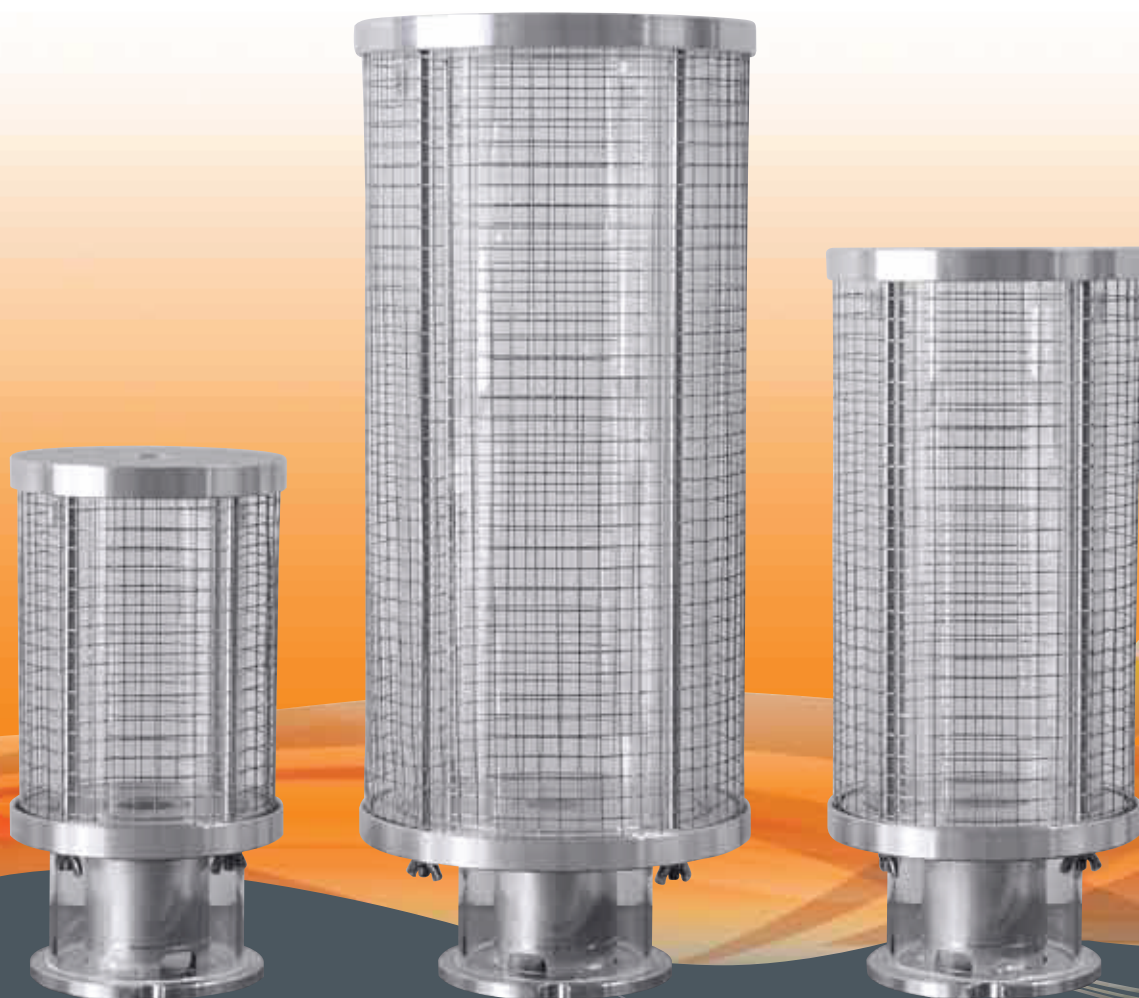


## Silica Gel Breathers



Desiccant Dryers



**“High voltage transformers can breathe easy!”**



### Moisture Ingress Problems

High Voltage Transformers are insulated and cooled internally with oil. If the moisture content of the oil is too high, catastrophic failures can occur. Moisture is absorbed into the oil from any air the oil has contact with. Moisture contamination is a problem for any fluid reservoir that must “breathe”, i.e., the fluid expands and contracts during use. This includes transformers, pumps, tanks, turbines, gearboxes etc. Contaminated fluids lose their desired properties and can cause damage to the fluid system and may become unstable and hazardous.

To prevent this moisture contamination, air coming into contact with the fluid is dehydrated. The simplest way of removing the moisture in air is with a hygroscopic agent (such as indicating Silica Gel). This gel will absorb up to 40% of its mass in water, it will gradually change colour to show that it is saturated. When the gel has reached its maximum absorption it can be regenerated by a drying process, ready for use again.



**Transformer explosion caused by excess moisture in the transformer's oil.**

### Standard Breather Sizes

Type	Transformer Oil Content Liters Approx. Guide	Silica Gel Capacity (Kg)	Gel Chamber Size	Approx overall Dimensions	Attachment thread
<b>SBD</b>	1 - 750	0.25	Dia 75 x 120 H	Dia 125 x 278 H	½ inch BSP
<b>SB1</b>	750 -1800	0.6	Dia 75 x 240 H	Dia 125 x 400 H	½ inch BSP
<b>SB2</b>	1800 - 4800	1.6	Dia 125 x 210 H	Dia 175 x 400 H	1 inch BSP
<b>SB3</b>	4800 - 7500	2.5	Dia 150 x 210 H	Dia 200 x 370 H	1 inch BSP
<b>SB4</b>	7500 - 12000	4.0	Dia 150 x 340 H	Dia 200 x 500 H	1 inch BSP
<b>SB5</b>	12000 - 19500	6.5	Dia 200 x 310 H	Dia 250 x 475 H	1 inch BSP
<b>SB6</b>	19500 - 30000	10	Dia 200 x 480 H	Dia 250 x 640 H	1 inch BSP
<b>SB7</b>	30000 - 37500	12.5	Dia 200 x 600 H	Dia 250 x 760 H	1 inch BSP
<b>SB66-PTM</b>	37500 - 60000	20	Qty (2) Dia 200 x 480 H	250D x 550 W x 880H	1 inch BSP
<b>SB77-PTM</b>	60000 - 75000	25	Qty (2) Dia 200 x 600H	250D x 550 W x 1000H	1 inch BSP
<b>PTM</b>	Parallel Twin Manifold	N/A	N/A	65D x 365W x 260H	1 inch BSP
<b>SVM</b>	Series Vertical Manifold	N/A	N/A	Dia 80 x 80L	1 inch BSP
<b>OFB</b>	Oil free Oil Bath	N/A	N/A	Dia 150 x 120L	M80 x 2.5Pitch Thread

Please note:

- 1.\*Includes small oil bath 2.Breather includes protective stainless steel mesh screen unless otherwise specified
- 3.In extremely humid conditions, it is recommended to increase breather capacity to the next largest size
- 4.Breathers are not charged with Silica Gel unless otherwise specified



## Nybro Silica Gel Breathers

The standard range of Nybro Silica Gel breathers are made with a combination of high quality materials including high tensile strength 5083 aluminium plate, AISI 316L Stainless Steel Tie Rods and Protective Mesh, Borosilicate Glass Tube and UV Resistant Polyvinylchloride (UVPVC) Baffles. An oil bath fitted to the breather prevents the Gel being directly exposed to the atmosphere and saturating prematurely. The innovative baffle system ensures the even saturation of gel, and prevents any oil from contaminating the gel. All of the components are manufactured to a rigorous 41 point Quality Control checklist, ensuring that every breather supplied is of the highest standard. The high standard of construction increases corrosion, resistance and provides a long service life.



## Nybro Acid Breathers

The presence of moisture in acids may dramatically increase the corrosiveness which risks damaging the tank and equipment. Moisture added to acids may react exothermically, generating heat very quickly and can be potentially dangerous.

Materials used in the standard range of breathers such as aluminum and stainless steel are unsuitable when used with acids. For acid tanks, components for the gel chamber are made from a UV resistant Polyvinylchloride (UVPVC). The oil bath for these breathers is machined from a single billet of UVPVC. The acid breather functions in the same way as standard breather. The Gel Chamber is made from Borosilicate glass and the exterior components are made from AISI 316L Stainless Steel to resist environmental corrosion.

**Special materials are used for the construction of acid breathers.**

Preventing moisture entering into the acid tanks will help protect all the equipment that comes into contact with the acid and help maintain quality and concentration.

## Breather Manifolds

Where the vessel size is larger than the capacity in the standard range, Nybro can supply a range of manifolds allowing breathers to be connected, increasing the dehydrating capacity. This can also be very useful in situations where a longer service interval is required, such as high humidity areas.

Allowing tanks that contain hydrocarbon vapours to vent into the atmosphere is potentially hazardous. A Hybrid system using an activated charcoal breather and a silica gel breather can solve this.

One way valves allow ingress of air through silica gel and air to be vented out through activated charcoal.

The silica gel removes the moisture, and the activated charcoal captures any volatile organic compounds or gaseous hydrocarbons. Using manifolds the breathers can be arranged in pairs, a quad, or four inline.



**Manifolds allow for the flexible arrangement of breathers to suit your application.**



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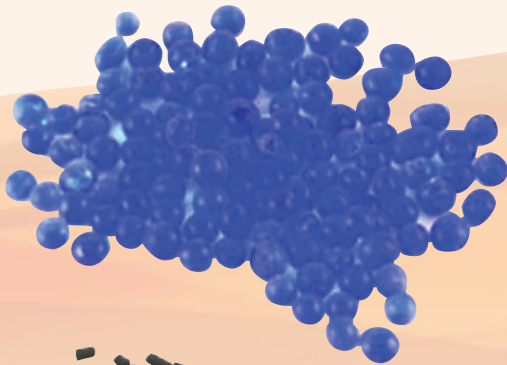
### Drum Breather

For smaller drums that are not used frequently, the presence of moisture can cause corrosion to the drum and degrade the quality of the contents. For many smaller operators this can see expensive lubricants and chemicals go to waste. Fitting a drum breather will provide the same benefits as the larger breathers in a more cost effective method.

The drum breather has a similar construction to a standard SB1 breather, however with a smaller gel chamber. A simple vent tube allows for the quick and easy installation and the same high quality materials used in the standard breather range ensure a long and effective service life. These smaller breathers are also suitable for installing directly to machinery such as hydraulic pumps and gearboxes. It makes economic sense to protect the investment made into quality lubricants and chemicals.



**Specially designed for storage drums.**



**Silica Gel (Blue) and Activated Charcoal (Grey).**

### Indicating Silica Gel and Activated Charcoal

Breathers are not supplied charged with Gel or Charcoal unless requested. International orders are never supplied charged to allow for custom inspections. This ensures the product will be delivered safely without tampering. Nybro can supply breathers to domestic clients charged with Indicating Silica Gel or Activated Charcoal as required. Indicating Silica Gel has a blue appearance which changes to pink, as it becomes saturated with moisture. It can be reprocessed with a drying unit without being removed from the breather and will return to its blue colour. The Silica Gel can also be removed from the breather and reprocessed in bulk.

Indicating Silica Gel and Activated Charcoal can be supplied in bulk. Indicating Silica Gel is supplied in bead form for ease of handling and maximum surface area exposure to moisture. Activated Charcoal is supplied in granulated form for ease of handling and safety. Spent Activated Charcoal can be disposed of easily by incineration, depending on contaminants being trapped.

Notes: