

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) Why does an internal engine leakage affect oil pressure?

2) How does the oil flow from the oil pump, through the filter and main engine bearings, to the valve train?

3) What causes a wedge-shaped film to form in the oil?

4) What property of oil does the SAE ratings reflect?

5) What are the steps in performing an oil change?

6) What is hydrodynamic lubrication?

Answer Key

Testname: LVDE1_SHORT4

- 1) As the engine parts wear and the oil clearance becomes greater, more oil will leak out. In other words, worn main or rod bearings are often the cause of lower than normal oil pressure.

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- 2) Oil from the oil pump first flows through the oil filter, and then goes through a drilled hole that intersects with a drilled main oil gallery, or longitudinal header. This is a long hole drilled from the front of the block to the back.

- Inline engines use one oil gallery.
- V-type engines may use two or three galleries.

Passages drilled through the block bulkheads allow the oil to go from the main oil gallery to the main and cam bearings. In some engines, oil goes to the cam bearings first, and then to the main bearings. The oil gallery may intersect or have drilled passages to the valve lifter bores to lubricate the lifters. When hydraulic lifters are used, the oil pressure in the gallery keeps them refilled.

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- 3) Hydrodynamic lubrication takes over as the shaft rotates in the bearing to produce a wedge-shaped hydrodynamic oil film that curves around the bearing. The pressure between the bearings and the crankshaft can exceed 1,000 PSI (6,900 kPa) due to hydrodynamic lubrication created by the wedging action between the bearing and the crankshaft journal.

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- 4) Engine oils are sold with a Society of Automotive Engineers (SAE) grade number, which indicates the viscosity range into which the oil fits.

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- 5) STEP 1 For best results, the engine should be at normal operating temperature before changing the engine oil.
STEP 2 Check the oil level on the dipstick before hoisting the vehicle. Document the work order and notify the owner if the oil level is low before changing the oil.
STEP 3 Safely hoist the vehicle.
STEP 4 Position a drain pan under the drain plug, and then remove the plug with care to avoid contact with hot oil.
STEP 5 Allow the oil to drain freely so that the contaminants come out with the oil.
STEP 6 While the engine oil is draining, the oil plug gasket should be examined. If it appears to be damaged, it should be replaced.
STEP 7 When the oil stops running and starts to drip, reinstall and tighten the drain plug to factory specifications. Replace the oil filter.
STEP 8 Refill the engine with the proper type, grade, and quantity of oil. Restart the engine and allow the engine to idle until it develops oil pressure. Check the engine for leaks.

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- 6) The wedging action of the oil between the shaft and the bearing is called hydrodynamic lubrication, and depends on the thickness of the oil.

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