Description

A unique combination of Pall’s leading edge AresKleen™ purification material combined with Ultramet-L® stainless steel filter media creating the industry’s most advanced true point-of-use purifier.

The Mini-Gaskleen™ Purifier assembly is designed to remove contamination from many process gases. Sub ppb level purification is achieved at designed flow rates of up to 1 slpm while providing 0.003 µm filtration.

- Controls and reduces impurities such as O₂, H₂O, CO₂, CO, NMHC, Ni(CO)₄, and Fe(CO)₅
- One-for-one dimensional replacement of conventional in-line particle filter assemblies
- Assembly hardware is made of 316 L stainless steel
- High efficiency diffusion barrier ensures integrity of reactive material during installation
- Superior pressure drop characteristics
- Wide variety of gases purified
- 100% helium leak and pressure tested
- Compact size
- Not orientation sensitive
- Does not generate hazardous waste when used in non-hazardous gas service
- Will not release hydrocarbons

Specifications

Materials

- Electropolished 316L VAR PLUS stainless steel components
- ≤ 10 µin / 0.25 µm Rₐ internal surface finish

Particle Removal Efficiency Rating

- 1x10⁹ retention of particles ≥ 0.003 µm up to 2 slpm

Connections

- ½" Gasket Seal, Male/Male (VCR² compatible)

Operating Conditions

- Maximum Operating Pressure: 3000 psig / 207 bar
- Maximum Operating Temperature: 212°F / 100°C (INP, SIP, FCP, SF6P), 104°F / 40°C (NH3P, GEH4P, OXP, CLXP)

EU Pressure Equipment Directive: Assemblies have been evaluated and designed using SEP per the European Union’s Pressure Equipment Directive 97/23/EC and are not CE marked

Design Flow Rate

- 0-1 slpm @ 15 psig / 1 bar
- Higher intermittent flow rates of up to 2 slpm can be accommodated with reduced lifetime³

Packaging

- Double bagged
- Outer bag: aluminized mylar⁴
- Inner bag: polyethylene
- End fittings capped with metal seals
- Product packaged in an argon environment

Dimensions

- Length: 3.31" / 84 mm
- Diameter: 0.84" / 21.3 mm

1 Vertical installation recommended for NH3P.
2 VCR is a trademark of Swagelok Co.
3 Contact the Pall Microelectronics Group for further information.
4 Mylar is a registered trademark of Dupont Teijin Films.
**Pressure Drop vs. Gas Flow Rate**

- **Flow Rate (slpm) Nitrogen 20˚C / 68˚F**
- **GLPINPVMM4**

**Clean Pressure Drop (psid)**
- 0 0.25 0.5 0.75 1
  - 15 psig/1 bar Inlet
  - 30 psig/2.1 bar Inlet
  - 80 psig/5.5 bar Inlet

**Clean Pressure Drop (mbar)**
- 0 100 80 60 40 0
  - 15 psig/1 bar Inlet
  - 30 psig/2.1 bar Inlet
  - 80 psig/5.5 bar Inlet

**Dimensions**

- 11/16 Hex
- 0.84” X 21.3 mm
- Inlet
- Outlet: 3.31” X 84.1 mm

**Part Numbers / Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Specific Gas</th>
<th>Effluent Purity Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLPINPVMM4</td>
<td>Inert Gases: Nitrogen, Argon, Helium, Xenon, Krypton, Neon</td>
<td>&lt; 1 ppb H₂O, O₂, CO₂, CO</td>
</tr>
<tr>
<td>GLPSIPVMM4</td>
<td>Flammable Gases: Silane, Hydrogen, Methane, Ethane, Cyclopropane, Propane, Dimethyl Ether, Carbon Monoxide</td>
<td>&lt; 1 ppb H₂O, O₂, CO₂, CO</td>
</tr>
<tr>
<td>GLPNH3PVMM4</td>
<td>Ammonia</td>
<td>&lt; 1 ppb H₂O, O₂, CO₂, CO</td>
</tr>
<tr>
<td>GLPFCPVMM4</td>
<td>Fluoromethane, Difluoromethane, Trifluoromethane, Tetrafluoroethane, Pentfluoroethane, Heptafluoropropane, Carbon Tetrafluoride, Perfluoropropane, Perfluorocyclobutane, Hexafluoroethane</td>
<td>&lt; 1 ppb H₂O, O₂, CO₂, CO</td>
</tr>
<tr>
<td>GLPGEH4PVMM4</td>
<td>Germane</td>
<td>&lt; 1 ppb H₂O, O₂, CO₂, CO</td>
</tr>
<tr>
<td>GLPSF6PVMM4</td>
<td>Sulfur Hexafluoride</td>
<td>&lt; 1 ppb H₂O, O₂, CO₂, CO</td>
</tr>
<tr>
<td>GLPOXPVMM4</td>
<td>Oxygenated Gases: Carbon Dioxide, Oxygen, Nitrous Oxide</td>
<td>&lt; 10 ppb H₂O</td>
</tr>
<tr>
<td>GLPLCXPVMM4</td>
<td>Chlorinated Gases: Boron Trichloride, Chlorine, Trichlorosilane, Dichlorosilane</td>
<td>&lt; 100 ppb H₂O</td>
</tr>
<tr>
<td>GLPHCLPVMM4</td>
<td>Hydrogen Chloride</td>
<td>Contact Pall Microelectronics</td>
</tr>
<tr>
<td>GLPHBRPVMM4</td>
<td>Hydrogen Bromide</td>
<td>Contact Pall Microelectronics</td>
</tr>
</tbody>
</table>

**Unit conversion:** 1 bar = 100 kilopascals
## Technical Information
### Impurity Removal as Tested in Specific Gases

<table>
<thead>
<tr>
<th>Specific Gas</th>
<th>Impurity Removal Efficiency</th>
</tr>
</thead>
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<tr>
<td><strong>Inert Gases:</strong> Nitrogen, Argon, Helium, Xenon, Krypton, Neon</td>
<td>&lt; 1 ppb H₂O, CO₂, O₂, and CO as tested in argon and nitrogen using APIMS analyzer</td>
</tr>
<tr>
<td><strong>Flammable Gases:</strong> Silane, Hydrogen, Methane, Ethane, Cyclopropane, Propane, Dimethyl Ether</td>
<td>&lt; 1 ppb H₂O, CO₃, O₂, and CO as tested in argon, nitrogen and hydrogen using APIMS analyzer</td>
</tr>
<tr>
<td><strong>Carbon Monoxide</strong></td>
<td>&lt; 1 ppb H₂O as tested in carbon monoxide using trace moisture analyzer</td>
</tr>
<tr>
<td><strong>Ammonia</strong></td>
<td>&lt; 1 ppb Ni(CO)₄, and &lt; 1 ppb Fe(CO)₅ as tested in carbon monoxide using GC-ECD analyzer</td>
</tr>
<tr>
<td><strong>Fluoromethane, Difluoromethane, Trifluoromethane, Tetrafluorothane, Pentafluoroethane, Heptafluoropropane, Carbon Tetrafluoride, Perfluoropropane, Perfluorocyclobutane, Hexafluoroethane</strong></td>
<td>&lt; 1 ppb H₂O, CO₂, O₂, and CO as tested in argon and nitrogen using APIMS analyzer</td>
</tr>
<tr>
<td></td>
<td>&lt; 1 ppb O₂ as tested in trifluoromethane using trace oxygen analyzer</td>
</tr>
<tr>
<td></td>
<td>&lt; 10 ppb H₂O as tested in trifluoromethane using trace moisture analyzer and FTIR</td>
</tr>
<tr>
<td><strong>Germane</strong></td>
<td>&lt; 1 ppb H₂O, CO₂, O₂, and CO as tested in argon and nitrogen using APIMS analyzer</td>
</tr>
<tr>
<td><strong>Sulfur Hexafluoride</strong></td>
<td>&lt; 1 ppb H₂O, CO₂, O₂, and CO as tested in argon and nitrogen using APIMS analyzer</td>
</tr>
<tr>
<td><strong>Oxygenated Gases:</strong> Carbon Dioxide, Oxygen, Nitrous Oxide, Clean Dry Air</td>
<td>&lt; 10 ppb H₂O</td>
</tr>
</tbody>
</table>
| **Chlorinated Gases:** Boron Trichloride, Chlorine, Trichlorosilane, Dichlorosilane | < 100 ppb H₂O
| Hydrogen Chloride                                                          | Contact Pall Microelectronics                                                              |
| Hydrogen Bromide                                                          | Contact Pall Microelectronics                                                              |

**Unit conversion:** 1 bar = 100 kilopascals

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Visit us on the Web at [www.pall.com/micro](http://www.pall.com/micro)