

NANOCHEM[®]

NANOCHEM[®] A-300I AsH₃ and PH₃ Purifier For Compound Semiconductor Epitaxy

Features and Benefits

- Direct purification for 100% AsH₃ and PH₃ gas used in ultra-high purity applications: point-of-use (most recommended), valve manifold boxes and gas cabinets
- Critical application: GaAs MOCVD - Proven in the field for the manufacture of high brightness LEDs and HBTs using high-purity AsH₃ and PH₃
- No external power source required
- Easy to install and operate
- Does not require heating or cooling
- Mounting bracket included
- Design uses Inlet / outlet springless diaphragm valves
- Uses new, patented, superactivated inorganic purification media ASX-II[™] and PHX[™]
- "Drop-In" replacement for competitor's hydride purifiers

Specifications

- Ultra-high purification of AsH₃ and PH₃
- ASX-II[™] and PHX[™] media performance specifications:
 - < 1 ppb H₂O in inert gas (LDL)
 - < 75 ppb H₂O in AsH₃ (LDL)
 - < 45 ppb H₂O in PH₃ (LDL)
 - < 11 ppb CO₂ in inert gas (PHX[™], LDL)
- Expect to remove oxyacids: H_xAs_yO_z & H_xP_yO_z
- 0.003 µm Pall[®] Teflon PTFE particle filter with 99.9999999% retention
- Recommended flows: up to 15 slpm (0.9 NM³/hr)
- Maximum feed AsH₃ /PH₃ pressure – 60 psig (0.51 MPa)
- Maximum operating temperature: 70°C
- Internal surface finish: < 10 µin Ra
- Type 316L stainless steel canister assembly and tubing

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

Overview

NANOCHEM[®] A-300I series purifiers offer a patented breakthrough technology alternative to the purification of 100% AsH₃ and PH₃ used in the III-V Compound Semiconductor Epitaxy Processes, with a "drop-in" replacement design.

Gas contaminants, especially moisture and oxygen-containing species, adversely affect process quality and reduce yields. In AsH₃ and PH₃, moisture is known to increase with cylinder use. NANOCHEM[®] A-300I purifiers provide protection from such moisture surges from source AsH₃ and PH₃ gases, and from system upsets, such as leaks in the process line and cylinder changes.



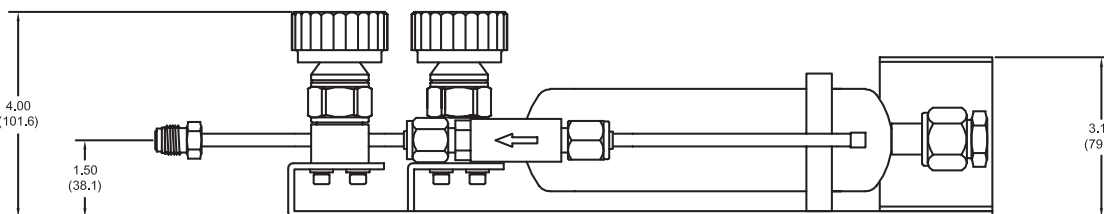
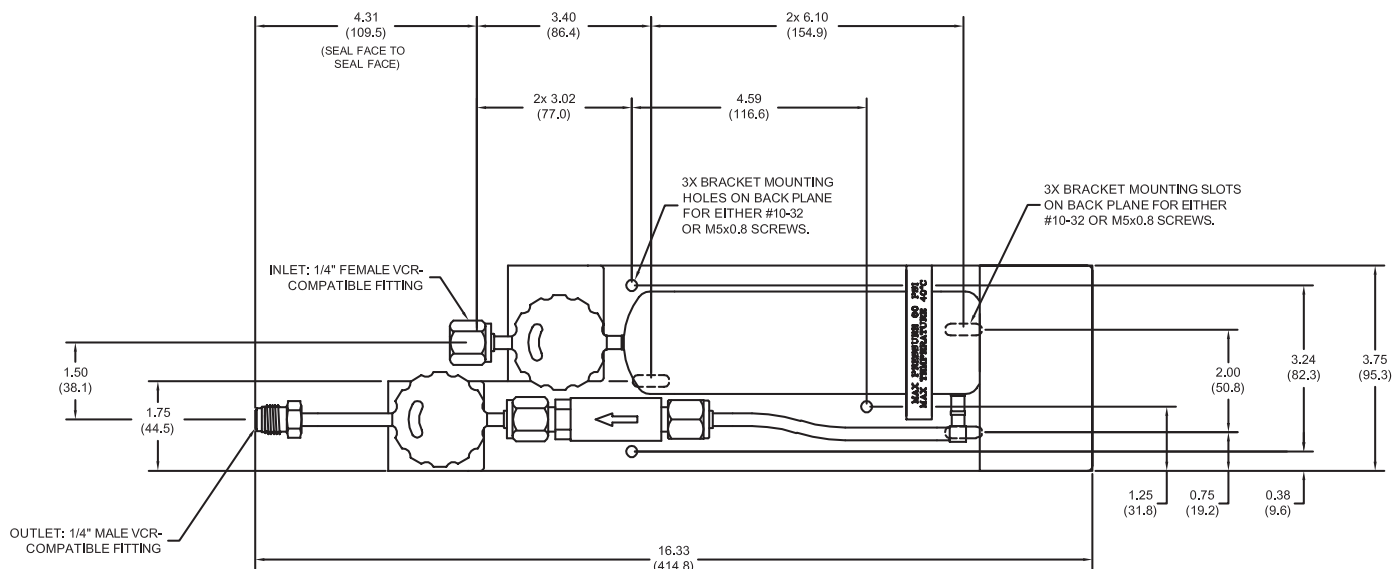
Connections and Model Numbers

- Female inlet and male outlet are 1/4" face seal fittings
- AsH₃ Model: A-300I-ASX-II[™] (Part # S1060-0414-003)
- PH₃ Model: A-300I-PHX[™] (Part # S1060-0414-002)
- "Drop-In" replacement for Entegris[®] GPU 300 with GC 300 manifold

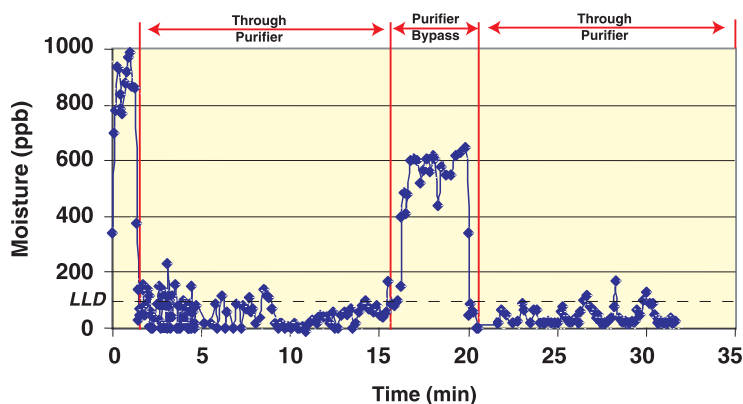


MATHESON
The Gas Professionals

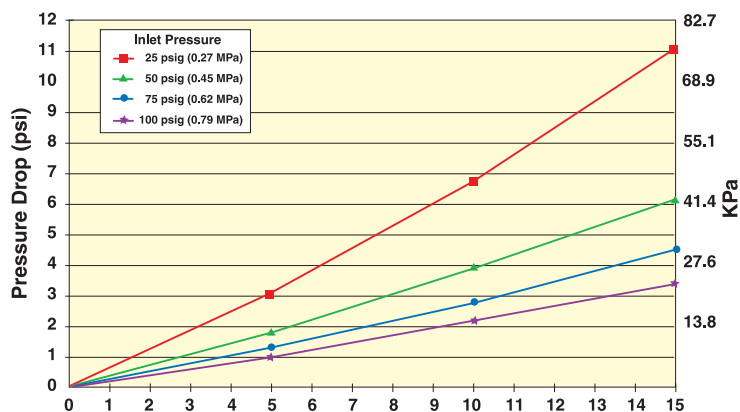
Dimensions in inches (mm)



MATHESON NANOCHEM® A-300I Purifier



Efficiency of ASX-II™ for Removal of Moisture in AsH₃
(0.4 slpm flow & 600 ppb challenge)



Flow Rate, slpm
Pressure Drop through Model A-300I

Equipment Technology Center

166 Keystone Drive
Montgomeryville, PA 18936
Tel: 800-828-4313 • Fax: 215-619-0458
Email: Info@mathesongas.com

Copyright 2025 Matheson Tri-Gas, Inc. All Rights Reserved.
Specifications are subject to change. Please check www.mathesongas.com for most current information.
NANOCHEM is a registered trademark of Matheson Tri-Gas, Inc.
ASX-II and PHX are trademarks of Matheson Tri-Gas, Inc.

Printed in USA PB025 R06/2025



MATHESON
The Gas Professionals

www.mathesongas.com

Tel: 800-416-2505

Email: Info@mathesongas.com