

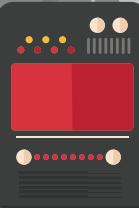
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CONSIDERATIONS *WHEN SELECTING A DESICCANT BREATHER FOR YOUR EQUIPMENT*

ARE YOU CHANGING YOUR OIL TOO OFTEN OR HAVING MACHINE FAILURES?

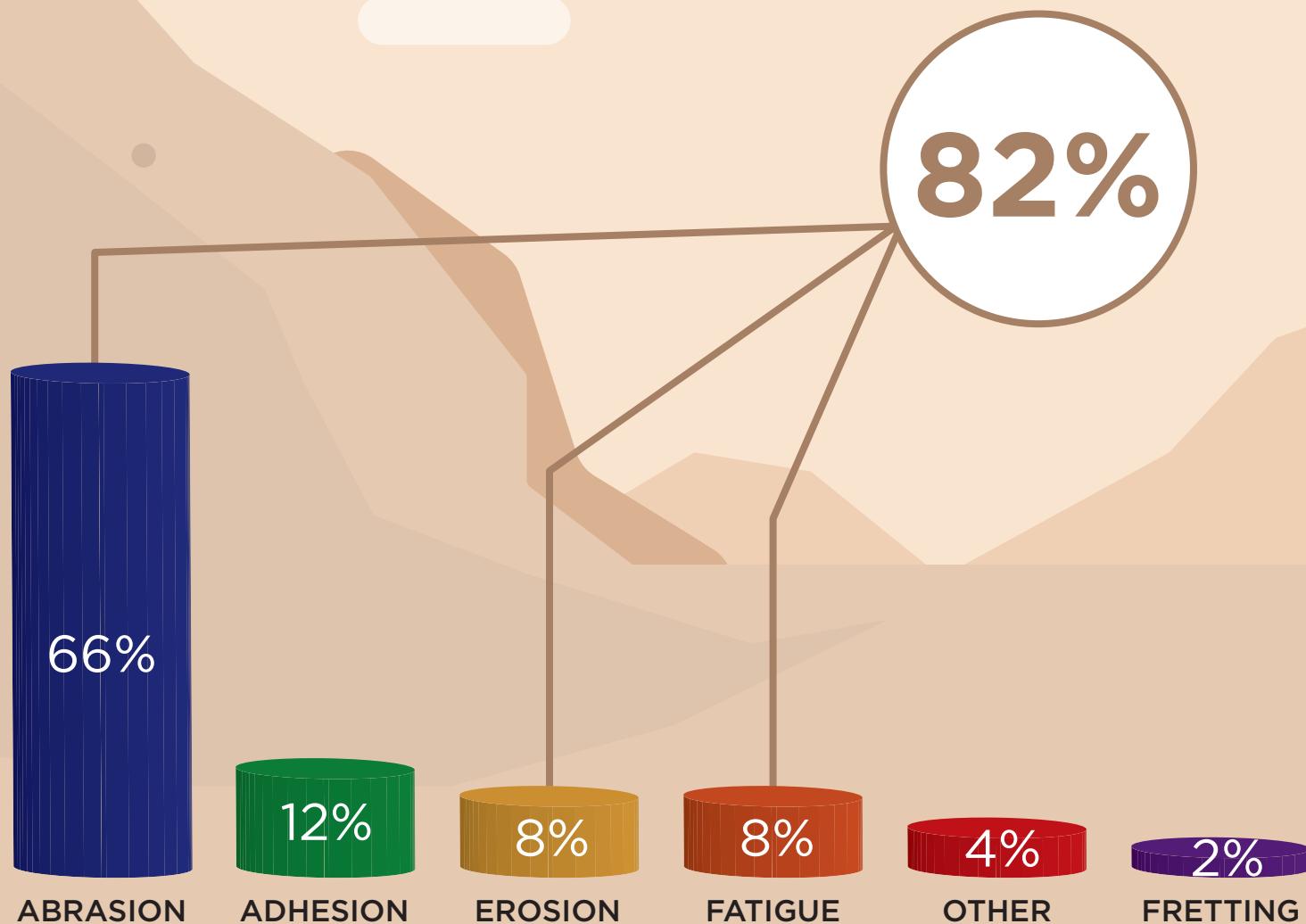
Most companies are now realizing that maintaining clean oil is one of the best investments it can make, with contamination at the core of premature machinery failure and diminished lubricant life. But many companies don't know where to start in preventing contamination.

This eBook will assist you in better understanding how a desiccant breather can be used as a first line of defense in preventing contaminants from ruining your equipment and what to consider when selecting the right one.



WHY DO I NEED A BREATHER?

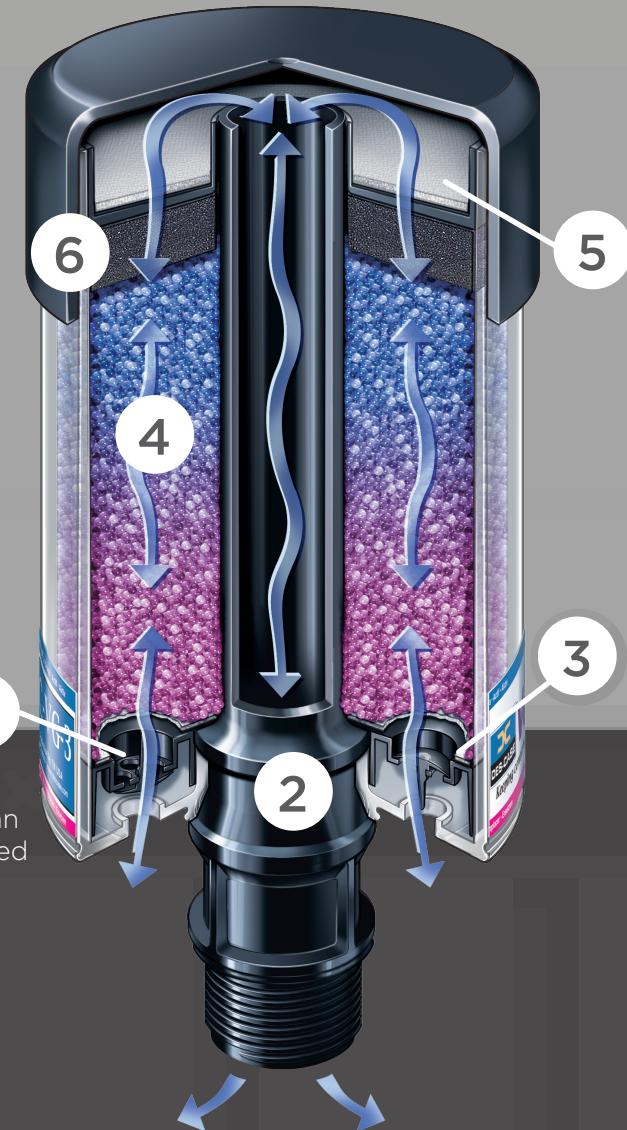
Almost 70% of the loss of machine life is a result of surface degradation, or simply put, wear. And 82% of machine wear is induced by particles that enter the system as the system breathes during normal operation. A breather is a filter used to limit the amount of particles allowed to enter the system as it breathes.



WHAT IS A DESICCANT BREATHER?

Most oil lubricated and hydraulic systems exchange air, or breathe, with the surrounding environment during normal operation. Some of this air exchange occurs as the systems heat up and cool down. In other systems, such as hydraulics, the air exchange is a result of fluid moving into and out of the reservoir.

The desiccant breather replaces the standard dust cap or OEM breather cap on equipment, offering better filtration to protect against even the smallest particulates that destroy the effectiveness of your machinery, and cause downtime and costly repairs. As air is drawn into equipment through the breather, the layered desiccant filter elements remove particulate while the desiccant beads strip harmful moisture. While in service or during shut-down, the desiccant beads attract moisture from inside the equipment reservoir, actively drying the equipment.



1-Recessed Check-Valves

High-quality umbrella check-valves that won't clog or stick are recessed underneath the unit for added protection from washdown environments. Check-valves isolate equipment from ambient conditions, prolonging breather life.

2-Integrated Nylon Standpipe

The integrated standpipe provides excellent vibration resistance and dissipates impact throughout the unit, eliminating weak points. It also allows even airflow distribution throughout the unit, eliminating inaccurate readings of desiccant saturation.

3-Filter Element

Polyester filter element removes airborne contamination to 3-micron absolute. Unique loops allow particles to release during system exhalation, helping to increase breather life.

4-Water Adsorbent

Silica gel adsorbs water from incoming air and can hold up to 40% of its weight. Condition is indicated by change of color from blue to light pink.

5-Secondary Filter Element

Second polyester filter element protects against migration of desiccant dust, providing maximum efficiency.

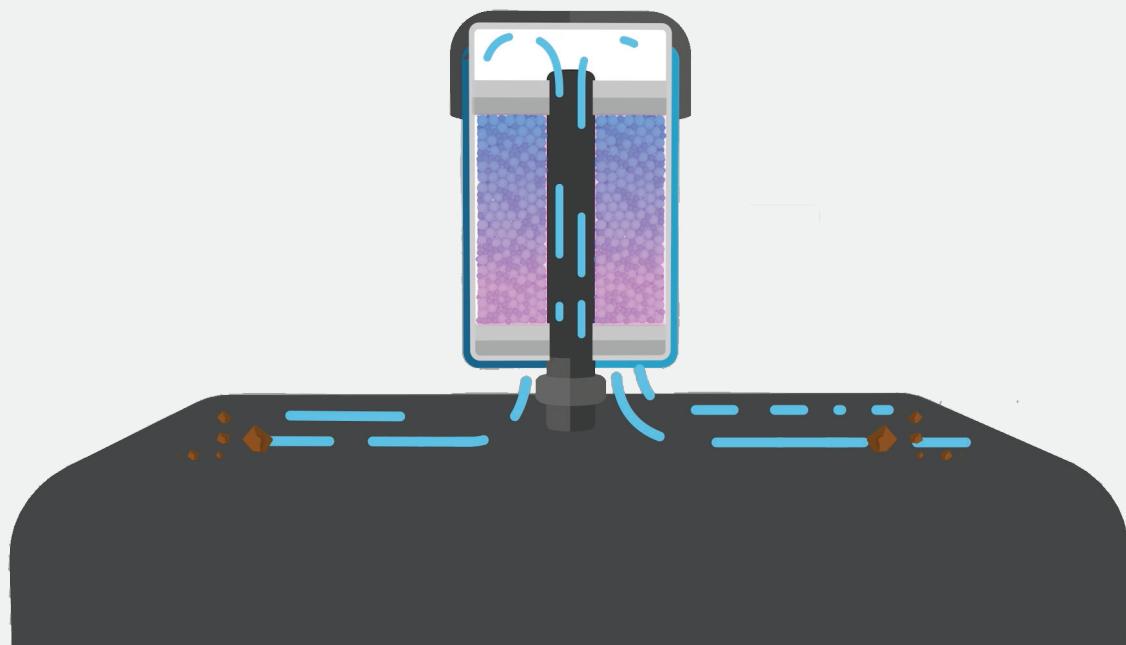
6-Foam Pad

Foam filter captures any oil mist and disperses incoming air evenly over filtration and drying areas.

HOW DOES A DESICCANT BREATHER FILTER OUT DIRT?

Most quality desiccant breathers have a multi-level filtration system to keep dirt out of your equipment.

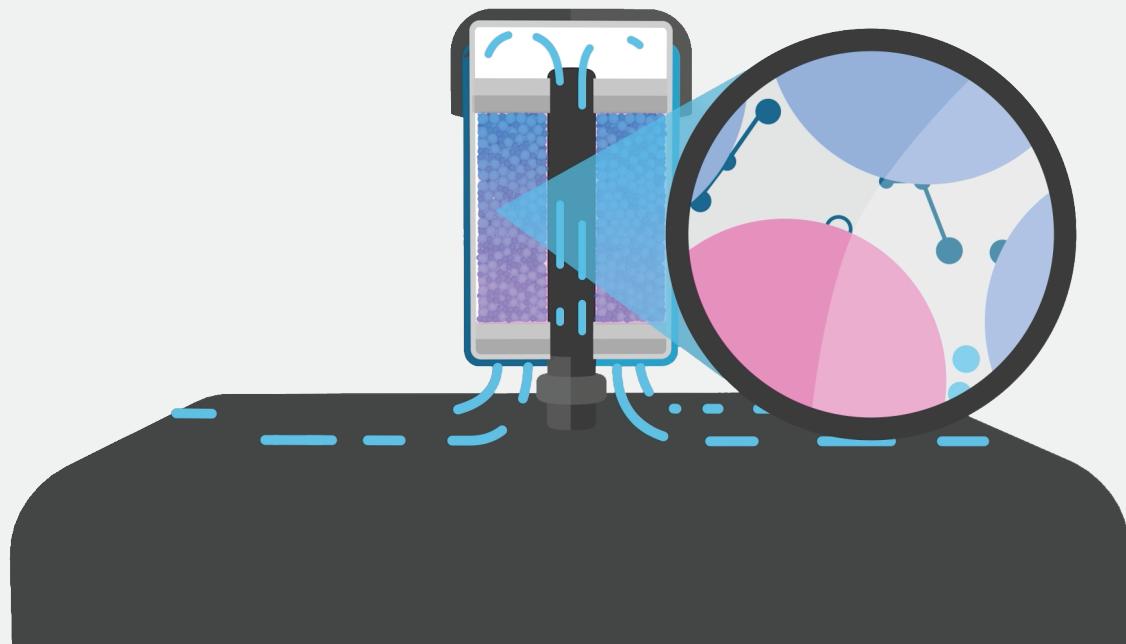
- As air enters the unit from outside it contacts a low-density foam filter element.
- The air then passes through a woven polyester filter element.
- For added protection, some desiccant breathers also provide a second foam and polyester filter.



HOW DOES A DESICCANT BREATHER GET AND KEEP YOUR EQUIPMENT DRY?

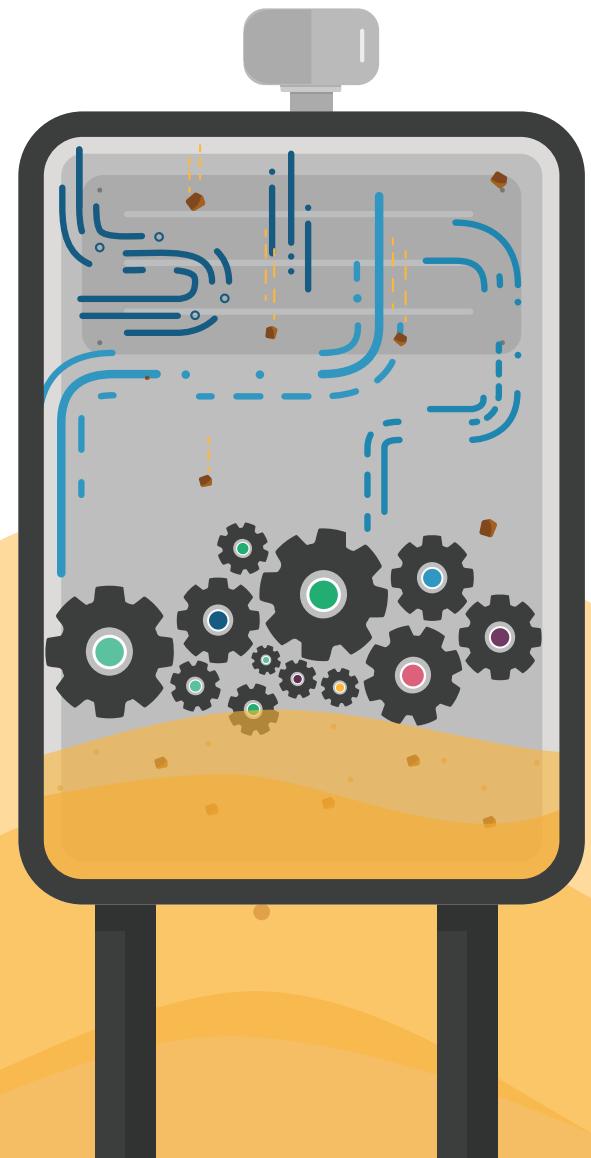
The breather is filled with a hygroscopic agent (water adsorbing) that traps and adsorbs moisture contained in the air entering the filter. It does this so well that a single grain of silica gel can adsorb 40% of its weight in water.

It also removes moisture from within the reservoir as the unit breathes out. As the reservoir heats up, water contained within the reservoir becomes water vapor. As the vapor is forced out through the breather it is removed by the drying agent.



IS MY OEM VENT CAP OR FILLER CAP OKAY TO USE?

Most equipment is sold and shipped with vents or caps that do not target moisture or the size of particles which are the most damaging to your oil lubricated systems and components. While acceptable for controlled environments where particles and moisture are non-acceptable, most of our equipment operates in areas with significant airborne contamination.



CONSIDERATION #1 - WHAT IS THE APPLICATION FOR MY BREATHER?

The first consideration when selecting a breather is understanding what the application actually is and what the needs of the system are. **Suggested applications include:**

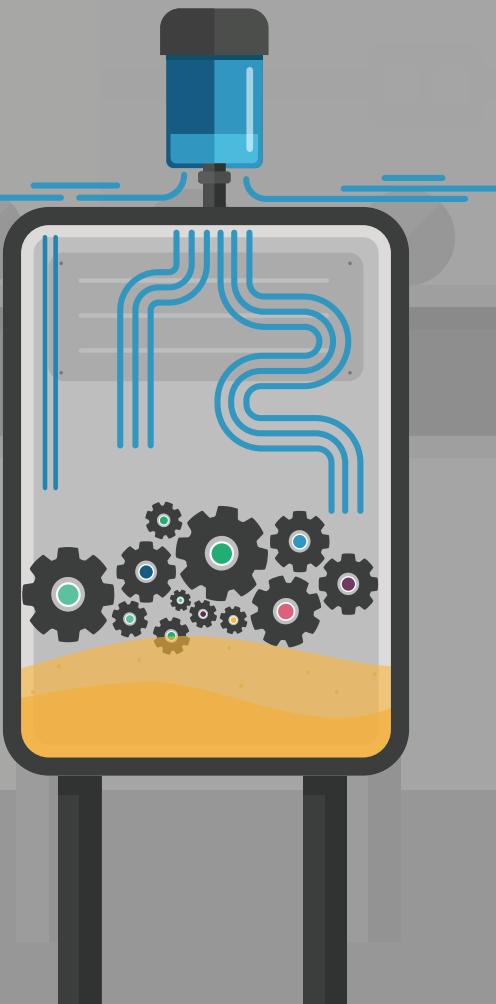
- Gearboxes
- Hydraulic Systems- All Types
- Bearing Circulating Systems
- Robotic Hydraulic Equipment
- Transformers with Oil Cooled Design
- Non-aqueous Chemical Process Storage/Handling Tanks
- Diesel Fuel Storage Tanks
- Mobile Earthmoving Equipment
- Agricultural Equipment
- Vacuum and Welding Chambers

A deeper look into any application will reveal whether or not the system breathes due to changes in temperature, changes in oil volume due to component application or both.



CONSIDERATION #2 - WHAT IS THE FLOW RATE OF MY APPLICATION?

Knowing the flow rate of your application is perhaps the most important consideration when selecting a breather. Proper air flow is critical to the operation of your system and critical components. Air flow needs to occur without restriction. If there is a restriction in air flow through the breather, the air will find a path of lesser resistance to follow. Each breather will be rated for a specific air flow rate often communicated in cubic feet per minute relative to a differential pressure rating of typically 1 PSID.



CONSIDERATION #3 - WHAT IS THE VOLUME OF OIL IN THE APPLICATION?

It's easy to think that the more volume of oil in a system the more air flow potential it has.

However, many desiccant breathers don't just operate when the system is breathing. As a system sits idle, or if it's a system that does not exchange large volumes of air during normal operation, the silica is still in contact with the head space of the component it's connected to. Due to the hygroscopic nature of silica gel, this constant connection allows the silica to remove moisture from the humid head space in the component reservoir preventing it from condensing and re-entering the oil. The larger the oil volume, the larger the head space is likely to be.



CONSIDERATION #4 - WHAT TYPE OF ENVIRONMENT IS MY APPLICATION SUBJECTED TO?

Much of our equipment operates in environments filled with clearance sized particles and moisture in the air. The higher the amount of solid particles and moisture in the air, the more dirt and moisture holding capacity is needed to keep up.

Typical environmental considerations are:

- Is the environment humid or dry?
- Are there frequent wash downs?
- Is your application outdoors and exposed to inclement weather?

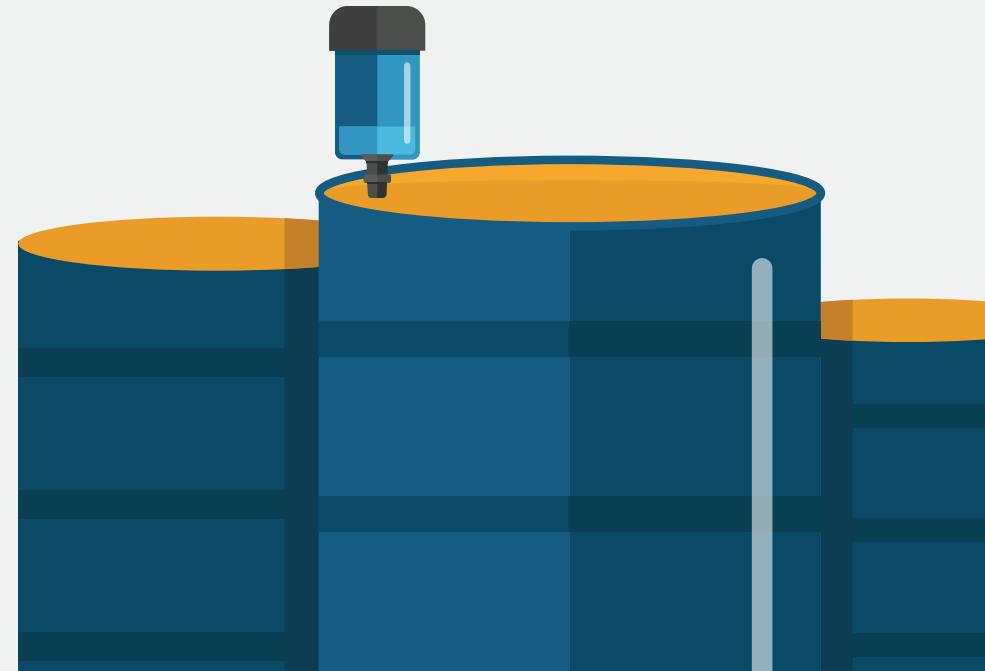


CONSIDERATION #5 - WHAT IS THE LUBRICANT TYPE IN USE IN MY APPLICATION?

Lubricant type, as it relates to selecting a breather, is important for a variety of reasons. As we know, solid particles and moisture are catalysts for oxidation in lubricating oils. Because some oils are much more sensitive to moisture than others, an undersized breather may not fully address the ingress rate of moisture.

Aged lubricating oils and hydraulic fluid can dissolve high levels of moisture in the range of 500-600ppm or higher. Temperature changes in the system cause the moisture in the oil to evaporate into the head space. This is a great opportunity for the breather to do its job and remove this moisture before its allowed to condense on the cool machine surfaces.

Lastly, oil mist and splashing can be managed with a well designed breather. However, the oils relative compatibility with the breather material is important as some lubricants are very aggressive and incompatible with some plastics and rubbers commonly found in breather construction.



WHY IS A BREATHER A GOOD INVESTMENT?

Research shows that anywhere from 5 – 15% of your annual maintenance budget is lost each and every year to the downstream effects of poor lubrication. Much of what we consider to be poor lubrication is control of contaminants or the lack thereof.

WHAT DOES THE EFFECT OF CONTAMINANTS IN OUR OIL ACTUALLY COST US?

Consider a simple hydraulic system that operates 24/7/365, has a 65 GPM pump and an ISO Particle Count of 23/21/18. If we were able to quantify the amount of dirt that passes through the pump in a years time it would equate to about 8800 pounds. Take that same system with a much cleaner ISO Particle Count of 17/14/11 and the amount of dirt falls to about 55 pounds over the course of a year. The difference is a life expectancy of 14 years versus 2 years.

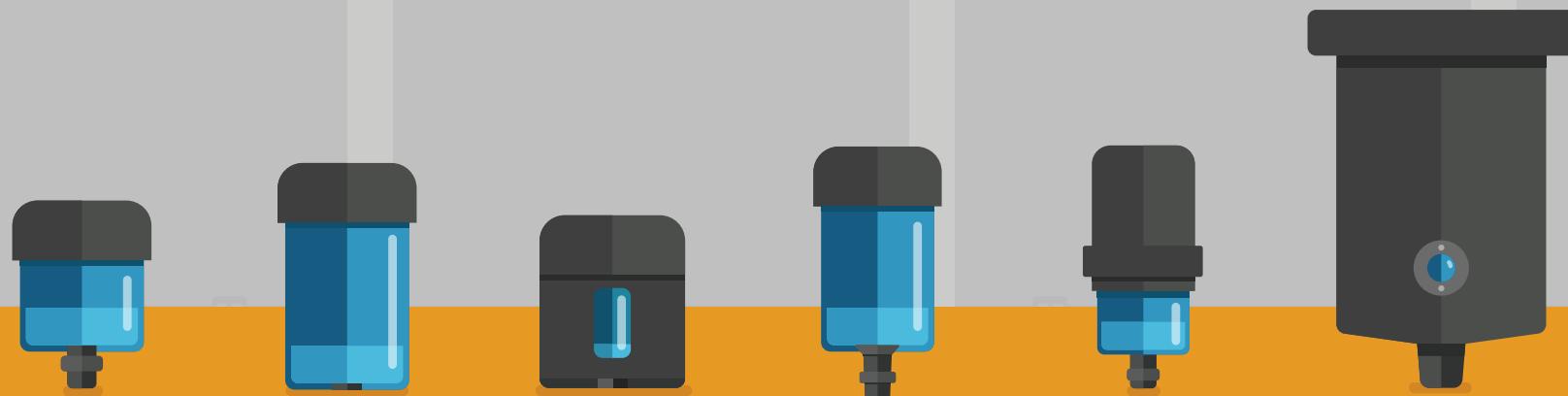
TRY ONE OUT FOR FREE

When it comes to selecting breathers, the “one size fits all” approach is not really ideal. Today, there are many different designs available and there is definitely a best fit for each particular application. Breather selection is an important part of the process of developing a world-class lubrication program and should not be oversimplified.

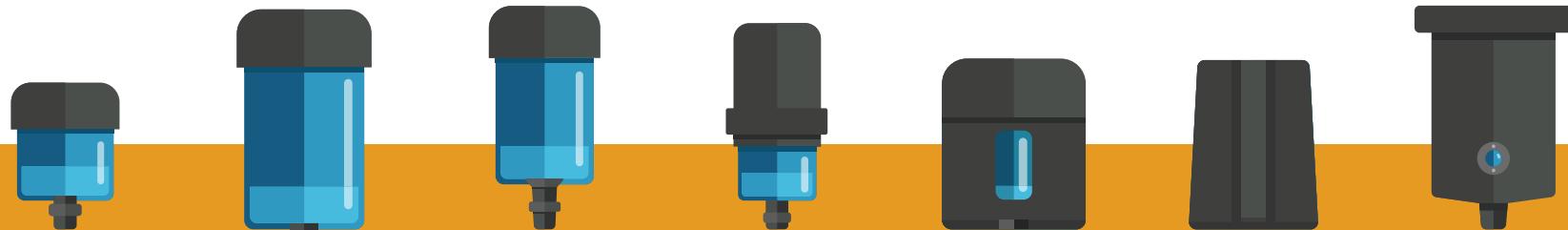
We want to give everyone an opportunity to try a breather and see its effectiveness for themselves.

Visit descase.com/request-free-breather to order your free breather!

REQUEST YOUR FREE BREATHER



At Des-Case, we understand the importance of fluid cleanliness and the role it plays in reliability optimization. That's why we've spent more than 30 years pioneering solutions specific to your industry applications that help maintain lubricant quality.



BREATHER LINES	Standard	Extended Series	VentGuard	HydroGuard	Extreme Duty	Non-Desiccant	Rebuildable Steel
Silica	✓	✓	✓	✓	✓		✓
Foam Pad	✓	✓	✓	✓	✓		✓
Efficient Filter	✓	✓	✓	✓	✓	✓	✓
Integrated Standpipe	✓	✓	✓	✓	✓		✓
Impact Resistance	✓	✓	✓	✓	✓	✓	✓
Vibration Resistance (female thread)		✓			✓	ND-35 Only	
Caustic Chemical Resistance					✓	✓	✓
Check Valves		✓	✓	✓	✓		
Expansion Bladder				✓			
Disposable	✓	✓	✓	✓	✓	✓	
Integrated Honeycomb Oil Mist Reducer		✓					

COMMON USES	Standard	Extended Series	VentGuard	HydroGuard	Extreme Duty	Non-Desiccant	Rebuildable Steel
General Use	Storage Tanks	Intermittent Operations	Steady State Operations	Harsh Environments	Low Humidity	High Flow Applications	
Transformers	Wind Turbines	Gearboxes	Gearboxes	Mobile Equipment	Oil Misting	Harsh Environments	
Storage Drums	Large Gearboxes/Hydraulics	High Humidity	High Humidity	Hydraulics	Arid Environments	Bulk Storage	
Totes	Oil Misting	Washdowns	Washdowns	Washdowns	High Dust	Large Hydraulics	
Hydraulics	Remote Applications	Low Flow Applications	Low Flow Applications	High Vibration/Impact	Water Based Fluids	Harsh Chemicals	