AMSOIL

Technical Service Bulletin

Date: 7/13/2006

Product Description: AMSOIL Oil Filters

Subject: Over Pressurization of AMSOIL Oil Filters

OBJECTIVE:

To inform AMSOIL Dealers and customers of the possible causes and effects of oil filter over pressurization. Applications included are motorcycle, light truck, ATV, snowmobiles, small engine, and marine applications.

ISSUES:

AMSOIL occasionally receives reports from Dealers and customers pertaining to leaking oil filter gaskets and deformed filters. These defects are mainly due to over pressurization of the lubrication system and are not related to filter defects.

TECHNICAL DISCUSSION:

Lubrication System

A basic understanding how an engine's lubrication system functions is essential in understanding the reasons how and why an oil filter could fail due to over pressurization

Figure 1 is a simplified diagram of an engine's lubrication system showing the pump, regulating valve, filter and bearings. The oil pump supplies sufficient flow and pressure to lubricate the bearings, moving parts of the engine, and must produce adequate pressure to properly separate the bearings from the wear surface to prevent excessive wear. The purpose of the regulating valve is to provide sufficient internal pressure, which for most passenger cars and light trucks are between 40 PSI and 60 PSI. Under normal operating conditions, motorcycles and other small engines normally produce oil pressures ranging from 7 to 35 psi . (2)(3)

The upper limit of the oil pressure is controlled by a

regulating valve and is usually an integral part of the pump. The regulating valve is made up of a ball or plunger that regulates pressure with the aid of a spring. The spring is calibrated so that the plunger will lift off its seat when the oil pressure reaches the targeted value. Once the valve is open, the pressure remains fairly constant with only small changes occurring as the engine speed varies. The filter and all other components in the lube system are subjected to the pressure established by the regulating valve. If the pressure is excessive, filter damage may occur. (2)(3)

NORMAL PRESSURE
FIG. 1
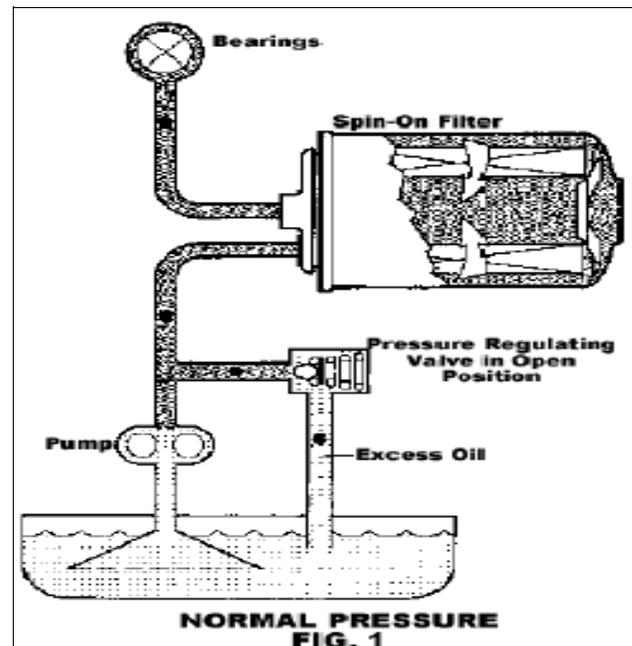
Causes of Failure

Excessive pressure can be caused for a number of reasons with the primary being the pressure regulating valve being stuck in the closed position or is sluggish and slow to respond. (2)(3)

Submitted By: RNH   **Reviewed By: DY**   **Approval By: Alan Amatuzio**   **Date: July 12, 2006**

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Figure 2 shows the system operating with the regulating valve stuck in the closed position. Under these conditions the pressure builds up equally on all components in the system until the pressure is relieved. If the regulating valve is freed, the pressure will return to normal. Normal operating pressure causes no permanent deformation of the filter body. When the system pressure reaches 150 PSI due to a faulty regulating valve, most filters become permanently deformed. At this pressure the lock seam will remain sound, but the gasket could leak. If the regulating valve still remains stuck, the pressure will increase further and the gasket between the filter and the base could be extruded. As a result, most of the oil in the engine will be lost. If the filter has been tightly screwed on to the engine, the gasket may not fail, but the filter crimp will separate as the pressure continues to rise. (2)(3)
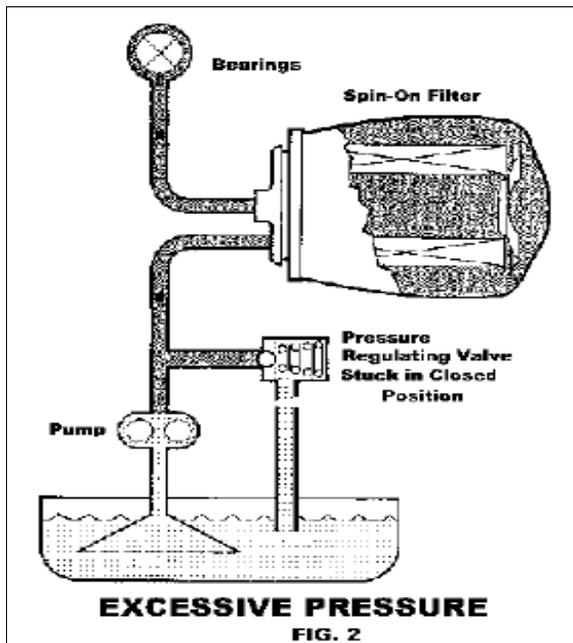
Leaking oil filters can occur from modified oiling systems that increase pressures and volumes and from improper installation. It is important that the gasket be in tact and that the mating surface be clean of dirt. Follow filer installation instructions carefully for best results.

RECOMMENDATION:

AMSOIL Ea oil filters are high efficiency, high capacity oil filters manufactured with higher quality gaskets and synthetic media that deliver very good oil flow. They are recommended for use in standard and high performance engines according to the AMSOIL recommendations.

For true racing engines with very high flow oiling systems, WIX Racing filters are a good choice. WIX Racing filters are high flow oil filers and not high efficiency oil filters. They are not good for removing small wear causing particles. WIX Racing filters are not recommended for street use.

Warranty-

Modifications to oiling systems that increase oil flow and/or pressure can add to the likelihood of over pressurization and filter leakage. AMSOIL, WIX, and Donaldson oil filters are warranted for use in their intended application and where the equipment has not been modified from the original equipment manufacturer's designs or where the oiling system has failed causing over pressurization. To determine the proper filter for the application, consult the AMSOIL filter catalog (G-3000), the online look up at www.amsoil.com, or the power sports application guide (G-2135).

EXCESSIVE PRESSURE
FIG. 2

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When in doubt, contact AMSOIL Technical Service at 715-392-7101 or Techservicemail@AMSOIL.com

For complete AMSOIL, WIX, and Donaldson written filter warranties, consult the AMSOIL filter catalog (G-3000) or:
- AMSOIL: www.amsoil.com/warranty_filters.aspx
- WIX: www.wixconnect.com/resources/forms/WixWarranty080703-3.pdf
- Donaldson: www.donaldson.com/en/engine/support/datalibrary/000194.pdf

REFERENCES:

1. AMSOIL INC., "2006 Filter Applications and Cross Reference", AMSOIL Brochure No. G-3000, p. 634-639.
2. Filter Manufacturers Council, "Over Pressurized Lube Oil Filters," Technical Service Bulletin 83-1R2.
3. WIX Filtration Corporation., "2006 Application Catalog", Catalog 99600, p. 562-563.

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