

Camshaft Sprocket Removal Tool Modification For 1995-2002 Chrysler 2.0L VIN C Engines

Modification of a camshaft sprocket removal tool for 1995-2002 Chrysler 2.0L VIN C engines makes the tool easier to use, and is, in some cases, necessary to allow use of the tool.

Some rebuilders say it may be difficult to use the Chrysler supplied cam sprocket tool C4687 with these engines. The tool may require “fitting” for a particular cam sprocket to allow tool location and use. To modify the tool, reference **Figure 1**, right, and grind a small amount of material from the shaded areas shown. Doing so will provide a more useful tool.

Cylinder Head Gasket Design Change For 2002 Chrysler PT Cruiser 2.4L VIN B Engines

A cylinder head gasket design change has been made for 2002 Chrysler PT Cruiser 2.4L VIN B engines. To improve the ability of oil drain back from the cylinder head and also improve crankcase ventilation on 2002 Chrysler PT Cruiser 2.4L VIN B engines, the hole size opening was changed. Beginning in 2002 this opening was reshaped to a much larger size.

A new cylinder head gasket has been designed to fit the new cylinder head with c/n 04667086. The 2002 block was also modified to reflect the cylinder head revision. With the implementation of the improved engine oil return and crankcase ventilation (enlarged hole) it became necessary for the 2002 and newer

head gasket revision.

The design change to the cylinder head gasket was made to cover the new, larger crankcase ventilation hole. The hole, marked in **Figure 2**, bottom, is between cylinders No. 3 and No. 4 on the 2002 head gasket. Only one of the oil drain back holes on the fly-wheel side is opened from a round hole to a slightly larger irregular shape.

The original hole was much smaller and is the reason the gasket will not fit properly on the earlier 2001 and down cylinder heads and blocks.

Although the earlier 2001 gasket can physically be installed on the 2002 head and block, it will leak oil from the uncovered oil return/ventilation hole in the cylinder head when the engine is run. It will also block openings. The oil hole between the cylinders is not a high-pressure oil passage.

The revised 2002 head/block may be installed on 2001 vehicles, so

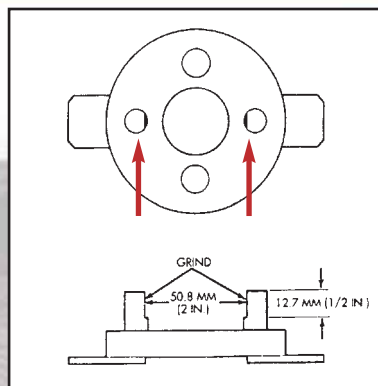


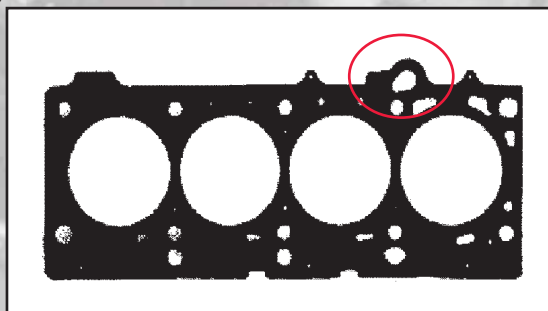
Figure 1 Grind the shaded area of the cam removal tool for use on Chrysler 2.0L engines.

exercise caution when assembling these engines, as well as when buying cores.

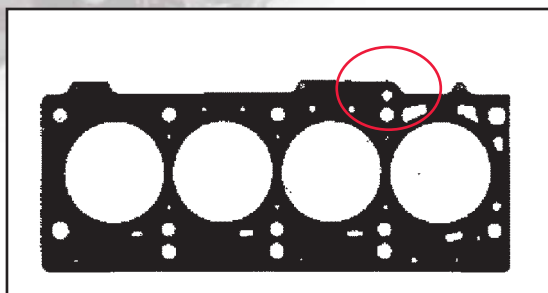
Piston Skirt Clearance Caution On 1998-2002 2.7L VIN R Engines

The AERA Technical Committee offers the following information regarding piston skirt clearance on 1998-2002 Chrysler 2.7L VIN R engines. Using the correct skirt clearance will help eliminate piston damage in the future.

Figure 2 The 2002 Chrysler 2.4L head gasket (above) was revised for a larger oil drain hole. The circle indicates the revision.



The original hole (below) was much smaller and is the reason the new gasket will not fit properly on the earlier 2001 and down cylinder heads and blocks.



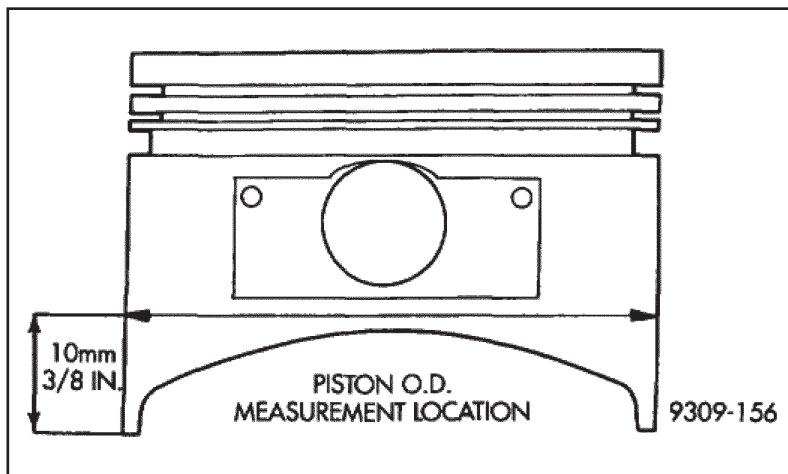


Figure 3 Measure the skirt clearance above the bottom of the piston skirt on Chrysler 2.7L engines.

These pistons have a solid film lubricant coating applied during manufacturing. Chrysler supplies a skirt clearance of .0001" interference to .0016" clearance.

Those values should be followed when assembling these engines with Chrysler pistons. Chrysler OEM pistons have an elliptical skirt and are coated with the solid film lubricant. When using those pistons, measure the skirt clearance at .390" (10 mm) above the bottom of the piston skirt as shown in **Figure 3**, above. The combination of the elliptical design features and coating may result in negative piston-to-bore skirt clearance.

If you're using aftermarket pistons it is critical to use piston skirt clearance specifications supplied by the piston manufacturer. On this particular piston a measuring point window is provided. Other piston manufacturers may design that area of the piston differently and use different parameters to measure piston clear-

ance. Check the pistons being used for the manufacturer and then determine where to measure the piston skirt oil clearance.

Remember that pistons and cylinder bores should both be measured at normal room temperature, 70°F (21°C).

Timing Chain Installation Procedure On 1998-2002 Chrysler 2.7L DOHC Engines

When installing a timing chain on 1998-2002 Chrysler 2.7L DOHC engines, if proper technique is not followed, valves will bend at startup. AERA's Technical Committee says the following procedure should be followed.

1) Align crankshaft sprocket timing mark to the mark on oil pump housing. Lubricate timing chain and guides with engine oil before installation.

2) Place left side primary chain sprocket onto the chain so that the timing mark is located in-between the two plated links on chain.

3) Lower the primary chain

with left side sprocket through the left cylinder head opening. The camshaft sprockets can be allowed to float on the camshaft hub during installation.

4) Loosely position left side camshaft sprocket over camshaft hub.

5) Align plated link to the crankshaft sprocket timing mark.

6) Position primary chain onto water pump drive sprocket.

7) Align right camshaft sprocket timing mark to plated link on timing chain and loosely position over camshaft hub.

8) Verify that all plated links are properly aligned to timing marks on all sprockets.

9) Install left lower chain guide and tensioner arm. Tighten attaching bolts to 250 in.lbs. (28 Nm). Inspect oil ring on chain guide access plug before installing. Replace O-ring as necessary.

10) Install chain guide access plug to left cylinder head. Tighten plug to 15 ft.lbs. (20 Nm).

11) Install chain tensioner into the right cylinder head.

12) Starting at the right cylinder bank, insert a 3/8" square drive extension with a breaker bar into intake camshaft drive hub. Rotate camshaft until the camshaft hub aligns to the camshaft sprocket and damper attaching holes. Install the sprocket attaching bolts and tighten to 250 in.lbs. (28 Nm).

13) Turn the left side camshaft by inserting a 3/8" square drive extension with a breaker bar into intake

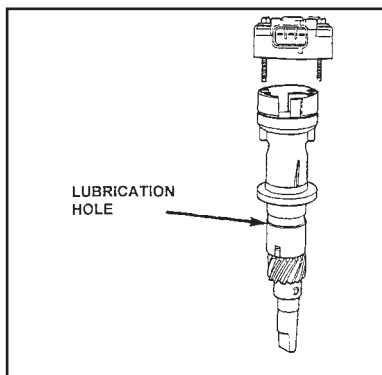


Figure 4 Remember to lubricate the shaft before installing camshaft sensor assembly on Chrysler/Jeep 4.0L engines.

camshaft drive hub and rotate camshaft until the sprocket attaching bolts can be installed. Tighten sprocket bolts to 250 in.lbs. (28 Nm).

14) Rotate engine slightly clockwise to remove timing chain slack, if necessary.

Cam Bearing Alternative For 1991-2001 Chrysler 3.3L & 3.8L VIN G, J, T, U, R & L Engines

The AERA Technical Committee offers the following information regarding a cam bearing alternative for 1991-2001 Chrysler 3.3L and 3.8L VIN G, J, T, U, R and L engines. This alternative cam bearing set may be used anytime they are being replaced in an engine.

AERA has published a technical bulletin (TB-1254) con-

cerning a lack of oil supply to either side rocker shaft for these engines. The root cause of that condition was either an out of place cam bearing or a restriction in the oil supply around the camshaft. To make a transfer through the lower portion of the block to the upper portion of the block engine oil was routed through a groove in the cam. On occasion that transfer of oil was impaired and an insufficient amount of oil reached the rocker shafts.

There are at least two engine parts suppliers who offer camshaft bearings for the intermediate locations with a groove machined around the outside of the bearing. This groove will help eliminate alignment concerns technicians may have while installing the bearings at those locations. This additional groove ensures uninterrupted oil supply to the rocker shaft assemblies around the backside of the bearing. This revised bearing design has been performing well in the field without subsequent rocker shaft concerns. Consult your engine parts supplier for availability of this revised bearing set.

Camshaft Sensor Caution For 2000 Chrysler 4.0L VIN S Engines

Addressing customer complaints of 2000 Chrysler (Jeep) 4.0L VIN S engines not running and no-start conditions, the AERA Technical Committee offers the following information regarding a camshaft sensor caution. This bulletin concerns instances caused by no impulse signal coming from the cam sensor.

In some instances the camshaft sensor has seized and requires replacement. When replacing the camshaft sensor pay particularly close attention that the cam sensor/oil pump drive gear on the camshaft is not damaged. If there are signs of sensor damage or camshaft gear damage, be sure to pull the oil pan and check for debris. Replacement of the cylinder block is not generally necessary when this condition occurs.

If the camshaft sensor assembly is being replaced, remember to lubricate the shaft before installation. To perform this pre-lube, turn the assembly upside down and squirt clean engine oil into the lubrication hole. It is located just below the mounting flange on the side of the housing (see **Figure 4**, top left). Also, rotate the shaft to ensure the upper bearing surfaces are lubricated properly. Failure to pre-lube the shaft and upper

Part Number	Part Description	Qty
05019089AA	Kit, CMP sensor shim (.010", .020", .031", .047")	1
53020878	Gasket Engine Cylinder Head Cover Right Side	1
56028133AD	Sensor, Camshaft	1

Chart 1 Chrysler 4.7L cam position sensor (CMP) shim identification.

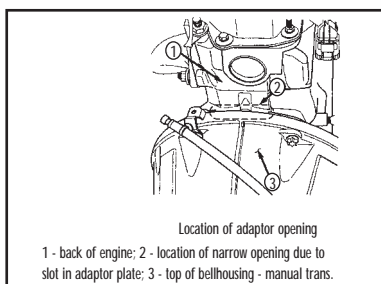


Figure 5 To repair rear main seal-leaks in Chrysler 4.0L engines apply liberal bead of RTV sealer to area.

bearing may result in a repeat no-start condition.

Rear Main Seal Leakage, Preventative Measure For 1997-2005 Chrysler 4.0L VIN S Engines

There have been occasional reports of rear main seal leakage on 1997-2005 Jeeps with the 4.0L engine and a standard shift transmission built prior to 09/02/04. Closer inspection of suspect vehicles may reveal the cause of the engine oil seepage past the rear main seal is due to the accumulation of dirt and debris around the outside of the rear main seal.

A spacer plate is used to mate the transmission bellhousing to the back of the engine. The spacer plate has a slot machined into it at the 12 o'clock position. A small opening may occur as a result of the spacer slot when the spacer is mated between the engine and transmission bellhousing. This narrow spacer opening at the top may allow small size debris to accumulate around the outside of the rear main crankshaft seal. Vehicles used in dusty off road situations have been more severely affected.

This accumulation may act

as an abrasive while rotating on the crankshaft, damaging the seal and surface.

To prevent this from happening, seal the area shown in area 2 of **Figure 5**, left, when reinstalling a rebuilt or remanufactured remanufactured engines. Chrysler has suggested this type of repair be conducted after the rear seal and/or crankshaft has been repaired by applying a liberal bead of RTV sealer to the area. Make sure to thoroughly clean the area before applying the sealer.

Low Engine Performance On 2000 Chrysler 4.7L VIN N Engines

The AERA Technical Committee offers the following information regarding low engine performance on 2000 Chrysler 4.7L Vin N engines. Customers may complain of a lower than expected engine performance. The loss or intermittent loss of the camshaft position sensor (CMP) signal could cause this.

The CMP signal may be lost if the CMP comes in contact with the tone wheel, because the internal electronic circuitry of the CMP may become damaged. When this happens, there is a chance that the malfunction indicator lamp (MIL) may become illuminated.

Most of these engines were inspected and repaired at the manufacturing facility, but some engines may need to be repaired. If the engine is in need of repair, there is a select fit shim that needs to be installed between the CMP and the cylinder head pad, around

the CMP sensor attaching bolt as shown in **Chart 1**, (page 12). The shims come in four different thicknesses depending on the amount of air gap that needs to be shimmed. The four sizes are .010", .020", .031" and .047".

The shim may also have been glued in place to either the cylinder head or the mounting tang on the camshaft position sensor. When making repairs, be careful not to overlook or lose the previously installed shim. This may cause the camshaft position sensor to contact the tone wheel when the CMP sensor is reinstalled or replaced. **EB**