FIGURE 9–1 Oil molecules cling to metal surfaces but easily slide against each other.

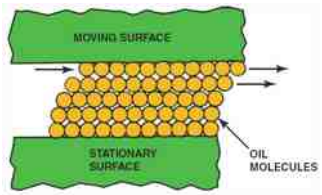


FIGURE 9–2 Wedge-shaped oil film developed below a moving block.

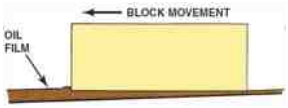


FIGURE 9–3 Wedge-shaped oil film curved around a bearing journal.

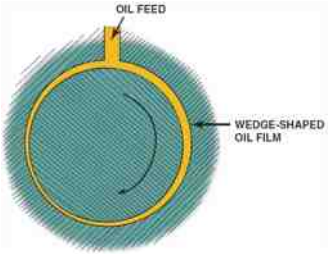


FIGURE 9–4 An oil pump driven by the camshaft.

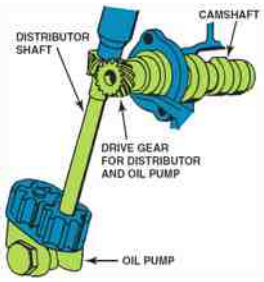
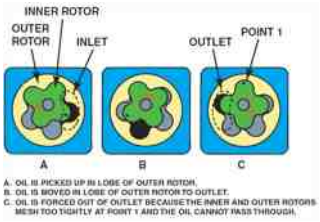


FIGURE 9–5 The operation of a rotor-type oil pump.



A. OIL IS PICKED UP IN LOBE OF OUTER ROTOR.
B. OIL IS MOVED IN LOBE OF OUTER ROTOR TO OUTLET.
C. OIL IS FORCED OUT OF OUTLET BECAUSE THE INNER AND OUTER ROTORS MESH TOO TIGHTLY AT POINT 1 AND THE OIL CANNOT PASS THROUGH.

FIGURE 9–6 A typical oil pump mounted in the front cover of the engine that is driven by the crankshaft.

FIGURE 9–7 Gerotor-type oil pump driven by the crankshaft.

FIGURE 9–8 In a gear-type oil pump, the oil flows through the pump around the outside of each gear. This is an example of a positive displacement pump, where everything entering the pump must leave the pump.

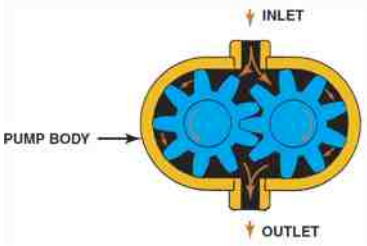


FIGURE 9–9 Oil pressure relief valves are spring loaded. The stronger the spring tension, the higher the oil pressure.

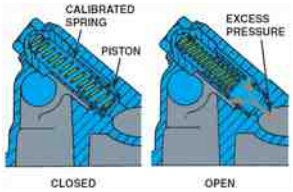


FIGURE 9–10 A typical engine design that uses both pressure and splash lubrication. Oil travels under pressure through the galleries (passages) to reach the top of the engine. Other parts are lubricated as the oil flows back down into the oil pan or is splashed onto parts.

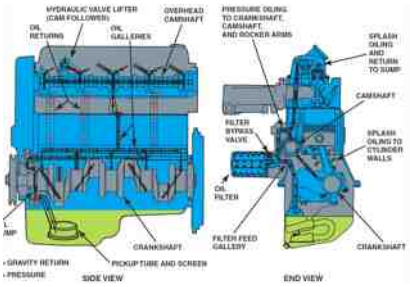


FIGURE 9–11 (a) A visual inspection indicated that this pump cover was worn. (b) An embedded particle of something was found on one of the gears, making this pump worthless except for scrap metal.

FIGURE 9–12 (a) The oil pump is the only part in an engine that gets unfiltered engine oil. The oil is drawn up from the bottom of the oil pan and is pressurized before flowing to the oil filter. (b) If debris gets into an oil pump, the drive or distributor shaft can twist and/or break. When this occurs, the engine will lose all oil pressure.

FIGURE 9–13 An intermediate shaft drives the oil pump on this overhead camshaft engine. Note the main gallery and other drilled passages in the block and cylinder head.

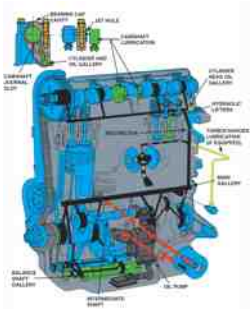


FIGURE 9–14 Oil is sent to the rocker arms on this Chevrolet V-8 engine through the hollow pushrods. The oil returns to the oil pan through the oil drainback holes in the cylinder head.

FIGURE 9–15 A typical oil pan with a built-in windage tray used to keep oil from being churned up by the rotating crankshaft.

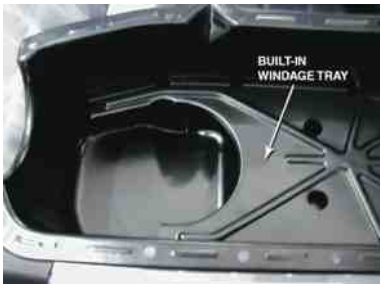


FIGURE 9–16 A straightedge and a feeler gauge are being used to check that the oil pan has been correctly installed on the 5.7-liter Chevrolet V-8 engine. The oil pan is part of the engine itself and must be properly installed to ensure that other parts attached to the engine are not being placed in a bind.

FIGURE 9–17 A typical engine oil cooler. Engine coolant flows through the cooler adjuster that fits between the engine block and the oil filter.

FIGURE 9–18 The oil pressure switch is connected to a warning lamp that alerts the driver of low oil pressure.

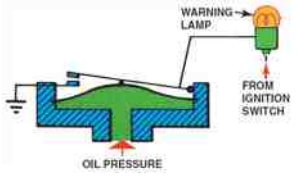


FIGURE 9–19 A typical oil pressure sending unit on a Ford V-8.