

SERVICE BULLETIN



M-1097

December 21, 1999

NEW REAR CAM ROLLER BEARING ASSEMBLY

General

Effective December 14, 1999, a new rear cam roller bearing assembly has been installed in both Twin Cam 88 and Twin Cam 88B engines. To service these assemblies, or to replace the earlier style ball bearing using the new parts, proceed with the instructions below.

NOTE

The new rear cam roller bearing assembly will retrofit all splined rear cams.

Removal

CAUTION

Cam bearings may be a loose fit in the cam support plate. To avoid possible damage, be aware that camshaft and bearing assemblies may drop out at start of press procedure.

1. Press out camshafts and bearings following existing service procedures. Regardless of model, see page 3-83 of the 2000 FLT Models Service Manual, CAMSHAFTS/CAMSHAFT BEARINGS, REMOVAL, steps 1-8.

NOTE

Some bearing retainer plates may have circular marks if the bearing has turned. Disregard these marks if observed as the retainer plate may continue to be used.

2. If the new style roller bearing is present, slide bearing from end of rear camshaft. Since bearing is a loose fit on cam, no pressing tools are required.

NOTE

Wherever the earlier style ball bearings are used, use pressing tools following existing service procedures. Regardless of model, see page 3-84 of the 2000 FLT Models Service Manual, CAMSHAFTS/CAMSHAFT BEARINGS, REMOVAL, step 9.

3. If reusing a rear camshaft that has the new style roller bearing installed, remove the bearing inner race and thrust washer as follows:
 - a. Position WEDGE ATTACHMENT (HD-95637-46A) on inboard side of thrust washer and turn hex nuts an equal number of turns to draw halves of wedge together.

- b. Obtain two 3/8-16 inch bolts 3-1/2 inches long (with flat washers). Install flat washers on bolts. Obtain bridge, forcing screw and hardened plug from MAINSHAFT BEARING INNER RACE PULLER/INSTALLER (HD-34902B).
- c. Slide one bolt into channel on each side of bridge, so that flat washer is between bridge and bolt head. Thread bolts into wedge attachment an equal number of turns.
- d. Sparingly apply graphite lubricant to threads of forcing screw to prolong service life and ensure smooth operation. Start forcing screw into center hole of bridge.

CAUTION

Failure to use hardened plug may result in damage to forcing screw and/or camshaft.

Description	Part Number	Qty.
Roller Bearing	8984	1
Bearing Inner Race	8985	1
Thrust Washer	8986	1
O-Ring	11350	1

Parts Not Sold Separately

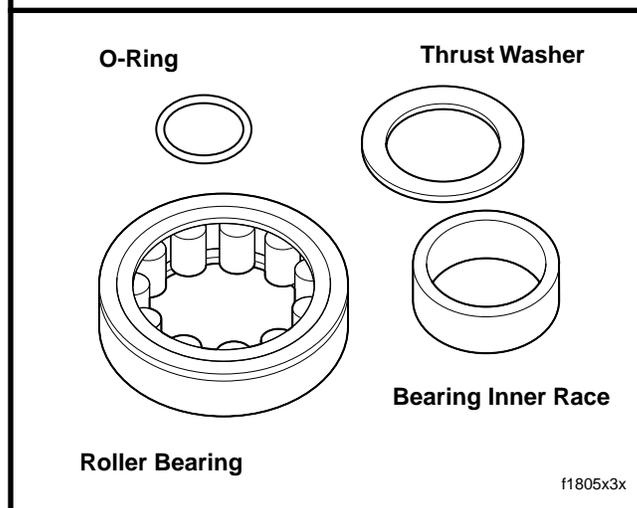


Figure 1. Rear Cam Roller Bearing Kit (P/N 8983)

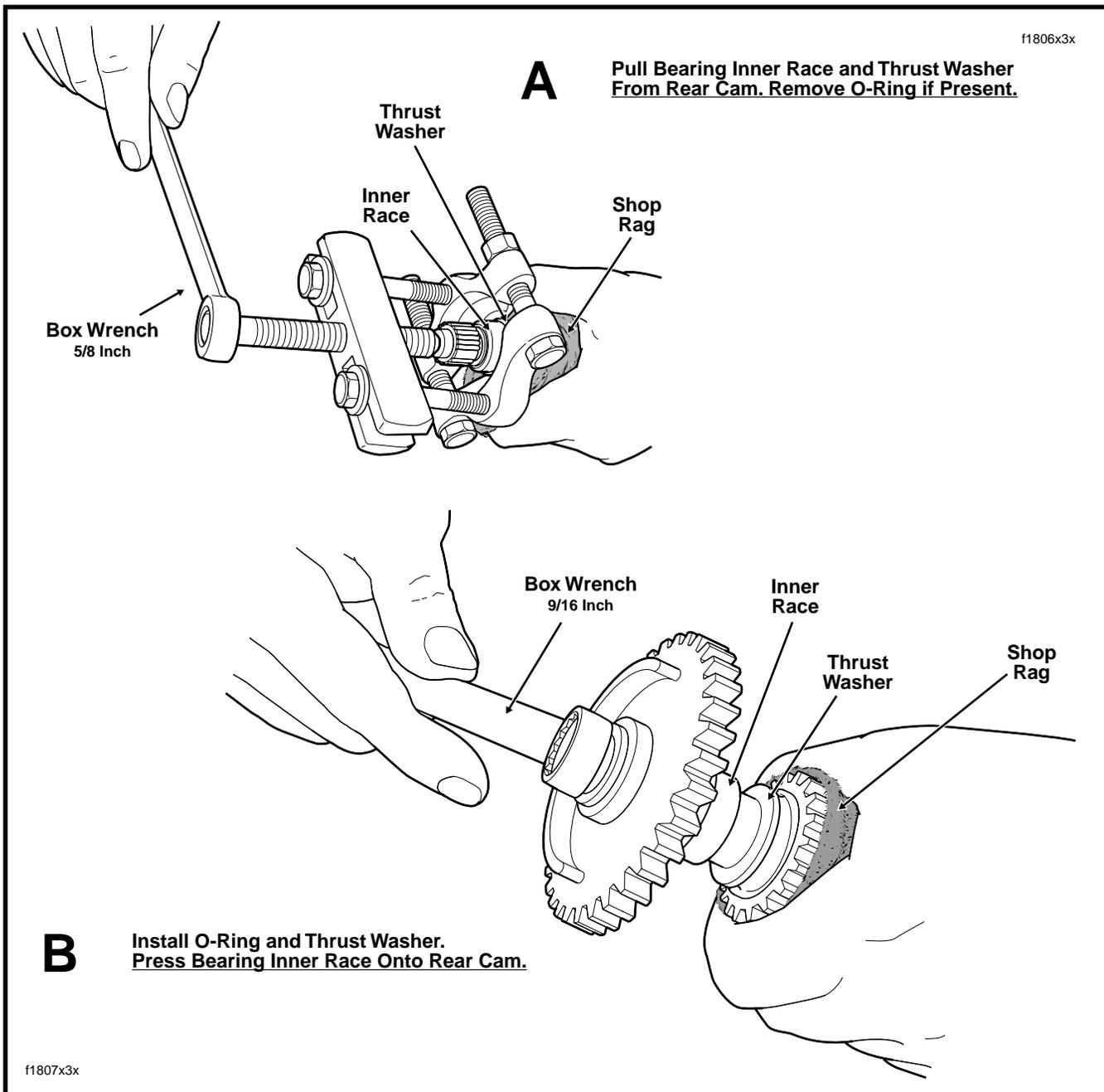


Figure 2. Remove/Install Bearing Inner Race (With O-Ring and Thrust Washer)

- e. Fit hardened plug into end of camshaft. Thread forcing screw into bridge until the steel ball at end of screw makes firm contact with cup of hardened plug. Verify that the tool assembly is square.
- f. Wrap a shop rag around camshaft to get a firm grip and also to protect hand from sharp edges of sprocket.
- g. Using a 5/8 inch box wrench, turn forcing screw until bearing inner race and thrust washer are pulled free of camshaft. See A of Figure 2. A light interference fit allows the parts to be removed with little effort. Discard inner race and thrust washer.
- h. If present, remove O-ring from grinding relief groove in camshaft. Groove is on the splined end between the machined area and the secondary cam sprocket. Discard O-ring.

NOTE

Since the O-ring is not used in production, it will only be found if the cams were serviced at the dealer level.

Installation

1. Obtain new rear cam roller bearing kit (Part No. 8983). See Figure 1.

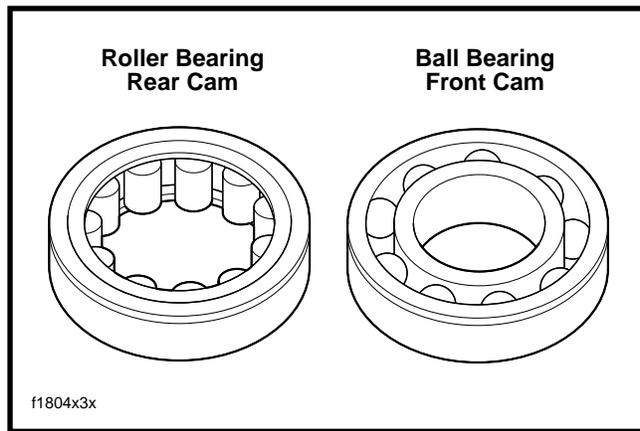


Figure 3. Cam Bearings

2. Install O-ring, thrust washer and bearing inner race onto rear camshaft as follows:
 - a. To properly locate thrust washer, first install O-ring in grinding relief groove. Groove is on the splined end between the machined area and the secondary cam sprocket. Exercise caution to avoid stretching or breaking the O-ring. Since the O-ring is not sold separately, damage will require purchase of a new roller bearing kit.

CAUTION

The thrust washer will be offset to one side if the O-ring is not installed in the grinding relief groove. Damage to the bearing cage can occur if the thrust washer is not properly centered.

- b. Slide thrust washer down rear camshaft until centered over O-ring in grinding relief groove.
- c. Slide bearing inner race down rear camshaft until contact is made with shoulder of machined area.
- d. Install primary cam sprocket spacer and sprocket on camshaft and secure using thicker flat washer and long flange bolt.

NOTE

If not enough of the splined shaft is exposed to install the sprocket, leave out the spacer and proceed to step 2(e). Once the bearing inner race has been started onto the machined area, remove the flange bolt, washer and sprocket, and then reassemble using the spacer. Repeat step 2(e) to fully install bearing inner race.

- e. Wrap a shop rag around camshaft to get a firm grip and also to protect hand from sharp edges of sprocket. Using a 9/16 inch box wrench, turn flange bolt in a clockwise direction. Bearing inner race is fully installed when it makes firm contact with the thrust washer. See B of Figure 2.
- f. Verify that the thrust washer is locked in place and cannot be rotated. If necessary, install shaft in vise using brass jaw inserts, and further tighten flange bolt until the desired result is achieved.

- g. Remove flange bolt, flat washer, sprocket and spacer.

3. Install new cam bearings in cam support plate following existing service procedures. Regardless of model, see page 3-85 of the 2000 FLT Models Service Manual, CAMSHAFTS/CAMSHAFT BEARINGS, INSTALLATION, steps 1-5.

NOTE

Be aware that the front and rear cam bearings are no longer interchangeable. The rear bearing is now the roller type, while the front remains the ball bearing kind. See Figure 3.

NOTE

Bearings may be a press to loose fit. If deemed necessary, clean bearing OD and apply Loctite Low Strength Threadlocker 242 (Blue) before installation, but exercise caution to avoid getting compound on rollers or bearing ID.

4. Start camshafts into cam bearings following existing service procedures. Regardless of model, see page 3-86 of the 2000 FLT Models Service Manual, CAMSHAFTS/CAMSHAFT BEARINGS, INSTALLATION, steps 6-10.

NOTE

Be sure not to mix camshafts during the press procedure. The rear camshaft, which can be identified by the splined shaft, must go into the roller bearing at the rear of the cam support plate.

5. Place cup of camshaft driver over end of front camshaft only.

CAUTION

Verify that splined end of rear camshaft has been started into support block. Damage to the camshaft and/or support block can occur if end of camshaft catches top of block during the press procedure.

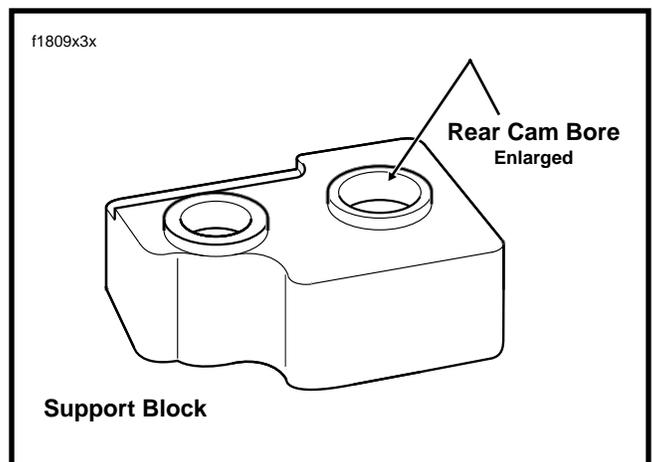


Figure 4. Enlarge Rear Cam Bore Using 7/8 Inch Drill Bit

NOTE

To reduce the likelihood of such contact occurring, use 7/8 inch drill bit to enlarge rear cam bore in support block. For best results, radius top inside edge of bore after drilling. See Figure 4.

CAUTION

Be sure that the tensioner shoe is clear of the secondary cam chain during the press procedure. Contact can result in damage that requires replacement of the tensioner assembly.

- Center end of front camshaft under ram and slowly apply pressure to driver just to start front camshaft into bearing ID.

CAUTION

If rear camshaft is not properly aligned, edge of installed inner race can catch on bearing rollers. Bearing damage can result if contact occurs during the press procedure.

- Slowly apply pressure to driver on front camshaft, while wiggling rear camshaft as necessary to guide inner race between bearing rollers.
- When inner race on rear cam is started into roller bearing, apply pressure to driver until front camshaft is fully seated. If necessary, keep finger pressure at top of rear camshaft to ensure that assembly remains square and inner race moves to installed position in roller bearing.
- Complete installation of cams. See page 3-86 of the 2000 FLT Models Service Manual, CAMSHAFTS/CAMSHAFT BEARINGS, INSTALLATION, steps 14-15.

IMPORTANT NOTE

When installing crank and primary cam sprockets, push on rear camshaft to remove end play and check alignment of sprocket faces as described in the 2000 FLT Models Service Manual, and shown in the upper frame of Figure 5. If alignment exceeds 0.010 inch, substitute existing spacer with one of those shown in Table 1. These spacers represent a new set and are to be used with the new rear cam roller bearing assembly only. Do not attempt to use earlier design spacers as they will not work.

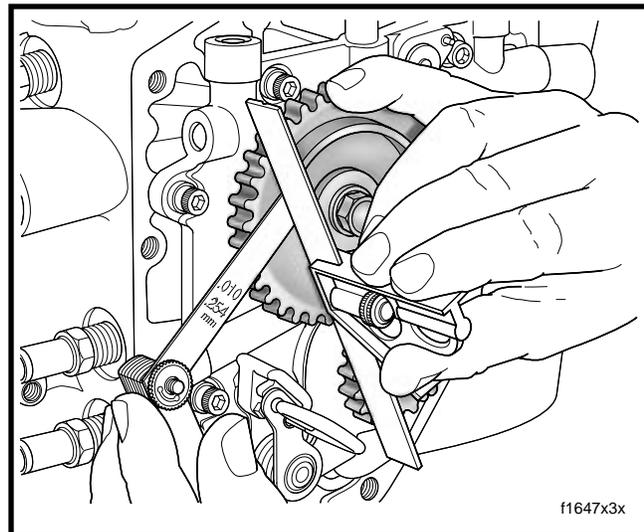


Table 1. New Primary Cam Sprocket Spacers

Spacer Size	H-D Part Number
0.287	25722-00
0.297	25723-00
0.307	25721-00
0.317	25719-00
0.327	25717-00

Figure 5. Use New Spacers to Align Crank and Primary Cam Sprocket Faces

When ordering service parts for replacement, please refer to Table 2 below.

Table 2. Fitment Information

Part No.	Description	Fitment
25267-99B	Cam Support Plate w/ Bearings & Oil Control Kit	99-00 TC 88-88B
24598-99B	Cam Support Plate w/ Cams, CARB	99-00 TC 88-88B CARB
24606-99B	Cam Support Plate w/ Cams, EFI	99-00 TC 88-88B EFI
NOTE: All kits come with the new rear cam roller bearing assembly, but do not include the new spacers.		

ROUTING	SERVICE MANAGER	SALES MANAGER	PARTS MANAGER	LEAD TECHNICIAN	TECHNICIAN NO. 1	TECHNICIAN NO. 2	TECHNICIAN NO. 3	TECHNICIAN NO. 4	RETURN THIS TO:
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