

# NANOCHEM® BLOC® Series Purifiers

## Features and Benefits

- Purification for all applications from source to point-of-use
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
  - Removes critical contaminants to sub parts-per-billion levels (< 0.1 ppb in inert gases)
- Patented **built-in poppet valves** at purifier inlet and outlet
  - Reduces/eliminates exposure of media bed to atmospheric air during purifier installation
  - Reduces operator exposure to process gas during purifier removal
- Enhances manufacturing process economy and improves equipment performance
- Provides consistently high purity gas regardless of inlet impurity fluctuations (up to 1000 ppm)
- Improves component lifetime and reduces particulate generation by removing moisture & volatile metals from corrosive gases.
- **Versatile and upgradeable design**
  - **3 different interchangeable sizes for different flow and lifetime requirements**
- No moving parts or power requirements
- Low Overall Cost of Ownership
- Factory-installed BLOC®-DOC™ combinations available

## Specifications

- Recommended flow rates up to 20 slpm (1.2 NM<sup>3</sup>/hr)
- 0.003 µm particle filter with 99.9999999% retention
- Internal surface finish < 15 µin Ra
- Maximum allowable working pressure of 150 psig (1.14 MPa)
- Maximum operating temperature of 40°C

## Connections

- Mounted on DOC™ with
  - Male inlet and outlet connections 1/4 inch, VCR®-compatible face seal fittings with protective cap
  - 1/4 inch tube stub connections for welded applications

## Overview

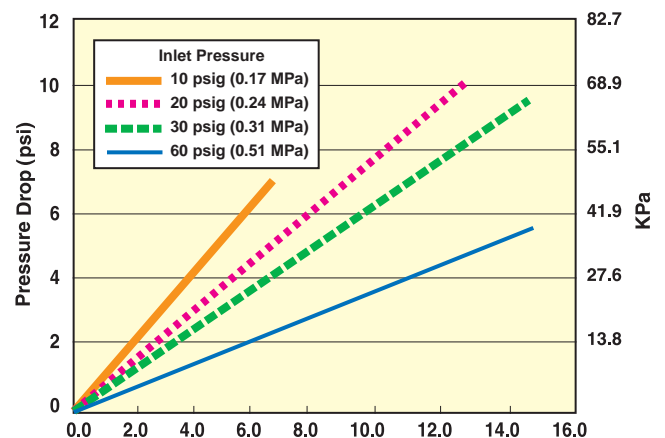
The NANOCHEM® BLOC® Purifier in combination with DOC™ filter is a compact purifier/filter designed for ultra-high purity applications in the semiconductor industry.

NANOCHEM® purification media react with impurities to deliver consistently pure gas to the process tool improving yields. BLOC® Purifiers can be installed as point-of-use filters at the process tool. They can also be installed in cylinder cabinets.

- Available in 50, 100 and 200 ml field interchangeable and replaceable purification canisters
- Base foot-print of only 2.11 inches (53.6 mm) with tube connections and 3.31 inches (84 mm) with VCR®-compatible face seal fittings
- All metal parts, Type 316L VIM/VAR stainless steel or Nickel 200
- Downstream particle cleanliness: Less than 1 particle/ft<sup>3</sup> greater than 0.014 µm
- No moving parts or power requirements
- All metal Z-Seal™ between body pieces



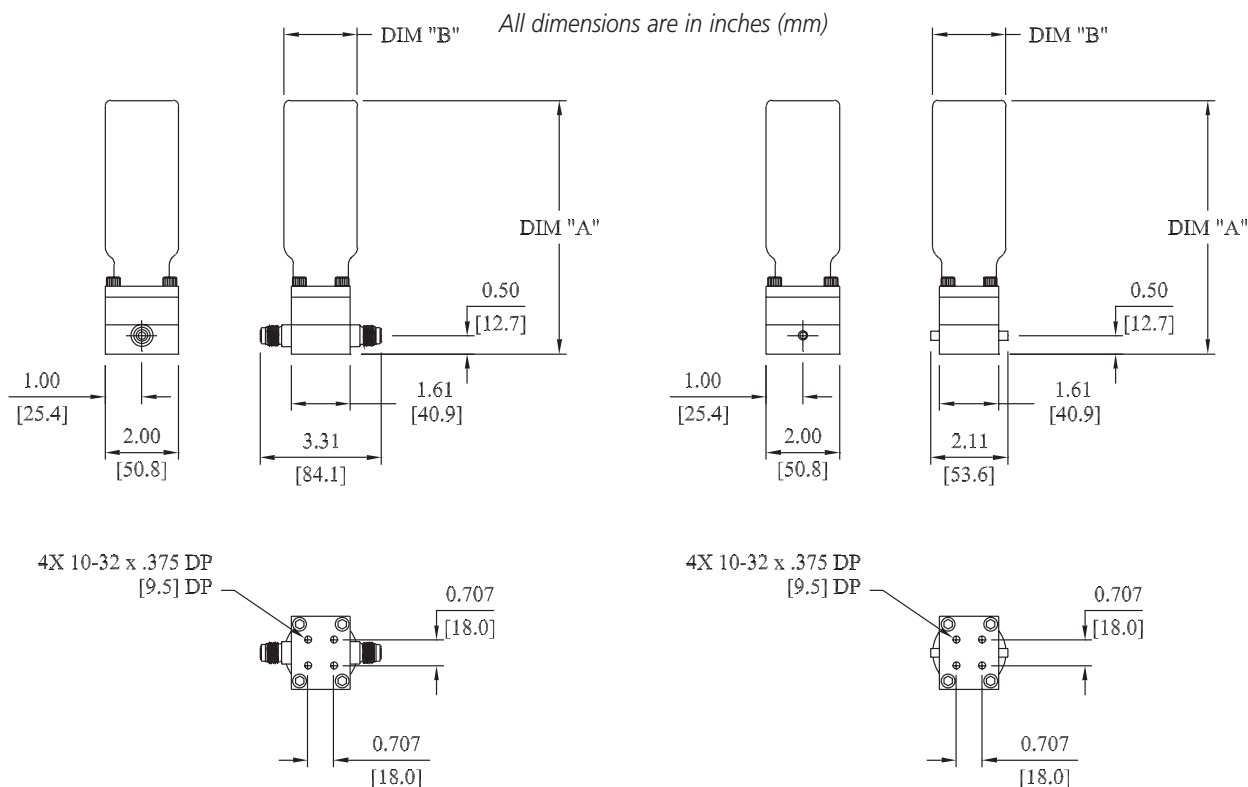
Pressure Drop vs. Flow Rate  
(BLOC® + DOC™)



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# NANOCHEM® Purifiers BLOC® Series



**BLOC® Purifier on DOC™ Filter with VCR®-Compatible Connections**

Size	DIM A	DIM B
50 ml Canister	5.12 in (130 mm)	1.50 in (38.1 mm)
100 ml Canister	5.12 in (130 mm)	2.00 in (50.8 mm)
200 ml Canister	6.93 in (176 mm)	2.00 in (50.8 mm)

**BLOC® Purifier on DOC™ Filter with Tube Stub Connections**

Bloc™ Purifier Series	B-50	B-100	B-200
Bed volume, milliliters	50	100	200
Typical flow rate, slpm nitrogen	5	10	20
NM <sup>3</sup> /hr nitrogen	0.3	0.6	1.2

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

DL – 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.

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