

Orange	Constant high pressure feedback (55 psi)
Purple	Low pressure (25 psi) control
Blue	Oil return low pressure

DESCRIPTION AND OPERATION > ENGINE - OVERVIEW > LUBRICATION SYSTEM

Variable Displacement Oil Pump

The variable displacement oil pump is designed to minimize energy loss. The active control matches the oil flow and pressure to the engine's need, eliminating excess oil flow, and reducing the load on the engine crankshaft to improve fuel economy.

The variable displacement oil pump works in two modes:

High pressure - in this mode the engine oil pressure is regulated by applying engine oil pressure (force) against the pump slide. The pump performs in this mode from idle to maximum engine speed much like a conventional ge-rotor style oil pump. The main improvement in this mode is that the pump only produces enough oil flow to meet the engine oil gallery pressure requirement as opposed to a ge-rotor pump that displaces a fixed volume and recirculates any surplus volume back to the pump inlet. The variable displacement pump in high mode is therefore more efficient because it produces only the flow necessary to achieve the engine oil pressure target and does not waste energy producing and recirculating excess volume.

Low pressure - in this mode a solenoid located in the front cover is energized. This solenoid allows oil pressure to be applied to a secondary pump port. This secondary force, further compresses the pump spring thereby allowing the pump to regulate to a secondary lower pressure setting. The pump becomes more efficient because it produces less flow and works against an even lower resistance.

Variable Displacement Oil Pump



Item	Description
1	Primary Port (always pressurized)
2	Pivot pin (slide pivots around pin in order to adjust the displacement of the rotating group)
3	Slide