Pall Corporation

Gaskleen® II EL Purifier Assembly

Description

Pall Gaskleen II EL purifier assemblies are designed to remove molecular contamination from many process gases. Sub-parts-per-billion (ppb) level purification is achieved for flow rates up to 30 slpm, with excursions up to 50 slpm[1], while providing ≥ 3 nanometer (nm) particle removal.

- Controls and removes impurities such as moisture, oxygen, carbon dioxide, non-methane hydrocarbons, metal carbonyls, and siloxanes
- 316L stainless steel housing
- Wide variety of gases purified
- 100% helium leak and pressure tested
- Not orientation sensitive
- 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	• Housing: electropolished 316L SS • ≤ 0.25 µm / 10 uin Ra internal surface finish • Housing meets or exceeds VIM / VAR specifications
Particle Removal Efficiency Rating	• 10^9 reduction for particles ≥ 3 nm up to 50 slpm[3]
Connections	• 1/4" Gasket Seal, Male / Male (VCR[3] or compatible)

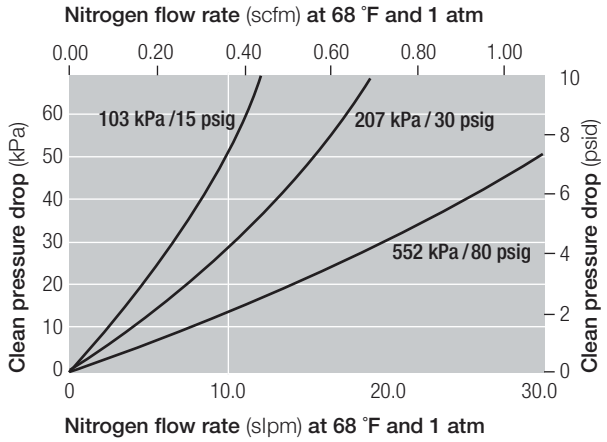
Operating Conditions	• Maximum operating pressure 6.9 MPa @ 100°C / 1,000 psig @ 212°F • Maximum operating temperature: 100°C / 212°F (INP, SIP, FCP, SF6P) 40°C / 104°F (GEH4P, OXP, CLXP, HCLP, HBRP, CDAP) • EU Pressure Equipment Directive: Assemblies comply with the European Union's Pressure Equipment Directive 2014/68/EC and are CE marked
Packaging	• Double bagged • Aluminized outer bag, polyethylene inner bag • End fittings sealed with metal gaskets and caps • Product sealed in an argon environment

[1] Contact the Pall Microelectronics group for further information.

[2] Particle rating based on laboratory testing with NaCl aerosol.

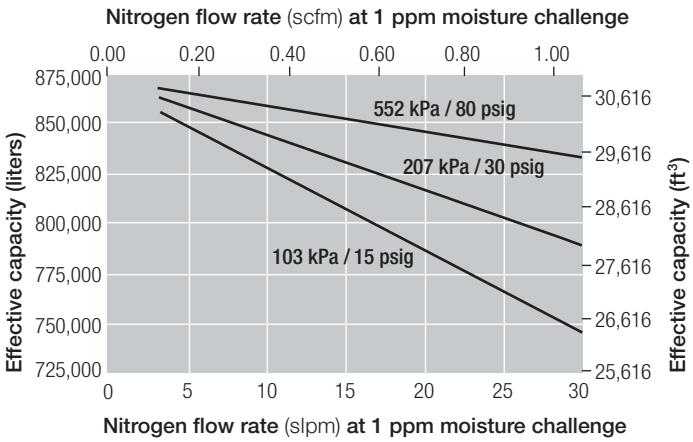
[3] VCR is a trademark of Swagelok Co.

Pressure Drop vs. Flow Rate



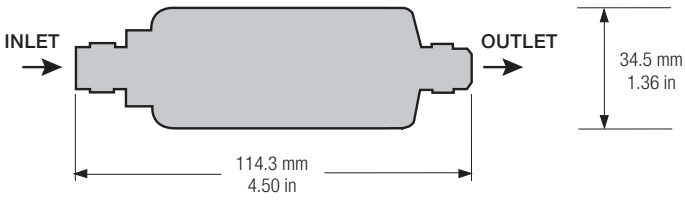
Unit conversion: 1 bar = 100 kilopascals

Effective Capacity[5]



[5] For application specific calculations, please contact Pall Microelectronics.

Dimensions



Part Numbers / Ordering Information

Part Number Specifications	Specific Gas	Effluent Impurity Specifications
GLP6INPVMM4	Inert Gases: Nitrogen, Argon, Helium, Xenon, Krypton, Neon	< 1 ppb H_2O, CO_2, O_2, CO
GLP6SIPVMM4	Flammable Gases: Silane, Hydrogen, Methane, Ethane, Cyclopropane, Propane, Dimethyl Ether, Ethylene, Propylene, Carbonyl Sulfide	< 1 ppb H_2O, CO_2, O_2, CO < 1 ppb H_2O, O_2, CO_2, $Fe(CO)_5$
	Carbon Monoxide	< 10 ppb $Ni(CO)_4$
GLP6FCPVMM4	Fluoromethane, Difluoromethane, Trifluoromethane, Tetrafluoroethane, Pentafluoroethane, Heptafluoropropane, Carbon Tetrafluoride, Perfluoropropane, Perfluorocyclobutane, Hexafluoroethane	< 1 ppb H_2O, CO_2, O_2
GLP6GEH4PVMM4	Germane	< 1 ppb H_2O, CO_2, O_2, CO
GLP6SF6PVMM4	Sulfur Hexafluoride	< 1 ppb H_2O, CO_2, O_2, CO
GLP6OXPVMM4	Oxygenated Gases: Carbon Dioxide, Oxygen, Nitrous Oxide	< 10 ppb H_2O
GLP6CLXPVMM4	Chlorinated Gases: Boron Trichloride, Chlorine, Trichlorosilane, Dichlorosilane	< 100 ppb H_2O
GLP6HCLPVMM4	Hydrogen Chloride	< 15 ppb H_2O
GLP6HBRPVMM4	Hydrogen Bromide	< 50 ppb H_2O
GLP6CDAPVMM4	Photolithography clean dry air	< 1 ppb H_2O, < 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)

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_2O, CO_2, O_2, and CO as tested in argon and nitrogen
Flammable Gases: Silane, Hydrogen, Methane, Ethane, Cyclopropane, Propane, Dimethyl Ether, Ethylene, Propylene, Carbonyl Sulfide	< 1 ppb H_2O, CO_2, O_2, and CO as tested in argon, < 1 ppb H_2O as tested in carbon monoxide using trace moisture analyzer H_2O and siloxanes removed to trace levels as tested in silane using APIMS
Carbon Monoxide	< 10 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_2O, CO_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_2O as tested in trifluomethane using trace moisture analyzer and FTIR
Germane	< 1 ppb H_2O, CO_2, and O_2 as tested in argon using APIMS
Sulfur Hexafluoride	< 1 ppb H_2O, CO_2, O_2, and CO as tested in argon and nitrogen
Oxygenated Gases: Carbon Dioxide, Oxygen, Nitrous Oxide	< 1 ppb H_2O and CO_2 as tested in argon using APIMS analyzer
Chlorinated Gases: Boron Trichloride, Chlorine, Trichlorosilane, Dichlorosilane	< 1 ppb H_2O and CO_2 as tested in argon using APIMS analyzer
Hydrogen Chloride	< 15 ppb H_2O as tested in hydrogen chloride using CRDS < 1 ppb H_2O as tested in argon using APIMS analyzer
Hydrogen Bromide	< 50 ppb H_2O as tested in hydrogen bromide using CRDS < 1 ppb H_2O as tested in argon using APIMS analyzer
Photolithography Clean Dry Air	< 1 ppb H_2O as tested in argon using APIMS analyzer < 300 ppt C_4H_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