CHRYSLER

Fix is a Snap for 2.0L, 2.4L Chrysler Engines with High-Pitched Noise

A strange noise may cause concern to owners of some Chrysler vehicles, particularly 2001-2004 vehicles equipped with a 2.0L, 2.4L DOHC or 2.4L Turbo engine.

The noise may occur when the vehicle is in park, and the engine is running between idle and 1,400 rpm at normal operating temperature. The sound is heard at the upper end of the engine (cylinder head) toward the right front side (passenger side), and is irregular, not periodic or harmonious. The frequency of the noise will increase with rpm. The sound is more of a high-pitched "snapping" noise than a low metallic knock.

If the customer describes the noise and the installer determines that the sound is coming from the described location, the repair procedure involves chamfering the bore radius on cam bearing caps L2 through L5 and R2 through R5.

Before beginning the repair, review safety procedures in ALLDATA Repair.

1. Remove the cylinder head cover.

2. Remove L2 cam bearing cap (see **Figure 1**).

Note: Do not remove the L1/R1 or L6 cam bearing caps, or loosen the fasteners. Only remove one cam bearing cap at a time.

3. Lightly chamfer the two bore radius edges with a small hand file, creating a 45° chamfer 1.0 to 1.5 mm in width along the edge of each bore radius (see **Figure 2**).

Caution: Be careful not to scratch the bore surface of the cam bearing cap(s). Chamfer both bore radii.

4. Clean the part to remove any aluminum filings prior to reinstalling.

5. Reinstall the L2 cam bearing cap by loosely assembling the fasteners. Prior to and during the torquing of each fastener, twist the cam bearing cap by hand in a clockwise direction, as viewed from the top of the engine. Torque M6 fasteners to 105 in.lbs. (12 Nm) while maintaining a clockwise twisting force on the cam bearing cap.

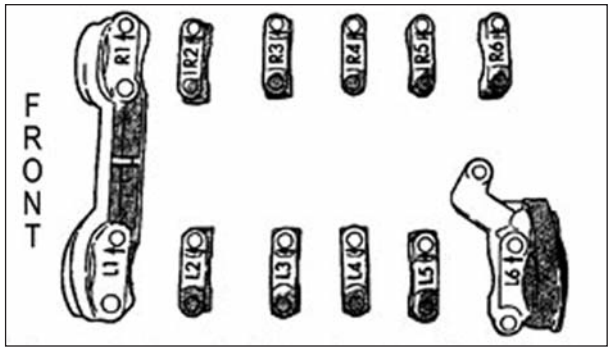

Figure 1 *Remove cylinder head valve cover on Chrysler 2.0L and 2.4L engines, then remove L2 cam bearing cap.*

6. Repeat steps 2 through 4 for cam bearing caps L3, L4, L5, R2, R3, R4, R5 and R6.

7. Reinstall the cylinder head cover.

8. Verify the repair.

Bulletin contributed by Eric Seifert, ALLDATA Automotive Technical Editor

MLS Head Gasket Installation Procedures for Chrysler 2.0L and 2.4L

The MLS gasket was released for production, as a running change, in the 1999 model year for all models except FJ. The new gasket provides superior sealing characteristics but will require extra care in their installation where a composite gasket was previously in place.

Caution: Aluminum engine components are susceptible to metal transfer and surface damage when old gasket material is removed from them. Use extreme care when cleaning gasket material from alu-

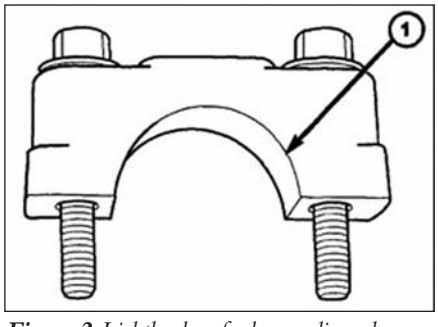

Figure 2 *Lightly chamfer bore radius edges on 2.0L, 2.4L engines with a hand file, creating a 45° chamfer along the edge of each bore radius.*

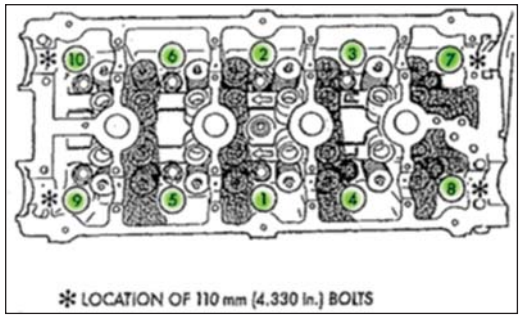

Figure 3 *Torque sequence for 2.0L DOHC with MLS gasket installation. The 4 short bolts are placed in the corners of the block (marked with an asterisk).*

minum components. The MLS gasket cannot properly seal if gouging of surfaces, metal transfer, or composite gasket material is left on the head or block surfaces.

Note: This information applies to models with a 2.0L SOHC/DOHC (naturally aspirated) or 2.4L engine.

To properly prepare head/block surfaces for MLS gasket installation, do the following:

1. Following service manual procedures, remove the head.

2. Remove as much of the loose composite gasket material with a plastic or wooden scraper.

Note: Prior to additional cleaning, inspect the cooling passages of the head. Replacement may be necessary if excessive pitting or erosion has taken place that will compromise the sealing surfaces around the cooling passages.

3. Cover coolant and oil passages to the best of your ability and apply solvent or a commercially available gasket cleaner to the head/block surfaces. Allow the solvent to soften the remaining composite gasket material.

4. Using a plastic or wooden scraper, scrape the composite gasket residue from the surfaces. If necessary, apply additional solvent or gasket remover to ease removal.

5. If additional cleaning is needed, use a drill motor and white 3M Roloc bristle disc (p/n 07528) to carefully remove the remaining gasket material from the head and block surfaces.

Note: If difficult-to-remove residue is left, the yellow roloc bristle disk 3m (p/n 07525) can be used. Use extreme care when power cleaning aluminum surfaces to prevent metal transfer.

6. Inspect the sealing surfaces for any remaining composite gasket residue. Carefully remove any remaining material.

7. The head and block must be checked for flatness. Follow appropriate service manual procedures/specifications where applicable.

8. Spray both sides of the MLS gasket with a coat of MOPAR spray gasket sealant (p/n 0431 8035).

9. Re-assemble the engine as outlined in the appropriate service manual. Pay particular attention to head bolt torque and torque procedures. All head bolts should be oiled prior to assembly.

Note: torque and torqueing procedure has changed when installing an MLS gasket on the 2.0L DOHC. Use the following procedures for the 2.0L DOHC only.

10. Make sure the cam sensor seal is replaced on all engine applications.

Note: A new cam sensor seal must be installed during the head gasket replacement procedure. Oil seepage from this seal can be misinterpreted as a head gasket leak.

11. Replace the engine oil and filter after performing these procedures.

2.0L DOHC Torque Procedure with MLS Gasket Installation

Note: The 4 short bolts are placed in the corners of the block (marked with an asterisk in **Figure 3,** which also explains torque sequences).

A. Torque all center bolts to 25 ft.lbs. (34 Nm); torque the 4 corner bolts to 20 ft.lbs. (27 Nm).

B. Torque all center bolts to 50 ft.lbs. (68 Nm); torque the 4 corner bolts to 35 ft.lbs. (47 Nm).

C. Re-torque all center bolts to 50 ft.lbs. (68 Nm); re-torque the 4 corner bolts to 35 ft.lbs. (47 Nm).

D. Tighten all bolts in the specified sequence (Fig 1) an additional 90° (1/4 turn).

Revised 2.4L Cylinder Head Re-torque Procedure

These procedures apply to vehicles equipped with a 2.4L engine built between February 1, 2004 and April 5, 2005.

1. Using a six inch wobble plus extension friction ball and shallow socket following the torque sequence shown in **Figure 3**), loosen one bolt at a time to 0 torque and then torque that same head bolt to 60 ft.lbs.

2. Repeat step 4 for every head bolt one bolt at a time in sequence.

3. Verify that each head bolt is at 60 ft.lbs. before performing next steps.

4. After all head bolts have been verified

to be torqued to 60 ft.lbs., follow the torque sequence and turn the head bolts an additional 90° (1/4 turn).

5. Following the appropriate procedures, install the cylinder head cover.

Outer Exhaust Manifold Studs Breaking on 1991-1999 Jeep 2.5L

Some outer exhaust manifold exhaust studs are breaking due to fatigue on 1991-1999 Jeep 2.5L engines. Inspect either manifold stud for breakage and if breakage is noted, perform the repair procedure outlined below.

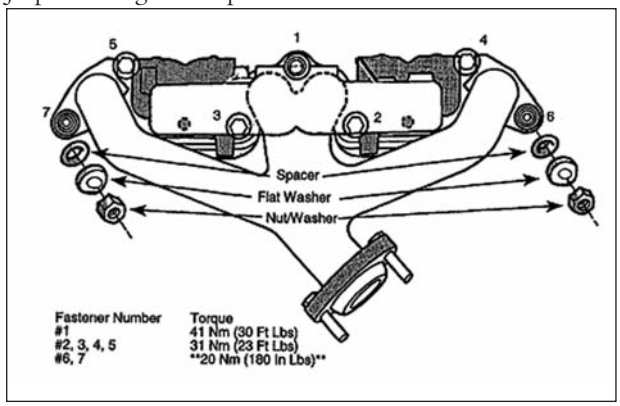

Figure 4 Replace both outer mounting studs, clamps and nuts on Jeep 2.5L engines with new parts and tighten the outer studs to a reduced torque of 180 in.lbs.

Models affected (with 2.5L engines):

1996 - 1999 (AN) Dakota
1991 - 1992 (MJ) Comanche
1997 - 1999 (TJ) Wrangler
1991 - 1999 (XJ) Cherokee
1991 - 1995 (YJ) Wrangler

NOTE:This information applies to Jeep vehicles equipped with a 2.5L engine.

This procedure involves replacing both outer mounting studs, clamps, and nuts with new parts and tightening the outer studs to a reduced torque of 180 in.lbs. (20 Nm).

1. Remove the intake/exhaust manifold per service manual procedures to gain access to the broken stud(s).

2. Remove the outer studs from the cylinder head. Use a stud removal tool if possible or drill the broken stud from the head.

3. Install two new outer studs (p/n 06036193AA) into the cylinder block. Torque the studs to 126 in.lbs. (14 Nm).

4. Clean any carbon deposits or debris from the exhaust manifold.

5. Reinstall the exhaust manifold. Use only the new studs listed above to attach the outer ends.

6. Torque the bolts in the order and specification as listed in **Figure 4**.

Cylinder Head Oil Gallery Cup Plug Service for Chrysler 2.7L Engine

This bulletin provides service information for 1998-2002 Chrysler 2.7L engine cylinder head oil gallery cup plugs.

Each cylinder head on a 2.7L engine has six external oil gallery cup plugs. It is not necessary to remove the original cup plug to install a new cup plug.The cup plug bore is deep enough to allow for two plugs.

You must determine which cup plug is leaking before performing this procedure. If necessary, perform an engine oil leak dye test.

If it becomes necessary to service an oil gallery cup plug, perform the repair procedure.

Inspect the cup plug bore in question for the presence of two cup plugs. If the cup plug flange is just inside (1-2 mm) the chamfered edge of the bore, two cup plugs are already in place and the cylinder head cannot be repaired.

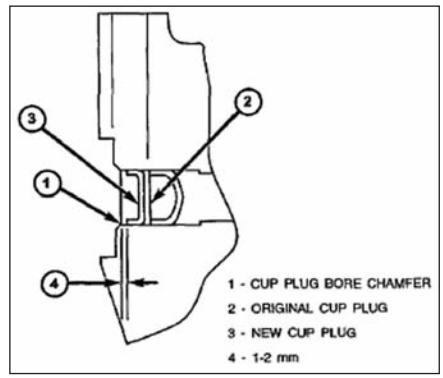

Figure 5 Drive the new cup plug on 2.7L engine into the bore until the flanged edge of the plug is just inside (1-2 mm) the chamfered edge of the bore.

Repair Procedure:

1. Remove component(s) necessary to gain access to the oil gallery cup plug requiring service.

Note: Some of the oil gallery cup plugs are serviceable with the head installed on the engine and the engine in the vehicle, while others require removing the affected cylinder head from the engine. In either case, only replace the

cup plug requiring service.

2. Clean the cup plug bore with brake cleaner and compressed air. It is not necessary to remove the existing cup plug.

3. Lightly coat the new cup plug with sealer (p/n 04318083).

4. Using an appropriate installation tool drive the new cup plug into the bore until the flanged edge of the plug is just inside (1-2 mm) the chamfered edge of the bore (**Figure 5**).

5. Allow the sealant to cure for at least 20 minutes.

6. Assemble any components removed in Step 1 as necessary.

Spark Knock, Oil Consumption on 3.9L, 5.2L and 5.9L Engines Caused by Manifold Leak

An engine intake manifold plenum pan gasket oil leak may occur on some Dodge 3.9L, 5.2L, or 5.9L gasoline V6 and V8 engines.

Two symptoms of this oil leak condition may be present. Customers may complain that the vehicle experiences an engine spark knock noise during acceleration and/or a high amount of engine oil consumption. The oil leak is inside the engine so no external oil leakage will be present.

The intake manifold plenum pan gasket has been revised to address this condition (see **Figure 6**).

If the intake manifold plenum pan gasket is leaking, a vacuum source will be created in the engine. Any engine blow-by and outside filtered air will be drawn past the leaking pan gasket and into the intake manifold. In most cases, an engine at idle will create the highest vacuum and lowest amount of engine blow-by.

1. Remove the positive crankcase ventilation (PCV) valve at the cylinder head valve cover. Clean the PCV valve grommet in the valve cover of any oil residue.

2. Remove the breather hose from the air cleaner assembly and seal off the breather hose going to the cylinder head valve cover.

3. Attach a gauge that reads both pressure and vacuum (+/- 10 in. Hg.).

4. Start the engine and observe gauge readings. If the intake manifold pan gasket is leaking, then a vacuum reading greater than -2 in. Hg. will be observed. If no internal leaks are present, then the gauge will read near zero to slightly positive pressure. If a the pan gasket is leaking then perform the repair procedure.

Figure 6 *Oil leaks on some Dodge V6, V8 engines may not leak externally. The intake manifold plenum pan gasket has been revised to address this condition.*

Note: Clean all oil from the interior surfaces of the plenum pan and plenum chamber. The proper torque and tightening sequence must be followed when tightening both the plenum pan screws and the intake manifold screws.

Dirt and Debris Accumulating at Rear Main Seal on 1997-2005 Jeep 4.0L

This bulletin may be helpful for engine builder customers/installers who complain of a small oil leak around the rear main seal. Your customer/installer may complain of engine oil seepage from the rear main bearing seal, but upon closer inspection may discover the cause of the seepage to be the accumulation of dirt and debris around the outside of the rear main seal. This condition may occur more frequently if the vehicle is used in off-road conditions.

A spacer plate is used to mate the transmission bellhousing to the back of the engine. The spacer plate has a slot

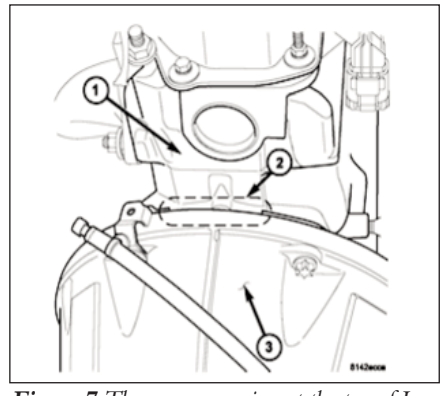

Figure 7 *The spacer opening at the top of Jeep 4.0L bellhousings may allow very small debris to enter the bellhousing and accumulate around the outside of the rear main seal.*

machined into it at the 12 o'clock position. A small opening may occur at the spacer slot when the spacer is mounted. The narrow spacer opening at the top of the transmission bellhousing may allow very small debris to enter the bellhousing and accumulate around the outside of the rear main engine seal. If debris accumulation becomes significant, damage to the rear main seal may result.

Repair Procedure:

1. Locate the narrow opening created by the spacer plate (see **Figure 7**). The spacer opening can be seen when looking toward the rear of the engine and top of the transmission.

2. Thoroughly clean the immediate area around the spacer opening with throttle body cleaner (p/n 04897156AA). Allow cleaner to dry (see **Figure 8**).

3. Apply a sufficient amount of RTV over the spacer opening. Verify that the spacer opening is completely sealed off by the RTV.

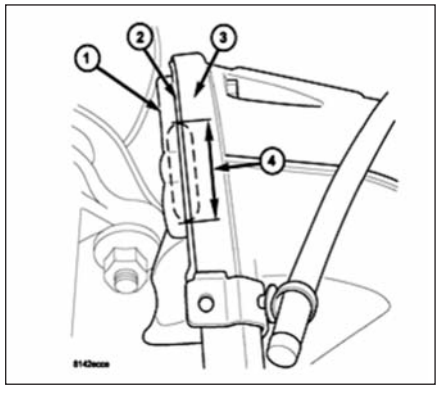

Figure 8 *Thoroughly clean the immediate area around 4.0L spacer opening with throttle body cleaner and allow to dry.*

Engine Whine at Idle Reported on Some Chrysler 6.1L Hemi Engines

This bulletin applies to 2005-2006 Chrysler models equipped with a 6.1L engine with an engine serial number of TNXE6026620001 or less. The engine serial number can be found on a label located on the upper side of the left or right engine front cover.

Some customers may notice a whine sound at idle after the vehicle has been driven (engine hot) in warm ambient temperatures over 50° F (10° C). This sound can be caused by the piston oil cooler jets fluttering during hot oil/idle conditions.

Installers must carefully diagnose this whine sound since it can be confused with other sounds that come from the engine compartment.

1. Run the engine until the oil is hot, over 230° F (110° C). Use the digital display located in the instrument cluster for oil temperature.

2. Allow the engine to stabilize at idle and read the oil pressure using the digital display located in the instrument cluster.

3. Shut the engine off and wait 10 seconds.

4. Restart the engine with NO throttle application, allow the engine to settle at idle RPM.

5. Note the oil pressure as it may read 1 to 2 psi less than in step 2. If this is the case, the whine may be heard. If the procedure is followed closely, the whine can be turned on and off with a slight change to oil pressure. The piston cooling jets (see **Figure 9**) are operating properly but high oil temperature results in slightly lower operating oil pressure at idle and can cause the valve inside the oil cooler jets to flutter.

Figure 9 *A whine sound may be present at idle after vehicles with 6.1L Hemi engines have been driven in warm ambient temperatures over 50° F (10° C). This sound can be caused by the piston oil cooler jets fluttering during hot oil/idle conditions.*

If a customer complains about this sound, first reassure him or her that no detrimental effect on engine durability is caused by the jets fluttering. If the customer wants this noise eliminated, Chrysler recommends the use of 15W50 Mobil One engine oil in warmer (summer) months and revert back to 0W40 Mobile One engine oil in cooler months. If the oil viscosity is changed, a label indicating this should be installed. **TSG**