OUR 75TH YEAR
OFCO
OHIO FABRICATORS COMPANY

White Paper

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Why Use an Air Breather? A Good Question, Indeed.

The air breather is often the most neglected component in a hydraulic system if keeping the fluid clean is your most important criteria. It is estimated that 75 percent of all failures of a hydraulic system occur due to contamination. Maintaining oil cleanliness starts with proper design and then it is up to the owner to maintain it by following a recommended maintenance schedule.

So if you are an owner of equipment, then the question is when was the last time you serviced the air breather? If "almost never" is your answer, then include it on your maintenance list.

Most modern hydraulic systems are equipped with Beta rated filter elements to maintain oil cleanliness to a desired ISO 4406 standard. Generally, most component manufacturers recommend oil cleanliness levels at which their components work best. Since a system has many components, the design engineer selects a filter that will maintain oil cleanliness at a desired level for its most sensitive component.

Simple, but correct!!

Hydraulic systems breathe just like human beings, especially systems with one or more hydraulic cylinders. When a cylinder extends, oil is pumped into the blind end, and the oil from the rod end is exhausted to the tank. Because of differences in volume between the blind and rod ends, there is imbalance of flow in and out of the tank. That is the reason the tank must breathe air in and out.

There are three main sources of contamination in a system:

1. **Built in.** This is the contamination left in the system during initial construction or rebuild, such as debris, weld splatters, burrs, etc.
2. **Ingested.** Mostly from the atmosphere
3. **Generated or ingressed.** This is the contamination due to wear and tear of moving parts in a component but clean oil will keep this contamination to a desired ISO level

Whenever air enters the tank, and if the ambient air is "dirty", then it must be filtered, otherwise it will mix with the oil in the reservoir and make it dirty. Most ambient air is dirty, just like new oil from the drum. It must be filtered. The only way to filter the air is with the use of an air breather. Our concern is item 2 above: how to keep contamination from dirty air out of the system?

Consider a hydraulic system that requires oil at 15/13/10 level per ISO 4406. Hydraulic filter manufacturers will recommend an element that allows you to achieve the desired oil cleanliness. Let us say that the filter element for this system should have Beta 3 of 200. It means that if you use a filter that has a 3-micrometer rating of 200, or 99.5% efficient, then your system should operate trouble free over a long period of time. But what if there is no air breather or a breather that does not match the filter element specification? Systems without an air breather are disasters in waiting. Nominal rated breathers may or may not do the job, but properly matched air breathers allow you to keep the oil clean. Also remember that a system without a breather will require many filter changes, usually an expensive proposition. First there is a cost of the filter element. Secondly there is downtime due to shut down and hence loss of revenue, etc. So even if you could afford this expensive shut down of the system, doesn't it make sense to install and maintain an air breather? Most screw-on or bayonet type air breathers can be replaced without shutting down the system and, since they are oil free, can easily be disposed.

So how can OFCO help? We have a complete line of breathers which have 3,10- and 40-micron ratings. If you already have a breather, chances are our breather could easily replace your OEM breather. If not, we will work with you to develop a custom solution for your system.

OFCO offers OBT and OBB-P types of breathers with a variety of options. OBT breathers come in NPT, SAE and BSPP threads, 3,10- and 40-micron media and an optional dipstick feature, which allows you to check the oil level in a reservoir,

OBB-P is a bayonet type breather and has a built in relief valve, which is used on pressurized reservoirs. It too comes in 3-, 10- and 40-micron ratings with an optional lock feature to prevent unauthorized tampering. An optional dipstick similar to our OBT breather is also available. It is provided with a strainer basket in 4 lengths: 3", 4", 6" and 8".The pressure valve is set at .435 PSI.

Call us to find out how we can solve all your filtration problems.