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Sudden Loss of Oil Pressure For 1995-2005 Ford 2.0L VIN 3 and Z Engines

Sudden loss of oil pressure has been reported in 1995-2005 Ford 2.0L VIN 3 and Z engines. The loss of pressure can occur at any time, but has been reported most often after cylinder head work has been performed.

This engine uses a valve to direct, complete and restrict the oil in an internal oil gallery within the head. It is secured in the head by an interference fit, which may be compromised if the cylinder head has become overheated. On occasion, this component has become dislocated or come out of its bore entirely. When that occurs, valve train noise and oil pressure loss will be noted. Excessive cam bore wear on these cylinder heads has been reported in several instances.

To thoroughly clean this oil gallery during a cylinder head rebuild, this restrictor valve should be removed. A new valve would be the proper choice during reassembly and it should be secured in the head with a locking compound. However, availability of a new restrictor valve may be limited. Calls to local dealers for the OE part (p/n 928M-6801-AC) have often been unproductive. AERA is aware of one shop that has a limited supply of these valves. Contact the AERA Technical Department if you have trouble obtaining one.

Some machine shops report that valves from discarded heads have been successfully used.

Crankshaft Pulley Replacement Caution For 2001-2007 Ford 2.0 and 2.3L VIN 3 and D Engines

The crankshaft pulley on 2001-2007 Ford 2.0 and 2.3L VIN 3 and D engines is NOT KEYED to the crankshaft on these engines. In case of crankshaft pulley replacement, special precautions are required before loosening the crankshaft pulley bolt.

If the crankshaft pulley bolt is loosened, the pulley may move position on

the crankshaft. The engine must be re-timed whenever the crankshaft pulley bolt is loosened, removed or replaced. Several service tools are required to correctly re-time all the components.

Follow the procedure listed below to time the cams to the crankshaft and tighten the new crankshaft bolt (p/n LF0111406).

1) Install the camshaft alignment plate 303-465 to the camshaft as shown in **Figure 1**, below.

2) Install the M6 x 1.0 bolt by hand as shown in **Figure 2**, below.

3) Rotate the crankshaft clockwise until the crankshaft is in the No.1 cylinder TDC position (until the

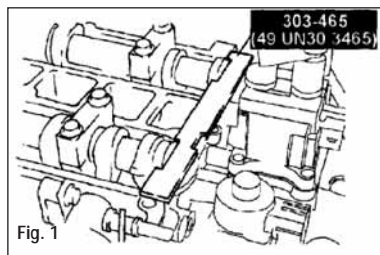


Fig. 1

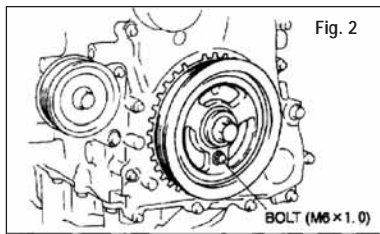


Fig. 2

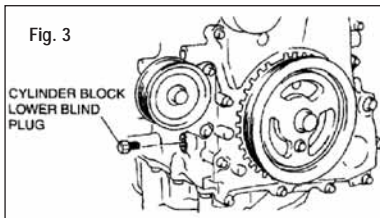


Fig. 3

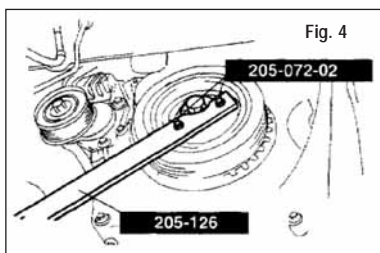


Fig. 4

From top, **Figures 1 through 4** on replacing a crankshaft pulley on Ford 2.0L and 2.3L engines.

crankshaft balance weight is contacting the Crankshaft Alignment Pin 303-507 as shown in **Figure 3**, below.

4) Hold the crankshaft pulley using the service tools shown in **Figure 4** below

5) Tighten the crankshaft pulley lock bolt in the order shown in the following two steps using the service tool (49 D032 31 6).

- Tighten to 70.9 - 76.7 ft.lbs. (96 - 104 Nm) (9.8 - 10.6 kgf-cm)

- Tighten 87° - 93°

6) Remove the M6 x 1.0 bolt.

7) Remove the service tool from the camshafts.

8) Remove the service tool from the cylinder block lower blind plug.

9) Rotate the crankshaft two times clockwise until the crankshaft is in the TDC position, reinstall the service tools to the camshaft and cylinder block, and inspect the valve timing.

10) If not aligned, loosen the crankshaft pulley lock bolt and repeat from Step 1.

Main Bearing Bedplate Installation Procedures For 2001-2006 Ford 3.0L VIN 1 Engines

Whenever you install a crankshaft in 2001-2006 Ford 3.0L VIN 1 engines you should review this main bearing bedplate installation information.

This engine uses 22 fasteners for the lower engine bedplate which also houses the lower main bearing shells. The bedplate assembly must be installed in its entirety and then removed to properly check main bearing clearance. Desired main bearing oil clearance is .0007"-.0018" (.018-.045 mm). There are three different standard bearings, as shown in **Figure 5**, page 4, available to assist in achieving the desired oil clearance.

Step 1) Torque fasteners 1-8 (small bolts) in sequence (**Figure 6**, page 4) to 18 ft.lbs.

Step 2) Torque fasteners 9-16 (large bolts) in sequence to 30 ft.lbs.

Step 3) Rotate fasteners 1-16 (large

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Bearing Grade

1
2
3

Bearing Thickness @ Crown

.0983" (2.498 mm)
.0985" (2.502 mm)
.0987" (2.507 mm)

Figure 5 Ford 3.0L bearing grades and thicknesses.

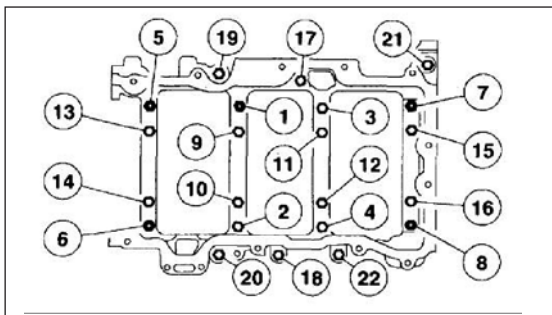


Figure 6 Ford 3.0L bearing bedplate torque sequence.

and small bolts) in sequence an additional 90° turn.

Step 4) Torque fasteners 17-22 in sequence to 18 ft.lbs.

It is suggested keeping oil clearances toward the "tighter" specification to achieve the required 45 psi @ 448 rpm, normal pressure reading.

Camshaft Timing Mark Verification For 2001-07 Ford 3.0L VIN 1 Engines

This bulletin offers information regarding camshaft timing mark verification for 2001-2007 Ford 3.0L VIN 1 engines and should be referenced anytime the timing chains for this engine are being reinstalled.

When the chains are properly positioned, the following should be noted, as referenced in **Figure 7** (right):

1) There should be 12 chain links between the front camshaft timing marks.

2) There should be 27 chain links between the camshaft and crankshaft timing marks.

3) There should be 30 chain links between the camshaft and crankshaft timing marks.

The pulse wheel, which is used in several different engines, should be installed with the keyway in the slot stamped "20-25-34Y-30M" (colored blue). Install the ignition pulse wheel as shown in **Figure 8** (below).

Some 2005-2007 Five Hundred, Freestyles and Montegos; 2006-2007 Fusions and Milans; 2006 Zephyrs; and 2006-2007 Escapes and Mariners built 1/17/2006 and later equipped with the 3.0L 4V Duratec engine with exhaust camshaft driven water pumps may exhibit a ticking noise from the left bank cylinder

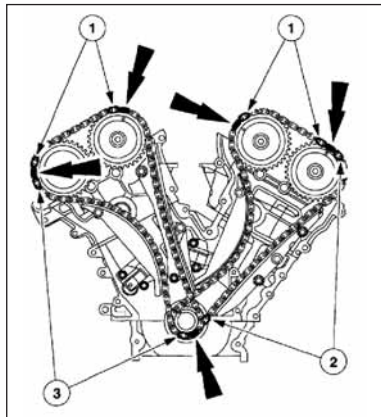


Figure 7 Chain Timed Positions

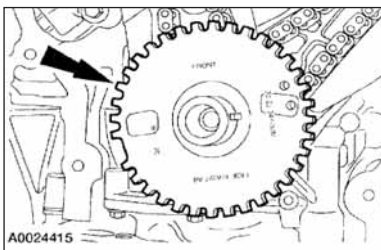


Figure 8 Install the Ford 3.0L engine ignition pulse wheel as shown

head with the engine at normal operating temperature.

With the engine running and warm (normal operation temperature), use a mechanic's stethoscope to determine if the ticking noise is coming from the left hand exhaust camshaft at cylinder number 6 (**Figure 9**, below). If a ticking noise can be verified, refer to the following service procedure:

1) Remove the left hand camshaft cover.

2) Rotate the engine clockwise

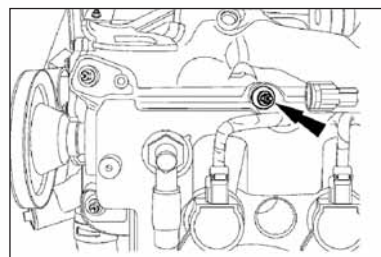


Figure 9 Left Hand Camshaft Area

until the cylinder number 6 exhaust cam lobes are pointing up and the valves are fully closed.

3) Remove all left hand exhaust cam caps individually and reinstall them finger tight.

4) Torque bolts in sequence shown in **Figure 10** (page 5), to 72 in. lbs. (8 Nm) excluding cam cap number 4L camshaft cap.

5) Using a screwdriver positioned on each side of the top of cam cap number 4L (**Figure 11**, page 5) apply hand pressure and shift cam cap number 4L toward the exhaust side of the cylinder head.

6) While holding cam cap number 4L in the shifted position, torque the fasteners number 9 (inboard) first, to 72 in. lbs. (8 Nm) then torque fastener number 10 (Figure 11).

7) Install the left hand camshaft cover.

8) Fully warm the engine to verify the repair.

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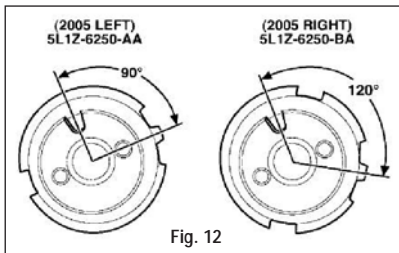


Fig. 12

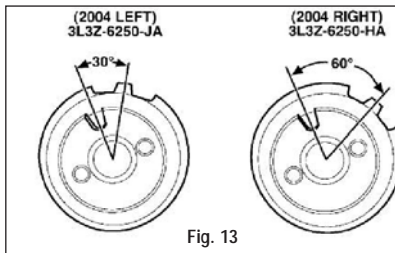


Fig. 13

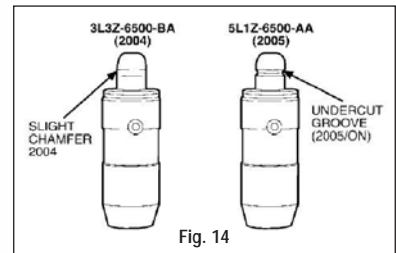


Fig. 14

Figures 12, 13 and 14 Identifying the differences in the 2004-2005 Ford 5.4L camshafts and valve lash adjusters

Camshaft & Lash Adjuster Differences In 2005 Ford 5.4L VIN 5 Engines

Engine builders are cautioned that the 2004 and 2005 Ford 5.4L engines in the F-150 use different camshaft and lash adjusters. The 2005 engines can be identified by the three valves per cylinder head design.

The 5.4L 3-valve engine lash adjuster and camshaft design has been modified for the 2005 model year (MY). You should not use 2005 MY parts when servicing a 2004 MY engine, or 2004 MY parts when servicing a 2005 MY engine. If parts are intermixed during a service repair, the engine may exhibit noises on affected cylinders and engine damage may result.

To assist in determining which MY engine you're working on, the engine model year should be confirmed by checking the engine tag located on the valve cover. A 2004 MY engine will have code 4G-692-AA and a 2005 MY engine will be identified as 5G-692-AA.

2004 and 2005 MY camshafts can be identified by the location of the variable cam timing phaser (VCT) pin

notch in relation to the machining lug, as seen on the end of the camshafts (See **Figures 12** and **13** above).

2004 and 2005 MY lash adjusters can be identified by the presence or lack of an identification groove cut into the lash adjuster boss as shown below in **Figure 14**, above. The 2005 MY parts have this identification groove cut into the boss, while the 2004 MY parts don't. **TSG**

Below, **Figures 10 and 11**

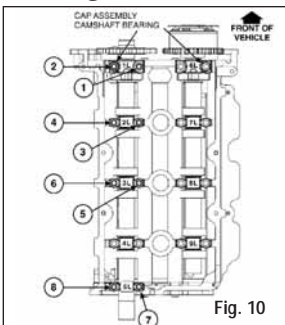


Fig. 10

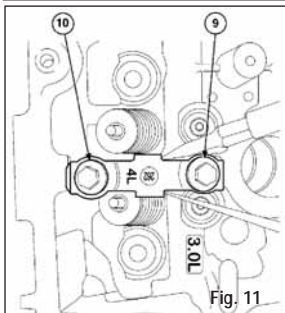


Fig. 11

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