TECHNI/TIPS

A publication of the Lubrication Engineers Technical Department

LEADERS IN LUBRICANTS NUMBER 113

OIL PRESSURE CHANGES-TAKE NOTE

Users of diesel engine oils often note a change in oil pressure when they change from a monograde oil to a multigrade. Typically, oil pressure is lower with a multigrade, and the uninitiated user can interpret the pressure drop as indicating a problem with the engine.

However, low oil pressure is not necessarily bad. In fact, it can be beneficial to a diesel engine operatiing within normal limits. By the same token, high oil pressure is not necessarily good. It can be caused by blocked oil galleries or a too viscous lubricant. The following guidelines, will help you decide whether the oil pressure readings you are getting are reason for concern.

Oil pressure is caused by the oil's resistance to flow. Therefore, wide oil galleries and low oil viscosity permit oil to flow freely. The results would be low oil pressure and more reliable lubrication. Conversely, narrow oil galleries (either by design or blockage) and high oil viscosity causes lower oil flow. While oil pressure would be high, lubrication would not be as efficient. A "good" oil, therefore, has viscosity characteristics sufficient to provide good hydrodynamic lubrication and also flows freely around the engine to maintain a continuous supply of lubricant.

Under ideal conditions, oil pressure should be stable, and any large increase or decrease should be investigated. The tables outline possible mechanical causes of low and high oil pressure, and the corrective action that should be taken.

Cold start is one operating condition under which oil pressure should be checked. At start up, all the oil is in the sump, and oil pressure is zero. The pump cannot begin to deliver oil or generate pressure until it sucks cold oil through the filter screen and pick up tube. Hence, cold start lubrication is improved by using a short, wide pick up tube and an oil with good cold flow properties, such as a multigrade.

Cold oil generally has high flow resistance; therefore, oil pressure on start up is high. As the oil circulates and warms up, it flows more freely and oil pressure drops to a stable level. Only at this point is the engine being lubricated properly. Until oil pressure stabilizes, wear rates are high because of insufficient oil delivery to the mating surfaces. Therefore, a "good" oil is one that reaches a stable oil pressure quickly.

Thus, a user should be equally concerned about high pressure as low pressure. Higher pressure means more work must be done to pump the oil around the engine. This loss of efficiency should be minimized. In general, high oil pressure does not equal good oil flow; in many cases, it indicates just the opposite. Lower oil pressure, on the other hand, means that the oil is flowing rapidly around the engine. In most cases, this condition is desirable to minimize wear. (see Trouble-Shooting Chart)

LOW OIL PRESSURE – CAUSE & CORRECTIVE ACTION

POSSIBLE CAUSE	CONSEQUENCES	CORRECTIVE ACTION
Low oil level	Possible catastrophic engine failure	Top up oil level and look for possible oil leaks

POSSIBLE CAUSE	CONSEQUENCES	CORRECTIVE ACTION
Oil not flowing into pump at start-up	Possible catastrophic engine failure	Shut down engine; change to oil with better low temperature properties; improve cold start procedures
Lugging; pump runs too slowly to deliver sufficient oil	Reduced engine life	Downshift to increase engine speed; check pump
Oil too hot; viscosity too low	Oil breakdown, engine problems, Wear, depsoits	Check temperature guage and engine temperature controls; check Oil viscosity for correct grade.
Worn oil pump	Engine problems	Replace pump
Worn bearings allow oil to flow freely through increased clearances	Engine problems	Replace bearings
Oil viscosity reduced by dilution (fuel or coolant)	Increased oil consumption, engine wear	Change oil; if problem persists, check for fuel system or head sket leakage
Oil Change	None	None - soot loading or oxidation increase viscosity of oil; new oil flows better

HIGH OIL PRESSURE – CAUSES & CORRECTIVE ACTION

Pressure remains high after start; oil flows adequately into pump does not flow through oil galleries	Possible catastrophic failure	Shut down engine; change to oil cold with better low-temperature
Oil thickened by soot	Potential engine failure	Change oil and filter; check injectors; avoid excessive idling
Oil thickened by oxidation	Potential engine failure	Change oil and filter
Oil viscosity too high; poor oil flow	Potential engine failure	Consult owner's manual or oil supplier for correct viscosity grade; change oil
Filter blocked; bypass valve allows unfiltered oil to circulate	Reduced engine life	Change oil and filter; investigate cause of blockage
Deposits in oil galleries increase back pressure	Reduced engine life	Change oil and filter; use higher quality oil
Oil too cold	Potential engine failure	Check engine thermostat system; check to ensure correct oil viscosity

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