Technical Installation Sheet for Membrane Separators

Installation, Operation & Maintenance Manual
Membrane Housings (GMS Series)

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1. SAFETY INFORMATION

1.1 General Warning

A filter housing is a **pressure vessel**. It must never be used above its stated **Maximum Allowable Working Pressure (MAWP)** or outside its stated temperature range.
Failure to follow these instructions may result in:

- Equipment damage
- Serious injury
- System failure

1.2 Pressure & Temperature Considerations

- Pressure rating decreases at elevated temperatures.
- Ensure system includes:
  - Pressure indicators
  - Temperature indicators
  - Pressure-limiting or safety relief devices

1.3 System Design Responsibility

Filter housings must be installed in well-designed piping systems. The system designer is responsible for ensuring safe integration.

2. DESIGN LIMITATIONS

The following factors were **NOT** considered in the filter housing design:

a. Static pressure and mass of contents
b. Traffic, wind, and earthquake loading
c. Reaction forces and moments from mounting
d. Decomposition of unstable fluids
e. External fire exposure

These must be evaluated separately by the system designer or engineer.

3. USER RESPONSIBILITIES
It is the responsibility of the user to ensure:

- Materials of construction (housing, gasket, filter media) are compatible with the intended application.
- The system operates within specified limits.
- Proper maintenance procedures are followed.

3.1 Fluid Compatibility
These filters are **not recommended for unstable fluids**.

4. INSTALLATION INSTRUCTIONS

4.1 General Installation Requirements

- All system connections must be leak-tight.
- Apply suitable pipe sealant prior to installation.
- Acceptable sealants:
  - PTFE tape
  - Thread paste
  - Compatible sealing compounds

Sealants must be compatible with the filtered media.

4.2 Assembly Guidance

- Do not swap caps and bodies between different filter assemblies.
- Ensure fittings are properly aligned before tightening.

5. TORQUE SPECIFICATIONS

5.1 Membrane Separator Cap

- Hand tighten until seated.
- Final torque: **30 ft-lb**

5.2 System Fittings
Typical torque range: **30–55 ft-lb**
Actual torque depends on:

- Fitting quality
- Sealant type
- Thread condition

Inspect fittings during servicing and re-tighten if necessary.

6. MOUNTING GUIDELINES
Wherever possible:

- Use appropriate mounting brackets.
- Avoid excessive loads on piping.
- Ensure system support prevents stress on housing connections.

Improper mounting can result in premature failure.

7. MEMBRANE SERVICE INSTRUCTIONS

7.1 GMS105 and GMS205 Membranes

Standard Features

- Viton O-Rings (standard)
- Maximum Pressure: 1500 PSIG
- 316 Stainless Steel construction
- Four-port design:
  - Inlet Port (stamped IN)
  - Outlet / Clean Sample (stamped OUT)
  - Drain / Bypass (stamped DR)
- Mounting bracket included

Supplied complete with either a Low Flow or High Flow membrane installed.

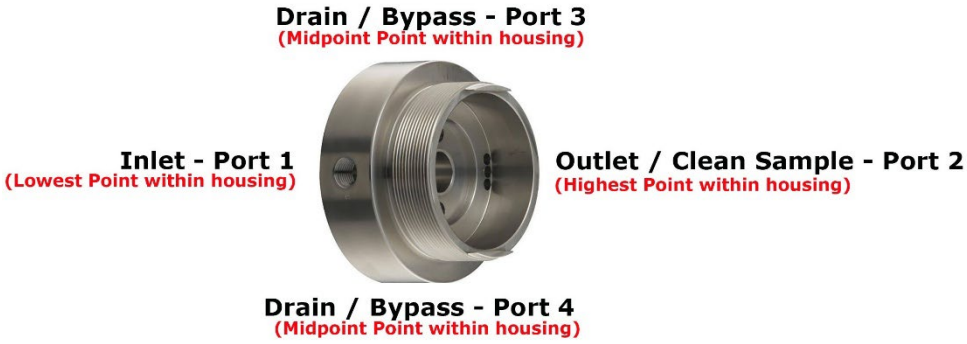
Membrane Compatibility

- GMS105-1/4" accepts:
  - MT.33.M1xx (Low Flow) Replace "xx" with Membrane Type
  - MT.33.M2xx (High Flow) Replace "xx" with Membrane Type
- GMS205-1/4" accepts:
  - MT.61.M1xx (Low Flow) Replace "xx" with Membrane Type
  - MT.61.M2xx (High Flow) Replace "xx" with Membrane Type

Flow direction is engraved on the housing head:

- **Inlet** (Stamped IN)
- **Outlet / Clean Sample** (Stamped OUT)
- **Drain / Bypass** (Stamped DR)

Ensure correct orientation during installation.



7.2 GMS122 and GMS132 Membranes

Standard Features

- Viton O-Rings (standard)
- Maximum Pressure: 1500 PSIG
- 316 Stainless Steel construction
- Four-port design:
  - Inlet Port (stamped **1**)
  - Outlet / Clean Sample (top)
  - Bypass (180° from inlet port)
  - Drain (bottom of bowl)

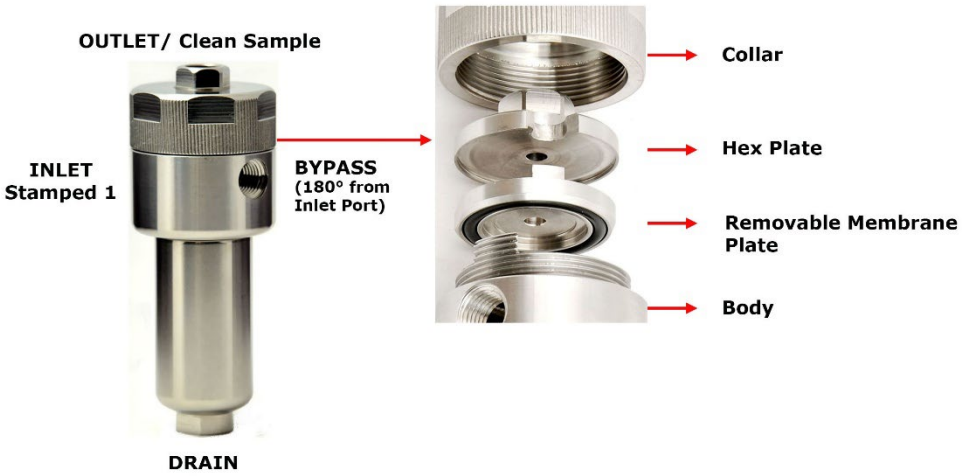
Supplied complete with either a **Low Flow** or **High Flow** membrane installed.

- **Model GMS122** includes a 12-57-50C coalescing pre-filter installed
- **Model GMS132** includes a 25-64-50C coalescing pre-filter installed

Membrane Compatibility

- **GMS122** accepts:
  - MT.33.M1xx (Low Flow) Replace "xx" with Membrane Type
  - MT.33.M2xx (High Flow) Replace "xx" with Membrane Type
- **GMS132** accepts:
  - MT.61.M1xx (Low Flow) Replace "xx" with Membrane Type
  - MT.61.M2xx (High Flow) Replace "xx" with Membrane Type

Design Advantage
The GMS122 / GMS132 series utilizes a distinctive hex plate and removable membrane plate design that allows for quick and easy membrane replacement.
The two plates float upon each other, allowing the removable membrane plate to be withdrawn without disconnecting the sample line connection. For membrane servicing, only the collar needs to be loosened and removed.



7.3 Inverted GMS170 Membrane
Standard Features

- Viton O-Rings (standard)
- Maximum Pressure: 2000 PSIG
- 316 Stainless Steel construction
- Four-port design:
  - Inlet Port (stamped **IN**)
  - Outlet / Clean Sample (stamped **OUT**)
  - Bypass / Drain (stamped **DR & DR**)
- Includes (2) 1/4" stainless steel drain plugs

Supplied complete with either a **Low Flow** or **High Flow** membrane installed.

- **Model GMS170** includes a 22/32-27-50CS coalescing pre-filter installed

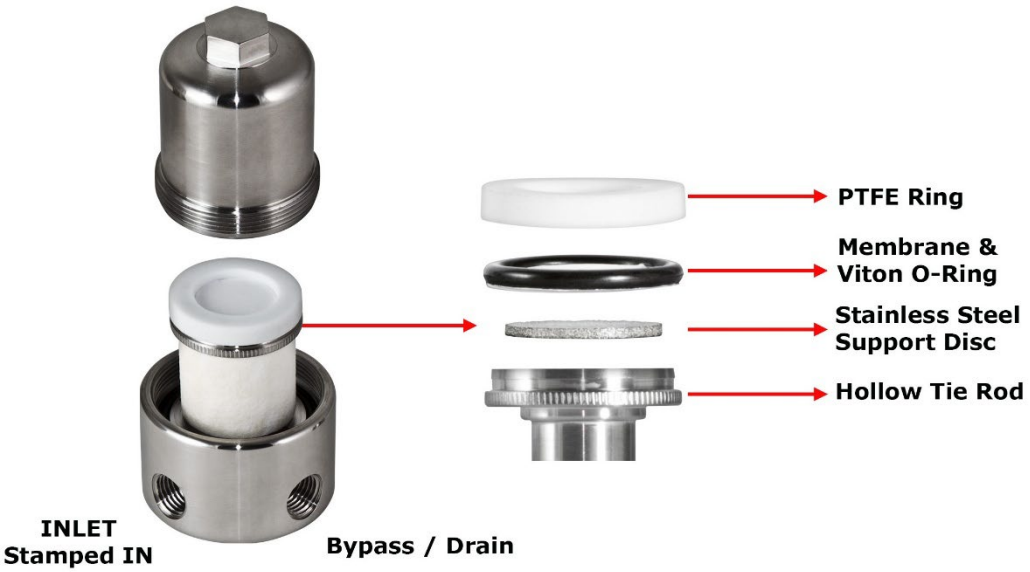
Membrane Compatibility

- **GMS170** accepts:
  - MT.33.M1xx/170 (Low Flow) Replace "xx" with Membrane Type
  - MT.33.M2xx/170 (High Flow) Replace "xx" with Membrane Type

Service Instructions
Before servicing, ensure the pressure and flow are shut off and the unit is fully vented to eliminate all internal pressure.
To replace the membrane:

1. Loosen and remove the knurled hollow tie rod.
2. Remove the coalescing element.
3. Carefully remove the PTFE retaining ring.
4. Remove the O-ring.
5. Install the new membrane.
6. Reinstall the support disc (must be reused).
7. Reinstall the O-ring and snap the PTFE retaining ring back into place.

The PTFE retaining ring may be reused multiple times. Lightly squeeze or flex the ring to allow it to snap securely back into position.
No process connections need to be disconnected for servicing.
Installation Orientation
The GMS170 is designed to be installed vertically with the bowl pointing upward.



8. FILTER ELEMENT & MEMBRANE REPLACEMENT
This housing design allows replacement without disconnecting process piping.

8.1 Safety Before Servicing
- Ensure there is **no pressure** in the housing.
- Depressurize system fully before disassembly.

8.2 Replacement Procedure
1. Confirm zero internal pressure.
2. Unscrew the filter bowl.
3. Unscrew the element retainer.
4. Remove filter element.
5. Replace membrane if required.
6. Reassemble components.
7. Tighten to specified torque.
8. Slowly repressurize and check for leaks.

9. INSPECTION & MAINTENANCE
During every servicing:
Perform a visual inspection for:
- Corrosion
- Erosion
- Surface wear
- Thread damage
- Seal degradation

No corrosion allowance is included in the housing design.

10. REMOVAL FROM SERVICE CRITERIA
The housing must be removed from service immediately if:
- Corrosion is present
- Erosion is visible
- Structural wear is evident
- Threads are damaged
- Cracks or deformation are observed

Continued use under these conditions is unsafe.

11. WARRANTY SUMMARY

Headline Filters Ltd. provides a one-year limited warranty covering:

- Conformance to purchase order
- Material and workmanship defects
- Clear title

Warranty does not cover:

- Improper installation
- Abuse or misuse
- Pressure spikes
- Unauthorized repair or alteration
- Normal wear
- O-rings or element life

Exclusive remedy is repair, replacement, or credit at manufacturer's discretion.
No liability for incidental or consequential damages.

12. DISCLAIMER

Except for expressly stated warranties:
No implied warranties apply, including:

- Merchantability
- Fitness for a particular purpose
- Non-infringement