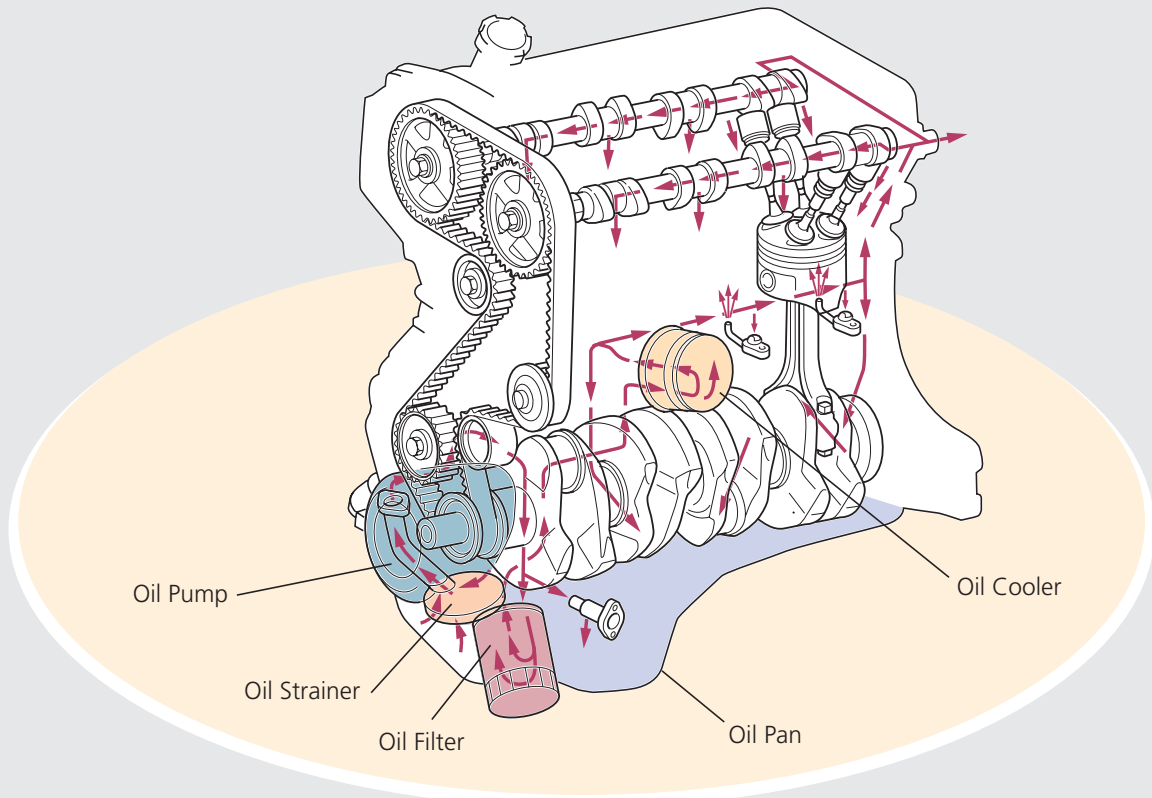


Oil Pump System

Operation Diagram

The oil pump is the vital component that provides the circulation of oil which cools, cleans and lubricates internal engine components. In some engines, the oil pump also provides hydraulic power to valve lifters and valve timing components. Driven by crankshaft power, the pump creates suction to draw oil from the oil pan through the strainer. The suction by the pump creates the pressure where oil is driven through the oil filter, oil cooler, internal moving parts, provide hydraulic power, then collected back into the oil pan.



Drive Systems

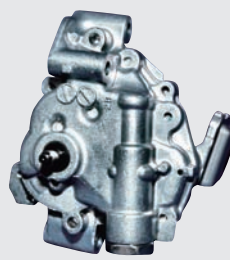
Various systems are utilized to transfer power from the crankshaft to the oil pump. The type of drive system influences the configuration and location of the oil pump.



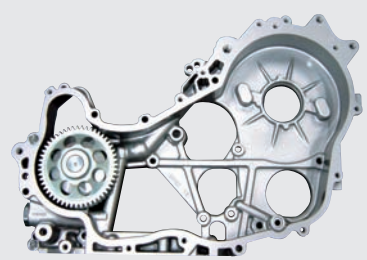
Direct Crankshaft Drive



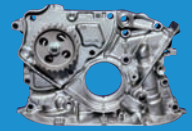
Integral Unit with W/P
(Front Module)



Chain Drive



Gear Drive
(Integral Unit with Gear Case)

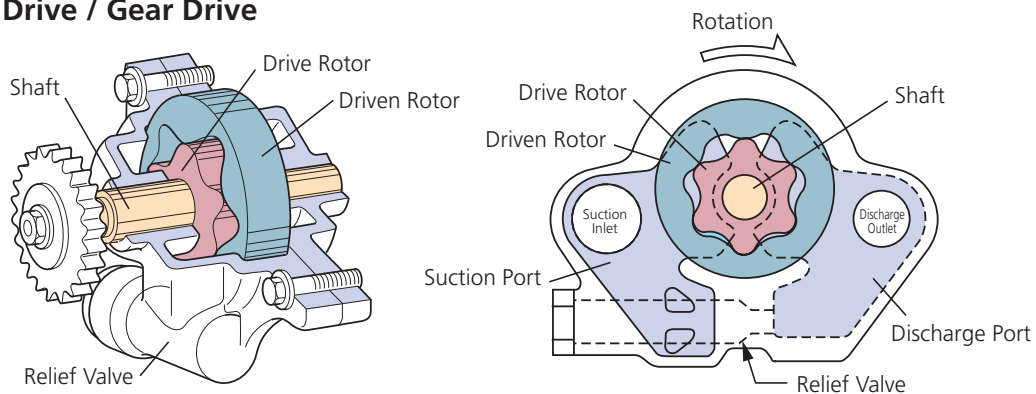


Structure and Components

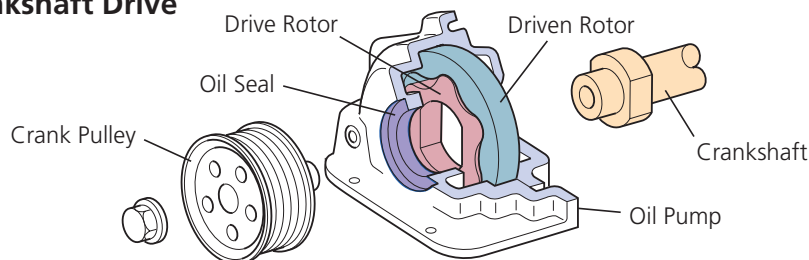
The basic structure of the oil pump consists of a sprocket (drive rotor) which revolves within a housing (driven rotor). The complex geometry of the rotor and the housing creates suction. Depending on the type of oil pump drive system, the rotor can receive power through a shaft that is connected to a pulley, a gear, a sprocket or directly into the crankshaft. When the rotor is revolved, oil is drawn in from the suction port and expelled into the discharge port. This process creates oil pressure to supply oil to the moving components of the engine. A relief valve is strategically configured in between the ports to prevent excessive pressure build-up and maintain optimal operating oil pressure.

Oil Pump Configuration

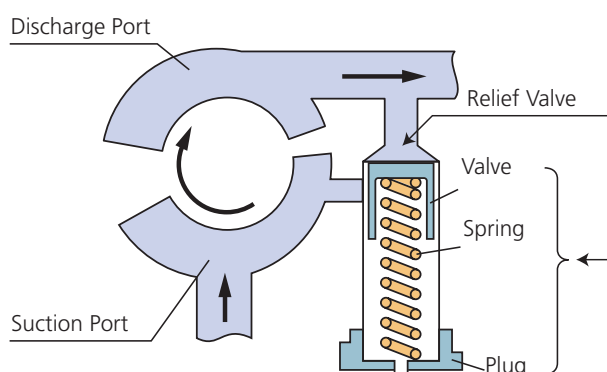
Chain Drive / Gear Drive



Direct Crankshaft Drive



Relief Valve Configuration



The relief valve is configured to prevent excessive oil pressure. The excess pressure along the discharge port compresses the relief valve spring to open the valve, relieving pressure by re-circulating the oil back into the suction port.