

NANOCHEM® Bulk Gas Purifier (P-Series & MegaShield™)

Features and Benefits

- For bulk and high flow specialty gas purification
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
 - Removes critical contaminants to sub part-per-billion levels
- **End-Point Detection available for many gases, at no extra charge.**
- Enhances manufacturing process economy and improves equipment performance
- Provides consistently high purity gas, regardless of inlet impurity fluctuations
- Improves component lifetime and reduces particle generation by removing moisture from corrosive gases
- Easy to install & operate
- No heating or cooling required
- Quick start up
- Inlet and outlet isolation valves
- All metal parts, Type 316L stainless steel, or Nickel 200
- Mounting bracket
- Refills available for most gases (except toxic or corrosive gases)

Specifications

- 0.003 µm filter with 99.9999999% retention – Standard on P-4000 and all ammonia purifiers
- Internal surface finish < 15 µin Ra
- Maximum operating temperature is 70°C
- Maximum operating pressure is 150 psig (1.13 MPa) *with* endpoint detection; 350 psig (3.51 MPa) *without* endpoint detection

Connections

- Female inlet and outlet connections, 1/2" VCR®-compatible face seal fittings

Options

- 0.003 µm filter with 99.9999999% retention available
- Exhausted enclosure available. Satisfies Uniform Fire Code (UFC) requirements for hazardous gases
- Three-valve manifold with isolation and bypass valves allows disconnection of purifier without interrupting process gas flow

Overview

NANOCHEM® MegaShield™ Purifiers ensure gas consistency for bulk gas purification. Select P-Series purifiers for flows up to 400 slpm (24 Nm³/hr) and MS-Series purifiers for flow rates up to 1000-1500 slpm (60-90 Nm³/hr). A variety of sizes are available to meet capacity and lifetime requirements. Fourteen (14) different purification media are available to purify 33 gases.

P-Series

P-Series purifiers are available in 4, 8, 16 and 32 liter sizes. The purifier comes completely assembled, and consists of an inlet and outlet diaphragm valve; 1-4 canister(s) with suitable purification media, and a 40 µm SS frit on the inlet and outlet. A 0.003 µm filter is standard on the outlet of the P-4000 and all ammonia purifiers and is available as an option on all other P-series purifiers.

MegaShield™ (MS-Series)

MS-Series purifiers enable higher flow rates and lower pressure drops than the corresponding P-Series Models. MS-Series purifiers are available in 8, 16, and 32 liter sizes. The purifier comes completely assembled, and consists of an inlet and outlet springless diaphragm valve; 2-4 canisters with suitable purification media, and a 100 µm SS frit on the inlet and outlet.

MS-Series purifiers are completely retrofittable in P-Series installations. Media refills are available through Matheson Tri-Gas, Inc., for all sizes.



Gas Type	Impurities Removed
Nitrogen (N ₂), Argon (Ar), other inerts	< 0.1 ppb H ₂ O, O ₂ , CO ₂ LDL < 1 ppb CO* < 0.1 ppb NMHC (with OMX-Plus™) LDL NO _x , SO _x , H ₂ S
Ammonia (NH ₃)	< 0.1 ppb H ₂ O, O ₂ , CO ₂ in inert gas LDL < 1 ppb CO* < 45 ppb H ₂ O in ammonia LDL NH ₃ -CO ₂ complexes, SiH ₄ , Siloxanes, GeH ₄ , H ₂ S
Silane (SiH ₄)	< 0.1 ppb H ₂ O, O ₂ , CO ₂ LDL < 1 ppb CO* Chlorosilanes, disilane, siloxanes, arsine, phosphine
Hydrogen (H ₂), Methane (CH ₄), Ethane (C ₂ H ₆), other HC	< 0.1 ppb H ₂ O, O ₂ , CO ₂ LDL < 1 ppb CO* NO _x , SO _x , H ₂ S
Sulfur Hexafluoride (SF ₆), Carbon Tetrafluoride (CF ₄), other fluorocarbons	< 0.1 ppb H ₂ O, O ₂ , CO ₂ in inert gas LDL < 10 ppb O ₂ , H ₂ O in sulfur hexafluoride LDL
Oxygen (O ₂), Carbon Dioxide (CO ₂), Nitrous Oxide (N ₂ O)	< 10 ppb H ₂ O
Carbon Monoxide (CO)	Metal Carbonyls: Fe, Ni
Corrosives (HCl, HBr, Cl ₂ , SiH ₂ Cl ₂ , SiHCl ₃ , BCl ₃)	< 1 ppb H ₂ O in inert gas < 100 ppb H ₂ O in HBr LDL < 150 ppb H ₂ O in HCl Volatile Metals: Fe, Mo, Cr, Ni, Mn, Ti

LDL – Lower Detection Limit by State-of-the-Art Analytical Instrumentation

NMHC – Non-methane Hydrocarbons

*NOTE: CO is removed efficiently by OMX & OMX-Plus™ media at low flow rates (recommend 1/10 of normal flow rate)

For a detailed list of purification media and impurities removed, refer to the Purification Media Table in Nanochem® Purification Solutions Brochure.



**MATHESON
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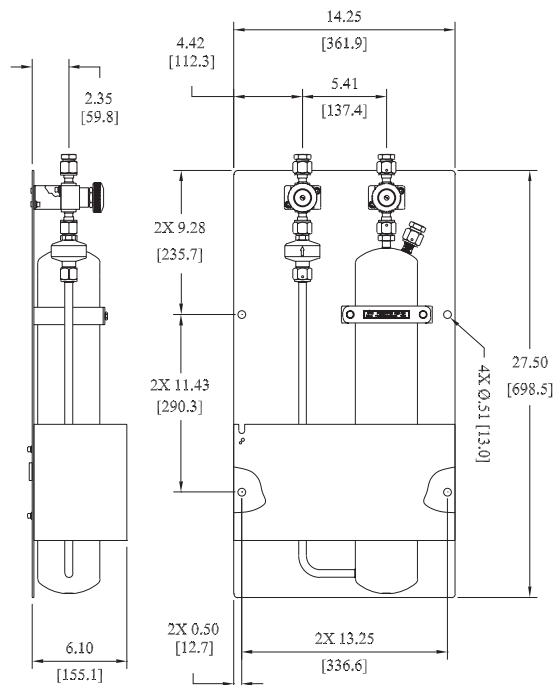
NANOCHEM® P-Series and MegaShield™ Gas Purifiers

Specifications	Model					
	P-4000	P -8000	P-16000	P-32000	MS-8000	MS-16 / 32000
Max flow rate, slpm (NM ³ /hr) of N ₂ *	150 (9)	250 (15)	400 (24)	400 (24)	1000 (60) *	
Max Pressure, psig (MPa) **	350 (2.51)				350 (2.51)	
Purification medium bed volume, Liters	4		8	16	8	16, 32
Wetted Parts	316L SS body and filter; Nickel 200 gaskets; PCTFE valve seat				316L SS, Nickel 200 gaskets, PCTFE & TFE valve components	
Connection Type	1/2" Female VCR®-compatible face-seal fittings					
Standard outlet filter	0.003 µm, 9-log retention	40 µm frit			100 µm frit	
Optional filter	N/A	0.003 µm; 9-log retention				
Flow Rate w/ optional filter, slpm N ₂ *	150				1000	
Dimensions, inches (mm)						
A - Width of purifier mounting plate	14.25 (361.95)	14.25 (361.95)	14.25 (361.95)	14.25 (361.95)	14.25 (361.95)	14.25 (361.95)
B - Depth of purifier	7.00 (177.8)	7.00 (177.8)	11.29 (286.77)	11.29 (286.77)	7.00 (177.8)	11.29 (286.77)
C - Height of purifier mounting plate	27.5 (69.85)	27.5 (69.85)	49.38 (1254.25)	49.38 (1254.25)	27.5 (69.85)	49.38 (1254.25)
D - In/Out center line to mounting plate	2.35 (59.69)	2.35 (59.69)	3.38 (85.73)	3.38 (85.73)	2.35 (59.69)	3.38 (85.73)
E - Mounting plate top to in / out connection	0.45 (11.43)	0.45 (11.43)	0.45 (11.43)	0.45 (11.43)	0.45 (11.43)	0.45 (11.43)
F - Distance between bolt holes	13.25 (336.55)	13.25 (336.55)	13.25 (336.55)	13.25 (336.55)	13.25 (336.55)	13.25 (336.55)
G - Distance between in / out connections	5.41 (137.41)	5.41 (137.41)	5.41 (137.41)	5.41 (137.41)	5.41 (137.41)	5.41 (137.41)
H - Distance between plate top & bolt hole	9.28 (235.71)	9.28 (235.71)	9.73 (247.14)	9.73 (247.14)	9.28 (235.71)	9.73 (247.14)
I - Bolt hole diameter	Ø 0.50 (12.70)	Ø 0.50 (12.70)	Ø .51 (12.95)	Ø .51 (12.95)	Ø 0.50 (12.70)	Ø 0.50 (12.70)

* All P-8000, P-16000 and P-32000 purifiers with OMA resin are provided with a filter which removes 99.9999999% (9 -log) of all particles ≥ 0.003 µm. This filter limits the maximum flow to 150 slpm of nitrogen. The filter is also standard on P-4000 purifiers for all gases.

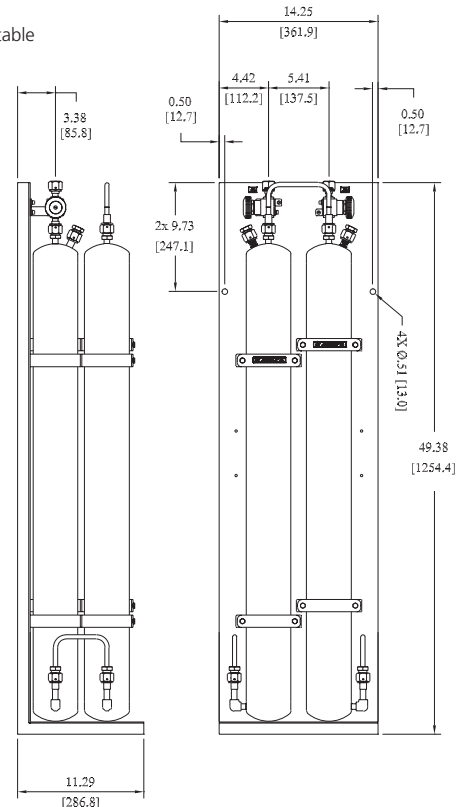
NOTE: The maximum specified flow rate is based upon a 10 psi (0.07 MPa) pressure drop. Flow rates up to 1500 slpm (90 NM³/hr) can be attained with the MS-Series, if higher pressure drops are acceptable

** Maximum operating pressure is 150 psi (1.13 MPa) when the endpoint detector is installed.



P-4000, P-8000, MS-8000

(P-4000 displayed with 1 canister; P-8000 has same dimensions but 2 canisters)



P-16000, P-32000, MS-16,000, MS-32000

(P-32000 shown with 4 canisters, P-16000 has 2 canisters)

Specifications are subject to change.

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