



ANALYZER GUARDIAN



Operator Manual

ANALYZER GUARDIAN OPERATOR MANUAL

Special Message from Advanced Micro Instruments (AMI):

Thank you for purchasing this **Analyzer Guardian** to help protect your AMI Gas Analyzer. This device has been designed to protect your AMI Analyzer by preventing unwanted liquids and particulates from entering.

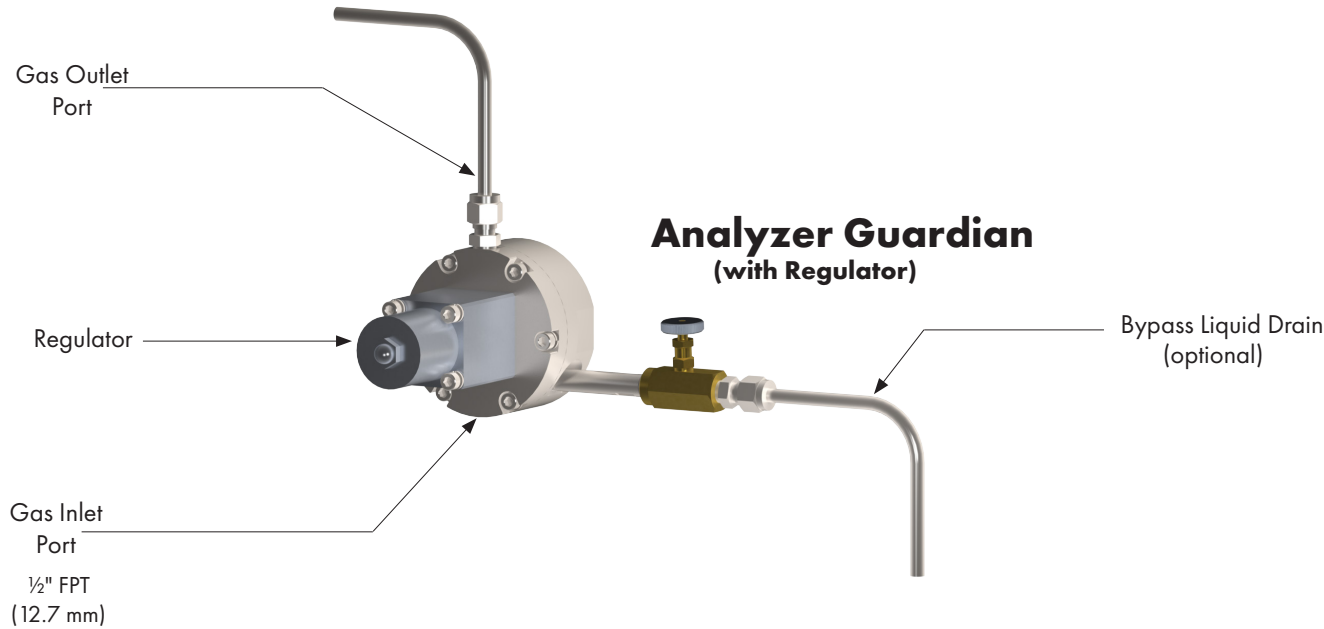
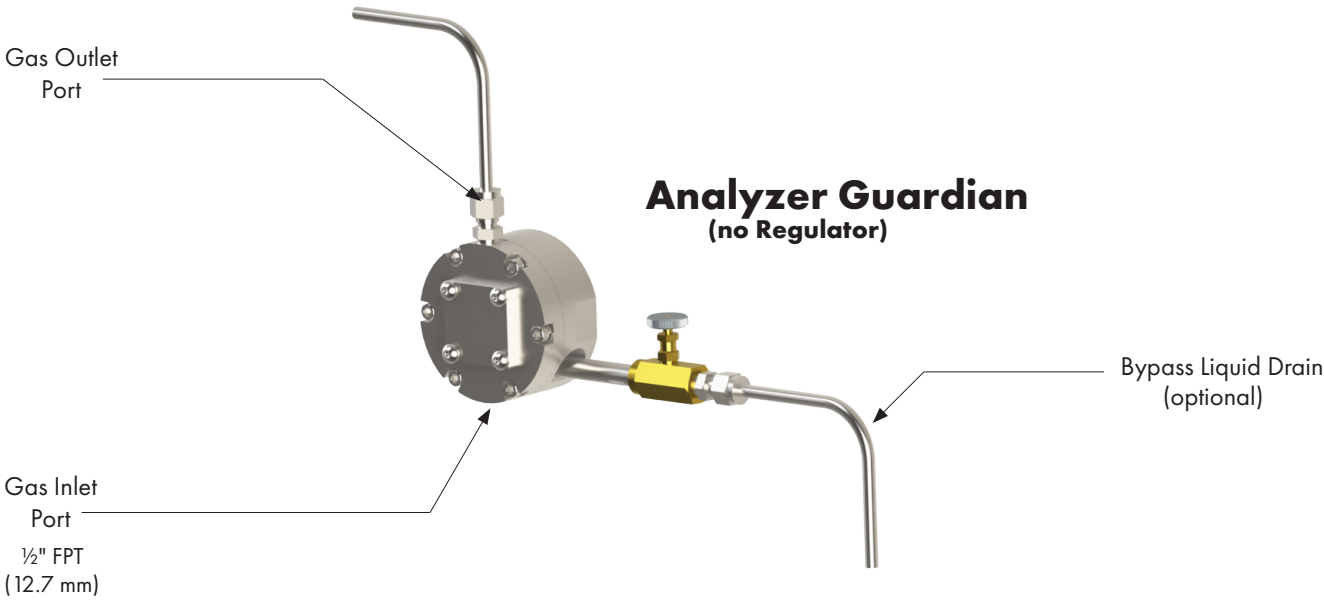
Note: Read this manual carefully prior to installation.

If you have any questions, contact AMI at 714.848.5533 or **www.amio2.com**.

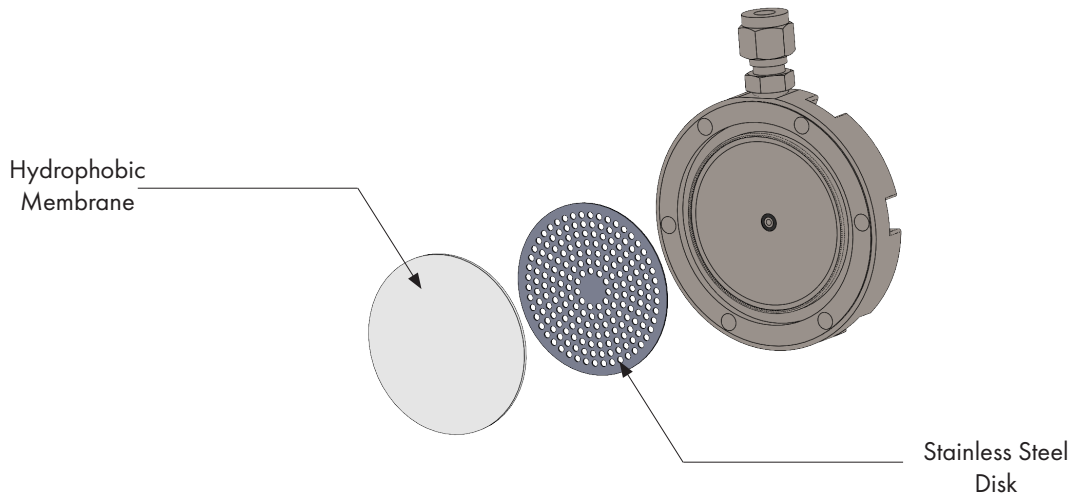
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OVERVIEW



TECHNOLOGY



AMI's **Analyzer Guardian** provides simple, virtually maintenance-free protection for gas analyzers against liquids such as: compressor oils, glycol, water and as well as particulates commonly found in pipeline gas.

- The **Analyzer Guardian** MUST be used in conjunction with AMI's **Demister**. The combination of the Guardian and Demister effectively blocks slugs of liquid, liquid droplets, liquid mists and particulates from ever reaching the Analyzer. The Demister cools hot saturated gases to ambient temperatures, causing them to coalesce and gravity-drain back into the pipeline without any maintenance requirements, as coalescing filters or drop pots require.
- The Guardian uses a combination of a hydrophobic/oleophobic membrane and perforated flexible stainless-steel disc that work in tandem, creating a barrier against saturated/wet gas, liquid slugs and particulates commonly found in pipeline gas.
- The **Analyzer Guardian** is designed to automatically shut-off gas flow to the gas analyzer when a liquid slug occurs. Once the liquid slug passes, gas flow will resume.
- In rare cases, the membrane will have to be replaced due to its pores being completely obstructed from heavy liquid and particulate exposure.
- The **Analyzer Guardian** is available with an optional liquid drain assembly for use with heavily saturated gas streams. This needle valve assembly is mounted near the inlet port and allows for continual rapid removal of excess liquids and can greatly prolong the life of the hydrophobic membrane.

SAFETY, WARNINGS & CAUTIONS

A **WARNING** identifies conditions or procedures that can be dangerous to the user.

A **CAUTION** identifies conditions or procedures that can cause damage to the Product.

 **WARNING**

The maximum pressure for proper operation of the device is 1500 psi.

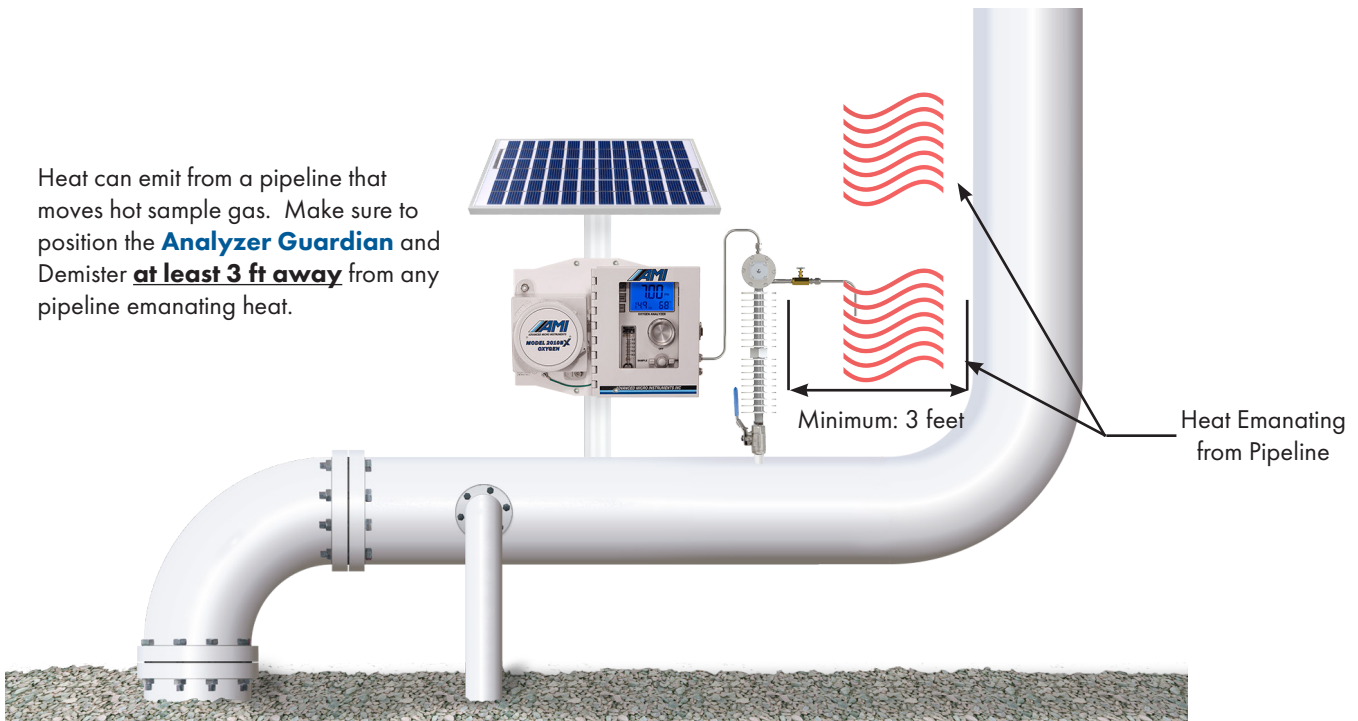
There is a safety risk if the device encounters pressure greater than 1500 psi .

ANALYZER GUARDIAN INSTALLATION



KEY POINTS for All Installations

- The **Analyzer Guardian** MUST be installed with an AMI Demister
- A shut-off valve (not included) SHOULD BE part of your installation



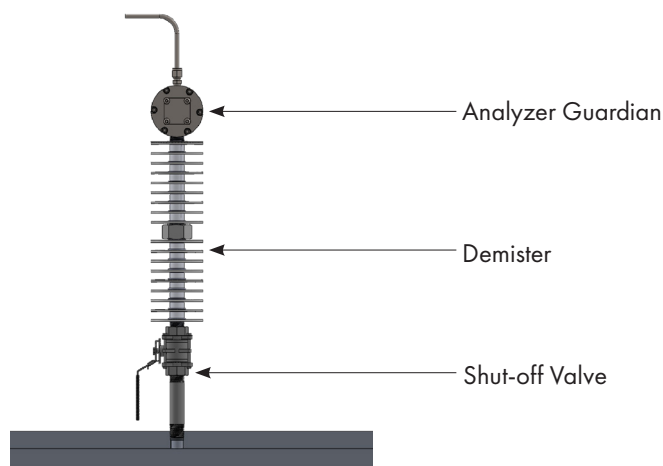
CAUTION

Never install an **Analyzer Guardian** and **Demister** near a heat source as it will greatly reduce their efficiency!

Mounting the **UNREGULATED** Analyzer Guardian

KEY POINTS

- The Unregulated **Analyzer Guardian** is designed for use in gas streams with pressures less than 150 psig.
 - The **Analyzer Guardian** and **Demister** are rated to handle much higher pressures. However, AMI Analyzers are only rated for a maximum of 150 psig.
1. Mount the **Analyzer Guardian** with the AMI **Demister** vertically as shown in the image on page 5. The Guardian and Demister must be positioned **at least 3 feet away** from any heat source.



2. Mount a ball valve/shut off valve vertically at the pipeline tap. This allows the overall installation to gravity-drain back into the pipeline.

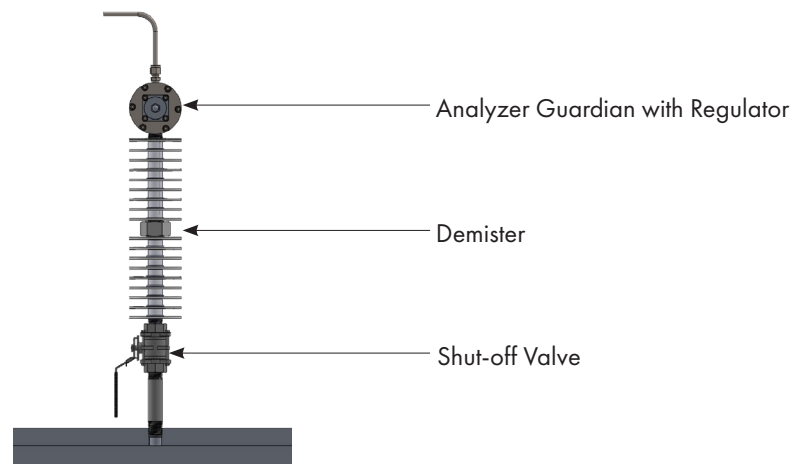
Note: The **Demister** has ½" MNPT threads on both ends.

3. Thread the **Demister** directly on top of the ½" FNPT ball valve/shut off valve
4. Thread the Guardian directly on top of the **Demister**. Refer to the drawing above.
5. Leak check all pipe treads and fittings with SNOOP® or equivalent for any gas leaks.
6. Adjust the flow of the AMI Gas Analyzer to approximately 1 SCFH. This completes the installation.

Mounting the **REGULATED** Analyzer Guardian

KEY POINTS

- The Regulated **Analyzer Guardian** is designed for use in gas streams with pressures up to 1500 psig.
 - The **Analyzer Guardian** and **Demister** are rated for pressures up to 1500 psig. Gas pressure to our Analyzer should be regulated down to 0–25 psig using the attached **Analyzer Guardian** regulator.
1. Mount the **Analyzer Guardian** with the AMI **Demister** vertically as shown in the image on page 5. The Guardian and Demister must be positioned **at least 3 feet away** from any heat source.



2. Mount a ball valve/shut off valve vertically at the pipeline tap. This allows the overall installation to gravity-drain back into the pipeline.

Note: The **Demister** has $\frac{1}{2}$ " MNPT threads on both ends.

3. Thread the **Demister** directly on top of the $\frac{1}{2}$ " FNPT ball valve/shut off valve
4. Thread the Guardian directly on top of the **Demister**. Refer to the drawing above.
5. Leak check all pipe treads and fittings with SNOOP® or equivalent for any gas leaks.
6. Adjust the regulator outlet pressure by removing the $\frac{9}{16}$ " protective acorn nut and then adjusting the $\frac{5}{32}$ " hex screw to a range of 0 to 25 psig.

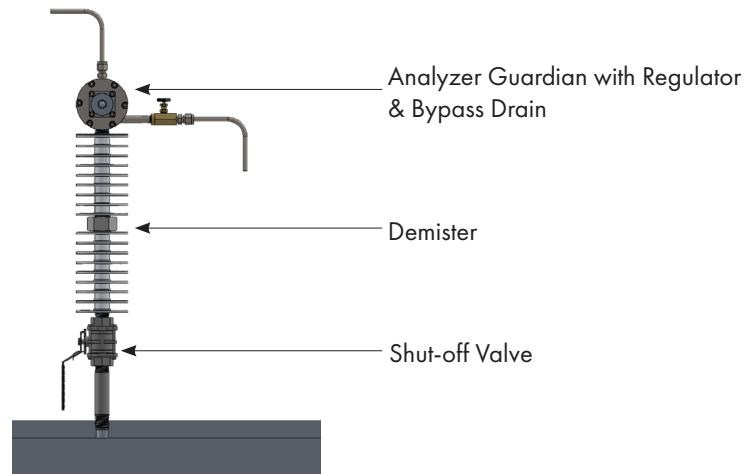
Note: Turning the hex screw clockwise increases the outlet pressure, while turning it counterclockwise decreases the outlet pressure.

7. Adjust the flow of the AMI Gas Analyzer to approximately 1 SCFH. This completes the installation.

Mounting the **REGULATED** or **UNREGULATED** Analyzer Guardian with Optional Bypass Drain Feature

KEY POINTS

- The unregulated **Analyzer Guardian** is for use when pipeline pressure is less than 150 psig, and the regulated version of our **Analyzer Guardian** is designed for use in gas streams with up to 1500 psig.
 - The **Analyzer Guardian** and **Demister** can are rated for pressures up to 1500 psig. Gas pressure to our Analyzer should be regulated down to 0–25 psig using the attached **Analyzer Guardian** regulator.
1. Mount the **Analyzer Guardian** with the AMI **Demister** vertically as shown in the image on page 5. The Guardian and **Demister** must be positioned at least 3 feet away from any heat source.



2. Mount a ball valve/shut off valve vertically at the pipeline tap. This allows the overall installation to gravity-drain back into the pipeline.

Note: The **Demister** has ½" MNPT threads on both ends.

3. Thread the **Demister** directly on top of the ½" FNPT ball valve/shut off valve
4. Thread the Guardian directly on top of the **Demister**. Refer to the drawing above.
5. Leak check all pipe treads and fittings with SNOOP® or equivalent for any gas leaks.
6. Adjust the regulator outlet pressure by removing the 9/16" protective acorn nut and then adjusting the 5/32" hex screw to somewhere between 0–25 psig.

Note: Turning the hex screw clockwise increases the outlet pressure, while turning it counterclockwise decreases the outlet pressure.

7. Adjust the flow of the AMI Gas Analyzer to approximately 1 SCFH.
8. Adjust the flow of the BYPASS METERING VALVE attached to the **Analyzer Guardian** by using a temporary flowmeter and connecting to the end of the supplied bypass tubing. (see the image above). Adjust the flowrate to approximately 1 SCFH and then remove the temporary flowmeter.

Note: Keeping a flow meter in place will quickly result in it becoming plugged by bypass liquids and particulates.

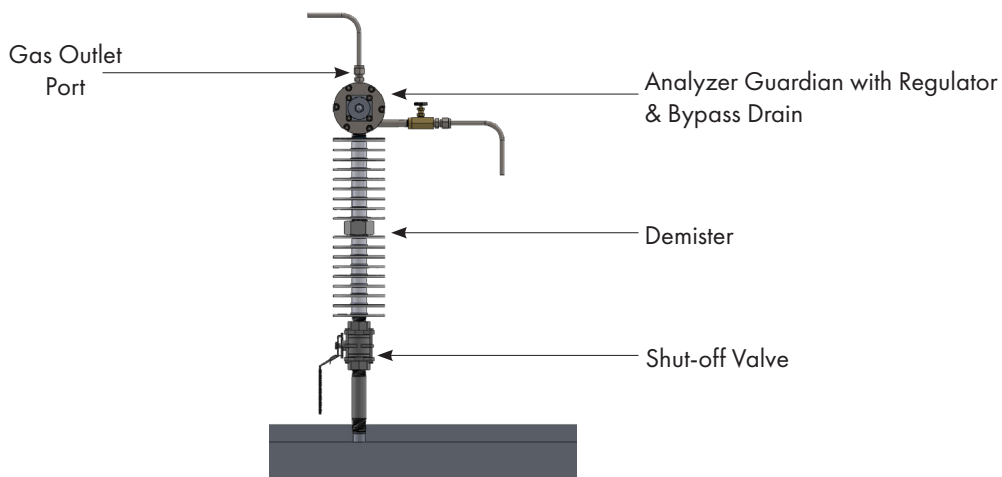
This completes the installation.

TROUBLESHOOTING, MAINTENANCE & REPAIRS

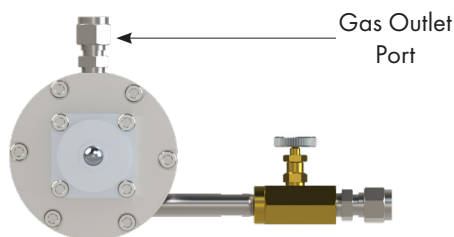
The following section identifies potential system issues and provides possible resolutions. If you are unable to resolve an issue after following the suggestion(s) shown in this section, contact AMI for further support.

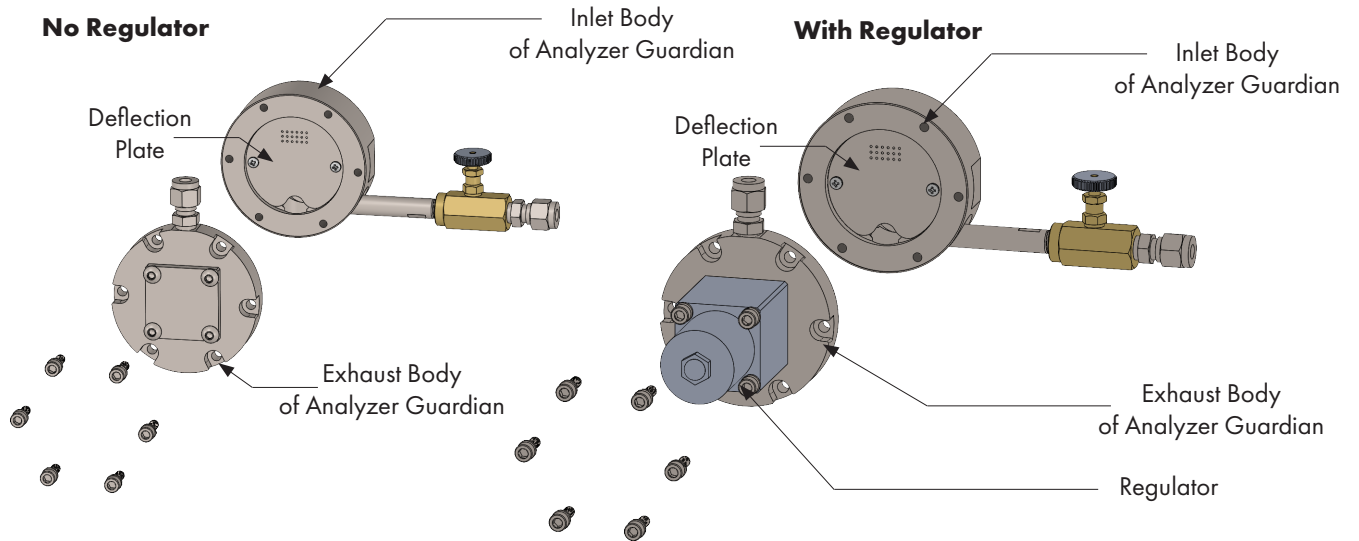
Replacing the Hydrophobic Membrane

Over time, the hydrophobic membrane may become dirty and its pores clogged, resulting in a decrease or loss of gas flow. The **Analyzer Guardian** Rebuild Kit can be purchased from AMI to replace the membrane and necessary O-rings.

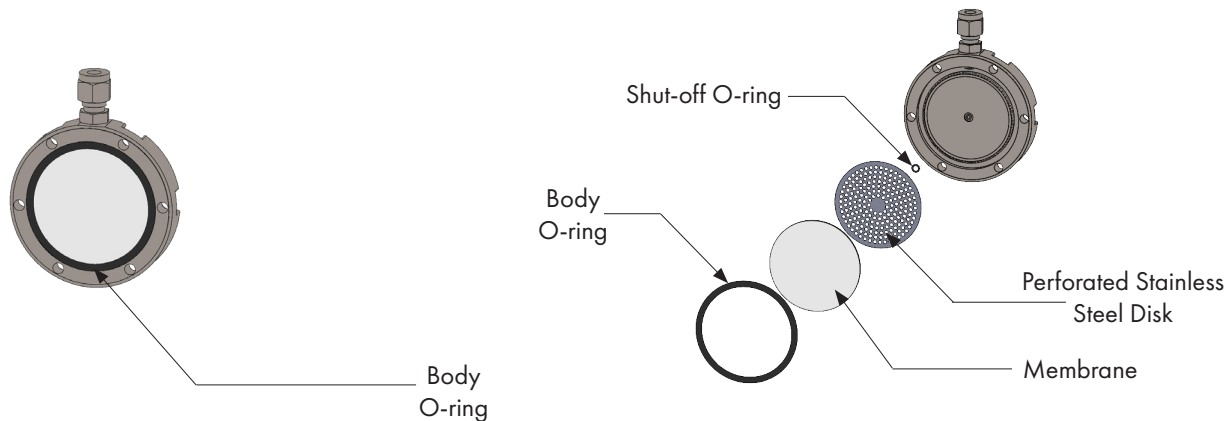


- 1) Shut off the gas flow using the Shut-off Valve.
- 2) Disconnect the fitting at the Gas Outlet Port.

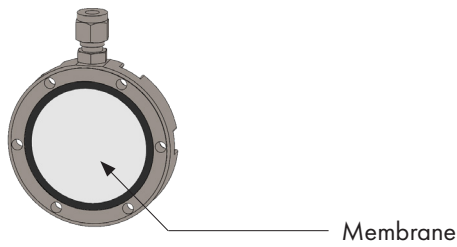




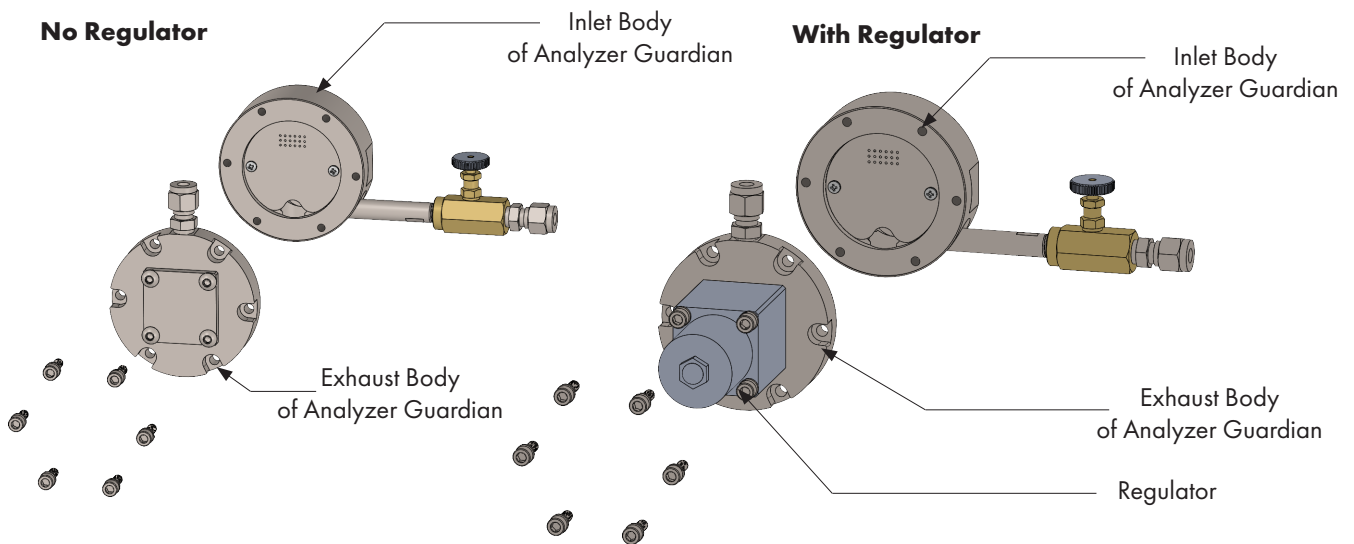
- 3) Remove the (6) socket head screws, shown in the image above, holding the 3.0" diameter machined disc in place.



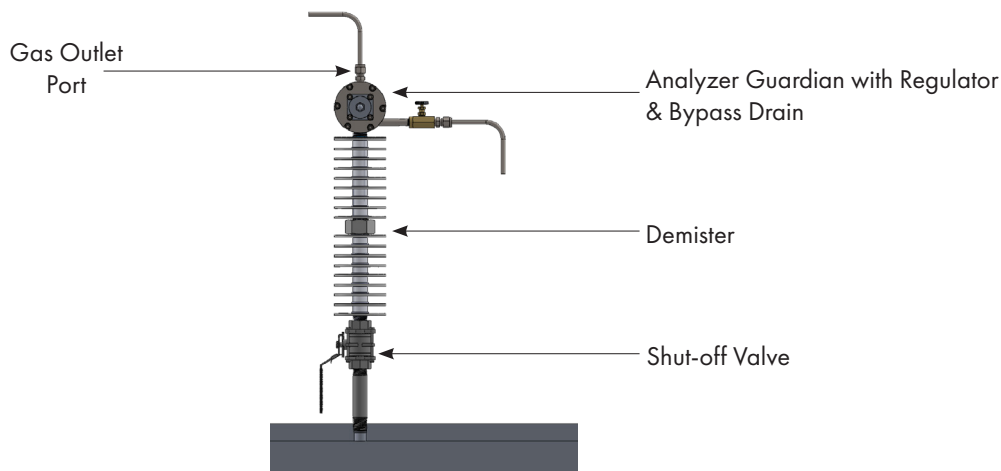
- 4) Carefully remove the Body O-ring sealing the white hydrophobic membrane in place and discard.
- 5) Carefully remove the hydrophobic membrane and discard.
- 6) Remove the perforated disc and clean it if necessary.
- 7) Remove and discard the Shut-off O-ring in the center of the Exhaust Body of the **Analyzer Guardian**.
- 8) Replace with a new 0.125" Shut-off O-ring from the kit.
- 9) Carefully reinstall the Perforated Stainless-steel Disc, making sure it is centered within the 0.030" counterbore.
- 10) Place the new Membrane into position, making sure that it is centered with respect to the O-ring groove.



- 11) While holding the center of the membrane in place with one finger, align the Body O-ring with its groove and apply a slight amount of pressure in a 4-area pattern, making sure the membrane does not move during this process. While still holding the membrane in place with one finger, continue to press the Body O-ring in place until it is completely seated into the groove.

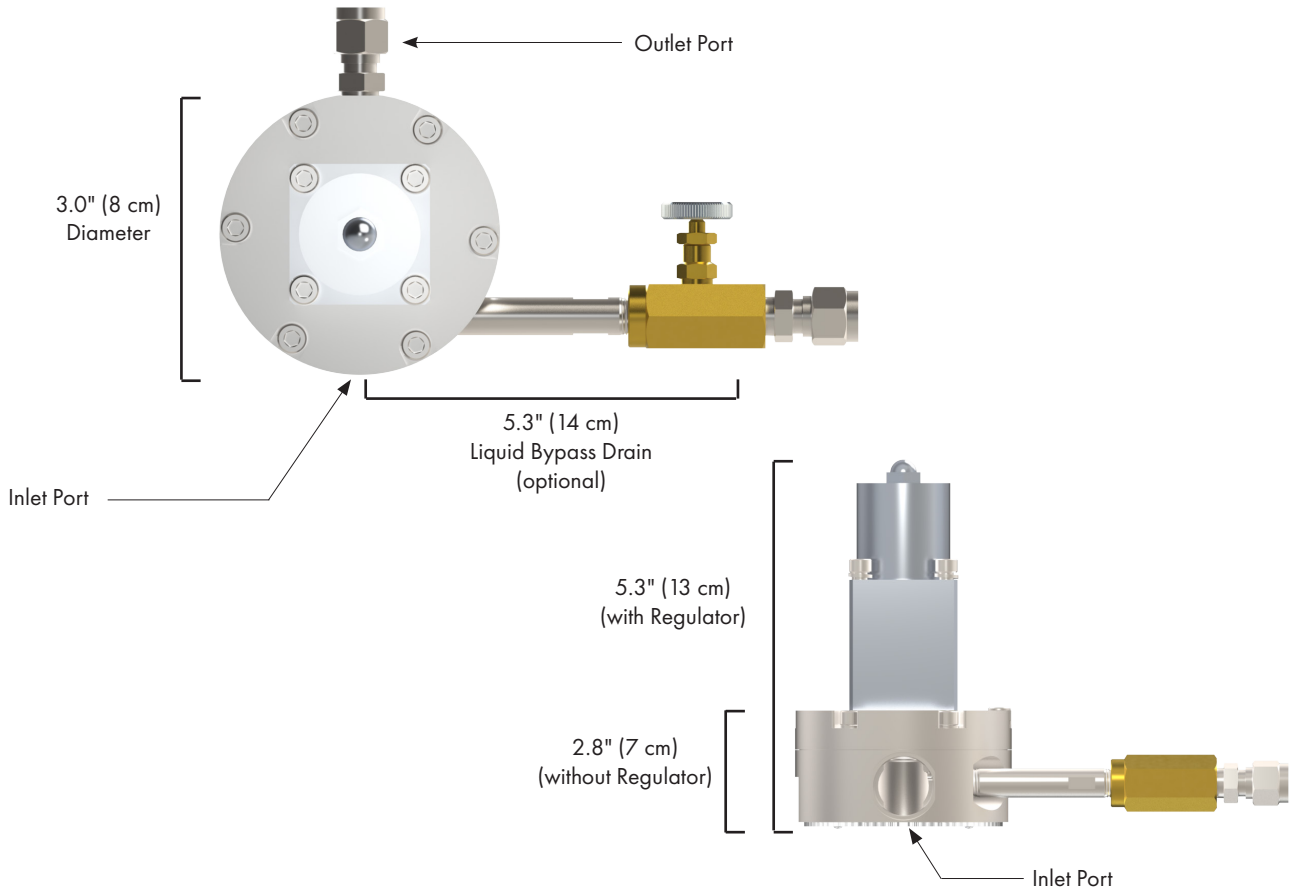


- 12) Reinstall all 6 socket head cap screws and tighten.



- 13) Reattach the **Analyzer Guardian** to the line by connecting its fitting at the Gas Outlet Port and tightening.

SPECIFICATIONS & PERFORMANCE OPTIONS



PART NUMBER	DESCRIPTION
5GRD01	Analyzer Guardian with Regulator
5GRD02	Analyzer Guardian Base Design (no Regulator)
4KIT11	Liquid Bypass Assembly for Heavily-saturated Gas
4KIT09	Membrane Replacement Kit (Hydrophobic membrane and necessary O-rings)
4KIT10	Full Rebuild Kit (Hydrophobic membrane, perforated metal diaphragm, deflection plate and O-rings)

CONNECTIONS		MAXIMUM INLET PRESSURE	OUTLET PRESSURE <i>(for Regulator Option)</i>	MAXIMUM FLOW RATE	MATERIALS OF CONSTRUCTION
INLET PORT	OUTLET PORT				
½" FPT (12.7 mm)	¼" compression fittings(6.4 mm)	1500 psig(103 bar)	0 – 25 psig (0 – 1.7 bar)	5 SCFH	Body: 303 Stainless Steel Disk: 300 Series Stainless Steel Diaphragm: PTFE

IMPORTANT (for Regulator Configurations)

The regulator on the **Analyzer Guardian** will exhibit the Supply Pressure Effect (SPE). This means that changes in the inlet pressure will have an inverse effect on the regulated pressure by 1.4%. For example, if the inlet pressure decreases 100 psig, the outlet regulated pressure will increase 1.4 psig.

AMI[®] WARRANTY & SUPPORT

LIMITED WARRANTY/DISCLAIMER

The warranty period is **TWO YEARS** for the Device. Any failure of material or workmanship will be repaired free of charge for that specified period from the original purchase (shipping date) of the instrument. AMI will also pay for 1-way ground shipment back to the customer.

The warranty period for the oxygen sensor is 6 months.

Any indication of abuse or tampering of the instrument will void the warranty.

Receiving the Device

When you receive the instrument, check the package for evidence of damage and if any is found contact the shipper. Although every effort has been made to assure that the Device meets all performance specifications, AMI takes no responsibility for any losses incurred by reason of the failure of this Device or associated components. AMI's obligation is expressly limited to the Device itself.

EXCEPT FOR THE FOREGOING LIMITED WARRANTY, AMI MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE NON-INFRINGEMENT OF THIRD-PARTY RIGHTS, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. IF APPLICABLE LAW REQUIRES ANY WARRANTIES WITH RESPECT TO THE SYSTEM, ALL SUCH WARRANTIES ARE LIMITED IN DURATION TO TWO (2) YEARS FROM THE DATE OF DELIVERY.

LIMITATION OF LIABILITY

IN NO EVENT WILL AMI BE LIABLE TO YOU FOR ANY SPECIAL DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF THE COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

LIMITATION OF REMEDIES

AMI's entire liability and your exclusive remedy under the Limited Warranty (see above) shall be the replacement of any Analyzer that is returned to the Company and does not meet the Company's Limited Warranty.

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HIGH PERFORMANCE

RELIABILITY

INTUITIVE DESIGN

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