

# SERVICE BULLETIN



M-1100

July 10, 2000

## CAM BEARING REPAIR KITS

### General

Two repair kits are now available to expedite rear cam bearing repair on 1999 and early 2000 model Twin Cam 88 and Twin Cam 88B engines. One kit is for fuel injected vehicles, the other for carbureted. See Table 1 for part numbers and contents of each kit.

Once a problem has been identified as the rear cam bearing, order the appropriate repair kit by **electronically placing a "down" vehicle order** (the VIN must be included). Then proceed with the instructions below.

### Removal

#### NOTE

*After careful inspection, Harley-Davidson has determined that complete engine disassembly is unnecessary. All contamination is confined to the cam compartment and the return oiling system.*

1. Drain engine oil. Remove and discard engine oil filter.

Regardless of model, see page 3-6 of the 2000 FLT Models Service Manual, Changing Engine Oil and Filter, steps 2-5.

#### NOTE

*On DYNA models, the engine oil drain plug is on the left side of the oil pan. On SOFTAIL models, the drain plug for the oil tank is on right side of the lower frame crossmember.*

2. Strip the vehicle for service.

- For FLT Models, see page 3-16 of the 2000 FLT Models Service Manual, Stripping Motorcycle for Service, steps 1-13.
- For DYNA Models, see page 3-23 of the 2000 DYNA Models Service Manual, Stripping Motorcycle for Service, steps 1-8.
- For SOFTAIL Models, see page 3-23 of the 2000 SOFTAIL Models Service Manual, Stripping Motorcycle for Service, steps 1-8.

3. Remove the rocker covers, breather cover and baffle assemblies, push rod covers, rocker arm support plate assemblies, intake and exhaust push rods, lifter covers, anti-rotation pins, and hydraulic lifters. Tag parts for warranty.

Regardless of model, see page 3-35 of the 2000 FLT Models Service Manual, Top End Overhaul, Disassembly, steps 1-13.

4. Remove the cam cover, crank and primary cam sprockets, primary cam sprocket spacer, chain guide, cam support plate, and oil pump. Tag parts for warranty.

Regardless of model, see page 3-47 of the 2000 FLT Models Service Manual, Bottom End Overhaul, Disassembly, steps 2-15.

Table 1. Cam Bearing Repair Kits

Description	Part No.		
Fuel Injected Vehicles	24984-99		
Carbureted Vehicles	24985-99		
Each Repair Kit Contains the Following:			
Description	Part Number		Qty.
EFI Camshafts or Carbureted Camshafts	Front	Rear	1 Each
	25296-99	25297-00	
	25534-99	25544-00	
Cam Needle Bearing	9198		2
Cam Support Plate	25267-99B		1
Cam Sprocket	25716-99		1
Cam Sprocket Spacer Kit	25938-00		1
Crank Sprocket	25609-99		1
Primary Cam Chain	25610-99		1
Secondary Cam Chain	25607-99		1
Cam Gear Retention Kit	25533-99A		1
Oil Pump Assembly	26035-99A		1
Oil Pump O-Ring	11301		2
Oil Pump O-Ring	11286		1
Oil Pump/Push Rod Cover O-Ring	11293		5
Push Rod Cover O-Ring	11132		4
Push Rod Cover O-Ring	11145		4
Hydraulic Lifter	18538-99A		4
Lifter Cover Gasket	18635-99		2
Breather O-Ring	11270		2
Umbrella Valve	26858-99		2
Breather Baffle Gasket	17592-99		2
Breather Cover Gasket	17591-99		2
Rocker Cover Gasket	17386-99		2
Cam Cover Gasket	25244-99		1
FLT Oil Pan Gasket	26077-99		1
DYNA Oil Pan Gasket	26072-99		1

Parts Sold Separately

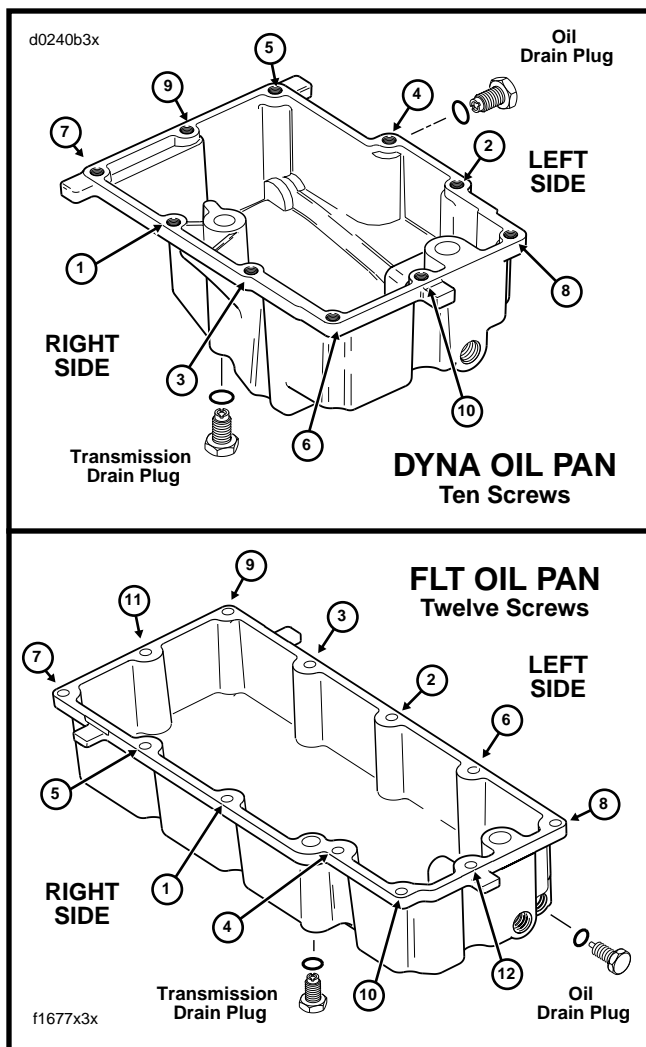


Figure 1. Oil Pan Torque Sequence

5. Remove the cam needle bearings. Tag parts for warranty.

Regardless of model, see page 3-88 of the 2000 FLT Models Service Manual, Subassembly Service and Repair, Cam Needle Bearings, Removal.

6. On FLT and DYNA models, remove the oil pan as follows:

**NOTE**

On FLT models, remove rear wheel before attempting to remove the oil pan. See page 2-9 of the 2000 FLT Models Service Manual, Rear Wheel, Removal.

- a. Locate transmission drain plug on right side of the oil pan. See Figure 1. Remove the plug and drain the transmission lubricant into a suitable container.
- b. Following the pattern shown in Figure 1, alternately loosen and then remove the allen head socket screws to release the oil pan from the transmission housing.
- c. Remove gasket and baffle assembly from oil pan. Discard gasket.

## Cleaning and Inspection

1. Thoroughly clean baffle assembly.
2. Thoroughly clean oil pan and flush oil feed and return passages. Verify cleanliness.
3. Flush oil feed and return passages at front of transmission housing. Verify cleanliness.

**NOTE**

On Softail models, drain oil tank, remove and flush oil feed and return lines, and then flush tank.

4. Thoroughly clean cam compartment.
5. Flush all oil feed and return fittings and hoses from engine to transmission housing.

## Installation

1. Obtain the appropriate Cam Bearing Repair Kit, either fuel injected or carbureted.
2. Install **new** cam needle bearings. Regardless of model, see page 3-89 of the 2000 FLT Models Service Manual, Subassembly Service and Repair, Cam Needle Bearings, Installation.
3. Using the **new** parts, install the oil pump, cam support plate, chain guide, primary cam sprocket spacer, crank and primary cam sprockets, and cam cover.

Regardless of model, see page 3-49 of the 2000 FLT Models Service Manual, Bottom End Overhaul, Assembly, steps 5-23.

**NOTE**

Primary cam sprocket spacers in the Cam Bearing Repair Kit are color coded for ease of identification. See Table 2 below.

Table 2. Primary Cam Sprocket Spacers

Spacer Size	Color
0.287	Red
0.297	Black
0.307	Blue
0.317	Green
0.327	Gold

4. Using the **new** parts, install the hydraulic lifters, anti-rotation pins, lifter covers, intake and exhaust push rods, rocker arm support plate assemblies, push rod covers, breather cover and baffle assemblies, and rocker covers.

Regardless of model, see page 3-43 of the 2000 FLT Models Service Manual, Top End Overhaul, Assembly, steps 25-39.

5. On FLT and DYNA models, install the oil pan as follows:

- a. Coat gasket surface of oil pan with a thin coat of HYLOMAR® gasket sealer.
- b. Place gasket on oil pan and allow sealer to dry until tacky.
- c. Position oil pan under transmission housing and start the allen head socket screws. Tighten each screw about two turns after initial thread engagement.
- d. Inspect the oil pan gasket to verify that it is properly positioned.
- e. Alternately tighten the oil pan screws to 7-9 ft-lbs (9-12 Nm) following the pattern shown in Figure 1.

#### NOTE

*On FLT models, install rear wheel. See page 2-12 of the 2000 FLT Models Service Manual, Rear Wheel, Installation.*

- f. Remove any foreign material from magnet of transmission lubricant drain plug. Also check the O-ring for tears, cuts or general deterioration. Replace as necessary.
- g. Install the transmission lubricant drain plug in right side of the oil pan. Tighten drain plug to 14-21 ft-lbs (19-28 Nm).
- h. Remove the transmission filler plug from the clutch release cover on the right side of the transmission case. Check the O-ring for tears, cuts or general deterioration. Replace as necessary.

#### WARNING

**When adding transmission lubricant, do not allow dirt, debris or other contaminants to enter the transmission case. Exercise caution so that lubricant does not contact rear wheel, tire and brake components. Such contact can adversely affect traction and may lead to loss of vehicle control, which could result in death or serious injury.**

- i. Fill the transmission with 20-24 oz. (590-710 ml) of transmission lubricant or until the lubricant level on the dipstick of the filler plug is at the F(ULL) mark with the motorcycle in a level, upright position and the filler plug resting on the threads. Use only Harley-Davidson TRANSMISSION LUBRICANT, Part No. 98853-96 (quart) or Part No. 98852-96 (gallon).
  - j. Install the transmission filler plug/dipstick in the clutch release cover. Tighten the plug to 25-75 in-lbs (2.8-8.5 Nm).
6. Reassemble the vehicle after service.
    - For FLT Models, see page 3-17 of the 2000 FLT Models Service Manual, Assembling Motorcycle After Stripping, steps 8-19.

- For DYNA Models, see page 3-24 of the 2000 DYNA Models Service Manual, Assembling Motorcycle After Stripping, steps 6-12.
- For SOFTAIL Models, see page 3-24 of the 2000 SOFTAIL Models Service Manual, Assembling Motorcycle After Stripping, steps 5-13.

7. Install a **new** engine oil filter. Add engine oil.

Regardless of model, see page 3-6 of the 2000 FLT Models Service Manual, Changing Engine Oil and Filter, steps 6-10. When performing step 9, be aware that different models have different oil capacities, as shown in Table 3 below. Add only the amount shown under the wet capacity column.

**Table 3. Wet/Dry Oil Capacities (Quarts)**

Model	Wet	Dry
FLT	3.5	4.0
DYNA	2.5	3.0
SOFTAIL	3.0	3.5

#### NOTE

*To perform the engine oil level COLD CHECK on SOFTAIL models, verify that oil level registers on the dipstick with the vehicle upright and level. If it does not, look into the oil tank to see if the level is at or near the filler neck weld. If necessary, add only enough oil to bring the level to the filler neck weld.*

8. Perform engine oil HOT CHECK. Regardless of model, see page 3-6 of the 2000 FLT Models Service Manual, Changing Engine Oil and Filter, steps 11-12.
9. See CREDIT PROCEDURE below.

### Credit Procedure

In the event of a cam bearing failure, follow the instructions on page 1 to remove the cam support plate and oil pump. Replace parts and hardware with contents of one of two kits.

#### NOTE

*If the vehicle is no longer under warranty, follow the parts ordering and repair process outlined in this bulletin. Then, after the repair is complete, submit a goodwill policy adjustment form by FAX.*

For each vehicle serviced, complete a separate Warranty Claim Form referencing Service Bulletin M-1100 in the "Description of Repair" section. In addition, the claim must contain the VIN (Vehicle Identification Number) of the vehicle on which the service was performed. Fill in the rest of the claim as follows:

CLAIM TYPE	MC, GDW*
QTY. EVENT 1	0
EVENT 1, PROBLEM PART NO.	8990
PART DESCRIPTION	Rear Cam Bearing
EVENT 1 (QUANTITY - ADDITIONAL PARTS)	1 - 24984-99 Fuel Injected Kit
	1 - 24985-99 Carbureted Kit
	1 - Oil Filter Part Number Either 63798-99 (Chrome) or 63731-99 (Black)
	Appropriate quantity (in whole numbers) for TRANSMISSION LUBRICANT and ENGINE OIL
PRIMARY LABOR CODE	3340
TIME	
FLT	4.5 hrs.
DYNA	4.0 hrs.
SOFTAIL	3.5 hrs.
CUSTOMER CONCERN	4102
CONDITION CODE	2208
<p><b>*Use "MC" if vehicle is still under factory warranty. Use "GDW" if vehicle is out of warranty, and you have obtained repair authorization from the factory. Be sure to include the authorization number obtained from the factory, if applicable.</b></p>	

Upon receipt of the properly completed claim, you will receive the labor credit shown above for performing the required service, and you also will receive the appropriate credit for parts.

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

2000 Harley-Davidson® Motor Company