

SERVICE MANUAL

TRANSMISSION

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Technical and Engineering Management

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**MODEL 140 SERIES CHASSIS & BODY SERVICE MANUAL
SECTION TM**

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GENERAL DESCRIPTION

The 8Ik type transmission was used till Feb.1973. The 8IL type transmission has been used since March.1973. It has been strengthened compared with the last type. The construction remains basically unchanged.

All forward speed gears are of a synchromesh type that uses helical gears.

The reverse gear is of a sliding-mesh type using spur gears. The transmission assembly consists of four main detachable parts: clutch housing, transmission case, rear extension housing and gearshift housing.

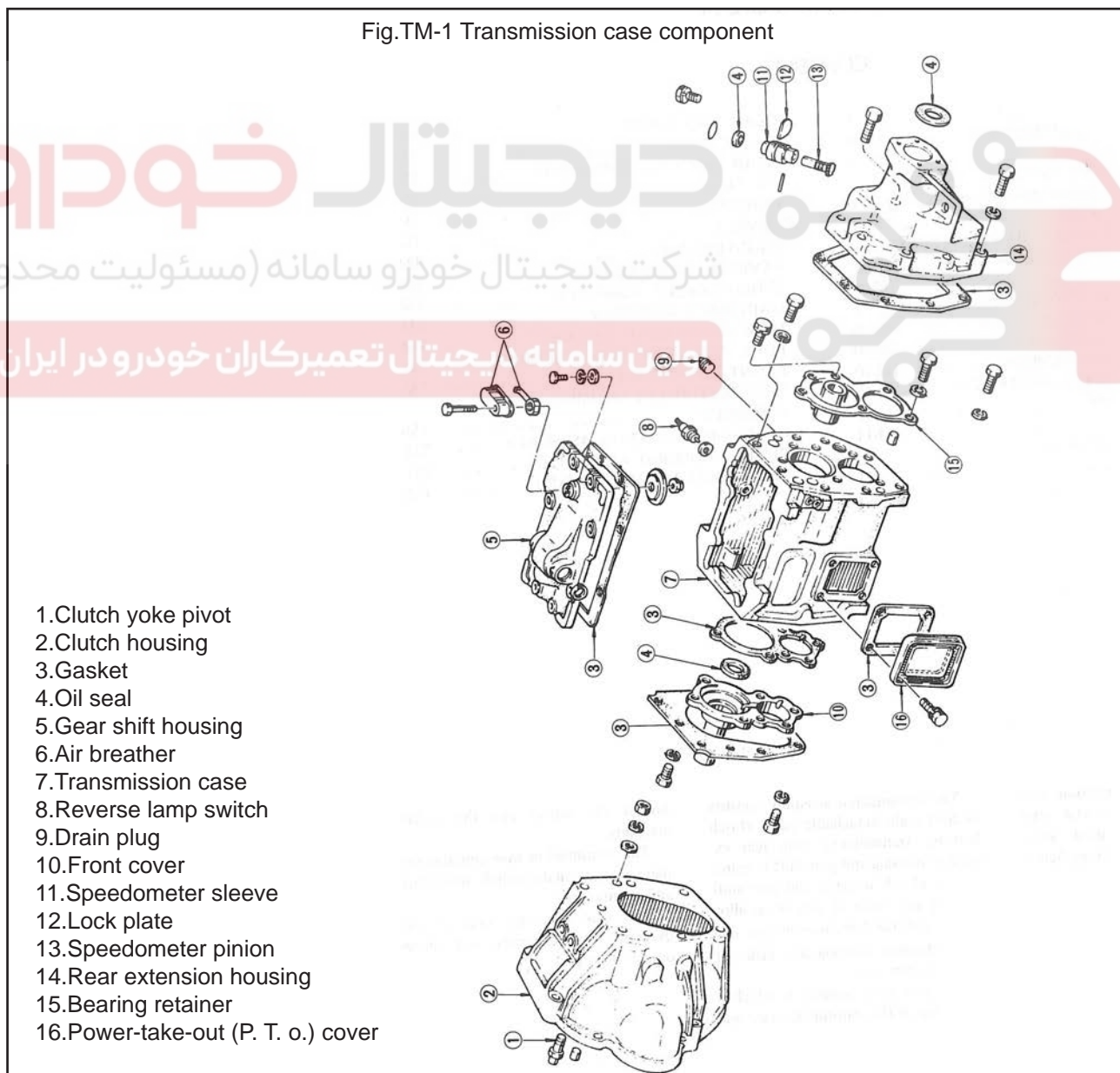
The clutch housing and gear shift housing are made of aluminum alloy metal, and the transmission case and rear extension housing are made of malleable case iron.

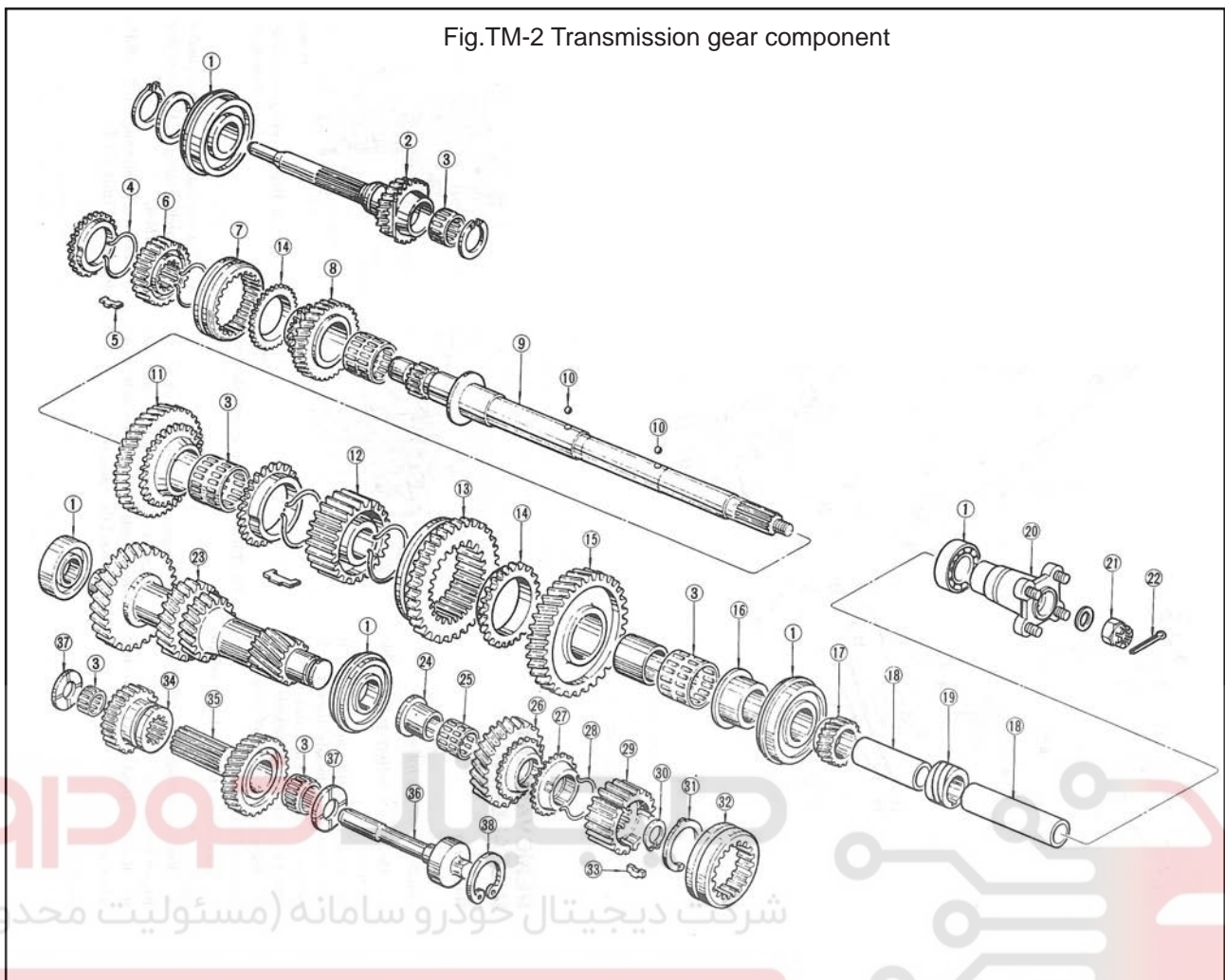
The gear shift housing is attached to the top of the transmission case and houses the shifter and the rocker assembly.

The transmission case contains the main gears, main drive shaft, main shaft and counter-shaft.

The rear extension encloses the overdrive gear assembly and speed-meter drive gear.

Fig.TM-1 Transmission case component



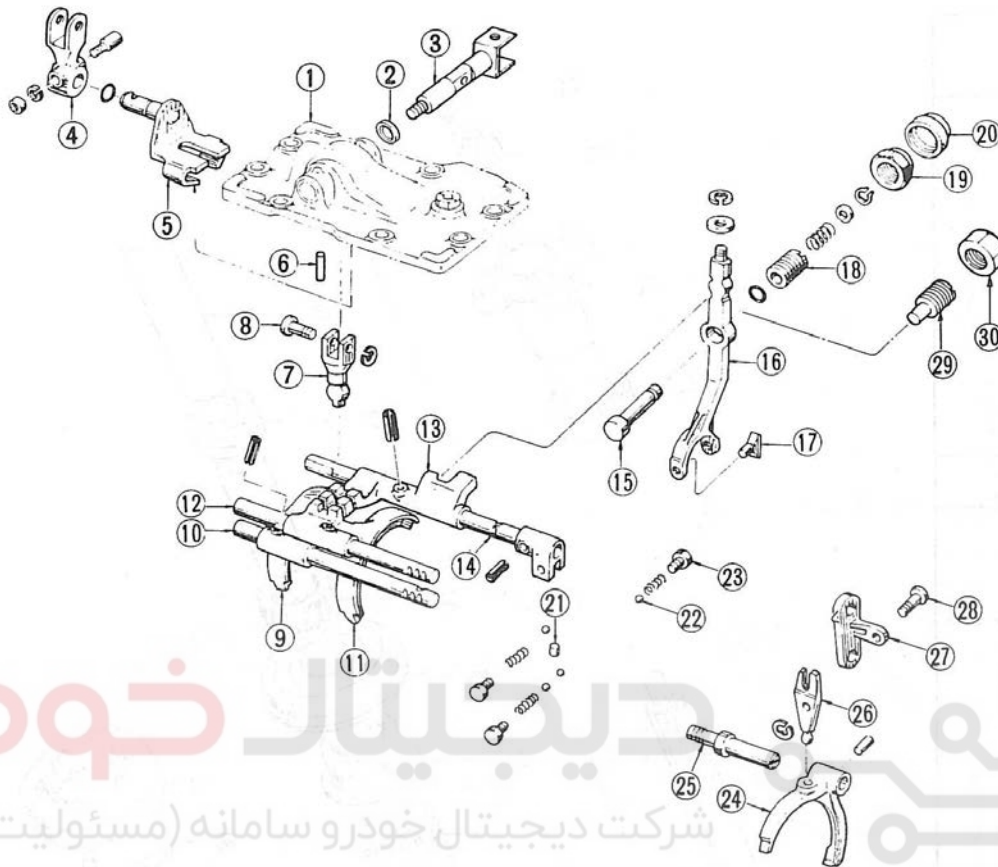


Transmission gear component usage chart

Part name		4-speed	5-speed	Part name		4-speed	5-speed
1	Ball bearing	X	X	21	Self-lock nut	X	X
2	Main drive gear	X	X	22	Cotter pin	X	X
3	Needle bearing	X	X	23	Counter gear	X	X
4	Spread spring	X	X	24	Overdrive gear bushing,		X
5	Shifting insert	X	X	25	countershaft		X
6	3 rd & 4 th synchronizer hub	X	X	26	Needle bearing		X
7	Coupling sleeve	X	X	27	Overdrive gear, countershaft		X
8	3 rd gear, main shaft	X	X	28	Baulk ring		X
9	Main shaft	X	X	29	Spread spring		X
10	Steel ball	X	X	30	Overdrive synchronizer hub		X
11	2 nd gear, main shaft	X	X	31	Spring ring		X
12	2 nd & 1 st synchronizer hub	X	X	32	Snap ring		X
13	Reverse gear, main shaft	X	X	33	Coupling sleeve		X
14	Baulk ring	X	X	34	Shafting insert	X	X
15	1 st gear, main shaft	X	X	35	Reverse idler gear	X	X
16	Mani shaft spacer	X	X	36	Reverse idler gear	X	X
17	Overdrive gear, main shaft		X	37	Reverse idler shaft	X	X
18	Mani shaft spacer	X	X	38	Thrust washer	X	X
19	Speedometer drive gear	X	X		Snap ring		
20	Flange	X	X				

TRANSMISSION GEAR SHIFTING

Fig.TM-3 Transmission gear component



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Component usage chart

Part name	4-speed	5-speed	Part name	4-speed	5-speed
1 Gear shift bushing	X	X	16 Reverse shift fork	X	X
2 Oil seal	X	X	17 Reverse gear shift shoe	X	X
3 Shifter shaft	X	X	18 Reverse shift fork bushing		X
4 Selector lever	X	X	19 Lock nut		X
5 Selector shaft	X	X	20 Dust cover		X
6 Retaining pin	X	X	21 Interlock plunger	X	X
7 Selector lever	X	X	22 Check ball	X	X
8 Selector spindle	X	X	23 Check ball plug	X	X
9 3 rd & 4 th speed shift fork	X	X	24 Overdrive shift fork		X
10 3 rd & 4 th fork rod	X	X	25 Overdrive shift fork shaft		X
11 1 st & 2 nd speed shift fork	X	X	26 Overdrive shift fork		X
12 1 st & 2 nd fork rod	X	X	27 Overdrive fork bracket		X
13 Reverse(&overdrive)shift fork	X	X	28 Clevis pin		X
14 Reverse(&overdrive)fork rod assembly	X	X	29 Reverse shift fork shaft	X	X
15 Reverse shift fork			30 Lock nut	X	

TRANSMISSION REMOVAL AND INSTALLATION Removal

To dismount transmission from vehicle, proceed as follows:

1. Disconnect battery ground cable from terminal.
2. Jack up vehicle and support it with four stands in safe manner. It is recommended that a hydraulic hoist or open pit be utilized, if available.
3. Remove propeller shaft assembly. Refer to PD section.
4. Disconnect reverse lamp switch wires.
5. Remove speedometer cable companion nut.
6. Remove upper select rod from select lever.
7. Disconnect lower shift rod. Remove frame and transmission by moving toward the frame side.

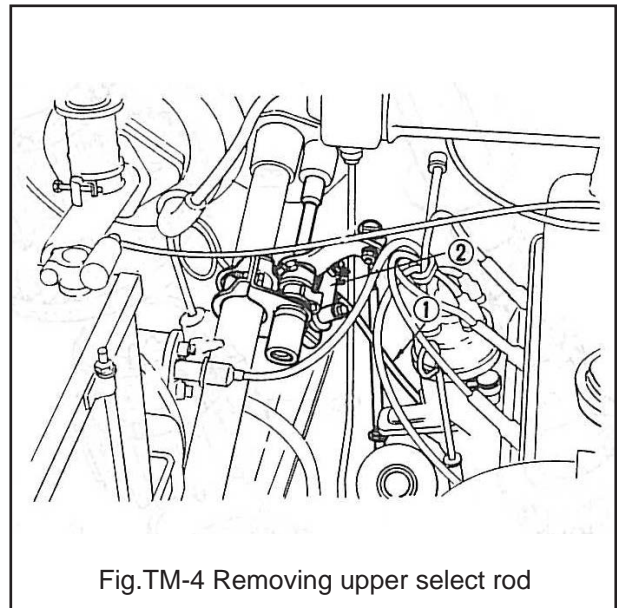


Fig.TM-4 Removing upper select rod

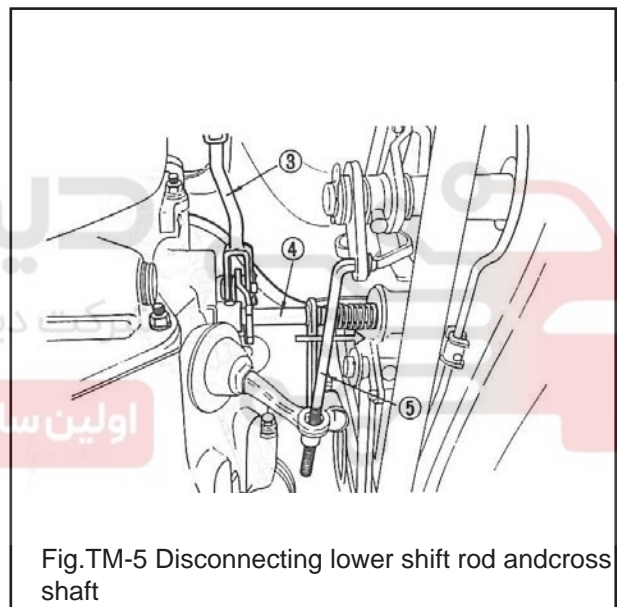


Fig.TM-5 Disconnecting lower shift rod and cross shaft

8. Remove clutch operating cylinder from clutch housing (L. H. drive). Disconnect adjusting rod (R. H. drive).

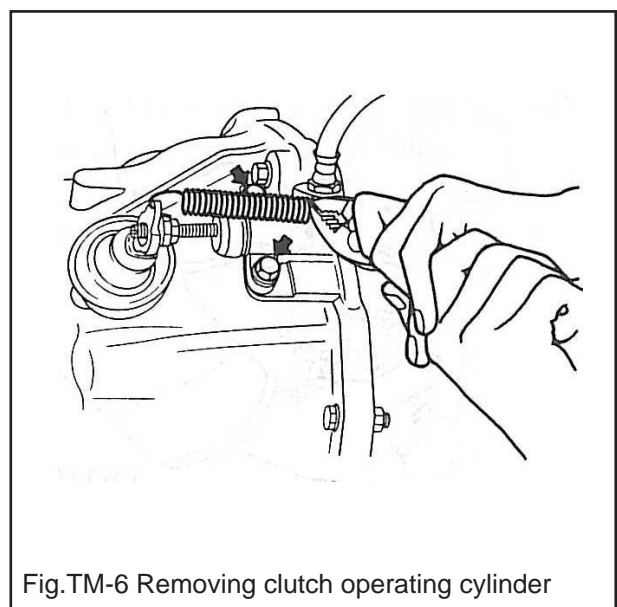


Fig.TM-6 Removing clutch operating cylinder

9. Unscrew two bolts which attach exhaust tube bracket to clutch housing.

10. Remove exhaust tube assembly from vehicle.

11. Unscrew starter motor to clutch housing securing bolts, and detach starter motor from clutch housing.

12. Remove center brake drum and disconnect center brake wire at brake lever. By shifting brake lever inside with screwdriver inserted between brake shoe and brake lever, locking ball of center brake wire is easily removed.

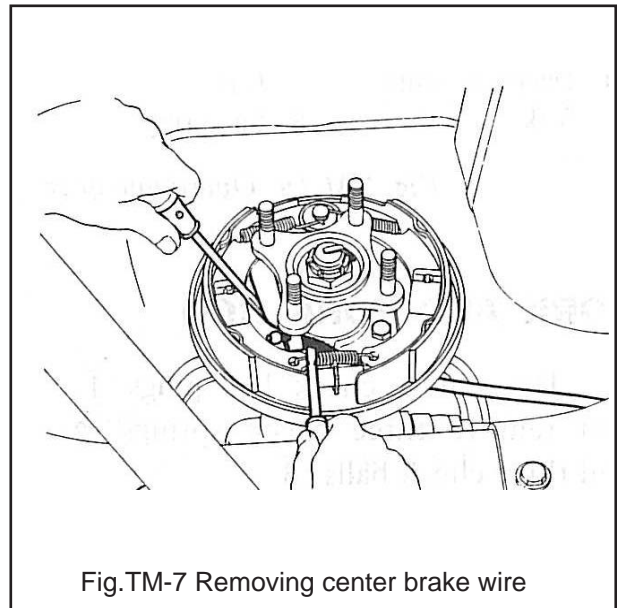


Fig.TM-7 Removing center brake wire

13. Unscrew two bolts which attach rear mounting insulator to rear extension housing. See Figure TM-9.

14. Support transmission with air jack.

Note:

Since transmission is drawn backward, support securely so as to prevent it from turning down or dropping. See Figure TM-8.

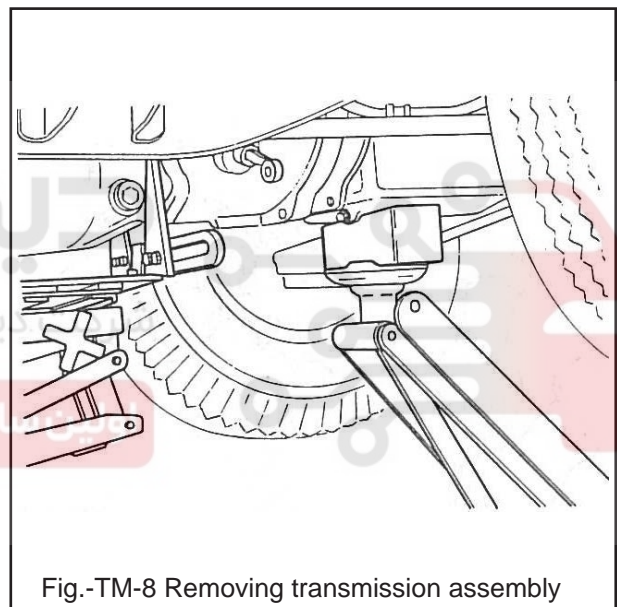


Fig.-TM-8 Removing transmission assembly

15. Unscrew four cross -member to frame securing bolts, and detach cross -member from frame. See Figure TM-9.

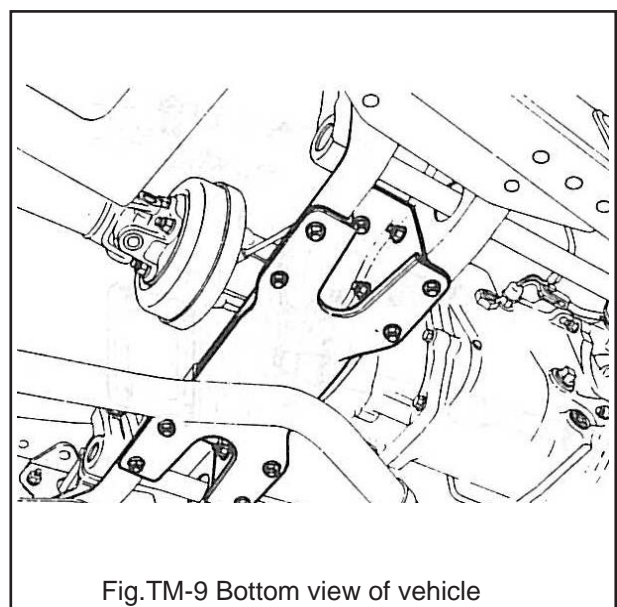


Fig.TM-9 Bottom view of vehicle

Note:

Apply a jack beneath oil pan and support engine. Be careful not to jack to oil pan drain plug. When applying jack place a wooden block between oil pan and jack to prevent oil pan from damage .

16. Remove engine and engine rear plate to transmission securing bolts, and draw off transmission backward and dismount it from vehicle.

Installation

To install, reverse the order of removal.

Tightening torque:

Engine to transmission installation bolt:

6.5 to 9.0 kg-m(47 to 65 ft-lb)

Engine rear plate to transmission:

0.8 to 1.3 kg-m(5.8 to 9.4 ft-lb)

Propeller shaft to transmission

6.5 to 8.0 kg-m(47 to 58 ft-lb)

Cross-member to frame:

3.2 to 4.3 kg-m(23 to 31 ft-lb)

DISASSEMBLY

To disassemble transmission utilize the following procedures.

1. Drain gear oil.

2. Detach dust cover and withdrawal lever together with clutch release bearing assembly from clutch housing.

See Figure TM-10.

3. Remove speedometer pinion assembly lock plate securing bolt and detach speedometer pinion assembly from rear extension housing. See Figure TM-11.

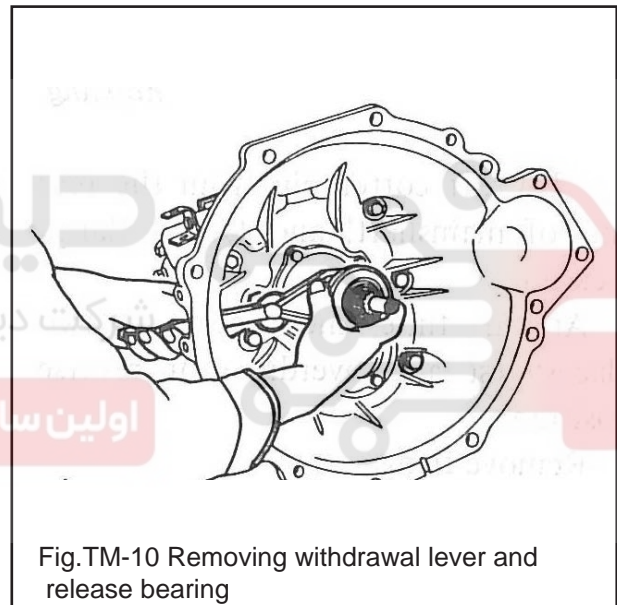


Fig.TM-10 Removing withdrawal lever and release bearing

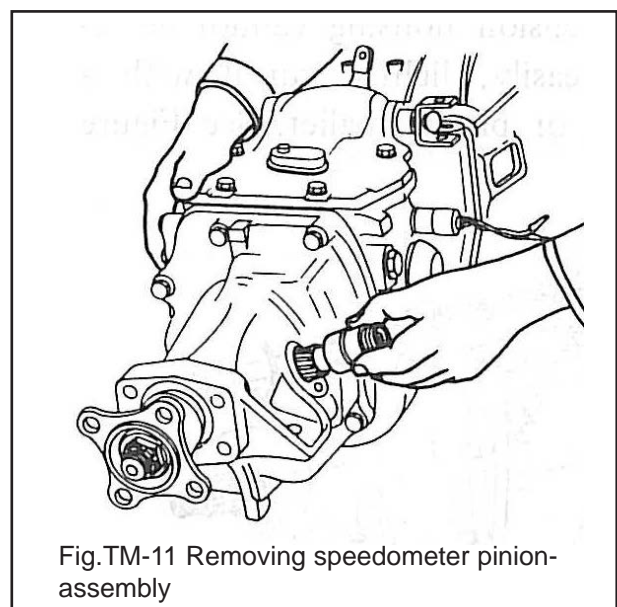


Fig.TM-11 Removing speedometer pinion-assembly

4. Detach reverse lamp switch from transmission case. See Figure TM-12.

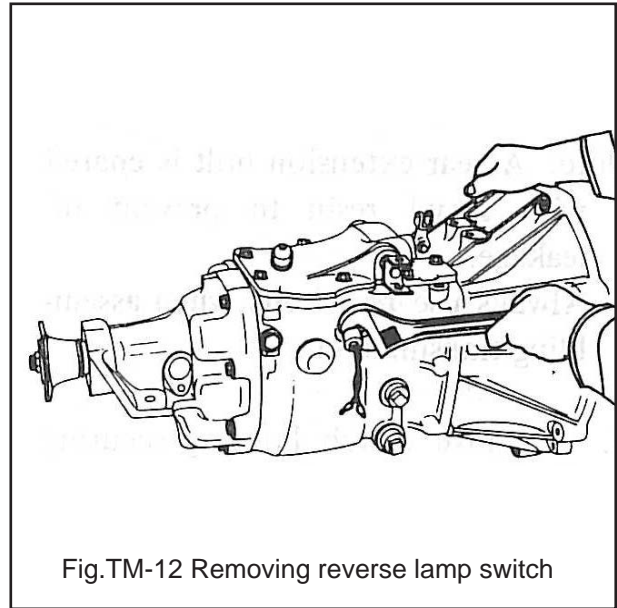


Fig.TM-12 Removing reverse lamp switch

5. Remove gear shift housing securing bolts and detach gear shift housing from transmission case. See Figure TM-13.

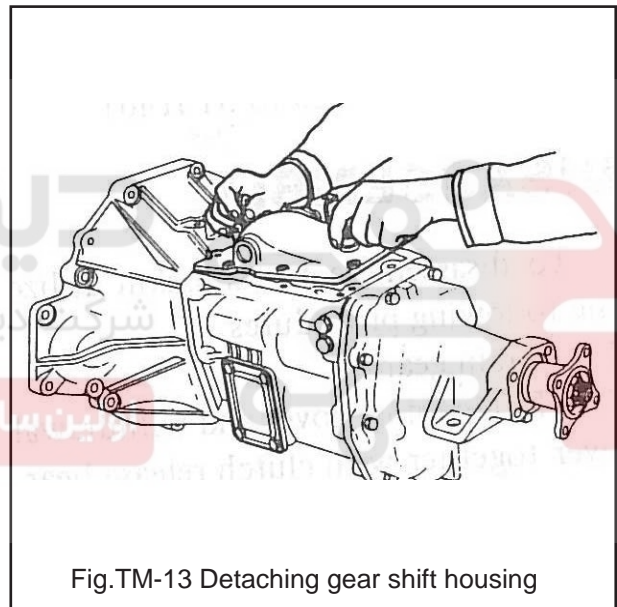


Fig.TM-13 Detaching gear shift housing

6. Pry off cotter pin from the rear end of main shaft, and loosen flange lock nut. At this time, mesh gears at two places: 1standoverdriveorreverseposition, Remove flange.

7. Remove four center brake shoe assembly securing bolts and detach center brake shoe assembly from the end of rear extension housing.

8. Removing rear extension housing securing bolts and detach rear extension housing from transmission case. If rear extension housing cannot be removed easily, lightly tap it with a wooden or plastic mallet. See Figure TM-14.

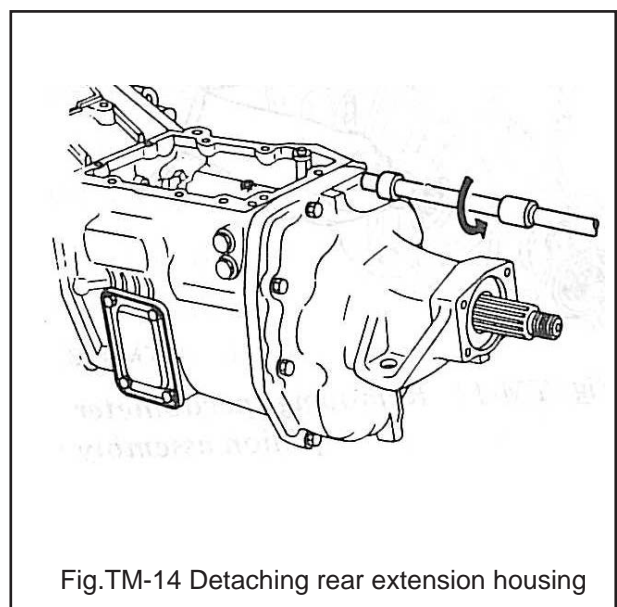


Fig.TM-14 Detaching rear extension housing

Note:

A rear extension bolt is coated with alkyd resin to prevent oil leakage. Always use new bolts when assembling transmission.

9. Remove clutch housing securing bolts and detach clutch housing from the front end of transmission case.

See Figure TM-15.

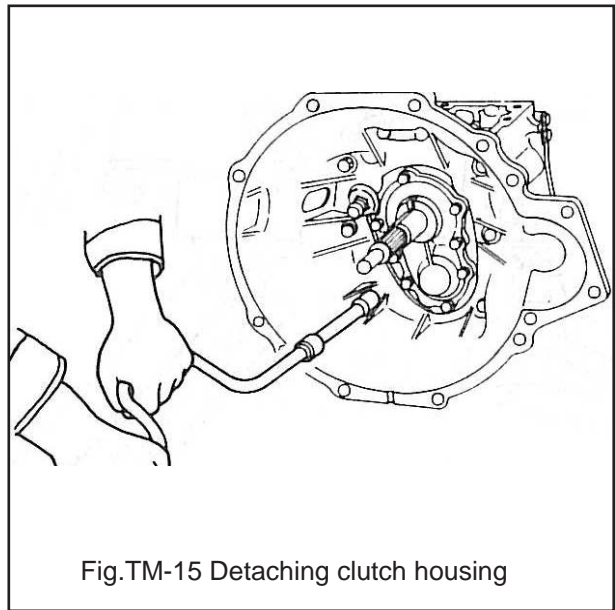


Fig.TM-15 Detaching clutch housing

10. Remove front cover securing bolts and detach front cover. See Figure TM-16.

Note:

The front cover securing bolts are coated with alkyd resin to prevent oil leakage. If bolts are once removed, they should not be used again.

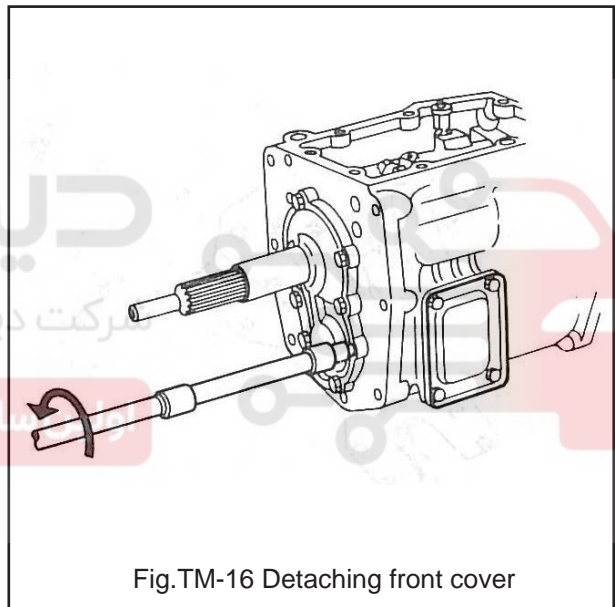


Fig.TM-16 Detaching front cover

COUNTER OVERDRIVE GREAR DIS-ASSEMBLY

(For 5-speed transmission)

1. Pry off snap ring ② and drive out clevis pin ③.

2. Remove snap ring ⑧ at the end of countershaft, using snap ring expander and then remove overdrive synchronizer counter gear, needle bearing, baulk ring, overdrive shift forks ⑦ and ④.

See Figures TM-17 and TM-18.

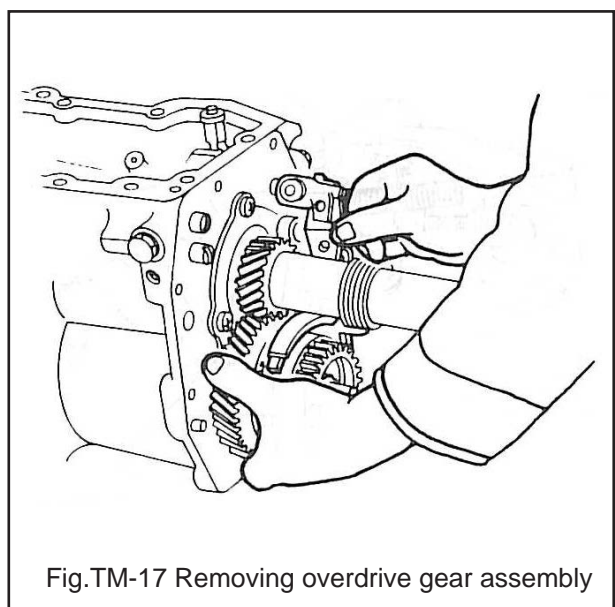


Fig.TM-17 Removing overdrive gear assembly

1. Revers& overdrive fork rod
2. Snap ring
3. Clevis pin
4. Overdrive shift fork
5. Overdrive fork bracket
6. Overdrive shift fork shaft
7. Overdrive shift fork
8. Snap ring

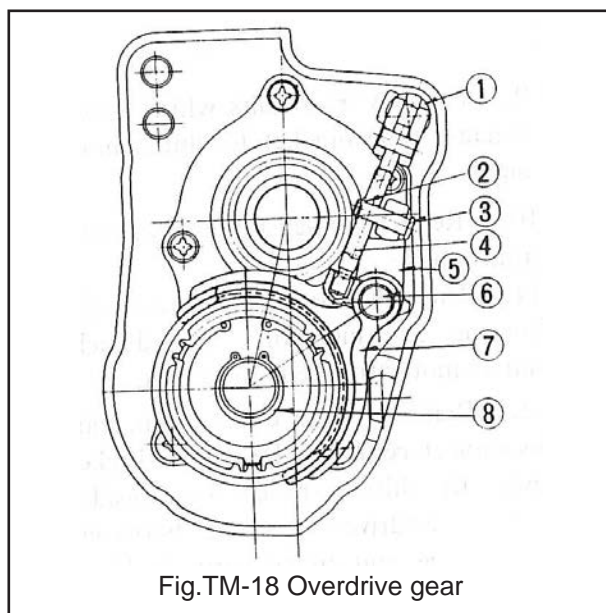


Fig.TM-18 Overdrive gear

FORK AND FORK ROD

1.Disconnect check ball plugs ①. And remove three check spring ② and three check balls ③.

Be careful not to lose these parts.

See Figure TM-21.

2.Using Fork Rod Pin Punch KV32101100, drive out retaining pins from fork rods.

See Figure TM-19.

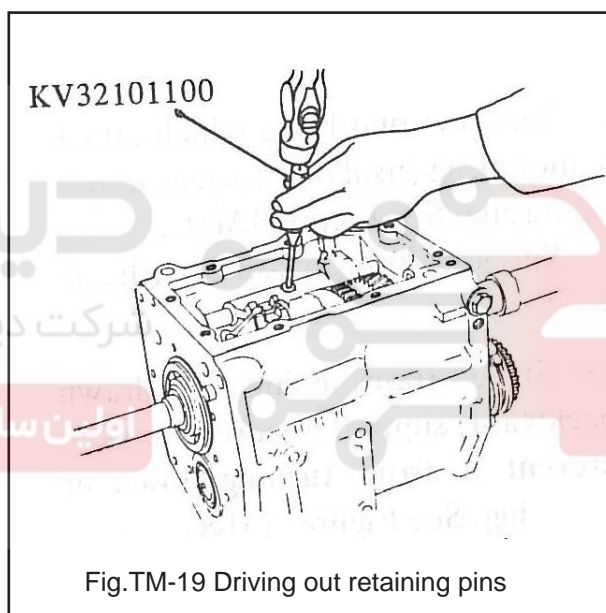


Fig.TM-19 Driving out retaining pins

3.Drive out three fork rods to the rear side of transmission case, and take out two forks and reverse shift fork.See Figure TM-20.

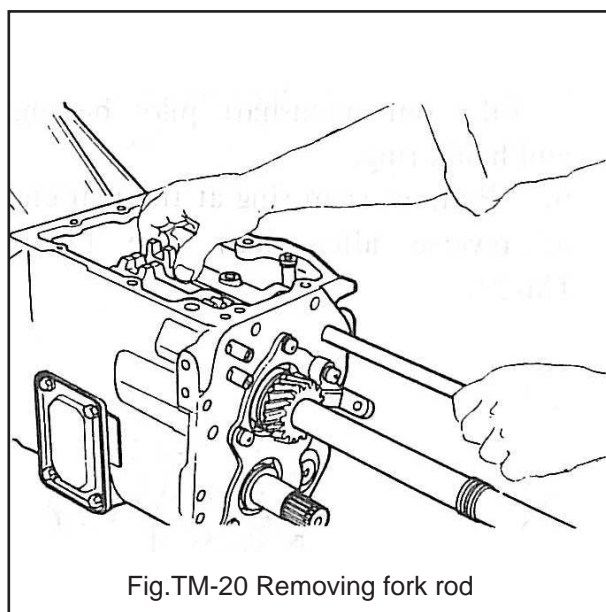


Fig.TM-20 Removing fork rod

4.remove interlock plunger ⑦ interlock ball ⑧ and interlock pin⑨.

Be careful not to lose them.

See Figure TM-21.

1. Check ball plug
2. Check spring
3. Check ball
4. 1 st & 2 nd fork rod
5. 3 rd & 4 th fork rod
6. Rever & Overdrive fork rod
7. Interlock plunger
8. Interlock ball
9. Interlock pin
10. Transmission case

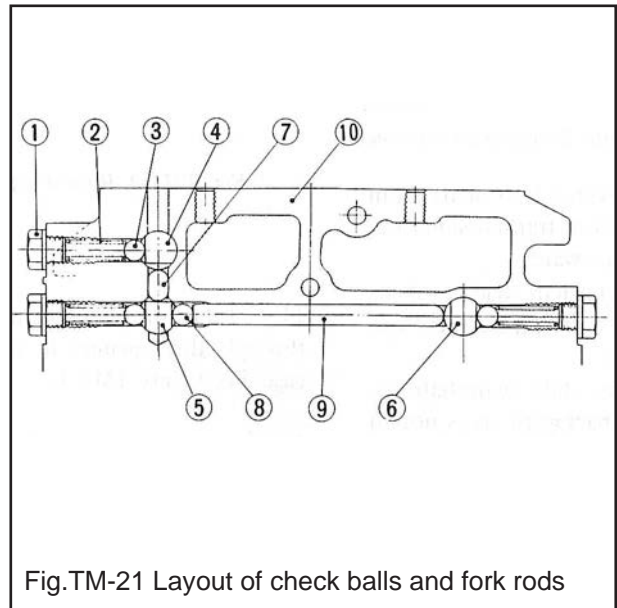


Fig.TM-21 Layout of check balls and fork rods

5. (For 5-speed transmission)

Remove overdrive shift fork shaft ①, and then unscrew small flat head screw securing overdrive fork bracket and bearing retainer to transmission case, using the shock drive.

Remove overdrive shift bracket.

See Figure TM-22.

1. Overdrive shift fork shaft
2. Screw
3. Overdrive fork bracket

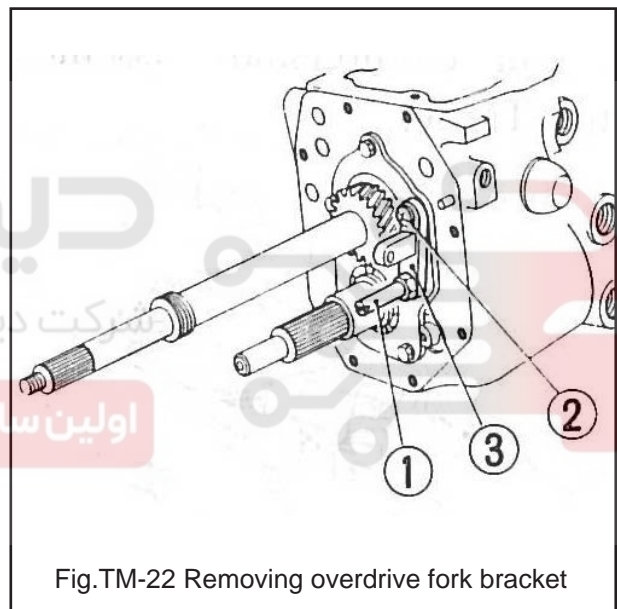


Fig.TM-22 Removing overdrive fork bracket

(For 4-speed transmission)

Remove bolt securing bearing retainer to transmission case, using universal tool.

See Figure TM-23.

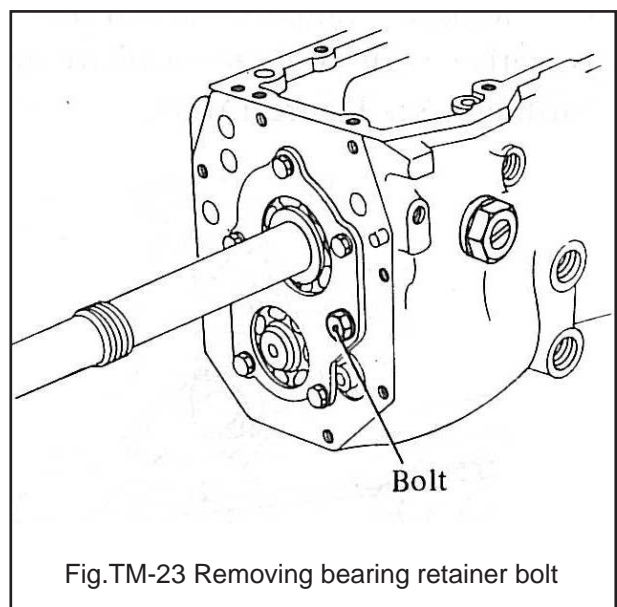


Fig.TM-23 Removing bearing retainer bolt

MAINSHAFT,MAIN DRIVE SHAFT, COUNTERSHAFT AND REVERSE IDLER SHAFT

1.Remove main shaft rear bearing, using universal puller, and then take out spacer. See Figure TM-24.

2.Remove speedometer drive gear, steel ball and spacers.Be careful not to lose steel ball.

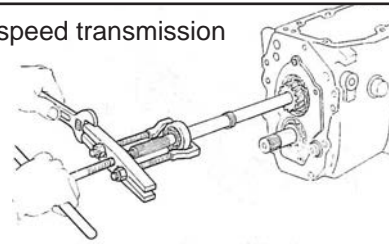
3. (For 5-speed transmission)

Remove overdrive gear by placing the tips two flat drivers the back of overdrive gear. If it is difficult to slide its out, use universal puller. See Figure TM-25.

(For 4-speed transmission)

Remove snap ring at the rear end of countershaft, using snap ring expander. See Figure TM-26.

For 5-speed transmission



For 4-speed transmission

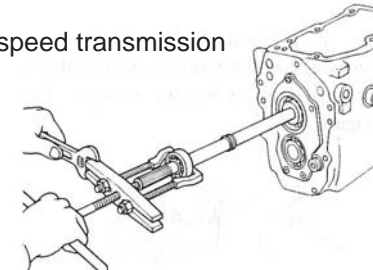


Fig.TM-24 Removing main shaft rear bearing

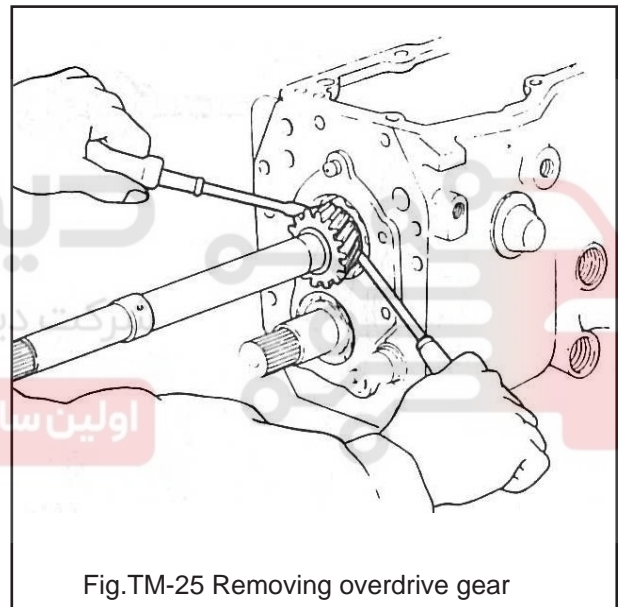


Fig.TM-25 Removing overdrive gear

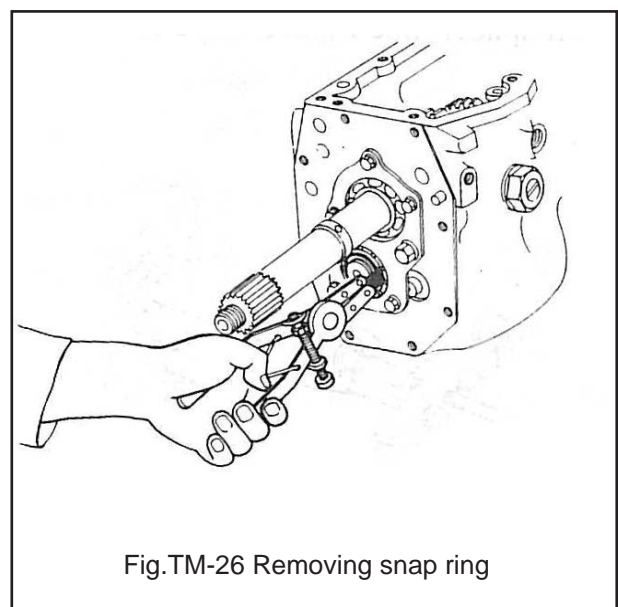


Fig.TM-26 Removing snap ring

4.Remove small flat head screws securing bearing retainer, using a shock drive. Remove bearing retainer. See Figure TM-27.

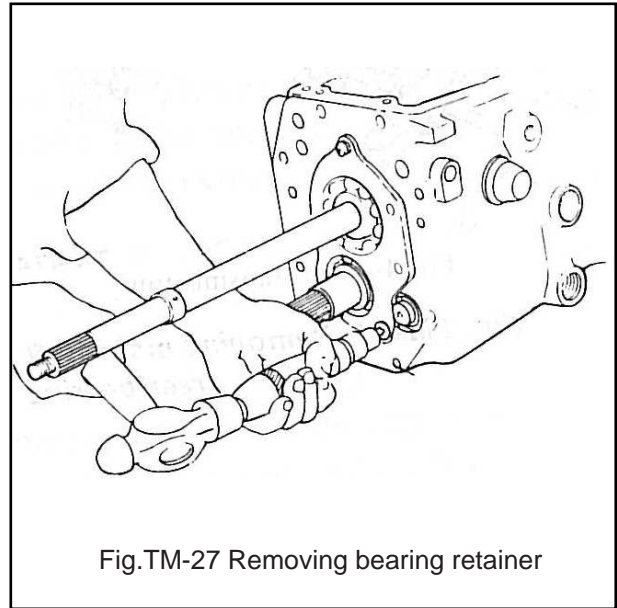


Fig.TM-27 Removing bearing retainer

5.Remove main drive gear assembly from the front of transmission case.

Tap transmission case backward with a plastic or wooden mallet, placing the cut-out portion on main drive gear downward and holding main drive gear by hand. See Figure TM-28.

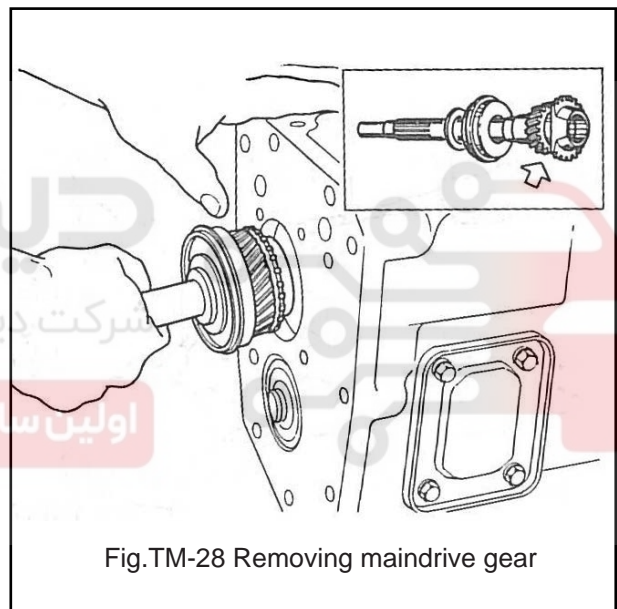


Fig.TM-28 Removing maindrive gear

Take out main shaft pilot bearing and baulk ring.

6.Remove snap ring at the end of reverse idler shaft. See Figure TM-29.

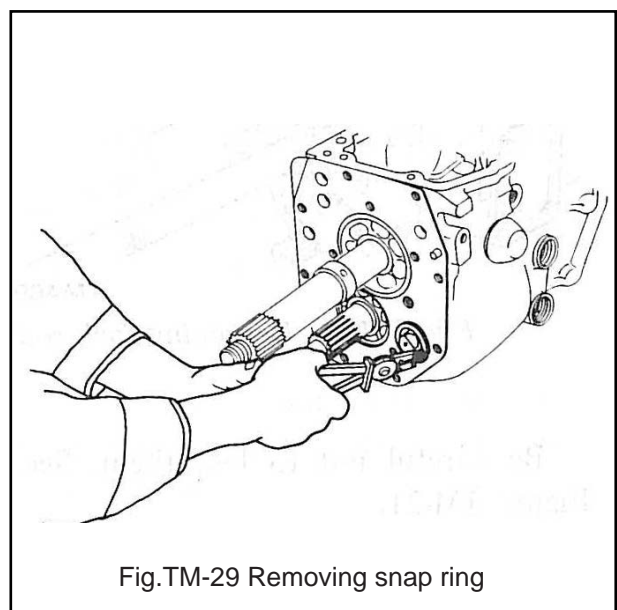


Fig.TM-29 Removing snap ring

7.Remove reverse idler shaft from the front support of transmission case, driving out backward.

8.Slide countershaft back -ward to remove countershaft rear bearing from transmission case.

At this time, slide main shaft assembly a little backward so as not to disturb with countershaft. See Figure TM-30.

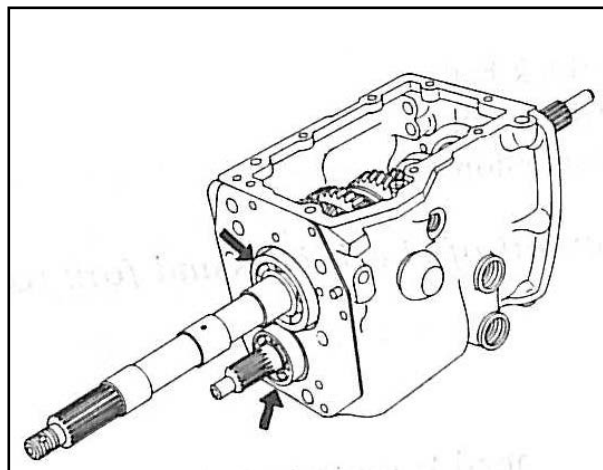


Fig.TM-30 Driving out main shaft assembly and countershaft assembly

9.Remove countershaft rear bearing (together with counter overdrive gear bushing).See Figure TM-31.

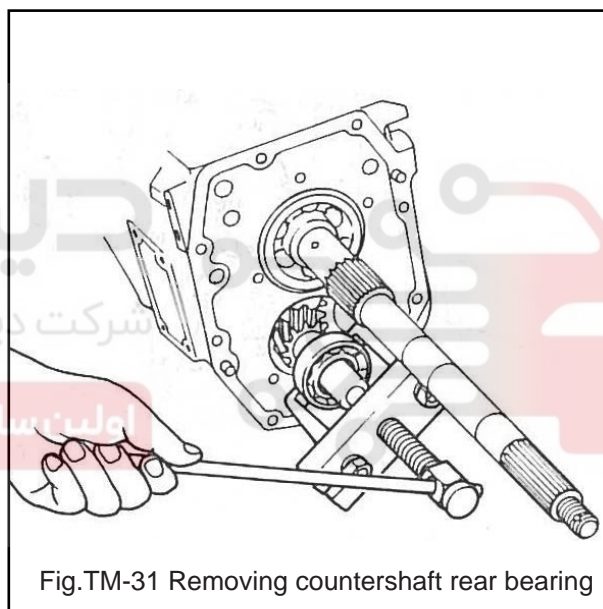
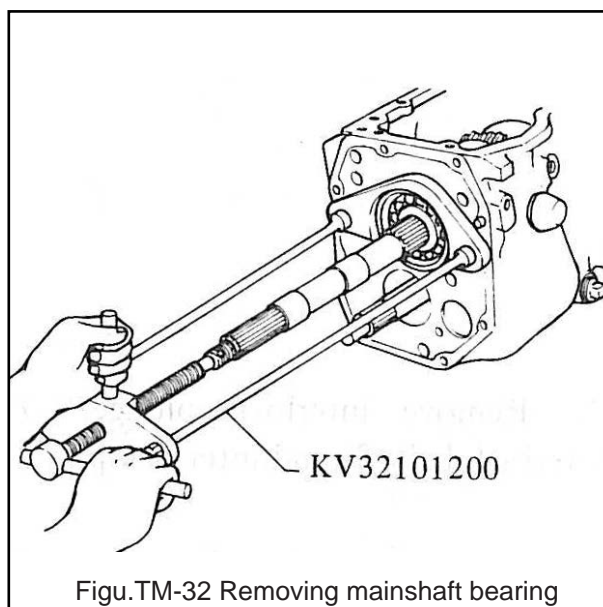


Fig.TM-31 Removing countershaft rear bearing

10.Tap the rear end of main shaft to drive it into transmission case, and remove main shaft bearing (by using Mainshaft Bearing Puller KV32101200). See Figure TM-32.



Figu.TM-32 Removing mainshaft bearing

11. Take out main shaft assembly through the opening in transmission case. See Figure TM-33.

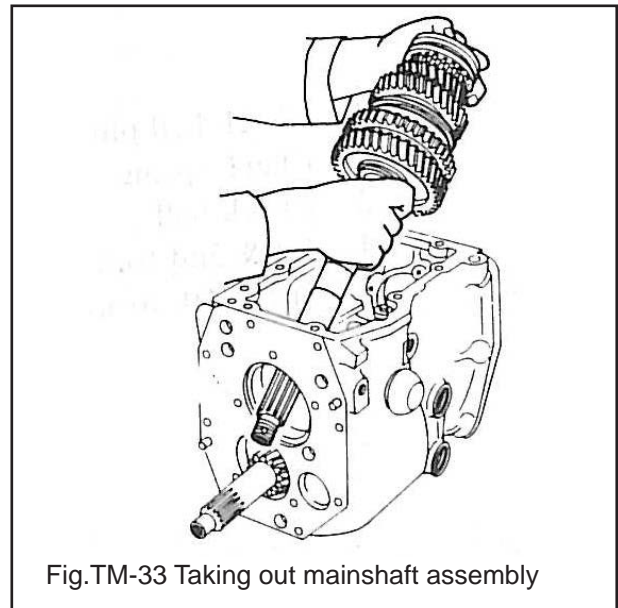


Fig.TM-33 Taking out mainshaft assembly

12. Take out reverse idler gear assembly, needle bearing, thrust washer and countershaft assembly. See Figure TM-34.

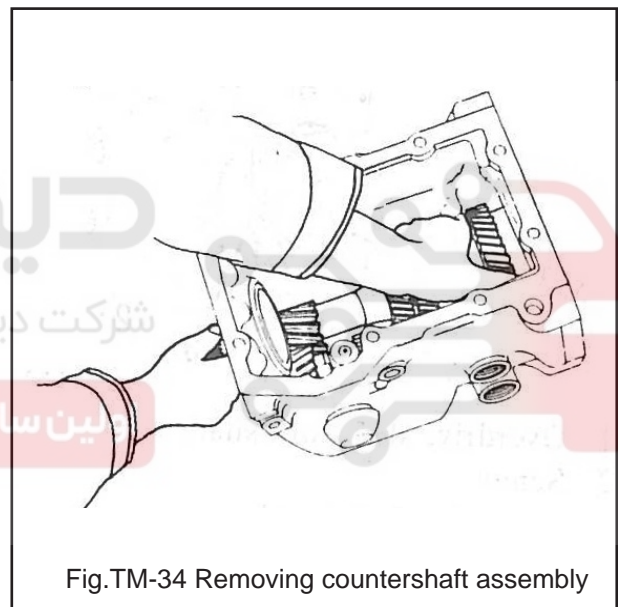


Fig.TM-34 Removing countershaft assembly

MAIN DRIVE GEAR DISASSEMBLY

1. Pry off snap ring on the front side of main drive gear bearing, and remove spacer. See Figure TM-35.

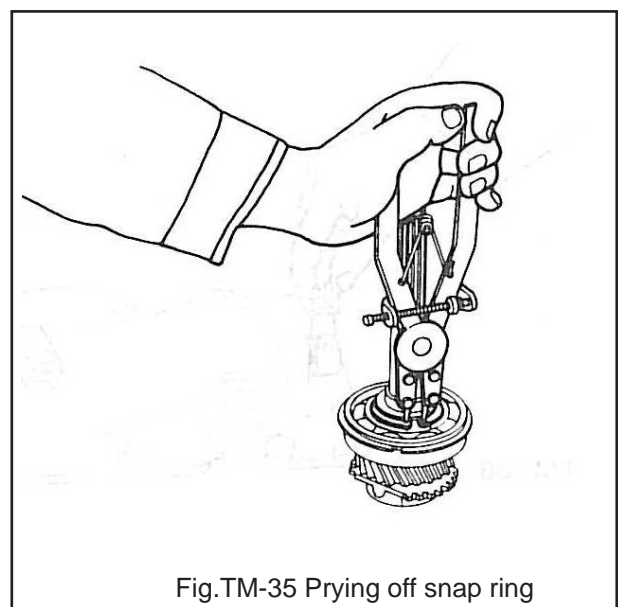


Fig.TM-35 Prying off snap ring

2.Remove main drive gear bearing by using suitable press. See Figure TM-36.
 3.As 1 st gear bushing is tightly fitted on main shaft, support the front end of 2 nd gear.Using a press, with –draw 1 st gear bushing, 1 st & 2 nd synchronizer assembly, 2 nd gear, baulk ring and 2 nd gear needle bearing.

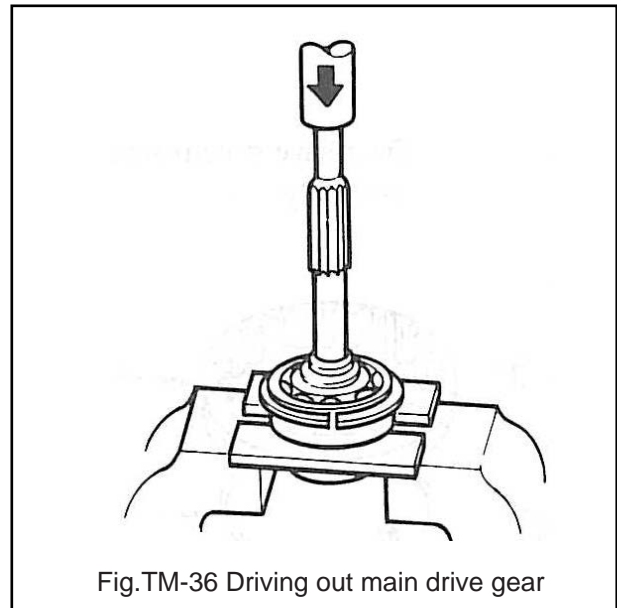


Fig.TM-36 Driving out main drive gear

1. Snap ring
2. Spacer
3. Main drive bearing
4. Main drive gear

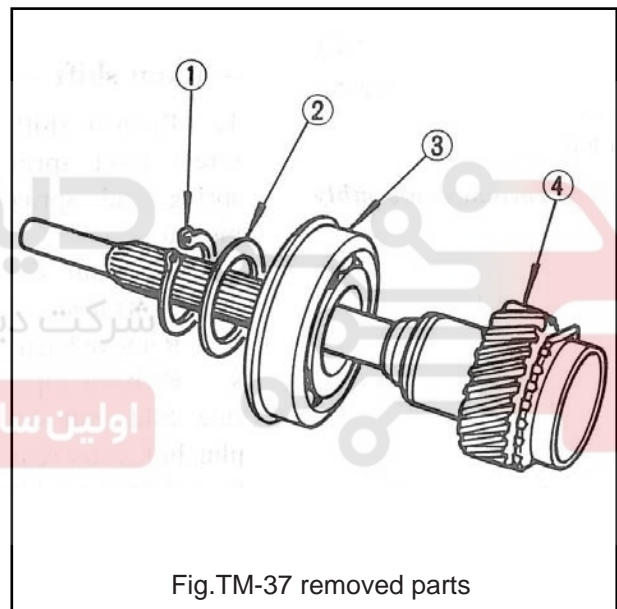


Fig.TM-37 removed parts

MAINSHAFT DISASSEMBLY

1.Pry off snap ring on the front end of main shaft , and remove 3 rd & 4 th synchromesh assembly , bulk ring , 3 rd gear and 3rd gear needle bearing. See FigureTM-38.

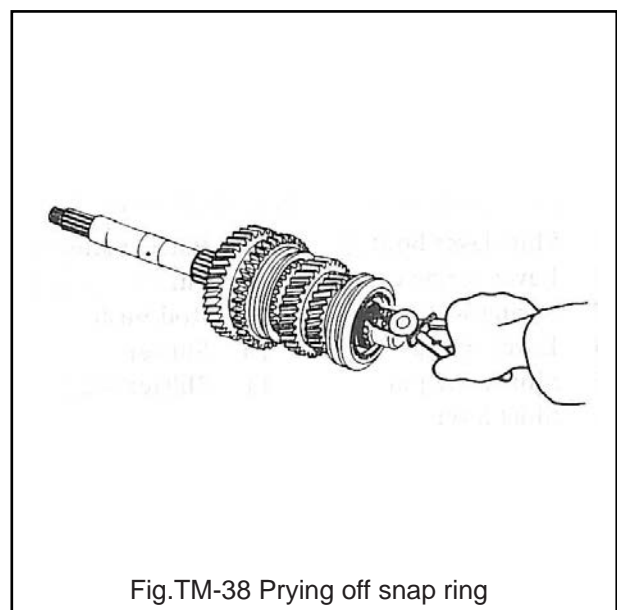


Fig.TM-38 Prying off snap ring

2.Remove spacer on the rear side of main shaft 1 st gear , and take out steel ball.
Be careful not to lose steel ball.
See Figure TM-39.

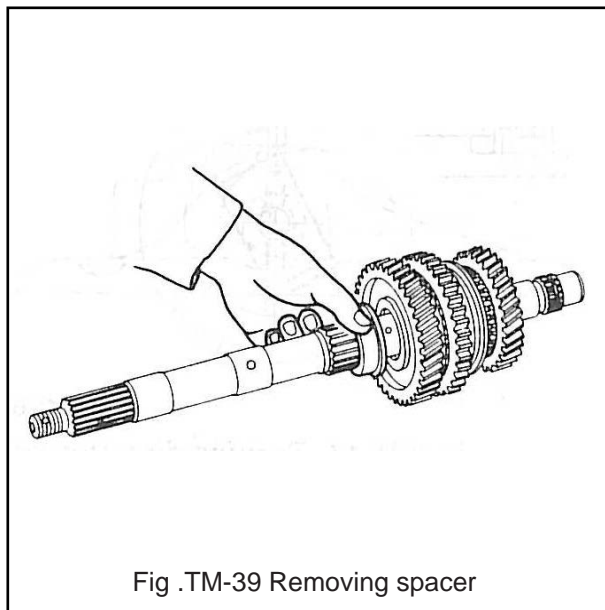


Fig .TM-39 Removing spacer

3.As 1 st gear bushing is tightly fitted on main shaft, support the front end of 2 nd gear.Using a press, with –draw 1 st gear bushing , 1 st & 2 nd synchronizer assembly, 2 nd gear, baulk ring and 2 nd gear needle bearing. See Figure TM-40.

1. Mainshaft
2. 1 st gear bushing
3. 1 st & 2 nd synchronizer
4. Spread spring
5. Shifting insert
6. Reverse main gear
7. Baulk ring
8. 2 nd gear
9. Press stand

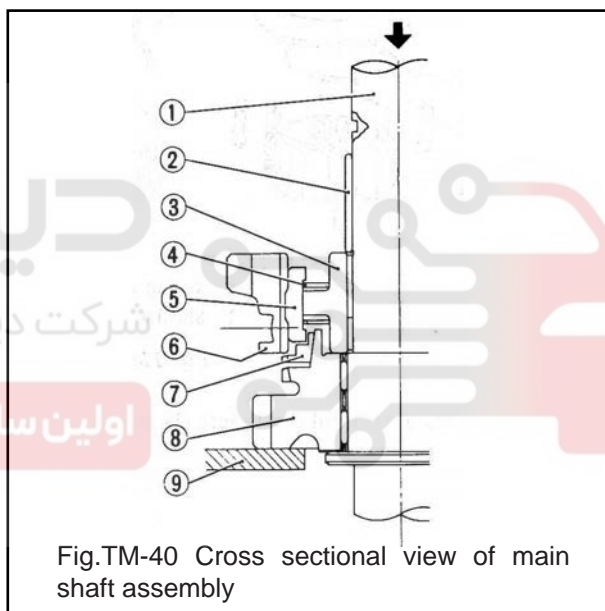


Fig.TM-40 Cross sectional view of main shaft assembly

SYNCHROMESH DISASSEMBLY

1.Remove spread springs ① and take out shifting insert ②.
2.Separate coupling sleeve ③ from synchronizer hub ④ See Figure TM-41.

1. Spread spring
2. Shifting insert
3. Coupling sleeve
4. Synchronizer hub

Note:

Be careful not to lose these parts.

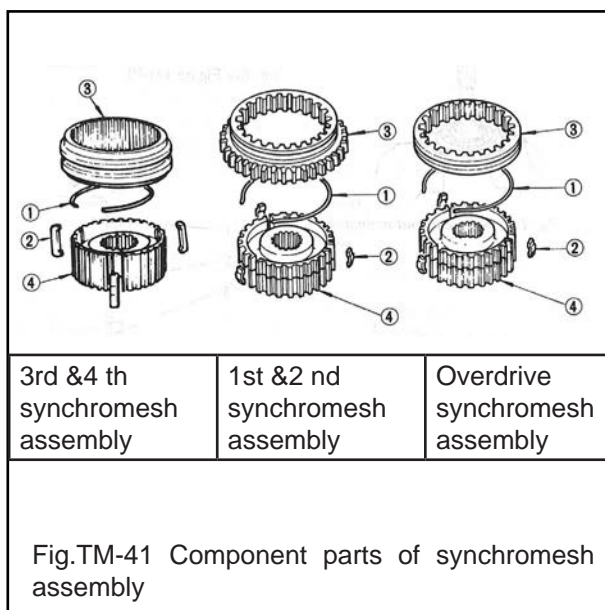


Fig.TM-41 Component parts of synchronesh assembly

COUNTERSHAFT DISASSEMBLY

1.Remove countershaft front bearing using Bearing Puller ST30031000 and a suitable press. See Figure TM-42.

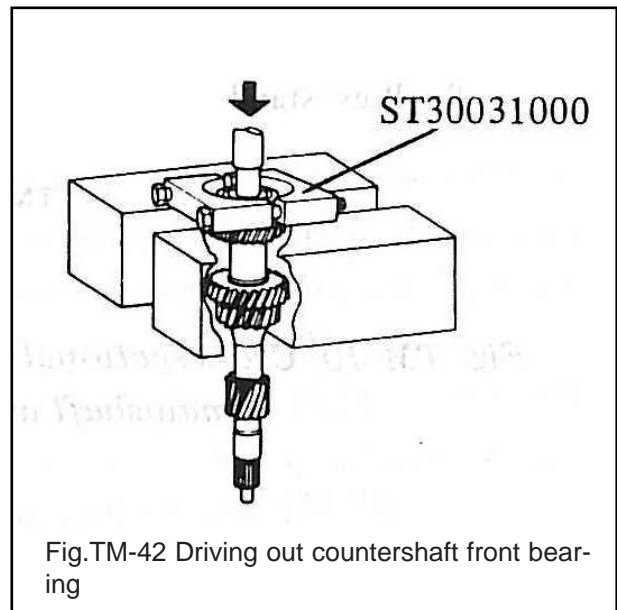


Fig.TM-42 Driving out countershaft front bearing

GEAR SHIFT HOUSING DISASSEMBLY

-Column shift-

1.Pry off snap ring on the shifter spindle, and remove shifter lever from shifter shaft. See Figure TM-43

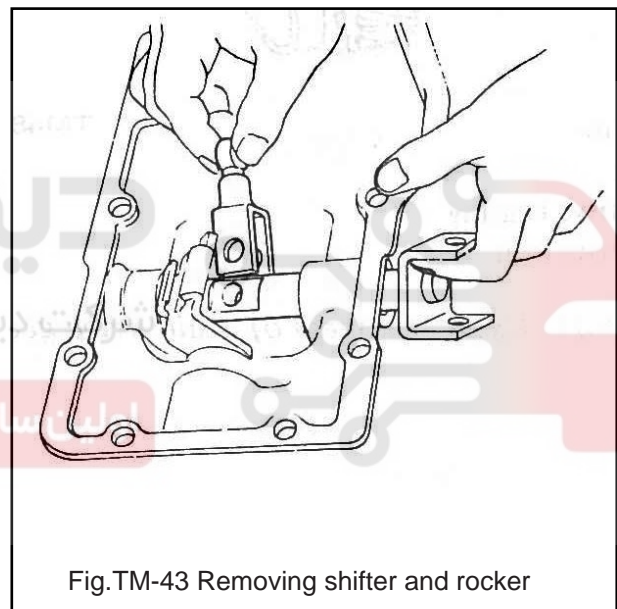


Fig.TM-43 Removing shifter and rocker

2.Turn shifter shaft in the direction shown in the below figure and drive out shifter shaft. See Figure TM-44.

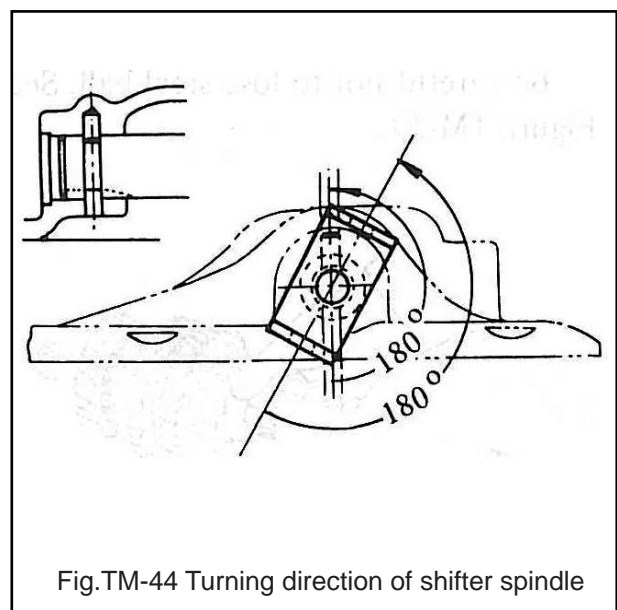


Fig.TM-44 Turning direction of shifter spindle

3.Remove nut securing selector lever selector shaft.

Withdraw cotter pin, and drive out selector shaft backward.See FigureTM-45.

-Floor shift-

1.Remove shift lever boot and unscrew lever spring cap. Then lever spring and spring seat can be removed.

2.Take out shift lever pin and remove shift lever.

3.Remove baffle plate.

4.Remove taper plug at the front side. Slide out shifter spindle through plug hole after removing pins which attach shifters to shifter spindle.

- | | |
|--------------------|------------------|
| 1 Shift lever boot | 7 Baffle plate |
| 2 Lever spring cap | 8 Pin |
| 3 Spring seat | 9 Rod bush |
| 4 Lever spring | 10 Shifter |
| 5 Shift lever pin | 11 Shifter shaft |
| 6 Shift lever | |

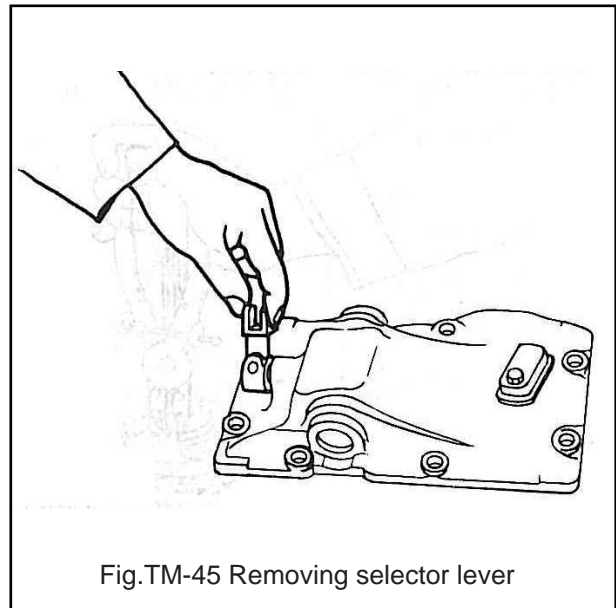


Fig.TM-45 Removing selector lever

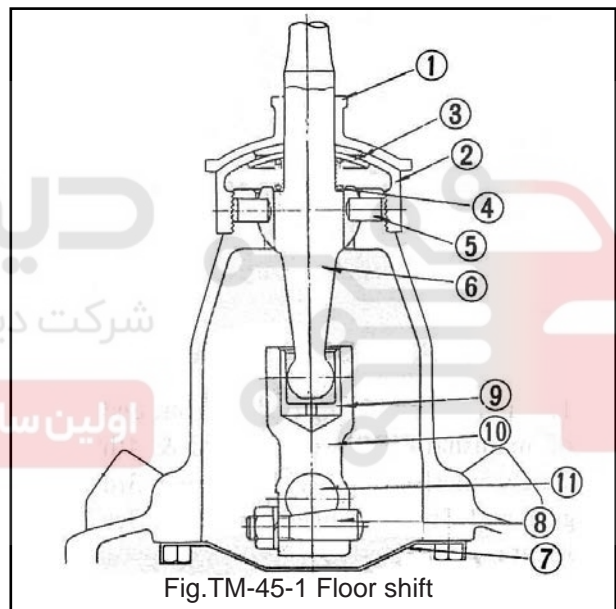


Fig.TM-45-1 Floor shift

TRANSMISSION CASE

(For 5-speed transmission)

1.Remove dust cover on the right side of transmission case.

2.Pry off snap ring on the reverse shift fork shaft. At this time, take out reverse fork shift shaft return spring.

Be careful not to lose return spring.

3.Drive out reverse shift fork shaft on the inner side of transmission case, and then take out reverse shift fork together with gear shift shoes. See Figure TM-46.

- | | |
|-----------------|---------------------------|
| 1 Dust cover | 4 Revers shift fork shaft |
| 2 Snap ring | 5 Reverse shift fork |
| 3 Return spring | 6 Reverse gear shift shoe |

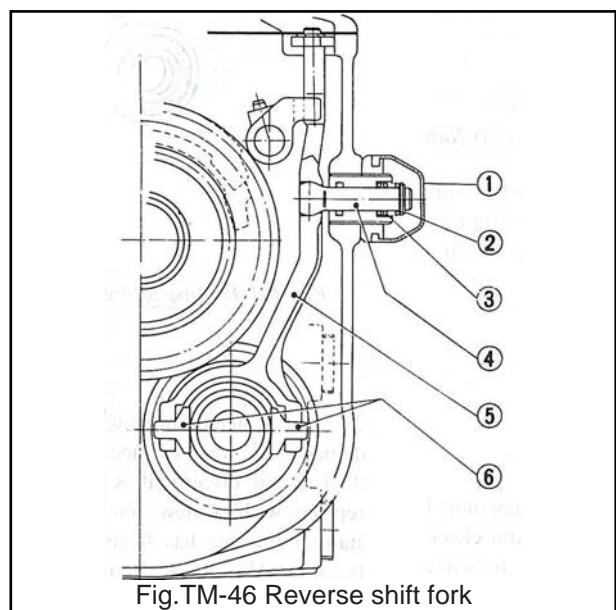


Fig.TM-46 Reverse shift fork

4.Remove four power-take-out cover securing bolts, and remove power-take-out cover. See Figure TM-47.

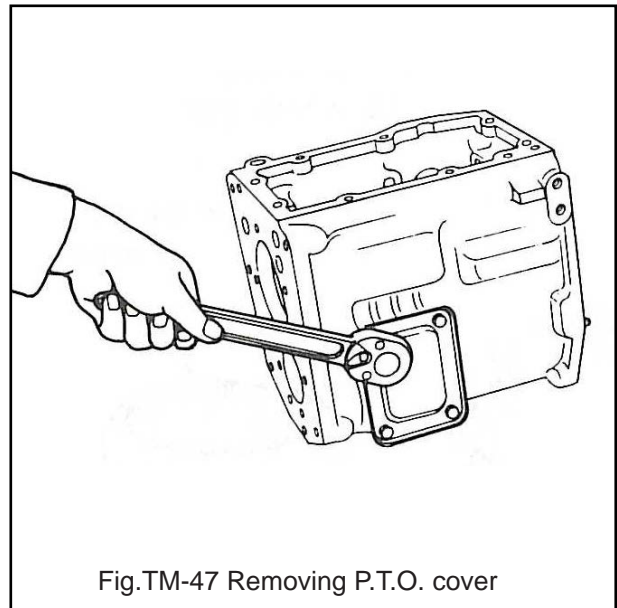


Fig.TM-47 Removing P.T.O. cover

(For 4-speed transmission)

1.Take out reverse shift fork together with gear shift shoes.

Loosen nut retaining reverse shift fork to transmission case, and remove reverse shift fork shaft and nut.

See Figure TM-48.

- 1.Transmission case
- 2.Reverse shift fork
- 3.Reverse gear shift shoe
- 4.Reverse shift fork shaft

2.Remove four power-take-out cover securing bolts, and remove power-take-out cover. See Figure TM-47.

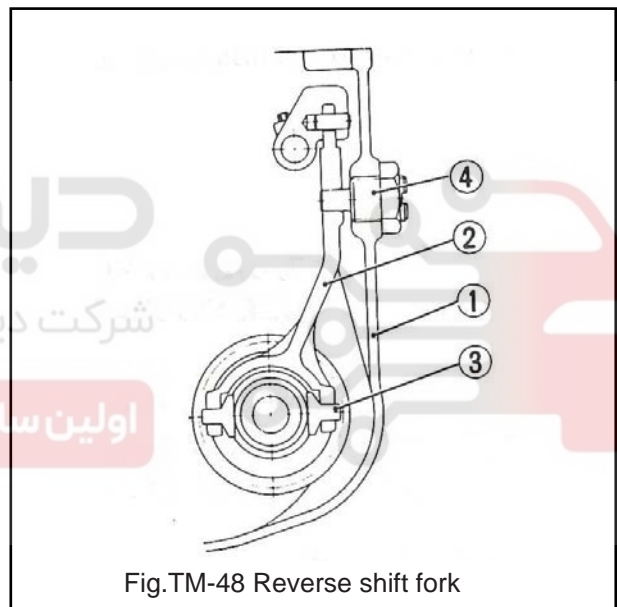


Fig.TM-48 Reverse shift fork

INSPECTION

Thoroughly clean all disassembled parts with cleaning solvent and check for wear, damage or other defective conditions.

TRANSMISSION CASE AND REAR EXTENSION

Clean them with solvent thoroughly and remove adhesive from jointing surfaces completely.

1.Check crack and other defective conditions which may cause oil leaking. Repair or replace if necessary.

2.When bur, pitting and /or other damage exists on jointing surfaces, repair or replace.

3.Check flatness of jointing surfaces and correct using a surface grinder, if necessary.

4.Repair or replace dowel pin (knock pin) if damaged, bent or warped.

BEARING

Thoroughly clean bearing, dry and remove dust with compressed air.

1.Check bearing by turning the outer race holding the inner lace lightly.

When ball bearing inner race and outer race ball sliding surfaces are worn excessively, unsmooth due to crack, or out-of-round of ball is excessive due to wear or rough surface, replace bearing with a new one.

2.Check needle bearing for wear or damage. As wear of needle rollers is difficult to discern, it is where substantial mileage has been covered by the unit. Also check the needle rollers contacting surfaces on shafts.

GEAR AND SHAFT

1.Clean and carefully check the teeth and other ground surfaces for wear damage or crack. Slight scores or burrs may be honed off with a fine stone: however, if any gear is chipped or unduly worn it must be replaced.

2. Check shaft for crack, wear, or worn spline. Replace if required.

3. Check mainshaft for straightness. Replace main shaft with a new one if run-out at rear end exceeds maximum limit.

Maximum run-out : 0.15 mm (0.0059 in)

See Figure TM-50

4.Measure backlash in gears.

Standard backlash	0.09 to 0.21 mm
Drive gear	(0.0035 to 0.0083 in)
1 st, 2 nd, 3 rd and overdrive gear	0.08 to 0.187 mm
	(0.0031 to 0.0074 in)
Reverse idler gear to reverse main gear	0.08 to 0.189 mm
	(0.0031 to 0.0074 in)
	0.09 to 0.21 mm
	(0.0035 to 0.0083 in)
Reverse idler gear to counter gear	0.08 to 0.210 mm
	(0.0031 to 0.0083 in)

If the backlash exceeds the specified value, replace drive and driven gears as set. See Figure TM-51.

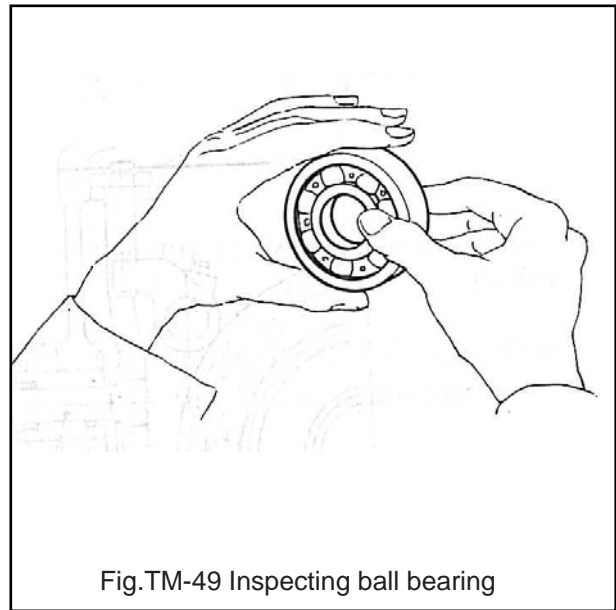


Fig.TM-49 Inspecting ball bearing

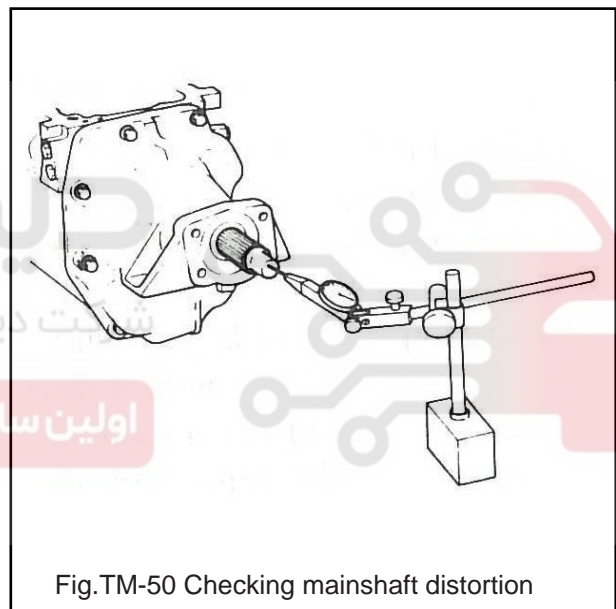


Fig.TM-50 Checking mainshaft distortion

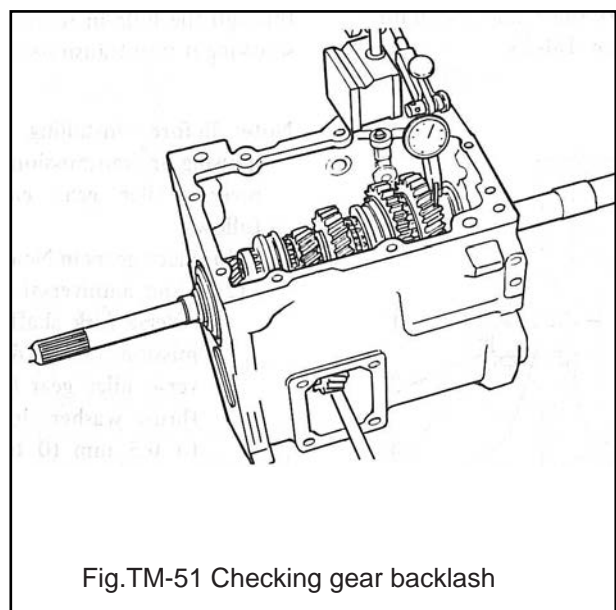


Fig.TM-51 Checking gear backlash

5. Check gears for end play.

See Figure TM-52.

Standard gear end ply :	0.10 to 0.50 mm
3 rd gear	(0.0039 to 0.0197 in)
1 st and 2 nd gears	0.20 to 0.35 mm
	(0.0079 to 0.0138 in)
Overdrive gear	0.10 to 0.25 mm
	(0.0039 to 0.0098 in)
Reverse idler gear	0.05 to 0.40 mm
	(0.0020 to 0.0157 in)

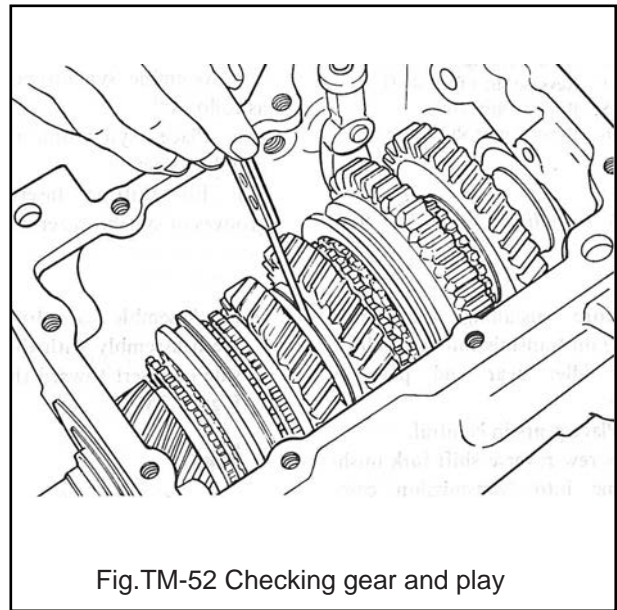


Fig.TM-52 Checking gear and play

BAULK RING

1. Replace baulk ring which is deformed or cracked.

2. Position baulk ring in place on the gear cone and measure the baulk ring to gear clearance with baulk ring fully pushed toward gear.

If the clearance is smaller than the specified value, replace baulk ring.

The standard baulk ring to gear cone clearance is 1.25 to 1.80 mm (0.0492 to 0.0709 in) See Figure TM-53

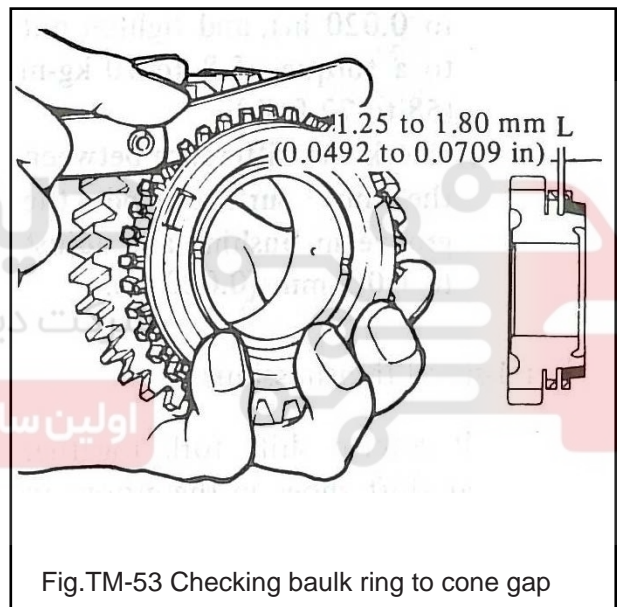


Fig.TM-53 Checking baulk ring to cone gap

GEAR SHIFTING MECHANISM

1. Check shift fork to coupling sleeve groove clearance: if the clearance is not within the range from 0.20 to 0.40 mm (0.0079 to 0.0157 in), replace bolt parts with new ones.

2. Check reverse idler gear groove-to-shift fork clearance. If the clearance exceeds 0.40 mm (0.0157 in) replace worn part(s).

OIL SEAL

Do not reuse oil seals that have been removed. Always install new oil seals.

If spring used in any oil seal is dislocated or if seal lip is folded, replace that oil seal.

OTHERS

O-rings, gaskets, front, cover securing bolts and rear extension securing bolt once removed should not be used again and must be discarded.

ASSEMBLY

To assemble transmission, utilize the following procedures.

COUNTERSHAFT

- 1.Press countershaft front bearing onto countershaft front end.
- 2.Insert countershaft together with countershaft front bearing through the opening in transmission case, and fit countershaft front bearing into transmission case by hand.
- 3.Press countershaft rear bearing into place, using Bearing Drift ST30600000. See Figure TM-54

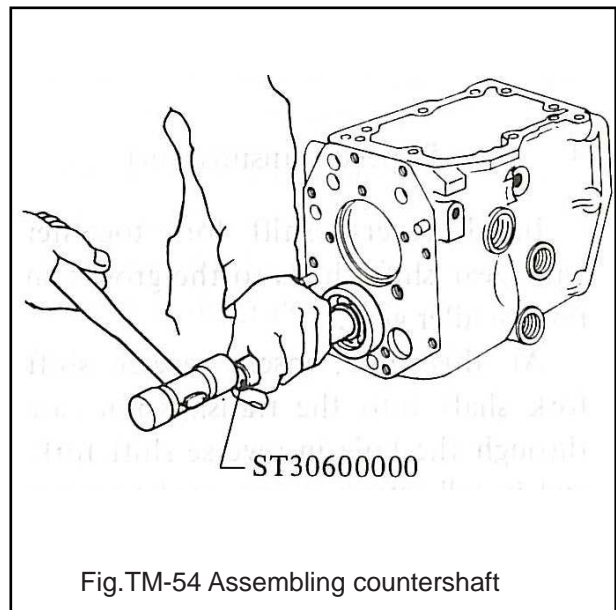


Fig.TM-54 Assembling countershaft

REVERSE IDLER GEAR

- 1.Wash clean all parts with solvent and dry with compressed air.
- 2.Place reverse idler gears, two thrust washers and two kinds of needle bearing in their positions on transmission case, and insert reverse idler shaft into reverse idler gear through the rear side of transmission case hole. See Figure TM-55.

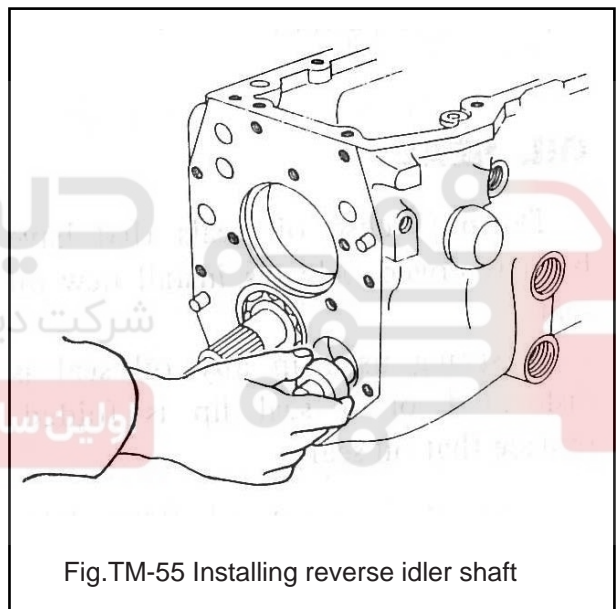


Fig.TM-55 Installing reverse idler shaft

3.Select a snap ring of the suitable thickness so that the specified reverse idler gear end play is obtained, and fit it in the groove of transmission case.

Standard reverse idler gear end play: 0.05 to 0.40 mm (0.0020 to 0.0157 in)

Available snap ring

	Thickness mm (in)
1	1.30 (0.0512)
2	1.55 (0.0610)
3	1.75 (0.0689)
4	1.90 (0.0748)

4. (For 5-speed transmission)

Install reverse shift fork together with gear shift shoes to the groove in reverse idler gear.

At this time, insert reverse shift fork shaft into the transmission case through the hole in reverse shift fork, and install return spring on the reverse shift fork shaft.

Fit a snap ring on the groove in reverse shift fork shaft, and install dust cover.

See Figure TM-56.

- | | |
|-----------------|----------------------------|
| 1 Dust cover | 4 Reverse shift fork shaft |
| 2 Snap ring | 5 Reverse shift fork |
| 3 Return spring | 6 Reverse gear shift shoe |

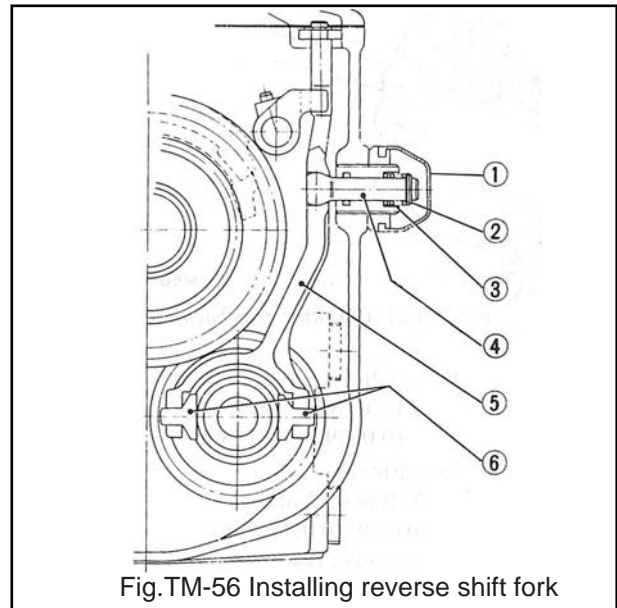


Fig.TM-56 Installing reverse shift fork

Note:

Before installing gear shift housing on transmission case, adjust reverse idler gear end play as following:

(1) Place gears in Neutral.

(2) Screw into transmission case.

Adjust the reverse idler gear (counter)-to-thrust washer clearance to 0 to 0.5 mm (0 to 0.020 in), and tighten nut to a torque of 8 to 10 kg-m (58 to 72 ft-lb).

Check the difference between the nut surface and the groove in bushing and adjust to ± 0.5 mm (0.020 in).

(For 4-speed transmission)

Install reverse shift fork together with gear shift shoes in the groove in reverse idler gear.

Install reverse shift fork shaft through the hole in reverse fork while screwing into transmission.

Note:

Before installing gear shift housing on transmission case, adjust reverse idler gear end play as following:

(1) Place gears in Neutral.

(2) Using a universal drive, screw reverse fork shaft into transmission case. Adjust the reverse idler gear (counter) to thrust washer Clearance to 0 to 0.5 mm (0 to 0.020 in) and then tighten nut to a torque of 8 to 10kg-m(58to72 ft-lb).

Check the difference between the nut surface and the groove in reverse shift fork bushing, and adjust to ± 0.5 mm (0.020 in)

SYNCHRONIZER ASSEMBLY

1.Wash clean all part with solvent and dry with compressed air.

2.Assemble synchromesh assembly as follows:

(1)Place synchronizer hub into coupling sleeve.

(2)Fit shifting inserts in their grooves of synchronizer hub.

Note:

Assemble overdrive synchromesh assembly with chamfered side of insert toward the front. See Figure TM-57.

(3) Locate one spread spring on the lower side of shifting inserts to secure them to the inner side of coupling sleeve. (All synchromesh assembly)

Install the other spread spring on the opposite side of synchronizer hub (Except overdrive synchromesh assembly).

See Figure TM-58.

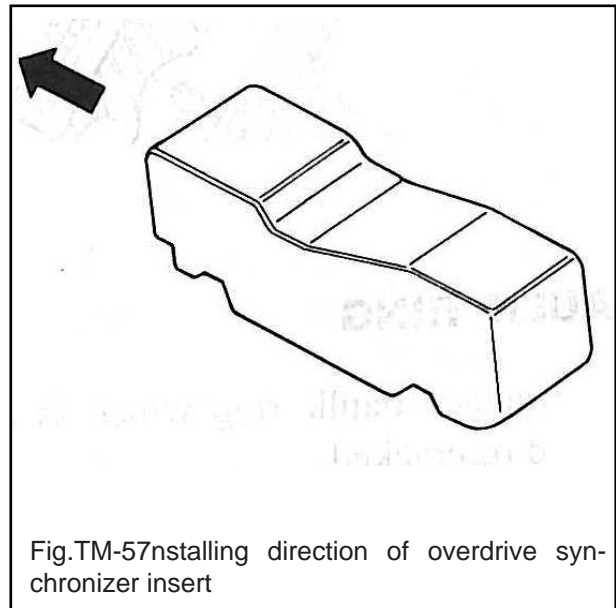


Fig.TM-57nstalling direction of overdrive synchronizer insert

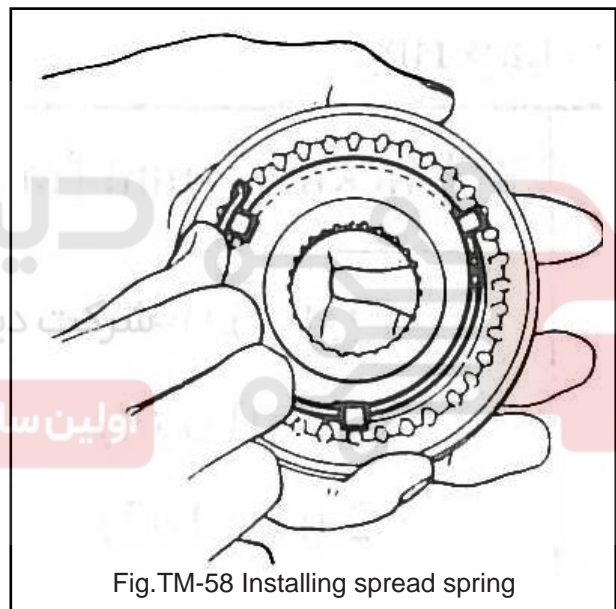


Fig.TM-58 Installing spread spring

MAINSHAFT ASSEMBLY

1.wash clean all parts with solvent and dry with compressed air.

2.Install 3rd gear needle roller bearing 3rd gear, baulk ring and 3rd & 4th synchromesh assembly onto main shaft, and fit a snap ring in the groove on the front end of main shaft. See Figure TM-59.

- | | |
|------------------------------|-------------------------|
| 1 Snap ring | 6 Baulk ring |
| 2 Coupling sleeve | 7 3rd gear |
| 3 Shifring insert | 8 Mainshaft |
| 4 Spread spring | 9 needle roller bearing |
| 5 3rd & 4rd synchronizer hub | |

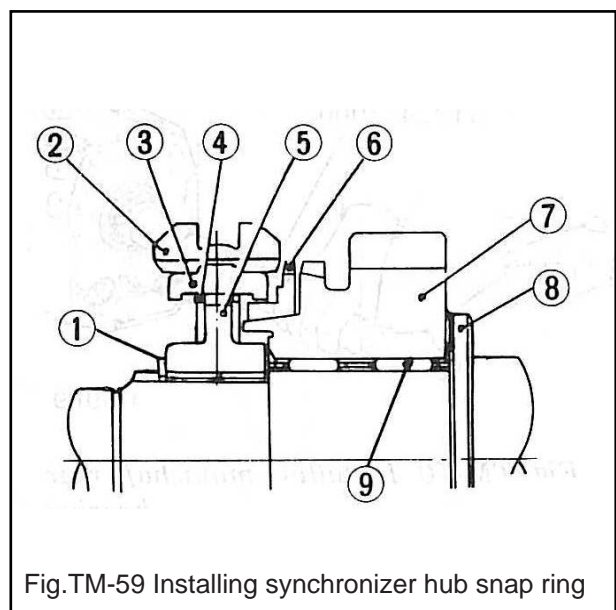


Fig.TM-59 Installing synchronizer hub snap ring

3. Install the following parts to mainshaft in the order listed below.

2nd gear needle roller bearing, 2nd gear, baulk ring and 1st & 2nd synchronizer assembly. See Figure TM-60.

- | | |
|-------------------------|------------------------------|
| 1 Mainshaft | 5 Coupling sleeve |
| 2 Needle roller bearing | 6 Spread spring |
| 3 2nd gear | 7 Shifting insert |
| 4 Baulk ring | 8 1st & 2nd synchronizer hub |

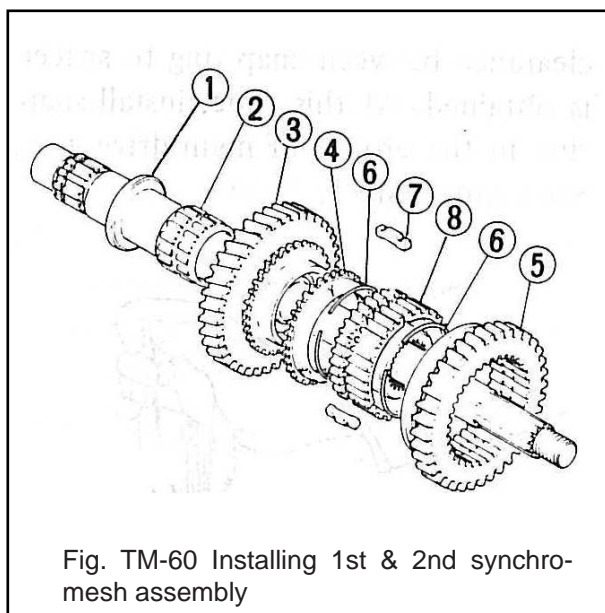


Fig. TM-60 Installing 1st & 2nd synchronizer assembly

4. Using a proper brass drift, install 1st gear bushing onto mainshaft, see Figure TM-61.

Notes:

- a. If the end of bushing is damaged 1st gear end play is deviated.
- b. Do not use wooden mallet.

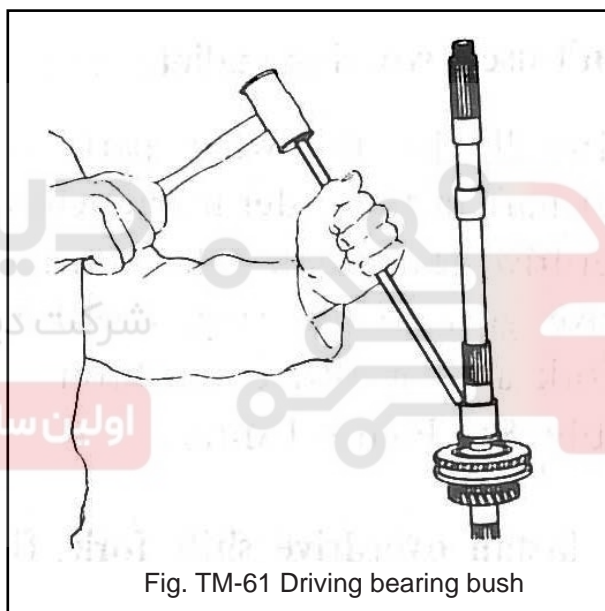


Fig. TM-61 Driving bearing bush

5. Install needle bearing, baulk ring, 1st gear, steel ball and spacer on mainshaft. See Figure TM-62.

- | | |
|-------------------------|--------------|
| 1 1st gear bushing | 5 Steel ball |
| 2 Needle roller bearing | 6 Spacer |
| 3 Baulk ring | 7 Mainshaft |
| 4 1st gear | |

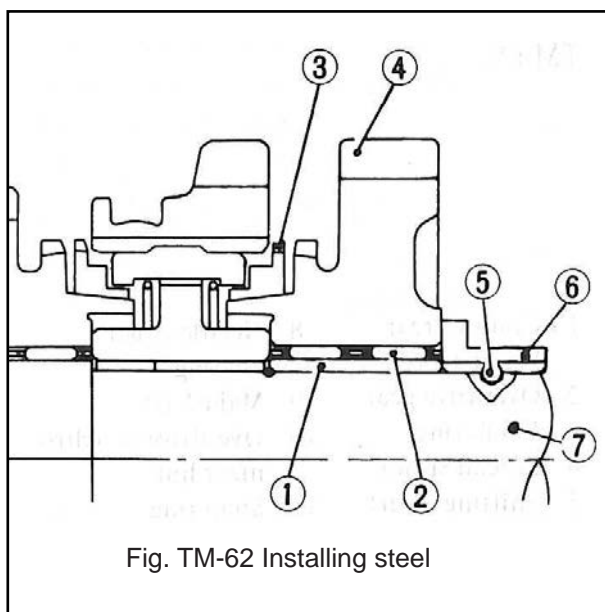


Fig. TM-62 Installing steel

6. Insert mainshaft assembly into the transmission case through the opening in transmission case. See Figure TM-63.

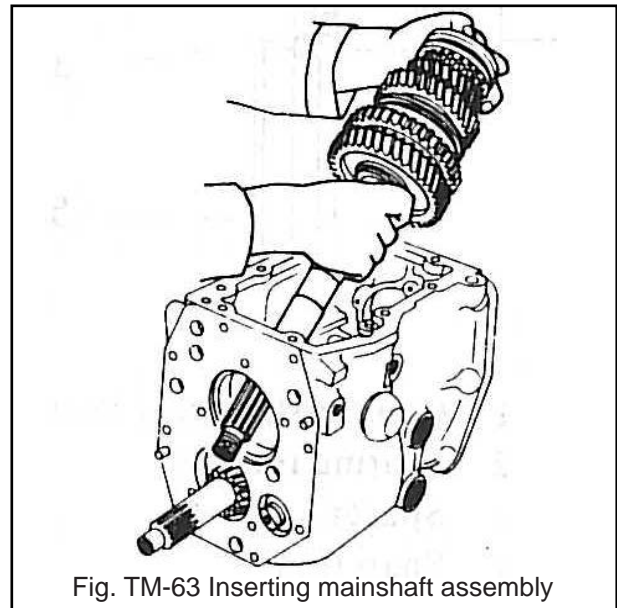


Fig. TM-63 Inserting mainshaft assembly

7. Install adapter ST22530000 on the front side of transmission case to support the front end of mainshaft. Use front cover securing bolts. See Figure TM-64.

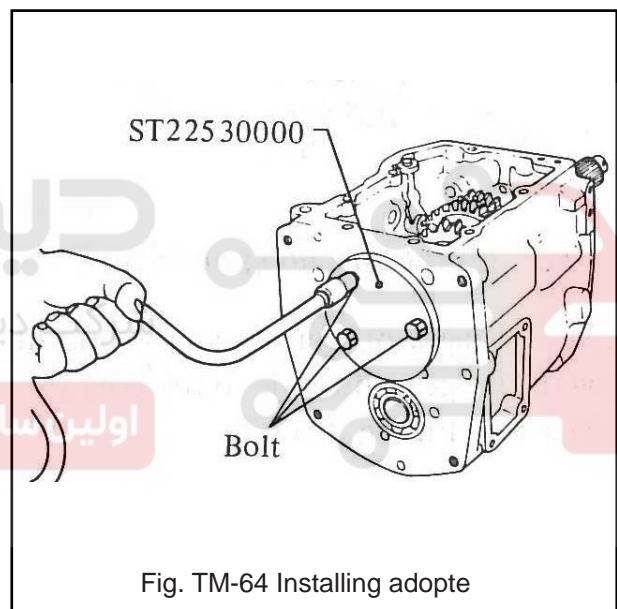


Fig. TM-64 Installing adopte

8. Press mainshaft bearing in place from the rear side of transmission case, using mainshaft Bearing Drift ST22452000. See Figure TM-65.

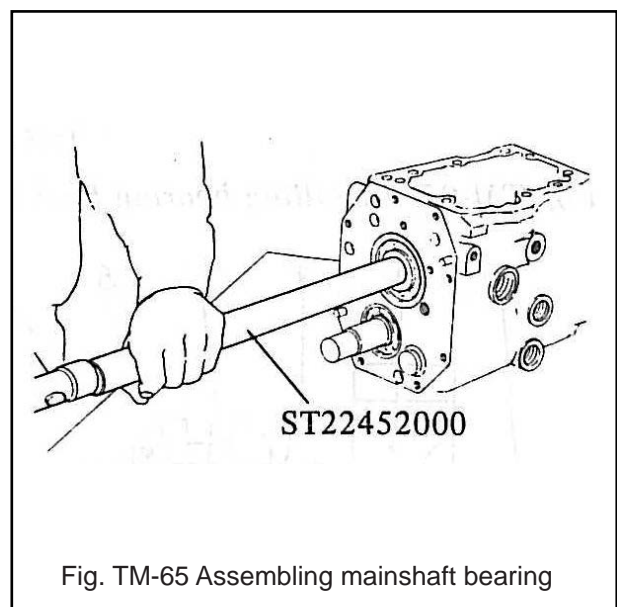


Fig. TM-65 Assembling mainshaft bearing

9. Install bearing retainer on transmission case.

Bearing retainer screw 1.2 to 1.8 kg-m
tightening torque. (9 to 13 ft-lb)

10. (For 5-speed transmission)

(1) Install overdrive shift bracket and overdrive shift fork shaft on the rear side of transmission case.

Overdrive shift fork shaft 4.9 to 6.2 kg-m
Tightening torque : (35 to 45 ft-lb)

See figure TM-22.

(2) Install overdrive gear on the mainshaft.
See Figure Tm-66.

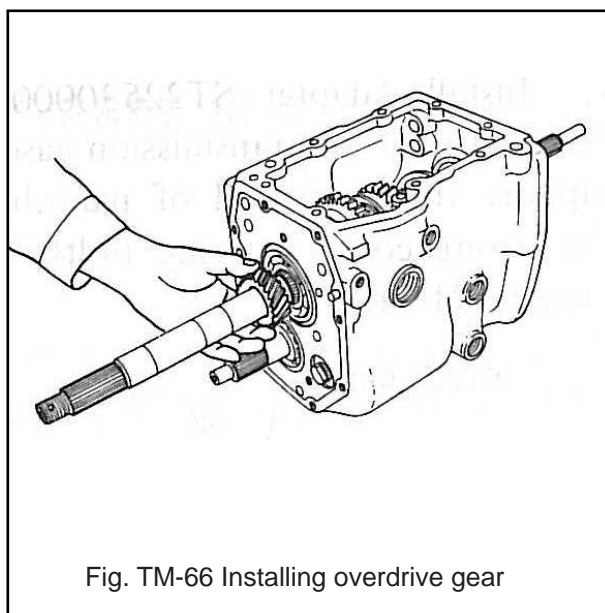


Fig. TM-66 Installing overdrive gear

(3) Using a proper brass drift, install overdrive gear bushing onto counter shaft. See figure TM-67.

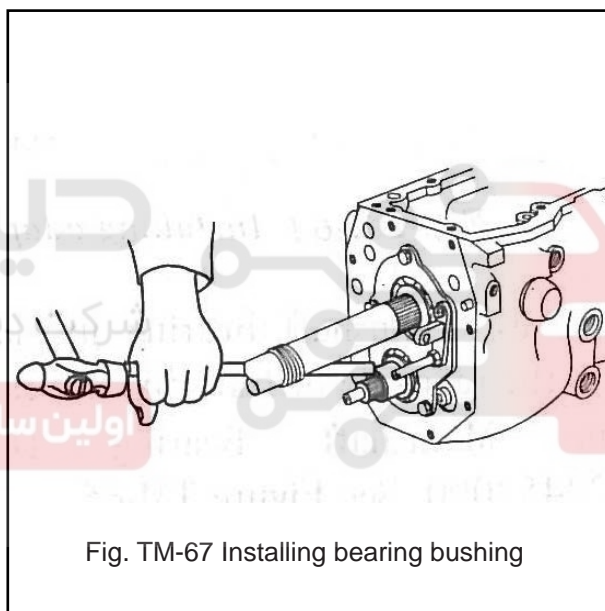


Fig. TM-67 Installing bearing bushing

Notes :

- a. If the end of bushing is damaged, overdrive gear end is deviated.
- b. Don't use a wooden mallet

Available snap ring

	Thickness mm (in)
1	1.4 (0.055)
2	1.5 (0.059)
3	1.6 (0.063)
4	1.7 (0.067)

- 1 Counter rear bearing
- 2 Overdrive gear
- 3 baulk ring
- 4 Spread spring
- 5 Shifting insert
- 6 Coupling sleeve
- 7 Overdrive gear bushing
- 8 Needle roller bearing
- 9 Mainshaft
- 10 Overdrive synchronizer hub
- 11 Snap ring
- 12 Stopper ring

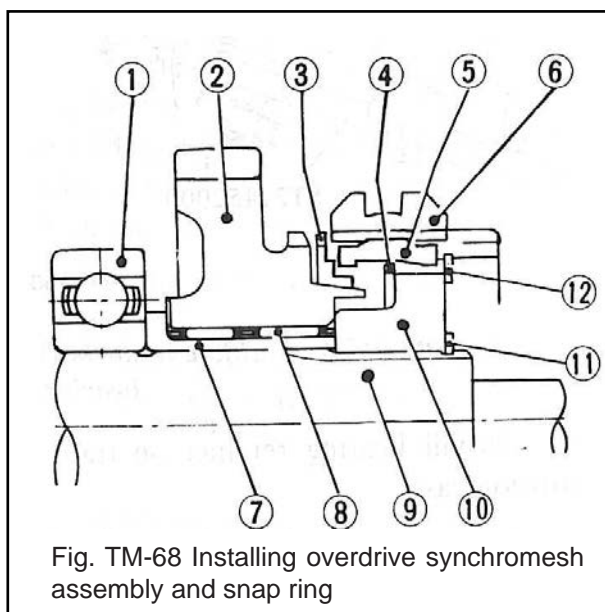


Fig. TM-68 Installing overdrive synchronesh assembly and snap ring

(4) Install the following parts on countershaft in the order listed below.

Overdrive gear needle roller bearing, overdrive gear, baulk ring, overdrive shift fork and overdrive synchromesh assembly. See figure TM-68.

Note :

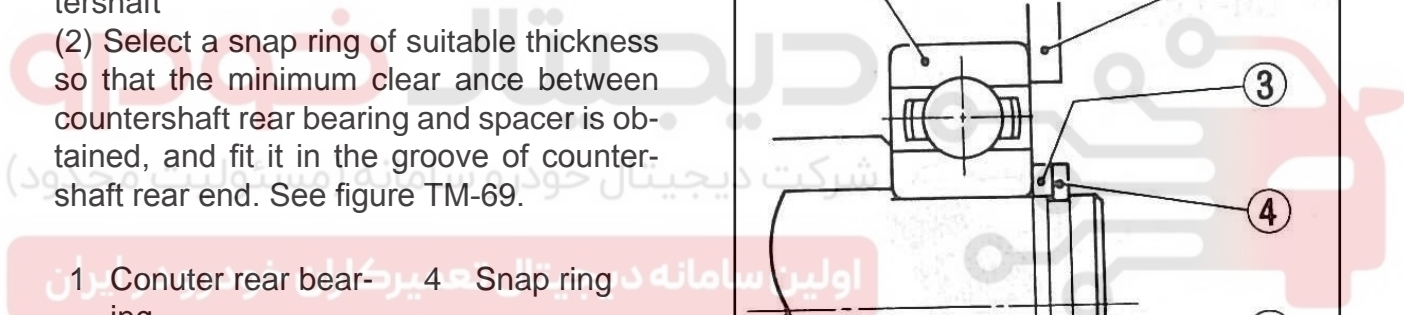
Install overdrive shift fork, fitting to the groove of overdrive coupling sleeve.

(5) Select a snap ring of suitable thickness so that the minimum clearance between overdrive gear bushing and overdrive synchronizer hub is obtained, and fit it in the groove of countershaft rear end. See Figure TM-68.

(For 4-speed transmission)

(1) Install spacer on the rear end of countershaft

(2) Select a snap ring of suitable thickness so that the minimum clearance between countershaft rear bearing and spacer is obtained, and fit it in the groove of countershaft rear end. See figure TM-69.



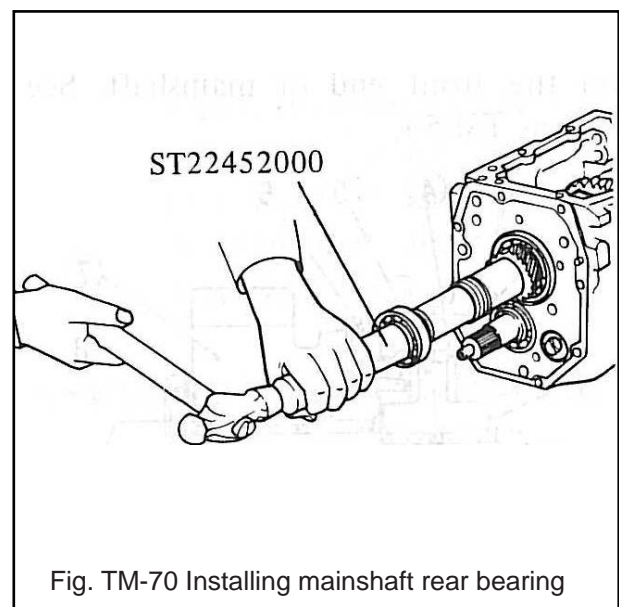
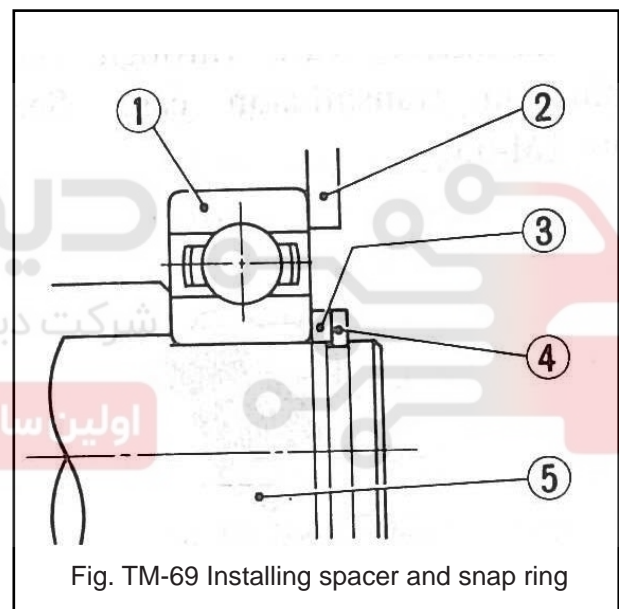
- 1 Conuter rear bearing
- 2 Bearing retainer
- 3 Spacer
- 4 Snap ring
- 5 Countershaft

	Thickness mm (in)
1	2.4 (0.094)
2	2.5 (0.098)
3	2.6 (0.102)
4	2.7 (0.106)

11. Install the following parts on mainshaft in the order listed below.

Spacer, steel ball, speedometer drive gear and spacer.

Press mainshaft rear bearing onto the mainshaft, using mainshaft Bearing Drift ST22452000. See figure TM-70.



MAIN DRIVE GEAR ASSEMBLY

1. Wash clean all parts with solvent and dry with compressed air.
2. Press a main drive gear bearing onto the main drive gear, using a suitable press stand and press.
3. Select and install a spacer of suitable thickness on the front side of main drive gear so that the minimum clearance between snap ring to spacer is obtained. At this time, install snap ring, in the groove of main drive gear. See figure TM-71.

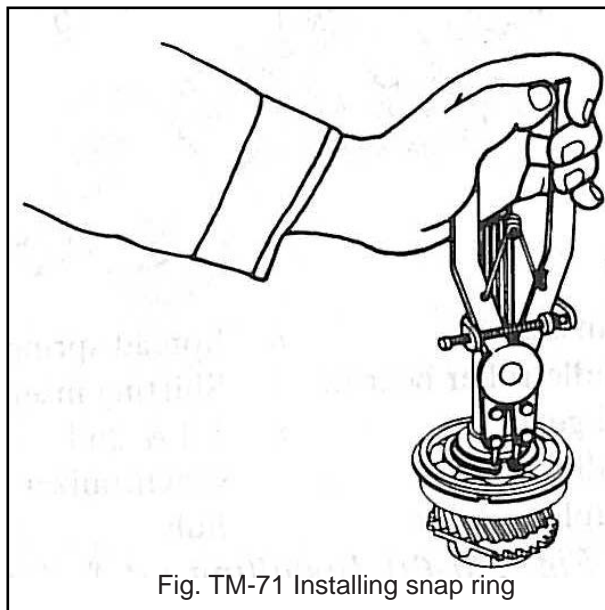


Fig. TM-71 Installing snap ring

Available spacer

	Thickness mm(in)
1	1.6 (0.063)
2	1.7 (0.067)
3	1.8 (0.071)
4	1.9 (0.075)

4. Install baulk ring on the front side of 3rd & 4th synchronizer hub, and insert pilot bearing on the front end of mainshaft.
5. Install main drive gear assembly from the front side side of transmission case, placing the cut-out portion on main drive gear down ward and holding main drive gear by hand. See figure TM-72.

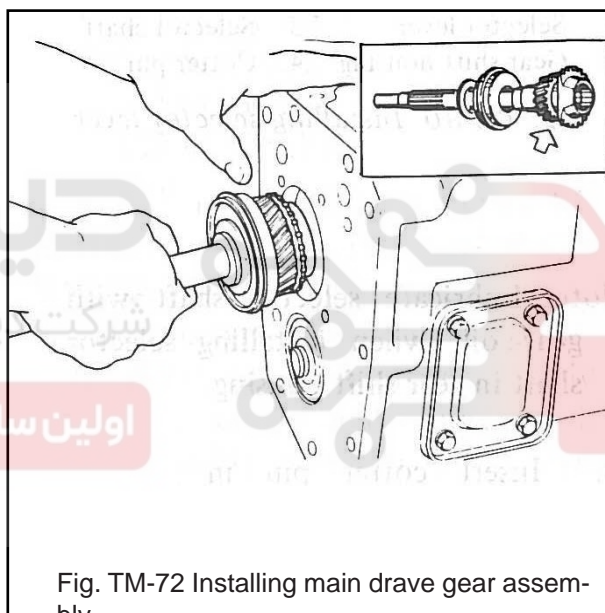


Fig. TM-72 Installing main drive gear assembly

FORK AND FORK ROD ASSEMBLY

1. (For 5 speed transmission)
Install overdrive shift bracket on the rear side of bearing retainer.
Small flat-head screw of overdrive shift bracket tightening torque : 0.8 to 1.3 kg-m (6 to 9 ft-lb)
See figure TM-22
- (2) Insert reverse & overdrive fork rod assembly together with reverse & overdrive shift fork into transmission case through the hole of transmission case.

At this time. Move, reverse & overdrive fork rod toward the front, fitting one end of overdrive shift fork (4) in the groove of overdrive shift fork (7), and the other end to the reverse & overdrive fork rod pin. See figure TM-18.

(3) Install clevis pin (3) to the overdrive shift fork (4) through the hole of overdrive fork bracket, and fit a snap ring (2) in the groove of clevis pin (3). See figure TM-18.

2.(For 4-speed transmission)

(1) Insert reverse fork into transmission case through the transmission case. See figure TM-20.

(2) Insert interlock pin and interlock ball in their original position. See figure TM-21.

(3) Fit 3rd & 4th shift fork and 1st & 2nd shift fork in the groove of each coupling sleeve.

(4) Insert 3rd & 4th shift fork rod into transmission case through the hole in 3rd & 4th shift fork.

Insert interlock plunger in the original position. See figure TM-21.

(5) Insert 1st & 2nd fork rod into transmission case, through the hole in 1st & 2nd shift fork. See figure TM-21.

(6) To connect shift forks and shift bracket to fork rods, drive retaining pins into them. See figure TM-73.

- | | |
|------------------------|------------------------|
| 1 Retaining pin | 5 3rd & 4th shift fork |
| 2 1st & 2nd fork rod | 6 Reverse shift fork |
| 3 1st & 2nd shift fork | 7 Reverse fork rod |
| 4 3rd & 4th fork rod | |

(7) Insert check balls and check springs into their holes in transmission case, and then install check ball plugs by applying thread agent.

Check ball plug tightening torque:

2.2 to 3.0 kg-m
(16 to 22 ft-lb)

See figure TM-21.

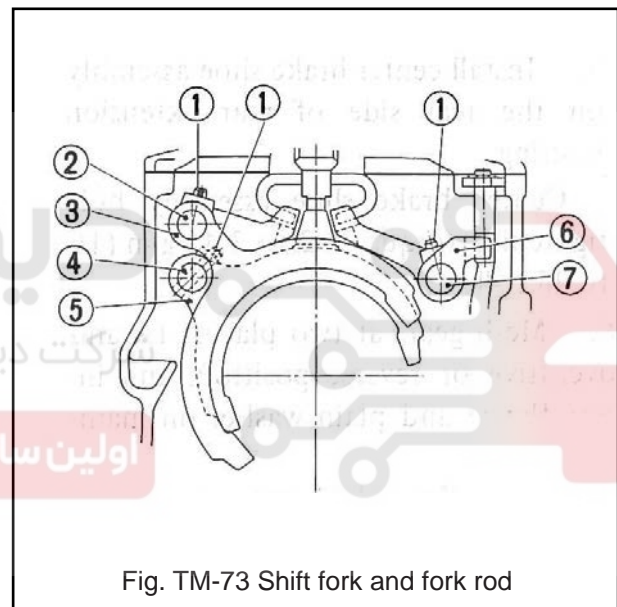


Fig. TM-73 Shift fork and fork rod

(8) Apply gear oil to all sliding parts and make sure that gears are meshed smoothly in their positions.

1. Make sure that oil mating surface is clean.
2. Using a press, drive new seal into place on front cover.
3. Lubricate seal lip and main drive shaft with gear oil when installing oil seal.

FRONT COVER ASSEMBLY

See figure TM-74.

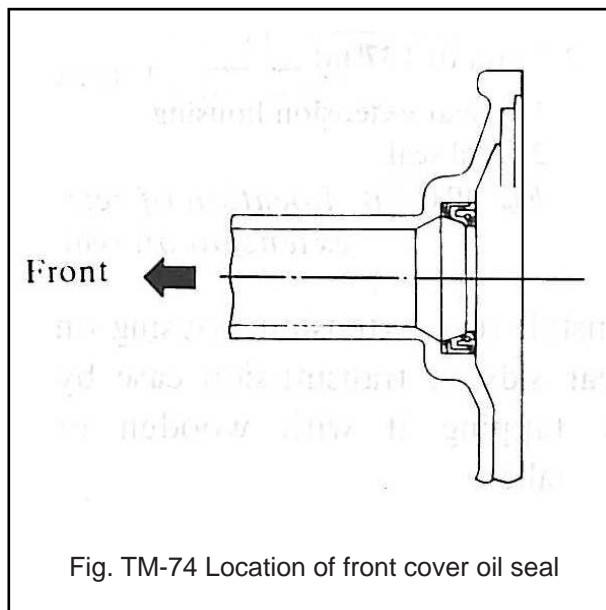


Fig. TM-74 Location of front cover oil seal

4. Install front cover on the front side of transmission case and secure with new bolts.

Front cover bolt tightening torque :

2.0 to 2.8 kg-m
(14 to 20 ft-lb)

Install a new gasket in place between front cover and transmission case.

See figure TM-75.

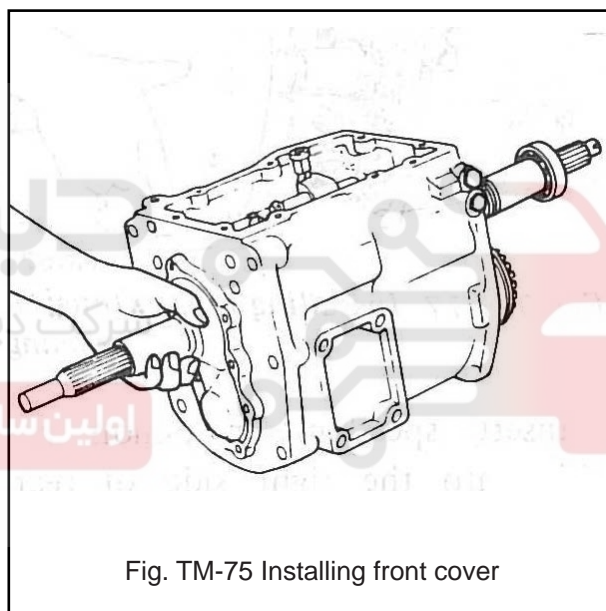


Fig. TM-75 Installing front cover

REAR EXTENSION HOUSING ASSMBLY

1. make sure that oil seal mating surface or rear extension housing is clean.

2. Using a press, drive new oil seal into rear extension housing, so that specified distance between oil seal and rear extension housing rear end is obtained.

See figure Tm-76.

1. Rear extension housing
2. Oil seal

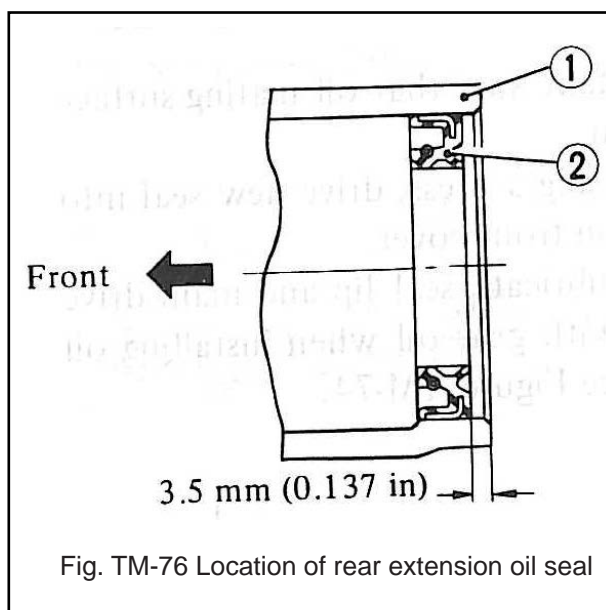


Fig. TM-76 Location of rear extension oil seal

3. Install rear extension housing on the rear side of transmission case by lightly tapping it with wooden or plastic mallet.

Rear extension housing bolt tightening torque :

1.8 to 2.6 kg-m
(13 to 19 ft-lb)

Note :

A rear extension securing bolt once removed should not be used again and must be discarded.

Install a new gasket in place between transmission case and rear extension housing. See figure TM-77.

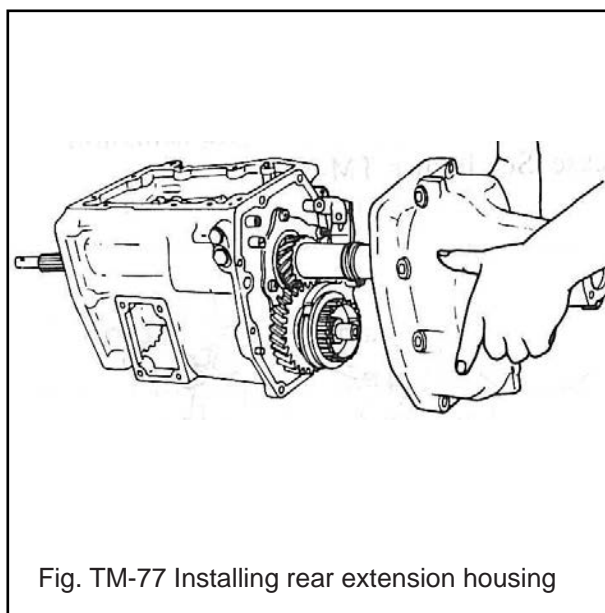


Fig. TM-77 Installing rear extension housing

4. Insert speedometer pinion assembly into the right side of rear extension housing, and secure with lock plate.

Speedometer lock bolt tightening torque :

0.23 to 0.45 kg-m
(2 to 3 ft-lb)

See figure TM-78.

Note :

While rotating mainshaft, insert speedometer pinion assembly into rear extension housing.

- | | |
|-------------------------------|---------------|
| 1 Rear extension housing | 3 Lock washer |
| 2 Speedometer pinion assembly | 4 Lock bolt |

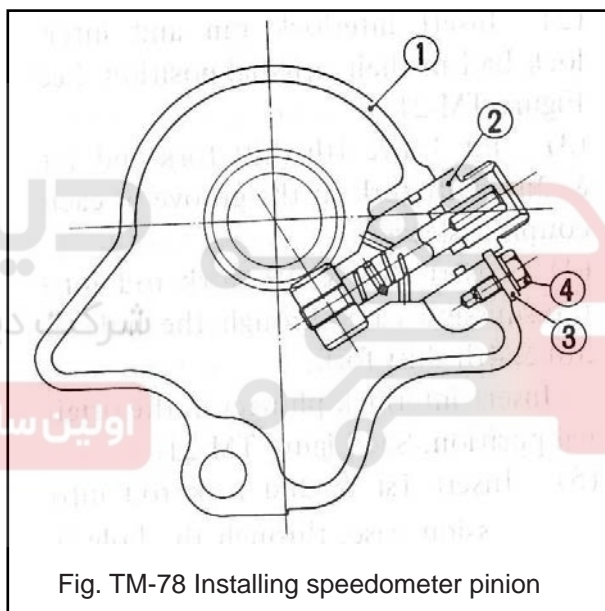


Fig. TM-78 Installing speedometer pinion

5. Install center brake shoe assembly on the rear side of rear extension housing.

Center brake shoe assembly bolt tightening torque :

2.2 to 3.4 kg-m
(16 to 25 ft-lb)

6. Mesh gears at two places: 1st and overdrive or reverse position, and insert flange and plain washer on mainshaft. Tighten flange lock nut.

Flare lock nut tightening torque :

9.0 to 17.0 kg-m
(65 to 123 ft-lb)

Insert and lock cotter pin into hole on the rear end of mainshaft. See figure TM-79.

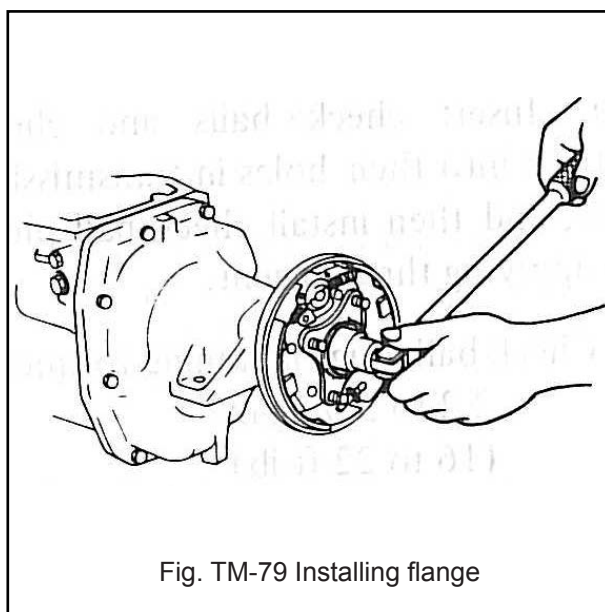


Fig. TM-79 Installing flange

GEAR SHIFT HOUSING ASSEMBLY - column shift –

1. Wash clean all parts with solvent and dry with compressed air.
2. Insert selector shaft into selector lever through the hole in gear shift housing. See figure TM-80.

- | | |
|----------------------|------------------|
| 1 Selector lever | 3 Selector shaft |
| 2 Gear shift housing | 4 Cotter pin |

Note :

Lubricate selector shaft with gear oil, when installing selector shaft in gear shift housing.

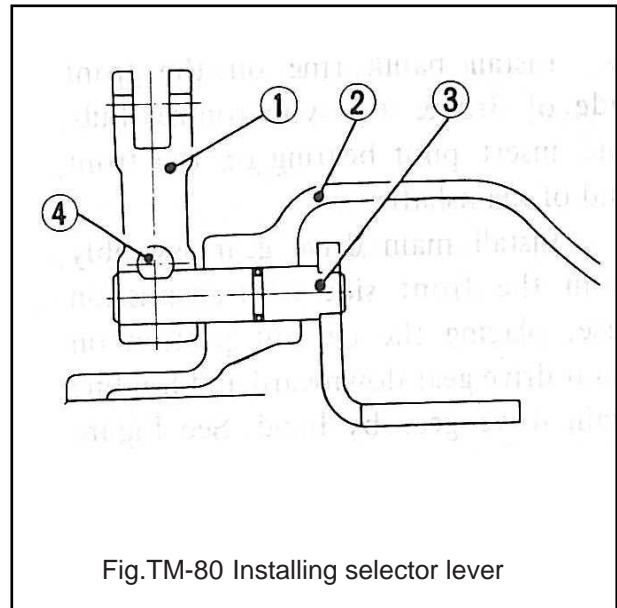


Fig.TM-80 Installing selector lever

3. Insert cotter pin in selector lever, and secure selector lever nut.

Selector lever nut tightening torque :
0.30 to 0.45 kg-m
(2.2 to 3.3 ft-lb)

4. Install shifter shaft in gear shift housing. See figure TM-44

5. Install shifter lever on shifter shaft. See figure Tm-43.

6. Insert shifter spindle into shifter shaft, and fit snap ring in the groove of shifter spindle.

7. Install gear shift housing assembly on the transmission case, and secure with gear shift housing bolts.

Gear shift housing bolts tightening torque :
1.8 to 2.6 kg-m
(13 to 19 ft-lb)

Install a new gasket in place between gear shift housing and transmission case.

- Floor shift –

1. Wash clean all parts with solvent and dry with compressed air.

2. Slide in shifter spindle through plug hole, then install pins which attach shifters to shifter spindle.

3. Install shift lever and insert shift lever pin.

4. Install lever spring and spring seat. Then screw lever spring cap and install shift lever boot.

5. Install baffle plate.

CLUTCH HOUSING ASSEMBLY

1. Install clutch housing assembly on the front end of transmission case, and secure with clutch housing bolts.

Clutch housing bolts tightening torque :

3.7 to 5.0 kg-m

(27 to 36 ft-lb)

Install a new gasket in place between transmission case and clutch housing.

2. Install withdrawal lever together with clutch release bearing assembly on clutch housing, and sliding clutch release bearing sleeve on front cover.

- Contact surface of withdrawal lever and clutch yoke pivot.
- Contact surface of release bearing sleeve and from cover

3. Install dust cover on clutch housing.

TRANSMISSION CASE ASSEMBLY

1. Secure reverse lamp switch in place on the right side of transmission case.

Reverse lamp switch tightening torque :

2.0 to 3.0 kg-m

(14 to 22 ft-lb)

Install power take out cover on the left side of transmission case.

Power take out cover bolts tightening torque :

1.2 to 1.8 kg-m

(9 to 13 ft-lb)

Install a new gasket in place between power take out cover and transmission case.

2. Install drain plug. Tightening torque :

2.5 to 4.0 kg-m

(18 to 29 ft-lb)

3. Fill transmission case with gear oil to the filler hole, [Approx. 2.6 liters]

4. Install filler plug. Tightening torque :

2.5 to 4.0 kg-m

(18 to 29 ft-lb)



TRANSMISSION GEAR CONTROL SYSTEM COLUMN SHIFT

- | | |
|-------------------------------|--------------------|
| 1 Select lever (Transmission) | 4 Upper select rod |
| 2 Shift lever (Transmission) | 5 Lower shift rod |
| 3 Lower select rod | 6 Upper shift rod |

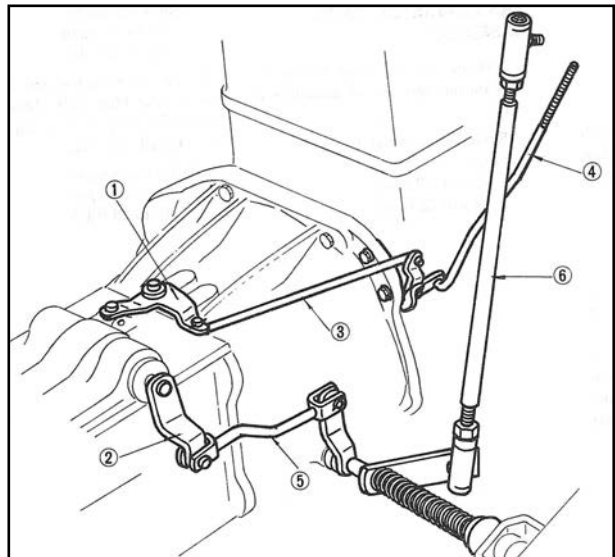


Fig. TM-81 Transmission gear control (R.H. drive)

- 1.Remove steering wheel assembly
- 2.Remove steering column shell cover, turn signal and lighting switch.

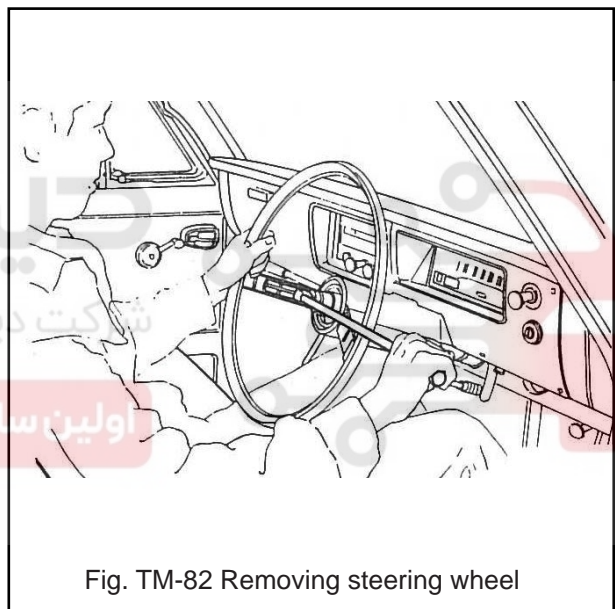


Fig. TM-82 Removing steering wheel

- 3.Remove Snap ring and hand lever pivot pin, and withdraw hand lever.

- | | |
|------------------------|-----------------|
| 1 Snap ring | 3 C- washer |
| 2 Hand lever pivot pin | 4 Upper bracket |

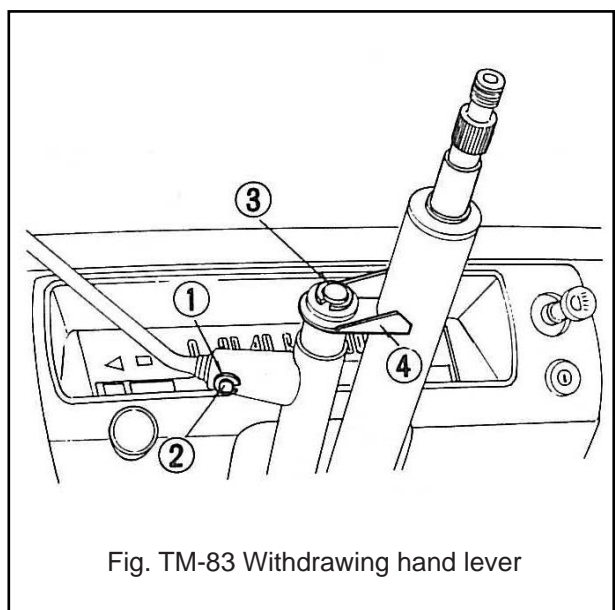


Fig. TM-83 Withdrawing hand lever

- 4.Remove C-washer.
- 5.Separate shift lever (1) from upper shift rod (2).
- 6.Separate select lever (3) from upper select rod (4).
- 7.Remove select lever.
- 8.Remove lower bracket (5).
- 9.Remove shift lever locking bolt (6) and then remove shift lever.
- 10.Depress control rod down word to remove the upper end from upper bracket. Pull it out toward driver's compartment

Note :

The individual joints use small washers and snap rings. Before removing, check them for reinstalling sequence and direction.

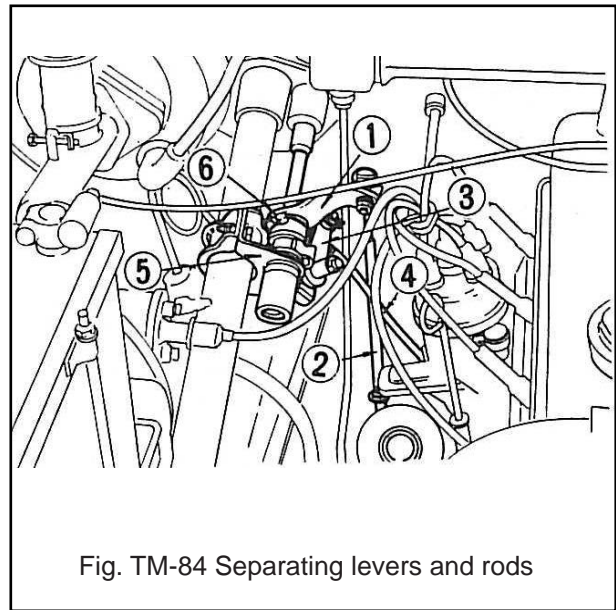


Fig. TM-84 Separating levers and rods

INSPECTION AND REPAIR

Check all sliding parts and other components for wear and other defective conditions. Replace as required.

INSTALLATION

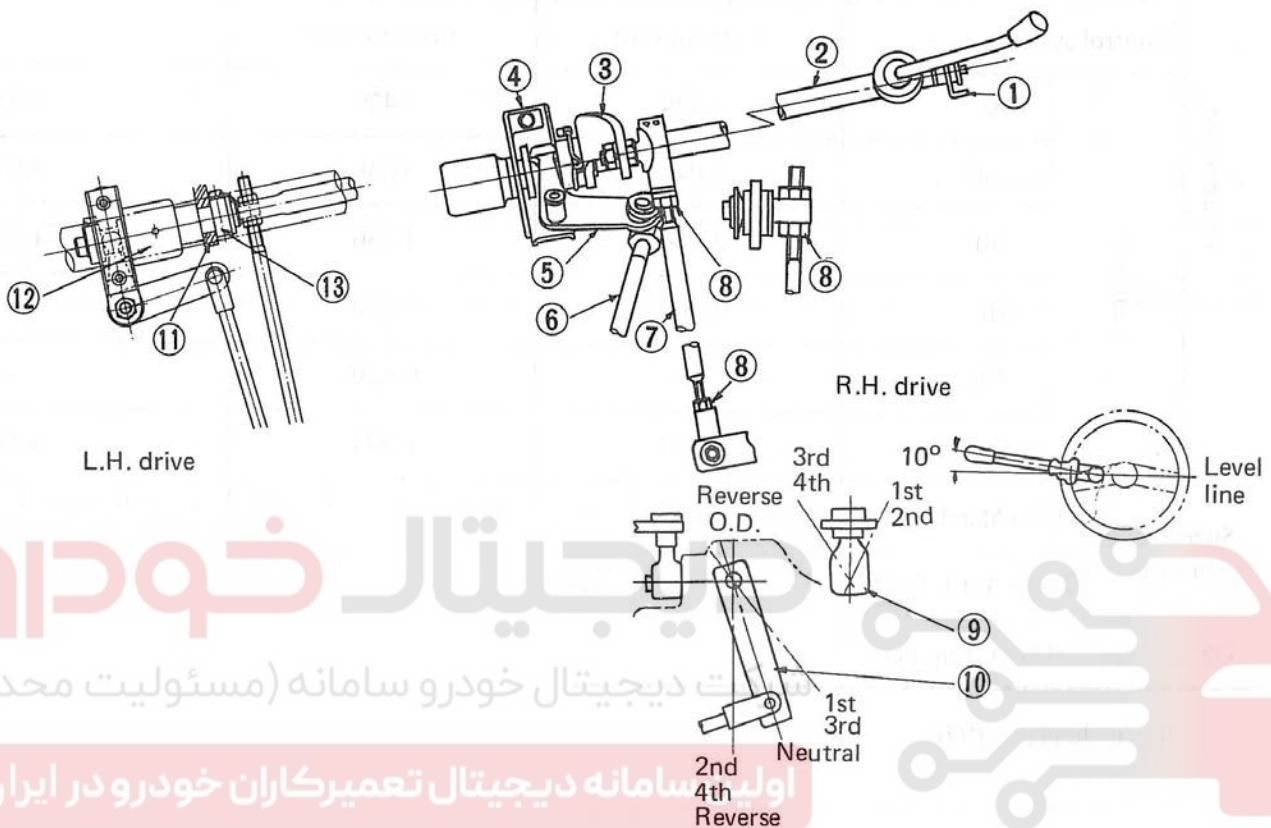
Install control system in reverse sequence of removal. When installing, apply multi-purpose to all sliding parts.

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ADIUSTMENT

Fig. TM-85 Transmission control linkage assembly



- | | |
|---------------------|------------------------------|
| 1. Upper bracket | 8. Lock nut |
| 2. Control rod | 9. Transmission select lever |
| 3. Shift lever | 10. Transmission shift lever |
| 4. Lower bracket | 11. Distance piece |
| 5. Select lever | 12. Lower bracket |
| 6. Upper select rod | 13. Shift lever |
| 7. Upper shift rod | |

R. H. DRIVE**Select linkage**

- 1.Set transmission select lever (rocker lever) to the “3rd-4th” position.
- 2.Adjust lock nut and connect select rod to select lever.

Shift linkage

- 1.Set transmission shift lever (shift spindle) to the “neutral” position.
- 2.Position hand lever to 10 digress upward from the level line of steering wheel.
- 3.Connect shift rod to shift lever.

L. H. DRIVE**Select linkage**

- 1.Raise hand lever upward and insert the distance piec [10 cm (3.94 in) height] between lower bracket and shift lever.
- 2.Set transmission select lever to the “1st-2nd” position.
- 3.adjust lock nut locating at the rear end of select rod, and Connect select rod to trunion.

Shift linkage

- 1.Set transmission shift lever to the “neutral” position.
- 2.Position hand lever to 10. digress upward from the level line of steering wheel
- 3.Adjust lock nut and connect shift rod to shift lever.



SERVICE DATA AND SPECIFICATIONS

GENERAL SPECIFICATIONS

Model		140U, L140							*NL140T			
Item		Q140U, QL140										
Final gear ratio	Up to march, 1978	5.857		0.143	-	5.857	6.143	-	5.857	6.143	-	6.428
	From April, 1978	6.143	6.500	-	6.143	6.500	-	6.143	6.500	-	-	-
Transmission	Type From April, 1978	Up to Feb., 1973	R4W81L			RS5W81L		F4W81L				
			R4W81A			RS5W81A		F4W81A				
	Control system		Column shift			Column shift		Floor shift				
	Gear ratio	1st	5.429			5.429		5.429				
		2nd	3.048			3.048		3.048				
		3rd	1.780			1.780		1.780				
		4th	1.000			1.000		1.000				
5th		0.820			0.820		-					
Reverse	6.544			6.544		6.544						
Speedometer gear ratio	Up to march, 1978	19/5	20/5		-	19/5	20/5	-	19/5	20/5	-	22/5
	From April, 1978	20/5	21/5		-	20/5	21/5	-	20/5	21/5	-	-
Oil capacity		US pt, Imp) (pt)										

UP to January, 1979 *

SPECIFICATIONS

TYPE	L 81	L 81
Gear backlash mm(in)		
1st gear	(to 0.22 (0.0020 to 0.0087 0.05	(to 0.187 (0.0031 to 0.0074 0.08
2nd gear	(to 0.22 (0.0020 to 0.0087 0.05	(to 0.187 (0.0031 to 0.0074 0.08
3rd gear	(to 0.22 (0.0020 to 0.0087 0.05	(to 0.187 (0.0031 to 0.0074 0.08
Overdrive gear	(to 0.23 (0.0020 to 0.0091 0.05	(to 0.187 (0.0031 to 0.0074 0.08
Reverse idler gear and main reverse gear	(to 0.25 (0.0020 to 0.0098 0.05	(to 0.189 (0.0031 to 0.0074 0.08
Reverse idler gear and counter gear	(to 0.25 (0.0020 to 0.0098 0.05	(to 0.210 (0.0031 to 0.0083 0.08
Gear and play mm(in)		
1st gear	(to 0.35 (0.0079 to 0.0138 0.20	(to 0.35 (0.0097 to 0.0138 0.20
2nd gear	(to 0.35 (0.0079 to 0.0138 0.20	to 0.35 (0.0097 to 0.0138) 0.20
3rd gear	(to 0.50 (0.0039 to 0.0197 0.10	0.10 to 0.50 (0.0039 to 0.0197)
Overdrive gear	(to 0.25 (0.0039 to 0.0098 0.10	0.10 to 0.25 (0.0039 to 0.0098)
Reverse idler gear	(to 0.30 (0.0020 to 0.0118 0.05	(0.05 to 0.40 (0.0020 to 0.0157

TIGHTENING TORQUE


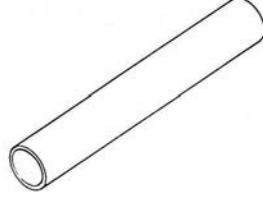
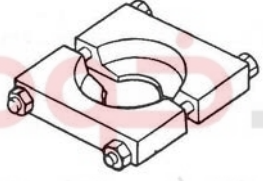
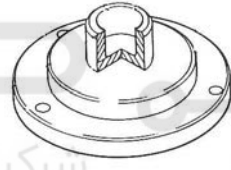
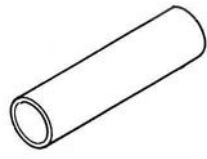
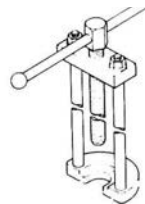
kg-m (ft-lb)

TYPE	L 81	L 81
Center brake to rear extension bolt	(to 3.4 (16 to 25 2.2	(to 3.4 (16 to 25 2.2
Rear extension bolt	(to 1.8 (9 to 13 1.2	(to 2.6 (13 to 19 1.8
Front cover bolt	(to 1.8 (9 to 13 1.2	(to 2.8 (14 to 20 2.0
Mainshaft retainer to transmission	(to 1.8 (9 to 13 1.2	(to 1.8 (9 to 13 1.2
Case bolt	(to 2.5 (13 to 18 1.8	(to 6.2 (35 to 45 4.9
Mainshaft lock nut	(to 17.0 (65 to 123 9.0	(to 17.0 (65 to 123 9.0
Check ball plug	(to 3.0 (16 to 22 2.2	(to 3.0 (16 to 22 2.2
Gear shift housing to transmission bolt	(to 1.8 (9 to 13 1.2	(to 2.6 (13 to 19 1.8
Overdrive shift fork shaft screw	(to 6.2 (35 to 45 4.9	(to 6.2 (35 to 45 4.9

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Difficult to intermesh gears	Cause for difficult gear shifting are classified to troubles concerning the control system and transmission.	
	When the gear shift lever is heavy and it is difficult to shift gears, clutch disengagement may also be unsmooth.	
	First, make sure that the clutch operates correctly, and inspect the transmission.	
	Transmission control mechanism adjusted improperly.	Repair.
	Insufficient operating stroke due to worn or loose sliding parts.	Repair or replace.
	Distorted fork shafts.	Repair or replace.
	Coupling sleeves bound on hubs, due to dirt in splines or spread springs or weakened.	Replace.
	Worn gears.	Replace
Gear slips out of mesh	Damaged baulk ring.	Replace
	Failure to engage clutch due to inefficiency of hydraulic control or improperly adjusted clutch assembly.	Repair
	In the most case, this trouble occurs when the interlock pin, locking ball, and/or spring are worn or weakened, or when the control system is malfunctioning.	
	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 weak front and rear engine mounts.	
	Worn interlock pin.	Replace.
	Worn locking ball and/or weak or broken spring.	Replace.
	Worn bearing.	Replace.
Noise	Worn gear.	Replace.
	When noise occurs under engine idling and stops while the clutch is disengaged, or when noise occurs while shifting gears, it may be considered that the noise is from the transmission.	
	Insufficient or improper lubricant.	Add oil replace with designated oil.
	Oil leaking due to damaged oil seal gasket or clogged breather.	Clean or replace.
	Worn bearing and/or gear (High humming occurs at a high speed).	Replace.
Damaged bearing and/or gear (cyclic knocking sound occurs also at a low speed).	Replace.	
Worn spline.	Replace.	

SPECIAL SERVICE TOOLS

Tool number & tool name	Reference page or fig. .No	Tool number & tool name	Reference page or fig. .No
	Unit applica-tion		Unit applica-tion
KV32101100 Fork rod pin punch 	Fig. TM-19	ST22452000 Mainshaft bearing drift 	Fig. TM-65 Fig. TM-70
ST30031000 Bearing puller 	Fig. TM-42	ST22530000 Adapter 	Fig. TM-64
ST30600000 Bearing drift 	Fig. TM-54	KV32101200 Mainshaft bearing puller 	Fig. TM-32

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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