

# NANOCHEM® WeldAssure™ Gas Purifiers

## Features and Benefits

- Low cost of ownership
- Easy to install and operate
- Removes impurities to low parts-per-billion levels
- **Enhances weld quality, strength and appearance**
- **Reduces weld porosity and oxidation**
- **Visual endpoint detection**
  - No guessing when to replace purifier canister
  - Color change in viewing window implies 75% of purifier is spent
- **Increases weld electrode lifetime**
  - Do not need to stop welding to grind or replace electrode
- **Reduces weld rejects**
- **Built-in Bypass around purifier canister**
  - Enables purging of gas lines (without purifier deactivation during cylinder changeout)
- **Check valve at purifier outlet**
  - Prevents deactivation of purifier from back diffusion of atmospheric air when gas flow (and welding) is stopped
- 60 micron filter
- Operates at room temperature
- No power requirements

## Specifications

- Flow rates up to 100 cfh (47 slpm / 2.8 NM<sup>3</sup>/hr)
- Gases purified:
  - Argon, helium, hydrogen, nitrogen and other inerts and blends of argon, helium, hydrogen, and inerts
- Impurities removed:
  - Moisture, oxygen, carbon dioxide and carbon monoxide
  - Also hydrocarbons with NANOCHEM® OMX-Plus™ resin
- Maximum working pressure of 200 psig (1.48 MPa)
- Maximum operating temperature of 104°F (40°C)
- Canister – Aluminum 6061-T6, Naval Brass Swagelok compression fittings

## Connections

- 1/4 inch female NPT brass fittings STD
- Optional connection kits available
- Canister also sold separately with brass compression fittings



## Overview

The NANOCHEM® WeldAssure™ purifiers provide purge and shield gas purification for welding applications. Weld gas impurities, such as moisture and oxygen, adversely affect weld quality. These impurities are present in gas cylinders, and can also be introduced through leaks in the line or during cylinder changes. NANOCHEM® OMX™ resin reacts chemically and irreversibly with these impurities to deliver consistently pure gas to the weld site, improving weld quality. NANOCHEM® OMX-Plus™ resin offers all the benefits of OMX™ resin plus efficient hydrocarbon removal.

NANOCHEM® WeldAssure™ purifiers are an economical solution for TIG welding and other critical welding applications.

- Available in 150, 300 and 500 mL sizes
- Easy to use bypass mode for canister changes and extended shutdowns
- Simple installation
- No heating or cooling required
- Field replaceable canisters available
- Purifier canister can be refilled, spare canister also available

## Applications

TIG (GTAW), MIG (GMAW), Plasma welding applications and welding overlays in the aerospace, ship building, automotive, military, nuclear and petrochemical industries.

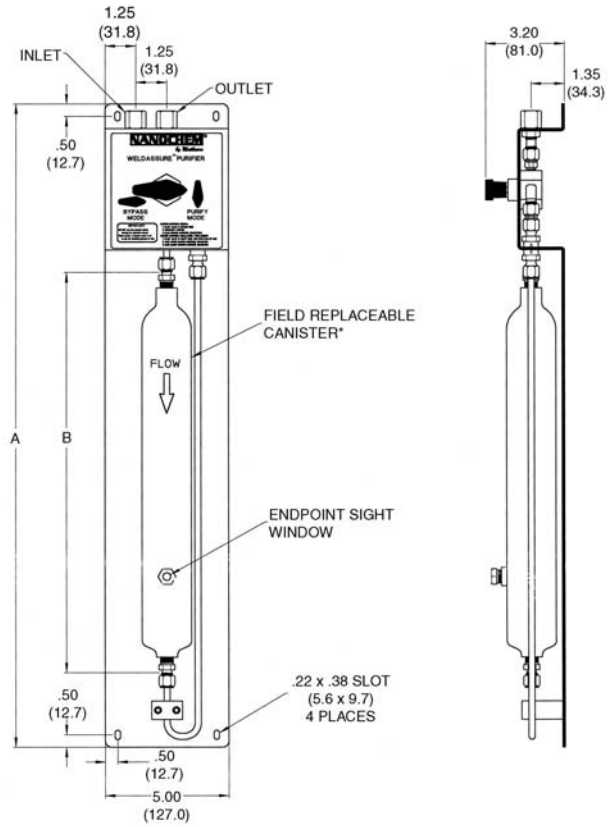
*NOTE: NANOCHEM® L-Series and P-Series Purifiers, with all stainless steel, Type 316L construction, are recommended for semiconductor and pharmaceutical welding applications.*

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



**MATHESON  
TRI·GAS®**

Dimensions in inches (mm)



	Purifier Model		
	WA-150	WA-300	WA-500
Resin bed volume (mL)	150	300	500
Maximum flow rating (slpm nitrogen)	14	28	47
(cfh nitrogen)	30	60	100
(NM <sup>3</sup> /hr nitrogen)	0.85	1.7	2.8
Dimension A / B (inches)	17 / 7	21 / 11.1	26 / 16.2
(mm)	432 / 178	533 / 282	660 / 411
<b>Lifetime (approximate)*</b>			
Number of cylinders purified	31	63	105

\*Based upon argon of 99.998% purity ("Pre-purified" grade) containing 3 ppm O<sub>2</sub> and 10 ppm H<sub>2</sub>O.  
Cylinder size -- ~ 280 ft<sup>3</sup> (7.9 NM<sup>3</sup>) -- Matheson 1A, BOC 200, Air Products B, Air Liquide 44, Praxair K.  
NOTE: Additional impurities contributed by the gas delivery system can significantly reduce predicted lifetime.

**CAUTION! NANO-CHEM® WeldAssure™ Purifiers MUST NOT be used for the purification of Argon / O<sub>2</sub> and Argon / CO<sub>2</sub> blends. The NANO-CHEM® purifier will get very hot and the resin inside will breakdown, forming hydrocarbons.**

Many welding gas distributors market custom gas blends for MIG (GMAW) welding applications. Such blends usually contain ~ 95-98% argon and ~ 1-5% oxygen and/or 1-5% carbon dioxide.

Addition of oxygen or carbon dioxide to the shielding argon helps stabilize the arc and reduces arc wandering and arc spatter. Weld penetration is also increased due to the increased heat input, but use of such blends may not improve weld quality.

The mechanical strength of the weld and weld ductility may be

reduced because the oxygen and carbon dioxide in such custom blends may deposit as oxides and carbon in the weld metal.

Matheson Tri-Gas, Inc., recommends using a blend of argon and helium for MIG (GMAW) applications. Such a helium/argon blend, e.g., 75% argon / 25% helium, with NANO-CHEM® purification has been demonstrated to provide a very stable arc with greatly reduced weld spatter and fumes.\* Weld quality of MIG welds with even duplex stainless steels, as measured by X-Rays, Charpy Impact Tests, and bending tests was excellent; porosity was completely eliminated.\* To increase the heat input to the weld, the helium concentration in the blend can be increased.

\*Krysiak K.F., Bhadha P. M., "Effect of Gas Purity on Welding of Duplex Stainless Steels." Paper presented at Corrosion '95, National Association of Corrosion Engineers, Orlando, FL, March 27-29, 1995

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