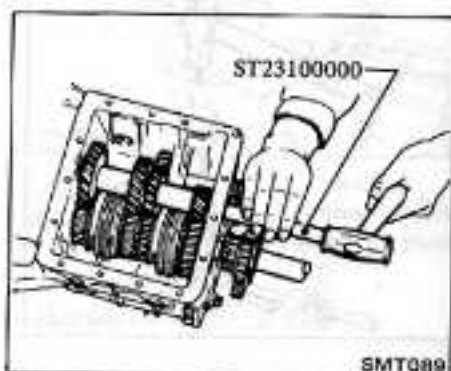
11. Assemble rear extension. Refer to Rear Extension for assembly.

GEARS AND SHAFTS

DISASSEMBLY

Counter gear

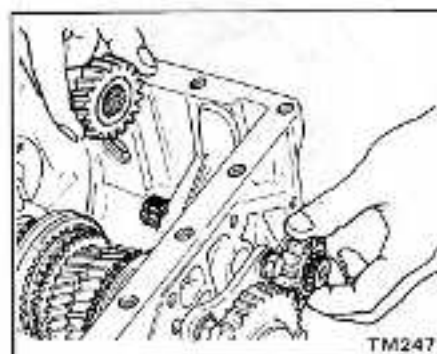
1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove dust cover, release bearing and withdrawal lever.
3. Remove front cover and gasket.
4. Remove forks and fork rods. Refer to Forks and Fork rods for disassembly.
5. Measure gear end plays. Refer to Gears and Shafts for inspection.
6. Mesh 1st and reverse gear. Flatten lock washer and loosen nut.
7. Push out countershaft. Take care not to drop needle bearing into place.



SMT089

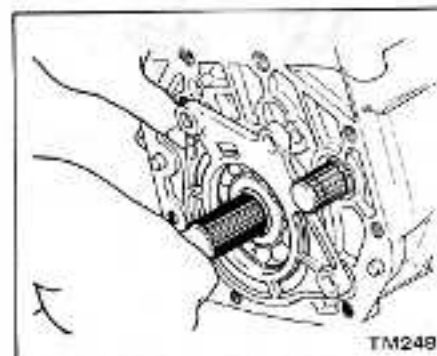
8. Remove counter gear together with needle bearings and washers from transmission case.

9. Remove reverse idler counter gear. Withdraw idler gear shaft.

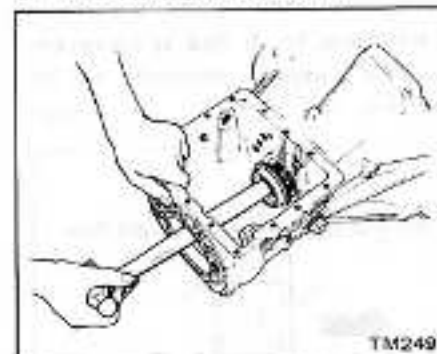


Main drive gear

1. Remove bolts securing mainshaft bearing retainer, withdraw mainshaft assembly, then take out baulk ring and needle bearing.

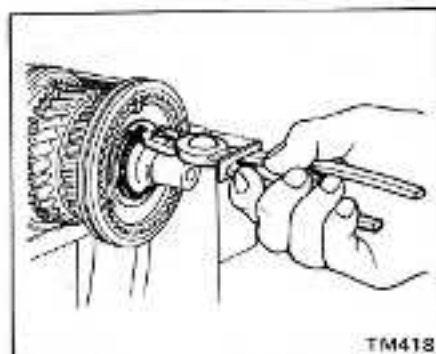


2. Drive out main drive gear.



3rd main and reverse gear

1. Remove snap ring, 3rd & 4th synchronizer assembly with 3rd gear and needle bearing.

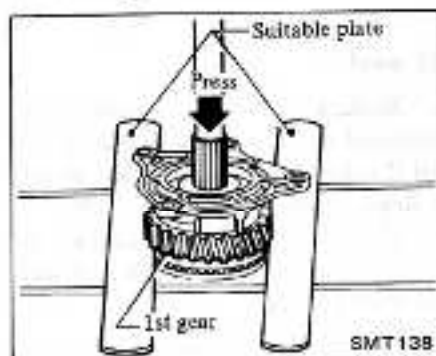


2. Remove lock nut, speedometer drive gear, steel ball and take out reverse gear and reverse gear hub.

Take care not to lose steel ball retaining speedometer drive gear.

1st and 2nd main gear

1. Press out 1st gear together with ball bearing and retainer.



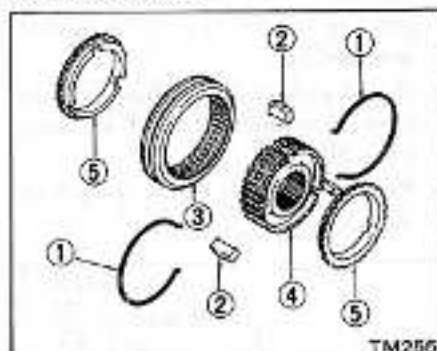
CAUTION:

- Do not attach this tool to 2nd gear. This may damage 1st gear main shaft bushing.
- Be careful not to remove needle bearing together with 1st bearing; otherwise, needle bearing may interfere with steel ball, resulting in damaged bearing.

2. Remove needle bearing, bushing, 1st & 2nd synchronizer, 2nd gear and needle bearing.

Synchronizers

- Remove spread springs (1), and take out shifting inserts (2).
- Separate coupling sleeve (3) from synchro-hub (4).



- | | |
|-------------------|---------------|
| 1 Spread spring | 4 Synchro hub |
| 2 Shifting insert | 5 Baulk ring |
| 3 Coupling sleeve | |

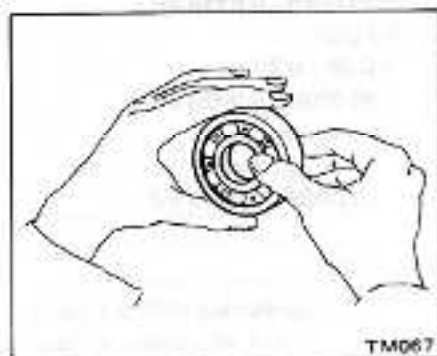
INSPECTION

Bearings

1. Thoroughly clean bearings and dry with compressed air.

CAUTION:

Do not allow bearing to spin. Because it will damage race and balls, turn them slowly by hand.



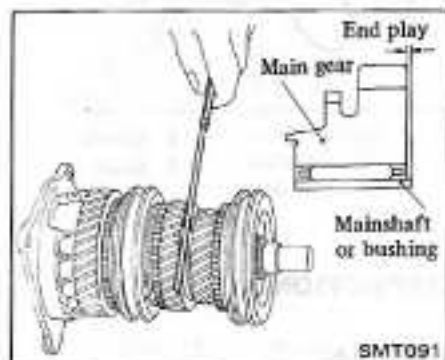
- When race and ball surfaces are worn or rough, or when balls are out-of-round or rough, replace bearing.
- Replace needle bearing if worn or damaged.

Gears and shafts

- Check all gears for excessive wear, chips or cracks; replace as required.
- 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

0.26 - 0.36 mm
(0.0102 - 0.0142 in)

2nd gear

0.20 - 0.30 mm
(0.0079 - 0.0118 in)

3rd gear

0.05 - 0.20 mm
(0.0020 - 0.0079 in)

Reverse idler gear

0.10 - 0.30 mm
(0.0039 - 0.0118 in)

Baulk ring

- Replace baulk ring if found to be deformed, cracked or otherwise damaged excessively.
- Place baulk ring in position on gear cone. While holding baulk ring against gear as far as it will go, measure clearance between baulk ring and outer gear.

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

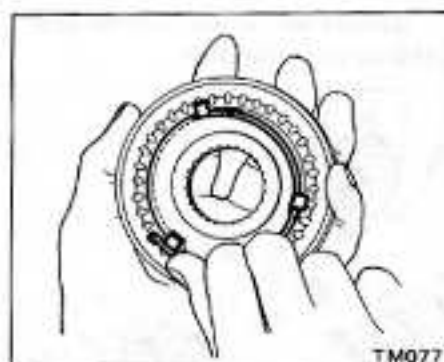
Baulk ring to gear clearance:

Standard

1.20 - 1.50 mm
(0.0472 - 0.0591 in)

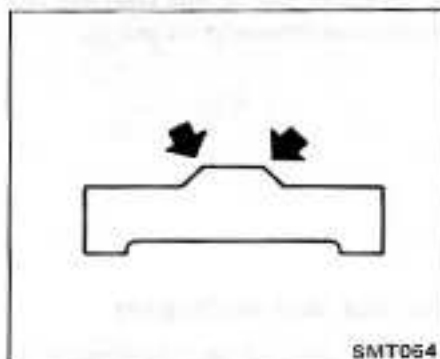
Wear limit

Less than 0.8 mm (0.031 in)

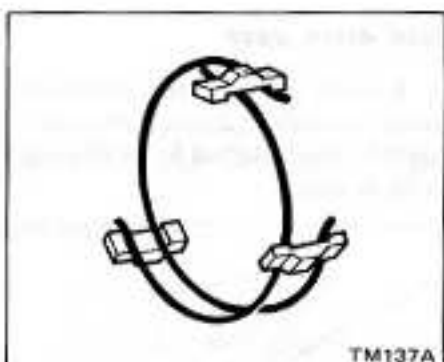


Shifting insert

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



Be careful not to hook front and rear ends of spread spring to the same insert.



Oil seal

- Replace oil seal if sealing lip is deformed or cracked. Also discard oil seal if spring is out of position. Refer to Replacement of Oil Seals.
- Check the oil seal lip contacting with shaft; if necessary replace oil seal and shaft as a set.

1st and 2nd main gear

- Assemble needle bearing, 2nd gear, 2nd gear baulk ring, 1st & 2nd synchronizer assembly and 1st gear.

Assemble 1st & 2nd synchronizer assembly, paying attention to its direction.

ASSEMBLY

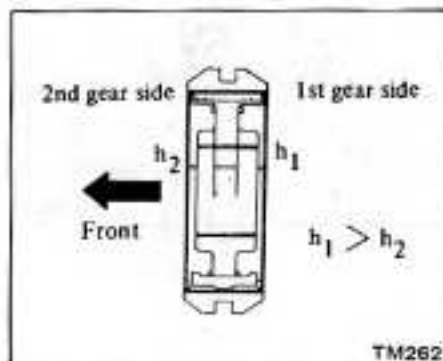
Synchronizer

- Place synchro-hub into coupling sleeve.

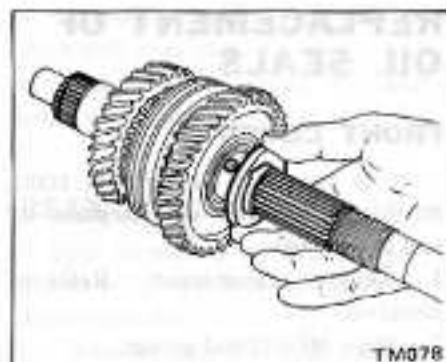
Be sure that hub and sleeve operates smoothly and correctly by hand.

- Fit shifting insert in three (3) grooves in synchro-hub.
- Install spread spring to inserts so that insert is securely attached to inner side of coupling sleeve.

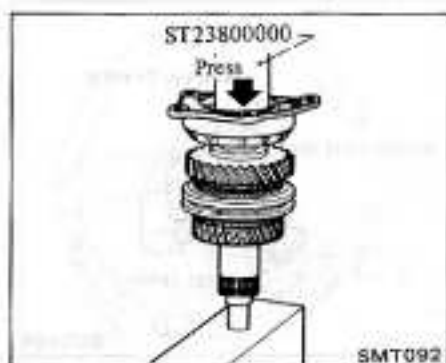
Install the other spread spring on the opposite side of synchro-hub.



- Apply grease to steel ball and thrust washer then install them.

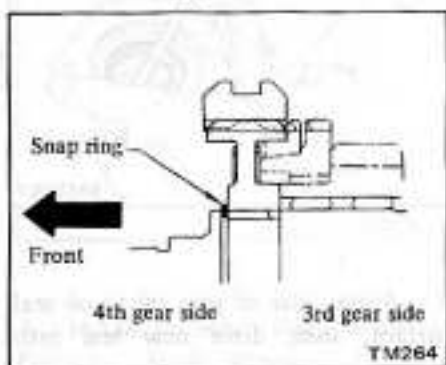


3. Press main shaft bearing.



3rd main gear

1. Install 3rd gear needle roller bearing, 3rd baulk ring, 3rd & 4th speed synchronizer assembly.
2. Fit thicker snap ring that will eliminate end play.

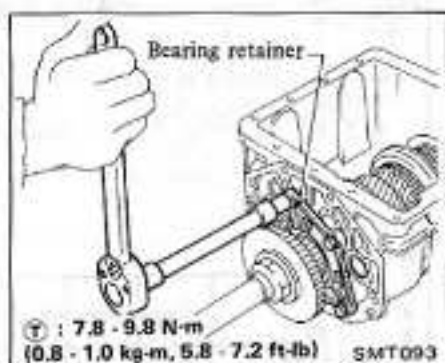


Mainshaft front snap ring:
Refer to S.D.S.

Reverse main gear

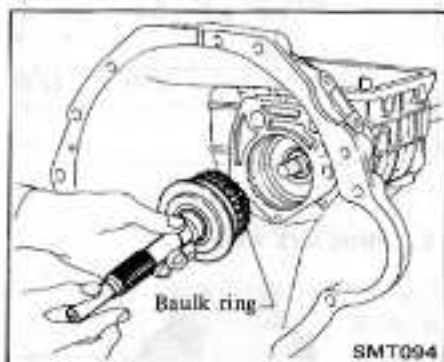
1. Install reverse hub, reverse main gear, steel ball and speedometer drive gear. Install mainshaft lock nut and lock washer and tighten it temporarily.

2. Insert mainshaft assembly and baulk ring and secure mainshaft bearing retainer bolts.



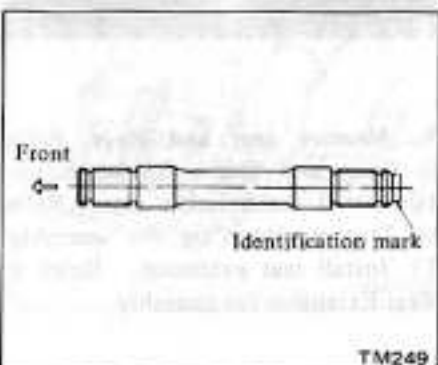
Main drive gear

1. Apply gear oil to pilot bearing and install it to main drive gear.
2. Insert main drive gear with pilot bearing and baulk ring.



Reverse idler gear

1. Insert reverse idler shaft with identification mark facing toward rear.



2. Assemble thrust washer (5) and reverse idler gear (6) (helical gear). Seat snap ring (7).
3. Insert a 0.1 mm (0.004 in) thick-

ness gauge between helical gear (6) and thrust washer (5).

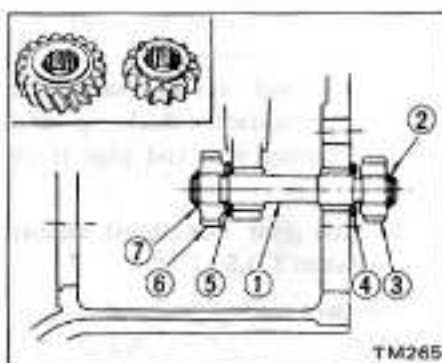
4. With shaft (1) pushed fully toward rear, install thrust washer (4) and spur gear (3); then, fit snap ring (2) of proper thickness so that specified end play is obtained for reverse idler gear.

Reverse idler gear snap ring:

Refer to S.D.S.

Standard reverse idler gear end play:

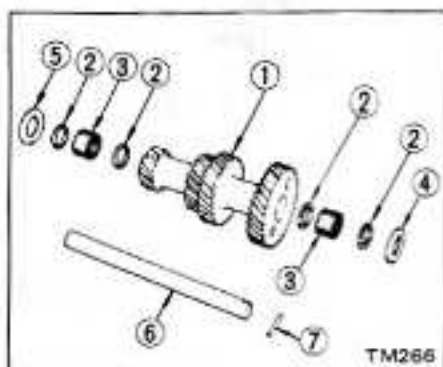
0.10 - 0.30 mm
(0.0039 - 0.0118 in)



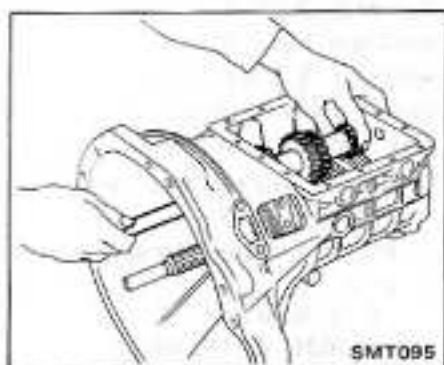
Install thrust washers (4) and (5) so that grooved sides are facing toward gears.

Counter gear

1. Apply grease to all needle roller bearings and spacers.
2. Install spacers (2) to counter gear, then assemble needle bearings in counter gear.
 - a. Use 42 needle roller bearings (21 to on each side).
 - b. After attaching needle roller bearing in place, apply grease thickly so that bearings will not come off.
3. Install spacers (2).
4. Insert Tool ST23100000 into counter gear.



5. Install counter gear assembly with washers and insert countershaft.

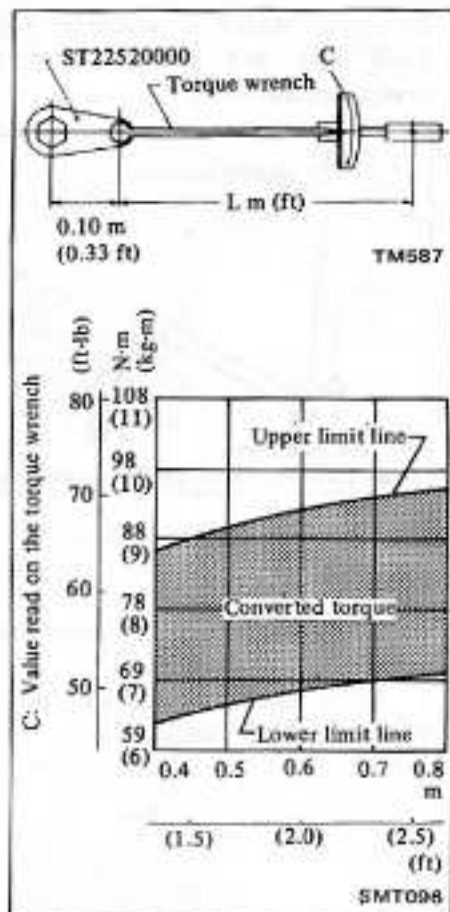


6. Select and install rear thrust washer of suitable thickness until proper counter gear end play is obtained.

Counter gear rear thrust washer:
Refer to S.D.S.

Standard counter gear end play:
0.05 - 0.15 mm
(0.0020 - 0.0059 in)

7. Mesh 1st and reverse gear, then tighten mainshaft nut.



8. Bend lock washer.



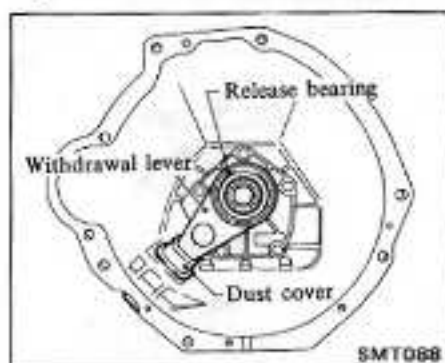
9. Measure gear end plays. Refer to Gears and Shafts for inspection.
10. Install transmission case. Refer to Transmission Case for assembly.
11. Install rear extension. Refer to Rear Extension for assembly.

REPLACEMENT OF OIL SEALS

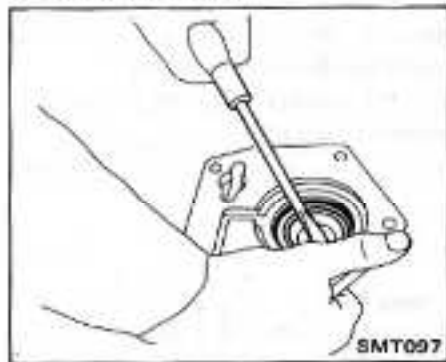
FRONT COVER

It is necessary to remove transmission unit from car. Replace oil seal as follows:

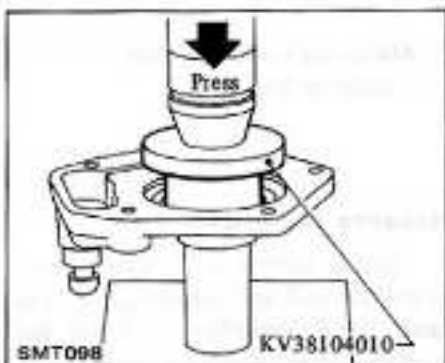
1. Remove transmission. Refer to Removal.
2. Wipe off dirt and grease.
3. Drain oil.
4. Remove dust cover, release bearing and withdrawal lever.



5. Remove front cover.
6. Remove oil seal.



7. Apply coat of gear oil to oil seal surface, then drive new seal into place.



Conversion of torque

Mainshaft nut should be tightened to specified torque with Tool ST22520000. When doing so, the amount of torque to be read on wrench needle should be modified according to the following chart.

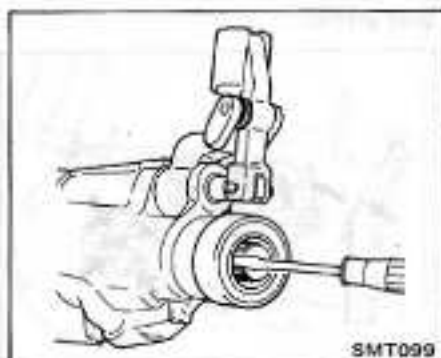
78 - 108 N·m
(8.0 - 11.0 kg-m,
58 - 80 ft-lb)

8. Lubricate seal lip and main drive shaft with gear oil.
9. Install front cover in reverse order of removal.

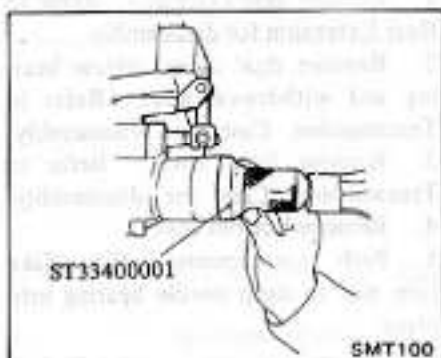
REAR EXTENSION

Rear extension oil seal can be replaced without removing transmission. Replace oil seal as follows:

1. Remove propeller shaft. Refer to Propeller Shaft (Section PD) for removal.
2. Remove oil seal.



3. Apply coat of gear oil to oil seal surface, then drive new seal into place.

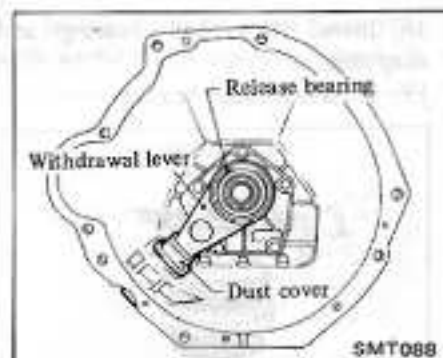


4. Install propeller shaft. Refer to Propeller Shaft (Section PD) for installation.

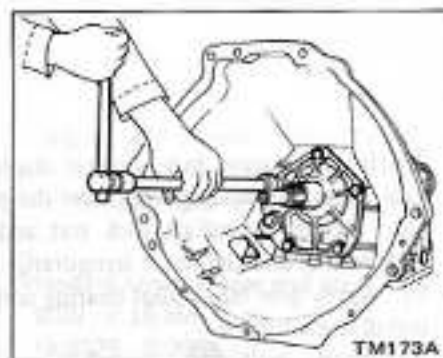
REPLACEMENT OF BEARINGS

MAIN DRIVE AND MAINSHAFT

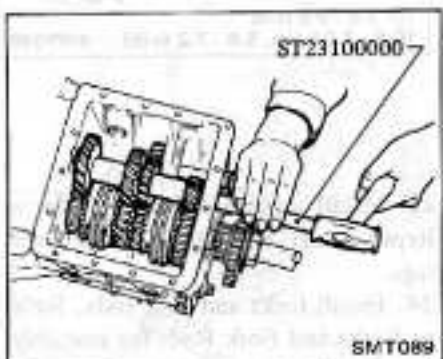
1. Remove dust cover, release bearing and withdrawal lever.



2. Remove front cover and gasket.

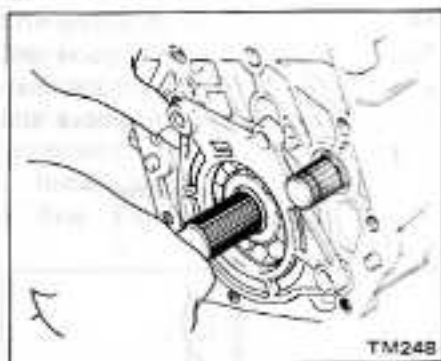


3. Remove rear extension. Refer to Rear Extension for disassembly.
4. Remove bottom cover.
5. Remove forks and fork rods. Refer to Forks and Fork Rods for disassembly.
6. Mesh 1st and reverse gear. Flatten lock washer and loosen nut.
7. Push out countershaft. Take care not to drop needle bearing into place.

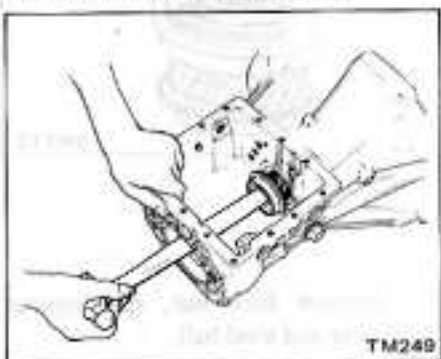


8. Remove counter gear together with needle bearing and washers from transmission case.
9. Remove bolts securing mainshaft bearing retainer, withdraw mainshaft assembly, then take out baulk ring and

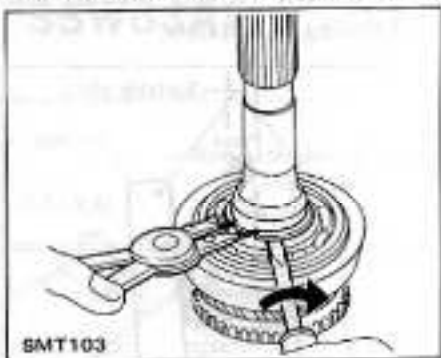
needle bearing.



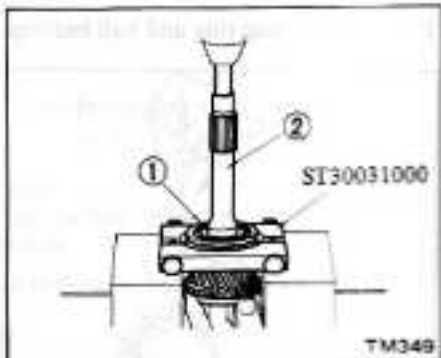
10. Drive out main drive gear.



11. Remove snap ring and spacer.



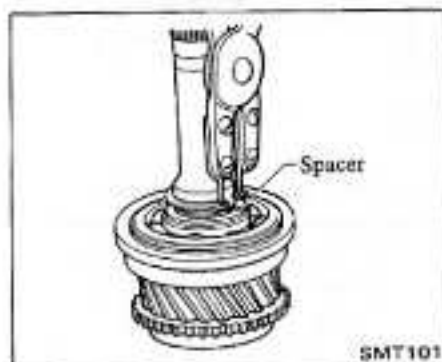
12. Press out main drive shaft bearing with bearing housing.



- 1 Main drive bearing
- 2 Main drive gear

13. Replace bearing with new bearing.
14. Press new main drive bearing with bearing housing. Install spacer and snap ring so that there exists a minimum clearance between groove and end face of spacer.

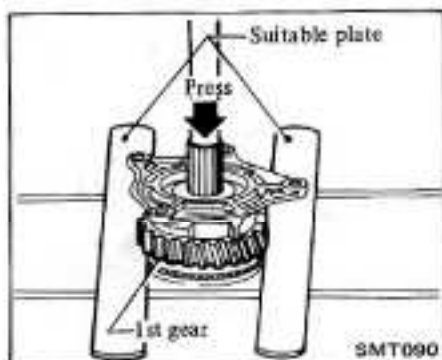
Main drive gear snap ring:
Refer to S.D.S.



15. Remove lock nut, speedometer drive gear and steel ball.

Take care not to lose steel ball retaining speedometer drive gear.

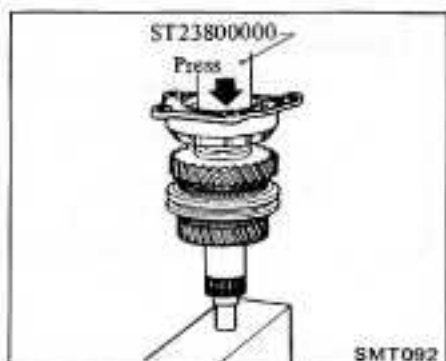
16. Press out 1st gear together with ball bearing and retainer.



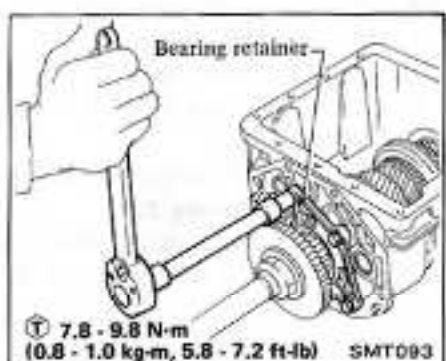
17. Remove snap ring and ball bearing.



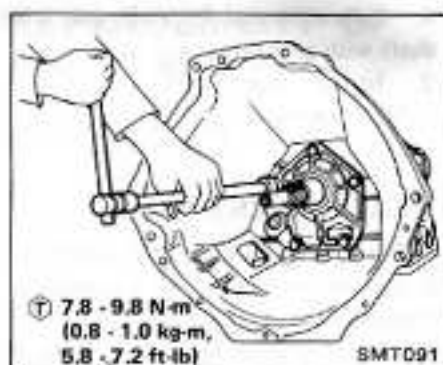
18. Install new ball bearing and snap ring.
19. Press mainshaft bearing.



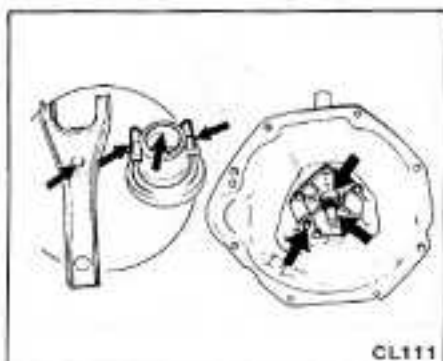
20. Install reverse hub, reverse main gear, steel ball and speedometer drive gear. Install mainshaft lock nut and lock washer and tighten it temporarily.
21. Apply gear oil to pilot bearing and install it mainshaft.
22. Insert mainshaft assembly and baulk ring and tighten mainshaft bearing retainer bolts.



23. Install counter gear. Refer to Replacement of Counter Gear Bearings.
24. Install forks and fork rods. Refer to Forks and Fork Rods for assembly.
25. Install bottom cover.
26. Install rear extension. Refer to Rear Extension for assembly.
27. Clean mating surfaces of front cover and transmission case, then install new gasket and front cover.
28. Apply sealant to threads of through-bolts and tighten them to transmission case.

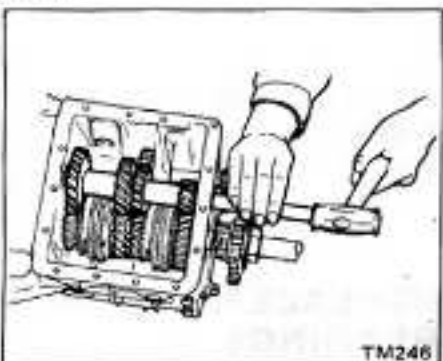


29. Apply a light coat of multi-purpose grease.



COUNTER GEAR

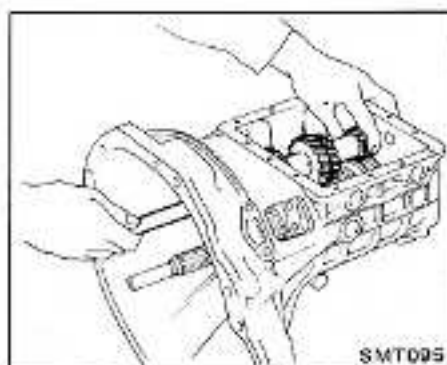
1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove dust cover, release bearing and withdrawal lever. Refer to Transmission Case for disassembly.
3. Remove front cover. Refer to Transmission Case for disassembly.
4. Remove bottom cover.
5. Push out countershaft. Take care not to drop needle bearing into place.



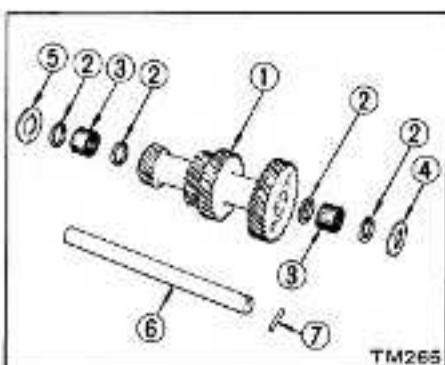
6. Remove counter gear together with needle bearings and washers from transmission case.

7. Apply grease to all new needle roller bearings and spacers.
8. Install spacer ② to new counter gear, then assemble needle bearings in counter gear.
 - a. Use 42 needle roller bearings (21 on each side)
 - b. After attaching needle roller bearing in place, generously apply grease so that bearings will not come off.
9. Install spacer ②.
10. Insert Tool ST23100000 into cover gear.

11. Install counter gear assembly with washers and insert countershaft.



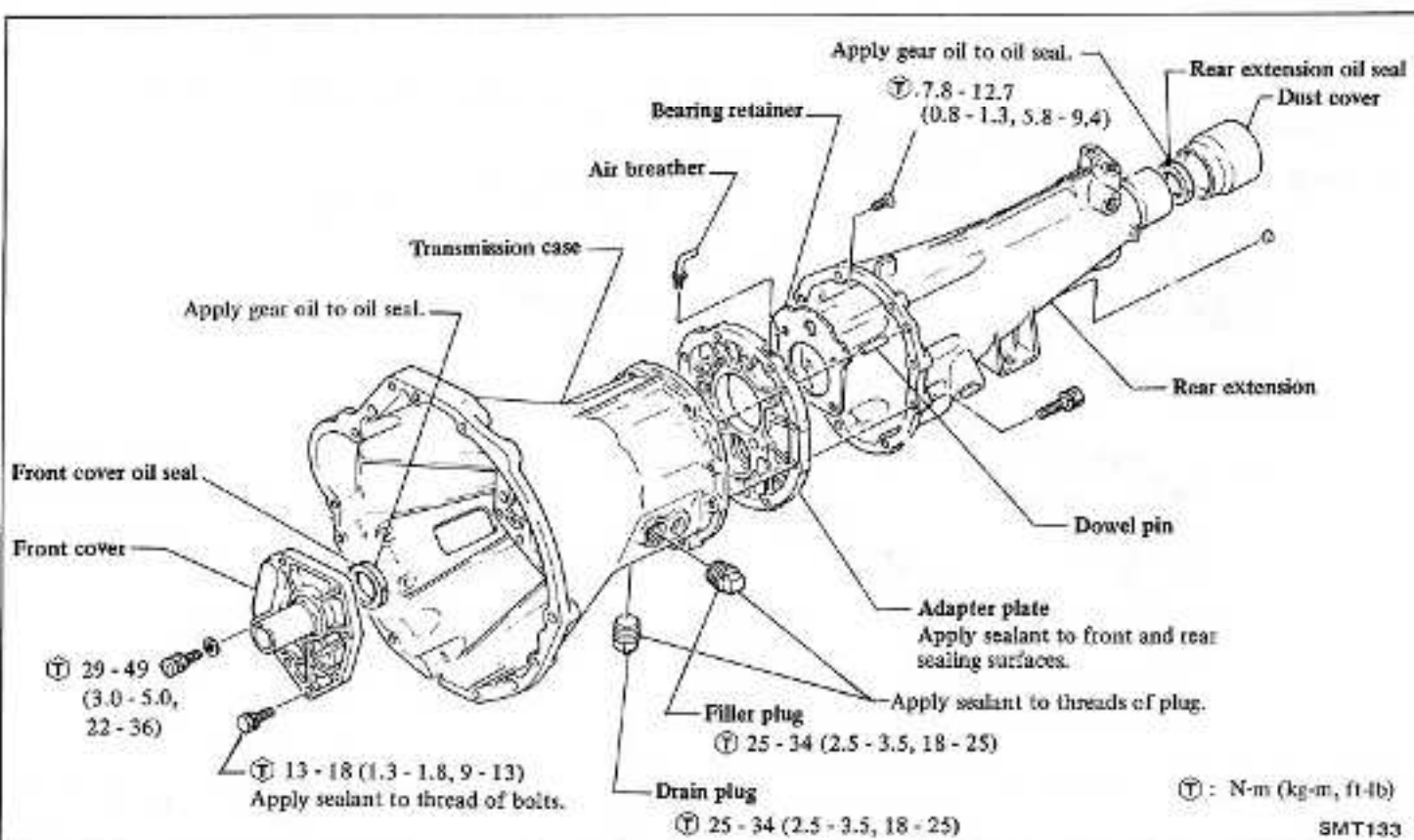
13. Install bottom cover.
14. Install front cover. Refer to Transmission Case for assembly.
15. Install withdrawal lever, release bearing and dust cover. Refer to Transmission Case for assembly.
16. Install rear extension. Refer to Rear Extension for assembly.

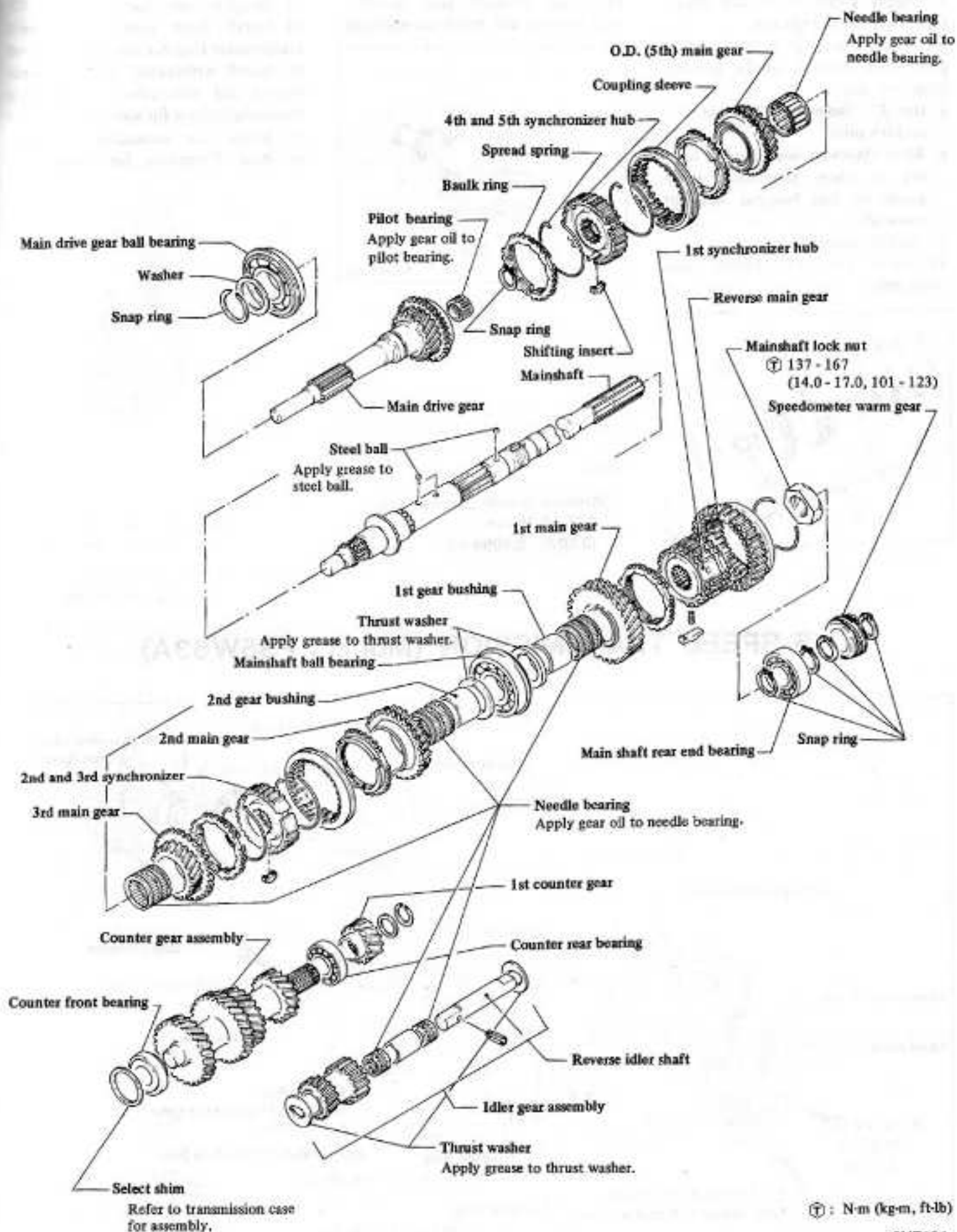


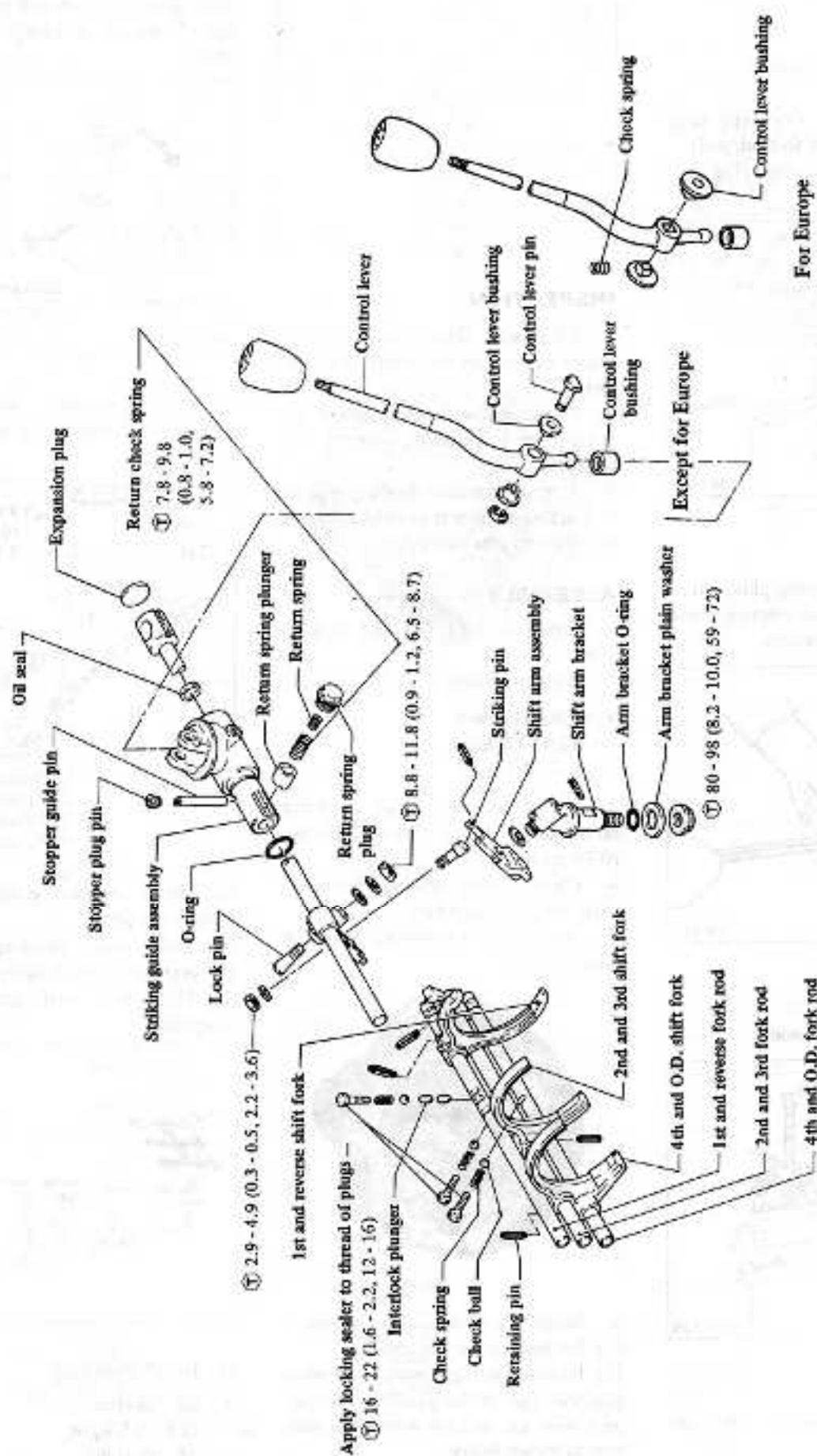
12. Select and install rear thrust washer of suitable thickness until proper counter gear end play is obtained.

Standard counter gear end play:
0.05 - 0.15 mm
(0.0020 - 0.0059 in)

5-SPEED TRANSMISSION (Model : FS5W63A)



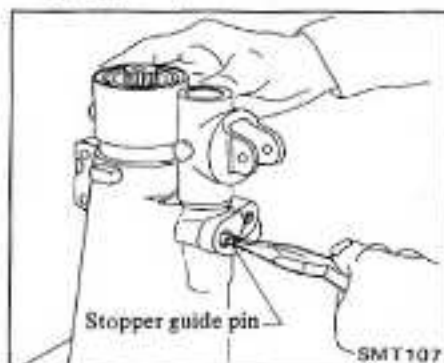




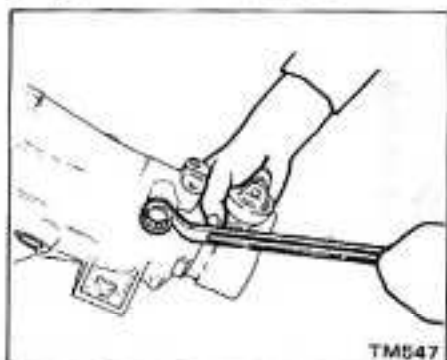
REAR EXTENSION

DISASSEMBLY

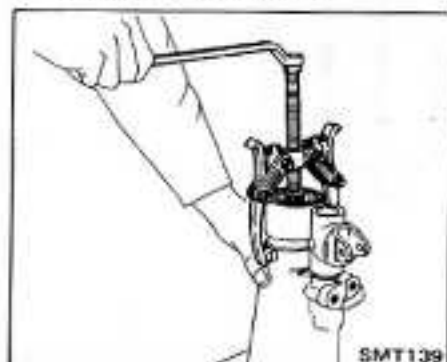
1. Wipe off dirt and grease.
2. Drain oil.
3. Remove reverse (back-up) lamp and top gear switch (if so equipped).
4. Remove stopper pin plug and stopper guide pin.



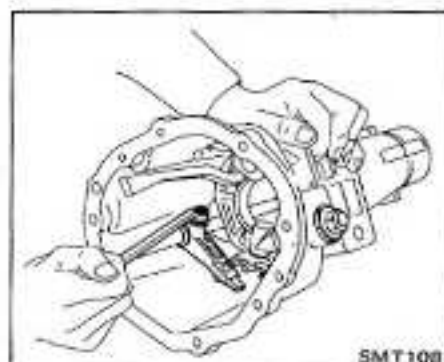
5. Remove return spring plug, return spring, return check spring, and plunger from rear extension.



6. Remove rear extension.



7. Remove lock pin and then remove striking rod.



INSPECTION

1. Clean with solvent and check for cracks or cavities by means of dyeing test.
2. Check mating surface of rear extension for small nicks, projection or sealant.
3. If rear extension bushing is worn or cracked, replace it as an assembly of bushing and rear extension.

ASSEMBLY

1. Install striking rod and striking lever.
2. Tighten striking lever nut.

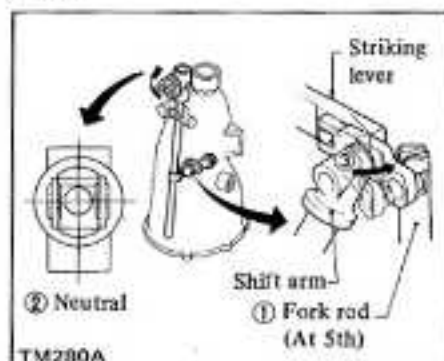
Ⓙ : 8.8 - 11.8 N·m
(0.9 - 1.2 kg-m,
6.5 - 8.7 ft-lb)

3. Stand transmission case assembly on wooden plates of more than 20 mm (0.79 in) thick.
4. Clean mating surfaces of adapter plate and rear extension.
5. Apply sealant to mating surface of adapter plate.



6. Install rear extension as follows:
 - (1) Set fork rod at 5th position.
 - (2) Position striking rod at Neutral position, turn striking guide clockwise, and then set striking lever and shift arm as shown below.

- (3) In this state, align shift arm pin with groove in fork rod and assemble rear extension assembly on adapter plate.

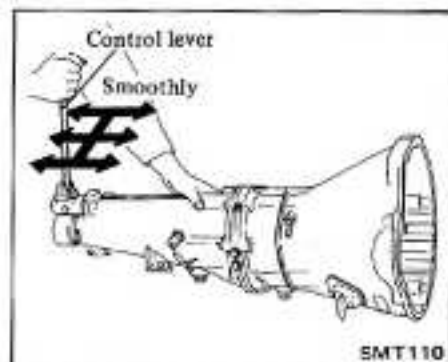


7. Install plunger, return check spring, return spring and return spring plug.



- 1 Plunger
- 2 Return check spring
- 3 Return spring
- 4 Return spring plug

8. Install stopper guide pin and stopper pin plug.
9. Install reverse (back-up) lamp and top gear switch (if so equipped).
10. Make sure that gears operate smoothly.



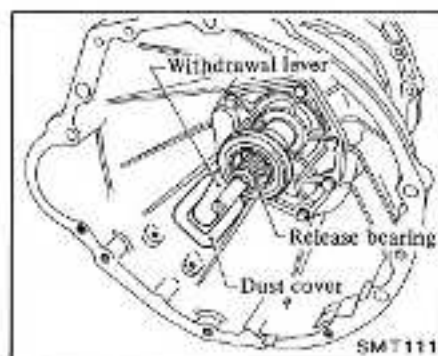
11. Install drain plug.

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

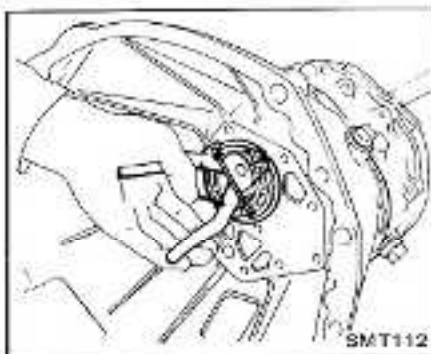
TRANSMISSION CASE

DISASSEMBLY

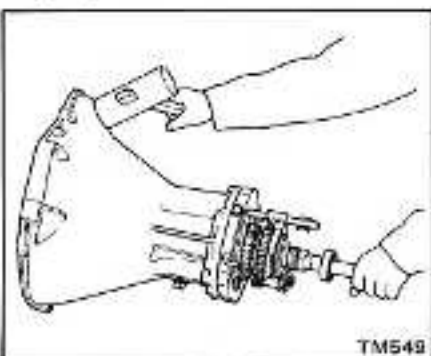
1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove dust cover, release bearing and withdrawal lever.



3. Remove front cover. Detach countershaft front bearing shim.
4. Remove main drive bearing snap ring.



5. Separate transmission case from adapter plate.



INSPECTION

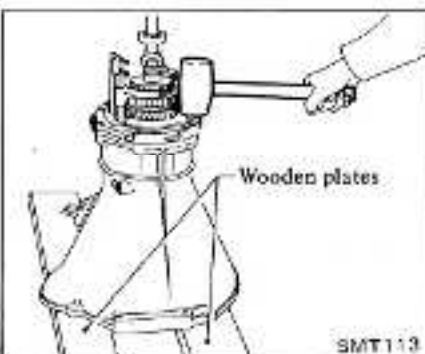
1. Clean with solvent and check for cracks or pits by means of dyeing test.
2. Check mating surface of transmission case for small nicks, projection or sealant.

ASSEMBLY

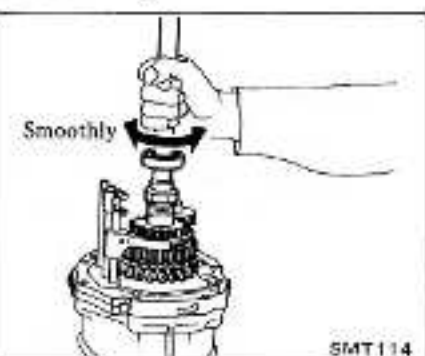
1. Clean mating surfaces of adapter plate and transmission case.
2. Stand transmission case on wooden plates of more than 20 mm (0.79 in) thick.
3. Apply sealant to mating surface of transmission case.



4. Slide gear assembly onto adapter plate by lightly tapping with a soft hammer.

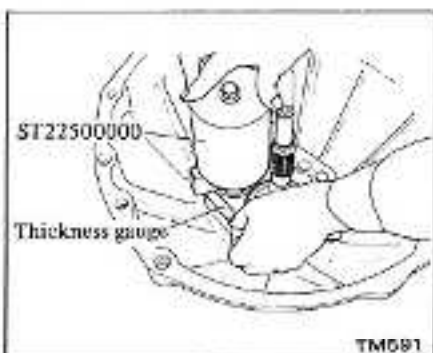
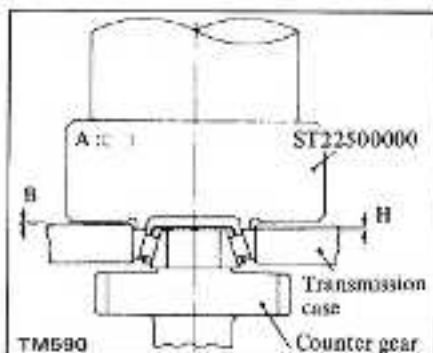


5. Make certain that mainshaft rotates smoothly.



6. Fit main drive bearing snap ring.
7. Select countershaft from bearing shim as follows:
8. Select countershaft front bearing shim as follows:

- (1) Support transmission assembly with its front side up.
- (2) Place Tool ST22500000 on countershaft front bearing, and turn main drive shaft until bearing is settled down.
- (3) Measure the clearance (B) between the setting gauge and the front end of transmission case.



- (4) The depth (H) can be obtained from the following formula:

$$H = A - B$$

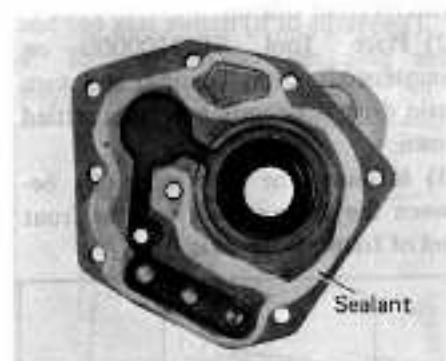
Where,

- H: Depth from front end of transmission case to countershaft front bearing. mm (in)
 A: Figure marked on the setting gauge mm (in)
 B: Measured value using thickness gauge mm (in)

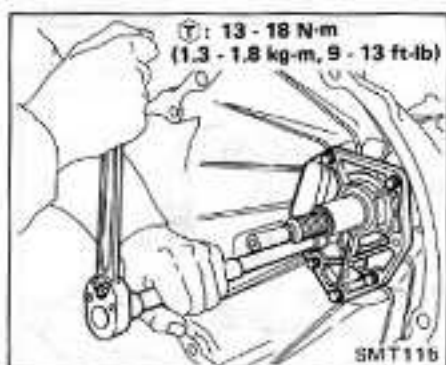
- (5) Select a shim of thickness "H" measured.

Counter gear front bearing shim:
 Refer to S.D.S.

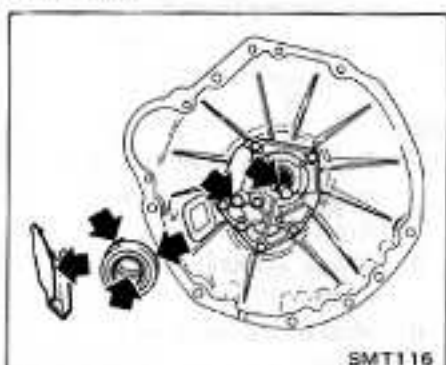
9. Clean mating surfaces of front cover and transmission case.
10. Apply grease to shim selected to retain it on front cover.
11. Apply sealant to mating surface of front cover.



12. Install front cover.
13. Apply sealant to threads of through-bolts and tighten them to transmission case.



14. Apply a light coat of multi-purpose grease.

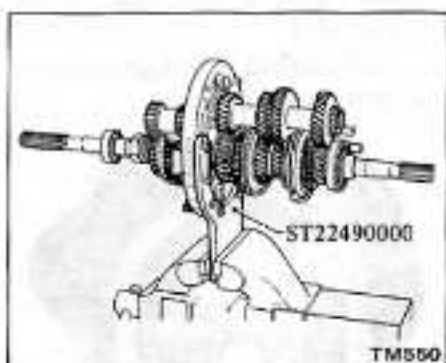


15. Assemble rear extension. Refer to Rear Extension for assembly.

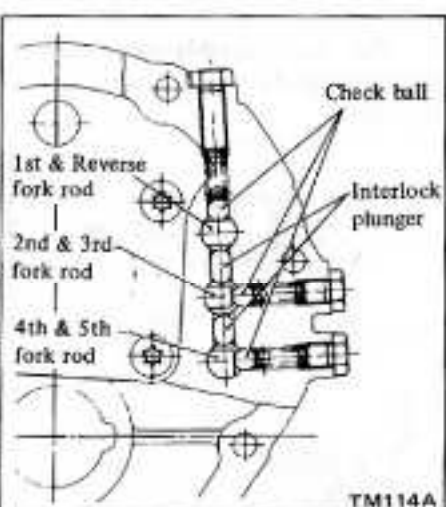
FORKS AND FORK RODS

DISASSEMBLY

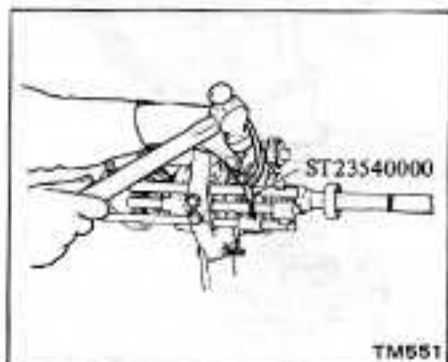
1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove transmission case. Refer to Transmission Case for disassembly.
3. Set up Tool ST22490000 on adapter plate.
4. Place above assembly in a vise.



5. Remove check ball plugs and check springs.



6. Drive out retaining pins.

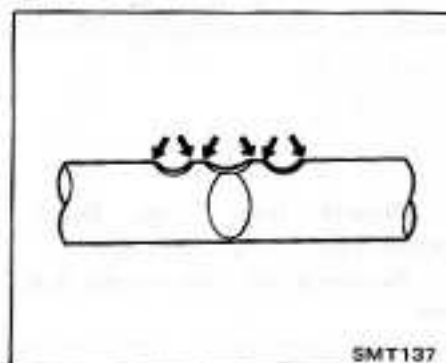


7. Drive out fork rods and then remove interlock balls and check balls.

Be careful not to lose three (3) check balls and four (4) interlock balls.

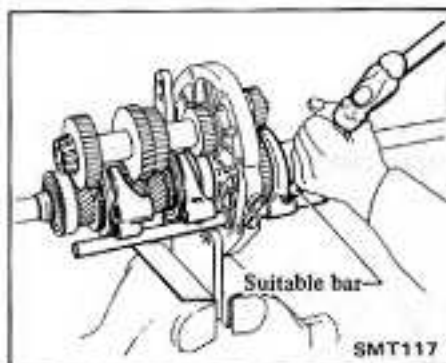
INSPECTION

1. Clean with solvent and check forks for wear, scratches, projection, damage or other faulty conditions. Replace any part which is worn or damaged.
2. Check fork rods for bending, scratches, and check groove of check ball for wear in illustration.



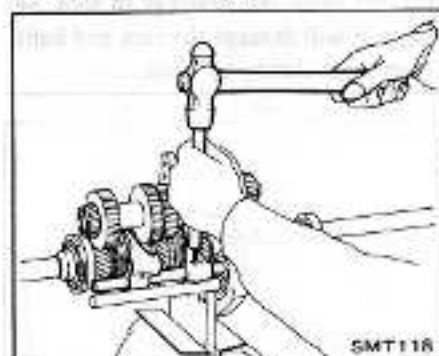
ASSEMBLY

1. Install 1st & Rev., 2nd & 3rd and 4th & 5th shift forks and 1st & Rev. fork rod, then secure with retaining pin.

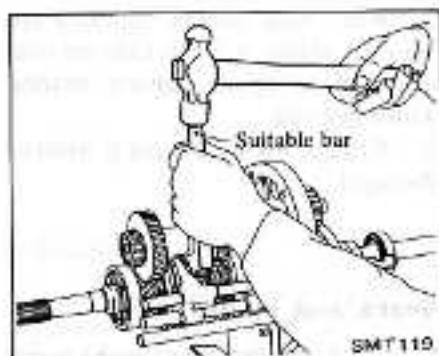


2. Install interlock plunger.

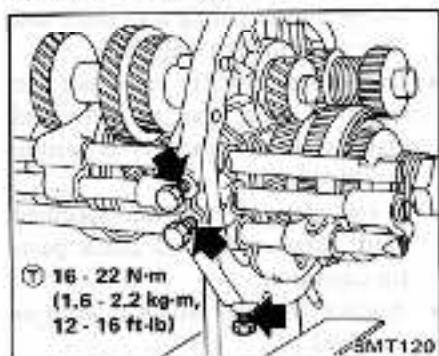
3. Install 2nd & 3rd fork rod, then secure with retaining pin.



4. Install interlock plunger.
5. Install 4th & 5th fork rod, then secure with retaining pin.



6. Install check balls and check springs.
7. Apply locking sealer to check ball plugs and install them.



- a. Check ball plug for 1st & Rev. fork rod is longer than those for 2nd & 3rd fork rod and 4th & 5th fork rod.
- b. To insure that interlock plunger is installed properly, slide 2nd & 3rd fork rod and operate the other fork rod. Make sure that the gear except 2nd or 3rd gear does not mesh.

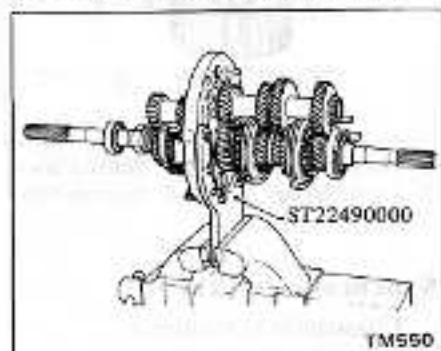
8. Apply gear oil to all sliding surfaces and check to see that shift rods operate correctly and gears are engaged smoothly.
9. Install transmission case. Refer to Transmission Case for assembly.
10. Install rear extension. Refer to Rear Extension for assembly.

GEARS AND SHAFTS

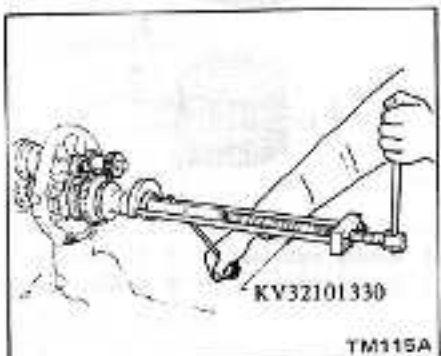
DISASSEMBLY

1st and reverse gear

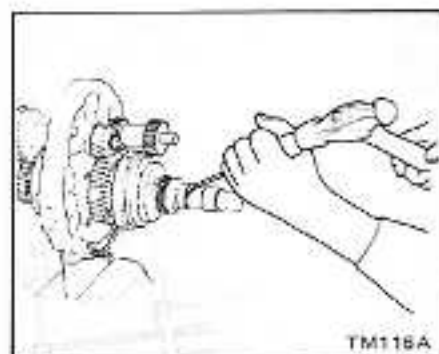
1. Remove rear extension. Refer to Rear Extension for disassembly.
2. Remove transmission case. Refer to Transmission Case for disassembly.
3. Remove forks and fork rods. Refer to Forks and Fork Rods for disassembly.
4. Measure gear end play. Refer to Gears and Shafts for inspection.
5. Set up Tool ST22490000 on adapter plate.
6. Place above assembly in a vise.



7. Remove snap ring, ball bearing and snap ring.

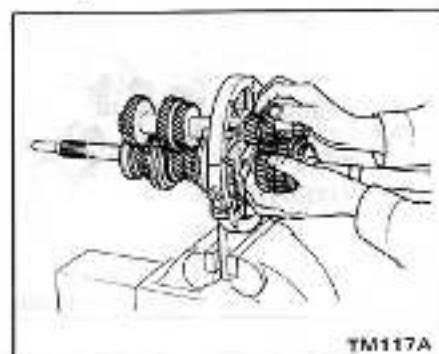


8. Mesh 1st and 5th gear, and release staking on mainshaft lock nut then remove lock nut and speedometer drive gear.



Mainshaft nut should be discarded and should not be reused.

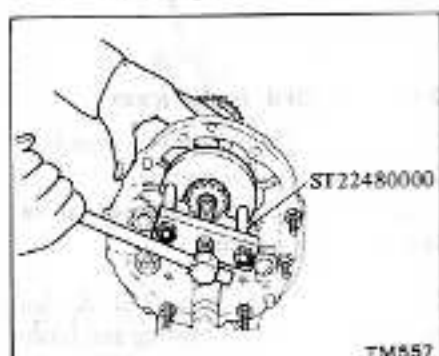
9. Remove synchro-hub with reverse gear, 1st gear together with needle bearing and bushing, and idler gear together with needle bearing simultaneously.



10. Remove thrust washer and steel ball.

Be careful not to lose steel ball retaining speedometer drive gear and thrust washer.

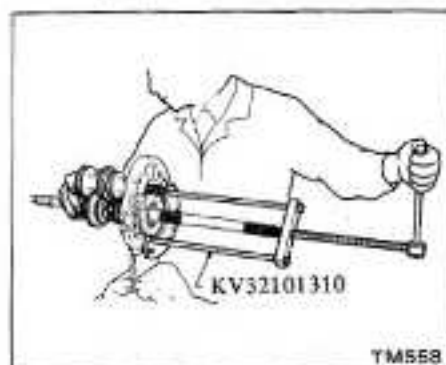
11. Remove snap ring, washer and 1st and 1st counter gear.



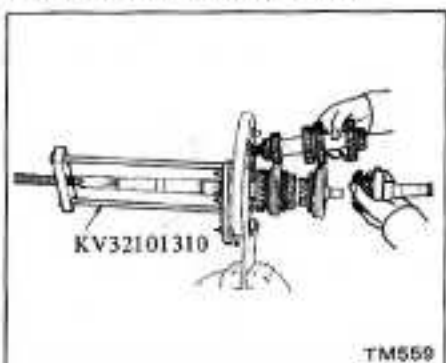
Main drive and counter gears

1. Drive out mainshaft as follows:
 - (1) Install Mainshaft Puller on adapt-

er plate, holding the front of mainshaft gear assembly and counter gear assembly by hand.



(2) Remove main drive gear and counter gear after driving out mainshaft roughly 10 mm (0.39 in).



(3) Remove mainshaft and mainshaft gear as an assembly.

CAUTION:

Be careful not to drop gears, pilot bearing and baulk ring.

2nd and 3rd main gear

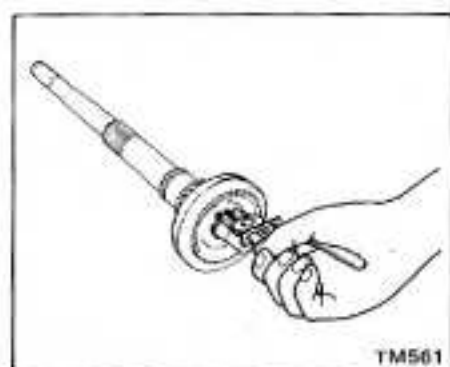
1. Remove thrust washer, steel ball, 2nd gear and needle bearing.

Be careful not to lose steel ball retaining thrust washer.

2. Remove 3rd gear, 2nd & 3rd synchronizer, needle bearing and bushing.

5th main gear

1. Remove snap ring.

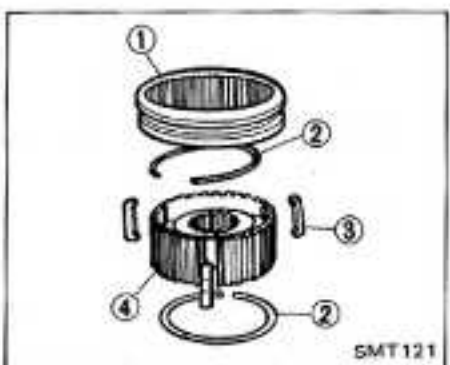


2. Remove 4th & 5th synchronizer, 5th gear and needle bearing.

Synchronizer

(2nd & 3rd and 4th & 5th)

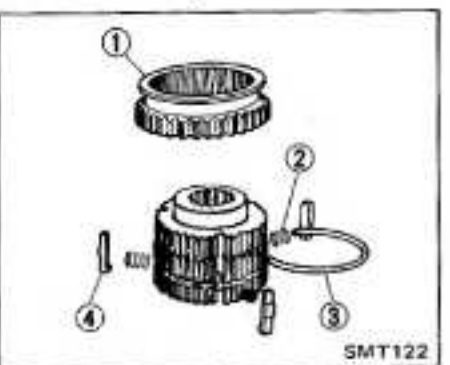
Disassemble synchronizer.



1 Coupling sleeve
2 Spread spring
3 Shifting insert
4 Synchro hub

Synchronizer (1st)

Disassemble synchronizer.



1 Reverse main gear
2 Spread spring
3 Stopper ring
4 Shifting insert

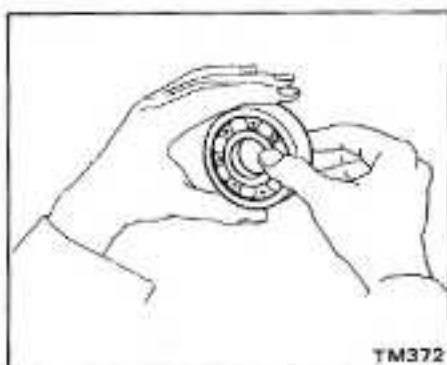
INSPECTION

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.



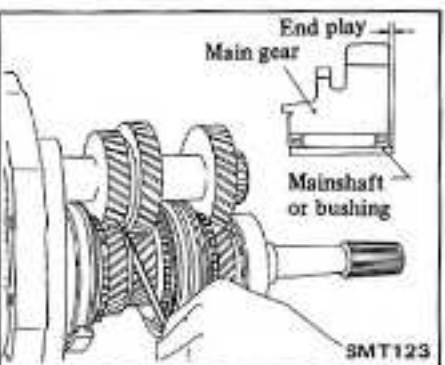
2. When race and ball surfaces are worn or rough, or when balls are out-of-round or rough, replace bearing with a new one.
3. Replace needle bearing if worn or damaged.

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 - 0.37 mm
(0.0106 - 0.0146 in)

2nd gear:

0.20 - 0.30 mm
(0.0079 - 0.0118 in)

3rd gear:

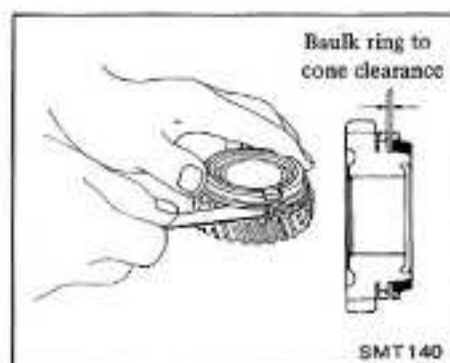
0.05 - 0.15 mm
(0.0020 - 0.0059 in)

5th gear:

0.05 - 0.20 mm
(0.0020 - 0.0079 in)

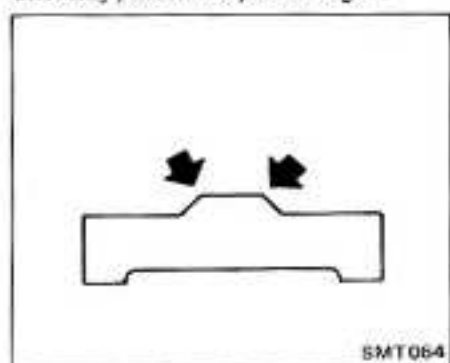
Reverse idler gear:

0.15 - 0.40 mm
(0.0059 - 0.0157 in)



Shifting insert

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



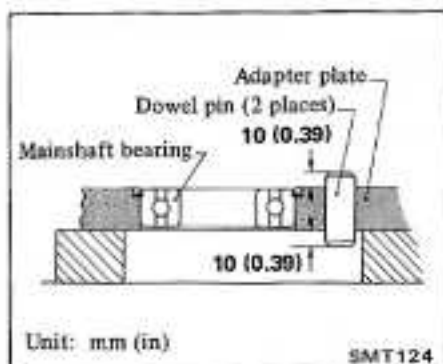
Oil seals

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. Refer to Replacement of Oil Seals.
2. Check the oil seal lip contacting with shaft; if necessary replace oil seal and shaft as a set.

ASSEMBLY

Adapter plate

1. Place new dowel pin, mainshaft bearing and outer race of counter rear bearing on adapter plate and tap them.



2. Install bearing retainer.

Ⓐ : 7.8 - 12.7 N·m
(0.8 - 1.3 kg·m, 5.8 - 9.4 ft·lb)

**Synchronizer
(2nd & 3rd and 4th & 5th)**

1. Place synchro-hub into coupling sleeve.

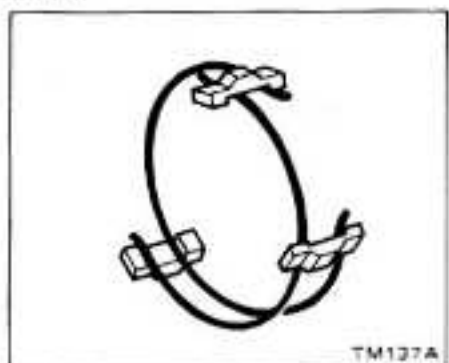
Be sure that hub and sleeve operate smoothly and correctly by hand.

2. Fit shifting inserts in three(3) grooves in synchro-hub.
3. Install spread spring to inserts so that insert is securely attached to inner side of coupling sleeve.

Install the other spread spring on opposite side of synchro-hub.



Be careful not to hook front and rear ends of spread spring to the same insert.

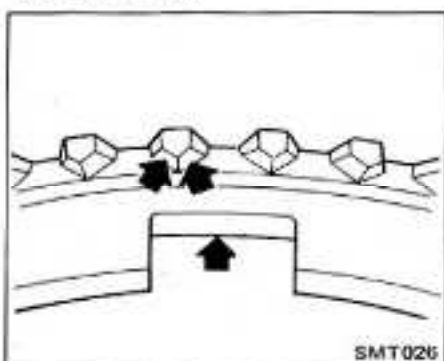


Synchronizer (1st)

1. Position spread springs and shifting inserts in three slots in synchronizer hub.
2. Put coupling sleeve on synchronizer hub.
3. Fit stopper ring on synchro-hub.

Baulk 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 clearance 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 - 1.50 mm
(0.0472 - 0.0591 in)

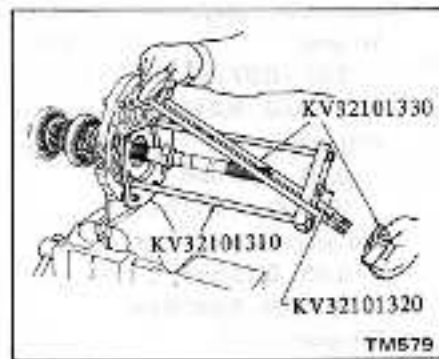
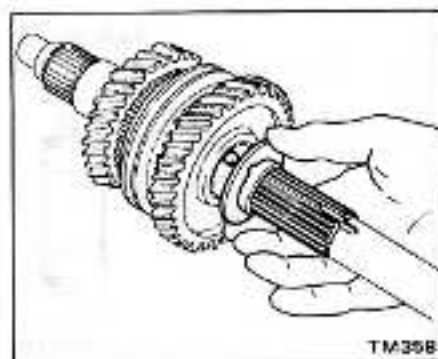
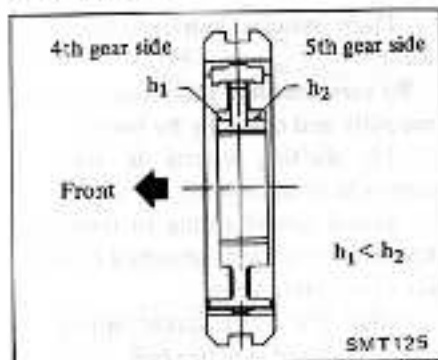
Wear limit

Less than 0.8 mm (0.031 in)

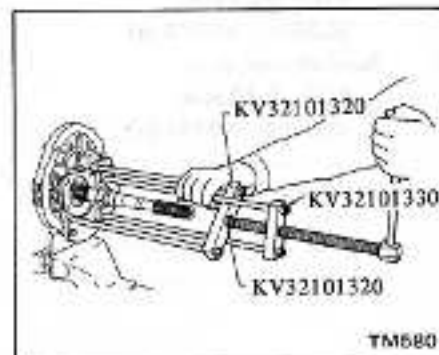
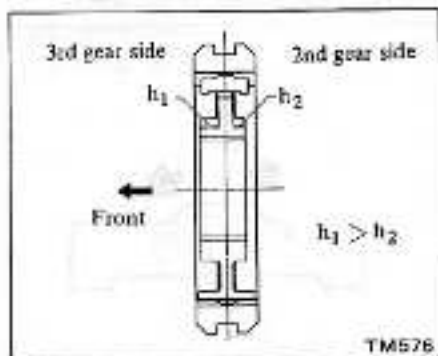
5th main gear

1. Position needle bearing, 5th main gear, baulk ring and 4th & 5th synchronizer assembly on the front of mainshaft.

Assemble 4th & 5th synchronizer hub, paying attention to its direction.

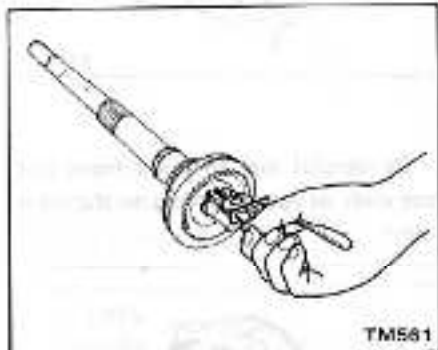


Assemble 2nd & 3rd synchronizer hub, paying attention to its direction.

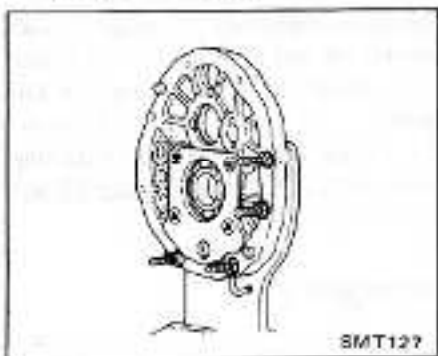


2. Install snap ring of proper thickness that will minimize clearance of groove in mainshaft.

Mainshaft front snap ring:
Refer to S.D.S.



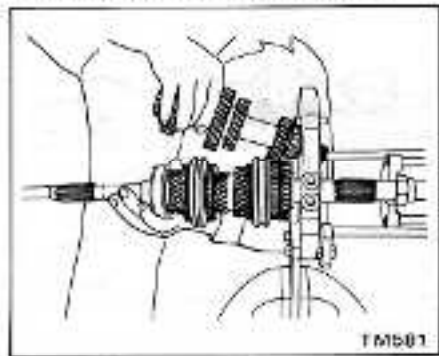
2. Set Tool ST22490000 and place adapter plate assembly on it.



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

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

5. Assemble counter gear assembly on mainshaft and main drive gear.



2nd and 3rd main gear

1. Assemble 3rd gear needle bearing, 3rd gear, baulk ring, 2nd & 3rd synchronizer assembly, 2nd gear baulk ring, 2nd gear bushing, needle bearing, 2nd gear, steel ball, and thrust washer on mainshaft.

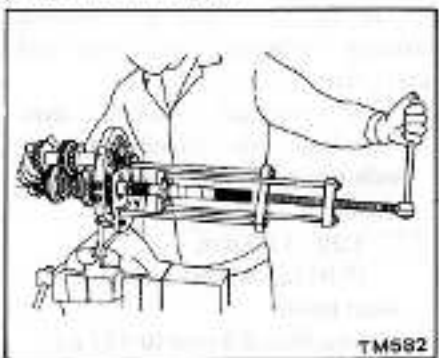
Before installing steel ball and thrust washer, apply grease to them.

Counter gear

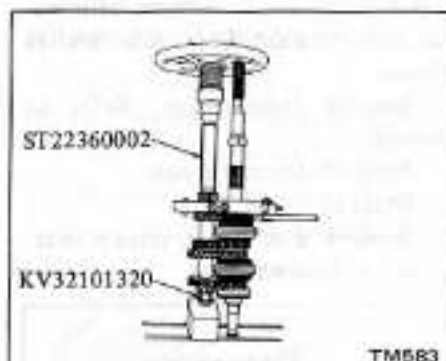
1. Place mainshaft assembly into adapter plate assembly. Place mainshaft nut onto mainshaft.

2. Pull mainshaft assembly into adapter plate using Tools KV32101310, KV32101330, and KV32101320 until thrust washer-to-bearing clearance reaches approximately 10 mm (0.39 in).

6. Pull mainshaft assembly into adapter plate together with main drive gear and counter gear.



- a. When installing mainshaft, hold gears carefully by hand.
- b. Take care not to damage bearing.
7. Press 1st counter gear onto countershaft.



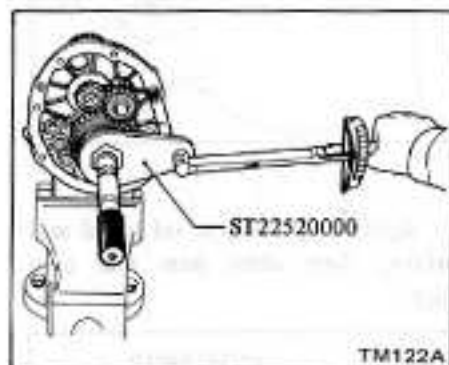
8. Install spacer and secure it with a snap ring so that there exists a minimum clearance between end face of counter gear and ring.

Make sure snap ring fits in groove.

Counter gear snap ring:
Refer to S.D.S.

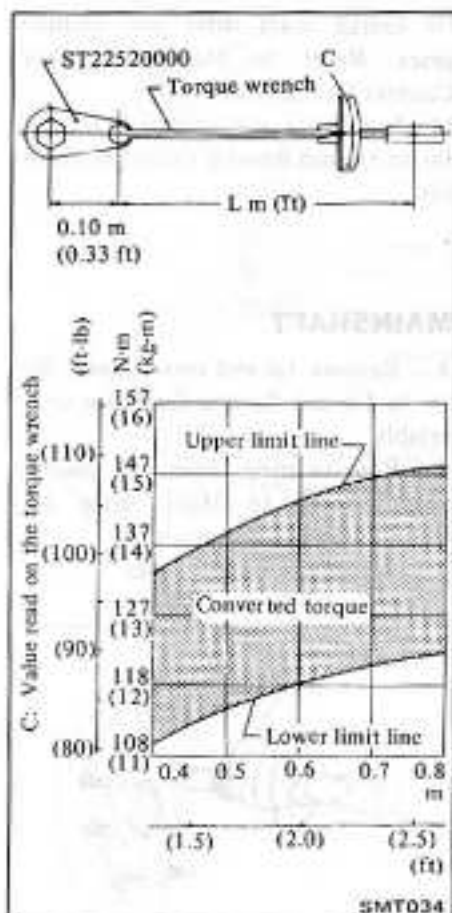
1st and reverse gear

1. Remove mainshaft nut and install steel ball and thick thrust washer.
2. Install synchro-hub with needle bearing and bushing, and idler gear together with needle bearing simultaneously.
3. Mesh 1st and 5th gear and tighten mainshaft lock nut.



Conversion of torque

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



4. Stake mainshaft lock nut.



5. Measure gear end plays. Refer to Gears and Shafts for inspection.
6. Install mainshaft rear end bearing and secure it with a snap ring so that there exists a minimum clearance between snap ring and bearing.

Make sure snap ring fits in groove.
Mainshaft rear end bearing snap ring:
Refer to S.D.S.

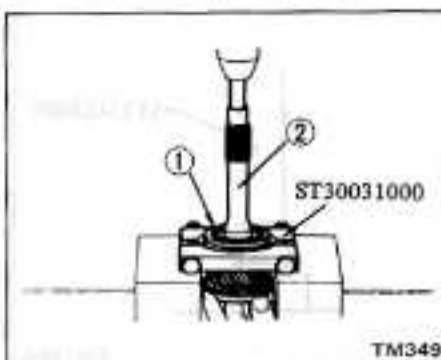
7. Install forks and fork rods. Refer to Forks and Fork Rods for assembly.

8. Install transmission case. Refer to Transmission Case for assembly.
9. Install rear extension. Refer to Rear Extension for assembly.

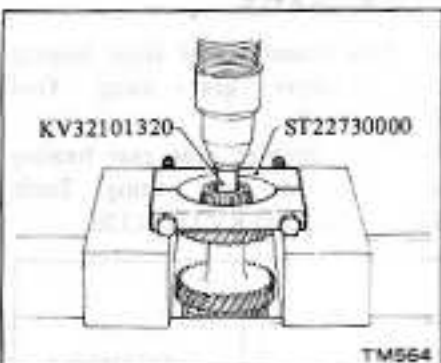
REPLACEMENT OF BEARINGS

MAIN DRIVE AND COUNTER GEAR

1. Remove 1st and reverse gears. Refer to 1st and Reverse Gears for disassembly.
2. Remove main drive and counter gears. Refer to Main Drive and Counter Gears for disassembly.
3. Remove main drive bearing.



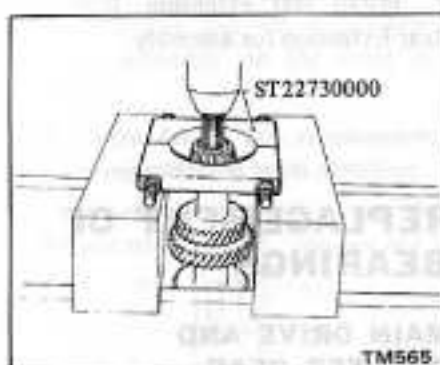
4. Press out counter gear front bearing.



CAUTION:

When pressing out bearing, hold gear by hand so as not to drop gear onto floor.

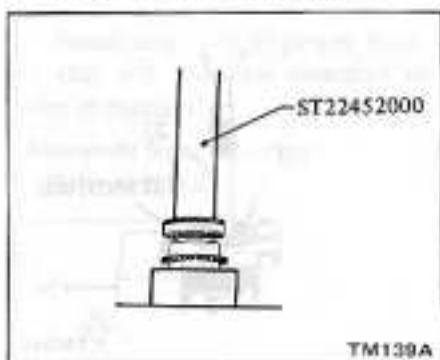
5. Press out counter gear rear bearing.



CAUTION:

Be careful not to drop off counter gear.

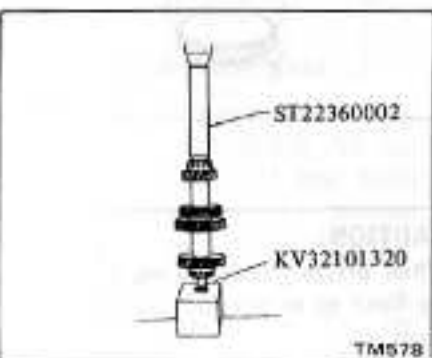
6. Press new main drive bearing.



7. Install spacer and secure main drive bearing with thicker snap ring that will eliminate end play.

Main drive gear snap ring:
Refer to S.D.S.

8. Press counter gear front bearing onto counter gear using Tool ST22360002.
9. Press counter gear rear bearing onto counter gear using Tools ST22360002 and KV32101320.

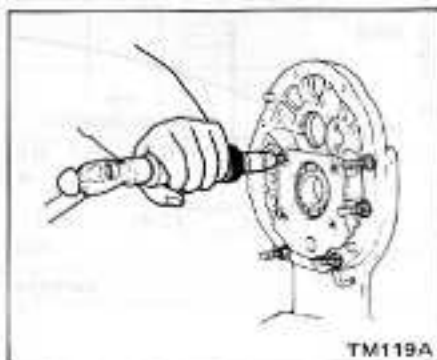


10. Install main drive and counter gears. Refer to Main Drive and Counter Gears for assembly.

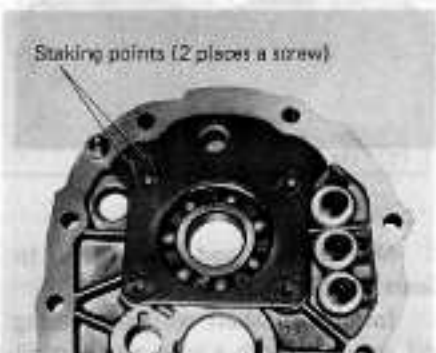
11. Install 1st and reverse gears. Refer to 1st and Reverse Gears for assembly.

MAINSHAFT

1. Remove 1st and reverse gears. Refer to 1st and Reverse Gears for disassembly.
2. Remove main drive and counter gears. Refer to Main Drive and Counter Gears for disassembly.
3. Remove bearing retainer.



4. Replace mainshaft bearing with new one.
5. Install bearing retainer.
6. Tighten and stake each screw at two points.



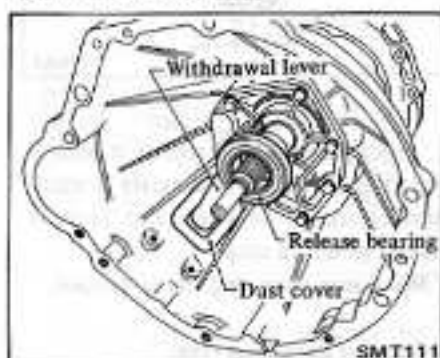
7. Install main drive and counter gears. Refer to Main Drive and Counter Gears for assembly.
8. Install 1st and reverse gears. Refer to 1st and Reverse Gears for assembly.

REPLACEMENT OF OIL SEALS

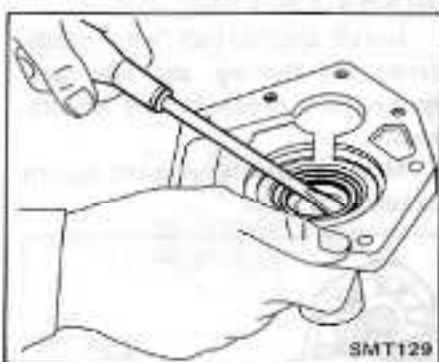
FRONT COVER

It is necessary to remove transmission unit from car. Replace oil seal as follows:

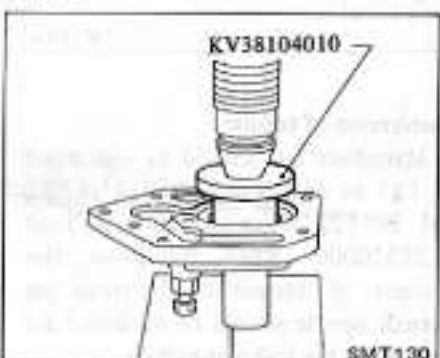
1. Remove transmission. Refer to Removal.
2. Wipe off dirt and grease.
3. Drain oil.
4. Remove dust cover, release bearing and withdrawal lever.



5. Remove front cover.
6. Remove oil seal.



7. Apply coat of gear oil to oil seal surface, then drive new seal into place.

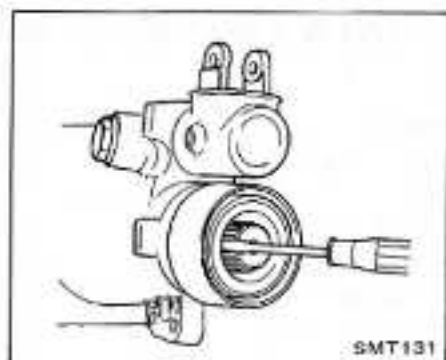


8. Lubricate seal lip and main drive shaft with gear oil.
9. Install front cover in reverse order of removal.

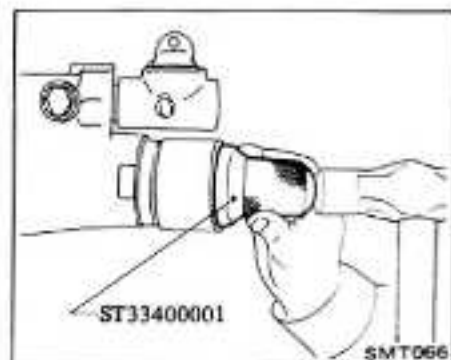
REAR EXTENSION

The rear extension oil seal can be replaced without removing transmission. Replace oil seal as follows:

1. Remove propeller shaft. Refer to Propeller Shaft (Section PD) for removal.
2. Remove oil seal.



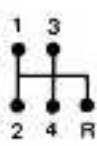
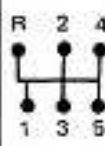
3. Apply coat of gear oil to oil seal surface, then drive new seal into place.



4. Install propeller shaft. Refer to Propeller Shaft (Section PD) for installation.

SERVICE DATA AND SPECIFICATIONS

GENERAL SPECIFICATIONS

Transmission model		F4W63L	F55W63A	
No. of speeds		4	5	
Synchromesh type		Warner		
Shift type				
Gear ratio	1st	3.382	3.382	
	2nd	2.013	2.013	
	3rd	1.312	1.312	
	4th	1.000	1.000	
	5th	—	0.854	
	Rev.	3.365	3.570	
Number of teeth	Mainshaft	Drive	22	
		1st	36	
		2nd	30	
		3rd	27	
		5th	—	20
		Rev.	39	38
	Counter-shaft	Drive	31	
		1st	15	
		2nd	21	
		3rd	29	
		5th	—	33
		Rev.	21	15
	Rev. idler shaft	C/S	18	17
		M/S	14	
Speedometer gear ratio		19/6 *1, 20/6 *2		
Oil capacity liter (Imp pt)		1.5(2-5/8)	2.0(3-1/2)	

C/S: Mesh to counter gear M/S: Mesh to mainshaft gear

*1 For a final gear ratio of 3.889

*2 For a final gear ratio of 4.111

INSPECTION AND ADJUSTMENT

GEAR END PLAY

Unit: mm (in)

Transmission model	F4W63L	F55W63A
1st gear	0.26 - 0.36 (0.0102 - 0.0142)	0.27 - 0.37 (0.0106 - 0.0146)
2nd gear	0.20 - 0.30 (0.0079 - 0.0118)	0.20 - 0.30 (0.0079 - 0.0118)
3rd gear	0.05 - 0.20 (0.0020 - 0.0079)	0.05 - 0.15 (0.0020 - 0.0059)
5th gear	—	0.05 - 0.20 (0.0020 - 0.0079)
Counter gear	0.05 - 0.15 (0.0020 - 0.0059)	—
Reverse idler gear	0.10 - 0.30 (0.0039 - 0.0118)	0.15 - 0.40 (0.0059 - 0.0157)

CLEARANCE BETWEEN BAULK RING AND GEAR

Unit: mm (in)

Transmission model	F4W63L	F55W63A
Standard	1.20 - 1.50 (0.0472 - 0.0591)	1.20 - 1.50 (0.0472 - 0.0591)
Wear limit	0.8 (0.031)	0.8 (0.031)

AVAILABLE SNAP RING

Main drive gear bearing

Model F4W63L and F55W63A

Thickness: mm (in)	Part number
1.52 (0.0598)	32204 08000
1.59 (0.0626)	32204 08001
1.65 (0.0650)	32204 08002
1.71 (0.0673)	32204 08003
1.77 (0.0697)	32204 08004
1.83 (0.0720)	32204 16500
1.91 (0.0752)	32204 16501

Mainshaft front**Model F4W63L**

Thickness mm (in)	Part number
1.40 (0.0551)	32263 14600
1.45 (0.0571)	32263 14601
1.50 (0.0591)	32283 14602
1.55 (0.0610)	32283 14603
1.60 (0.0630)	32263 14604

Model FS5W63A

Thickness mm (in)	Part number
1.40 (0.0551)	32263 N9000
1.45 (0.0571)	32263 N9001
1.50 (0.0591)	32263 N9002
1.55 (0.0610)	32263 N9003
1.60 (0.0630)	32263 N9004

Mainshaft rear end bearing**Model FS5W63A**

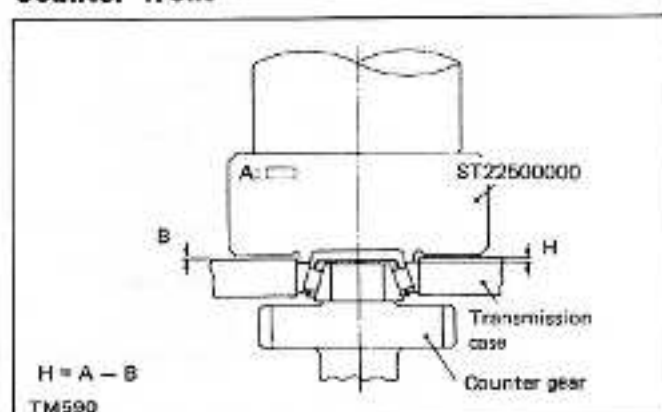
Thickness mm (in)	Part number
1.1 (0.043)	32226 20100
1.2 (0.047)	32226 20101
1.3 (0.051)	32226 20102
1.4 (0.055)	32226 20103

Counter gear snap ring**Model FS5W63A**

Thickness mm (in)	Part number
1.65 (0.0650)	32222 N9000
1.45 (0.0571)	32222 N9001
1.95 (0.0728)	32222 N9002

Reverse idler gear**Model F4W63L**

Thickness mm (in)	Part number
1.2 (0.047)	32285 14600
1.4 (0.055)	32285 14601
1.3 (0.051)	32285 14602
1.5 (0.059)	32285 14603
1.1 (0.043)	32285 14604

AVAILABLE SHIM**Counter front**

"H" mm (in)	Thickness of countershaft front bearing shim mm (in)	Part number
1.200 - 1.225 (0.0472 - 0.0482)	1.350 (0.0531)	32225 N9000
1.225 - 1.250 (0.0482 - 0.0492)	1.375 (0.0541)	32225 N9001
1.250 - 1.275 (0.0492 - 0.0502)	1.400 (0.0551)	32225 N9002
1.275 - 1.300 (0.0502 - 0.0512)	1.425 (0.0561)	32225 N9003
1.300 - 1.325 (0.0512 - 0.0522)	1.450 (0.0571)	32225 N9004
1.325 - 1.350 (0.0522 - 0.0531)	1.475 (0.0581)	32225 N9005
1.350 - 1.375 (0.0531 - 0.0541)	1.500 (0.0591)	32225 N9006
1.375 - 1.400 (0.0541 - 0.0551)	1.525 (0.0600)	32225 N9007
1.400 - 1.425 (0.0551 - 0.0561)	1.550 (0.0610)	32225 N9008
1.425 - 1.450 (0.0561 - 0.0571)	1.575 (0.0620)	32225 N9009
1.450 - 1.475 (0.0571 - 0.0581)	1.600 (0.0630)	32225 N9010
1.475 - 1.500 (0.0581 - 0.0591)	1.625 (0.0640)	32225 N9011
1.500 - 1.525 (0.0591 - 0.0600)	1.650 (0.0650)	32225 N9012
1.525 - 1.550 (0.0600 - 0.0610)	1.675 (0.0659)	32225 N9013
1.550 - 1.575 (0.0610 - 0.0620)	1.700 (0.0669)	32225 N9014
1.575 - 1.600 (0.0620 - 0.0630)	1.725 (0.0679)	32225 N9015
1.600 - 1.625 (0.0630 - 0.0640)	1.750 (0.0689)	32225 N9016
1.625 - 1.650 (0.0640 - 0.0650)	1.775 (0.0699)	32225 N9017

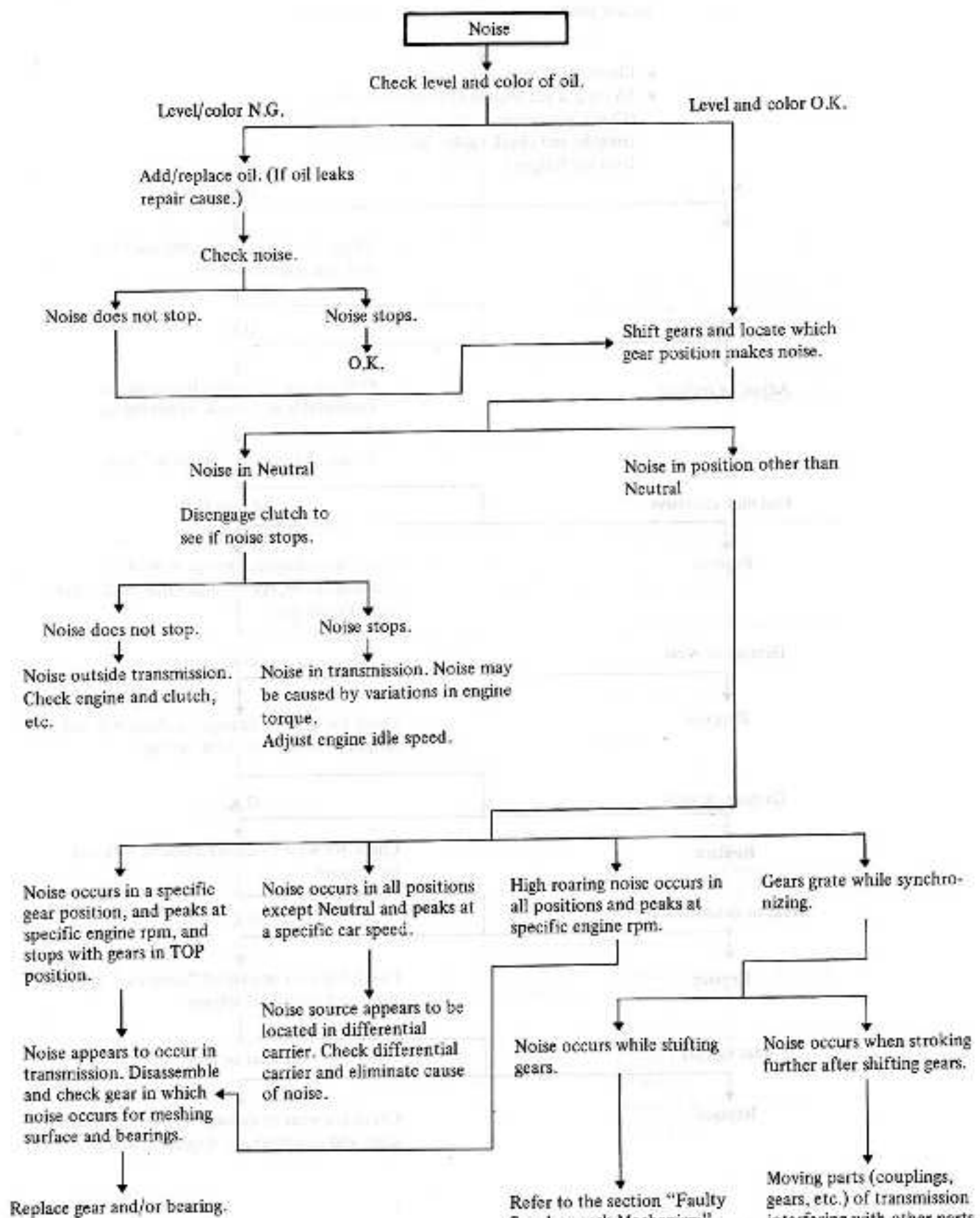
AVAILABLE WASHER**Counter gear, rear**

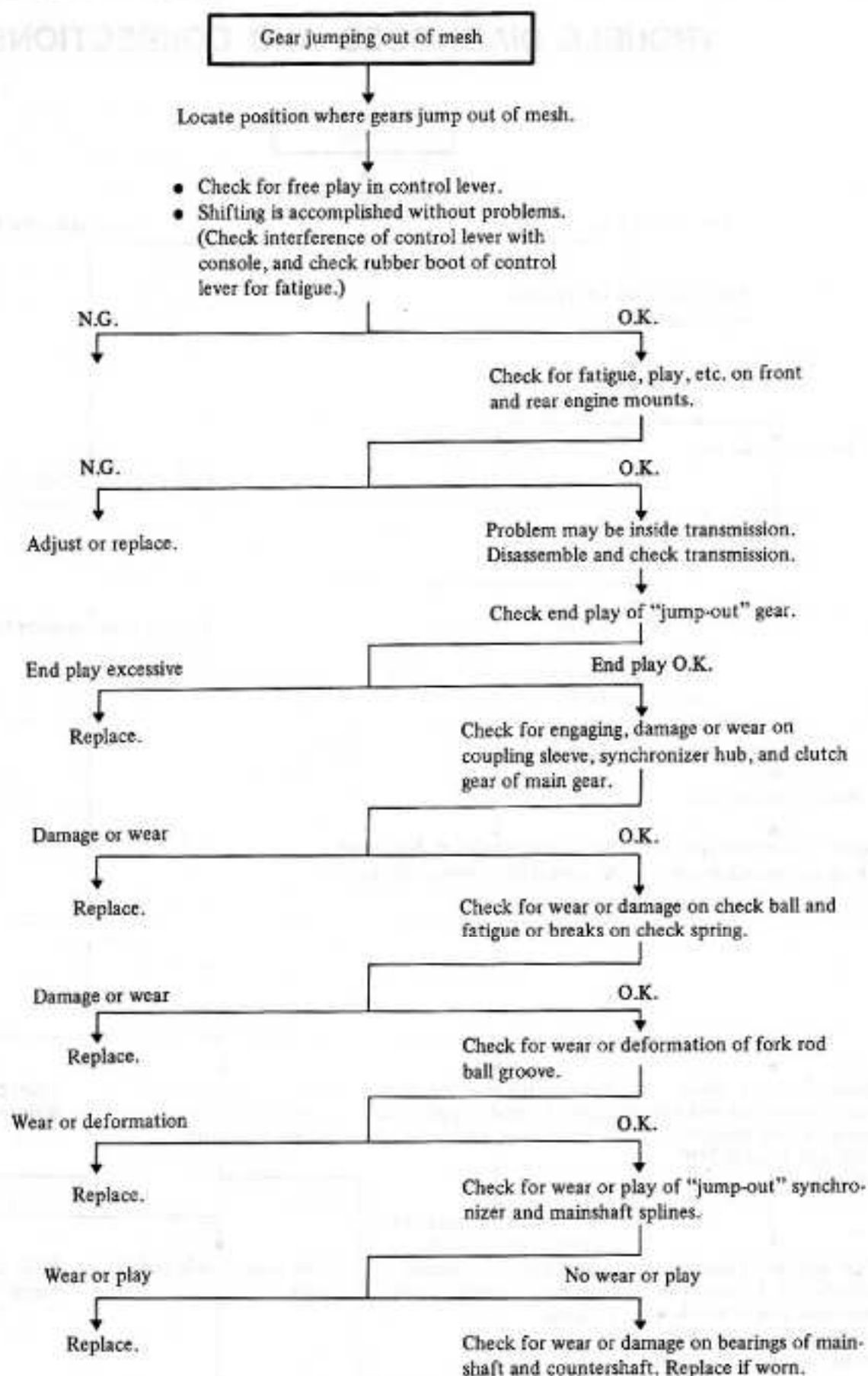
Model F4W63L

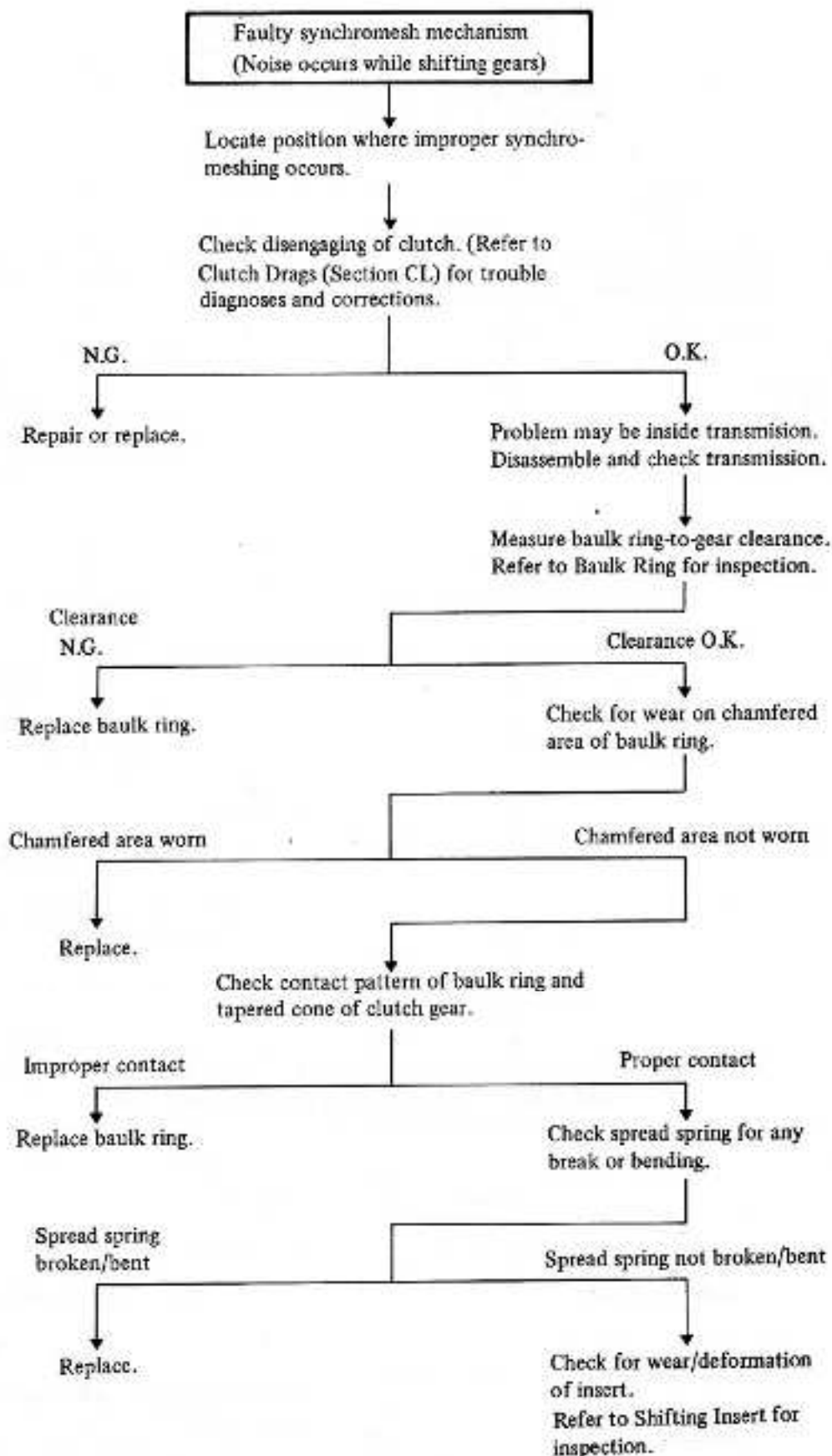
Thickness mm (in)	Part number
2.40 (0.0945)	32225 A0900
2.45 (0.0965)	32225 A0901
2.50 (0.0984)	32225 A0902
2.55 (0.1004)	32225 A0903
2.60 (0.1024)	32225 A0904

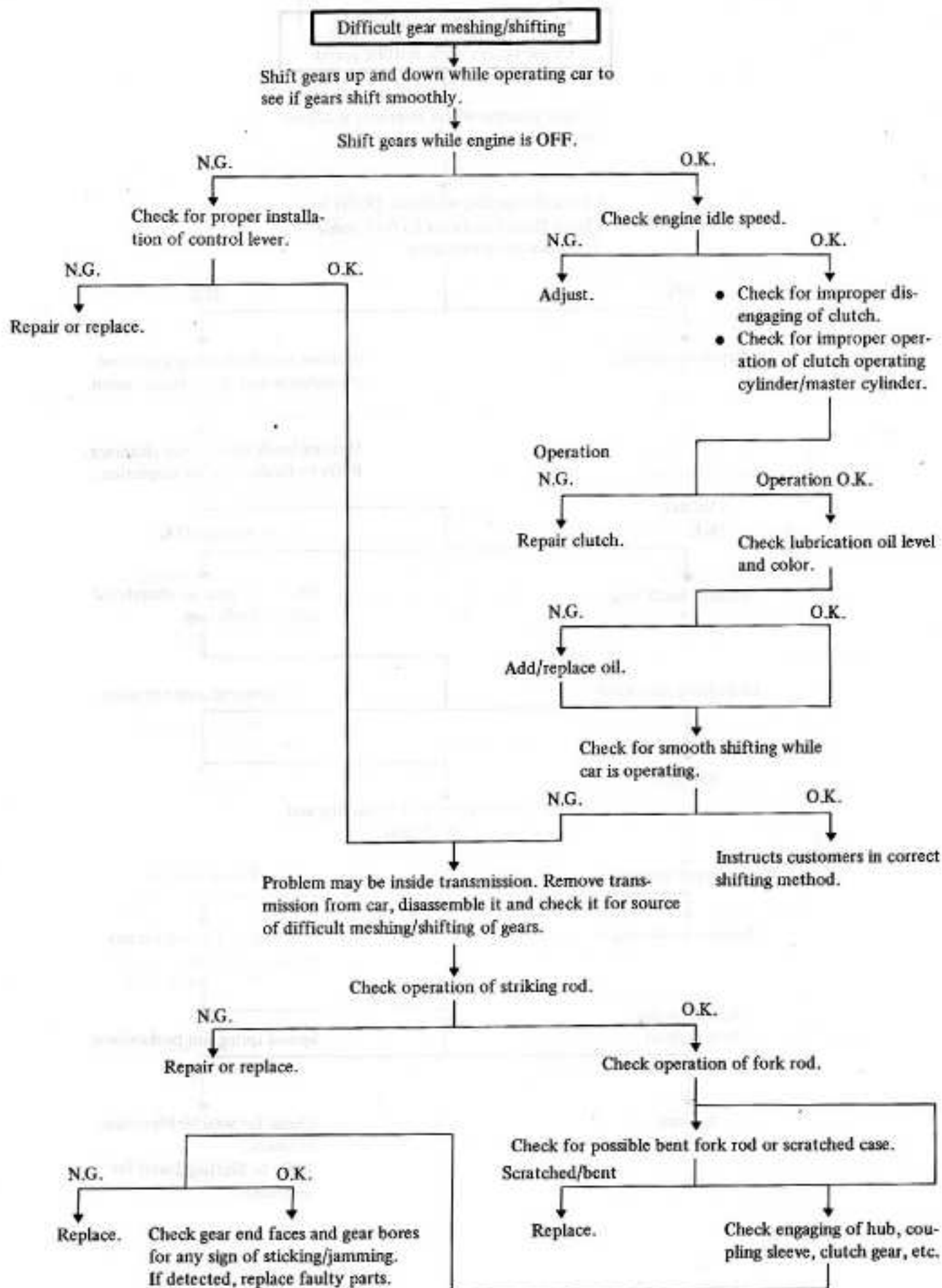
TIGHTENING TORQUE

Transmission model	F4W63L			FS5W63A		
Unit	N·m	kg·m	ft·lb	N·m	kg·m	ft·lb
Ball pin	29 - 49	3.0 - 5.0	22 - 36	29 - 49	3.0 - 5.0	22 - 36
Striking lever lock nut	—	—	—	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7
Shift arm bracket	—	—	—	80 - 98	8.2 - 10.0	59 - 72
Mainshaft bearing retainer screw	7.8 - 9.8	0.8 - 1.0	5.8 - 7.2	7.8 - 12.7	0.8 - 1.3	5.8 - 9.4
Mainshaft lock nut	78 - 108	8.0 - 11.0	58 - 80	137 - 167	14 - 17	101 - 123
Check ball plug	17 - 21	1.7 - 2.1	12 - 15	16 - 22	1.8 - 2.2	12 - 16
Rear extension installation bolt	14 - 18	1.4 - 1.8	10 - 13	13 - 18	1.3 - 1.8	9 - 13
Front cover installation bolt	7.8 - 9.8	0.8 - 1.0	5.8 - 7.2	13 - 18	1.3 - 1.8	9 - 13
Bottom cover installation bolt	7.8 - 9.8	0.8 - 1.0	5.8 - 7.2	—	—	—
Speedometer sleeve locking plate bolt	2.9 - 3.9	0.3 - 0.4	2.2 - 2.9	2.9 - 3.9	0.3 - 0.4	2.2 - 2.9
Reverse lamp switch	20 - 29	2.0 - 3.0	14 - 22	20 - 29	2.0 - 3.0	14 - 22
Return spring plug	—	—	—	7.8 - 9.8	0.8 - 1.0	5.8 - 7.2
Filler plug	25 - 34	2.5 - 3.5	18 - 25	25 - 34	2.5 - 3.5	18 - 25
Drain plug	25 - 34	2.5 - 3.5	18 - 25	25 - 34	2.5 - 3.5	18 - 25
Transmission to engine installation bolt	39 - 47	4.0 - 4.8	29 - 35	36 - 49	3.7 - 5.0	27 - 36
Transmission to engine rear plate installation bolt	2.9 - 3.9	0.3 - 0.4	2.2 - 2.9	2.9 - 3.9	0.3 - 0.4	2.2 - 2.9
Transmission to gusset installation bolt	45 - 60	4.6 - 6.1	33 - 44	—	—	—
Starting motor to transmission installation bolt	29 - 39	3.0 - 4.0	22 - 29	29 - 39	3.0 - 4.0	22 - 29
Rear mounting insulator to transmission installation bolt	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7
Crossmember mounting bolt	31 - 42	3.2 - 4.3	23 - 31	31 - 42	3.2 - 4.3	23 - 31
Rear engine mount installation bolt	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7	8.8 - 11.8	0.9 - 1.2	6.5 - 8.7
Clutch operating cylinder installation bolt	30 - 40	3.1 - 4.1	22 - 30	30 - 40	3.1 - 4.1	22 - 30
Propeller shaft to differential	24 - 32	2.4 - 3.3	17 - 24	24 - 32	2.4 - 3.3	17 - 24
Transmission control lever installation nut	19 - 22	1.9 - 2.2	14 - 16	—	—	—

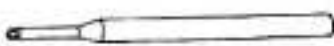




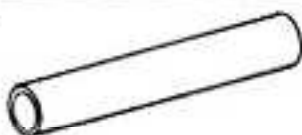
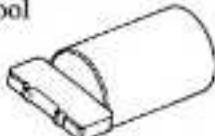

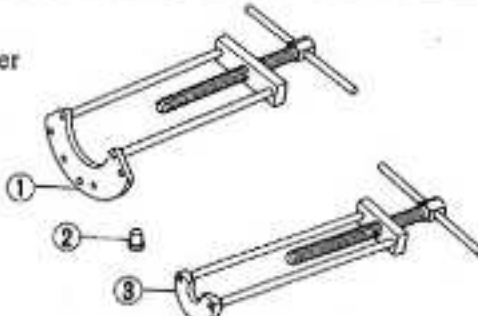
TROUBLE DIAGNOSES AND CORRECTIONS



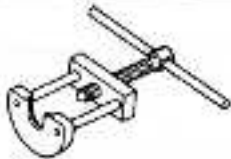


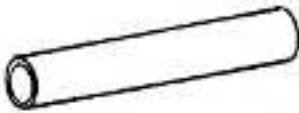
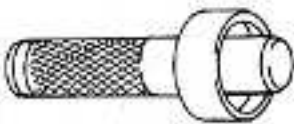




SPECIAL SERVICE TOOLS

Tool number	Tool name	Unit application	
		F4W63L	FS5W63A
ST23540000	Fork rod pin punch 	X	X
ST23100000	Countershaft guide 	X	
ST22520000	Wrench 	X	X
KV38104010	Oil seal drift 	X	X
ST30031000	Bearing puller 	X	X
ST23800000	Transmission adapter 	X	
ST22500000	Counter bearing setting tool 		X
ST22490000	Adapter setting plate 		X
KV321013S0 ① KV32101310 ② KV32101320 ③ KV32101330	Puller set Mainshaft puller Adapter Bearing puller 		X

Special Service Tools – **MANUAL TRANSMISSION**

Tool number	Tool name	Unit application	
		F4W63L	FS5W63A
ST22480000	Gear puller 		X
ST22360002	Bearing drift 		X
ST22730000	Bearing puller 		X
ST22452000	Bearing drift 		X
ST33400001	Oil seal drift 	X	X