



Service Line

NEWS AND IDEAS FROM AMSOIL

Filtration Is Critical to Hydraulic Systems

Hydraulic systems are dirty. Every component – reservoir, pump, motor and valves – contains dirt particles.

The components of a hydraulic system can be contaminated when they are assembled, by contaminants sucked into the system from the surrounding air, through breather filters and the various seal points in the system. Additional contamination is generated by abrasive and cavitation wear as the system operates, or by dirt entering the system when replacing worn or damaged components. Even the routine task of adding new hydraulic fluid to the system can introduce contaminants.

Purpose of Hydraulic Filters

All hydraulic systems have a common need for protection from harmful contaminants. Hydraulic filters help minimize maintenance costs through good contamination control.

In systems utilizing a full-flow filter, all of the oil is filtered each complete circulation cycle. Every full-flow filter must be protected by a bypass valve. The valve may be located in the filter, the filter mounting base or in a line connected to the inlet and outlet of the filter assembly. A full-flow filter mounted in the return line permits cleaning of the fluid before it returns to the reservoir. In this arrangement, the filter must be able to withstand the maximum pressures generated by the pump.

Types of Contaminants

There are many kinds of contaminants found in a hydraulic system, but they can be divided into two types; chip and silt.

Chips are large particles which can cause sudden and catastrophic failures such as the sticking of a valve or the binding or jamming of a pump or motor.

Silt consists of very fine dirt particles that often are invisible to the naked eye. Failures because of silt occur during a period of time as they slowly eat away the internal components. Good system maintenance and proper filtration are the prerequisites to long life for the hydraulic system.

Contamination affects hydraulic systems in many ways. Acids forming due to fluid breakdown and mixing of incompatible fluids in the system cause corrosion. Contaminants can cause increased internal leakage which lowers the efficiency of pumps, motors and cylinders. Internal leakage decreases the ability of valves to control flow and pressure accurately. It also wastes horsepower and generates excess heat. Sludge or silting can cause parts to stick or seize. All of these things can be prevented with good filtration.

Servicing Hydraulic Filters

Proper hydraulic system maintenance procedures can be summed up in one word; cleanliness. Good clean proce-



dures should be used in any filter system but particularly in hydraulics. The introduction of one chip into the system could result in high maintenance costs and downtime.

All exterior components of the filter system should be thoroughly cleaned before disassembly. During disassembly and replacement of the filter and other components, all parts should be cleaned and inspected prior to installation of the new filter.

Hydraulic Filters Available From AMSOIL

AMSOIL offers Donaldson heavy-duty high-pressure filters protect critical hydraulic components such as cylinders, motors and valves. All of Donaldson's heavy-duty hydraulic filters contain synthetic filter media specially developed by Donaldson for high efficiency liquid filtration.

AMSOIL also carries Donaldson DURAMAX®, well-known as the highest rated spin-on style filters available. DURAMAX filters are available with synthetic or cellulose media, and are used most often in return-line positions.

Donaldson low-pressure filters are the most commonly used type of filter in hydraulic circuits, usually as return-line filters. AMSOIL carries Donaldson low-pressure filters that offer flow/pressure combinations to fit most applications.

The Donaldson P550606 hydraulic filter can also be used in five-speed manual Allison transmissions commonly used in Duramax diesel engines found in Chevy and GMC trucks. The P550606 replaces the Hastings HF992. Other hydraulic filter applications include tractors, backhoes, presses or essentially anywhere there are hydraulic lines.

Haywood Gray – Where Is He Now?

Haywood Gray is a long-time user of AMSOIL products. He's an owner/operator from Colonial Heights, Va., who has tested the performance power of AMSOIL Synthetic Motor Oils to the extreme.

Gray began using AMSOIL Synthetic Heavy-Duty Diesel and Marine 15W-40 Motor Oil (AME) in the E9-400 V-8 engine of his first truck, a 1984 Mack, after the engine accumulated 45,000 miles. For 280,000 miles, Gray changed his oil at 40,000- to 60,000-mile intervals, though oil analysis showed the oil was good for continued use. At 325,000 miles, Gray increased his oil drain intervals to 100,000 miles.

When the engine was torn down at 600,000 miles, the cylinder liners, bearings, pistons, rings and oil pump, all treated with AMSOIL, were found to be in excellent condition.

In 1996, he bought a 1990 Mack with an E7-400, and continued to use AMSOIL AME. Instead of using 100,000-mile drain intervals, Gray began basing oil drains on the findings of a used oil analysis program. He also installed an AMSOIL By-Pass Oil Filter.

After 630,000 miles total and 409,000 without an oil change, the E7-400 engine was torn down by a local Mack dealership in late 1996 and its parts were examined by an engine rater from a major oil additive manufacturer.

The engine showed light to moderate wear throughout just as an engine in similar service and lubricated with conventional oil changed at 15,000- to 20,000-mile intervals would show. In fact, according to the engine rater, the parts he examined – cylinder liners, pistons, rings, bearings, valve train components – could have been put right back in the engine



Haywood and Sharon Gray

and would have continued to provide the good, dependable service they had provided all along.

Gray still runs AMSOIL in his newest Mack truck.

He's driving a 1999 Mack with an ET-460 engine. It has more than 387,000 miles on it without an oil change so far, and the samples show the oil doesn't need to be changed. A sample is taken every 50,000 miles and the filters are changed.

Gray said the cost savings with AMSOIL have allowed him and his wife, Sharon, to travel and enjoy their motorcycle more than they otherwise could have.

The AMSOIL Service Line sent courtesy of your Servicing AMSOIL Dealer.

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