GasPro™ RF Series

High-Purity Sintered Metal Flow Restrictor Products

GasPro RFPs (restrictive flow products) are sintered porous metal flow restrictors with hundreds of micropores. These are clog resistant, flow limiting devices used to deliver highly acurate flow of high-purity speciality gases or limit the flow of compressed semiconductor process gases.

Our GasPro™ Sintered metal flow restrictors are highly reliable, low cost, flow control parts that will provide a quick return on investment for a range of applications.

Porous Metal Flow Restrictor Benefits

- **Improved gas safety management**
  RFPs are in-line devices that precisely limit the gas flow in case of catastrophic failure of a valve, pressure regulator, distribution manifold or gas supply line. They can be used in a wide range of highly toxic and pyrophoric gases to reduce the handling risk.
- **Semiconductor industry, building & fire code compliance**
  RFPs can assist in complying with SEMI S5-0310 Safety Guidelines for sizing and identifying flow limiting devices for gas cylinder valves, NFPA 318 Standard for Protection of Semiconductor Fabrication Facilities, CGA G-13 Storage and Handling of Silane and other gas safety standards.
- **Cost reduction of exhaust venting systems**
  Toxic gas delivery systems with GasProTM RFPs installed can be designed with smaller, lower flow exhaust systems and save significant capital investment.
- **Reliable, tamper proof flow control**
  Provides acurate, fixed flow without the requirement of adjustments, moving parts or power. Low cost replacement for some mass flow controllers. Ideal for gas flow mixing and splitting.
- **Sintered porous media provides laminar flow**
  With hundreds of small flow channels, our GasPro™ RFP sintered metal flow restrictors provide smooth, laminar flow and resist clogging from particles in the gas supply. The porous media will not wear or degrade from friction.
- **Pressure stabilization**
  Prevention of pressure surges and pressure shock protects and improves dynamic flow control performance downstream.

Specifications

- **Porous material options**
  316L stainless steel and Hastelloy® C22.
- **Hardware**
  Electro polished hardware made from 316L stainless steel or Hastelloy® C22.
- **Flow range**
  From 0.2 sccm N2 @ 30psig (2 bar) equivalent. Most RFP's are callibrated to +/- 7.5%. Tighter tolerances may be available by special request. Standard products can be used in pressures up to 150psig. Custom designed products can be manufactured to withstand pressures up to 3000psig.
- **Test gases**
  Clean dry air, nitrogen, hydrogen, helium and argon are commonly used. Other specialty gases are correlated to an equivalent N2 flow using viscosity conversions.
- **Cleanroom processing**
  kevin@border-digital.co.uk Particle free, chemically clean, organic free handling and bagging of RFPs for out-of-package cleanliness.
- **Manufactured in the USA**

Features and Benefits

Single Orifice Flow Restrictor Device

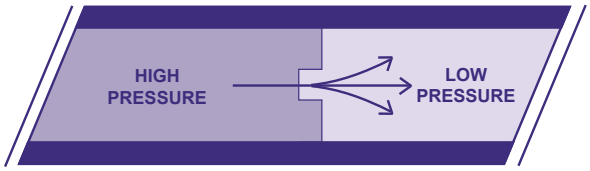
High gas velocity, pressure, heat causing erosion

↓

Particulate fowling changes gas flow volume

↓

Downstream turbulent gas flow



Porvair RFP Restrictive Flow Product

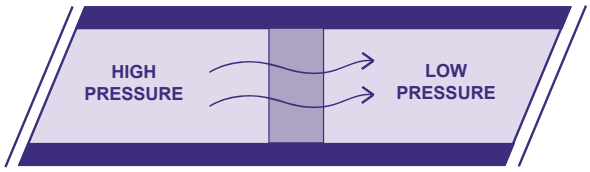
Low gas approach velocity, virtually no effect on performance

↓

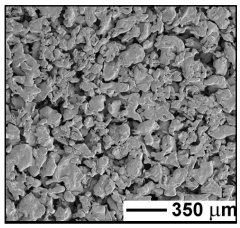
Sinterflo® P media with multiple pathway resists particulate fowling

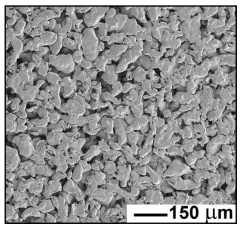
↓

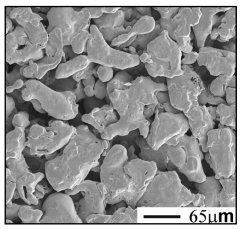
Low velocity gas flow creates laminar downstream flow

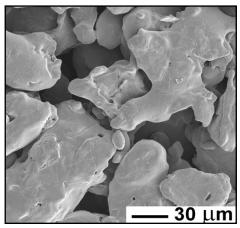


Restrictive Flow Product Sinterflo® P Media









Specifications

Materials of Manufacture

Standard restrictive flow products are manufactured from:

Media: 316L stainless steel

Hardware: 316 stainless steel

Other available materials:

- Hastelloy®-C22

Standard Gas Flow Rates

Standard gas flow rates from 0.2sccm.

Other gas flow rates available.

Standard Test Gas Pressure

2,068 mbar (30.0psig) to atmosphere.

Maximum test gas pressure 68,950mbar (1,000psig).

Specificy gas pressure required.

Standard Test Gas Type Nitrogen

Available test gases:

- Air
- Argon
- Carbon Dioxide
- Helium
- Hydrogen
- Oxygen
- Gas Mixtures
- Exotics

Specifications

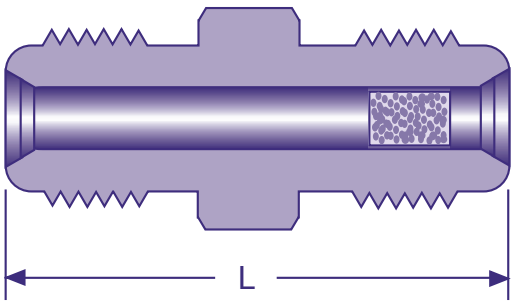
GasPro™ RFP part number builder

GPRF	Hardware type and size	Porous Metal	Flow (SCCM)	Calibration Gas*	Gas inlet pressure (PSIG)	Gas outlet pressure (PSIG)
GPRF	FS4 = ¼" face seal 316L SM = 1.125" C-seal 316L	SS = 316L HA = Hastelloy C22	From 0.2 sccm	N2 = nitrogen CDA = air AR = argon HE = helium CO2 = carbon dioxide H2 = hydrogen O2 = oxygen	30 psig is standard. Other calibration pressures available by request.	0 = atmosphere

**Calibration with other gases or gas mixtures may be possible by special request.*

EXAMPLE:
GPRF-FS4-SS-150-N2-30-0
316L flow restrictor
150 sccm
1/4" VCR union
Nitrogen calibration
30 psig inlet pressure
Outlet pressure - to atmosphere

¼" face seal union



1.125" C-Seal

Dimensions

Length (L)	Flat (F)
1.55" (39.4mm)	0.625" (15.9mm)

Please note, this product is custom made to meet specific application requirements. For further information, please contact a member of the Sales Team. Visit us online for current and comprehensive GasPro™ Restrictive Flow Products and Sinterflo® P Sintered Metal Powder Flow Restrictors information.

Porvair Filtration Group Ltd.
Queensway
Stem Lane, New Milton,
Hampshire, BH25 5NN, UK
Tel: +44 (0)1425 612010
Email: microelectronics@porvairfiltration.com

Porvair Filtration Group Inc.
1226 Caldwell Blvd.
Nampa, Idaho 83651, USA
Tel: +1 208 461 2090
Fax: +1 208 461 5794
Email: microelectronics@porvairfiltration.com

Porvair Filtration Group
Chengdong Area
Square Industrial Park, North District
Xiaonan Economic Development Zone
Xiaogan, 432000, China
Tel: +86 25 5758 1600
Sales: +86 151 0101 2510
+86 189 3686 6188
Email: infoCN@porvairfiltration.com

Porvair Filtration India PVT. Ltd.
Gangotri Glacier Annex, Kavesar
Opposite Vijay Nagari, Off Ghodbunder Road
Thane (W), 400607, India
Tel: +91 22 25 976464 / +91 22 25 976465
Email: infoIN@porvairfiltration.com

www.porvairfiltration.com

PFG937 / April 2019 / Rev1: July 2019