Guardian Membrane Separators (GMS Series)

Features

- Integral Porting and Mounting Bracket
- 316L Stainless Steel Standard: NACE MR-01-75 Compliant
- Up to 70 LPM Flow (2.5 SCFM)
- 1500 PSIG Max. Pressure Rating on All SS Units
- PTFE Assemblies Available
- Hydrophobic/Oleophobic Membrane Bonded to O-Ring for Ease of Service

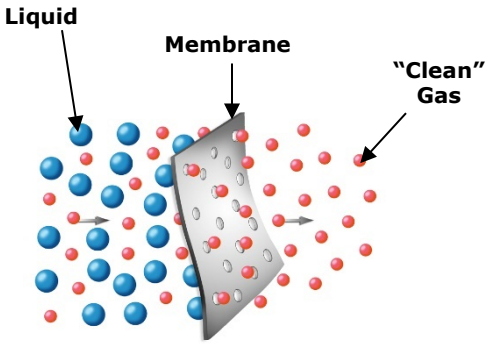
Applications

- Protect On-Line Analyzers
- Gas Chromatographs
- CNG Sampling Systems
- Moisture Barrier on Critical Monitoring
- Probes, Mass Spectrometers
- Sampling Conditioning

Many sample systems require zero liquid entrainment, and demand the sample not to be altered. At the heart of our Guardian Membrane Series is a porous PTFE Hydrophobic/Oleophobic membrane which is supported by a stainless steel disc. As a wet sample enters, the membrane only allows gas or vapor molecules to pass through while all liquids are stopped. Our series of membrane filters are uniquely designed to allow the operator quick and easy membrane service while providing high performance filtration. The body contains an integral mounting bracket along with the inlet, outlet, drain, and bypass connections. The threaded cap is user friendly with knurls and flats for optimum infield serviceability. No connections are broken to service the membrane disc.

Our of GMS105 products also features an "Atomizer Plate" which spins the gas flow dropping much of the liquid mass out before contact is even made with the membrane. This rotation assists in keeping the membrane particle free too. We have further reduced the internal volume to minimize the sample lag time.

"Pull Ring" to easily remove the plug & service the membrane.



Standard Guardian Membrane

Our standard guardian membrane series will completely remove all entrained liquids and solids. Each housing is constructed from 316L stainless steel with pressure ratings up to 1,500 PSIG. The compact design makes them ideal for low flow sampling applications. Servicing the membrane is simple and fast with our no tool required user friendly design. Simply unthread the cap and remove the plug to replace the membrane. No connections need to be broken to replace the membrane. Each assembly is supplied with an Hydrophobic/Oleophobic Membrane bonded to a Viton O-ring.

All of our Guardian Membranes are available in exotic materials: PTFE, Hastelloy C, Monel 400, and Titanium. As an option we also offer Kalrez, EPDM, Buna and PTFE Encapsulated Viton O-rings.

Stainless Steel Model	GMS050	GMS100	GMS105-1/8"	GMS105-1/4"
Port Size (NPT)	1/8"	1/4"	1/8"	1/4"
Drain & Sample Port (NPT)	1/8"	1/4"	1/8"	1/4"
Maximum Pressure (psig)	1500	1500	1500	1500
Internal Volume (cc)				
In Sample Chamber (Behind Membrane)	1.5	3	3.96	3.96
Weight of Housing (lbs)	0.5	1.5	2.0	2.0
Principle Dimensions: (inch)				
Center of Port to Back	0.28	N/A	0.39	0.39
Body Diameter	1.50	1.97	2.48	2.48
Body Depth	1.29	2.01	1.83	1.83
Space Required to Remove Cap	0.79	1.38	0.87	0.87
Maximum Temp. (300ºF) Standard Viton O-Ring	GVGMS050	GVGMS100	GVGMS105	GVGMS105
PTFE Membrane Code (1) **Specify: M1 (Low Flow) or M2 (High Flow)	MT.19.□G	MT.33.□HG	MT.33.□HG	MT.33.□HG
Drawing **For More Detail & Options**	**GMS050**	**GMS100**	**GMS105-1/8"**	**GMS105-1/4"**
PTFE Model Max. Pressure: 100 PSIG, Maximum Temp: 250°F	**N/A**	**N/A**	**GMS105P-1/8"**	**GMS105P-1/4"**

Notes: (1) Replace the "□" with the flow required. i.e. MT.19.M1G, MT.33.M2HG

Small Footprint – GMS100

The GMS100 assembly uses a straight through flow path with an inlet port and drain sharing the same plane. The clean sample is on the opposite plane thus increasing efficiency and minimizing flooding. A simple collar holds the two sides (planes) of the assembly together. This user-friendly design still allows the operator to service the housing without breaking any connections. This compact design is ideal for small footprint environments and allows the membrane to be mounted vertically (as pictured) or horizontally.

Integral Coalescing Pre-Filter Membranes

Guardian Membranes are also offered with integral coalescing pre-filters. A 50C grade element is mounted before the membrane to remove most liquids and solids, thus providing longer membrane life. This integral package minimizes dead volume, panel space, and leak points. The combo units accept the same membrane kits as our standard Guardian units. Part numbers are specified at the bottom of the attached chart.

Our Model GMS170 takes the built-in coalescing filter one step further by inverting the complete assembly and making it easy to service by eliminating the need to break port connections. Here too we reduced internal volume for better conditioning results.

GMS170

Stainless Steel Model	GMS120	GMS122	GMS127G	GMS170
Port Size (NPT)	1/8"	1/4"	1/4"	1/4"
Drain & Sample Port (NPT)	1/8"	1/4"	1/8" / 1/4"	1/4"
Maximum Pressure (psig)	1500	1500	100	2000
Internal Volume (cc)				
In Sample Chamber - Behind Membrane	0.118	0.118	0.118	23.8 (Total)*
Weight of Housing (lbs)	2.0	2.0	2.0	1.5
Principle Dimensions: (inch)				
Body Diameter	2.00	2.00	2.00	2.12
Overall Length	5.08	5.08	5.52	3.23
Space Required to Coalescing Element	2.36	2.36	2.64	1.61
Maximum Temp. (300ºF) Standard Viton O-Ring	GVGMS120	GVGMS120	GVGMS120	GVGMS170
Coalescing Element PTFE Membrane Code (1) **Specify: M1 (Low Flow) or M2 (High Flow)	12-57-50C MT.33.□HG/50C	12-57-50C MT.33.□HG/50C	12-57-50C MT.33.□HG/50C	22/32-27-50CS MT.33.□HG/170
Drawing **For More Detail & Options**	**GMS120**	**GMS122**	**GMS127G**	**GMS170**
PTFE Model Max. Pressure: 100 PSIG, Maximum Temp: 250°F	**GMS120P**	**GMS122P**	**N/A**	**N/A**

Notes: (1) Replace the "□" with the flow required. i.e. MT.33.M1HG/50C, MT.33.M2HG/50C
(*) Internal Volume on the GMS 170: Inlet Side of Element: 3.9; Drain Side of Element: 19.5; Sample Side of Membrane: 0.4

Traditional T-Type

The GMS120/122 series utilizes the traditional T-type design, with a coalescing pre-filter built into the assembly. The GMS127G utilizes a pyrex bowl for at a glance monitoring. The membrane is mounted on top with a vertical exit point, which assists in keeping it clean. This series utilizes a unique membrane holder plate which simply slides out from underneath the collar once it is loosen and lifted. This plate allows membrane maintenance without breaking any connections.

High Flow Membranes

For flow rates up to 15 LPM we offer our GMS205 Series. This series uses the same user-friendly design as the GMS105 series, but with a larger membrane. The increased surface area provides higher flows and also increases the time between service intervals. Our standard assemblies are machined from 316L stainless steel and supplied with Viton seals. Each assembly is supplied with a Hydrophobic/Oleophobic Membrane bonded to a Viton O-ring.

All of our Guardian Membranes are available in exotic materials: PTFE, Hastelloy C, Monel 400, and Titanium. As an option we also offer Kalrez, EPDM, Buna and PTFE Encapsulated Viton O-rings.

Stainless Steel Model	**GMS205-1/4"**	**GMS205-1/2"**	**GMS305-1/8"**	**GMS305-1/4"**
Port Size (NPT)	1/4"	1/2"	1/8"	1/4"
Drain & Sample Port (NPT)	1/4"	1/2"	1/8"	1/4"
Maximum Pressure (psig)	1500	1500	1500	1500
Internal Volume (cc)				
In Sample Chamber - Behind Membrane	19.69	19.69	28.00	28.00
Weight of Housing (lbs)	7.0	7.0	9.0	9.0
Principle Dimensions: (inch)				
Center of Port to Back	0.63	0.63	0.39	0.39
Body Diameter	3.94	3.94	4.49	4.49
Body Depth (with knob)	3.03	3.03	1.85	1.85
Space Required to Remove Cap	1.38	1.38	3.70	3.70
Maximum Temp. (300ºF) Standard Viton O-Ring	GVGMS205	GVGMS205	GVGMS305	GVGMS305
PTFE Membrane Code (1) **Specify: M1 (Low Flow) or M2 (High Flow)	MT.61.□HG	MT.61.□HG	MT.89.□G	MT.89.□G
Drawing **For More Detail & Options**	**GMS205-1/4"**	**GMS205-1/2"**	**GMS305-1/8"**	**GMS305-1/4"**
PTFE Model Max. Pressure:100 PSIG, Max.Temp: 250°F	**GMS205P-1/4"**	**GMS205P-1/2"**	**GMS305P-1/8"**	**GMS305P-1/4"**

Notes: (1) Replace the "□" with the flow required. i.e. MT.61.M1HG, MT.61.M2HG

* We also offer a GMS205ST (Straight Through / Fast Loop) version is which the inlet/outlet ports are directly connected and the membrane only filters what the analyzer requires. *

GMS305-High Volume

Our GMS305 series offers an 89 MM membrane for extremely high flow sample systems requiring zero liquid entrainment. It is available with either 1/8" or 1/4" FNPT connections.

The GMS305 is typically protected by a coalescing filter for added security. We recommend our 130 or 137G series based on the pressure needed.

Keep in mind a combination of ports are available within the complete Guardian range, i.e. 1/8" and 1/4" on the same body. We welcome your phone calls to clarify any and all information. Please do not hesitate to call us at 1-586-802-5561.

Integral Coalescing High Flow Pre-Filter Membranes

The **GMS130** Series offers the same features as our GMS120 Series, but with a physically larger membrane and coalescing element. The **added surface area** of both the membrane and coalescing element will provide **much longer service intervals** as compared to the GMS120 Series. By having the coalescing element and membrane in one assembly we minimize sample lag time, optimize space (one housing versus two), and reduce potential leak points by having less connections.

Stainless Steel Model	GMS130-61	GMS132	GMS137G	GMS138G
Port Size (NPT)	1/4"	1/2"	1/4"	1/2"
Drain & Sample Port (NPT)	1/4"	1/4"	1/4"	1/4"
Maximum Pressure (psig)	1500	1500	100	100
Internal Volume (cc)				
In Sample Chamber - Behind Membrane	2.2	2.2	2.2	2.2
Weight of Housing (lbs)	9.0	9.0	9.0	9.0
Principle Dimensions: (inch)				
Body Diameter	3.38	3.38	3.38	3.38
Overall Length	5.73	5.73	6.25	6.25
Space Required to Coalescing Element	2.95	2.95	3.15	3.15
Maximum Temp. (300ºF) Standard Viton O-Ring	GVGMS130	GVGMS130	GVGMS137	GVGMS137
Coalescing Element PTFE Membrane Code (1) **Specify: M1 (Low Flow) or M2 (High Flow)	25-64-50C MT.61.□HG/50C	25-64-50C MT.61.□HG/50C	25-64-50C MT.61.□HG/50C	25-64-50C MT.61.□HG/50C
Drawing **For More Detail & Options**	GMS130-61	GMS132	GMS137G	GMS138G

Notes: (1) Replace the "□" with the flow required. i.e. MT.61.M1HG/50C, MT.61.M2GH/50C

Pyrex Bowl For Visual Monitoring

The GMS137G/GMS138G series is a low-pressure version of the GMS130 Series. They share the same size membrane and coalescing element by having a Pyrex glass bowl which allows at a glance monitoring of liquid collection.

Technical Details

The porous membranes are produced from pure PTFE; they are extremely inert and have very low absorption levels. There are two standard grades available for use in low to high flow applications. The M1 (0.1 micron) is a low flow type membrane suitable for most liquids and the M2 (0.8 micron) is a high flow type recommended for higher surface tension liquids.

Our **Hydrophobic/Oleophobic** membranes designated by the "H" suffix (i.e. MT.33.M2H) have an extra thin layer which repels hydrocarbons and will block both water and hydrocarbons. They exhibit the same flow rate characteristics as our standard membranes.

Membrane Size	MT.19.M1G	MT.19.M2G
Membrane Type	Low Flow	High Flow
Material	PTFE	PTFE
Diameter (mm)	19	19
Thickness (µm)	152	152
Maximum Temperature (ºF)	300	300
Recommended Flow Rate (LPM)	0.25	6
Membrane Micron Size	0.1	0.8

Membrane Size	MT.33.M1HG	MT.33.M2HG
Membrane Type	Low Flow	High Flow
Material	PTFE	PTFE
Diameter (mm)	33	33
Thickness (µm)	152	152
Maximum Temperature (ºF)	300	300
Recommended Flow Rate (LPM)	0.35	10
Membrane Micron Size	0.1	0.8

Membrane Size	MT.61.M1HG	MT.61.M2HG
Membrane Type	Low Flow	High Flow
Material	PTFE	PTFE
Diameter (mm)	61	61
Thickness (µm)	152	152
Maximum Temperature (ºF)	300	300
Recommended Flow Rate (LPM)	2	15
Membrane Micron Size	0.1	0.8

Membrane Size	MT.89.M1G	MT.89.M2G
Membrane Type	Low Flow	High Flow
Material	PTFE	PTFE
Diameter (mm)	89	89
Thickness (µm)	152	152
Maximum Temperature (ºF)	300	300
Recommended Flow Rate (LPM)	3	43
Membrane Micron Size	0.1	0.8

The above flow rates are with a 3 PSID across the membrane and are for reference purposes only. The flow may be increased, but we do not recommend exceeding a 5 PSID in order to maintain the integrity of the membrane. The M1 membrane is suitable for separation of most liquids from gases. The M2 membrane is best suited for the separation of water and other high surface tension liquids from gases.