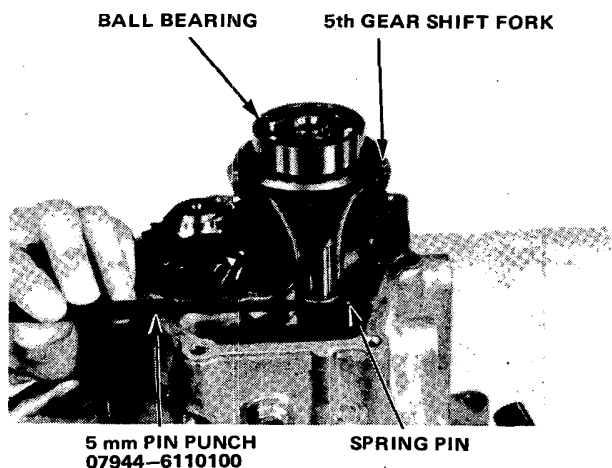


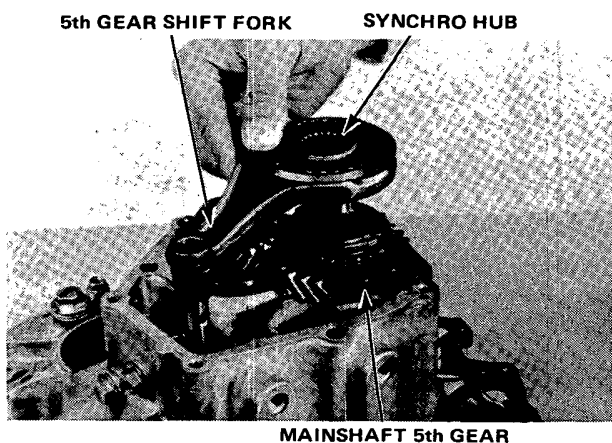
5-Speed Transmission

Housing Disassembly

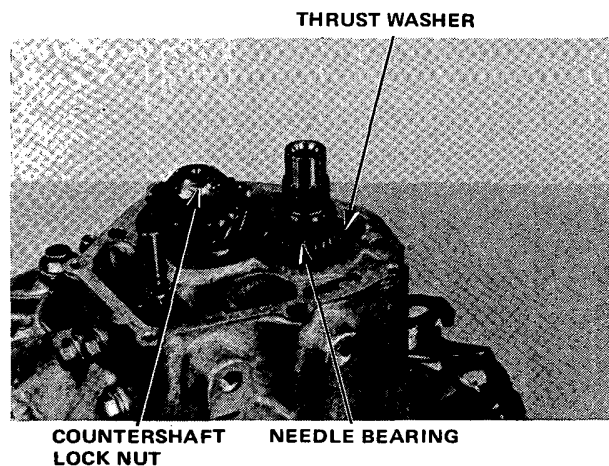
1. Drive out the spring pin securing the fifth gear shift fork to the shaft.
2. Remove the ball bearing.



3. Remove the shift fork and synchro hub as a unit. Then remove the synchro ring and spring and the mainshaft 5th gear.

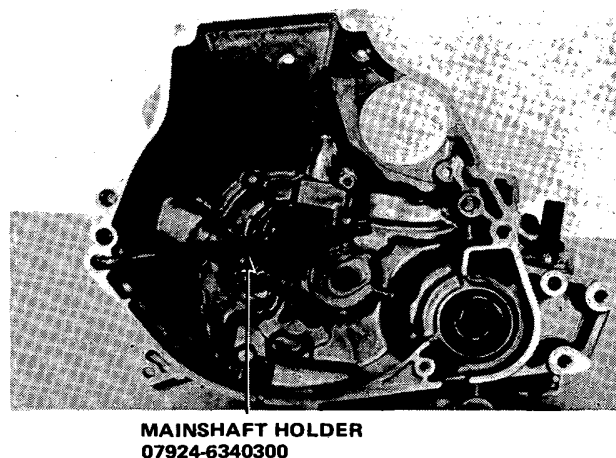


4. Remove the needle bearing and the thrust washer.



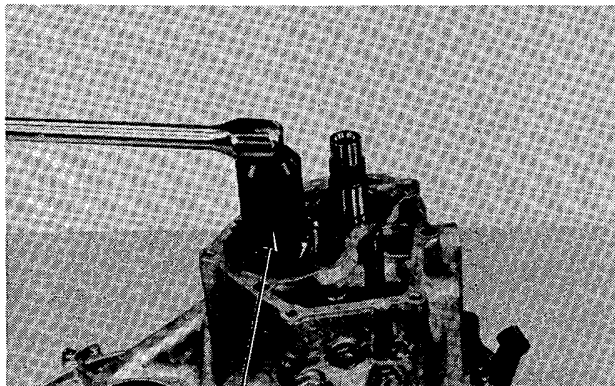
5. Raise tab on mainshaft lock nut using a hammer and prick punch.

6. Install the mainshaft holder.





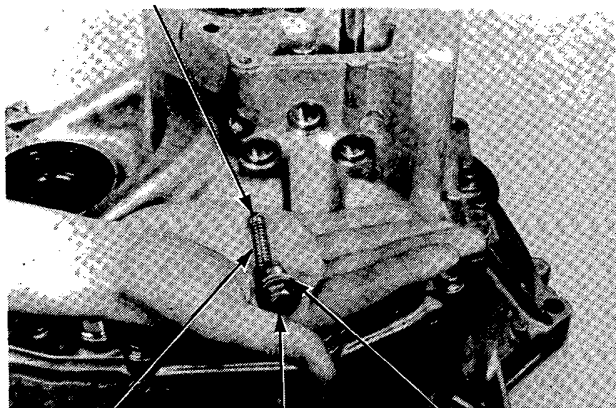
7. Remove the lock nut using a 22 mm socket wrench.



22 mm SOCKET WRENCH

8. Remove the detent ball retaining bolts, springs and balls.

DETENT BALL



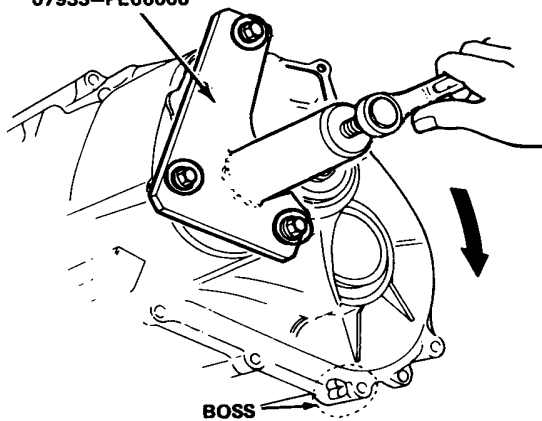
SPRING

RETAINING
BOLT

WASHER

9. Remove the 11 bolts from housing.
10. Loosen transmission housing from liquid sealant by tapping on bosses with a soft hammer. Remove the transmission housing by using puller.

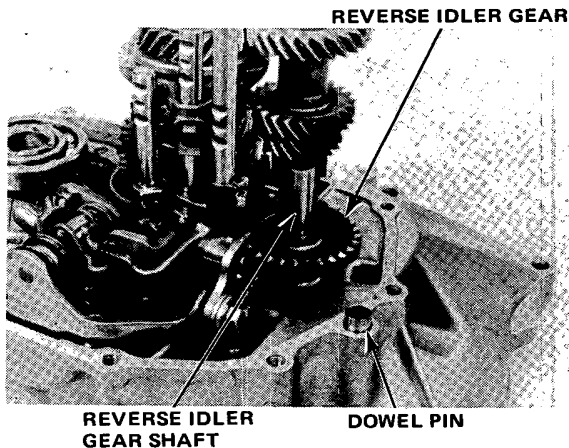
TRANSMISSION HOUSING
PULLER
07933-PE60000



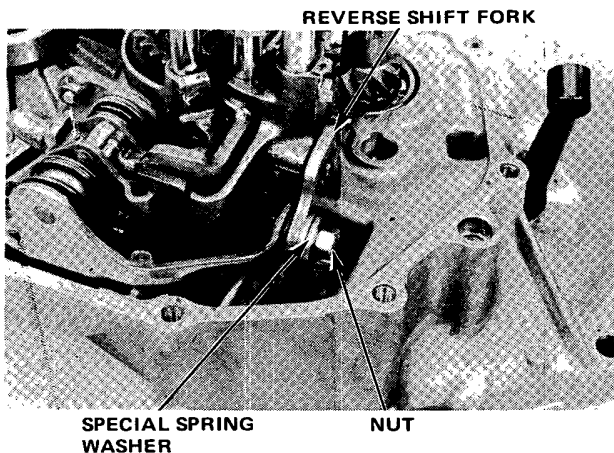
5-Speed Transmission

Shaft Removal

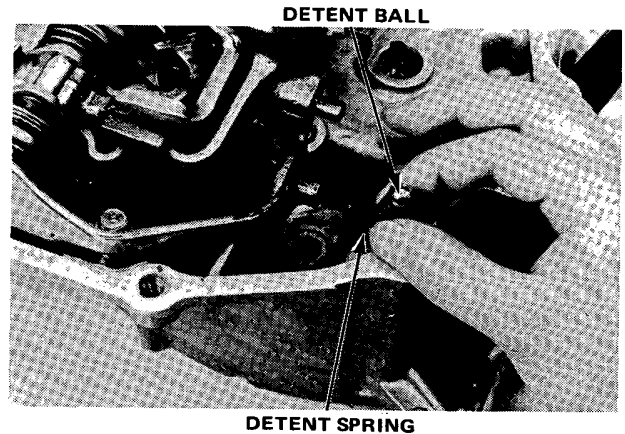
1. Pull out the reverse idler gear shaft and remove the gear.
2. Remove the dowel pin.



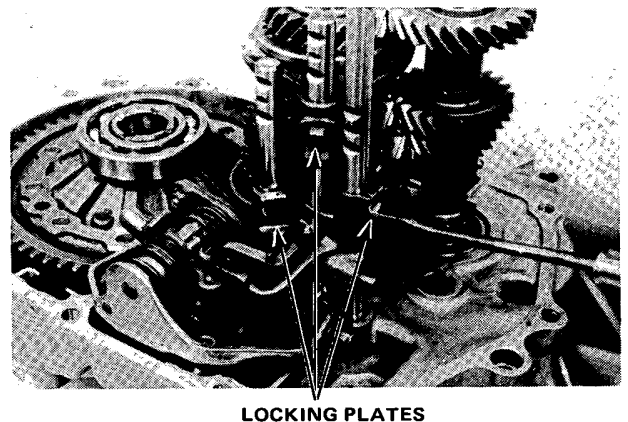
3. Remove the nut and the special spring washer on the reverse shift fork, then remove the reverse shift fork.



4. Remove the detent ball and spring from the reverse shift fork.

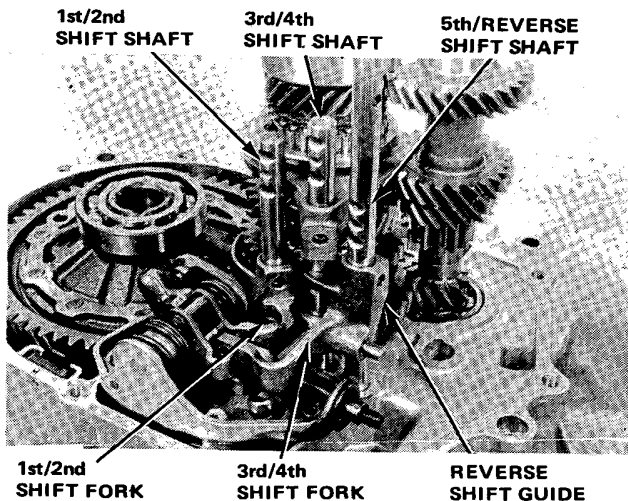


5. Bend down the tabs on the three locking plates and remove the bolts.

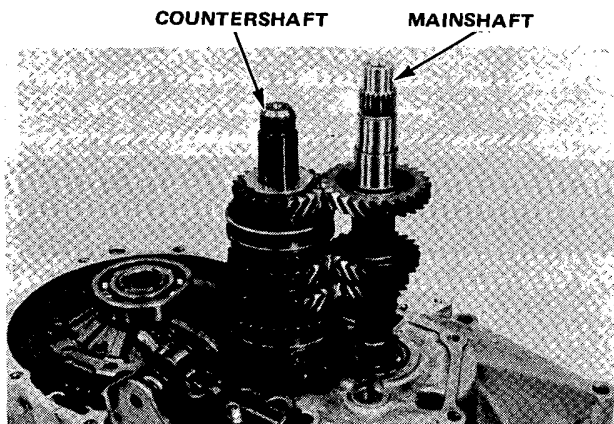




6. Remove the reverse shift shaft.
7. Remove the reverse shift guide.
8. Remove the 1st/2nd gear shift shaft.
9. Remove the 3rd/4th gear shift shaft and shift fork.
10. Shift the synchro into the 2nd and remove the 1st/2nd gear shift fork.

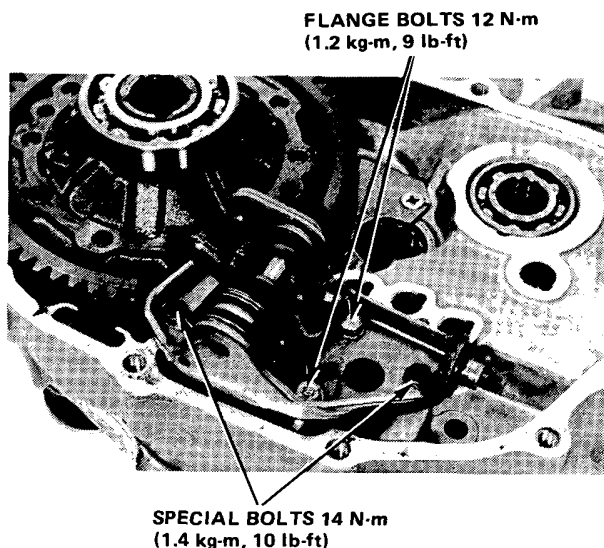


11. Remove the countershaft and the mainshaft as an assembly.



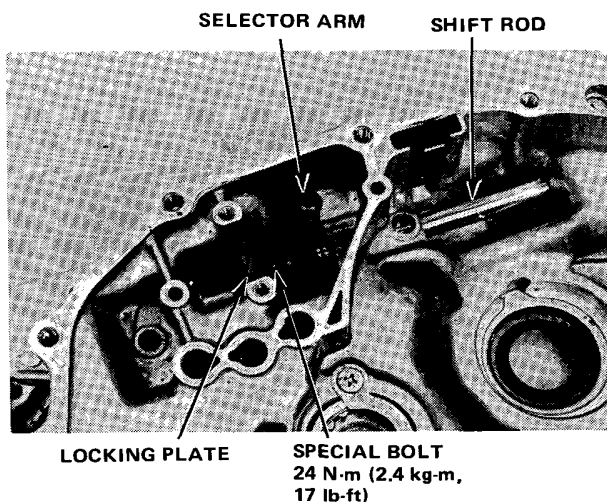
Shift arm Holder Removal

1. Remove the special bolts and the flange bolts and then remove the shift arm holder.



Shift Rod Removal

1. Bend down the tab on the locking plate, remove the special bolt, then slip out the shift rod.



5-Speed Transmission

Mainshaft Inspection

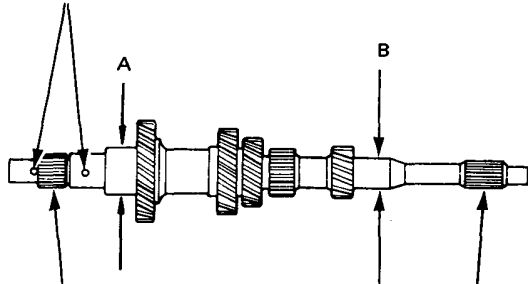
1. Measure gear and bearing O.D.s.

Standard: A: 27.997–28.010 mm
(1.102–1.103 in)

B: 21.987–22.0 mm
(0.866–0.866 in)

Service Limit: A: 27.94 mm (1.100 in)
B: 21.93 mm (0.863 in)

Inspect oil passages for clogging.



Inspect for wear or damage.

Inspect for wear or damage.

2. Replace the mainshaft if any readings are out of tolerance.

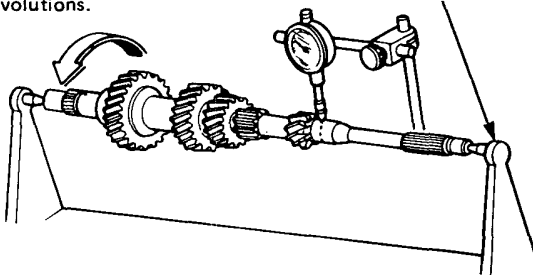
3. Inspect for runout.

Standard: 0.02 mm (0.0008 in)

Service Limit: 0.05 mm (0.0019 in)

Rotate two complete revolutions.

Support with lathe type tool or V-blocks



4. Replace the mainshaft if the reading is out of tolerance.

Countershaft Inspection

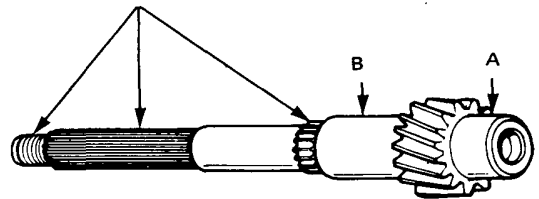
1. Measure gear and bearing O.D.s.

Standard: A: 30.004–30.017 mm
(1.181–1.182 in)

B: 31.984–32.000 mm
(1.259–1.260 in)

Service Limit: A: 29.94 mm (1.179 in)
B: 31.93 mm (1.257 in)

Inspect for wear or damage.



2. Replace the countershaft if any readings are out of tolerance.

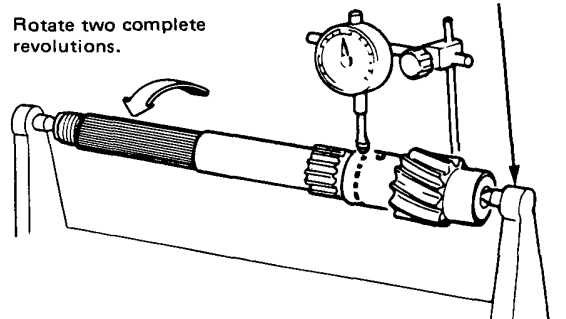
3. Inspect for runout.

Standard: 0.02 mm (0.0008 in)

Service Limit: 0.05 mm (0.0019 in)

Rotate two complete revolutions.

Support with lathe type tool or V-blocks



4. Replace the countershaft if the reading is out of tolerance.



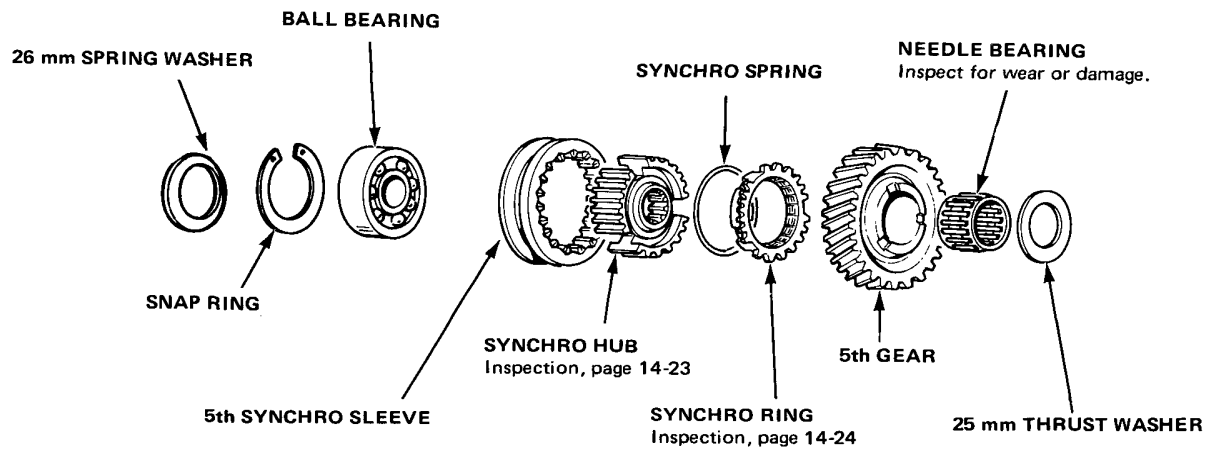
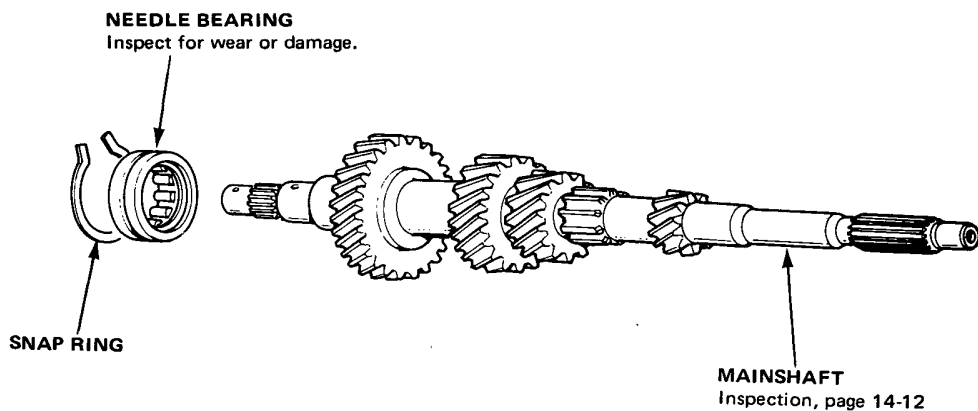
Mainshaft Index

NOTE:

- Clean all parts thoroughly in solvent and dry with compressed air.



Lubricate all parts with oil before reassembly.



5-Speed Transmission

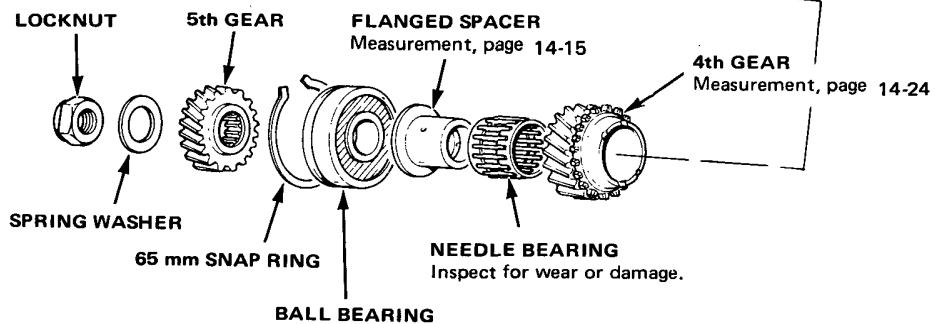
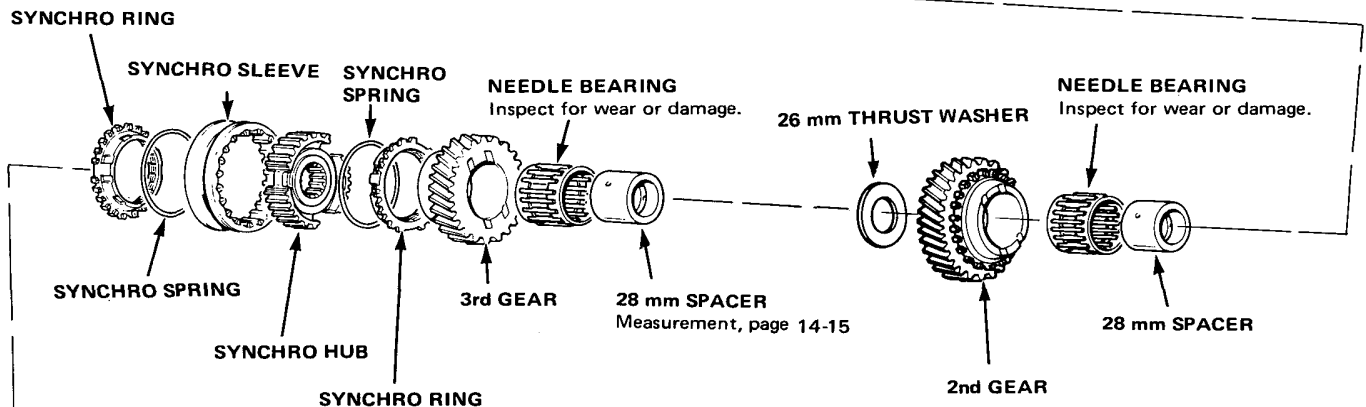
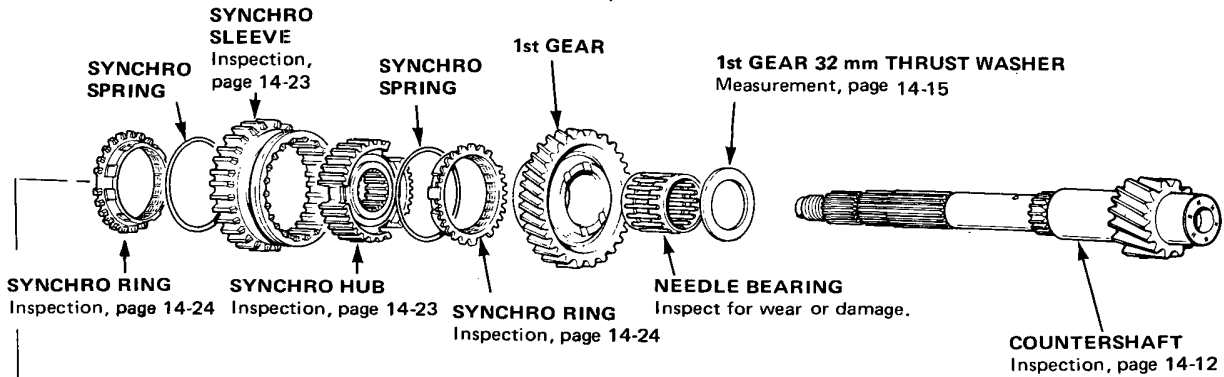
Countershaft Index

NOTE:

- Clean all parts thoroughly in solvent and dry with compressed air.
- The 28 mm spacers should be marked as they are removed, so that they can be reinstalled correctly.



Lubricate all parts with oil before reassembly.





Countershaft Clearance Measurement

NOTE: On adjusting the countershaft clearance, select the correct spacer 28 mm, flanged spacer, and 1st gear thrust washer from the tables below.

1. Assemble the mainshaft and countershaft as shown below.

THRUST WASHER THICKNESS

CLASS THICKNESS

A	1.95–1.98 mm (0.077–0.078 in)
B	1.92–1.95 mm (0.076–0.077 in)
C	1.89–1.92 mm (0.074–0.076 in)

SPACER 28 mm

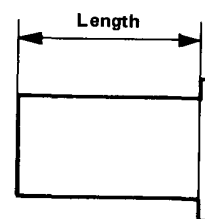
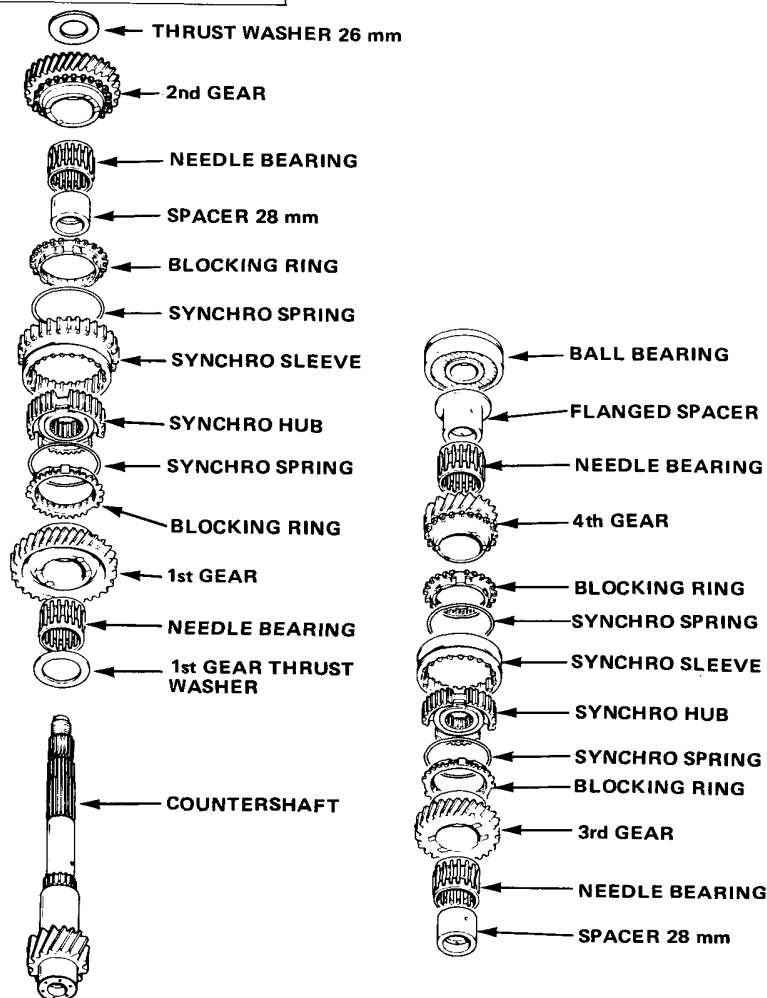
LENGTH

28.01–28.04 mm (1.103–1.104 in)
28.04–28.07 mm (1.104–1.105 in)
28.07–28.10 mm (1.105–1.106 in)
28.10–28.13 mm (1.106–1.107 in)

FLANGED SPACER

LENGTH

28.01–28.04 mm (1.103–1.104 in)
28.04–28.07 mm (1.104–1.105 in)
28.07–28.10 mm (1.105–1.106 in)
28.10–28.13 mm (1.106–1.107 in)

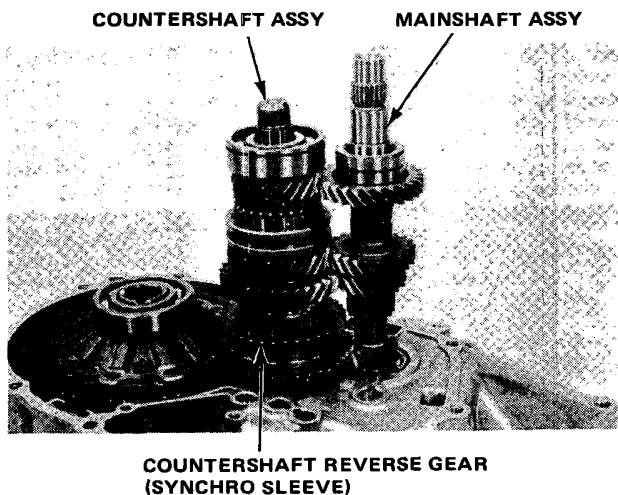


(cont'd)

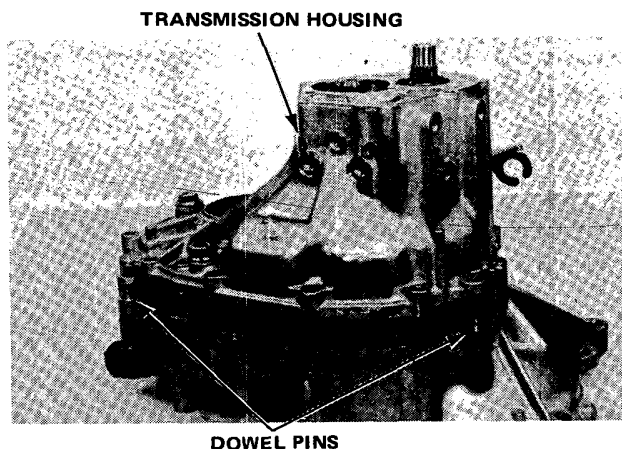
5-Speed Transmission

Countershaft Clearance Measurement (cont'd)

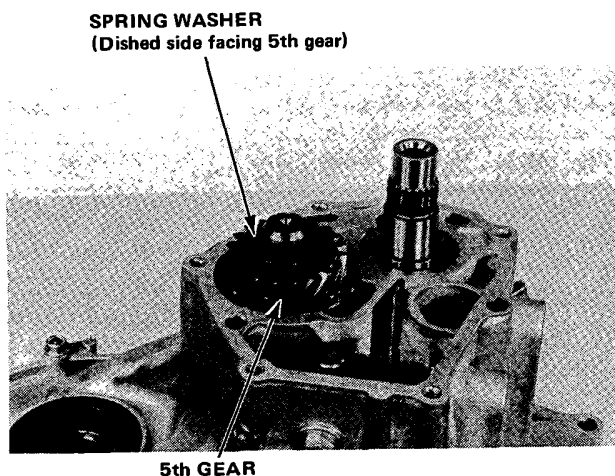
2. Install the mainshaft and countershaft as an assembly.
3. Lift the countershaft 2nd and reverse gear to shift into 2nd gear.



4. Install the dowel pins in clutch housing, then install transmission housing.



5. Install the countershaft 5th gear and spring washer.



6. Install the mainshaft holder. See page 14-8.
7. Install the countershaft locknut. Tighten to 90 N-m (9.0 kg-m, 65 lb-ft).



8. Remove the transmission housing by using housing puller. See page 14-9.
9. Remove the countershaft assembly and mainshaft assembly.



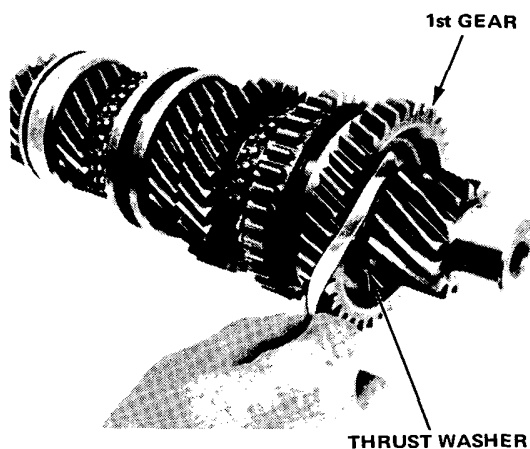
- If any measurement is out of tolerance, the counter-shaft assembly must be disassembled and spacer collars or the thrust washer changed (see page 14-15).

10. Measure the clearance between thrust washer and 1st gear.

1st Gear Clearance

Standard (New): 0.03–0.08 mm (0.001–0.003 in.)

Service Limit: 0.18 mm (0.007 in.)

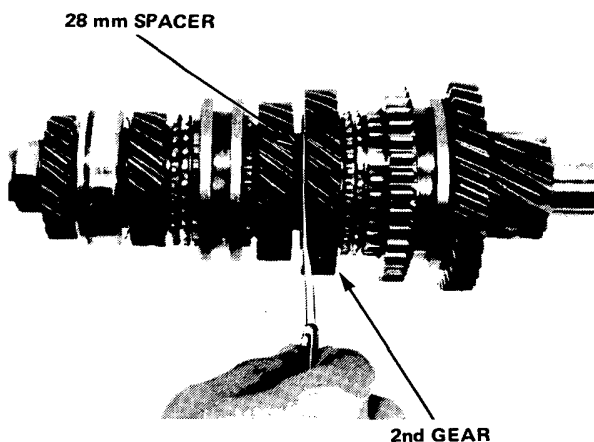


11. Measure the clearance between the 28 mm spacer and 2nd gear.

2nd Gear Clearance:

Standard (New): 0.05–0.12 mm (0.002–0.005 in.)

Service Limit: 0.18 mm (0.007 in.)

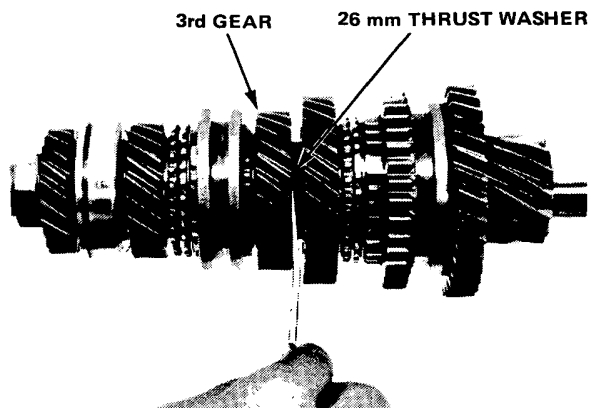


12. Measure the clearance between the 26 mm thrust washer and 3rd gear.

3rd Gear

Standard: 0.05–0.12 mm
(0.002–0.005 in.)

Service Limit: (0.007 in.)

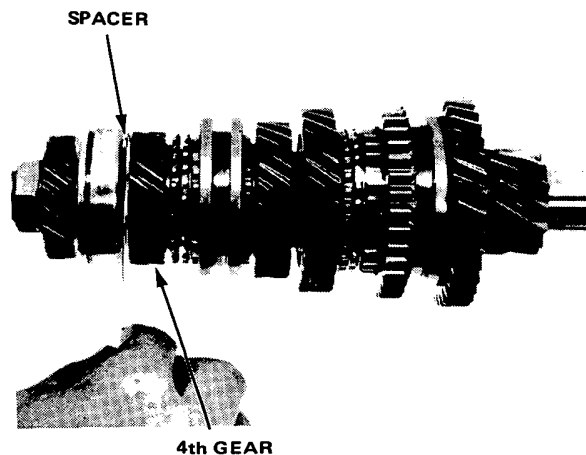


13. Measure the clearance between 4th gear and its spacer.

4th Gear

Standard: 0.05–0.12 mm
(0.002–0.005 in.)

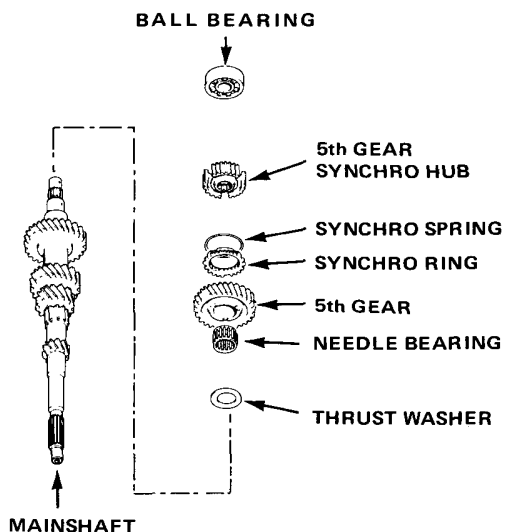
Service Limit: 0.18 mm (0.007 in.)



5-Speed Transmission

Mainshaft Assembly Clearance

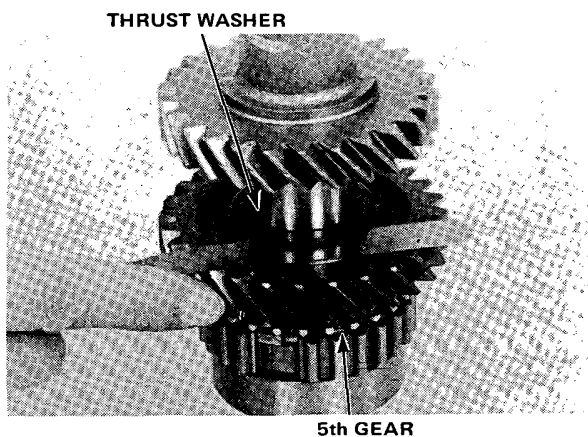
1. Install the parts below onto the mainshaft.



2. Hold the ball bearing outer race with a socket and compress it to 30 kg (66 lb).
3. Measure clearance between 5th gear and its thrust washer.

Standard: 0.05–0.38 mm
(0.0020–0.0150 in.)

Service Limit: 0.4 mm (0.016 in.)

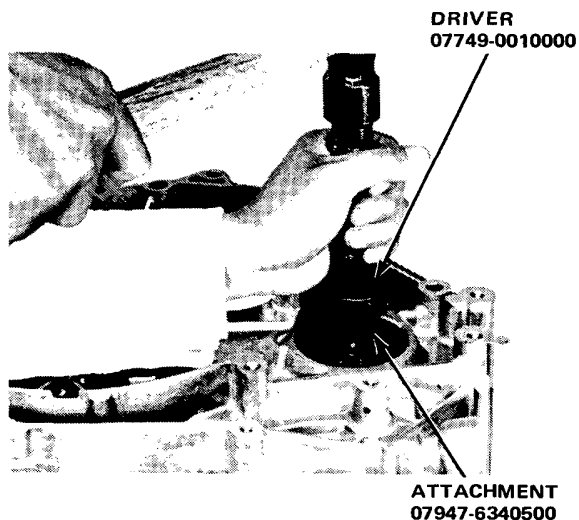


4. Replace the thrust washer if the clearance exceeds the service limit.
Recheck the clearance with the new thrust washer.
If the clearance is still over the service limit, replace 5th gear and recheck.

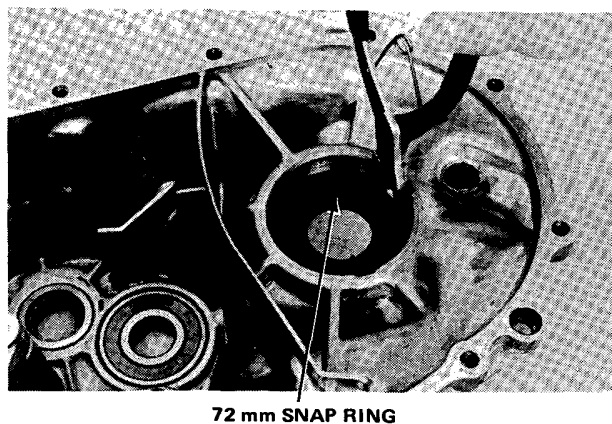


Differential Oil Seal Removal

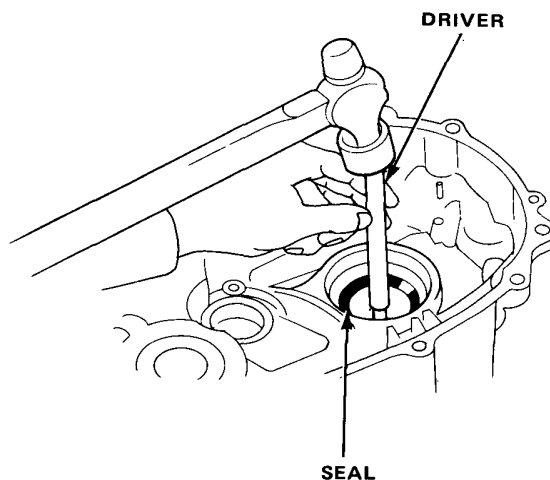
1. If seals are to be replaced, or if the differential needs repair, remove the differential assembly. Refer to section 17 for differential repair.



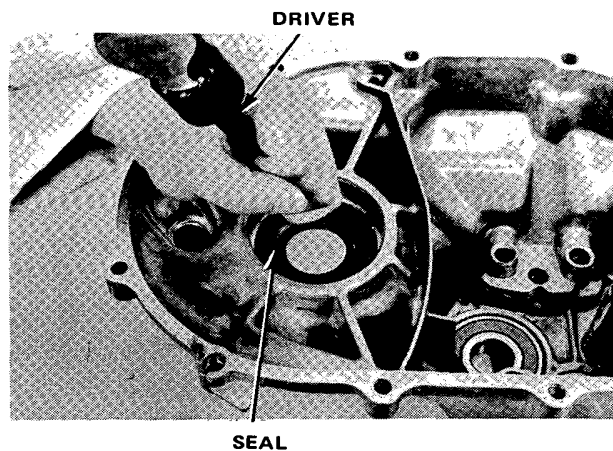
2. Remove the 72 mm snap ring in the transmission housing.



3. Drive out the seal from the clutch housing.



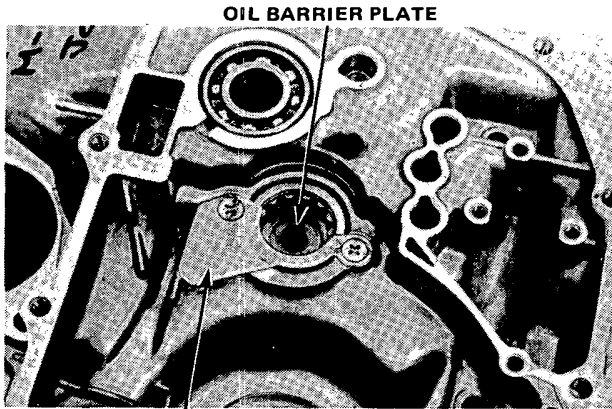
4. Drive out the seal from the transmission housing.



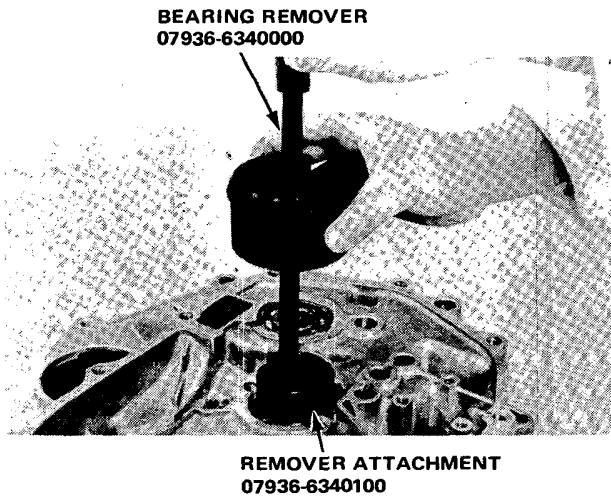
5-Speed Transmission

Countershaft Bearing Replacement

1. Remove the bearing retainer plate.

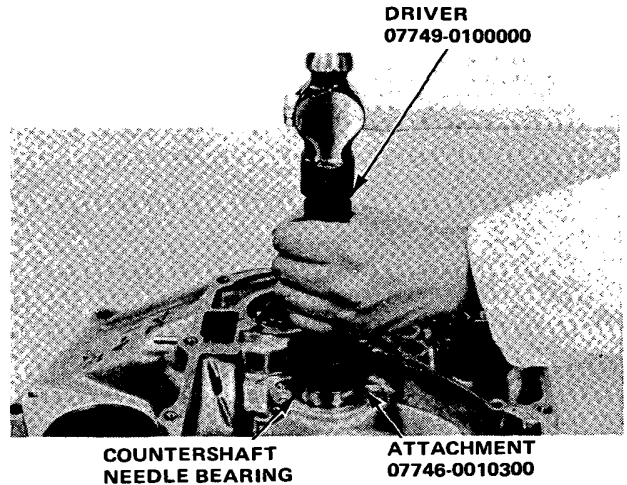


2. Insert Bearing Remover with attachment into countershaft bearing.
3. Raise slide hammer rapidly and strike against handle. Repeat several times to remove bearing.

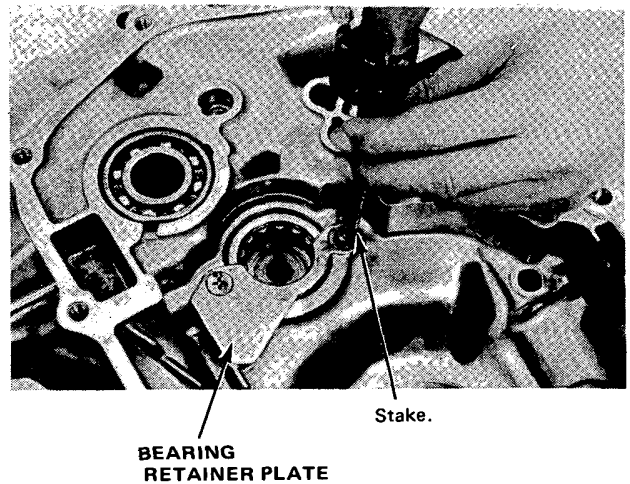


4. Remove the oil barrier plate, wash thoroughly, then reinstall it.

5. Drive in the countershaft needle bearing with the special tools.



6. Reinstall the bearing retainer plate. Tighten the screws with an impact driver, then stake the screw heads.

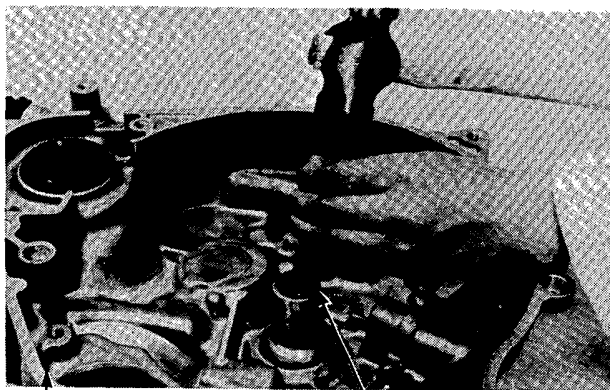




Mainshaft Bearing Replacement

1. Remove the mainshaft bearing and seal from the clutch housing by driving out with a drift.

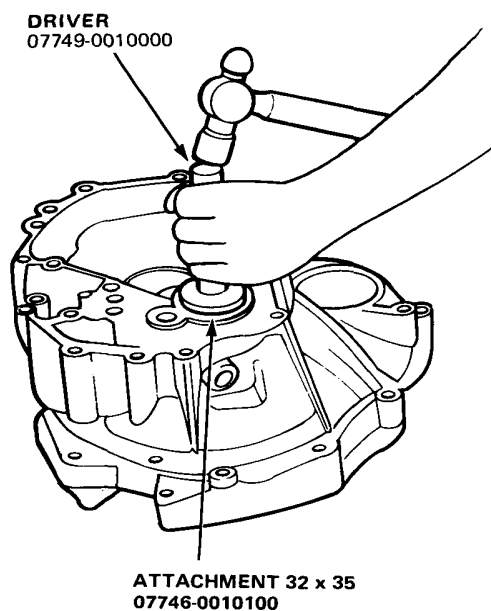
NOTE: Always install a new bearing and seal. Do not reinstall old ones.



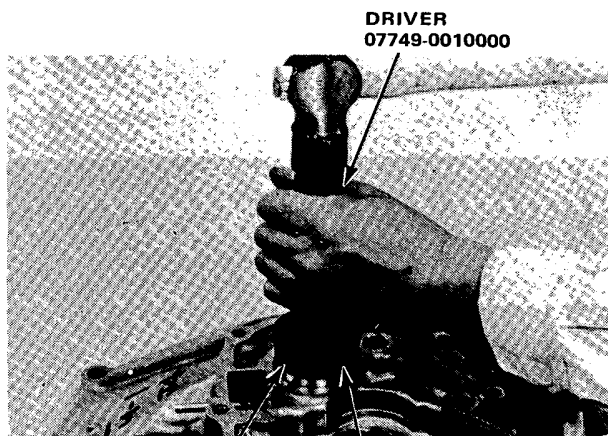
CLUTCH HOUSING

DRIFT

2. Drive in the mainshaft oil seal.



3. Drive in the mainshaft bearing with a support block placed under the case to support the bearing boss.



5-Speed Transmission

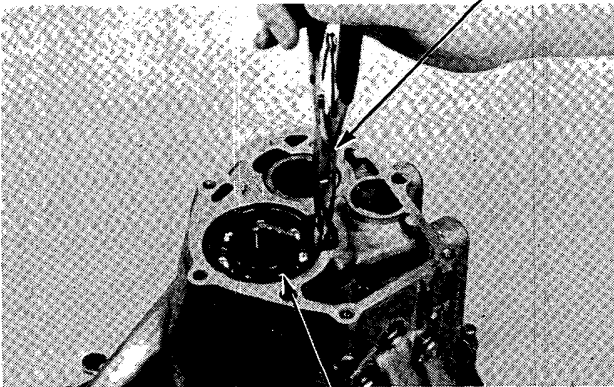
Mainshaft/Countershaft Bearing Replacement (Transmission Housing)

1. Remove the mainshaft and countershaft bearings from transmission housing; expand each snap ring with snap ring pliers, then push bearing out by hand.

CAUTION: To avoid damaging the housing, fully expand each snap ring before pushing out the bearing.

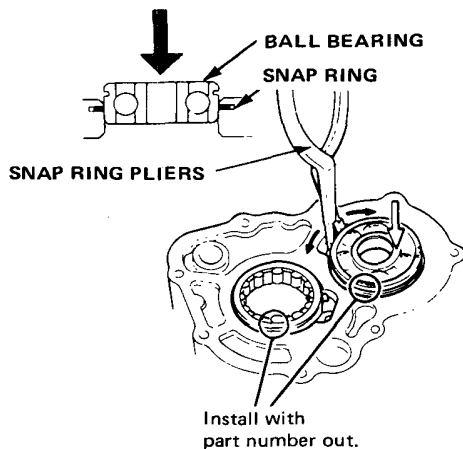
NOTE: Do not remove the snap rings unless it is necessary to clean the grooves in the housing.

SNAP RING PLIERS



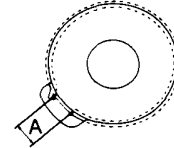
COUNTERSHAFT BEARING

2. Expanding each snap ring with snap ring pliers, insert the new bearing partway into it (part number facing out), then release pliers. Push the bearing down into the transmission until ring snaps in place around it.



3. Check that the snap ring is securely seated in both the grooves of the bearing and the case.

NOTE: To confirm proper snap ring seating and condition, measure snap ring gap A as installed:



Bearing	Dimension A as installed
Mainshaft	3.5–4.7 mm (0.14–0.19 in.)
Countershaft	5.7–8.8 mm (0.22–0.35 in.)

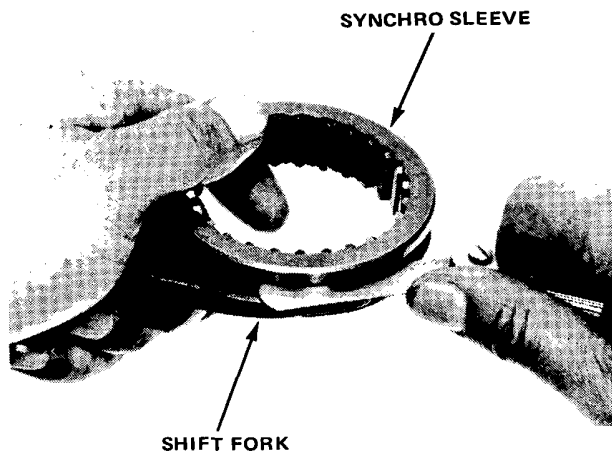
Reseat or carefully replace the snap ring if the gap is outside the specification.



Shift Fork to Synchro Sleeve Clearance

1. Check clearance between each shift fork and its matching synchro sleeve.

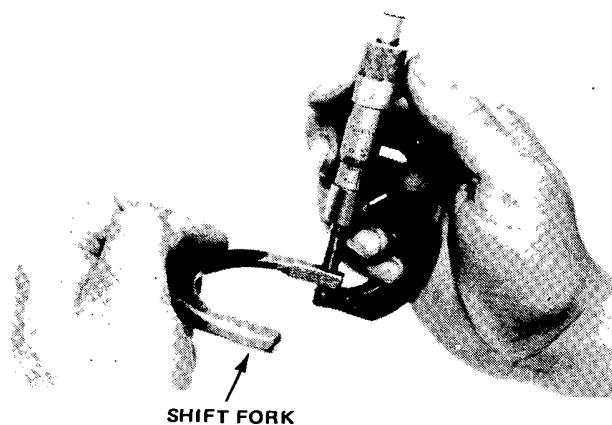
Standard: 0.45–0.65 mm
(0.018–0.026 in)
Service Limit: 1.0 mm (0.039 in)



2. If the clearance exceeds the service limit, measure the thickness of the shift fork fingers.

Finger Thickness:
(All shift forks)

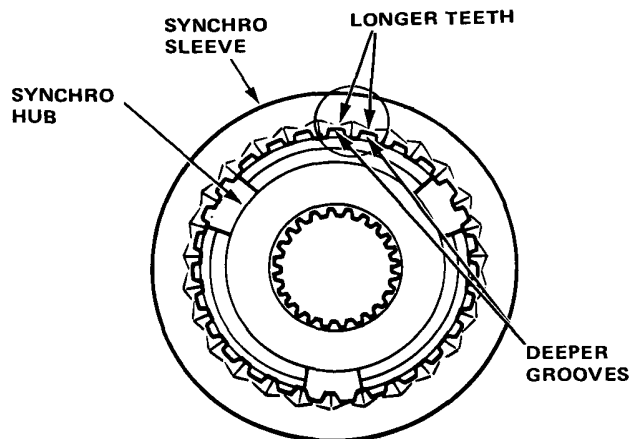
Standard: 6.4–6.5 mm (0.252–0.256 in)
Service Limit: 6.0 mm (0.236 in)



3. If any shift forks are replaced, recheck fork-to-sleeve clearance. If still out of tolerance, replace the synchro sleeve and recheck.

Installing Synchro Hubs in Sleeves

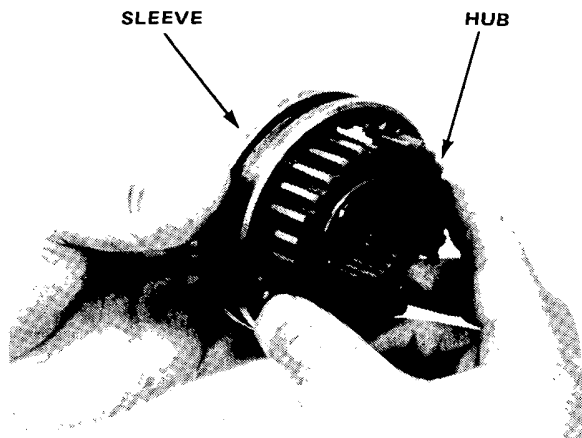
Each synchro sleeve has three sets of longer teeth (120 degrees apart) that must be matched with the three sets of deeper grooves in the hub when assembled.



Synchro Sleeve and Hub Inspection

1. Inspect the gear teeth on all synchro hubs and sleeves for rounded off corners, indicating wear.
2. Install each hub in its mating sleeve and check for freedom of movement.

NOTE: If replacement is required, always replace the synchro sleeve and hub as a unit.



5-Speed Transmission

Gear and Synchro Ring Inspections

SYNCHRO SPRING
Replace

1. Inspect the inside of synchro ring for wear.

SYNCHRO RING

2. Inspect the synchro ring teeth and matching teeth on gear for wear (rounded off).

Wear

3. Inspect the gear hub thrust surface for wear.

4. Inspect the cone surface for wear on 1st, 2nd, 3rd and 4th countershaft gears; 5th mainshaft gear.

5. Inspect the teeth on all gears for uneven wear, scoring, galling, cracks.

6. Place the synchro ring on matching gear cone and rotate until it stops (approx. 10 to 20 degrees), then measure the clearance between ring and gear.

Ring-to-Gear Clearance:

Standard (New): 0.85–1.1 mm (0.033–0.043 in.)

Service Limit: 0.4 mm (0.016 in.)

7. Separate the synchro ring and gear, and coat them with oil.
8. Install the synchro spring on synchro ring.
9. Put the synchro ring on gear cone again, rotate until it stops, then set it aside for later reassembly.

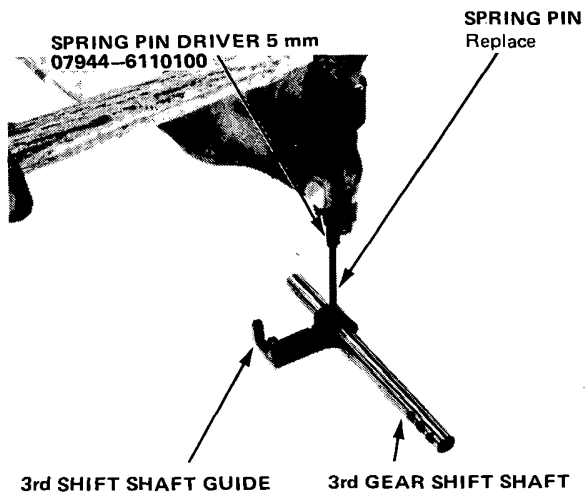
SYNCHRO RING

GEAR



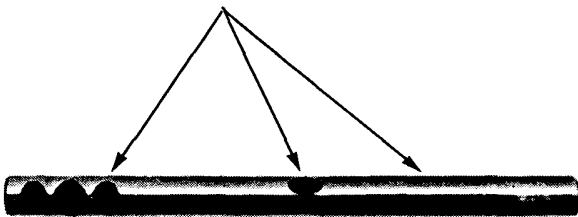
Shift Shaft Inspection

1. Remove the 3rd gear shift shaft guide from its shaft with a spring pin driver.



2. Inspect the shift shaft for wear or damage.

Inspect the surface of the shaft for wear or damage.

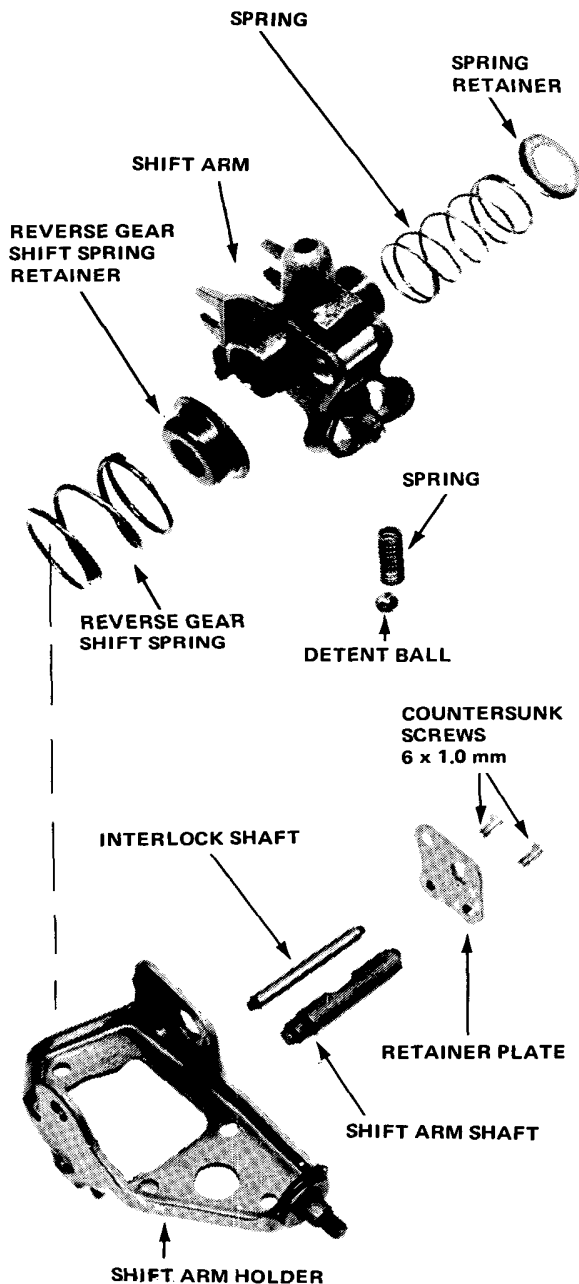


Inspect the grooves for wear or damage.

5-Speed Transmission

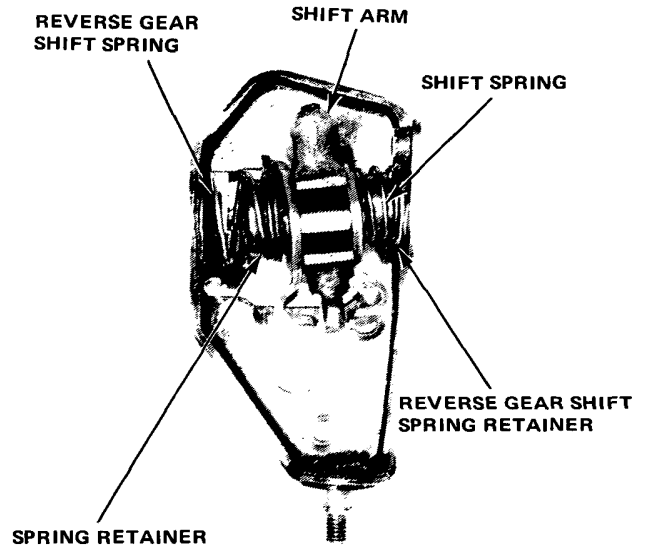
Shift Arm Holder Disassembly

1. Use an impact driver to remove the retainer plate screws, then remove the retainer plate.
2. Pull out the shift arm shaft and interlock shaft.
3. Remove the detent ball and spring.
4. Remove the shift arm, shift springs, and spring retainers.

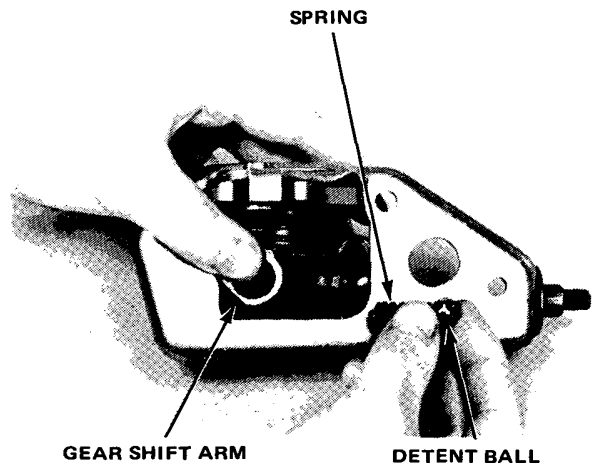


Shift Arm Holder Reassembly

1. Install the shift arm, shift springs, and spring retainers in shift arm holder.

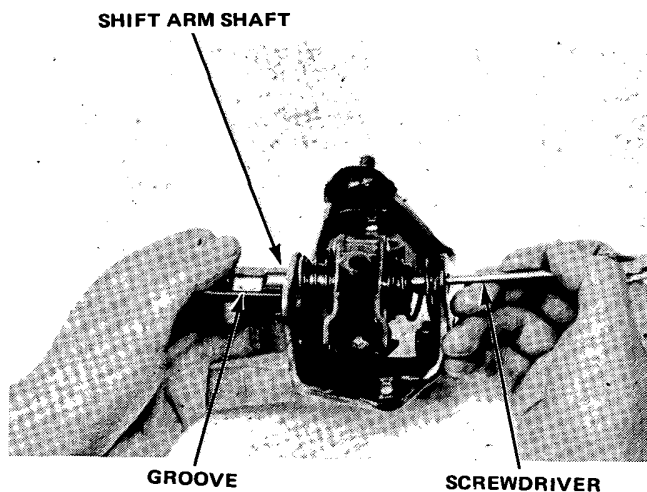


2. Turn the shift arm holder upside down and place the detent ball and spring in the shift arm.

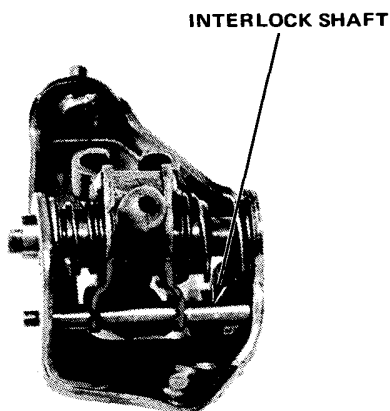




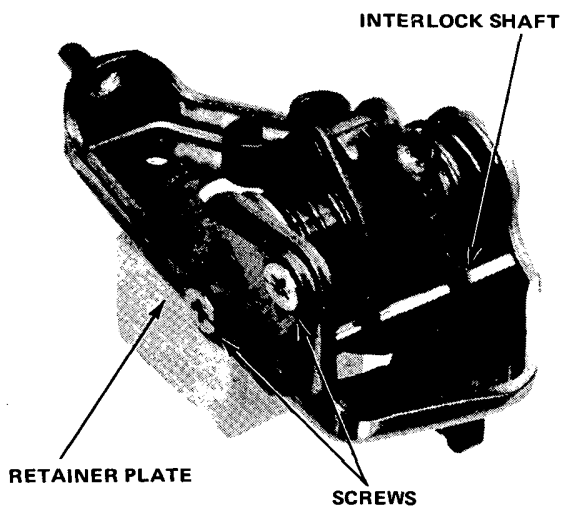
3. Hold the detent ball in place with a small screwdriver, align groove in shift arm shaft with detent ball, then insert the shaft through shift arm holder and shift arm.



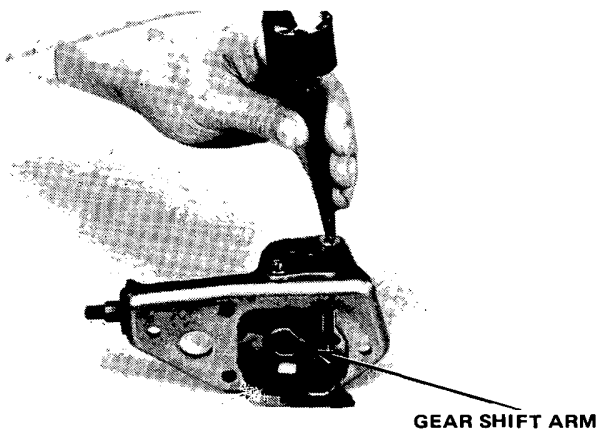
4. Insert the interlock shaft.



5. Install the retainer plate.



6. Tighten the retainer plate screws with impact driver, then stake the screw heads.



NOTE: After reassembly, check the gear shift arm for free movement.