



Microelectronics

Maxi Gaskleen® Gas Purifier



Description

The Maxi Gaskleen gas purifier is a unique combination of Pall's leading edge AresKleen™ purification material together with our Ultramet-L® stainless steel filter medium, creating the industry's most advanced true point-of-use purifier.

The Maxi Gaskleen Purifier assembly is designed to remove contamination from most process gases. Sub ppb level purification is achieved at designed flow rates of up to 50 slpm while providing 3 nm 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
- Not orientation sensitive
- Does not generate hazardous waste when used in non-hazardous gas service
- Will not release hydrocarbons
- No detectable metal contribution above background in HCl gas with HCLP material
- No detectable metal contribution above background in HBr gas with HBRP material

Specifications

Materials

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

Particle Removal Efficiency Rating

- 1x10⁹ retention of particles ≥ .003 nm up to 50 slpm

Connections

- 1/4 in Gasket seal, male / male (VCR¹ compatible)

Operating Conditions

- Maximum operating pressure: 5.2 MPa / 750 psig
- Maximum operating temperature: 100°C / 212°F (INP, SIP, FCP, SF6P), 40°C / 104°F (GEH4P, OXP, CLXP, HCLP, HBRP, CDAP)
- EU Pressure Equipment Directive: Assemblies have been evaluated and are CE marked per the European Union's Pressure Equipment Directive 2014/68/EU.

Design Flow Rate

- 0-50 slpm @ 0.1 MPa / 15 psig inlet
- Intermittent flow rates up to 100 slpm can be accommodated with reduced lifetime²

Packaging

- Double bagged
Outer bag: aluminized mylar³
Inner bag: polyethylene
- End fittings capped with metal seals
- Product packaged in an argon environment

Nominal Dimensions

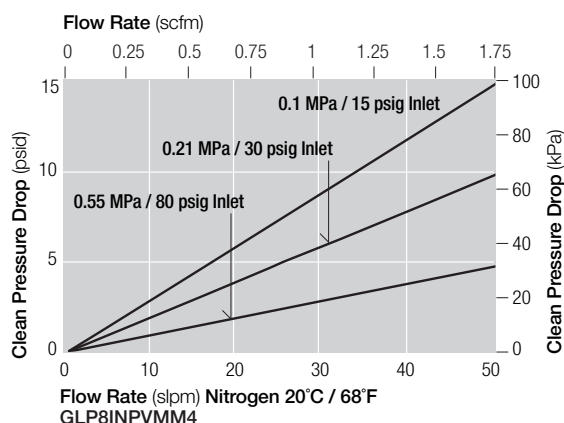
- Length: 208 mm / 8.2 in
- Diameter: 63.5 mm / 2.5 in

¹ VCR is a trademark of Swagelok Co.

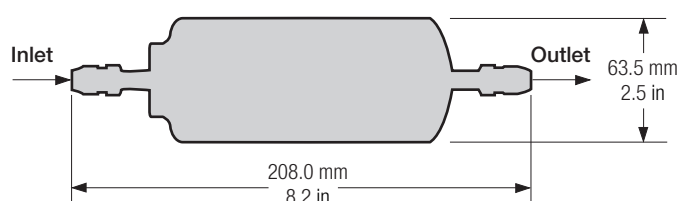
² Contact the Pall Microelectronics Group for further information.

³ Mylar is a registered trademark of Dupont Teijin Films.

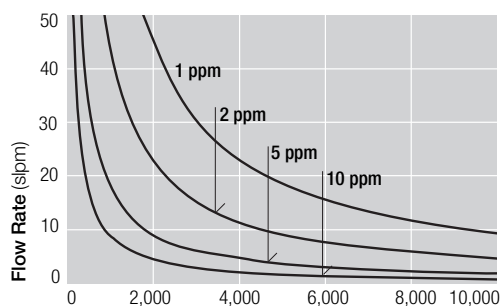
Pressure Drop vs. Gas Flow Rate



Nominal Dimensions



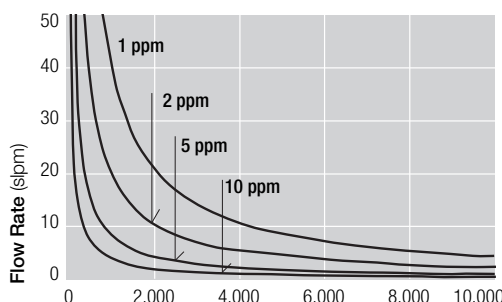
Lifetime Calculations



Lifetime (Typical Performance hrs)

Pall AresKleen Purification Material: Inert Gas Service
Maxi Gaskleen Purifier Assembly, Part # GLP8INPVMM4

Inlet Pressure: 0.21 MPa / 30 psig Contaminant Challenge as H₂O



Lifetime (Typical Performance hrs)

Pall AresKleen Purification Material: Inert Gas Service
Maxi Gaskleen Purifier Assembly, Part # GLP8INPVMM4

Inlet Pressure: 0.21 MPa / 30 psig Contaminant Challenge as O₂

Part Numbers / Ordering Information

Part Number	Specific Gas	Effluent Purity Specifications
GLP8INPVMM4	Inert gases: Nitrogen, argon, helium, xenon, krypton, neon	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLP8SIPVMM4	Flammable gases: Silane, hydrogen, methane, ethane, cyclopropane, propane, dimethyl ether Carbon monoxide	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO < 1 ppb H ₂ O, O ₂ , CO ₂ , Ni(CO) ₄ , Fe(CO) ₅
GLP8FCPVMM4	Fluoromethane, difluoromethane, trifluoromethane, tetrafluoroethane, pentafluoroethane, heptafluoropropane, carbon tetrafluoride, perfluoropropane, perfluorocyclobutane, hexafluoroethane	< 1 ppb H ₂ O, CO ₂ , O ₂
GLP8GEH4PVMM4	Germane	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLP8SF6PVMM4	Sulfur hexafluoride	< 1 ppb H ₂ O, CO ₂ , O ₂ , CO
GLP8OXPVMM4	Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide	< 10 ppb H ₂ O
GLP8CLXPVMM4	Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H ₂ O
GLP8HCLPVMM4	Hydrogen chloride	< 15 ppb H ₂ O
GLP8HBRPVMM4	Hydrogen bromide	< 50 ppb H ₂ O
GLP8CDAPVMM4	Photolithography clean dry air	< 1 ppb H ₂ O, < 300 ppt organics (as C ₄), < 10 ppt acid gases (as SO ₂), < 15 ppt basic gases (as NH ₃), < 1 ppt refractory compounds (as HMDSO)

Unit conversion: 100 kilopascals = 1 bar

Technical Information

Impurity Removal as Tested in Specific Gases

Specific Gas	Impurity Removal Efficiency
Inert gases: Nitrogen, argon, helium, xenon, krypton, neon	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon and nitrogen using APIMS analyzer
Flammable gases: Silane, hydrogen, methane, ethane, cyclopropane, propane, dimethyl ether	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon, nitrogen and hydrogen using APIMS analyzer < 1 ppb H ₂ O as tested in carbon monoxide using trace moisture analyzer H ₂ O and siloxanes removed to trace levels as tested in silane using APIMS
Carbon monoxide	< 1 ppb Ni(CO) ₄ , and < 1 ppb Fe(CO) ₅ as tested in carbon monoxide using GC-ECD analyzer
Fluoromethane, difluoromethane, trifluoromethane, tetrafluoroethane, pentafluoroethane, heptafluoropropane, carbon tetrafluoride, perfluoropropane, perfluorocyclobutane, hexafluoroethane	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon and nitrogen using APIMS analyzer < 1 ppb O ₂ as tested in trifluoromethane using trace oxygen analyzer < 10 ppb H ₂ O as tested in trifluoromethane using trace moisture analyzer and FTIR
Germane	< 1 ppb H ₂ O, CO ₂ , O ₂ , and CO as tested in argon and nitrogen using APIMS analyzer
Sulfur hexafluoride	< 1 ppb H ₂ O, CO ₂ , and O ₂ as tested in argon using APIMS
Oxygenated gases: Carbon dioxide, oxygen, nitrous oxide, clean dry air	< 10 ppb H ₂ O < 1 ppb H ₂ O, and CO ₂ , as tested in argon using APIMS analyzer
Chlorinated gases: Boron trichloride, chlorine, trichlorosilane, dichlorosilane	< 100 ppb H ₂ O < 1 ppb H ₂ O, and CO ₂ , as tested in argon using APIMS analyzer
Hydrogen chloride	< 15 ppb H ₂ O as tested in hydrogen chloride using CRDS < 1 ppb H ₂ O as tested in argon using APIMS analyzer
Hydrogen bromide	< 50 ppb H ₂ O as tested in hydrogen bromide using CRDS < 1 ppb H ₂ O as tested in argon using APIMS analyzer
Photolithography clean dry air	< 1 ppb H ₂ O as tested in argon using APIMS analyzer < 300 ppt C ₄ H ₈ as tested in argon using APIMS Analyzer < 10 ppt SO ₂ as tested in nitrogen using ion chromatograph < 15 ppt NH ₃ as tested in nitrogen using ion chromatograph < 1 ppt HMDSO as tested in argon using APIMS analyzer and baseline subtraction

Unit conversion: 100 kilopascals = 1 bar



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