TECH TALK

Why Breathers Are Important

Regardless of the application, a breather is now a critical part of the complete system required to maintain fluid cleanliness.

How does contamination enter a tank?

No matter what the size, there are only three ways that contamination can enter a fluid storage tank.

1. Contaminant can be pre-existing in the tank or from the existing infrastructure.
2. It can be introduced with the delivery of fluids, either from nozzles, hoses, hydraulic equipment or within the fluid itself.
3. It is drawn into the tank as airborne contaminant by the daily expansion and contraction cycle.

Prevention is better than a cure and ensuring the tank or reservoir is clean prior to use is the first step in controlling contamination.

The next step is maintaining this level of cleanliness by ensuring that incoming fluids are filtered prior to entering the tank.

In a hydraulic circuit, high quality filters will remove introduced contaminant as the liquid in the circuit is continually cycled through the filters. However, if a good quality breather is not used, contamination and moisture will continue to enter the system through the tank.

In addition to air entering and exiting the tank during filling and dispensing, tanks are continually subjected to a warming and cooling cycle. This can be from machine operation, changes in ambient temperature and changes in the operating temperature of the fluid.

What does a breather do?

As the air inside the tank cools, it contracts, drawing in air from outside the tank. The incoming air contains both contamination and moisture. As the air space in the top of the tank warms, the air expands, with the excess air being expelled out of the tank. Most of the contamination and moisture remains inside the tank, increasing with each contraction cycle. In a diesel storage tank, the increasing level of moisture will accumulate at the bottom of the tank which could result in algae forming, adding further to fluid contamination.

Breathers prevent the ingress of contamination with this incoming air, keeping the fluid clean. T.R.A.P. Breathers also strip the moisture from this incoming air, keeping the fluid clean and dry.

Donaldson offers a complete range of breathers ranging in size from those that suit vehicle tanks and small reservoirs to breathers for storage tanks holding thousands of litres of fluid.

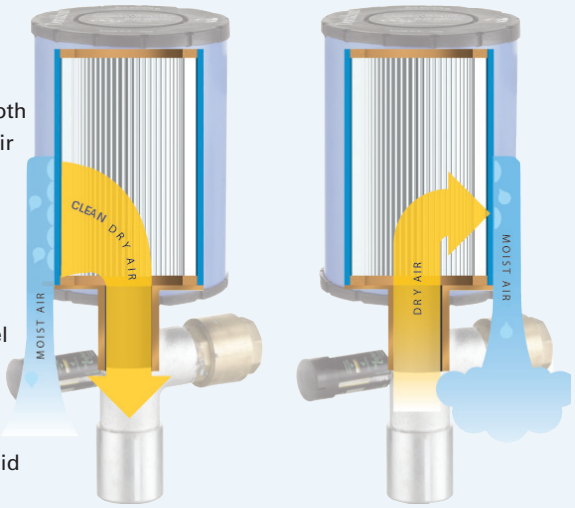

Figure 1: Inhale and exhale cycles of a Donaldson breather, moisture and contaminant is prevented from entering the tank.

DID YOU KNOW

✔ It is estimated that 85% of mechanical failure in a hydraulic system is due to contamination.

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