

# news

YOU CAN  
USE

*"Unparalleled Delivery Times on Custom  
and Standard Filtration Products"*



## OEM Mobile Heavy Equipment Filters

OFCO has a [listing of replacement filters and strainers](#) for large OEM heavy equipment. Give us a call to see if we can help you in your quest for additional business. We can interchange filters and strainers for...

Allis Chalmers	Nacco
Caterpillar	Terex
Daewoo	Yale
Clark	Hyster
Euclid-Hitachi	Mitsubishi
Ingersol Rand	New Holland
J.I. Case	... and others
John Deere	

## For the Die-Hard Fans of Vocabulary Quizzes!

1. \_\_\_\_\_ is the use of liquids or gases under pressure to move objects or perform other tasks.
2. \_\_\_\_\_ is a force on a unit surface area (such as a square inch).
3. \_\_\_\_\_ states that when a force is applied to a confined liquid, the resulting pressure is transmitted unchanged to all parts of the liquid.
4. \_\_\_\_\_ states that as pressure increases, the volume of the gas decreases.
5. \_\_\_\_\_ are fluid power systems based on the use of air or another gas.

See upside down answers to questions on page 2



# A Simplified Study in Filtration

PART 5 OF 10

## Two Locations in the Hydraulic System Some Sort of Filtration Should be Installed

Last time we mentioned how the reservoir could be considered a filter itself. Now let's take a look at the first two locations in the hydraulic system where some sort of filtration should be installed.

The absolute first area in which a filtration device should be installed is on the inlet (suction) line before the pump. These strainers are used to prevent ingestion of large particles into the pump. Before we go any further, I need to make a very important point. **It is very important to keep the pump operating in a smooth and efficient manner. Remember, the pump is the heart of all hydraulic systems. It is the most important component.** The pump can be considered just like the human heart. If the human heart stops or breaks down, what occurs? The human body breaks down or stops. The same applies to the pump in a hydraulic system. If the pump stops, the system stops.

The suction strainer could be a strainer placed on the end of the inlet line at the bottom of the reservoir, installed through the side wall of a reservoir, or an "in-line" type placed between the reservoir and the pump. Keep in mind that this is an area where, most of the time, "straining" should occur and not "filtering." I suggest no finer filtration than 74 microns (200 mesh). With low pressure vane or gear pumps, a 149 micron strainer should be adequate. With piston pumps and/or high-pressure systems, a 74 micron strainer should work fine. If there is too fine of filtration on the inlet line, the pump could possibly cavitate, leading to components being damaged or destroyed. For that reason, it is important to have a bypass valve on your inlet strainer. That will take care of any possibility of cavitating the pump.

Another reason for using a bypass is during cold weather start-ups. Using a bypass will allow unfiltered fluid to bypass the strainer and continue through the system until its viscosity reaches standard operating temperature. Allowing unfiltered fluid to temporarily bypass the strainer can be more cost effective than possibly collapsing the strainer or destroying a pump due to cavitation. However, I cannot stress enough how important regular system maintenance is to maintain clean fluid running smoothly through the pump.

The second location a filter should be placed is in the pressure line following the pump and before the actuation, the component that is actually performing the function. If a directional valve is used, install the filter before the directional valve. The actuation performs the work of the system and has the greatest need for the finest filtration.

Pumps produce wear and debris. If you have a servo system, the micron rating on this filter should be 3 microns or finer. At this stage of the system you want to insure the filter is as fine as the application requires.

The question is not, "How clean does the fluid have to be?" The question is, "How dirty can the fluid be to still get the job done and still give you good system life?" In a "typical" hydraulic system, if there is such a thing, a 5-10 micron cellulose paper or glass filter is adequate.

We merely touched the surface with the first two areas where a filtration device should be installed. Stay tuned for the 3rd and 4th areas.



### Vocabulary Quiz Answers

1. Fluid Power; 2. Pressure; 3. Pascal's Principle; 4. Boyle's Law; 5. Pneumatic Systems

111 North 14th Street  
P.O. Box 218  
Coshocton, OH 43812

888.354.8512  
Fax 740.622.3307  
info@ohfab.com  
[www.ohfab.com](http://www.ohfab.com)

