

CLUTCH

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GENERAL INFORMATION

CLUTCH COMPONENTS

The clutch mechanism consists of a single, dry-type clutch disc and a diaphragm style clutch cover. A hydraulic linkage is used to operate the clutch disc and cover. The clutch components are very similar to those used in gas engine models.

A pilot bearing is used to support the transmission input shaft. The bearing is seated in a separate, removable housing bolted to the flywheel hub.

CLUTCH HYDRAULIC SYSTEM

The clutch hydraulic system should not require additional fluid under normal circumstances.

NOTE: The reservoir fluid level will actually increase as normal clutch wear occurs. For this reason, it is important to avoid over filling, or removing fluid from the reservoir.

If inspection indicates additional fluid is needed, add fluid from a sealed container only. Use Mopar® brake fluid, or an equivalent meeting standards SAE J1703 and DOT 3. Do not use any other type of fluid.

REMOVAL AND INSTALLATION

CLUTCH COVER AND DISC

REMOVAL

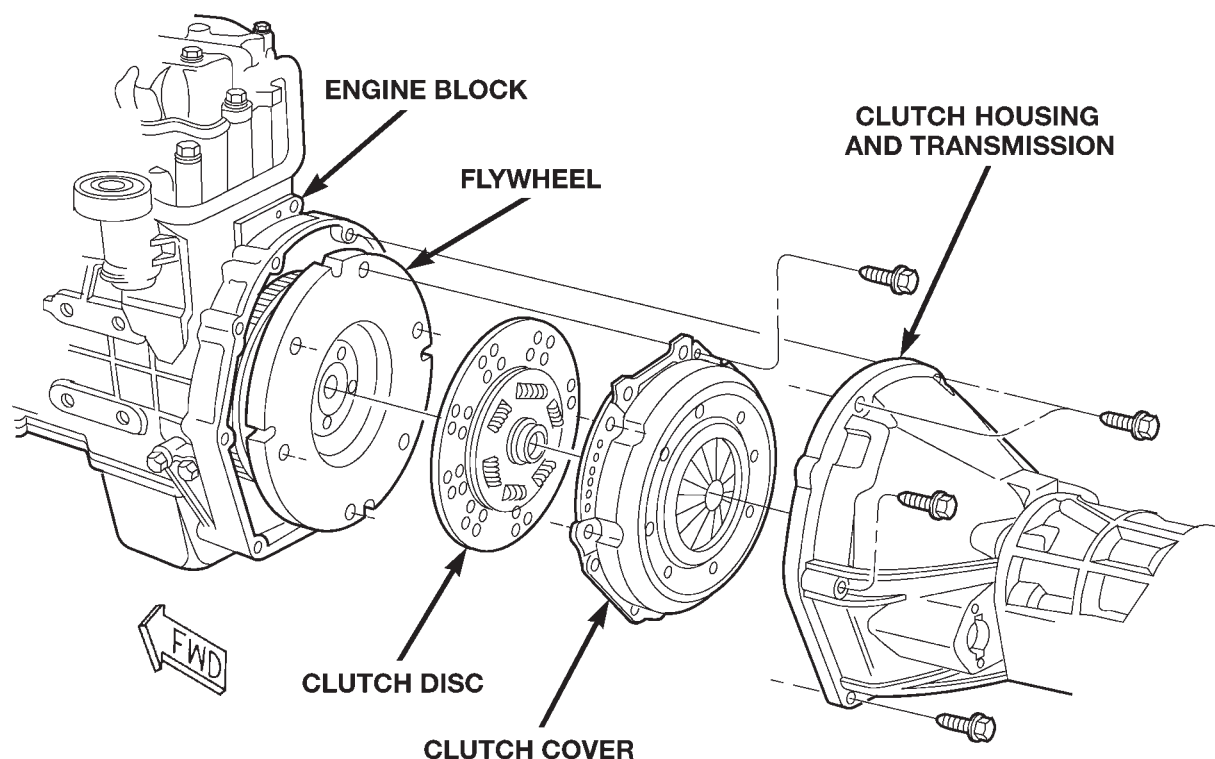
(1) Remove transmission and transfer case, if equipped. (Refer to Group 21, Transmission And Transfer Case.)

(2) If original clutch cover will be reinstalled, mark position of cover on flywheel for assembly reference. Use paint or scribe for this purpose.

(3) If clutch cover is to be replaced, cover bolts can be removed in any sequence. However, if original cover will be reinstalled, loosen cover bolts evenly in a star pattern to relieve spring tension equally. This is necessary to avoid warping the cover.

(4) Remove clutch cover bolts and remove cover and disc (Fig. 1).

REMOVAL AND INSTALLATION (Continued)



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Fig. 1 Clutch Components (VM Diesel)**INSTALLATION**

(1) Lightly scuff sand flywheel face with 180 grit emery cloth. Then clean surface with brake or carburetor cleaner.

(2) Lightly lubricate pilot bearing with Mopar® high temperature bearing grease.

(3) Check free operation of clutch disc by sliding disc onto transmission output shaft splines. Disc should slide onto splines freely without binding.

(4) Position clutch disc on flywheel. Be sure side of disc marked "flywheel side" is positioned against flywheel (Fig. 2). If disc is not marked, be sure flat side of disc hub is placed toward the flywheel.

(5) Insert clutch alignment tool (Fig. 3) in clutch disc and pilot bearing.

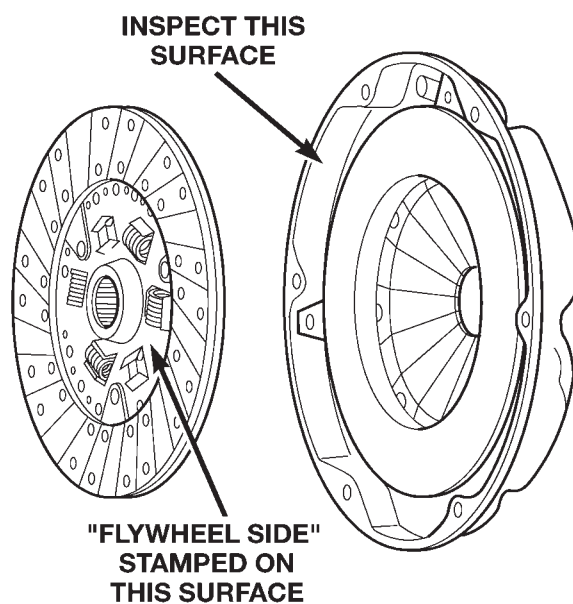
(6) Position clutch cover over disc and on flywheel.

(7) Install clutch cover bolts finger tight.

(8) Starting with the bolts marked "P" on the cover first, tighten clutch cover bolts in a star pattern to 50 N·m torque.

(9) Apply light coat of Mopar® high temperature bearing grease to pilot bearing and splines of transmission input shaft.

CAUTION: Do not over-lubricate as this will result in grease contamination of the disc.



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Fig. 2 Clutch Disc Position

(10) Install transmission.

REMOVAL AND INSTALLATION (Continued)

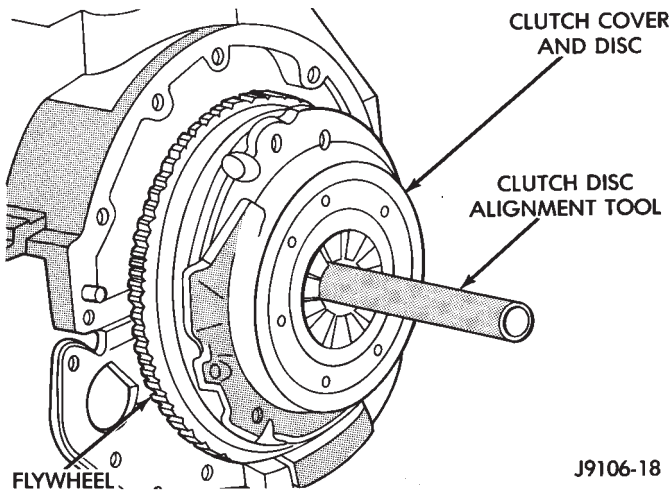


Fig. 3 Clutch Disc Alignment—Typical PILOT BEARING

REMOVAL

- (1) Remove transmission and transfer case. (Refer to Group 21, Transmissions And Transfer Case.)
- (2) Remove clutch cover and disc.
- (3) Remove the four bolts that attach the pilot bearing retainer to the flywheel (Fig. 4).
- (4) Remove the pilot bearing retainer.
- (5) Support the bearing retainer on two wood blocks.
- (6) Remove the pilot bearing with a suitable sized socket and extension (Fig. 5). Use mallet to tap bearing out of retainer.

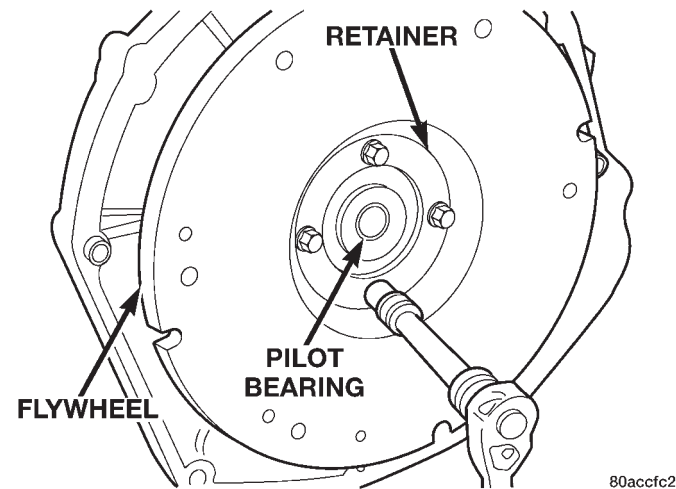


Fig. 4 Pilot Bearing Retainer Bolt Removal/Installation

INSTALLATION

CAUTION: The bearing can be installed incorrectly if care is not exercised. Check bearing position before installing it. Make sure the bearing seal and

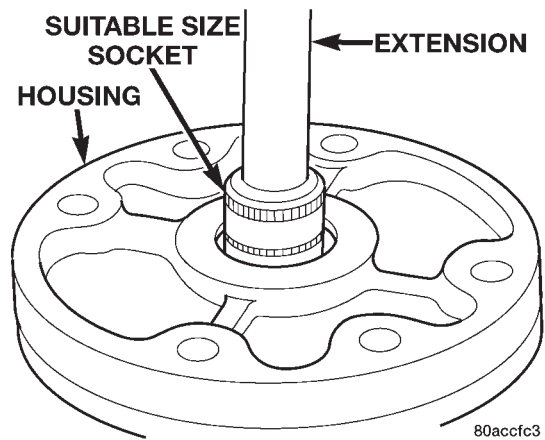


Fig. 5 Pilot Bearing Removal

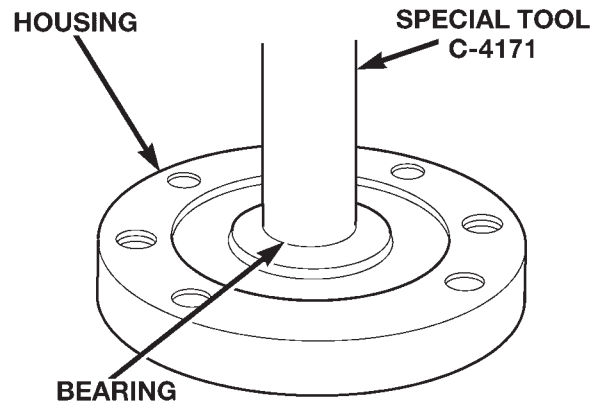


Fig. 6 Pilot Bearing Installation

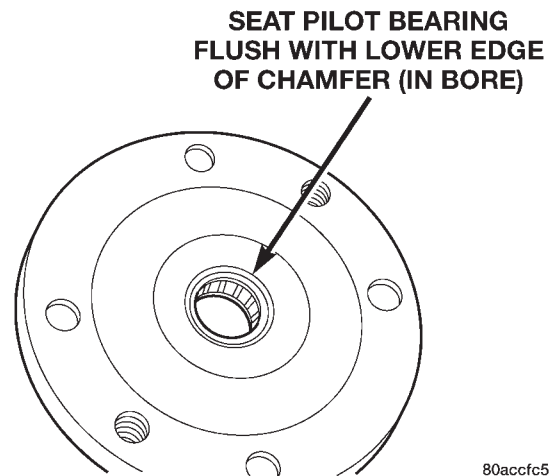


Fig. 7 Pilot Bearing Seated In Retainer

the letters on the bearing will both be facing out (toward the clutch) after installation.

- (1) Install new pilot bearing with hammer and tool handle C-4171 (Fig. 6). Seat bearing flush with lower

REMOVAL AND INSTALLATION (Continued)

edge of chamfer in retainer bore (Fig. 7). Reposition bearing if necessary.

- (2) Install bearing retainer and tighten bolts.
- (3) Lubricate pilot bearing with Mopar® high temperature wheel bearing grease.
- (4) Lightly scuff sand flywheel surface with 180 grit emery cloth. Clean the surface with Mopar® brake or carburetor cleaner.
- (5) Install clutch disc and cover as described in this section
- (6) Install transmission and transfer case.

FLYWHEEL

REMOVAL

- (1) Remove transmission and clutch housing. (Refer to Group 21, Transmission And Transfer Case.)
- (2) Remove clutch cover and disc as described in this section.
- (3) Remove bolts that attach pilot bearing retainer to flywheel.
- (4) Remove pilot bearing and retainer.
- (5) Remove flywheel bolts.
- (6) Grasp flywheel firmly and work it off the crankshaft flange (side to side or up and down). Be sure to maintain a firm grip as the flywheel is heavy.
- (7) Remove the o-ring from the crankshaft flange, or the mounting shoulder of the flywheel (Fig. 9).
- (8) Clean the flywheel in solvent.

INSPECTION

Examine flywheel mounting surfaces, clutch contact surface, and ring gear. Check condition of flywheel hub and attaching bolts. Replace flywheel if hub exhibits cracks in the area of attaching bolt holes. Replace ring gear if the teeth are damaged. Resurface the flywheel if the clutch contact surface is scored or rough (refer to flywheel finishing and ring gear replacement information in this section).

Check flywheel runout if misalignment is suspected. Runout should not exceed 0.08 mm. Measure flywheel face runout with a dial indicator (Fig. 8). Mount the indicator on a stud installed in the engine block or in one of the flywheel attaching bolt holes. Face runout can be corrected by resurfacing if necessary. Surface grinding equipment is recommended for this purpose. Stock removal should not exceed 0.25 mm.

INSTALLATION

- (1) Clean crankshaft flange before mounting the flywheel. Dirt or grease on flange surface may cock flywheel causing run-out.
- (2) Install new o-ring in the flywheel mounting flange (Fig. 9). Use grease to hold the ring in place.

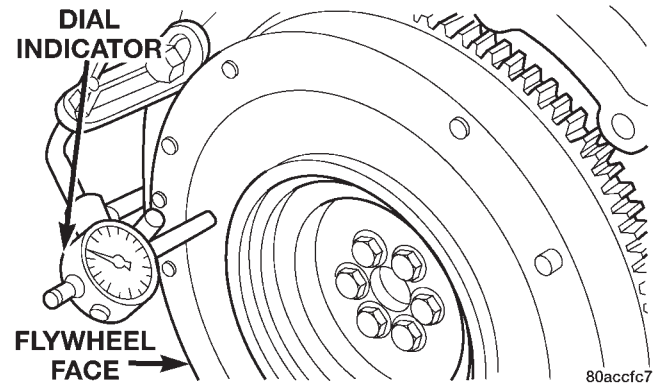


Fig. 8 Checking Flywheel Runout

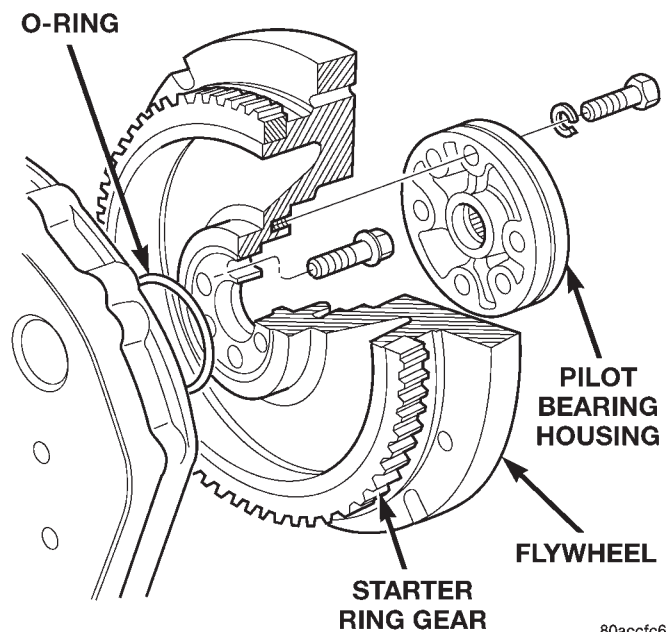


Fig. 9 Flywheel Mounting (VM Diesel)

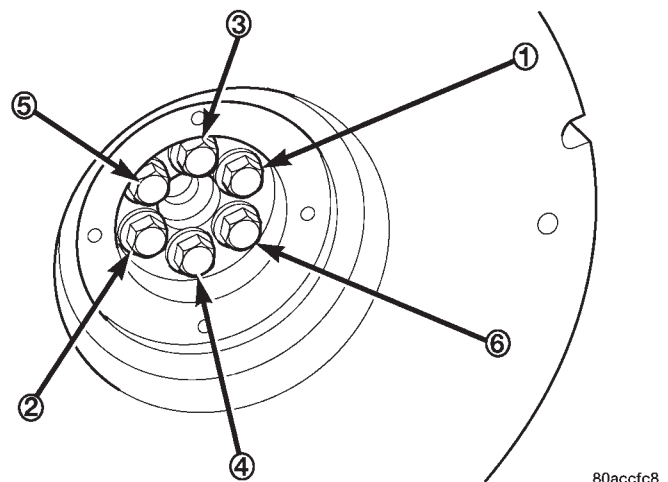


Fig. 10 Flywheel Bolt Tightening Pattern

- (3) Mount flywheel to crankshaft and align the bolt holes.

REMOVAL AND INSTALLATION (Continued)

- (4) Install and tighten new flywheel bolts as follows:
 - (a) Lubricate bolt threads with engine oil.
 - (b) Install and tighten bolts to initial torque of 20 N·m. Tighten bolts diagonally in pairs (Fig. 10).
 - (c) Tighten each bolt and additional 60° turn. Continue tightening bolts in small increments to final torque of 130 N·m.
- (5) Install clutch disc and cover (refer to procedure in this section).
- (6) Install transmission and transfer case.

FLYWHEEL RING GEAR

REMOVAL

- (1) Remove the transmission and transfer case. (Refer to Group 21, Transmission And Transfer Case.)
- (2) Remove the clutch cover.
- (3) Remove the clutch plate.
- (4) Remove the flywheel.
- (5) Mark position of the old gear for alignment reference. Use a carbide tipped scribe to mark gear location on flywheel.
- (6) Wear protective goggles or approved safety glasses.
- (7) Remove the old gear by cutting most of the way through it at one point. Use an abrasive cut off wheel for this purpose. Break the ring gear at cut with a hammer and a cold chisel or punch
- (8) Ring gear is shrink fit on flywheel. This means the gear must be expanded by heating in order to install it.

NOTE: The method of heating and expanding the new ring gear is extremely important. Every surface of the gear must be heated at the same time to produce uniform expansion. An oven or similar enclosed heating device must be used. Temperature required for uniform expansion is approximately 350°-375°.

CAUTION: Do not use an oxy/acetylene torch to remove the old gear, or to heat and expand a new gear. The high temperature of the torch flame can cause localized heating that will damage the flywheel. In addition, using the torch to heat a replacement gear will cause uneven heating and expansion. The torch flame can also anneal the gear teeth resulting in rapid wear and damage after installation.

INSTALLATION

- (1) Position and install the heated ring gear on the flywheel:

- (a) Wear heat resistant gloves to handle the hot ring gear.
 - (b) Align the ring gear on the flywheel evenly.
 - (c) Use hammer and brass drift to tap ring gear onto the flywheel.
 - (d) Seat gear on flywheel
- (2) Allow the ring gear to cool down before installation on the engine. Place flywheel on work bench and let it cool in normal shop air.
- (3) Install flywheel and torque bolts to 130 N·m.
- (4) Install clutch cover and disc. Refer to procedure in this section.
- (5) Install transmission and transfer case.

CAUTION: Do not use water or compressed air to cool the flywheel. The rapid cooling produced by water or compressed air will distort or crack the new gear.

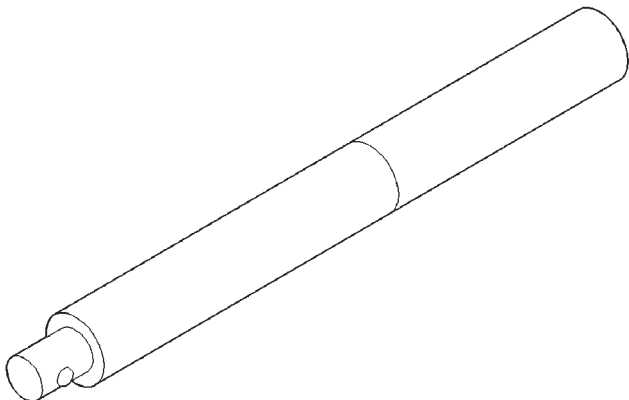
SPECIFICATIONS

SPECIFICATIONS

DESCRIPTION	TORQUE
Clutch Cover to Flywheel	
Bolts	50 N·m
Clutch Housing to Transmission	
Bolts	47 N·m
Flywheel to Crankshaft	
Bolts	130 N·m
Pilot Bearing Retainer to Flywheel/Crankshaft	
Bolts	47 N·m
Clutch Housing to Engine	
Top (2) Bolts	37 N·m
Middle (2) Bolts	58 N·m
Bottom (2) Bolts	75 N·m

SPECIAL TOOLS

SPECIAL TOOLS



Universal Handle—C-4171

