



ALL MODELS (STAND ALONE AND INTEGRATED WITH OIL FILTER ASSEMBLY)



ALL CAR/ENGINE MODELS APPLYING OIL HEAT EXCHANGERS FOR ENGINE OIL AND GEARBOX OIL COOLING



PROBLEM PREMATURE OIL COOLER FAILURE, INTERNAL BURST > LEAKAGES

OIL PRESSURE RELIEF VALVE FAILURE > LEADS TO EXCESSIVE LUBRICANT PRESSURE AND OIL COOLER DAMAGE

BACKGROUND

The automotive oil pump is commonly driven by the engine, and it pressurizes and circulates the lubricant in the system. As the pump speed increases along with the engine revs, there is typically a surplus of the lubricant flow and pressure produced. To control and level these, pumps are equipped with a relief valve located at the outlet. The oil pressure relief valve makes sure that the delivered lubricant pressure is consistent regardless of the engine speed. It opens when a certain oil pressure is reached and by this, lets part of the flow return to the engine crankcase, thus protecting the system against overpressure.

Malfunctions of the valve is one of the major reasons for oil pressure issues within the system. Its moving elements need very precise clearance or they can get stuck, thus causing failure in the flow control.



Lack of proper pressure - leads to dangerous oil starvation and possible seizures within the engine's inner parts or equipment. **Excessive lubricant pressure** - is very harmful, as it exposes the lubrication system channels, seals and components to abnormal working conditions, thus leading to premature, severe failures. Especially, the oil cooler/filter assembly installed close to the pump outlet can suffer from damage provoked by overpressure. Ultimately, the excessive lubricant pressure will lead to serious leaks of the system. Whether an internal burst of the oil cooler leads to the lubricant penetrating to the coolant circuit, or severe oil leaks from blown system seals, all of these will end up with lubricant loss and catastrophic failure of the engine and its equipment.

RECOMMENDED SOLUTION

The pressure relief valve may wear out over time but typically its failure is premature and consequential to other problems. To avoid the valve getting stuck, thus leading to the lubrication system's critical failure, some prevention and regular service are recommended:



- Replace oil and oil filter regularly and according to the vehicle's maintenance schedule.
- Ensure that the lubrication system is clean. Metal particles, dirt, carbon or oil sludge build up must be eliminated, as it can reduce the lubricant flow and cause the pressure relief valve to get stuck. Be sure to inspect spots potentially exposed to a concentration of contaminants: oil pan, oil pump/screen and oil filter assembly. Make sure no contaminants are present. Flush the engine if necessary.
- With an oil cooler failure or/and replacement, make sure to measure the pressure of the lubricant in the system. Compare the readings with the vehicle documentation to check if within tolerances. Control the condition of the pressure relief valve, clean and replace it whenever a failure is suspected. The previous oil cooler damage may have its root cause in the valve failure.



A moving piston is the common design of the pressure relief valve. This is sensitive to impurities.



Lubricant mixed with coolant, seen on the oil cooler outlets. One of the most common outcomes of lubricant overpressure and internal bursting of the oil cooler.

