

# WK-Series (White Knight™) Series Gas Purifiers

## Features and Benefits

- For point-of-use to bulk flow specialty gas purification
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
  - Removes critical contaminants to sub part-per-billion levels
- Patented built-in poppet valves at purifier inlet and outlet for purifiers filled with: OMX, OMX-Plus, and In2Go
- Enhances manufacturing process economy and improves equipment performance
- Provides consistently high purity gas under fluctuating inlet impurity conditions
- Improves component lifetime and reduces particle generation by removing moisture from corrosive gases
- Compact Footprint; Inline design
- Easy to install & operate
- No heating or cooling required
- Quick start up
- All metal parts, Type 316L stainless steel, or Nickel 200
- Economical, Low Cost of Ownership

## Specifications

- 0.003 µm filter with 99.9999999% retention (PTFE or 316L SS)
- Internal surface finish < 15 µin R<sub>a</sub>
- Maximum operating temperature is 70°C

## Connections

- Male inlet and outlet connections, 1/4" VCR - compatible

## Options

- Inlet and outlet isolation valves
- Three-valve manifold with isolation and bypass valves allows disconnection of purifier without interrupting process gas flow

## Purifier Models

Model No.	Maximum Recommended Flow Rate*	Maximum Allowable Working Pressure
WK-70F	5 slpm (0.3 NM <sup>3</sup> /hr)	1,000 psig (7 Mpa)
WK-75F	5 slpm (0.3 NM <sup>3</sup> /hr)	1,000 psig (7 Mpa)
WK-500F/P	60 slpm (3.6 NM <sup>3</sup> /hr)	500 psig (3.5 Mpa)
WK-2500F/P	300 slpm (18 NM <sup>3</sup> /hr)	500 psig (3.5 Mpa)

\* Applies to designs without built-in poppet valves.

## Overview

NANOCHEM® WK-Series (White Knight™) purifiers offer the highest lifetimes and the best impurity removal efficiencies in a very economical design. The in-line design enables a very compact footprint and allows drop-in replacement of competing hardware designs. WK-Series are available in a number of sizes ranging from 55-ml for point-of-use applications to 9-liters for bulk gas purification. Flow rates range from 3 slpm (0.2 NM<sup>3</sup>/hr) to 300 slpm (18 NM<sup>3</sup>/hr).



Gas Type	Impurities Removed
Nitrogen (N <sub>2</sub> ), Argon (Ar), other inerts	< 100 ppt H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 1 ppb CO* < 100 ppt NMHC (with OMX-Plus™) LDL NO <sub>x</sub> , SO <sub>x</sub> , H <sub>2</sub> S
Ammonia (NH <sub>3</sub> )	< 100 ppt H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> in inert gas LDL < 1 ppb CO* < 45 ppb H <sub>2</sub> O in ammonia LDL 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> )	< 100 ppt H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 1 ppb CO* 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	< 100 ppt H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 1 ppb CO* 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	< 100 ppt 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
Carbon Monoxide (CO)	Metal Carbonyls: Fe, Ni
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 HBr LDL < 150 ppb H <sub>2</sub> 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)

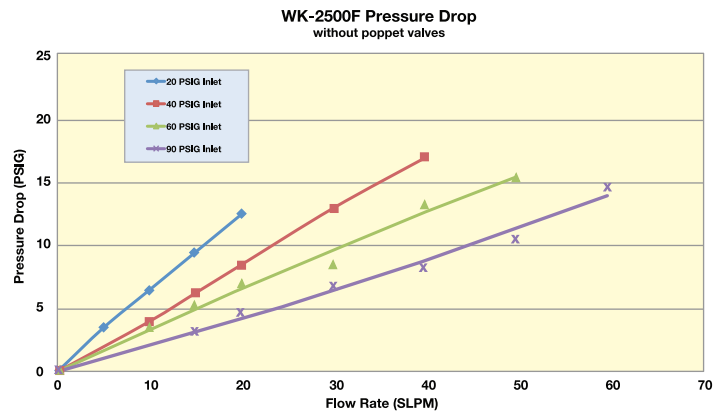
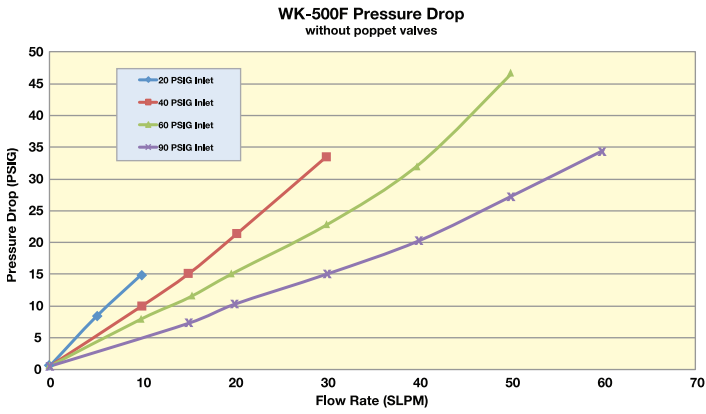
For a detailed list of purification media and impurities removed, refer to the Purification Media Table in Nanochem® Purification Solutions Brochure.



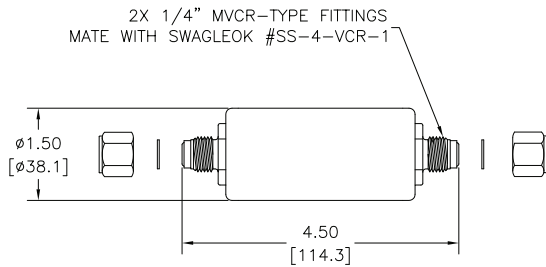
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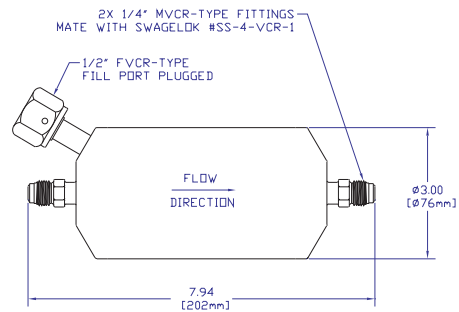
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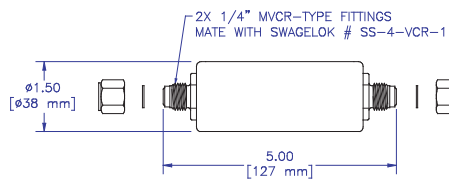
## Dimensions



**NANOCHEM® Purifier**  
Model WK-70F

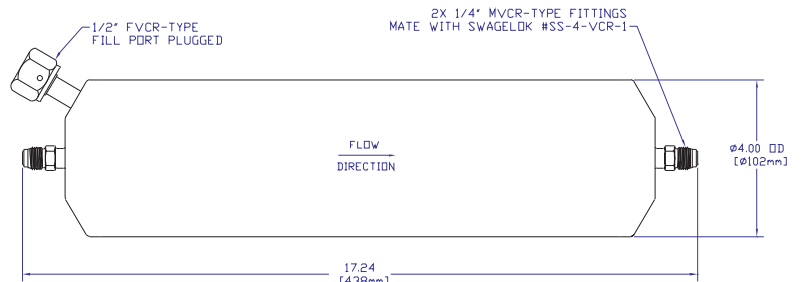


**NANOCHEM® Purifier**  
Model WK-500F/P



**NANOCHEM® Purifier**  
Model WK-75F

*\*actual media volume is 55 ml*



**NANOCHEM® Purifier**  
Model WK-2500F/P

*Dimensions in inches (mm)*

**Note: Purifiers are shown in horizontal position for illustration purposes only.  
A vertically-oriented installation is preferred.**

Models WK-75F, WK-500F and WK-2500F have a 0.003  $\mu$ m particle filter.

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