

SERVICE BULLETIN

M-878

January, 1984



PRODUCTION CHANGES ON LATE 1984 1340cc MODELS

GENERAL

The most significant change to take place at mid-year 1984 is the introduction of the diaphragm spring clutch, or wet clutch as it is often referred to. The physical differences in the new clutch as well as the addition of oil to the primary chaincase will affect not only servicing the clutch, but also: primary chaincase lubrication, sprocket alignment and transmission assembly and disassembly. The new service procedures, as they relate to the mid-year changes are given in this bulletin.

PRIMARY CHAINS AND SPROCKETS

CLEANING, INSPECTION AND REPAIR

There will be ample lubrication from the oil within the primary chaincase so that greasing of the compensat-

ing sprocket components, at reassembly, is no longer required.

SPROCKET ALIGNMENT

The sprocket alignment procedure will differ due to the physical differences in the new clutch. The method of sprocket alignment will also differ slightly between vehicles equipped with secondary chains, or belt drives. This is due to the wider secondary belt sprocket which moves the clutch starter ring gear to a position outside the chaincase cover surface.

Secondary Chain Drive Models (See Figure 1)

The following procedure should be used for primary chain sprocket alignment on FLT, FLTC, FLHT, FLHTP,

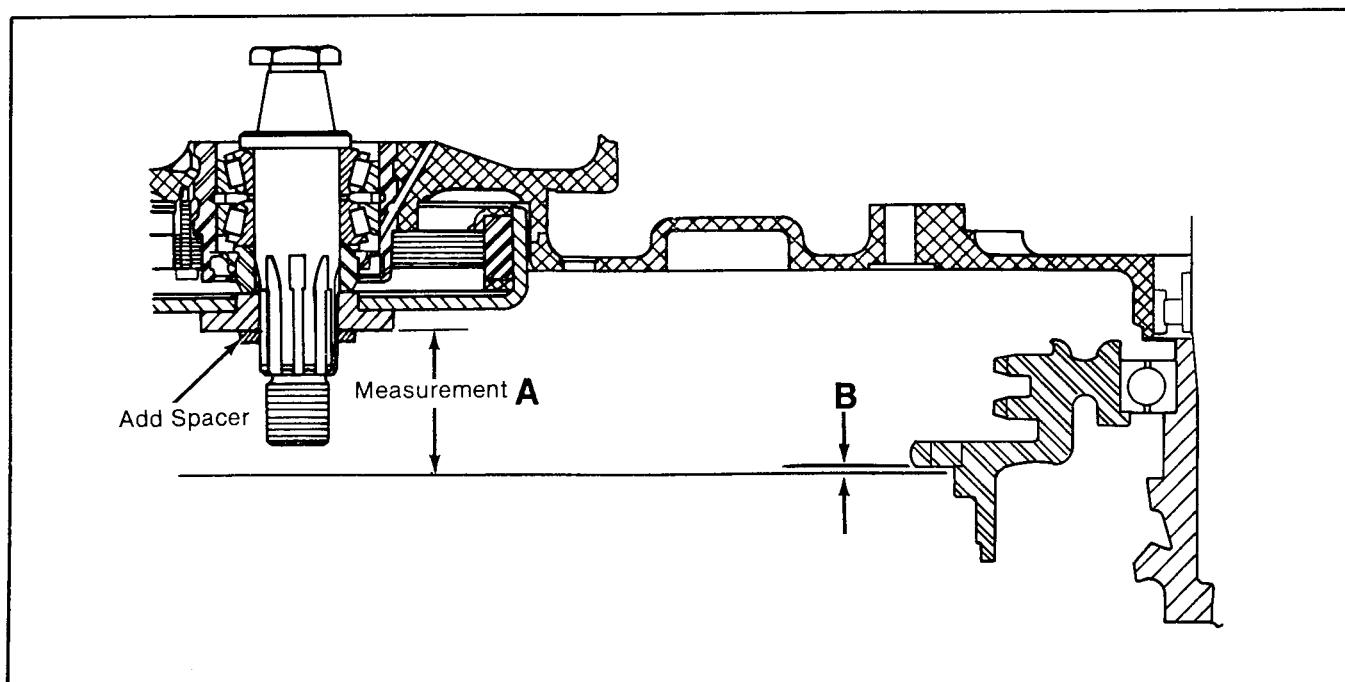


Figure 1. Primary Chain Sprocket Alignment (Secondary chain drive)

ROUTING:	SERVICE MANAGER	SALES MANAGER	PARTS MANAGER	CHIEF MECHANIC	MECHANIC NO. 1	MECHANIC NO. 2	MECHANIC NO. 3	MECHANIC NO. 4	RETURN THIS TO:
INITIAL HERE									

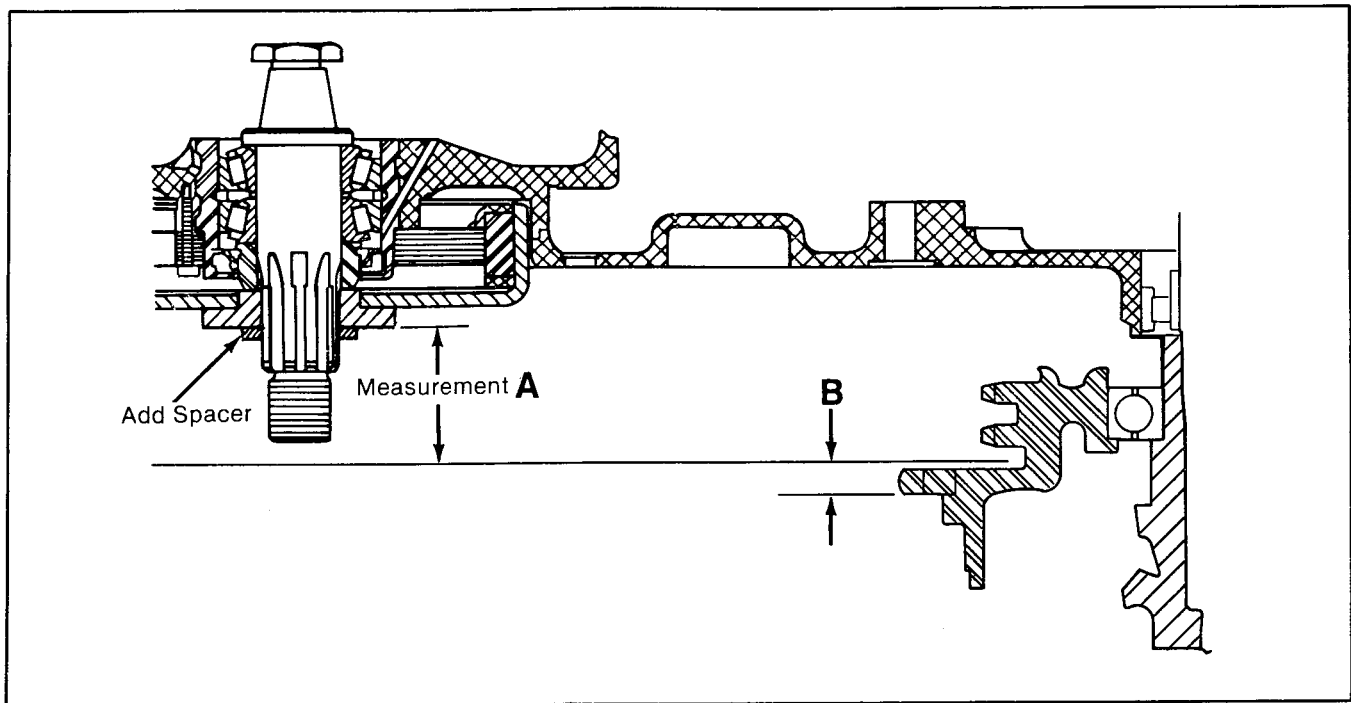


Figure 2. Primary Chain Sprocket Alignment (Secondary belt drive)

FLHTC, FXE, FXST, FXDG, FXR, FXRS, FXRT, and FXRP model vehicles.

1. Take measurement (A) from face of chaincase cover surface to alternator rotor surface. Record this measurement.
2. Take measurement (B) from chain cover surface to outside face of ring gear.
3. Add 1.597 to measurement (B) in step 2.
4. Subtract the sum determined in step 3 from measurement (A).
5. Compare the value determined in step (4) with the values listed in the chart (Figure 3) and select proper shim or combination of shims.

Secondary Belt Drive Models (See Figure 2)

The following procedure should be used for primary chain sprocket alignment on FLH, FLHPB, FXWG and FXSB model vehicles.

1. Take measurement (A) from face of chaincase cover surface to alternator rotor surface. Record this measurement.
2. Take measurement (B) from chain cover surface to outside face of ring gear.
3. Subtract measurement (B) from 2.024.
4. Subtract the answer determined in step 3 from measurement (A).

5. Compare the value determined in step 4 with the values listed in the chart (Figure 3), and select proper shim or combination of shims.

CAUTION

The Print-O-Seal gasket between the primary chaincase cover and chaincase must be replaced each time the cover is removed.

VALUE	SHIM
.030 - .040	.000
.041 - .050	.010
.051 - .060	.020
.061 - .070	.030
.071 - .080	.040
.081 - .090	.050
.091 - .100	.060
.101 - .110	.070
.111 - .120	.080
.121 - .130	.090
.131 - .140	.100
.141 - .150	.110
.151 - .160	.120
.161 - .170	.130
.171 - .180	.140
.181 - .190	.150
.191 - .200	.160
.201 - .210	.170
.211 - .220	.180

Figure 3. Compensating Sprocket Shims

CLUTCH

The new big twin clutch is termed a diaphragm spring clutch or wet clutch. Oil is now added to the primary chaincase and the primary drive chain runs in an oil bath.

LUBRICATION

The primary chaincase lubricant is changed after the first 500 miles and every 5000 miles thereafter. Use Harley-Davidson PRIMARY CHAINCASE LUBRICANT, Part No. 99887-84 for all operating temperatures.

Changing Oil

1. Stand vehicle in vertical position and remove clutch cover.
2. Drain oil into suitable container by removing drain plug at bottom of primary chaincase.
3. Clean drain plug, then reinstall drain plug in chaincase.
4. Refill chaincase through clutch cover opening with 44-48 ozs. of recommended lubricant.
5. Reinstall clutch cover with new o-ring if o-ring is damaged. Replace plastic seals at screws prior to assembly.

Checking Oil

The oil is checked every 2500 miles at the same time clutch adjustment is checked.

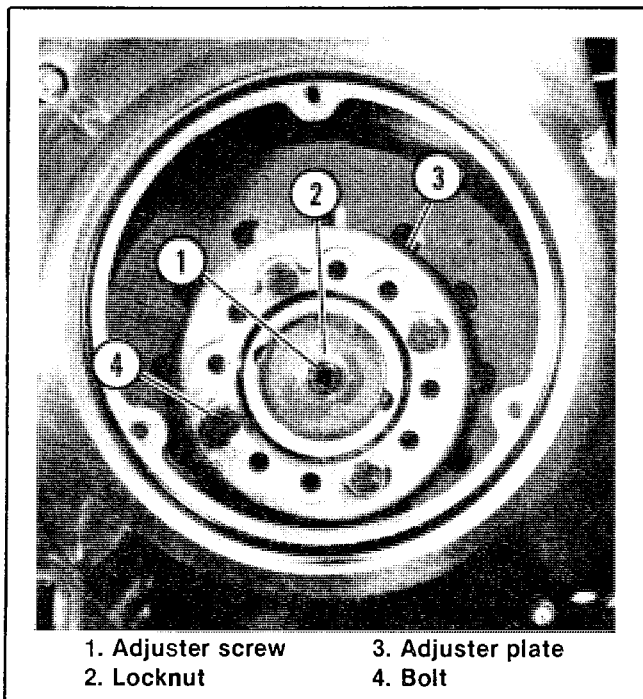


Figure 4. Push Rod Adjustment

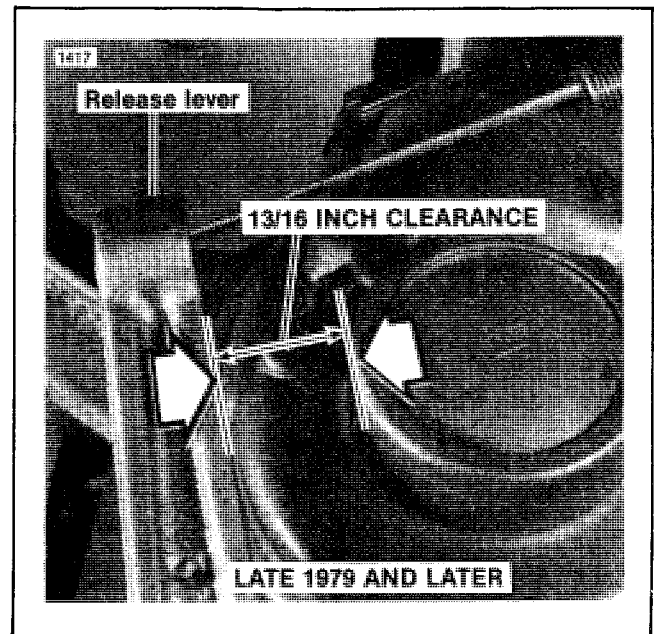


Figure 5. Release Rod Measurement

1. Stand the vehicle in a vertical position and remove clutch cover.
2. The oil level is visually checked through clutch cover opening. The primary chaincase lubricant should be level with bottom of clutch inspection opening or spring slots.
3. Add oil to recommended level, if necessary.

ADJUSTMENTS

CAUTION

The Print-O-Seal gasket between the chain adjustment inspection cover and the chaincase cover must be replaced each time the cover is removed.

Clutch adjustment is checked every 2500 miles. The clutch hand lever should have approximately .01" to .06" free play before disengaging clutch.

1. Remove clutch inspection cover.
2. Steps 2 thru 5 apply to 5 speed vehicles only. Disconnect clutch cable at transmission.
3. Loosen clutch adjusting screw locknut (2). See Figure 4. Turn adjusting screw (1) inward (clockwise) to take up all free play in push rods.
4. Back out adjusting screw (counterclockwise) 1/8 to 1/4 turn. Tighten locknut (2) while holding adjusting screw (1) with allen wrench.
5. Reattach clutch cable.
6. See Figure 5. Steps 6 thru 10 apply to 4 speed vehicles only. Move the release lever forward as far as it will go. Measure the clearance as shown.

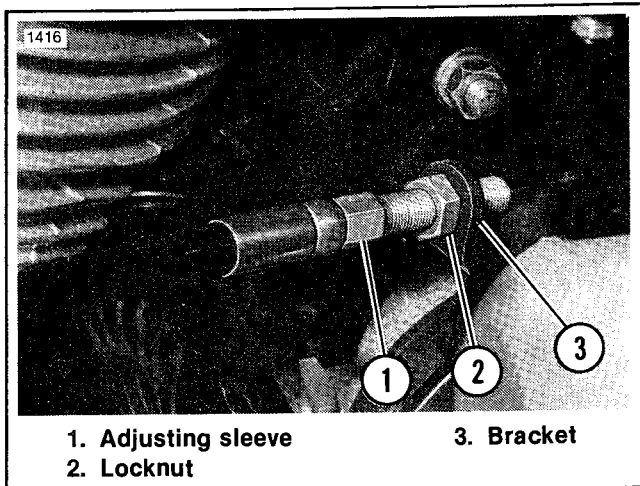


Figure 6. Clutch Cable Adjustment

7. See Figure 6. If measurement is not as shown in Figure 5, loosen locknut (2). Turn the adjusting sleeve (1) all the way into the bracket (3).
8. See Figure 4. Loosen the push rod locknut (2) and turn the screw (1) outward so there is no tension on the push rod.
9. See Figure 6. Turn the adjusting sleeve (1) outward until the proper measurement as shown in Figure 5 is obtained. Tighten the locknut (2).
10. See Figure 4. Turn the screw (1) inward until contact is made with the push rod, then back off 1/8 - 1/4 turn. Tighten the locknut (2).
11. See Figure 8. Lay a straight edge across the face of diaphragm spring (4). The spring should be flat within .010 in. See Figure 7. If the spring is bowed outward (convex), the adjuster plate is moved to the next hole position of greater compression. If the spring is dished inward (concave), the adjuster plate should be moved to the next hole position of less compression.
12. See Figure 9. If an adjustment is required, remove bolts (1) by backing out each, alternately, 1/2 to 1 turn at a time until spring pressure is relieved. Position adjuster plate (2) at the mounting holes which will give the correct adjustment.

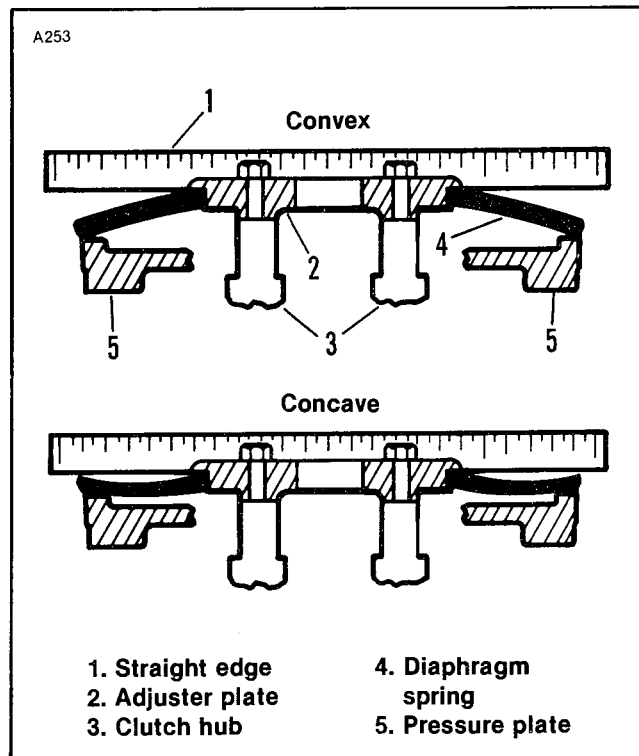


Figure 8. Checking Diaphragm Spring Adjustment

13. Reinstall bolts (1) and tighten alternately in a cross pattern to 6.5 - 8 ft-lbs. Adjust hand lever to give .01 to .06 in. free play.

NOTE

A new set of friction plates is required when the grooved lining surface has worn smooth. New friction discs can be installed, or inspected, without removing the clutch hub and drum assembly. See DISASSEMBLY.

DISASSEMBLY

WARNING

Disconnect the battery cables (negative cable first) to avoid accidental start-up of vehicle and possible personal injury.

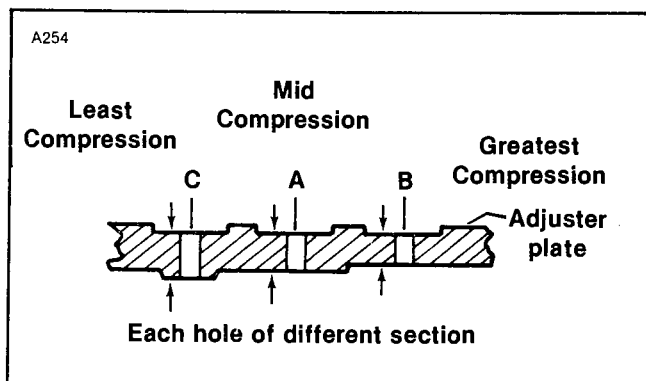


Figure 7. Adjuster Plate Hole Positions

1. See Figure 9. Remove four bolts (1) together with washers and lockwashers.
2. See Figure 12. The adjuster plate (5), spring diaphragm (1) and pressure plate (2) are free and now removed. The friction plates can now be changed or inspected without any further disassembly.
3. Remove nut (18) from the end of transmission main shaft. See Figure 12. **The nut and shaft have left hand threads.** Remove push rod.

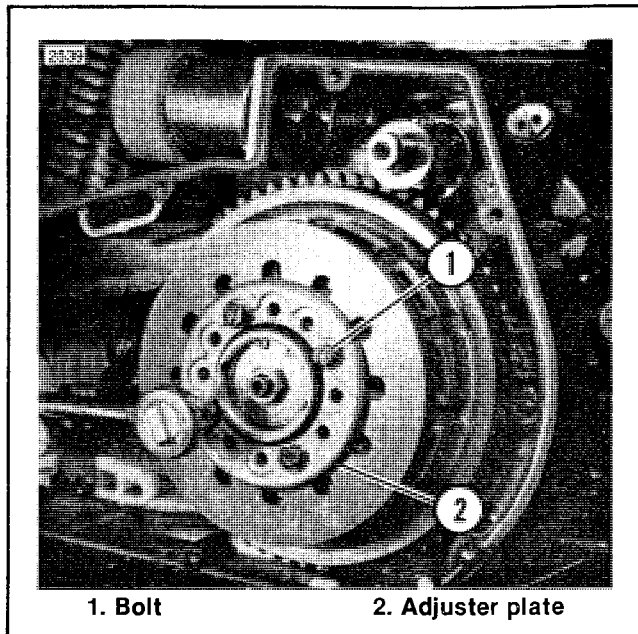


Figure 9. Adjuster Plate Removal

CAUTION

The end piece of the push rod must be removed prior to the installation of the clutch puller to prevent damage to other related components.

4. Attach the Harley-Davidson CLUTCH PULLER, Part No. HD-95960-52B to the clutch hub. See Figure 10.
5. See Figure 11. Remove the bolt (1) and engine compensating sprocket nut (2). Pull the clutch hub-drum assembly while removing the compensating sprocket and chain with adjuster.
6. See Figure 12. Remove the steel discs (4) and friction plates (3).
7. With lock ring pliers, remove internal circlip (9) and external circlip (7).
8. Due to possible damage to the bearing, the clutch drum and hub assembly should not be disassembled unless the bearing, hub or drum require replacement. If parts require replacement, press clutch hub out of bearing inner race using an arbor press.

CAUTION

Do not press hub out of bearing unless the bearing, clutch hub or clutch drum is to be replaced.

9. Press Pilot bearing out of clutch drum if replacement is required.

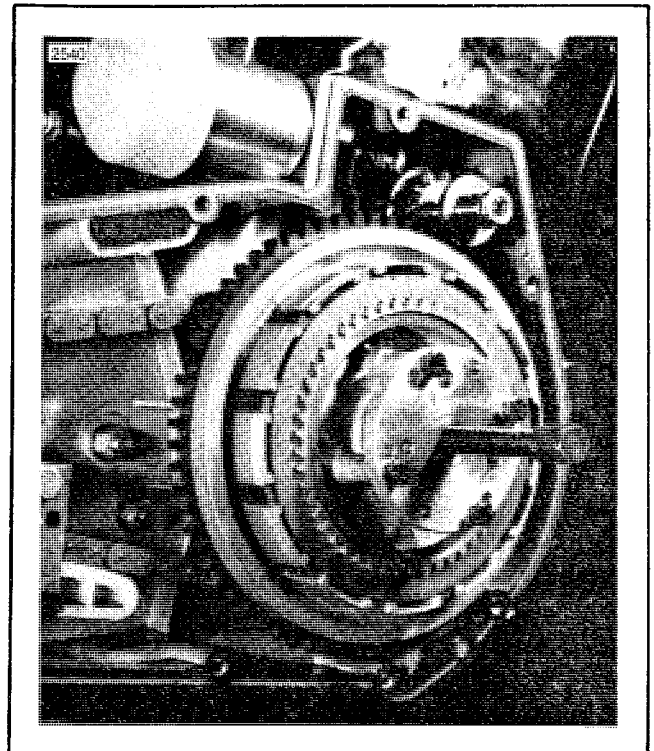


Figure 10. Pulling Clutch Hub Drum Assembly

CLEANING, INSPECTION AND REPAIR (Figure 12)

Wash all parts, except for lined discs and bearing (10) in cleaning solvent and blow dry with compressed air.

Examine the Clutch for the following:

1. Worn lining surface
2. Checked or chipped lining
3. Steel discs — grooved or warped

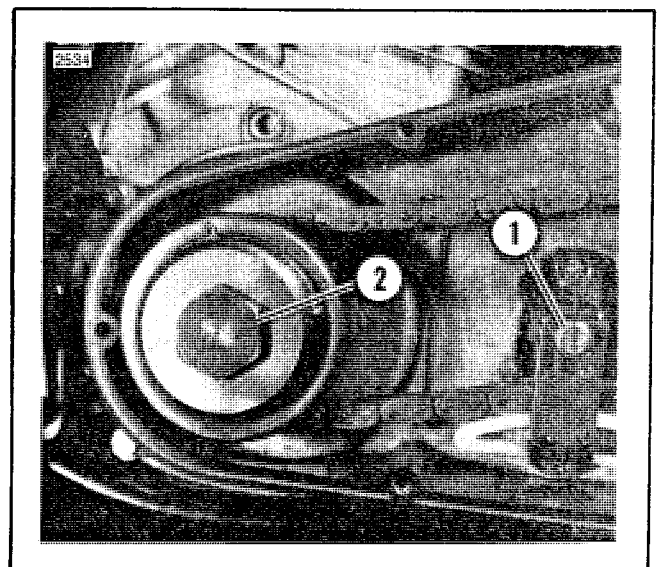


Figure 11. Compensating Sprocket Mounting

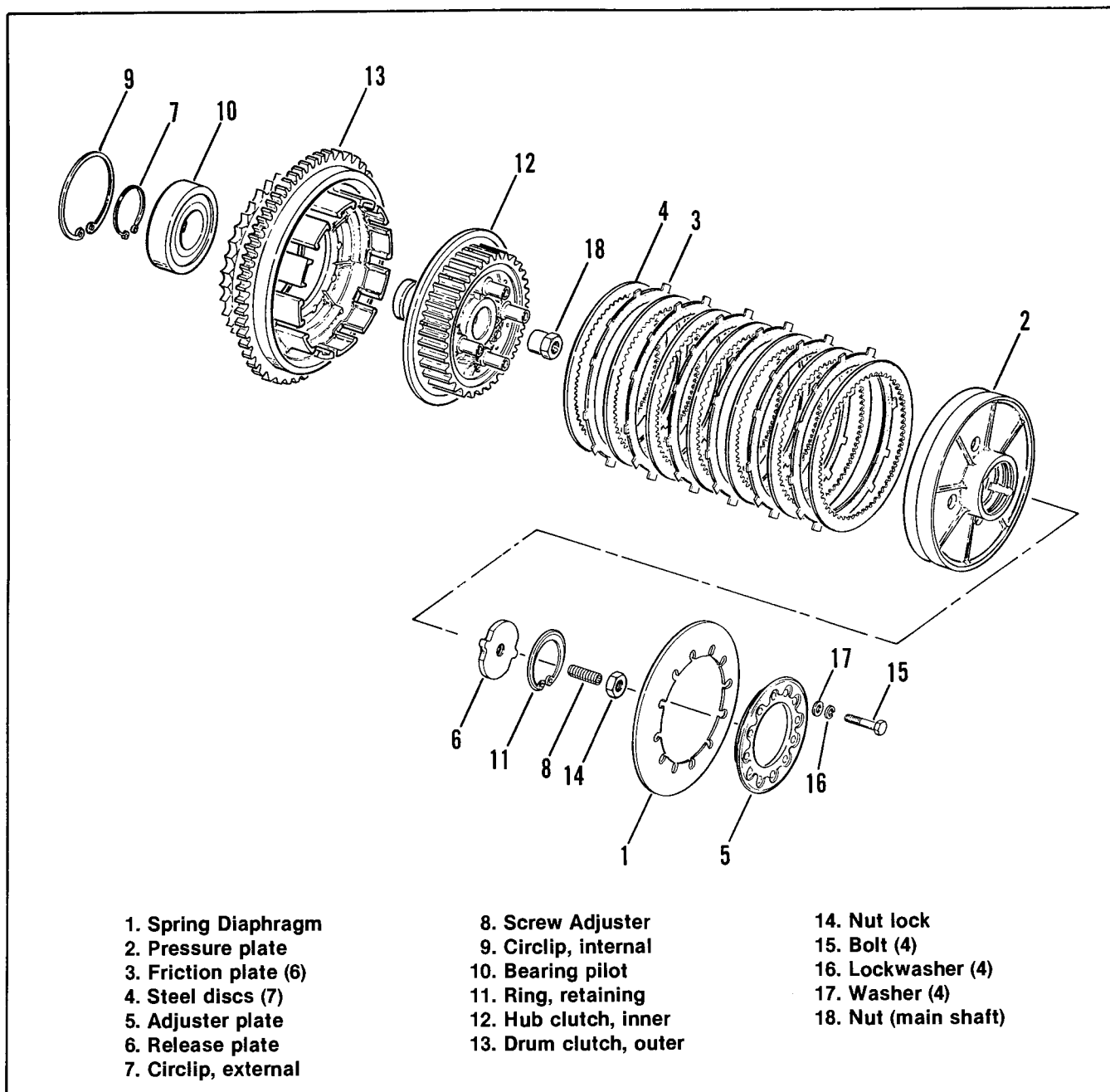


Figure 12. Clutch Assembly

4. Check bearing visually for heat discoloration. Rotate bearing and check for smooth rotation free of interference and noise.
5. Check spring for cracks or damage.
6. Check hub keyway and key for damage.
3. Place drum (3) on arbor press with inner race supported by a sleeve (5). See Figure 13. Press hub into bearing against hub shoulder.
4. With lock ring pliers, expand external circlip (7) into groove next to pilot bearing.

ASSEMBLY (Figures 12 and 13)

1. Press pilot bearing, with numbered side of bearing facing outward and pressing against outer race only, into clutch drum counterbore.
2. With lock ring pliers, compress internal circlip (9) into groove in drum next to pilot bearing.

NOTE

Minimum thickness of clutch plates: friction plates .078 in., steel discs .044 in. If clutch plates are worn, but have not exceeded minimum thickness, an additional steel disc can be installed to increase the plate-disc stack height.

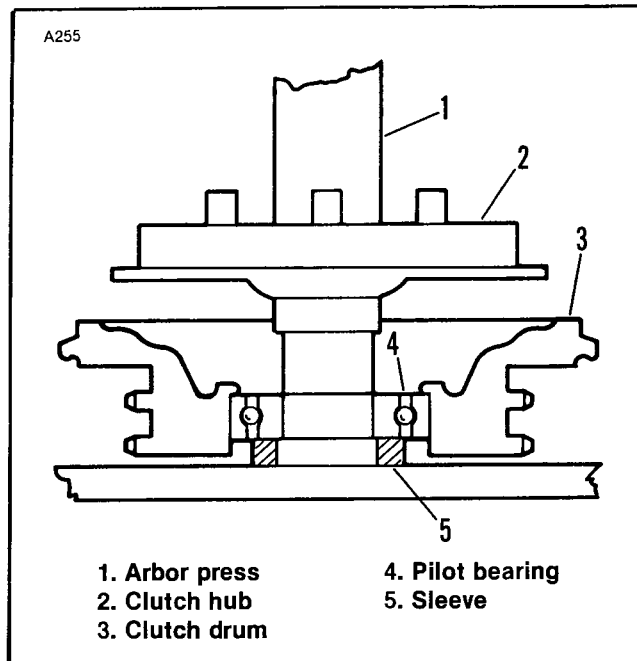


Figure 13. Pressing Hub into Pilot Bearing

5. Alternately place steel discs (4) over hub (12) and friction discs (3) into drum (13) starting and ending with a steel disc.
6. Position the drum and hub assembly on the transmission mainshaft over shaft key. **Be careful not to disturb key position.** Thread nut (18) onto shaft turning in direction for left hand thread. Tighten nut to a torque of 35-50 ft-lbs.

CAUTION

Be sure key bottoms fully in the keyway and the top of the key is parallel with the taper. Improper installation of the key could damage the clutch hub.

CAUTION

Do not use impact wrench for tightening nut (18) unless certain wrench is calibrated for torque settings during counterclockwise rotation. Clutch hubs can be damaged when overtightening nut.

7. Stack pressure plate (2), spring diaphragm (1) (convex face outward) and adjuster plate (5), in that order, against clutch hub (12) with holes aligned. Place one lockwasher (16) and washer (17) onto each bolt (15). Insert bolt through holes in stacked components and thread into clutch hub (12). Tighten the bolts to 6.5 - 8 ft-lbs.

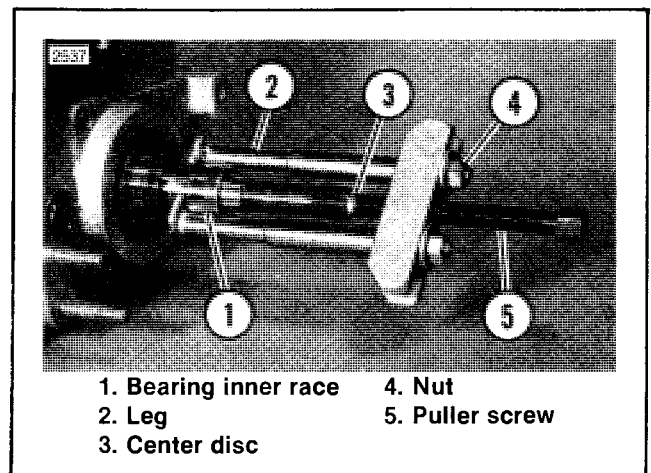


Figure 14. Pulling Bearing Race

8. Check and adjust clutch as instructed under "Adjustments" earlier in this section.

NOTE

If bevel retainer (11) is removed, the beveled edge must face outward on reassembly.

TRANSMISSION

LUBRICATION (4-Speed)

The 1984½ 4-speed transmission is to be filled with 28 ozs. of TRANSMISSION LUBRICANT, Part No. HD-99892-84 (Qt.) and Part No. HD-99891-84 (Gallon).

DISASSEMBLY (4-Speed)

On 4-speed transmissions, it is necessary to remove the primary chaincase bearing inner race from the transmission mainshaft prior to disassembly. The bearing inner race is removed by using BEARING RACE PULLER & INSTALLATION TOOL, Part No. HD-34902. See Figure 14.

1. Place center disc (3) in end of main shaft bore.
2. Position legs (2) of puller so that each foot of puller grips the bearing (1). Tighten nuts (4) to hold legs in position.
3. Turn puller screw (5) against center disc (3) until bearing race (1) is pulled free.

ASSEMBLY (4-Speed)

On reassembly, the bearing race must be positioned on the shaft a precise distance to properly align with the bearing outer race in the primary chaincase. To install the bearing inner race, use those parts of the combination bearing race; PULLER AND INSTALLATION TOOL, Part No. HD-34902, shown in Figure 15.

1. Slide bearing inner race (1), chamfer edge first, on to main shaft.
2. Thread sleeve pilot (2) onto end of main shaft (left hand thread).
3. Position sleeve (3) over sleeve pilot (2) and against bearing race (1).
4. Place washer (4) over threaded portion of adapter screw (2) and install nut (5).
5. Tighten nut (5) while holding adapter screw (2) stationary with wrench on flats at end of screw threads. Press bearing onto shaft until the bearing race inside edge is .200" from main drive gear.

ASSEMBLY (5-Speed)

The new 1984½ transmission mainshaft has an o-ring oil seal installed under the bearing in the primary chaincase. The seal prevents leakage of lubricant from the primary chaincase. The o-ring should be replaced, prior to reassembly, whenever the primary chaincase is removed.

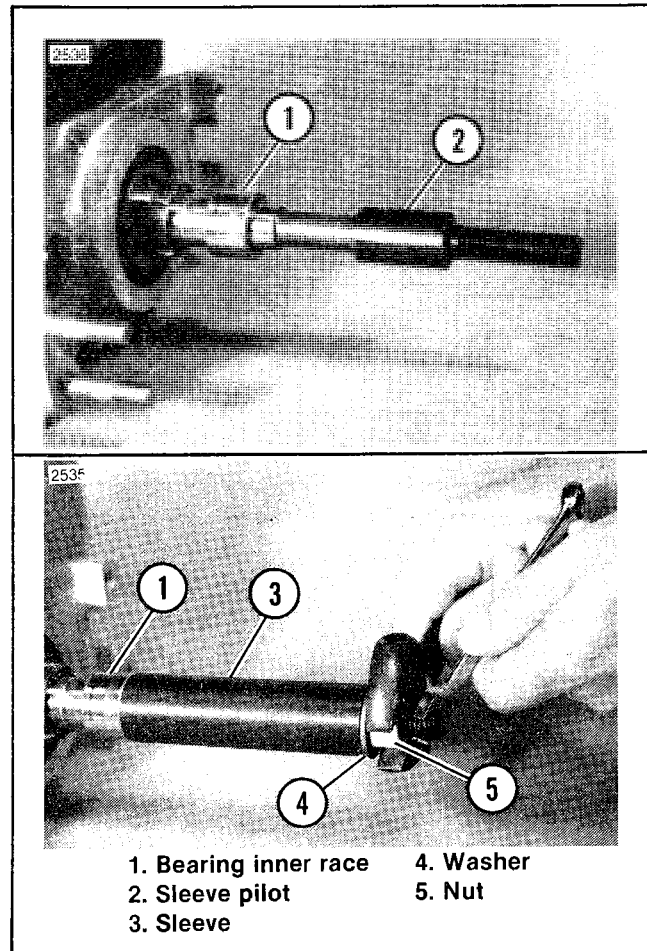


Figure 15. Installing Bearing Race

NOTE

Those vehicles equipped with the diaphragm spring clutch are easily identified by a round sticker attached to the headlight lens. The sticker reads; "AP clutch".