

Clutch

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Clutch Actuator to Support Bracket Nut	16 N.m	12 lb ft
Clutch Actuator to Swivel Nut	40 N.m	30 lb ft
Clutch Fork Bolts	15 N.m	11 lb ft
Clutch Housing Bolts	35 N.m	26 lb ft
Front Bearing Cover Bolts	27 N.m	20 lb ft
Master Cylinder to Support Bolts	20 N.m	15 lb ft
Pedal Shaft Bolts	45 N.m	33 lb ft
Pressure Plate Bolts 8 mm (0.31")	25 N.m	18 lb ft
Pressure Plate Bolts 9.5 mm (0.37")	50 N.m	36 lb ft

Sealers and Lubricants

Clutch System Fluid	Fluid Levels
Use a brake fluid that meets DOT 3 specifications when adding fluid to the clutch system reservoir.	Fill the reservoir to the specified level shown on the reservoir. Do not overfill the system.

Diagnostic Information and Procedures

Clutch Slipping

Cause	Action
The release levers in the pressure plate and the cover are binding.	Replace the clutch cover.
The clutch release levers are not properly adjusted.	If the levers are in place, adjust the clutch cable.
The clutch release bearing adjustment is improper.	Adjust the clutch cable for proper clearance.
The clutch pedal is binding or sticking	Check the clutch cable for proper operation.
The clutch pressure springs are weak or broken.	Replace the clutch cover.
The clutch facings are burnt.	Replace the driven disc.
The release bearing is binding in the drive gear.	Lubricate or replace the release bearing.

Clutch Grabbing (Chattering) (Chattering)

Causes	Action
Grease or oil is on the facings.	Repair the oil leak and replace the driven disc.
The pressure springs are weak.	Replace the clutch cover.
The pilot bearings are worn or broken.	Replace the pilot bearings.
The pressure plates are bent.	Replace the clutch cover.
The pressure plate or the flywheel is warped.	Replace the pressure plate or the flywheel.

Clutch Grabbing (Chattering) (Grabbing)

Causes	Action
There is grease or oil on the clutch facings.	Repair the oil leak and replace the driven disc.
The clutch pressure springs are too stiff.	Replace the clutch cover.

Clutch Rattle (Trans Click)

Causes	Action
The retractor spring is loose or worn.	Repair or replace the retractor spring.
The linkage is worn.	Repair or replace as necessary.

Clutch Noisy

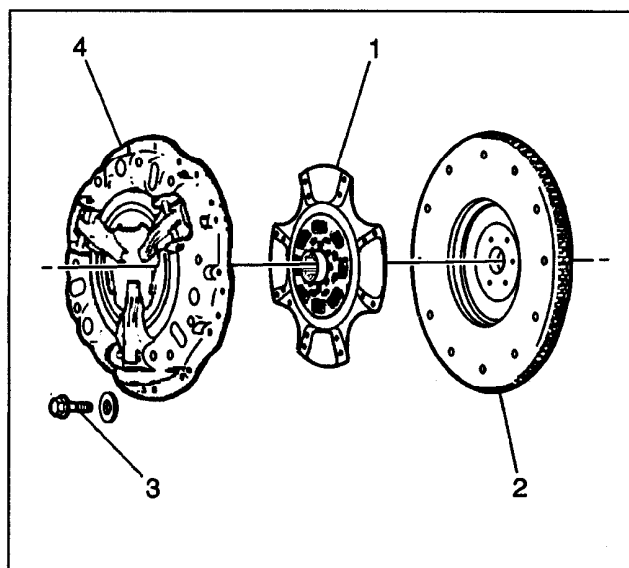
Causes	Action
The pilot bearing or the bushing is worn or broken.	Replace the pilot bearing or the bushing.
The release bearing is worn or broken.	Replace the release bearing.

Clutch Noisy During Engagement

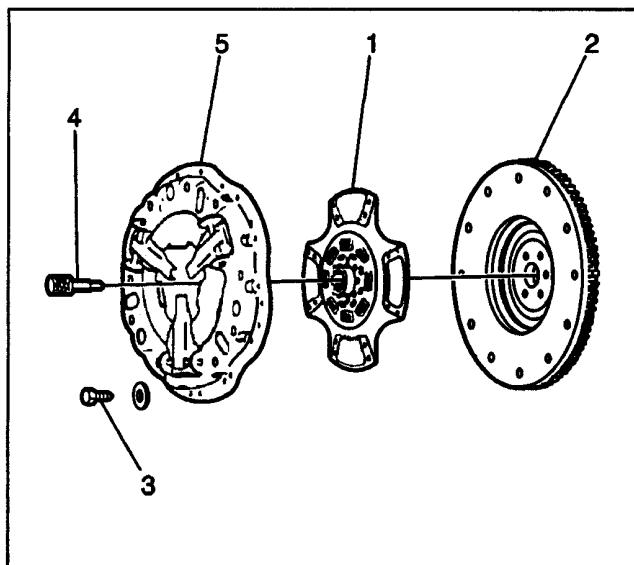
Causes	Action
The clutch release bearing is improper.	Adjust the clutch cable for pedal free play.
The clutch disc damper springs are weak or broken.	Replace the driven disc.
The clutch release bearing is binding.	Check for proper alignment. Replace the bearing if required.
The splines on the clutch disc are worn.	Replace the clutch disc.

Repair Instructions**Clutch Pressure Plate and Clutch Driven Plate****Removal Procedure**

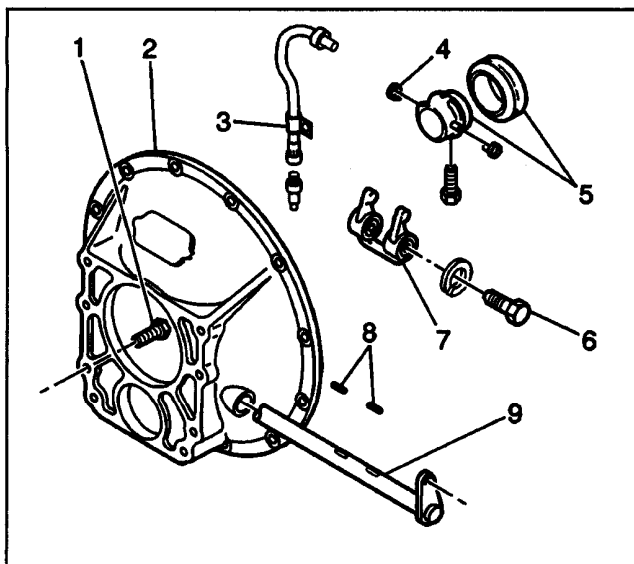
1. Remove the transmission. Refer to *Transmission Replacement* in Manual Transmission.
2. Remove the bolts (3) and the washers that secure the pressure plate (4) and the driven plate (1) to the flywheel (2).
3. Remove the pressure plate.
4. Remove the driven plate.
5. Inspect the following parts:
 - The clutch fork for wear, cracks, or distortion
 - The release bearing for roughness
 - The driven plate for broken springs, loose rivets, and cracks
 - The hub splines for wear and damage
 - The pressure plate for wear and damage
 - The flywheel for wear or damage
6. Inspect for unnecessary grease or oil on any of the components.
7. Measure the following components:
 - The driven plate friction material for thickness
Replace the driven plate if the material thickness is less than 1.27 mm (0.050 in).
 - The pressure plate friction surface flatness
Replace the pressure plate if the friction surface flatness is less than 0.10 mm (0.0039 in).



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Installation Procedure

Tools Required

J 37367 Clutch Pilot Aligner

1. Apply grease to the hub splines.
2. Install the driven plate (1).
3. Install the J 37367 to the center of the driven plate.
4. Install the pressure plate (5).
5. Install the bolts and the washers.
6. Remove the J 37367 from the driven plate.
7. Install the transmission. Refer to *Transmission Replacement* in Manual Transmission.

Release Bearing Replacement

Removal Procedure

1. Remove the transmission. Refer to *Transmission Replacement* in Manual Transmission or *Transmission Replacement* in Automatic Transmission.
2. Remove the bolt (6) and the washers that secure the fork (7).
3. Remove the following parts from the housing:
 - The shaft (9)
 - Use a drive bar in order to remove the shaft from the clutch housing.
 - The fork (7)
 - The keys (8)
4. For 200 HP models only, remove the flexible hose (3).
5. For 200 HP models only, remove the return spring (4).
6. Remove the release bearing (5) and the seal. Pry the seal from the clutch housing. Drive the bearing from the clutch housing.
7. Remove the bolts that secure the clutch housing to the transmission.

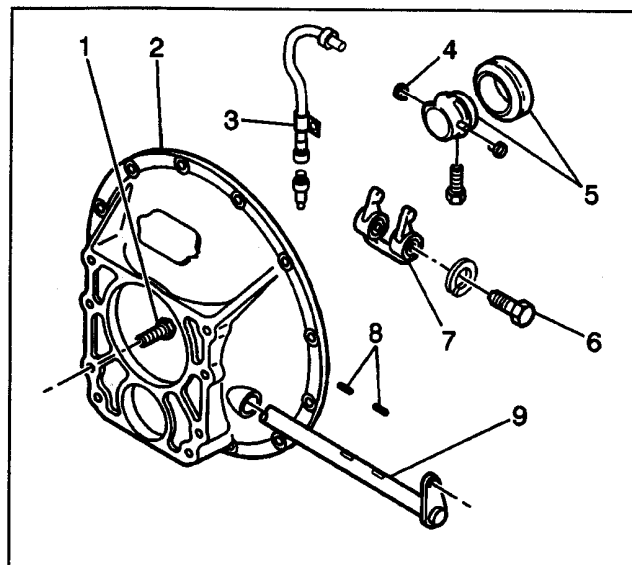
Installation Procedure

Notice: Refer to *Fastener Notice* in Cautions and Notices.

1. Install the bolts that secure the clutch housing (2) to the transmission.

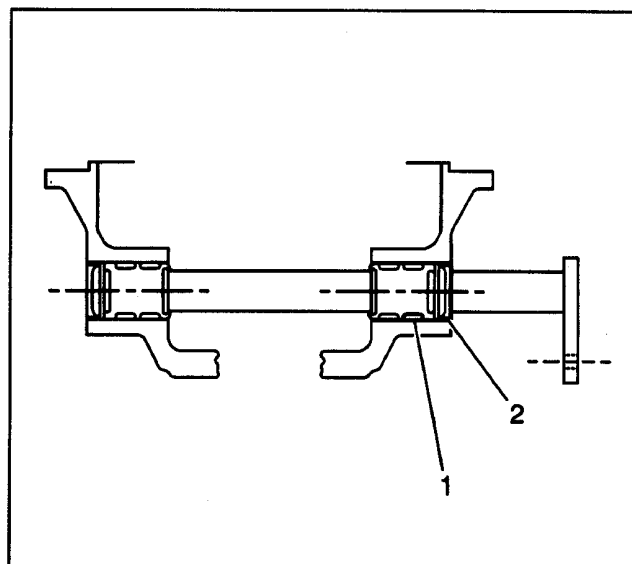
Tighten

Tighten the clutch housing bolts 35 N·m (26 lb ft).



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2. Install the release bearing (1) and the NEW seal (2).
 - Apply grease to the bearing and the clutch housing cavity.
 - Apply grease to the area between the seal and the bearing.
 - Drive the bearing to 10 mm (0.39 in) depth.
 - Drive the seal to 2 mm (0.08 in) depth.



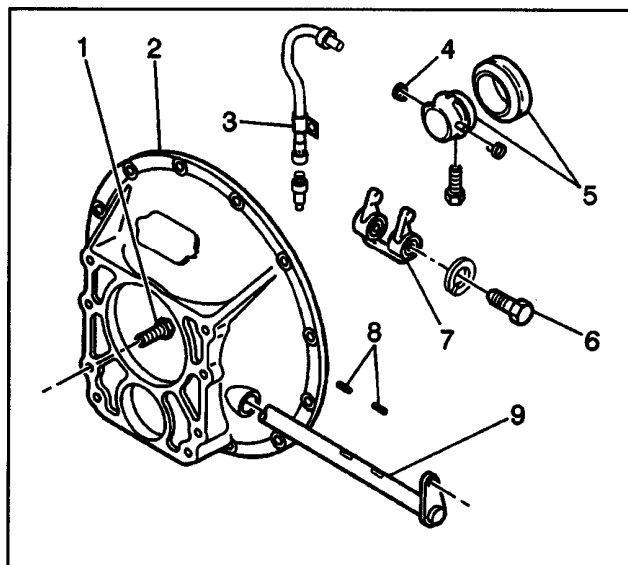
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3. For 200 HP models only, install the return spring (4).
4. For 200 HP models only, install the flexible hose (3).
5. Install the following parts to the housing:
 - The shaft (9)
 - The fork (7)
 - The keys (8)
6. Install the bolt (6) and the washers securing the fork (7).

Tighten

Tighten the fork bolt to 15 N·m (11 lb ft).

7. Install the transmission. Refer to *Transmission Replacement* in Manual Transmission or *Transmission Replacement* in Automatic Transmission.



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Description and Operation

Clutch Driving Members

The driving members of a clutch usually consist of two flat surfaces machined to a smooth finish. One of these surfaces is usually the rear face of the engine flywheel, and the other is a comparatively heavy flat ring with one side machined. This part is known as the pressure plate. The pressure plate is fitted onto a steel cover that contains some of the operating members and is bolted to the flywheel.

Clutch Driven Members

The driven member is a clutch disc with a spined hub that is free to slide lengthwise along the splines of the clutch shaft, but does not drive the shaft through these same splines. The suitable frictional facings are attached to each side of the clutch disk by means of rivets. The facings must be heat resistant in order to operate in a friction heated environment.

Clutch Operating Members

The driving and the driven members are held in contact by spring pressure. The throw-out (clutch release) bearing a ball thrust bearing contained in the clutch housing is mounted on a sleeve attached to the front of the transmission case. The throw out bearing is moved by the clutch release yoke to contact the release levers and move the pressure plate to the rear, thus separating the clutch driving members from the driven members when the clutch pedal is pushed.

Hydraulic Clutch Description

The hydraulic clutch system provides automatic clutch adjustments, no adjustment of clutch linkage or pedal position is required for clutch disc wear. When the clutch disc wears, the fluid level in the master cylinder reservoir will rise in order to accommodate for the extra fluid not required in the hydraulic system.

SECTION 7B1B

**MLD6Q MANUAL TRANSMISSION
OVERHAUL**

NOTICE: Always use the correct fastener in the correct location. When you replace a fastener, use **ONLY** the exact part number for that application. ISUZU will call out those fasteners that require a replacement after removal. ISUZU will also call out the fasteners that require thread lockers or thread sealant. **UNLESS OTHERWISE SPECIFIED**, do not use supplemental coatings (paints, greases, or other corrosion inhibitors) on threaded fasteners or fastener joint interfaces. Generally, such coatings adversely affect the fastener torque and joint clamping force, and may damage the fastener. When you install fasteners, use the correct tightening sequence and specifications. Following these instructions can help you avoid damage to parts and systems.

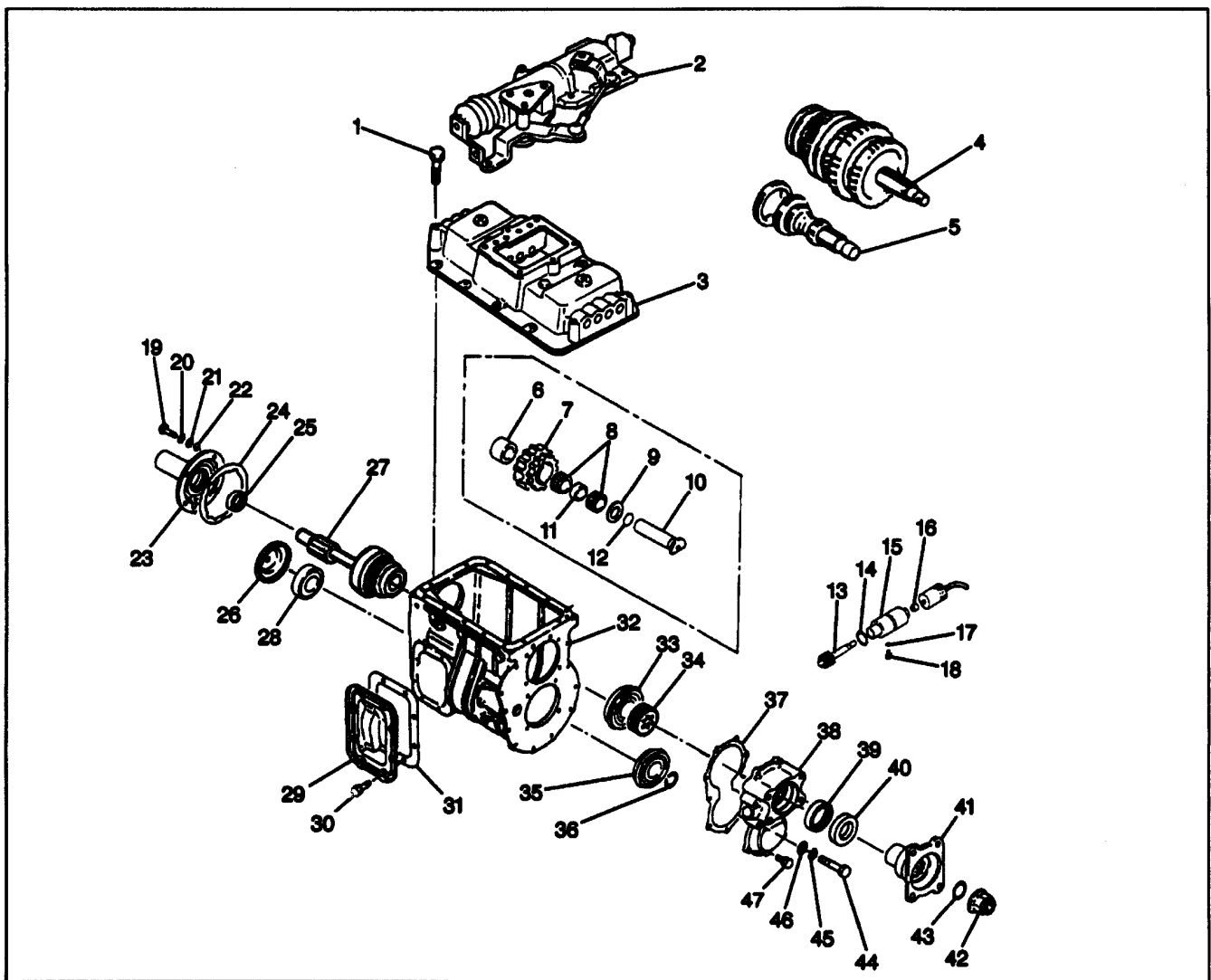
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GENERAL DESCRIPTION

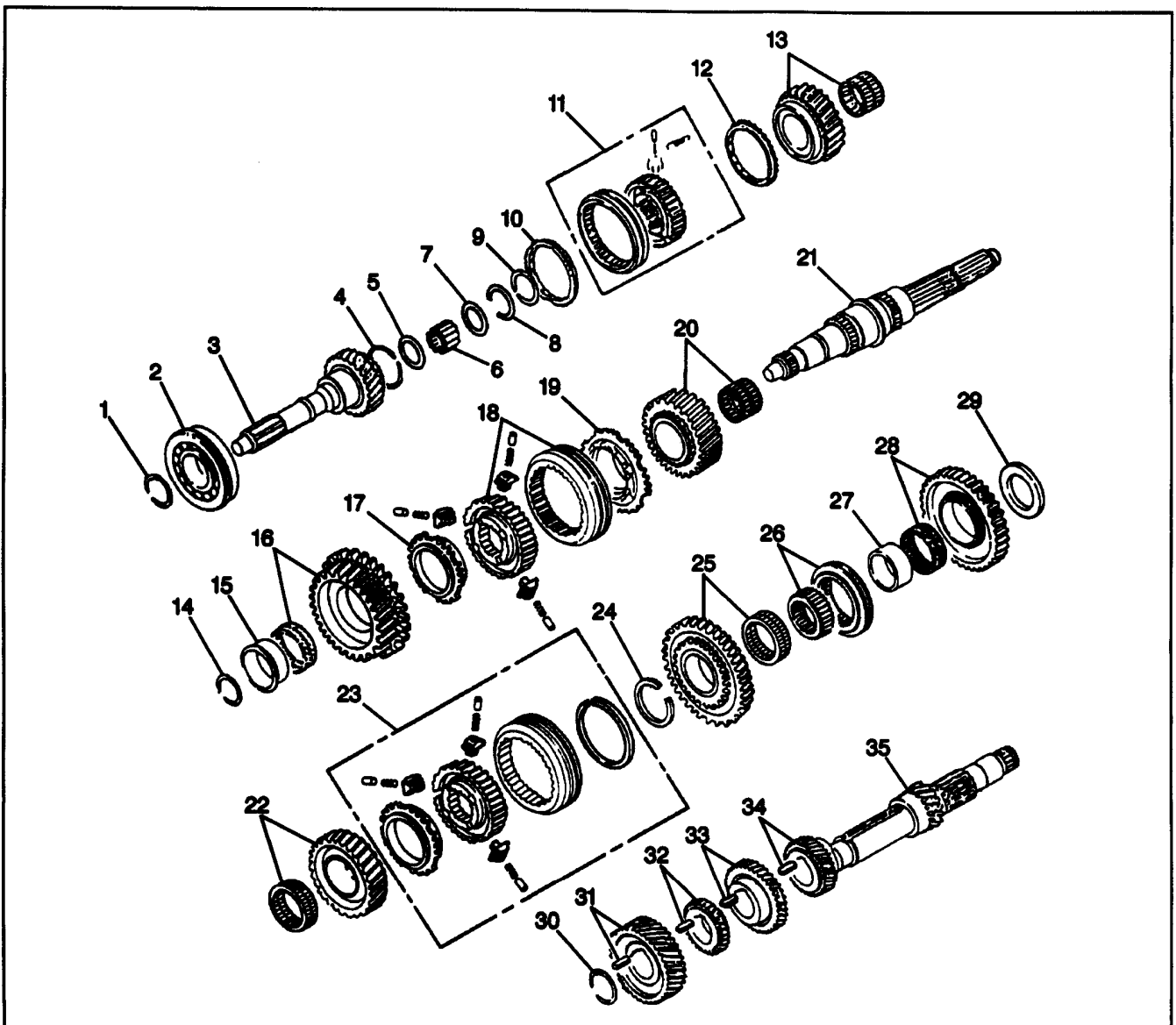
The six speed (MLD6Q) transmission has a constant mesh first and reverse gear. The remaining gears are synchronized. Shifting is done with a remote shift control connected to two cables that operate a shift

quadrant mounted on the top of the transmission. The transmission is equipped with a drive that can be connected to a power takeoff system.

MLD6Q MANUAL TRANSMISSION OVERHAUL**Legend**

- | | |
|-------------------------------|-----------------------------------|
| (1) Bolt, | (25) Seal |
| (2) Box, Upper Quadrant | (26) Cover, Counter Shaft Bearing |
| (3) Box, Lower Quadrant | (27) Shaft, Top Gear |
| (4) Mainshaft | (28) Bearing, Front Countershaft |
| (5) Countershaft | (29) Cover |
| (6) Collar | (30) Bolt |
| (7) Gear, Reverse | (31) Gasket |
| (8) Bearing | (32) Case, Transmission |
| (9) Washer, Thrust | (33) Bearing, Mainshaft Rear |
| (10) Shaft, Reverse Gear | (34) Gear, Speedometer Drive |
| (11) Piece, Distance | (35) Bearing, Countershaft Rear |
| (12) Gasket | (36) Ring, Snap |
| (13) Gear, Speedometer Driven | (37) Gasket |
| (14) Seal | (38) Cover, Rear Bearing |
| (15) Bushing | (39) Seal, Rear Oil |
| (16) Seal | (40) Cover, Dust |
| (17) Washer | (41) Flange |
| (18) Screw | (42) Nut |
| (19) Bolt | (43) O-Ring |
| (20) Washer, Spring | (44) Bolt |
| (21) Washer | (45) Washer, Spring |
| (22) O-Ring | (46) Washer |
| (23) Cover, Front Bearing | (47) Bolt |
| (24) Gasket | |

Figure 1—Manual Transmission Internal Components


Legend

- | | |
|--------------------------------|--------------------------------|
| (1) Ring, Snap | (19) Ring, 3rd Blocker |
| (2) Bearing | (20) Gear and Bearing, 3rd |
| (3) Shaft, Top Gear | (21) Mainshaft |
| (4) Clip, Retaining | (22) Gear and Bearing, 2nd |
| (5) Washer | (23) Synchronizer, 1st and 2nd |
| (6) Bearing, Pilot | (24) Ring, Snap |
| (7) Washer | (25) Gear and Bearing, 1st |
| (8) Ring, Snap | (26) Sleeve and Hub, Reverse |
| (9) Ring, Snap | (27) Collar, Reverse Gear |
| (10) Ring, 6th Blocker | (28) Gear and Bearing, Reverse |
| (11) Synchronizer, 5th and 6th | (29) Washer, Thrust |
| (12) Ring, 5th Blocker | (30) Ring, Snap |
| (13) Gear and Bearing, 5th | (31) Gear and Key, Driven |
| (14) Ring, Snap | (32) Gear and Key, 5th |
| (15) Collar, 4th Gear | (33) Gear and Key, 4th |
| (16) Gear and Bearing, 4th | (34) Gear and Key, 3rd |
| (17) Ring, 4th Blocker | (35) Countershaft |
| (18) Synchronizer, 3rd and 4th | |

Figure 2—Gearshaft and Components

OVERHAUL**TRANSMISSION CASE
DISASSEMBLY****Tool Required:**

J 22912-01 Bearing Remover

J 34827 Countershaft and Mainshaft Bearing
Remover

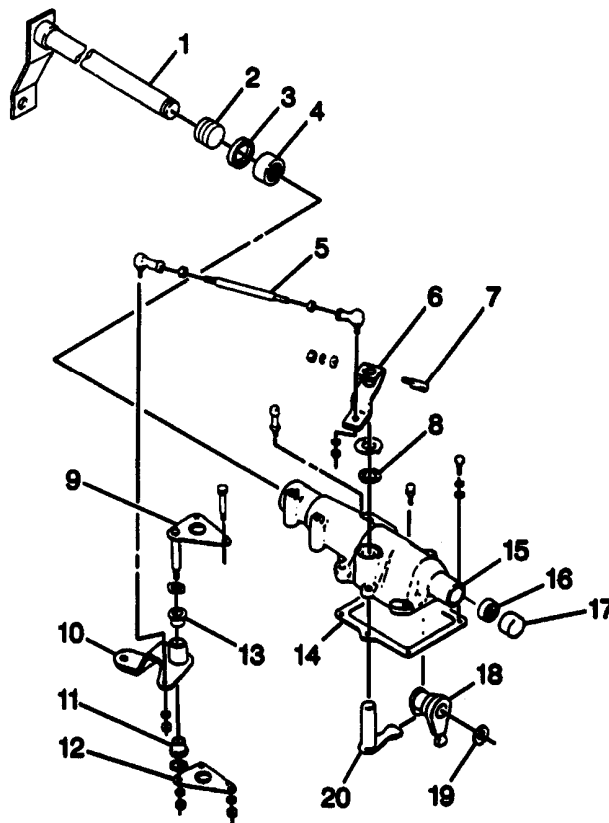
J 35669 Puller Bar and Screw

J 35833 Speedometer Gear Bushing Remover

**Remove or Disconnect (Figures 1 through 6)**

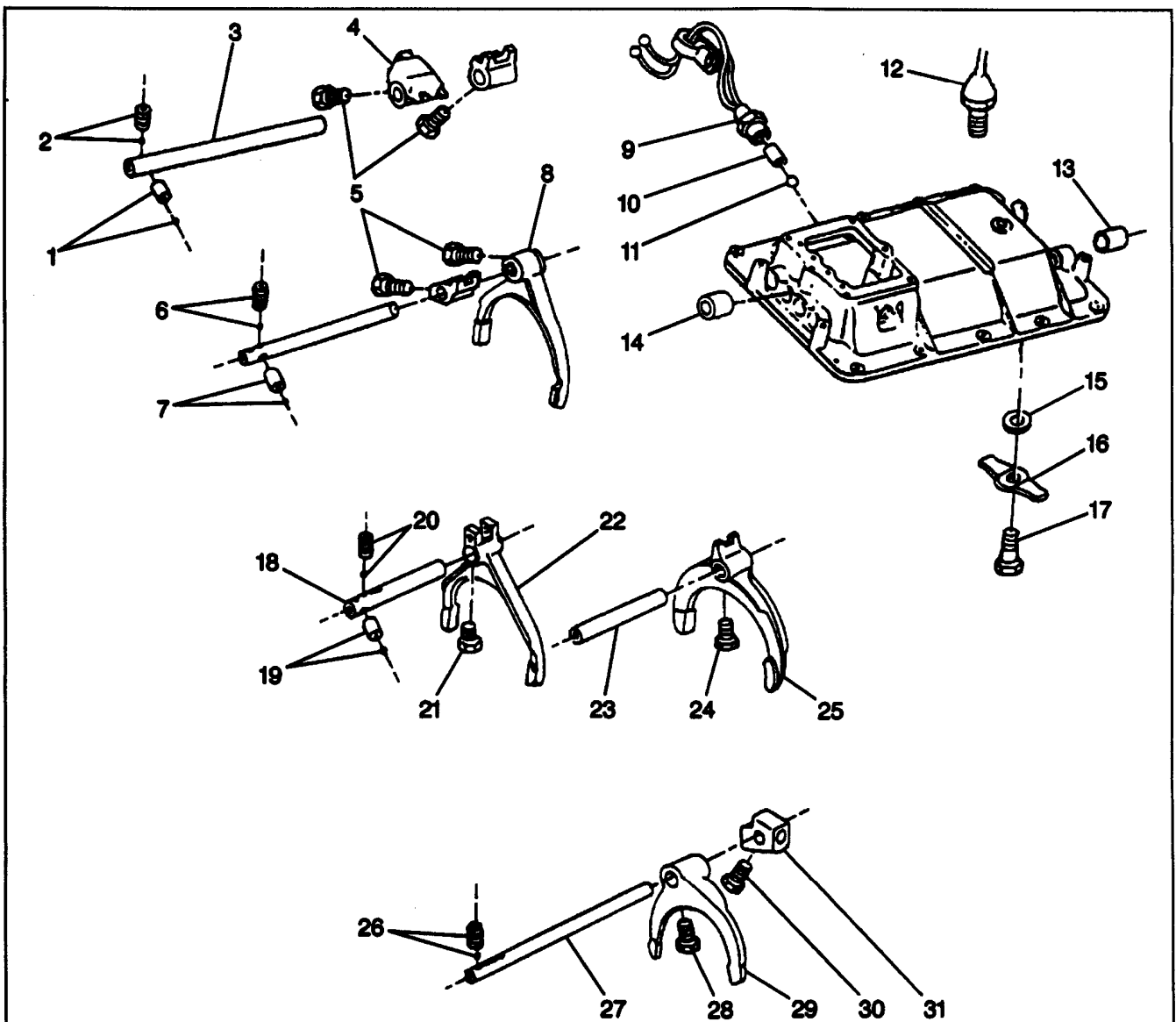
- Ensure the oil has been drained prior to transmission disassembly.
- 1. Upper and lower quadrant boxes from the transmission case (Figures 3 and 4).
 - Engage two gear sets to prevent the mainshaft from turning.

2. Flange nut, Flange and O-ring from the rear bearing cover (Figure 1).
3. Speedometer driven gear from the transmission. Refer to SECTION 7B.
4. Side cover and gasket.
5. Power takeoff if the transmission is equipped.
6. Clutch housing. Refer to SECTION 7C.
7. Front bearing cover, gasket, and oil seal.
8. Top gear shaft (Figure 5).
 - Use a screw driver between the top gear shaft and synchronizer clutch gear.
 - The synchronizer clutch gear can be separated from the top gear shaft.
9. Mainshaft rear bearing using J 34827 and J 2619-01.
10. Mainshaft assembly.

**Legend**

- | | |
|----------------------------|-----------------------------|
| (1) Lever, External Shift | (11) Bushing |
| (2) Boot | (12) Bracket |
| (3) Seal | (13) Bushing |
| (4) Bushing | (14) Gasket |
| (5) Rod, Link | (15) Upper Quadrant Box |
| (6) Lever, External Select | (16) Bushing |
| (7) Bolt, Key | (17) Cap |
| (8) Seal, Oil | (18) Lever, Internal Shift |
| (9) Bracket | (19) Ring, Snap |
| (10) Arm, Select Cable | (20) Lever, Internal Select |

Figure 3—Upper Quadrant Box Components


Legend

- | | |
|------------------------------|-------------------------------|
| (1) Ball and Pin, Interlock | (17) Screw |
| (2) Ball and Spring, Detent | (18) Rod, 3rd and 4th Shift |
| (3) Rod, Reverse Block Shift | (19) Ball and Pin, Interlock |
| (4) Block, Reverse Shift | (20) Ball and Spring, Detent |
| (5) Setscrew | (21) Setscrew |
| (6) Ball and Spring, Detent | (22) Arm, 3rd and 4th Shift |
| (7) Ball and Pin, Interlock | (23) Rod, Reverse Shift |
| (8) Arm, 1st and 2nd Shift | (24) Setscrew |
| (9) Neutral Position Switch | (25) Arm, Reverse Shift |
| (10) Bar | (26) Ball and Spring, Detent |
| (11) Ball, Interlock | (27) Rod, 5th and 6th Shift |
| (12) Switch, Back up Light | (28) Setscrew |
| (13) Cap | (29) Arm, 5th and 6th Shift |
| (14) Cap | (30) Setscrew |
| (15) Washer | (31) Block, 5th and 6th Shift |
| (16) Lever, Shift | |

Figure 4—Lower Quadrant Box Components

11. Reverse gear shaft and O-Ring using J 34539 and J 2619-01.
12. Thrust washer, reverse gear, bearing, and distance piece.
13. Collar.
14. Snap ring and counter shaft rear bearing using J 22912-01 and J 35699.
15. Countershaft assembly.
16. Countershaft front bearing cover and bearing from the transmission case (Figure 6).

GEARSHAFTS DISASSEMBLY

Tools Required:

- J 35699 Puller Bar and Screw
- J 35909 Mainshaft Collar Remover

TOP GEAR SHAFT DISASSEMBLY

Disassemble (Figure 2)

1. Retaining clip.
2. Snap ring.
3. Washers and pilot bearing.
4. Snap ring and bearing.

MAINSHAFT DISASSEMBLY

Disassemble (Figures 2 and 7)

1. 6th blocker ring.
2. Thrust washer, reverse gear, bearing, and collar.
3. Reverse sleeve and hub.
4. 1st gear, bearing, and thrust washer.
5. Snap ring and 1st and 2nd synchronizer (Figure 7).

Important

- Remove the synchronizers as one piece to avoid losing the synchronizers springs and blocks.

6. 2nd gear and bearing.
7. Snap ring and 5th and 6th synchronizer.

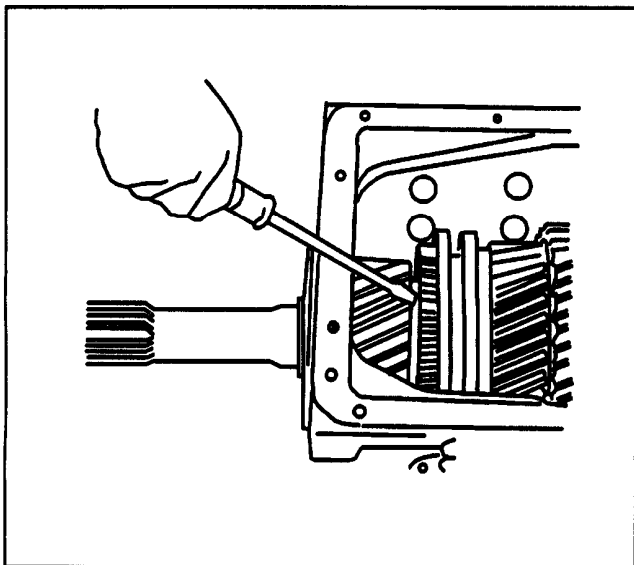


Figure 5—Top Gear Shaft Removal

8. 5th blocker ring.
9. 5th gear and bearing.
10. Snap ring and 4th gear collar.
11. 4th gear and bearing.
12. 4th blocker ring.
13. 3rd and 4th synchronizer.
14. 3rd blocker ring.
15. 3rd gear, bearing, and oil catcher.

COUNTERSHAFT DISASSEMBLY

Disassemble (Figures 2 and 8)

1. Snap ring.
2. Driven gear and key.
3. 5th gear and key.
4. 4th gear and key.
5. 3rd gear and key.

Clean

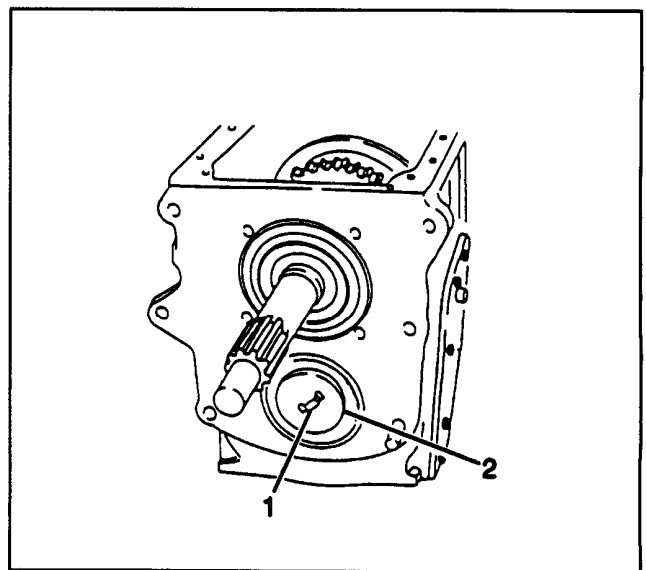
- All parts in a cleaning solvent.

Inspect

- All parts for wear or damage.
- Gear teeth and splines for chips and wear.
- Bearing and bearing surfaces for loose fit and pitting.
- Worn away blocker ring grooves (Figure 8).
— Replace the blocker ring assembly if the blocker ring grooves are worn away.

Measure (Figure 9)

- Block spring length.
- Blocker ring slots.
- Blocker ring to gear clearance.



Legend

- (1) Tab
- (2) Cover, Countershaft Front Bearing

Figure 6—Countershaft Front Bearing Cover

! Important

- The standard clearance between the 5th and 6th blocker ring and the gear is 2.0 mm (0.0787 in.).
- The minimum clearance between the 5th and 6th blocker ring and the gear is 0.
- The standard clearance between the 2nd, 3rd, and 4th blocker ring and the gear is 2.0 mm (0.0787 in.).
- The minimum clearance between the 2nd, 3rd, and 4th blocker ring and the gear is 0.
- Block to hub clearance.

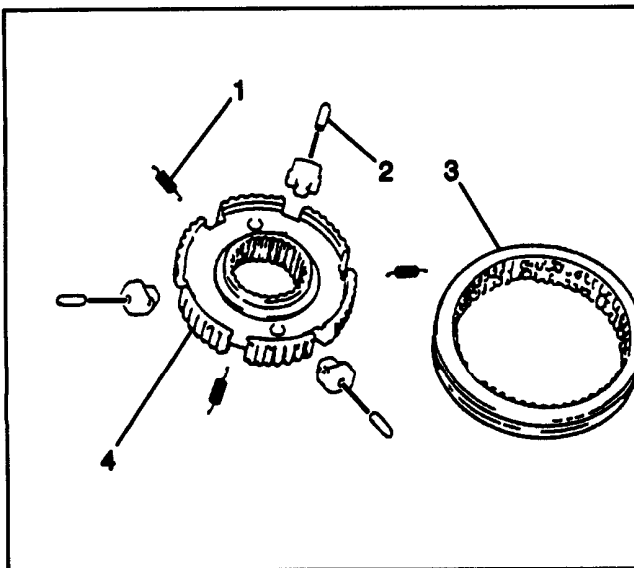
! Important

- The standard clearance between the block and the hub is 0.1 - 0.35 mm (0.00393 - 0.01377 in.).
- The maximum clearance between the block and the hub is 0.5 mm (0.0196 in.).

LOWER QUADRANT BOX DISASSEMBLY

Disassemble (Figure 3)

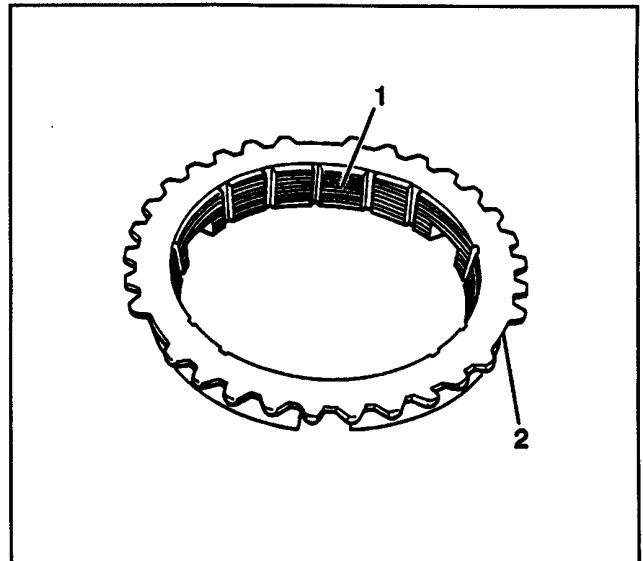
- Move all of the shift rods to the neutral position.
 - Interlock and detent balls will fall from the lower quadrant box when the shift shafts are removed.
1. 1st and reverse shift rod and shift arm setscrew and shift block setscrew.
 2. 1st and reverse shift rod, shift block, and shift arm.
 3. Cap, interlock balls, pin, detent balls, and spring.
 4. 2nd and 3rd shift rod and shift arm.
 5. 2nd and 3rd shift rod and shift arm setscrew.
 6. Cap, interlock balls, pin, detent balls, and spring.
 7. 4th and 5th shift rod and shift arm setscrew.



Legend

- (1) Spring
- (2) Blocker
- (3) Sleeve
- (4) Hub

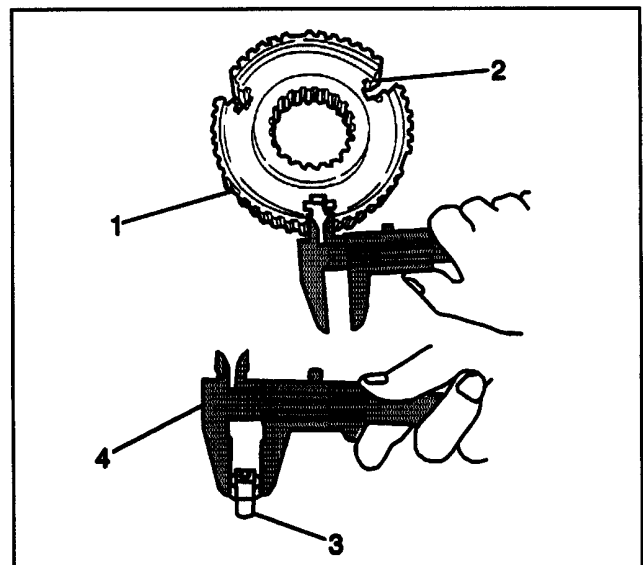
Figure 7—Synchronizer Assembly



Legend

- (1) Grooves
- (2) Ring, Blocker

Figure 8—Blocker Ring

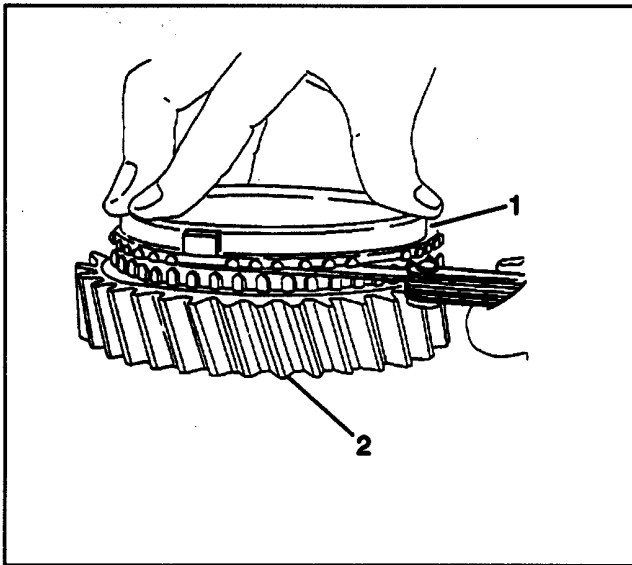


Legend

- (1) Hub, Clutch
- (2) Slot, Clutch Hub
- (3) Block
- (4) Caliper

Figure 9—Measuring the Block to Hub Clearance

8. 4th and 5th shift rod and shift arm.
9. Cap, detent ball and spring.
10. Nut, washer, and key bolt.
11. External select lever, washer, seal, and internal select lever.
12. Key pin, external shift lever, and seal.
13. Neutral switch.
14. Back-up light switch.

**Legend**

- (1) Ring, Blocker
- (2) Gear

Figure 10—Measuring the Blocker Ring to Gear Clearance**UPPER QUADRANT BOX DISASSEMBLY****Disassemble (Figure 4)**

1. Link rod.
2. Select cable arm, bracket, and bushings.
3. Key bolt and external washer.
4. Washer and oil seal.
5. Internal select lever.
6. Snap ring, external lever, seal, and bushing.
7. Internal shift lever.

**Clean**

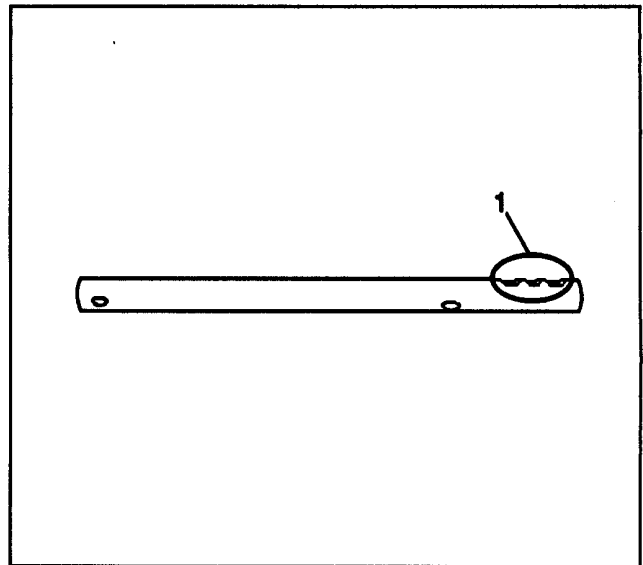
- Clean all parts with a cleaning solvent.

**Inspect**

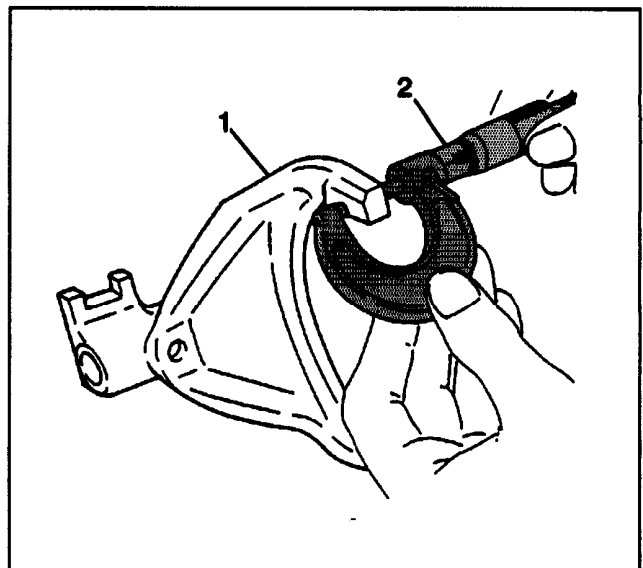
- All parts for wear and damage.
- Seal surfaces for scratching and pitting.
- Shafts for rounding of detent shoulders (Figure 11).

**Measure (Figures 12 and 13)**

1. Shift arm thickness (Figure 12).
 - The standard thickness of the shift arm is 11 mm (0.4331 in.).
 - The minimum thickness of the shift arm is 10 mm (0.3937 in.).
2. Detent spring length (Figure 13).
 - The standard length of the detent spring is 37.8 mm (1.4881 in.).
 - The minimum length of the detent spring is 34 mm (1.3385 in.).

**Legend**

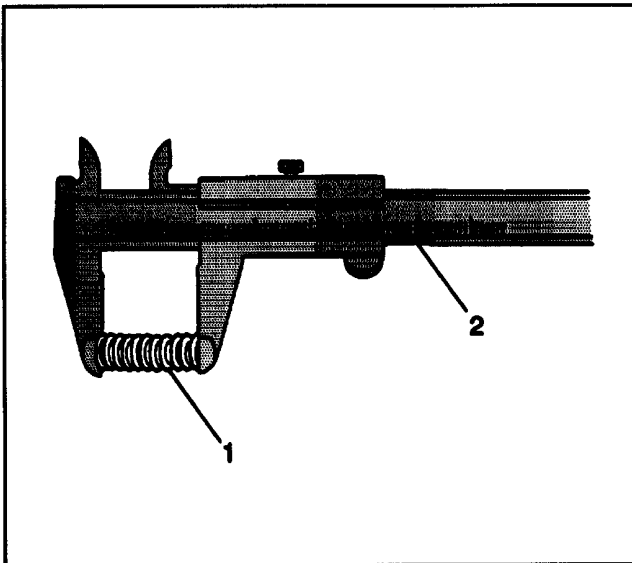
- (1) Shoulders

Figure 11—Shift Rod and Detent Shoulders**Legend**

- (1) Arm, Shift
- (2) Micrometer

Figure 12—Shift Arm Thickness Measurement**UPPER QUADRANT BOX ASSEMBLY****Assemble (Figure 4)**

- Apply a thin coat of transmission oil to all of the shift rods and bushings prior to installation.
1. Internal shift lever.
 2. Bushing, seal, external lever, and NEW snap ring.
 3. Internal select lever.
 4. Oil seal and washer.
 5. External washer and key bolt.
 6. Bushings, bracket, and select cable arm.
 7. Link rod.



Legend

- (1) Spring, Detent
- (2) Caliper

Figure 13—Detent Spring Measuring

LOWER QUADRANT BOX ASSEMBLY



Assemble (Figures 3, 14, and 15)

- 1. Back-up light switch.
- 2. Neutral switch.
- 3. Seal, external shift lever, and key pin.
- 4. Internal select lever, seal, washer, and external select lever.
- 5. Key bolt, washer, and nut.
- 6. Spring, detent ball, and cap.
- 7. Shift arm and 4th and 5th shift rod.
- 8. Shift arm setscrew and 4th and 5th shift rod.
- 9. Spring, detent balls, pin, interlock balls, and cap.
- 10. Shift arm setscrew and 2nd and 3rd shift rod.
- 11. Shift arm and 2nd and 3rd shift rod.
- 12. Spring, detent balls, pin, interlock balls, and cap.
- 13. Shift arm, shift block, and 1st and reverse shift rod.
- 14. Shift block setscrew, shift arm setscrew, and 1st and reverse shift rod.

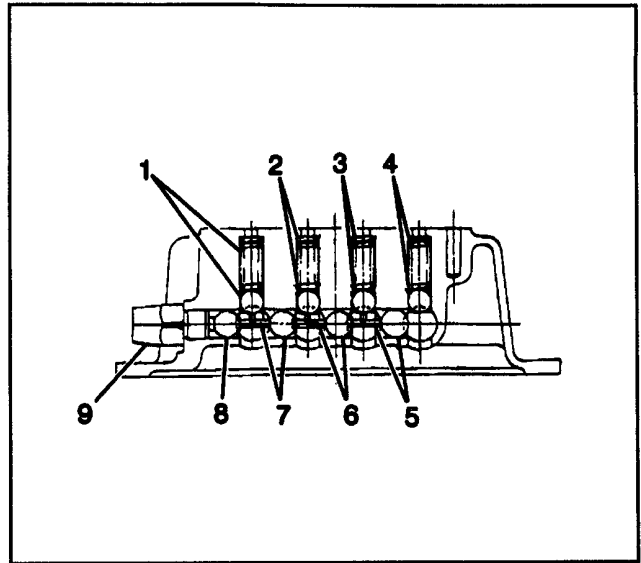
GEARSHAFTS ASSEMBLY

COUNTERSHAFT ASSEMBLY



Assemble (Figure 2)

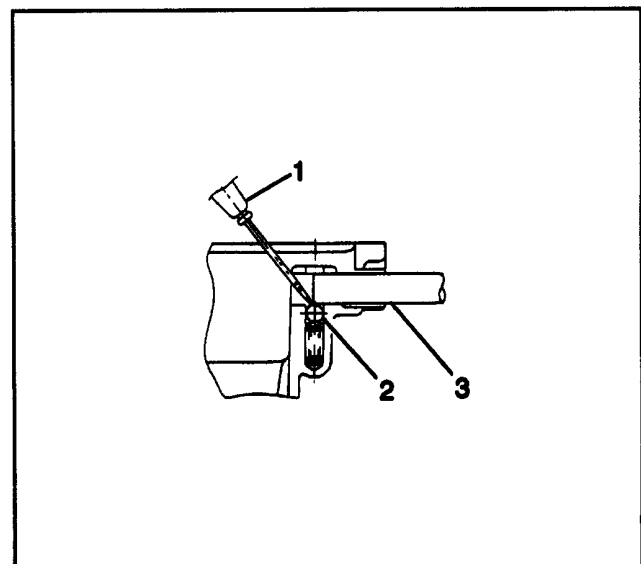
- Apply a light coat of transmission oil to all gears, bearings, and shafts prior to installation.
- 1. 3rd gear and key.
- 2. 4th gear and key.
- 3. 5th gear and key.
- 4. Driven gear and key.
- 5. NEW snap ring.



Legend

- (1) Ball, Detent and Spring
- (2) Ball, Detent and Spring
- (3) Ball, Detent and Spring
- (4) Ball, Detent and Spring
- (5) Ball, Interlock and Pin
- (6) Ball, Interlock and Pin
- (7) Ball, Interlock and Pin
- (8) Ball, Interlock
- (9) Switch, Neutral

Figure 14—Interlock Balls, Detent Balls, and Springs



Legend

- (1) Screwdriver
- (2) Ball, Detent
- (3) Rod, Shift

Figure 15—Shift Rod and Detent Ball Installation

MAINSHAFT ASSEMBLY**Assemble (Figures 2, 16, and 17)**

1. Oil catcher, bearing, and 3rd gear.
2. 3rd blocker ring.
3. 3rd and 4th synchronizer (Figure 16).
4. 4th blocker ring.
5. Bearing and 4th gear.
6. 4th gear collar and NEW snap ring.
7. Bearing and 5th.
8. 5th blocker ring.
9. 5th and 6th synchronizer and NEW snap ring (Figure 16).
10. Bearing and 2nd gear.
11. 1st and 2nd synchronizer and NEW snap ring.
12. Thrust washer, bearing, and 1st gear.
13. Hub and reverse sleeve (Figure 17).
14. Collar, bearing, reverse gear, and thrust washer.
15. 6th blocker ring.

TOP GEAR SHAFT ASSEMBLY**Assemble (Figures 2 and 18)**

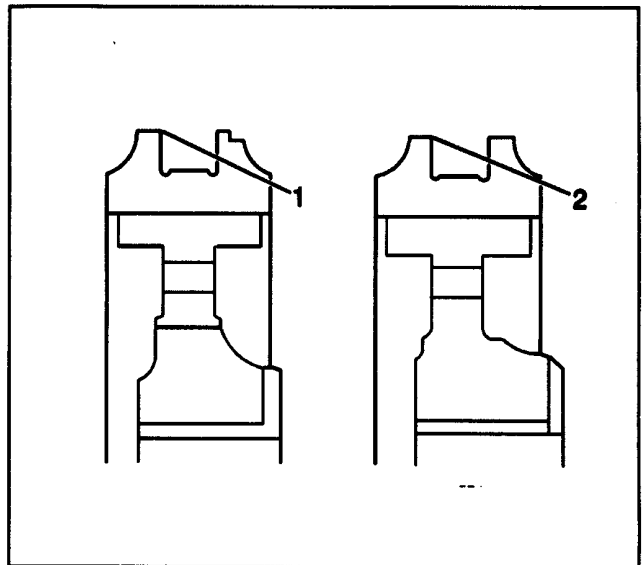
1. Bearing and NEW snap ring.
 - Select a snap ring thickness that will allow a minimum amount of axial play.
 - White snap ring thickness 2.01 - 2.06 mm (0.0790 - 0.0811 in.).
 - Yellow snap ring thickness 2.53 - 2.58 mm (0.0996 - 0.1016 in.).
 - Blue snap ring thickness 2.57 - 2.62 mm (0.1012 - 0.1013 in.).
 - Green snap ring thickness 2.61 - 2.66 mm (0.1028 - 0.1047 in.).
2. Washers and pilot bearing.
3. NEW snap ring.
4. NEW retaining clip.

TRANSMISSION CASE ASSEMBLY**Install or Connect (Figures 1 through 4 and 19)**

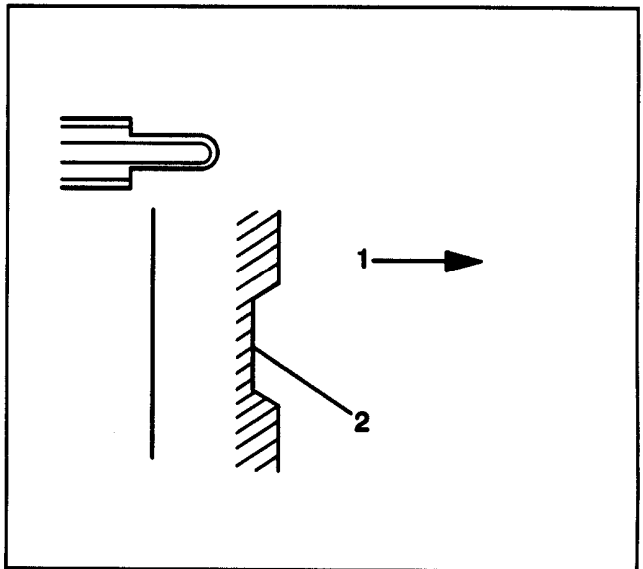
1. Countershaft front bearing to the transmission case.
2. Countershaft assembly.
3. Counter shaft rear bearing and NEW snap ring.
4. Collar.
5. Distance piece, bearing, reverse gear, and thrust washer.
6. NEW O-Ring and reverse gear shaft.
7. Mainshaft assembly.
8. Mainshaft rear bearing.
9. Top gear shaft.
10. Oil seal, NEW gasket, and front bearing cover.
 - Apply Loctite® 242 or the equivalent to the threads of the bolts.

**Tighten**

- Front bearing cover bolts to 27 N·m (20 lb. ft.).

**Legend**

- (1) Synchronizer, 5th and 6th
- (2) Synchronizer, 3rd and 4th

Figure 16—Synchromizer Arrangement**Legend**

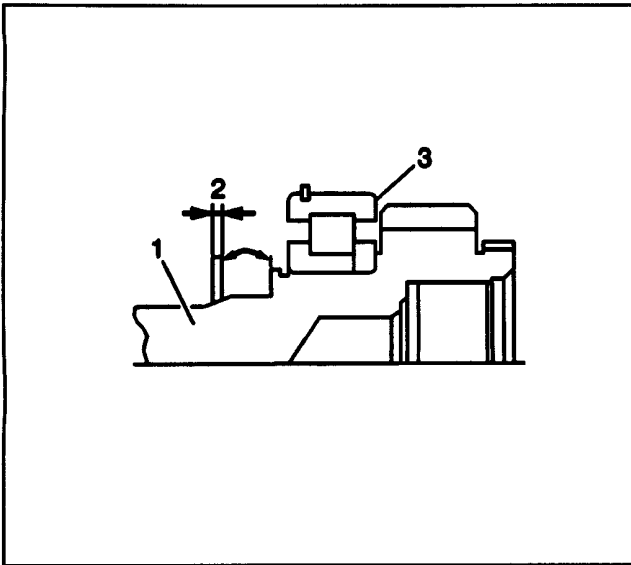
- (1) Direction, Rear Side
- (2) Groove, Oil

Figure 17—Reverse Sleeve and Hub

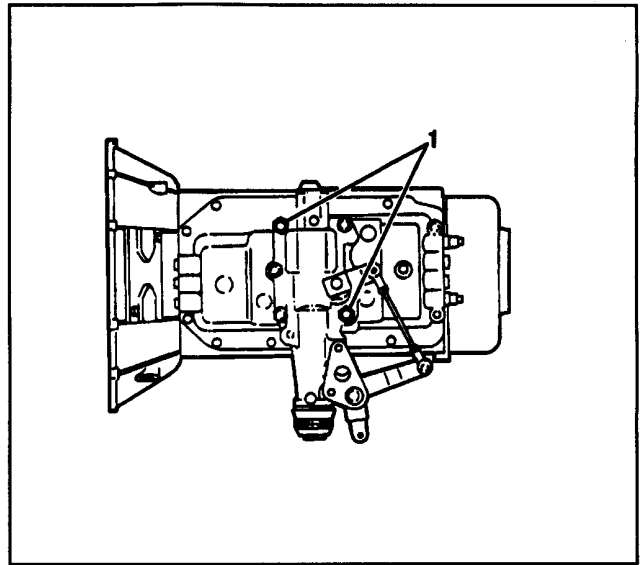
11. Clutch housing. Refer to SECTION 7C.
12. Power take off if the transmission is equipped.
13. NEW gasket and side cover.
14. Speedometer driven gear to the transmission. Refer to SECTION 7B.
15. Rear bearing cover.

**Tighten**

- Rear bearing cover bolts to 71 N·m (52 lb. ft.).


Legend

- (1) Shaft, Top Gear
- (2) Thickness, Snap Ring
- (3) Bearing

Figure 18—Top Gear Shaft Bearing Clearance

Legend

- (1) Bolt, Reamer

Figure 19—Installing Reamer Bolts

16. O-ring, flange, and flange nut.



Tighten

- Flange nut to 800 N.m (590 lb. ft.), then stake the nut.

17. Upper and lower quadrant boxes to the transmission case.

- Apply a thin coat of Loctite® 17430 or the equivalent to the transmission case and quadrant box sealing surfaces.

- Install the reamer bolts first (Figure 19).



Tighten

- Reamer bolts to 37 N.m (27 lb. ft.).
- Install the remaining quadrant box bolts.



Tighten

- Quadrant bolts to 37 N.m (27 lb. ft.).

18. Countershaft front bearing cover to the transmission case.

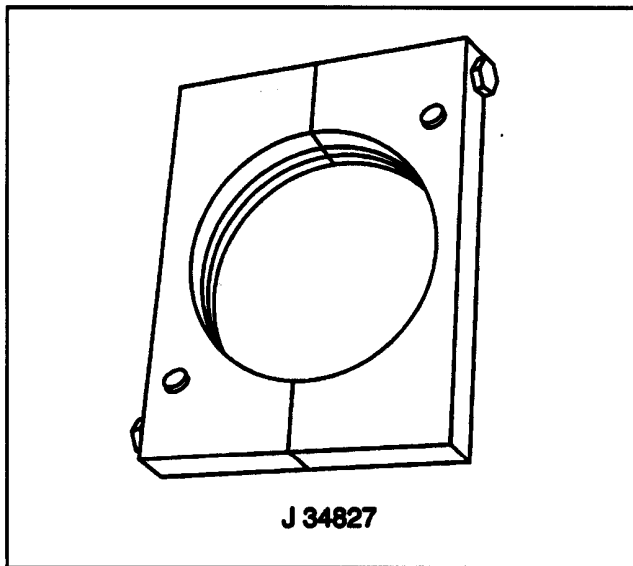
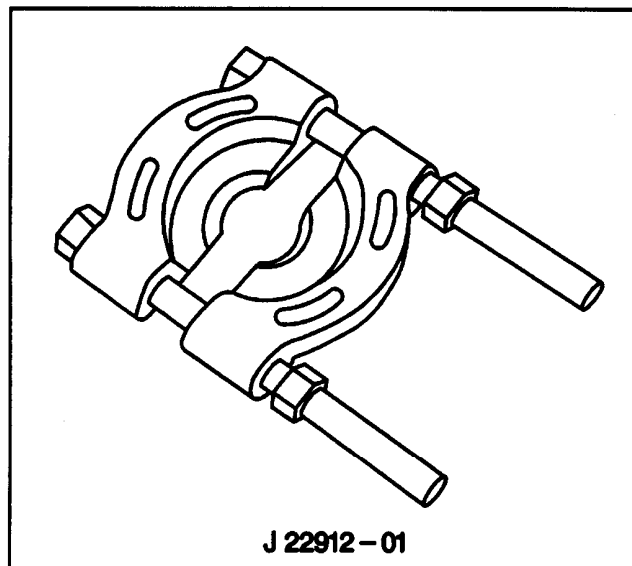
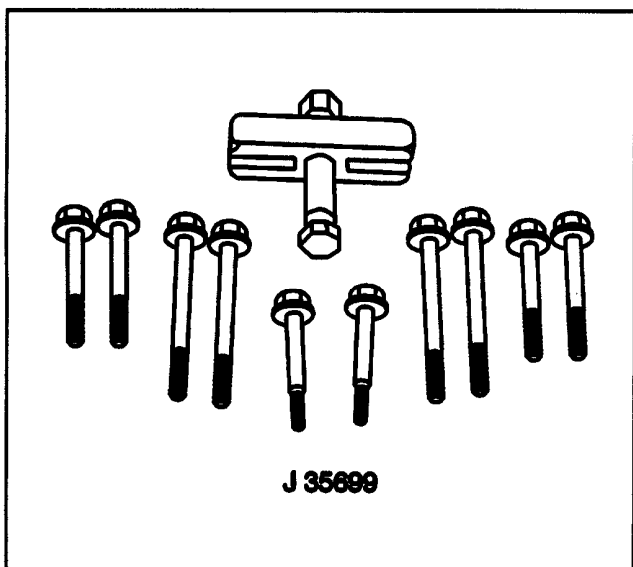
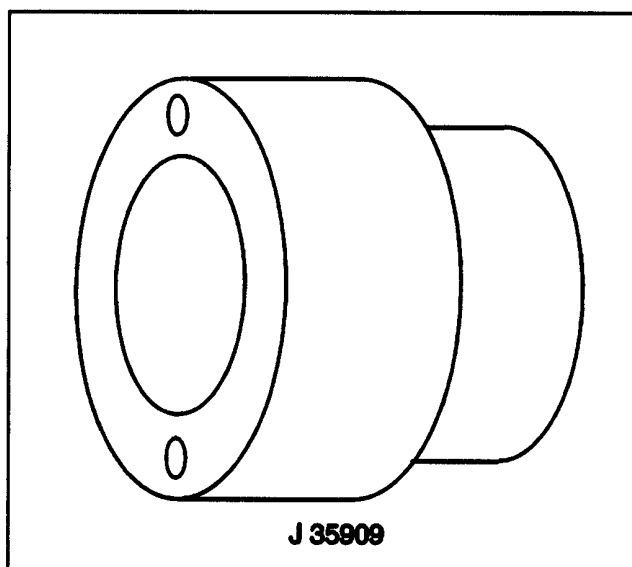
SPECIFICATIONS

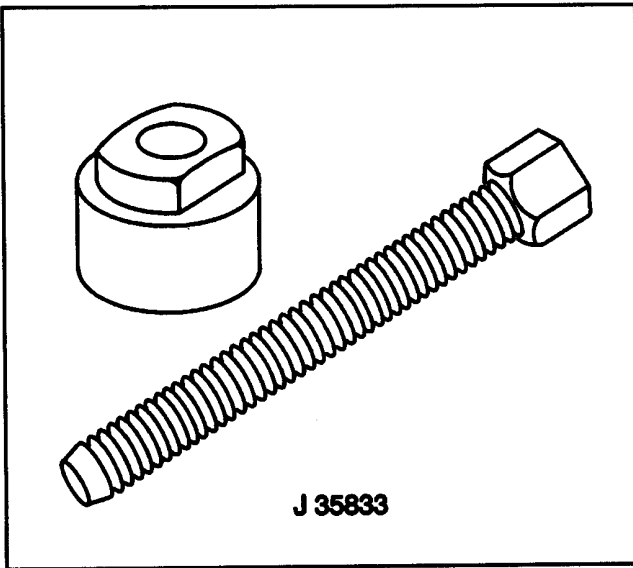
CAPACITIES

Application	Liters	Gallons	Quarts
API GL5, SAE 90 Multipurpose Oil (Use SAE 80 in Canada)	6.5	—	6.9

FASTENER TIGHTENING SPECIFICATIONS

Application	N.m	Lb Ft	Lb In.
Flange Nuts	800	590	—
Front Bearing Cover Bolts	27	20	—
Quadrant Box Bolts	37	27	—
Reamer Bolts	37	27	—
Rear Bearing Cover Bolts	71	52	—

SPECIAL TOOLS**Countershaft and Mainshaft Bearing Remover****Bearing Remover****Puller Bar and Screws****Mainshaft Collar Tool**



Speedometer Gear Bushing Remover

BLANK