

NANOCHEM® Bulk Gas Purifier (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 99.999999% retention – Standard on MS-4000 and all ammonia purifiers
- Internal surface finish < 15 $\mu\text{in Ra}$
- 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 99.999999% retention available
- 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 MS-Series purifiers for flow rates up to 1000-1500 slpm (60-90 Nm^3/hr). A variety of sizes are available to meet capacity and lifetime requirements. Seventeen (17) different purification media are available to purify over 70 gases.

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 4, 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 for all sizes.



Gas Type	Impurities Removed
Nitrogen (N_2), Argon (Ar), other inerts	< 100 ppt H_2O , O_2 , CO_2 LDL < 1 ppb CO^* < 100 ppt NMHC (with OMX-Plus™) LDL NO_x , SO_x , H_2S
Ammonia (NH_3)	< 100 ppt H_2O , O_2 , CO_2 in inert gas LDL < 1 ppb CO^* < 45 ppb H_2O in ammonia LDL NH_3 - CO_2 complexes, SiH_4 , Siloxanes, GeH_4 , H_2S
Silane (SiH_4)	< 100 ppt H_2O , O_2 , CO_2 LDL < 1 ppb CO^* Chlorosilanes, disilane, siloxanes, arsine, phosphine
Hydrogen (H_2), Methane (CH_4), Ethane (C_2H_6), other HC	< 100 ppt H_2O , O_2 , CO_2 LDL < 1 ppb CO^* NO_x , SO_x , H_2S
Sulfur Hexafluoride (SF_6), Carbon Tetrafluoride (CF_4), other fluorocarbons	< 100 ppt H_2O , O_2 , CO_2 in inert gas LDL < 10 ppb O_2 , H_2O in sulfur hexafluoride LDL
Oxygen (O_2), Carbon Dioxide (CO_2), Nitrous Oxide (N_2O)	< 10 ppb H_2O
Carbon Monoxide (CO)	Metal Carbonyls: Fe, Ni
Corrosives (HCl , HBr , Cl_2 , SiH_2Cl_2 , SiHCl_3 , BCl_3)	< 1 ppb H_2O in inert gas < 100 ppb H_2O in HBr LDL < 150 ppb H_2O 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 Nanotech® Purification Solutions Brochure.



MATHESON
The Gas Professionals

NANOCHEM® MegaShield™ Gas Purifiers

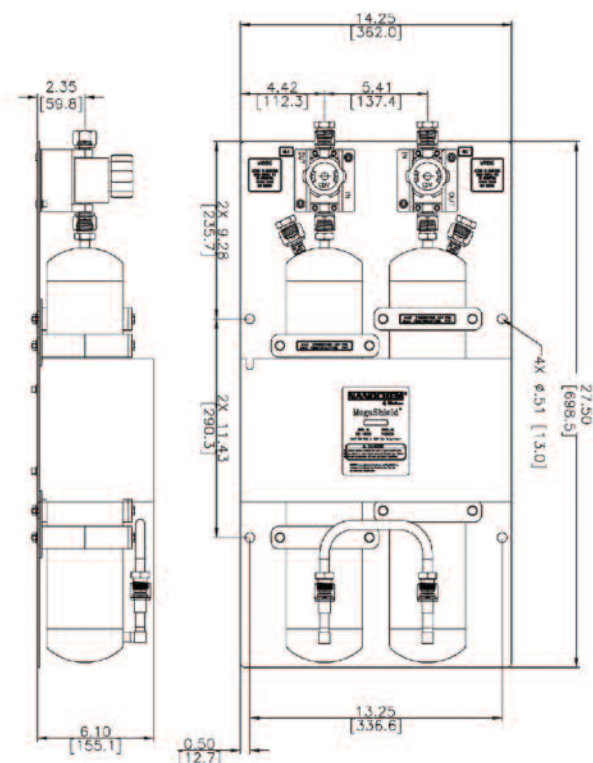
Specifications	Model	
	MS-4000 / 8000	MS-16000 / 32000
Max flow rate, slpm (NM ³ /hr) of N ₂ *	1000 (60) *	
Max Pressure, psig (MPa) **	350 (2.51)	
Purification medium bed volume, Liters	4, 8	16, 32
Wetted Parts	316L SS, Nickel 200 gaskets, PCTFE & TFE valve components	
Connection Type	1/2" Female VCR®-compatible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

NOTE: The maximum specified flow rate is based upon a 10 psi (0.07 MPa) pressure drop.

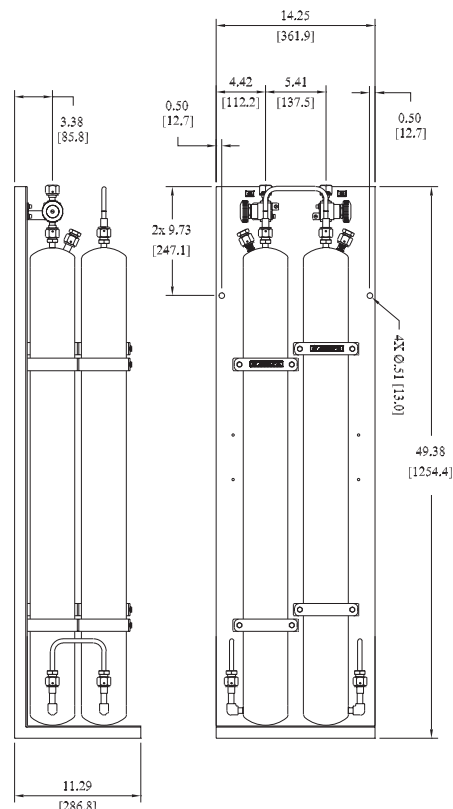
Flow rates up to 1500 slpm (90 NM₃/hr) can be attained with the MS-Series, if higher pressure drops are acceptable

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

*** 0.003 µm filter standard on MS-4000



MS-4000, MS-8000 (shown)



MS-16,000, MS-32000

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Specifications are subject to change. Please check

www.mathesongas.com

for most current information.

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Printed in USA PB036 R06/19



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