

# 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  $\mu\text{m}$  filter with 99.999999% retention – Standard on P-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  $\mu\text{m}$  filter with 99.999999% 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 MS-Series purifiers for flow rates up to 1000-1500 slpm (60-90  $\text{Nm}^3/\text{hr}$ ). A variety of sizes are available to meet capacity and lifetime requirements. Fourteen (14) different purification media are available to purify 33 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 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  $\mu\text{m}$  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 ( $\text{N}_2$ ), Argon (Ar), other inerts	< 100 ppt $\text{H}_2\text{O}$ , $\text{O}_2$ , $\text{CO}_2$ LDL < 1 ppb $\text{CO}^*$ < 100 ppt NMHC (with OMX-Plus™) LDL $\text{NO}_x$ , $\text{SO}_x$ , $\text{H}_2\text{S}$
Ammonia ( $\text{NH}_3$ )	< 100 ppt $\text{H}_2\text{O}$ , $\text{O}_2$ , $\text{CO}_2$ in inert gas LDL < 1 ppb $\text{CO}^*$ < 45 ppb $\text{H}_2\text{O}$ in ammonia LDL $\text{NH}_3$ - $\text{CO}_2$ complexes, $\text{SiH}_4$ , Siloxanes, $\text{GeH}_4$ , $\text{H}_2\text{S}$
Silane ( $\text{SiH}_4$ )	< 100 ppt $\text{H}_2\text{O}$ , $\text{O}_2$ , $\text{CO}_2$ LDL < 1 ppb $\text{CO}^*$ Chlorosilanes, disilane, siloxanes, arsine, phosphine
Hydrogen ( $\text{H}_2$ ), Methane ( $\text{CH}_4$ ), Ethane ( $\text{C}_2\text{H}_6$ ), other HC	< 100 ppt $\text{H}_2\text{O}$ , $\text{O}_2$ , $\text{CO}_2$ LDL < 1 ppb $\text{CO}^*$ $\text{NO}_x$ , $\text{SO}_x$ , $\text{H}_2\text{S}$
Sulfur Hexafluoride ( $\text{SF}_6$ ), Carbon Tetrafluoride ( $\text{CF}_4$ ), other fluorocarbons	< 100 ppt $\text{H}_2\text{O}$ , $\text{O}_2$ , $\text{CO}_2$ in inert gas LDL < 10 ppb $\text{O}_2$ , $\text{H}_2\text{O}$ in sulfur hexafluoride LDL
Oxygen ( $\text{O}_2$ ), Carbon Dioxide ( $\text{CO}_2$ ), Nitrous Oxide ( $\text{N}_2\text{O}$ )	< 10 ppb $\text{H}_2\text{O}$
Carbon Monoxide ( $\text{CO}$ )	Metal Carbonyls: Fe, Ni
Corrosives ( $\text{HCl}$ , $\text{HBr}$ , $\text{Cl}_2$ , $\text{SiH}_2\text{Cl}_2$ , $\text{SiHCl}_3$ , $\text{BCl}_3$ )	< 1 ppb $\text{H}_2\text{O}$ in inert gas < 100 ppb $\text{H}_2\text{O}$ in $\text{HBr}$ LDL < 150 ppb $\text{H}_2\text{O}$ in $\text{HCl}$ Volatile Metals: Fe, Mo, Cr, Ni, Mn, Ti

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

NMHC – Non-methane Hydrocarbons

\*NOTE:  $\text{CO}$  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.



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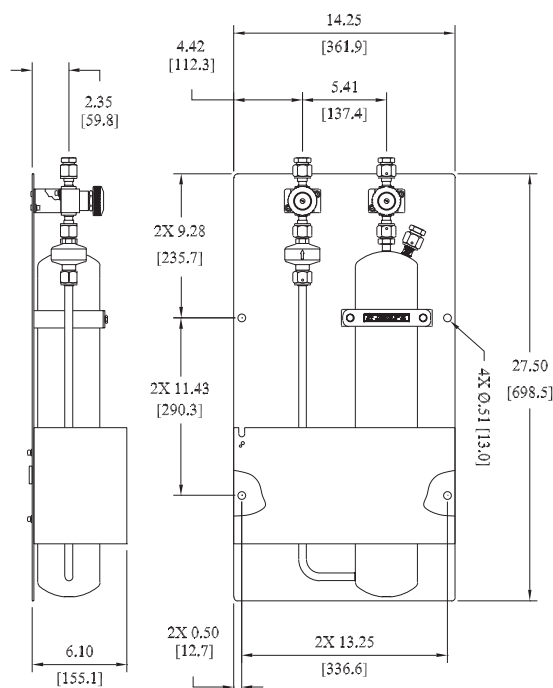
# NANOCHEM® MegaShield™ Gas Purifiers

Specifications	Model	
	MS-8000	MS-16 / 32000
Max flow rate, slpm (NM <sup>3</sup> /hr) of N <sub>2</sub> *	1000 (60) *	
Max Pressure, psig (MPa) **	350 (2.51)	
Purification medium bed volume, Liters	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 <sub>2</sub> *	1000	
Dimensions, inches (mm)		
<b>A</b> - Width of purifier mounting plate	14.25 (361.95)	14.25 (361.95)
<b>B</b> - Depth of purifier	7.00 (177.8)	11.29 (286.77)
<b>C</b> - Height of purifier mounting plate	27.5 (69.85)	49.38 (1254.25)
<b>D</b> - In/Out center line to mounting plate	2.35 (59.69)	3.38 (85.73)
<b>E</b> - Mounting plate top to in / out connection	0.45 (11.43)	0.50 (12.7)
<b>F</b> - Distance between bolt holes	13.25 (336.55)	13.25 (336.55)
<b>G</b> - Distance between in / out connections	5.41 (137.41)	5.41 (137.41)
<b>H</b> - Distance between plate top & bolt hole	9.28 (235.71)	9.73 (247.14)
<b>I</b> - Bolt hole diameter	Ø 0.50 (12.70)	Ø 0.50 (12.70)

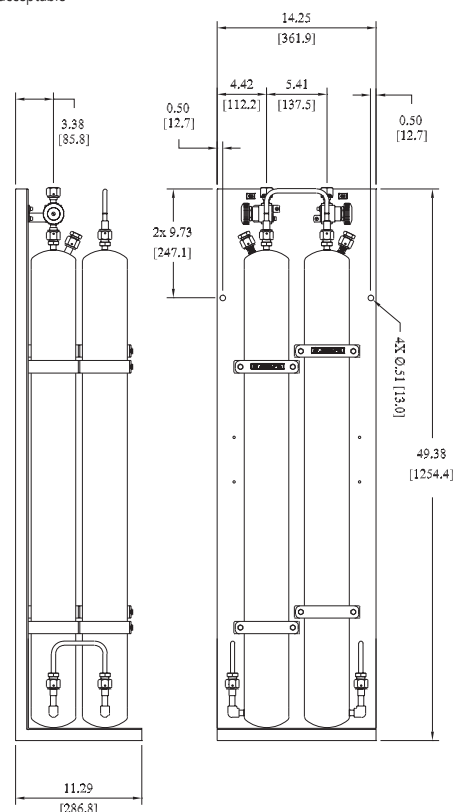
NOTE: The maximum specified flow rate is based upon a 10 psi (0.07 MPa) pressure drop.

Flow rates up to 1500 slpm (90 NM<sub>3</sub>/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.



**MS-8000**



**MS-16,000, MS-32000**

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Specifications are subject to change. Please check

[www.mathesongas.com](http://www.mathesongas.com)

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