Restrictive Flow Products
For OEM and Custom Applications

Porvair Filtration Group’s restrictive flow products (RFPs) are a cost effective alternative for gas flow control and limiting in dynamic and static gas flow applications. Our RFPs, manufactured using our Sinterflo® P sintered metal powder media, can replace costly single orifice flow restrictors, capillary tubes, flow limiters, micro-metering valves and mass flow controllers (MFC) with an effective high performance solution in demanding conditions.

Multiple pathways are more resistant to particulate fouling and erosion, a common occurrence with any single orifice flow-controlling or limiting device. Porvair RFP Sinterflo® P media has over 200 times more surface area of an equivalent single orifice flow control or limiting device.

Sinterflo® P metal media can withstand heavily particulate-laden gas streams without any loss in performance or the need for re-calibration or cleaning. It also creates a low gas approach velocity collecting particulate on the surface of the media. Gas flow finds its way through a tortuous route at low gas velocities not attainable using single orifice flow control or limiting devices.

Applications

- **Medical gas**
  Flow control anaesthesia, limiting gas flow.

- **Food and beverage**
  Nitrogen blanketing for preservation during packaging extending shelf life.

- **Micro CO² injection**
  For precise control of carbonation.

- **Safety**
  Limiting maximum gas flow from a damaged valve, regulator or broken gas line.

- **Gas venting**
  Precise controlled gas venting of diaphragm and line bleed regulators.

- **Gas panels**
  Process control eliminating MPFC no electrical or mechanical moving parts.

- **Analytical equipment**
  GC & LC and mass spectrometer equipment for gas and liquid flow control.

Features and benefits

- **Consistent Reliability**
  - Specific Sinterflo® P sintered metal powder media developed for restrictive flow products.
  - Individually calibrated for gas type, pressure and flow rate.
  - Flow data traceability provided for each individual part or lot size.
  - Sinterflo® P media can be used in bi-directional gas flow applications.

- **Robust Construction**
  Sinterflo® P sinterbonded construction ensures there is no particle shedding within the apparatus.

- **Zero Maintenance**
  No built-in moving parts; the parts can withstand heavily particulate-laden gas streams without any loss in performance or the need for re-calibration or cleaning.

- **Corrosion Resistant**
  As standard, flow restrictive products and their hardware are manufactured from 316 and 316L stainless steel. Other materials are available on request.

- **Porous Media**
  Multiple pathways are more resistant to particulate fouling and erosion.

- **Flexible Options**
  Custom fittings and assemblies available, as well as the option to use customer supplied hardware assemblies.
Features and Benefits

Single Orifice Flow Restrictor Device

High gas velocity, pressure, heat causing erosion
Particulate fouling changes gas flow volume
Downstream turbulent gas flow

Porvair RFP Restrictive Flow Product

Low gas approach velocity, virtually no effect on performance
Sinterflo® P media with multiple pathway resists particulate fouling
Low velocity gas flow creates laminar downstream flow

Specifications

Materials of Manufacture

Standard restrictive flow products are manufactured from:
Media: 316L stainless steel
Hardware: 316 stainless steel
Other available materials:
• Hastelloy®-C276
• Hastelloy®-C22
• Inconel®-600
• Titanium

Standard Gas Flow Rates

Standard gas flow rates from 0.2sccm. Other gas flow rates available.

Standard Test Gas Pressure

2,068mbar (30.0psig) to atmosphere.
Maximum test gas pressure 68,950mbar (1,000psig).
Specific gas pressure required.
## Specifications

### Two Standard RFP Tube Union Types
- Tube Union:
  - Tube Union: 1/8" x 1/8" 
  - Tube Union: 1/4" x 1/4"

### Three Standard RFP Male Connector Types
- Tube 1/8" x NPT 1/8"
- Tube 1/4" x NPT 1/8"
- Tube 1/4" x NPT 1/4"

### Two Standard Hex Nipple Types
- NPT 1/8" x NPT 1/8"
- NPT 1/4" x NPT 1/4"

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### RFP: Restrictive Flow Product Configurator

#### Build your RFP

<table>
<thead>
<tr>
<th>RFP</th>
<th>SL</th>
<th>1/4</th>
<th>25</th>
<th>SCCM</th>
<th>7.5%</th>
<th>30.0</th>
<th>ATM</th>
<th>SA</th>
<th>SA</th>
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</thead>
<tbody>
<tr>
<td>Product code</td>
<td>RFP flow restrictor</td>
<td>Hardware type SL sleeve</td>
<td>Hardware size 1/4&quot;</td>
<td>Flow rate</td>
<td>Flow rate unit of measure</td>
<td>Flow tolerance + / - percent</td>
<td>Standard tolerance 7.5%</td>
<td>Inlet / upstream pressure</td>
<td>Outlet / downstream pressure</td>
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### Standard flow rates SCCM nitrogen 30 psig to atmosphere

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<tr>
<th>Porous material</th>
<th>0.2</th>
<th>0.5</th>
<th>2.0</th>
<th>5.0</th>
<th>10.0</th>
<th>25.0</th>
<th>50.0</th>
<th>100.0</th>
<th>200.0</th>
<th>400.0</th>
<th>600.0</th>
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<tbody>
<tr>
<td>Hardware types</td>
<td>Hardware sizes</td>
<td>Hardware material</td>
<td>Porous material</td>
<td>Material codes: Porous material &amp; hardware</td>
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<tr>
<td>RFPSL - Sleeve</td>
<td>0.125&quot; x 0.125&quot;, 0.250&quot; x 0.250&quot;</td>
<td>Standard Material 316L SS</td>
<td>Standard Material 316L SS</td>
<td>SA: 316L Stainless Steel</td>
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</tr>
<tr>
<td>RPPTU - Tube Union</td>
<td>1/8&quot; x 1/8&quot;, 1/4&quot; x 1/4&quot;, 3/8&quot; x 3/8&quot;</td>
<td>Special Order Hastelloy-C22</td>
<td>Special Order Hastelloy-C22</td>
<td>HA: Hastelloy-C22</td>
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<tr>
<td>RFPMMC - Male Connector</td>
<td>1/8&quot; Tube x 1/8&quot; MNPT, 1/8&quot; Tube x 1/4&quot; MNPT, 1/4&quot; Tube x 1/8&quot; MNPT, 1/4&quot; Tube x 1/4&quot; MNPT</td>
<td>Hastelloy-C276</td>
<td>Hastelloy-C276</td>
<td>HC: Hastelloy-C276</td>
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<td>RFPVU - VCR Union</td>
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<td>Inconel-600</td>
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<td>ML: Monel-400</td>
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The document provides details on various types of flow restrictors and male connectors, along with their specifications and material options. It includes tables and diagrams to illustrate the product configurator and flow rates. The tables list the hardware types, size options, material codes, and special order materials available. The flow rates are specified in SCCM nitrogen, with pressure ranges from 30 psig to atmosphere, and are applicable for standard and special order materials.