

COLT 2310, 2510, AND 2712 COMPACT TRACTORS

CHAPTER 7

BEARINGS, SEALS, GASKETS

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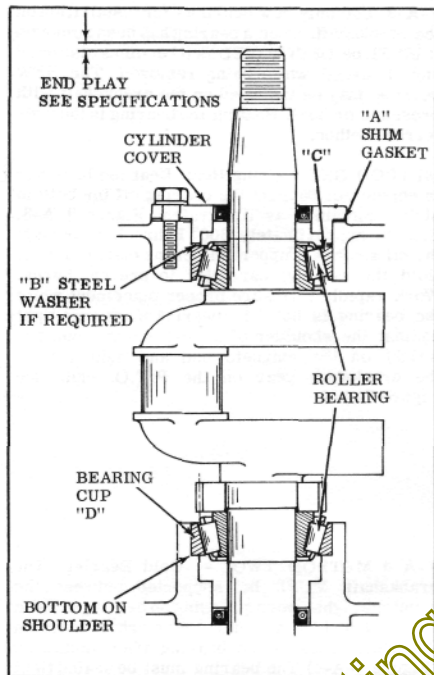


Figure 7-A-1

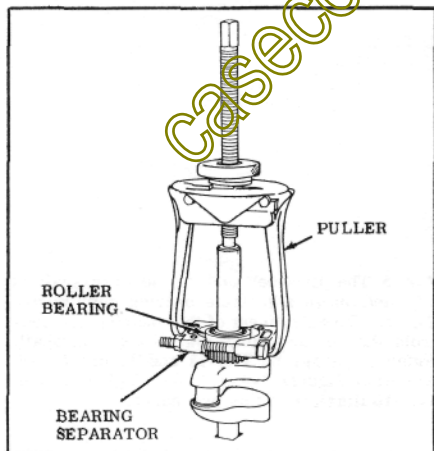


Figure 7-A-2

7-A-1 Figure 7-A-1 illustrates the correct assembly of the tapered crankshaft bearings. The bearing at the flywheel end of the crankshaft seats in an adjustable bearing cup "C" in the cylinder. (Figures 7-A-4, 7-A-5) The bearing cup "D" supporting the P.T.O. end of the crankshaft is a press fit in the cylinder cover. (Figures 7-A-4, 7-A-6).

Examine the bearing for wear, pitting, rust alignment, and uneven wear of the rollers. If doubtful replace to assure dependable trouble free service.

7-A-2 BEARING REMOVAL. Remove the bearing by securing a bearing separator between the bearing and crankshaft gear. Secure jaws of puller on the separator and draw bearing off shaft.

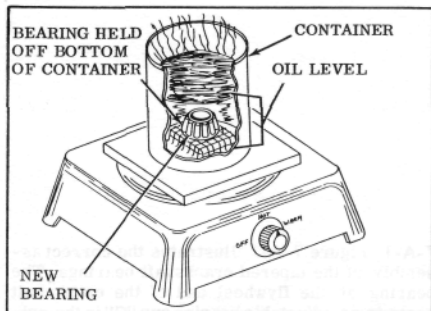


Figure 7-A-3

7-A-3 Use only new bearings for installation on the crankshaft. Once a bearing has been removed it **MUST** be **DESTROYED** as it becomes distorted and damaged while being removed. The **NEW** bearing may be installed on the crankshaft with pressure or heat. Heating the bearing is the preferred method.

METHOD ONE - Using Heat. Heat the bearings in engine oil. Support the bearing off the bottom of the container as illustrated, Figure 7-A-3. Heat to approximately 300° Fahrenheit or until the oil smokes. Support the crankshaft in a vise. Hold the bearing carefully to prevent burns. Work rapidly to assure proper placement while the bearing is hot. The bearing must seat tight against the shoulder of the crankshaft counterweight on the magneto end and tight against the crankshaft gear on the P.T.O. end. See Figure 7-A-4.

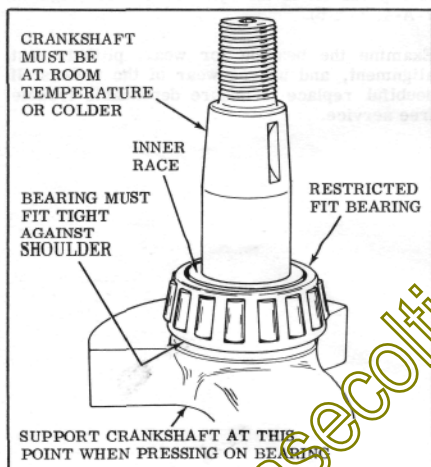


Figure 7-A-4

7-A-4 METHOD TWO - Cold Bearing. The crankshaft **MUST** be supported between the counterweights when pressing on bearings. Use a **LOCK** to direct the pressure of an arbor press on the inner race of the bearing when installing (Figure 7-A-4). The bearing must be seated tight against the shoulder of the crankshaft counterweight. This method is not recommended because of the great force needed.

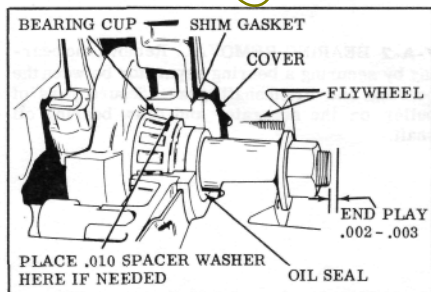


Figure 7-A-5

7-A-5 The flywheel end of the crankshaft is adjusted in an adjustable bearing cup. Figure 7-A-5. The adjustment of this bearing cup controls the end and radial play of the crankshaft. Refer to paragraph 7-A-13 and Figure 7-A-9. See Also Figures 7-A-1, 7-A-5, 7-A-7, 7-A-8, 7-A-10 illustrating this procedure.

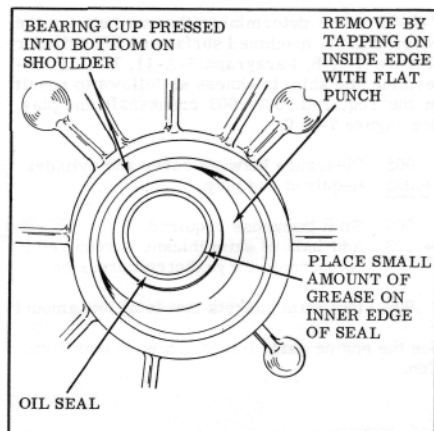


Figure 7-A-6

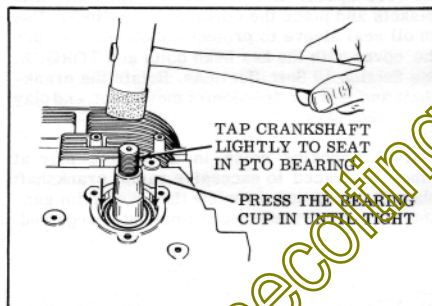


Figure 7-A-7

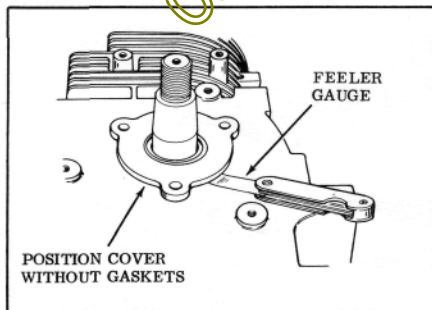


Figure 7-A-8

7-A-6 The bearing cup should be examined for rust, pitting, scuffing, cracks or other damage.

7-A-7 The bearing cup is removed by tapping the edge beneath the oil seal with a light hammer and flat punch. Press in a new cup until it bottoms on the shoulder. The bearing cup must be pressed in square, use an arbor press.

7-A-8 Reinstall cylinder cover using a new gasket and torque to specifications.

CAUTION: REMOVE POINT PUSH ROD BEFORE INSTALLING CYLINDER COVER OR RISK BREAKING OFF THE END OF THE ROD. Rod will strike the side of the cam lobe and will break as the cover is secured.

After the cylinder cover is secured to correct torque specification, place the engine in a stand or device that will allow the P.T.O. (Power Take-Off) shaft to extend freely. **DO NOT** set engine on P.T.O. shaft or the correct crankshaft end play cannot be obtained. End play adjusting procedures follow in Paragraphs 7-A-9 thru 7-A-13.

7-A-9 Turn the crankshaft until the piston is at T.D.C. Tap the flywheel end of the crankshaft lightly with a mallet to seat the P.T.O. bearing, Figure 7-A-1, 7-A-7.

7-A-10 With either fingers or two screw drivers, press the bearing cup inward until tight.

7-A-11 Position the cylinder cover (magneto end), oil seal, and sleeve tool (See 7-B-1) over the crankshaft and seat on the machined gasket surface. (Figure 7-A-8) Insert a feeler gauge between the cover and cylinder, Figures 7-A-8, record the reading. See Figure 7-A-9 and paragraph 7-A-13 for selecting the correct thickness of shim gasket.

7-A-12 If space does not exist between the cover and the machined gasket surface to allow insertion of the feeler gauge use a .010 metal spacer. The spacer fits between the bearing cup and inside surface of the cover. See also Figures 7-A-1, "B", 7-A-5 and 7-A-10. More than one may be used if required.

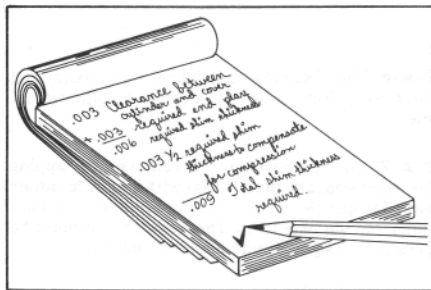


Figure 7-A-9

7-A-13 After determining the gap between the cover and the machined surface on the cylinder (Figure 7-A-8, Paragraph 7-A-11, 7-A-12) determine the shim thickness as follows to result in the required .002-.003 crankshaft end play. See Figure 7-A-9.

- .003 Clearance between cover and cylinder
- + .003 Required end play
- .006 Shim thickness required
- + .003 Add half of shim thickness required to compensate for gasket compression.
- .009 Use shim gaskets that total this amount

See the engine parts list for shim gasket variation.

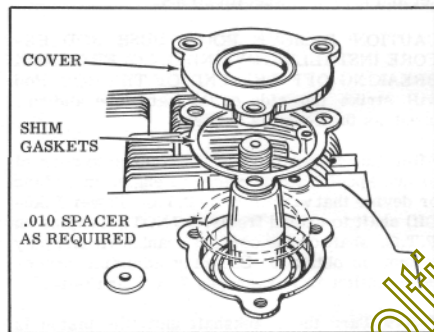


Figure 7-A-10

7-A-14 Insert an oil seal in the cover. Position the .010 spacer as required. Position the shim gaskets and place the cover on the cylinder. Use an oil seal sleeve to protect the oil seal. Secure the cover with the hex head bolts and TORQUE. See Section 5 Specifications. Rotate the crankshaft and test for freedom of movement, end play and radial play.

7-A-15 Knocking noise in an engine may at times be traced to excessive radial crankshaft play. If this is noted review the cover shim gaskets. Correct by adding or removing as required.

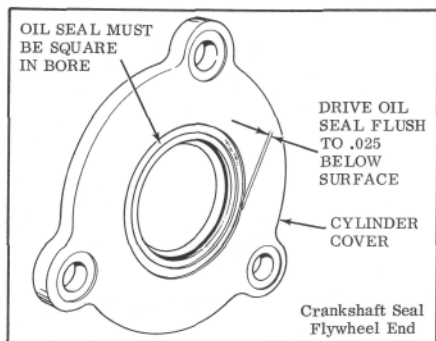


Figure 7-B-1

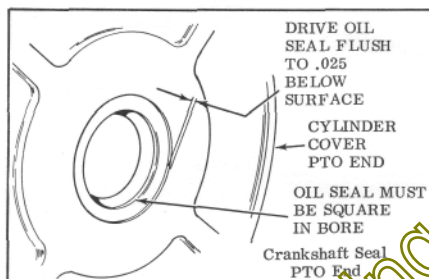


Figure 7-B-2

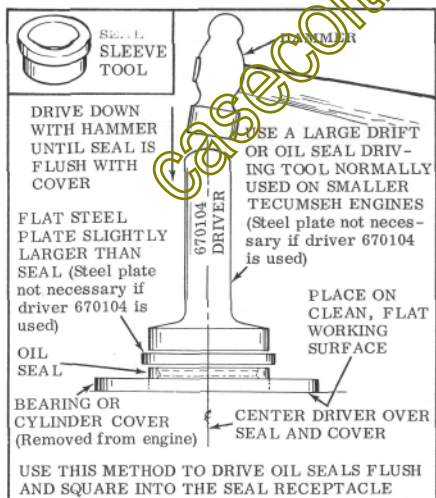


Figure 7-B-3

7-B-1 Use an oil seal sleeve to protect the oil seal when removing covers from crankshaft. See Section 10, Tools and see Figure (7-B-3). Remove the cylinder cover at either the P.T.O. or flywheel end. Drive the seal out of the cylinder cover from the inside out. Install a new seal. Use new gaskets. Use the seal protector when replacing the cover.

7-B-2 Remove the covers before installing the oil seal. The crankshaft cannot protrude while the seal is being installed.

Lay the cover on a flat clean surface. Use a 670104 seal driver or a flat piece of steel and a drift to drive the seal into position. Place the seal over the bore, center the driver over the seal and drive the seal into position with a hammer. See Figure 7-B-3.

USE A SEAL PROTECTOR SLEEVE EVERY TIME THE OIL SEAL IS PUT ON TO OR PULLED OFF OF THE CRANKSHAFT.