

Hydraulic Reservoir Breathers



Protecting Hydraulic Equipment From Moisture And Humidity Damage



www.brownell.co.uk

Company Profile

World Leaders in Moisture Control

Since 1952, Brownell has developed its experience and a range of products dedicated to providing solutions to prevent and protect against the effects of condensation, humidity and pressure control.

Brownell now offers a comprehensive range of products including desiccators, humidity indicators, pressure relief valves and gas purging systems for applications in all of today's commercial and industrial sectors.

An on going commitment to research and development continues to offer customers and user's knowledge and products capable of proving solutions for their needs and requirements. We welcome opportunities to work and cooperate with customers to develop solutions and products for their specific needs.

Brownell is based in North West London on the modern Park Royal Industrial estate and holds ISO 9001:2015 approval.

We also have a comprehensive data library and test facility for the performance of moisture barriers, equipment housings and operational scenarios to assist customers with the best design practices for the performance of their system.

Our Products

Molecular Sieves
Transformer Breathers
Tank Vent Dryers
Drum Vent dryers
Desiccants
Pipeline Dryers
Re-Actrans
Pressure Relief Valves



Hydraulic Reservoir Breathers

Protecting Hydraulic Oil

Brownell Hydraulic Reservoir Breathers protect the contents of reservoir and storage vessels against water contamination. Water contamination of hydraulic oil can cause the failure of hydraulic systems.

These rechargeable units also minimise pressure differentials and odour emissions. The design of the dryers incorporates excellent weather protection, making them suitable for external applications.

An active desiccant bed retains the moisture before it enters the vessel. Field trials have proven that most existing water vapour contained within a vessel is quickly removed when these vent dryers are fitted.

Key Features

- Quick and easy to install
- Full weather coverage
- Prevents product contamination
- Rechargeable
- No energy requirements
- Constant protection
- Low dusting beaded Envirogel
- Visual colour change
- Minimised pressure differentials
- Reduced Odour emissions
- Assist flame suppression
- Dual thread mounting option
- Filters both moisture and particles
- Durable plastic construction protects from external and liquid damage



Brownell's range of products designed to keep Hydraulic oil operating at its optimum include:

Vent Dryers - Gear boxes, hydraulic reservoirs

Tank Vent Dryers - Large hydraulic reservoirs

Pipe line Dryers - For air airline protection

In Line Dryers - For fluid product protection

Hydraulics

Protecting Your Machinery

Contamination

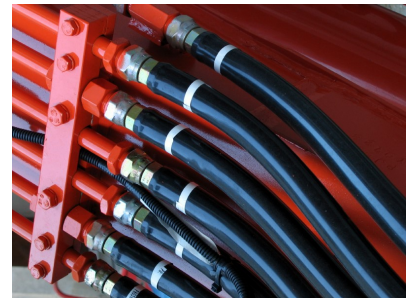
Contamination is the main cause of hydraulic system failures and can significantly reduce the product life span.

Water

Water can cause corrosion, effect seals, decrease shelf life and efficiency of hydraulic machinery. Water gets in via damaged seals, condensation in the reservoir and through the vent that allows the reservoir to breath. If water is not prevented from entering the system then damage to the machinery will occur.

Dirt and Dust

Due to the nature of hydraulics to allow movement, the reservoir level needs to rise and fall with demand. This breathing can contain harmful dust and debris, this will mix with the fluid and cause damage. Particles as small as 10 microns can cause an hydraulic system to fail.



Contaminated Hydraulic Oil Can Result In:

- Increase in viscosity
- Variation in chemical stability
- Increased corrosion, coagulation and sedimentation
- Icing at low temperatures
- Loss of efficiency
- Failure of machinery



Vent Dryers

Protecting Small Hydraulic Reservoirs

The BROWNELL range of Vent Dryers has been developed to protect hydraulic reservoirs during use and operation. Many fluids are hygroscopic (adsorb water vapour and condensate) in nature. Once exposed to normal atmospheric humidity these materials will adsorb water vapour. Water vapour which subsequently condenses can cause a fluid to be permanently damaged from the resulting physical and chemical changes.

Key Features

- Quick and easy to install
- Visual colour change
- Prevents product contamination
- Rechargeable
- No energy requirements
- Constant protection
- Minimised pressure differentials
- Provide full weather protection
- Assist flame suppression
- Reduced odour emissions
- Dual thread mounting option
- Reduces chances of overheating
- Full carbon version CARBON PURE available for protection from odours and gases



To order please quote the below part number and remember that custom made versions are available.

Part Number	Desiccant Type	Desiccant Capacity	Maximum Working Pressure
BLD7548/01-02 SEN 1/2	Indicating Silica Gel	0.6kg—1.2kg	5 Psi
BLD7870/01-02 SEN 3/4	Indicating Silica Gel	0.6kg—1.2kg	5 Psi
BLD9714/01-02 SEN 5/6	Indicating Silica Gel (90) / Activated Carbon (10/10)	0.6kg—1.2kg	5 Psi

The Vent Dryer begins to work from the moment it is installed. Practical field trials have demonstrated that when a Vent Dryer is fitted to a new reservoir of hydraulic fluid the airspace above the fluid is safe from condensation within a few hours.

Tank Vent Dryers

Protecting Larger Hydraulic Reservoirs

Brownell Tank Vent Dryers prevent the contamination of hydraulic fluid from the harmful damage moisture can do. The effects of air transfer will lead to a dry gas blanket over the stored product. Installation of these breathers has been made quick and simple, with a direct connection to an existing breather or vent pipe. The desiccant has a built in colour change indicator which provides an at a glance condition monitor.

Key Features

- Quick and easy to install
- Visual colour change indication
- IP 65 rating
- Available in mild or stainless steel
- ISO9001/2015 design approved
- Polycarbonate or glass sight window
- Easy ENVIROGEL replacement
- Floor and wall mounting
- Refillable
- ATEX Directive 94/9/EC approved
- Reduces chances of overheating
- Chemical resistant seals
- Tank Vent Dryers reduce the relative humidity in a tank to less than 10%

Many fluids, semi-solids and powders are seriously affected by moisture and other contaminants. Materials which are affected are stored in tanks which are either located in the open and vented to atmosphere or are located in the process area.

Fluid Contaminants

The ingress of these contaminants occurs whenever material is drawn from the tank by:

- Operational demand
- Thermal breathing
- Barometric pressure

Purging

Vents Dryers also allow the purging of air bubbles which can build up inside hydraulic systems.

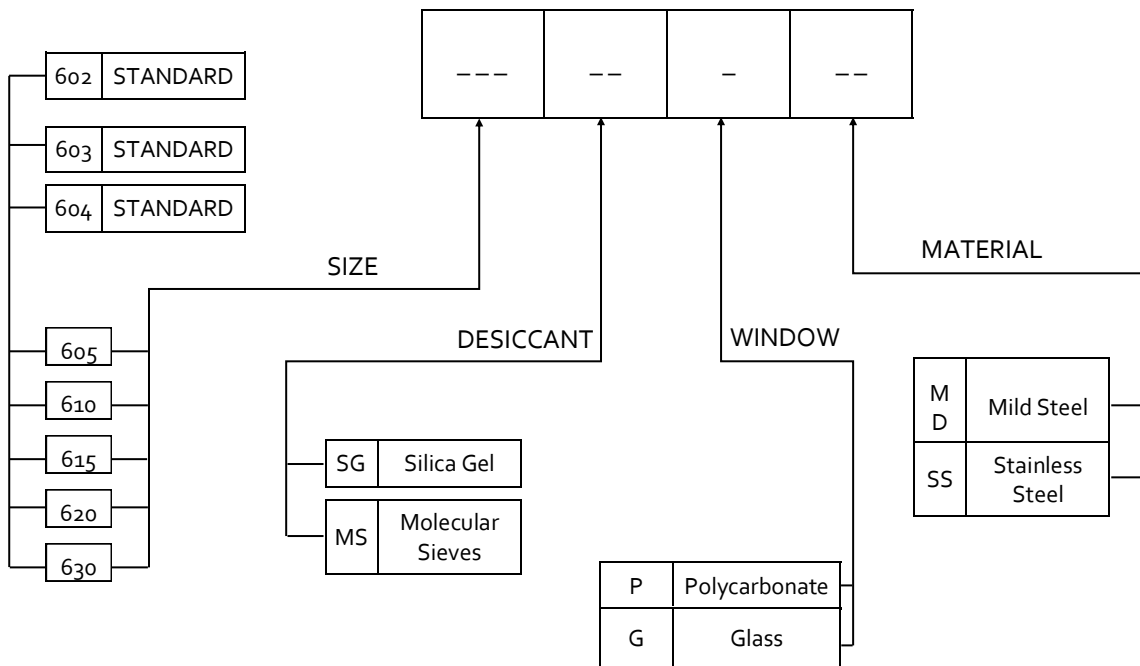
As hydraulic fluid is used it causes friction which makes it heat. Using vent dryers allow the heat a place to exit, preventing overheating.



Tank Vent Dryers

How to Order Your Tank Vent Dryer

Order Code and Specification



An example of an order code:
 If you would like to order 610 Tank Vent Dryer in stainless steel with glass sight window filled with silica gel, your order code will look like this:

610 SG G SS

MODEL		602	603	604	605	610	615	620	630
Maximum Filling or Emptying Rate	m ³ /hr	8.4	10.7	13.8	24.6	28.9	62.9	114	250
	litres/min	150	200	250	410	480	1048	1897	4163
	c.f.m.	5.3	7	8.8	14.5	17	37	67	147
	imp. galls/min	33.3	44.4	55.5	90	206	230	417	916
Maximum Fluid Capacity Related to Desiccant Content	m ³	0.5	1.5	3	9	55	125	225	500
	litres	500	1500	3000	9000	55000	125000	225000	500000
	ft ³	17.6	53	106	318	1975	4431	7930	17658
	imp. galls	111	333	666	1981	12297	27593	49387	109972
Replacement Desiccant Charge Data	wt. of spare charge	N/A	N/A	N/A	3.30kg	10.75kg	20.00kg	35.00kg	67.00kg
	wt. of desiccant	0.6kg	1.2kg	1.9kg	1.40kg	5.60kg	12.50kg	22.40kg	50.00kg

The maximum flow rate will give a pressure drop of approximately 3" water gauge

Pipeline Dryers

Air Drying

Brownell Pipeline Dryers are primarily used for reducing the water vapour content to a safe level in compressed air or process gas pipelines. These dryers are suitable for small diameter pipelines and working pressures up to 7 bar. Dryers are usually filled with either silica gel or molecular sieves desiccant for water vapour removal, but the use of different grades of molecular sieves desiccant can provide selective adsorption of other components.

Key Features

- Point of use dry air
- Low cost
- Easy installation
- Available with condition indicator
- Different filtration levels available
- Compression fitting interface
- Low - medium pressure ratings



Applications

- Air Exhaust Lines
- Vacuum Lines
- Low Pressure Compressed Air Lines
- Marine Vehicles



To order please quote the below part number and remember that custom made versions are available.

Part Number	Desiccant Type	Desiccant Capacity	Maximum Working Pressure
BLD4123/01-03 PLD 1/2/3	Molecular Sieves	0.06kg-0.2kg	60 psi
BLD6927/01-05 PLD 4/5/6/7	Indicating Silica Gel	0.06kg-0.3kg	20 psi
BLD8438/01-04 CAD 1/2/3/4	Molecular Sieves and Indicating Silica Gel	1kg	100 psi
BLD10787/01-03 LD 1/2/3	Indicating Silica Gel	0.6kg-1.8kg	25 psi

In - Line Dryers

Fluid Drying

Brownell has introduced a combined in line dryer which adsorbs water contamination and in addition filters particles and other foreign debris from the oil.

Using the active adsorbent the in line dryer is capable of reducing water levels to less than 10 ppm depending on the fluid or oil being dried.

The in line dryer prevents property changes caused by water contamination including viscosity, emulsification and icing at low temperatures.

Key Features

- ◆ Quick and easy to install
- ◆ Full weather coverage
- ◆ Prevents product contamination
- ◆ Rechargeable
- ◆ No energy required
- ◆ Constant protection



In Line Dryer's outlet coupling being adjusted

To order please quote the below part number and			
Part Number	Desiccant Type	Desiccant Capacity	Maximum Working Pressure
BLD9447 ILD	Molecular Sieves	1 Kg	100 Psi

Specifications

Oil Flow Rate (typical) pumped	100 litres per minute
Oil Filter Rate (optional)	2-25 Microns
Adsorbent	Molecular Sieves Type 3A
Adsorbent Contents	1 kg
Adsorbent Capacity	200 grams
Temperature Range	-30°C to +80°C
Mounting	Horizontal - Vertical
Weight	7.10 kg

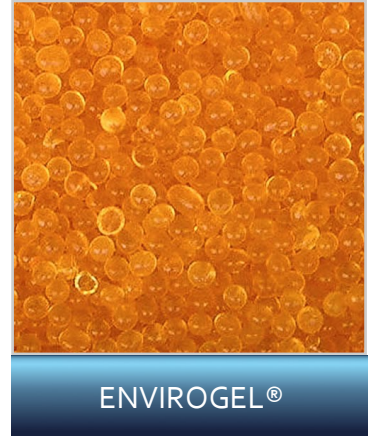
Desiccants

Drying and Purifying

A desiccant is a moisture adsorbing material that can create and maintain a dry environment or gas stream. Silica gel, activated clay or molecular sieves are the most common desiccants. With Brownell's Hydraulic Reservoir Breathers we use Envirogel because of its high capacity and colour indication.

Envirogel

- Selective adsorption
- Ultra low moisture concentration
- Low dusting
- High capacity
- Saturation indication
- Uniform flow distribution
- Odour adsorption



ENVIROGEL adsorbs 15% of its own weight of water. 1kg of ENVIROGEL adsorbs 150g of water

Water vapour can be seen being adsorbed by the silica gel desiccant at the orange/green interface and as it progresses through the adsorbent bed.

Reactivating

We would recommend the replacement or reactivation of the Envirogel once it has changed colour from orange to green as it has become saturated with water. Depending on the atmospheric conditions the amount of time this takes can vary.

Activated Carbon

The addition of activated carbon in some of our units enables the adsorption of volatile organic compounds and the release of smells and odours.

- Treatment of odours
- Industrial air filtration
- Removal of exhaust fumes
- Fumes, odour & outgassing removal
- Solvent recovery
- Toxic gas control
- Waste water treatment



Desiccants

Molecular Sieves

A Versatile adsorbent for all applications

Molecular Sieves are synthetic crystalline zeolites in which the atoms are arranged in a definite pattern. Internally, the structure has many cavities inter-connected by smaller pores of a uniform size. These pores are only able to accept and pass to the cavities molecules of the same and smaller size, hence the name molecular sieve.

The water vapour adsorption characteristics are very different from those of silica gel. Molecular sieves can adsorb up to approximately 20% by weight of water before the relative humidity of the surrounding air increases significantly. Any further increase causes a large rise in relative humidity.

Molecular Sieves are available in four primary generic forms, 3A, 4A, 5A and 13X. Each form has its own specific properties and applications, and all retain a polar preference for adsorption of water.



Powder

STANDARD PACKAGING

Powder: 20kg PE bag

Paste: 30kg steel drums; 100kg steel drums; 1000kg IBC

Pellets: 125kg steel drums; 135kg steel drums

Beads: 125kg steel drums; 135kg steel drums; 150kg steel drums

Other packaging (available upon request) includes bulk bags and bulk trucks.



Beads and Pellets

Molecular Sieves

- *Dries mixed streams*
- *Purifies and dries*
- *Achieves low dewpoints*
- *Low investment and operating costs*
- *Versatile range of adsorbents for varied applications*
- *Available as powders, pastes, beads and pellets*



Paste



brownell.co.uk



brownell.fr
envirogel.co.uk
neps1000.com
reactrans.com