Reservoir Vent Filters
Spin-on Air Filters & Adaptors
Introduction

**Prevent Airborne Ingression**
A key element of contamination control is reservoir vent filtration. Reservoir vents are a common source of both water and particulate contamination from the atmosphere surrounding a hydraulic system.

Fluid contamination can increase:
- Equipment wear
- Cause corrosion
- Reduce fluid performance and life

Hydraulic components have become more complex and operate at higher pressures, flows and temperatures thus making fluid cleanliness a key to longer component life and system reliability. Vickers reservoir vent breathers make it easier to attain higher cleanliness levels, and can extend fluid filter life in the system.

**Vickers Offers Hi-Tech Options**
Vickers recognizes the variety of atmospheric conditions which hydraulic systems encounter, so we offer a complete line of vent filters to prevent airborne contamination.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>H2O-Gate</th>
<th>DIRT-Gate</th>
<th>V0211</th>
<th>V0191</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Indication*</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Control</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Water/Moisture Control</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrosion Resistant Housing</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* For systems where a visual indicator cannot be seen for inspection and subsequent action, Vickers recommends service for the vent filter after 500 hours of machine operation.

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**Element Model Code**

**BR110**

**Specifications**
- Housing Material - ABS Plastic
- Temperatures - Up to 121°C (250°F)
- Efficiency - 99% at 3 micron

**Features & Benefits**
- Rugged ABS plastic housing can be exposed to temperatures as high as 121°C (250°F), and is corrosion resistant.
- Visual mechanical indicator, which triggers at ΔP 0.07 bar (1 psid) (during exhalation).
- Easy installation. Lightweight design requires only hand tightening.
- Low pressure drop across filter media reduces stress on reservoir and system components.
- Reversible flow-through media in the H2O-Gate allows moisture to exit while filter regenerates its capacity to prevent moisture ingestion.
- Plated steel core prevents filter media distortion.

**Performs as a gate.**

During the "inhalation" cycle, the H2O-Gate proprietary media blocks the water vapor from entering the reservoir. During the "exhalation" cycle, the media allows the moisture in the reservoir air to exit. The moisture is blown off the media by the exiting air, restoring the media’s water barrier capacity, and the moisture barrier mechanism is not affected by the amount of exposure to moisture. The reservoir air is maintained at a low relative humidity, and more importantly, at a lower dew point temperature than the ambient temperature.

**Highly effective**

In an operating system, the H2O-Gate vent breather creates a moisture barrier when there is a 2°C (5°F) degree difference between reservoir and ambient temperature and when there is a 10% exchange of air volume above the fluid.

**Pressure Drop**

The ΔP indicator triggers at ΔP 0.07 bar (1 psid) (during exhalation).

**NOTE:** Mobile systems may actuate the indicator due to vibrations, in which case the element should be changed after 500 hours of operation.
Element Model Code
BR210

DIRT-Gate media is made of a strong graded matrix especially designed for removing airborne contamination. This media is pleated to maximize surface area (high dirt holding capacity) and provides high efficiency (99% at 2 micron) with very low pressure drop.

Specifications
Housing Material - ABS Plastic
Temperatures - Up to 121 °C (250 °F)
Efficiency - 99% at 2 micron

Features & Benefits
- Rugged ABS plastic housing can be exposed to temperatures as high as 121 °C (250 °F), and is corrosion resistant.
- Visual mechanical indicator, which triggers at 0.07 bar (1 psid) (during exhalation).
- Easy installation. Lightweight design requires only hand tightening.
- Low pressure drop across filter media reduces stress on reservoir and system components.
- Plated steel core prevents filter media distortion.

Pressure Drop

NOTE: Mobile systems may actuate the indicator due to vibrations, in which case the element should be changed after 500 hours of operation.
V0211 and V0191 Spin-on Elements

**V0211 Series**

**Pressure Drop**

<table>
<thead>
<tr>
<th>Fluid Displacement l/min (USgal)</th>
<th>284 (75)</th>
<th>568 (150)</th>
<th>852 (225)</th>
<th>1136 (300)</th>
<th>1419 (375)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Flow SCFM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V0211B1R03 Breather</td>
<td>0.007 (0.108)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V0211B2R03 Breather</td>
<td>0.005 (0.073)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Element Model Code**

**V0211B*R03**

Element length
1 - 184 (7.30)
2 - 286 (11.3)

**Dimensions mm (inch)**

Element length
1 - 184 (7.30)
2 - 286 (11.3)

See pages 5 & 6 for available adaptor options.

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**V0191 Series**

**Pressure Drop**

<table>
<thead>
<tr>
<th>Fluid Displacement l/min (USgal)</th>
<th>189 (50)</th>
<th>284 (75)</th>
<th>379 (100)</th>
<th>568 (150)</th>
<th>757 (200)</th>
<th>852 (225)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Flow SCFM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V0191B1R03 Breather</td>
<td>0.007 (0.108)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V0191B2R03 Breather</td>
<td>0.005 (0.073)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Element Model Code**

**V0191B*R03**

Element length
1 - 147 (5.80)
2 - 203 (8.00)

**Dimensions mm (inch)**

Element length
1 - 147 (5.80)
2 - 203 (8.00)

See pages 6 & 7 for available adaptor options.
Spin-On Vent Filter Adaptors

Models & Part Numbers

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Vent Filters Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>924709</td>
<td>Bayonet, 0.40 bar (6 psi) check</td>
<td>V0211, BR110, BR210</td>
</tr>
<tr>
<td>930865</td>
<td>Bayonet, 0.20 bar (3 psi) check</td>
<td>V0211, BR110, BR210</td>
</tr>
<tr>
<td>924710</td>
<td>Bayonet, no check</td>
<td>V0211, BR110, BR210</td>
</tr>
<tr>
<td>P-077002</td>
<td>Threaded pipe</td>
<td>V0211, BR110, BR210</td>
</tr>
<tr>
<td>932182</td>
<td>Threaded pipe</td>
<td>V0191</td>
</tr>
<tr>
<td>932400</td>
<td>Bayonet, no check</td>
<td>V0191</td>
</tr>
</tbody>
</table>

Threaded Pipe Adaptors

Installation Dimensions

For V0211, BR110 & BR210
Part: P-077002

Bayonet Adaptor Installation

All Vickers Vent Filters are easily applied to reservoirs via Spin-On adaptors.

For V0191
Part: 932400

Bayonet style 1/4" turn connection with gasket
Roll pin

For V0191
Part: 932182

O-ring

O-ring

11/2-16 UN

3/4 NPT

44.2 (1.74) 54.4 (2.14)

63.5 (2.50)

38.1 (1.50)

11/8-16 UN

O-ring

Bayonet style 1/4" turn connection with gasket
Roll pin

63.5 (2.50)

11/8-16 UN

O-ring

Bayonet style 1/4" turn connection with gasket
Roll pin

11/2-16 UN

O-ring

Standard Mounting Flange of a reservoir filler/breather assembly
Bayonet Adaptors

For V0211, BR110 & BR210
W/Pre-vent
Part: 924709 0.40 bar (6 psid)
Part: 930865 0.20 bar (3 psid)

Pre-Vent Option
In a system where the fluid level drops and rises with cylinder actuation, the Pre-Vent feature minimizes the amount of air exchange through the vent filter.

As the oil level drops, air enters the reservoir and is cleaned as it passes through the vent filter. As the oil level begins to rise, the pressure-vent stops the air from escaping the reservoir, and the tank becomes pressurized up to a maximum of the pressure vent setting (either 0.20 bar or 0.40 bar (3 or 6 psi)). The next time the system cycles, and the oil level drops, the air inside the reservoir will expand to make up the difference in volume.

CAUTION: The reservoir tank and system must be designed to withstand a pressure of either 0.20 bar or 0.40 bar (3 or 6 psi).

Pre-Vent exhale check
Inhale check

For V0211, BR110 & BR210
Part: 924709 0.40 bar (6 psid)
Part: 930865 0.20 bar (3 psid)

Bayonet Adapter with 0.4 bar (6 psid)
Pressure Vent

Flow (CFM)

Flow (CFM)

Note: 20 CFM = 570 l/min

Pump Pressure
PVH 0.50 bar (7 psi)
PVQ 0.35 bar (5 psi)
PVB 0.35 bar (5 psi)
PVE 0.35 bar (5 psi)
VVA 2.00 bar (29 psi)
VVB 1.00 bar (15 psi)

Note: Max. drain port pressure for variable pumps:
PVH 0.50 bar (7 psi) (pressurized)
PVQ 0.35 bar (5 psi)
PVB 0.35 bar (5 psi)
PVE 0.35 bar (5 psi)
VVA 2.00 bar (29 psi)
VVB 1.00 bar (15 psi)
### Vickers® Recommended System Sampling Frequency Chart

#### Systems with target cleanliness 17/15/12 or lower

<table>
<thead>
<tr>
<th>System Pressure</th>
<th>&lt; 140 bar (2000 psi)</th>
<th>140 - 210 bar (2000 - 3000 psi)</th>
<th>&gt; 210 bar (3000 psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hours or less operation per day</td>
<td>4 months</td>
<td>3 months</td>
<td>3 months</td>
</tr>
<tr>
<td>Over 8 hours of operation per day</td>
<td>3 months</td>
<td>2 months</td>
<td>2 months</td>
</tr>
</tbody>
</table>

#### Systems with target cleanliness 18/16/13 or higher

<table>
<thead>
<tr>
<th>System Pressure</th>
<th>&lt; 140 bar (2000 psi)</th>
<th>140 - 210 bar (2000 - 3000 psi)</th>
<th>&gt; 210 bar (3000 psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hours or less operation per day</td>
<td>6 months</td>
<td>4 months</td>
<td>4 months</td>
</tr>
<tr>
<td>Over 8 hours of operation per day</td>
<td>4 months</td>
<td>3 months</td>
<td>2 months</td>
</tr>
</tbody>
</table>

#### Initial commissioning or major rebuild

- Large system (2000 liters (530 USgal) or more) and systems with servovalves
  - Sample fluid before start-up
  - Sample fluid during first day running
  - Sample fluid after one week
  - Sample fluid after one month operation

#### Other systems

- Sample during first day running
- Sample after one month operation

#### Systems in distress or immediately after a maintenance event

(i.e. increased heat, erratic operation, unusual sound etc.)

- Immediate