

Why is hydraulic filtration so important?

Today's hydraulic systems operate under extremely high pressures with extremely tight tolerances, meaning they are very sensitive to wear from abrasive particles and must be protected with filtration. In fact, 90% of all hydraulic system failures result from fluid contamination. These contaminants can enter the system from a number of sources:

- Built in from manufacturing processes
- Low quality or unclean hydraulic fluid used and the filling process
- Exposure to dirt, dust and moisture in operating conditions
- System generated wear over time

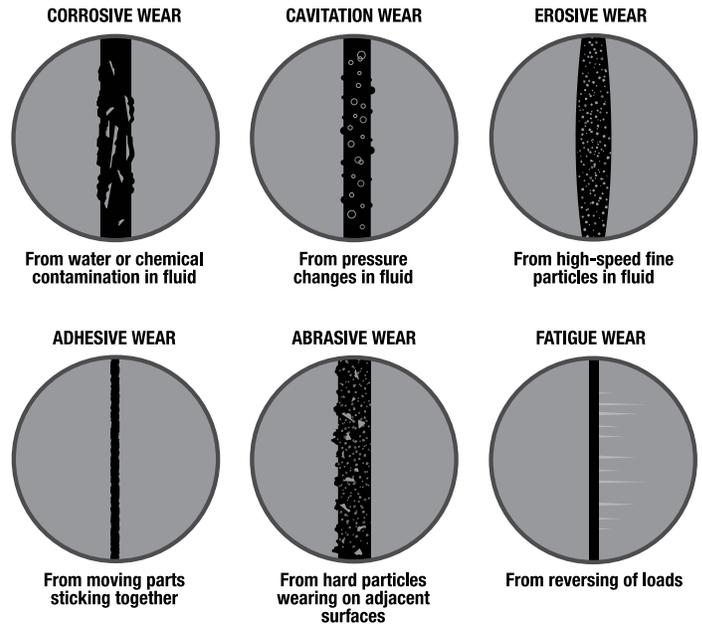
Types of hydraulic filters:

Filtration is the only defense against wear once contamination is present in the hydraulic system.

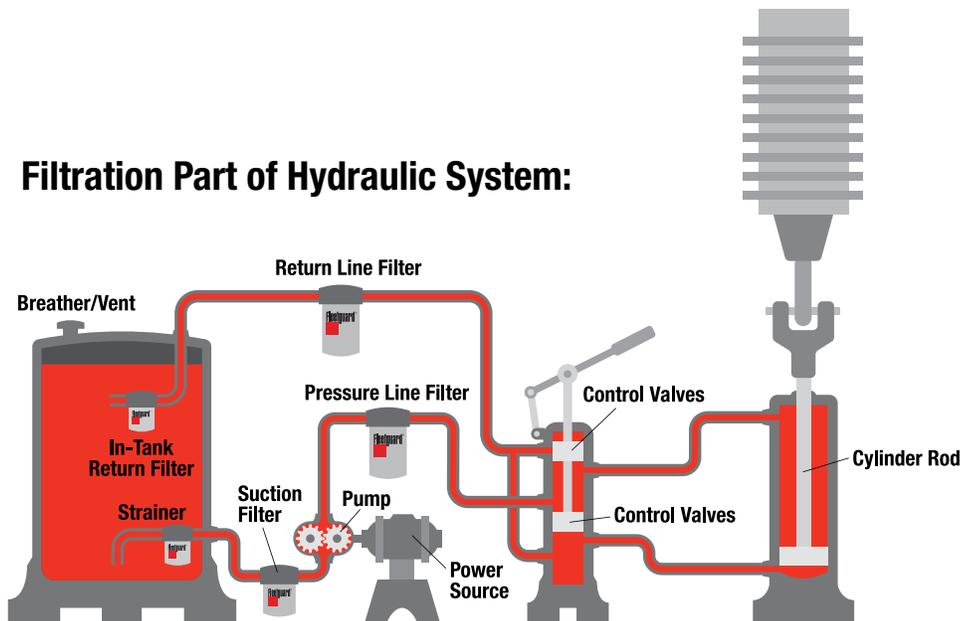
Each type of filter in the system is designed to perform a specific job:

- **Suction Filters** - removes the largest particles that may find its way into the reservoir; also known as strainers or safety filters
- **Return Line Filters** - removes the largest particles that may find its way into the reservoir; also known as strainers or safety filters
- **Pressure Filters** - designed to protect the most sensitive components at full system pressures

Types of hydraulic wear:



Filtration Part of Hydraulic System:



Frequently Asked Questions about Hydraulic Filtration

What is a hydraulic system?

A hydraulic system is composed of a network of valves, hoses, components and piping which is typically used in machinery. These systems can be very diverse and complex, but always work under the same principle of using an in-compressible fluid under pressure.

Why are hydraulic systems used?

Hydraulic systems can generate high amounts of focused energy which is often used to lift enormous weights, aid in steering equipment/vehicles, and a variety of other applications where large forces are required.

Why do hydraulic components fail?

As is the case with any mechanical system, wear and tear is eminent. Seals, springs and components that rely on a tolerance fit lose efficiency overtime or from damage or poor filtration and leakage, meaning the system is not maintaining the pressures it needs to work properly. In hydraulic systems, fluid contamination is the leading cause of system degradation and failure.

What type of hydraulic fluid should I use?

Only dedicated hydraulic oil can be used in hydraulic systems. Unlike fuel and lube systems, there are often multiple types of hydraulic fluids that can be used, but it is dependent on your specific application. Always consult with your equipment OEM's recommendations on selecting the appropriate hydraulic fluid.

Why are my hydraulic systems overheating?

Excessive heat occurs when more heat is produced than can be dissipated. Poor filtration can lead to contamination build up that acts as a thermal barrier, reducing the system's ability to dissipate heat. Continuing to operate a hydraulic system that is overheating can compromise seals and hoses, leading to decreased performance or eventually total system failure. Operating temperatures above 82 degrees Celsius can damage seals and hoses and accelerate hydraulic fluid degradation. Proper maintenance is the key to making sure your hydraulic system does not have an excessive heat issue.

Are Fleetguard filters compatible with all types of hydraulic fluid?

Yes, all Fleetguard filters are designed and validated to meet or exceed the OEM performance specifications for the respective application or fluid requirement. Fleetguard filters utilize media types that are compatible with all modern hydraulic fluid types.

Why use Fleetguard hydraulic filters rather than other brands?

Fleetguard has been engineering and manufacturing heavy-duty filtration solutions for more than 60 years and is the only brand of filters made by an engine company—Cummins Inc. The extensive experience we have as a company ensures that all of our filters and filter media has been proven in the harshest operating environments for dozens of OEMs around the world.

When should hydraulic filters be changed?

Hydraulic filters should be serviced based on hours or miles of use, typically specified by the equipment manufacturer; however, some hydraulic systems have differential pressure switches that indicate when it is time to service the hydraulic filters. Always follow the recommended service intervals specified by the OEM application's guidelines to ensure the highest level of system protection.

How often should hydraulic fluid be changed?

As is the case with servicing hydraulic filters, hydraulic fluid should be changed as per OEM application guidelines.

What is a beta ratio?

A beta ratio simply refers to the efficiency in which a filter removes particles of a specific size. It is commonly used to differentiate performance between high efficiency and ultra-high efficiency filters where standard micron ratings may not be sufficient.

What types of hydraulic fluids are commonly used today?

There are a few different types of hydraulic fluids used in today's applications and typically vary based on the performance and operating requirements of the specific application. Petroleum based hydraulic fluids are considered standard for most applications. Water glycols, water-oil emulsions and synthetic hydraulic fluids are often used when there are application requirements for a fire-resistant fluid.

What operating temperature range is safe for hydraulic filtration?

Temperatures ranging between -42 and 135 degrees Celsius are typical for hydraulic filter applications.

What are the different types of Fleetguard hydraulic filters available?

There are multiple styles of hydraulic filters, which vary depending on the filter head and application into which they will be placed. There are traditional spin-on filters, available in lock seam, rollover seam, bead-lock and wide-mouth designs, as well as coreless and non-coreless cartridge style filters. These filters can vary in media type and performance depending on the application.

Where in the hydraulic system are filters are located/required?

Within a hydraulic system, there are typically three locations where filters are located: suction line, return line and pressure line. Suction line filters remove the large particles that often appear within the hydraulic fluid reservoir and are also known as safety filters. Return line filters remove any contamination before returning the hydraulic fluid to the reservoir. Pressure line filters remove the finest particles in the system and are designed to withstand the highest operating pressures in the hydraulic system. Each of these filters are designed to protect the components most susceptible to particle contamination at high pressures.

What are some basic recommendations for proper hydraulic system maintenance?

When working with end users, it is useful to understand their expenditures on replacement hydraulic components such as pumps, control valves and hoses. This is a good practice for discovering customer habits and attitudes toward system maintenance.

Understanding the common causes of hydraulic system downtime can demonstrate your value in finding solutions for the customer. A frequent response of customers will be that they are experiencing hose failure, which is often attributable to excessive heat caused by contamination build up inside the hydraulics system. Overheating can also lead to rod seal failure, which allows contaminant into the high-pressure side of the mechanism and causes the most cost damage in the system. A sign that this is occurring is scoring on the sealing and pressure faces of the hydraulic components, though this may only be visible at tear down.

It is good to understand if the end user conducts their own maintenance on hydraulic cylinders and rods. Rods should be checked for straightness during the repair process and some in-house operations may not check for this as standard procedure. Rod seal failure is accelerated by event slightly bent rods, as the bend places excessive load on the rod seal and causes distortion which leads to quicker failure and fluid contamination. Some rods can be straightened, but those that are induction hardened cannot and should be replaced.

It is a discussion point to understand the process that users and operators adopt after replacing hydraulic system components. Hydraulic systems and components are not self-lubricating or self-priming and if the hydraulic systems and circuits are not correctly filled with fluid and bled through, wear will occur. This wear, which is avoidable, does not lend to the best start to new life for replacement system components.

Built by the Best Name

Fleetguard products are designed by engineers at Cummins Filtration, the only filter company that's part of an engine company. We know what it takes to maximize your investment in your equipment. And the quality of our products is matched only by the quality of our sales, service and support. Our worldwide distribution network can find the right solution to meet your needs, quickly and efficiently.

Backed by the Best Warranty

Unlike our competitors who offer pro-rated coverage, our full warranty protection extends from the point of purchase throughout the recommended service life of the product.

Nothing Guards Like Fleetguard!



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