

# NANOCHEM<sup>®</sup> L-Series<sup>®</sup> Purifiers

## Features and Benefits

- Purification for all ultra-high purity applications from source to point-of-use
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
  - Removes critical contaminants to sub parts-per-billion level
- **End-Point detection available**
  - 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 and volatile metals from corrosive gases
- Low overall cost of ownership
- Requires little or no conditioning of purification media
- Easy to install and operate. Does not require heating or cooling
- Resin refills available
- All metal parts, Type 316L stainless steel, Elgiloy<sup>®</sup> or Nickel 200 (except Kel-F<sup>®</sup> valve seat)
- Inlet and outlet springless diaphragm valves included
- Mounting bracket

## Specifications

- 0.003  $\mu\text{m}$  particle filter with 99.999999% retention (PTFE or 316L SS)
- Recommended for flow 10 sccm (0.0006  $\text{NM}^3/\text{hr}$ ) up to 150 slpm (9  $\text{NM}^3/\text{hr}$ )
- Internal surface finish < 15  $\mu\text{in}$   $R_a$
- Maximum allowance working pressure of 150 psig (1.13 MPa) with fiber-optic end-point detector or 500 psig (3.5 MPa) without end-point detector
- Maximum operating temperature of 70°C

## Connections

- Female inlet and male outlet connections 1/4" VCR<sup>®</sup>-compatible face seal fittings

## Overview

The NANOCHEM<sup>®</sup> L-Series<sup>®</sup> Purifier provides economical purification in multi-tool or single-source applications. Gas impurities such as moisture and oxygen adversely affect process quality. Those impurities are present in gas cylinders and can also be introduced through leaks in the line or during cylinder changes.

NANOCHEM<sup>®</sup> purification media react with such impurities to deliver consistently pure gas to the process, improving product consistency and yields.

## Options

- Fiber optic end-point detector
  - Not available with L-60 Model
- Bypass assembly for isolating the purifier from the gas stream
- Pneumatically-actuated valves
- Upgraded particle filter for higher flow applications
- Bellows valves



## Capabilities Summary

Gas Type	Impurities Removed
Nitrogen ( $\text{N}_2$ ), Argon ( $\text{Ar}$ ), 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 <sup>™</sup> ) 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
Arsine ( $\text{AsH}_3$ ), Phosphine ( $\text{PH}_3$ )	< 100 ppt $\text{H}_2\text{O}$ , $\text{O}_2$ , $\text{CO}_2$ LDL < 45 ppb $\text{H}_2\text{O}$ in phosphine LDL < 75 ppb $\text{H}_2\text{O}$ in arsine LDL $\text{CO}$ , oxyacids ( $\text{H}_3\text{AsO}_2$ , $\text{H}_3\text{P}_2\text{O}_2$ )
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<sup>™</sup> media at low flow rates (recommend 1/10 of normal flow rate)

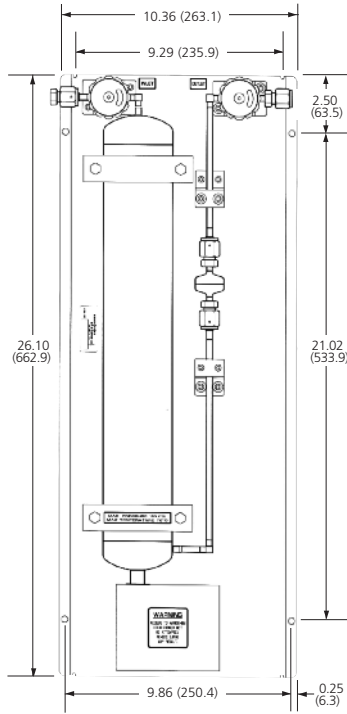
For a detailed list of purification media and impurities removed, refer to the Purification Media Table in Nanochem<sup>®</sup> Purification Solutions Brochure.



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## Dimensions, Flow Rates and Options

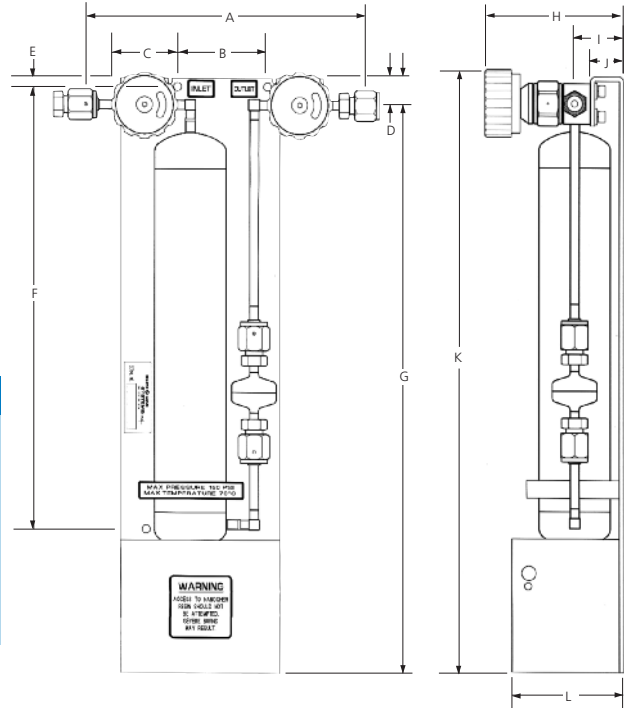


**L-2000**

	L-60	L-300	L-500
<b>A</b>	8.00 (203.20)	8.00 (203.20)	8.00 (203.20)
<b>B</b>	2.51 (63.75)	2.51 (63.75)	2.51 (63.75)
<b>C</b>	1.59 (40.39)	1.59 (40.39)	1.59 (40.39)
<b>D</b>	0.76 (19.05)	0.76 (19.05)	0.76 (19.05)
<b>E</b>	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)
<b>F</b>	7.90 (200.66)	7.90 (200.66)	12.34 (313.44)
<b>G</b>	11.40 (289.56)	11.40 (289.56)	15.84 (402.34)

	L-60	L-300	L-500	L-2000
<b>H</b>	3.88 (98.55)	3.88 (98.55)	3.88 (98.55)	4.81 (122.17)
<b>I</b>	1.38 (35.05)	1.38 (35.05)	1.38 (35.05)	2.32 (58.93)
<b>J</b>	0.94 (23.88)	0.94 (23.88)	0.94 (23.88)	1.87 (47.50)
<b>K</b>	12.15 (308.60)	12.15 (308.60)	16.59 (421.39)	26.10 (662.90)
<b>L</b>	3.13 (79.50)	2.88 (73.15)	2.88 (73.15)	3.25 (82.55)

\*All dimensions are in inches (approx. mm)



**L-60, L-300, L-500**

Purifier	L-60	L-300	L-500	L-2000
Purification Medium bed volume - milliliters	60	300	500	2000
Maximum recommended flow rating - slpm nitrogen (NM <sup>3</sup> /hr) nitrogen	8 (0.5)	15 (0.9)	50 (3.0)	50 (3.0)
With upgraded filter - slpm nitrogen (NM <sup>3</sup> /hr) nitrogen		50 (3.0)	75 (4.5)	150 (9.0)

### L-SERIES® OPTIONS

	End-Point Detection	Bellows Valves	High Flow Particle Filter Upgrade	Purifier Bypass	Pneumatic Actuated Valves
<b>L-60</b>		•	•	•	•
<b>L-300</b>	•	•	•	•	•
<b>L-500</b>	•	•	•	•	•
<b>L-2000</b>	•	•	•	•	•

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