

On the Line

Dealing with Oil Pressure It's a Matter of Regulation

The vehicle owner had his oil and filter changed, and days later, oil deposits in his driveway revealed a leaking oil filter as the culprit. The filter was replaced, but the leaking symptoms recurred within days, and this time the filter gasket was protruding from its mounted position. Installing two defective filters in a row on the same vehicle is highly unlikely, and installing a competitor's brand is not the solution.

WHEN THE PRESSURE IS TOO HIGH

When evaluating the described symptoms and the evidence reveals a dislodged gasket, deformed or split canister, there is a reason for this occurrence, and it is not due to a defective oil filter. The condition is due to over-pressurization due to a defective or sticking pressure regulating valve. Most pressure regulating valves are mounted internally in the oil pump. The oil pressure is controlled by a plunger and a calibrated spring. When the oil pressure reaches a determined pressure, the plunger will move from its seat against the spring tension, diverting some of the oil back into the oil pan or the suction side of the oil pump to maintain the desired oil pressure in relation to engine RPM. Pressurization problems occur when the plunger sticks in the bore in which it travels. Stuck closed, an over-pressurization condition will occur, often blowing gaskets or deforming the oil filter canister. Stuck open, a loss of oil pressure will occur, promoting engine damage due to lack of lubrication. Be aware, the plunger can stick intermittently. This explains why some are convinced that replacing the oil filter was the solution. The oil filter has no control over the engine oil pressure. The oil pressure is controlled by bearing tolerances and the oil pump pressure regulating valve.

Conditions that may promote a sticking pressure regulating valve include:

- 1) Wear or imperfections in the valve bore or plunger.
- 2) Engine sludge due to poor maintenance.
- 3) Any debris that can restrict plunger travel, such as metal fragments from machining or bearing wear.
- 4) Removing gaskets with an abrasive disc introduces fine grit that the oil filter may not catch.
- 5) A damaged or improperly sealed air filter.
- 6) Vehicles driven for extended mileage intervals

without an extended life oil filter, allowing filter bypass and contaminated oil to be pumped throughout the engine. Oil filter flow rates for the newer engines result in a higher pressure differential across the filter media, requiring a higher bypass valve setting. Filters not manufactured to these specs will result in unfiltered oil flowing through the engine.

- 7) Substandard filters with disintegrating drain back valves that plug the lubricating system with silicone appearing residue.

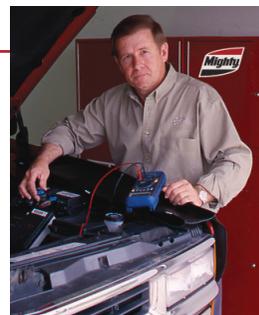
KIA, HYUNDAI ENGINE RECALL

Kia and Hyundai are recalling nearly 1.5M cars and SUVs in the US, Canada and South Korea due to potential engine failures that could result in an engine seizing and resulting in a crash, according to the National Highway Traffic Safety Administration. Vehicles affected: 1) Kia applications involving certain 2011-2014 Optima, 2012-2014 Sorento and 2011-2013 Sportage vehicles. 2) Hyundai applications involving certain 2013-2014 Santa Fe and Santa Fe Sport vehicles.

The engine failure is due to machining errors during the manufacturing process, whereby metal fragments were left in the engine, promoting bearing failure. Engines affected are the 2.0L and 2.4L gasoline engines.

THE REST OF THE STORY

The industry has been plagued with oil pressure related symptoms on the Kia and Hyundai vehicles. Kia has produced a bulletin that implied that only OE filters were compatible with their engines, and any engine failures may not be covered where an aftermarket filter had been installed. This prompted much response from the filter manufacturers/suppliers, as it was not in compliance with the Magnuson Moss Warranty Act. While there was no mention from the vehicle manufacturers or NHTSA in the engine recall notice concerning under/over pressurization of the lubricating system, the same metal fragments/debris can restrict movement of the pressure regulating valve, which controls the oil pressure.



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WITH A **FOURTH** FILTER ATTEMPT, OIL PRESSURE AND BLOOD PRESSURE ARE ABOUT TO BECOME THE ISSUE.