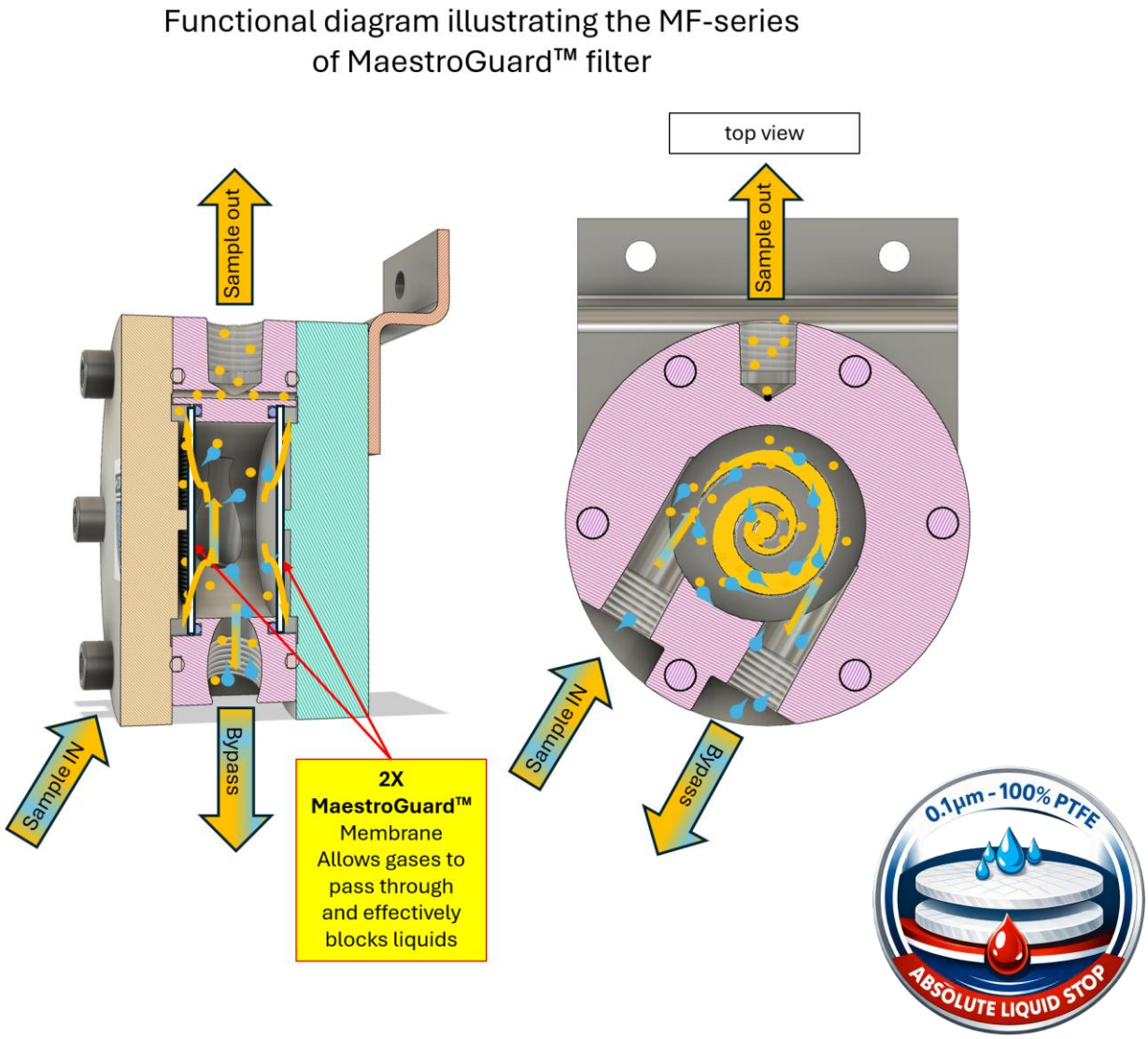
Product Brief – MaestroGuard® Filter

MMF-80-316L-160

1. Product Overview

The **MMF-80 MaestroGuard® Filter** is a compact, high-performance filter designed for critical gas sampling systems. It combines **parallel multi-membrane filtration**, **mechanical particle pre-separation**, and **self-cleaning bypass drainage**—resulting in **exceptional flow capacity**, **prolonged filter life**, and **minimal maintenance** requirements.



2. Key Features

The MMF-80 features a carefully engineered **internal spiral flow path** that significantly enhances phase separation and membrane protection:

- **Dual MaestroGuard® Membrane Chambers (Parallel)**
  The pre-separated gas then passes through **two parallel MaestroGuard® membrane zones**, allowing clean gas to pass while liquids and particles are retained.
- **Centrifugal Pre-Separation**
  Spiral inlet design creates a rotational flow that mechanically removes heavier droplets and particulates before they reach the membranes.
- **Self-Cleaning Bypass Channel**
  Continuously drains separated liquids and contaminants from the membrane chamber, preventing saturation and extending filter life.
- **Low-Flow, High-Precision Operation**
  Optimized for small-volume gas sampling systems in analytical and environmental applications.
- **Aggressive Cleaning for Harsh Streams**
  The internal swirl and bypass design also supports effective operation in dirty or multiphase gas flows, where oil mist, aerosols, and solid particles are present.
- **Robust and Compact Housing**
  Corrosion-resistant stainless steel body for integration in industrial or ATEX-rated environments.
- **Bypass Drainage Path**
  Collected liquids and contaminants are directed downward into a **dedicated bypass channel**, continuously flushed out to maintain membrane dryness and performance.
- **Vertical Sample Outlet**
  The clean, dry gas exits at the top—ready for precise downstream analysis.

This **internal spiral-bypass design** not only increases filtration effectiveness but also extends membrane life by preventing overload and fouling.

3. Technical Specifications

Housing Material	Stainless Steel 316L (1.4404)
Filter Element	2 x MaestroGuard® membrane
Filtration Efficiency	< 0.1 µm absolute - customizable
Operating Pressure	Up to 160 bar
Temperature Range	–20°C to 200°C (depending on seal)
Flow Rate	210 L/h air @ 100mbar
Bypass flow	100ml to 5l/min (per application to drain or back to process)
Internal volume	19ml in centrifugal system and 5ml after filtration
Connections	NPT Female or on request
Seal Materials	FKM or FFKM
Certificates / Compliance	EN 10204 3.1, CE, ATEX, PED 2014/68/EU, ISO 11114-4, ISO 15156 / NACE MR0175

No self-ignition hazard – compliant with requirements for explosive environments.
*Higher flow rates can be achieved by using a membrane with a larger pore size

4. Application Areas

- **Gas Analysis Systems**
  Effectively removes entrained liquids and fine particulates from corrosive or inert gas samples. Ideal for use with infrared sensors, TCDs, chromatographs, and moisture **analyzers.**
- **Oil and Fuel Sample Conditioning**
  Separates free water and solid contaminants from oil or diesel vapor samples, protecting sensitive analytical components.
- **Hydrogen and Alternative Fuel Systems**
  Prevents ingress of droplets and aerosols in fuel cell and hydrogen quality monitoring systems.
- **Environmental & Stack Gas Monitoring**
  Ensures accurate low-level detection of pollutants such as NO_x, SO_2, CO, CO_2, and VOCs—even under humid or wet sampling conditions.
- **Industrial Process Control**
  Provides robust filtering in wet, oil-laden, or dust-rich gas streams—especially in harsh or remote processing environments.
- **Pharmaceutical and Chemical Manufacturing**
  Supplies dry, contaminant-free gas samples to instrumentation used for product validation and process compliance.
-



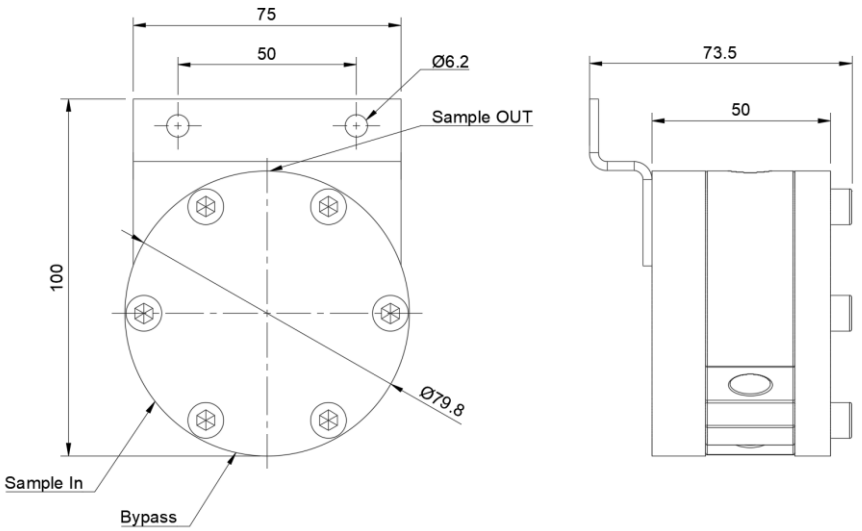
5. Ordering Information

Order Number	Description
MMF-80-316L-160-FKM-V1	MMF-80 MaestroGuard® membrane Filter, 160 bar, O-ring FKM
MMF-80-316L-160-FFKM-V1	MMF-80 MaestroGuard® membrane Filter, 160 bar, O-ring FFKM
MMF-80-316L-160-PTFE-V1	MMF-80 MaestroGuard® membrane Filter, 160 bar, O-ring PTFE
Option	
MB-MMF-80-SS	MMF-80 Mounting Bracket in Stainless Steel 316L
Spare Parts	
MK-MMF-80-FKM-V1	MMF-80 Service kit: 2 x MaestroGuard® Membrane Set 0,1µm, 4 x O-ring FKM
MK-MMF-80-FFKM-V1	MMF-80 Service kit: 2 x MaestroGuard® Membrane Set 0,1µm, 4 x O-ring FFKM
MK-MMF-80-PTFE-V1	MMF-80 Service kit: 2 x MaestroGuard® Membrane Set 0,1µm, 4 x O-ring PTFE
MMF-80-SS-V1	MMF-80 Support screen, 316L

6. Benefits

- **Superior Gas Purity**
  Only clean, dry gas passes through the dual membrane system—protecting downstream analyzers from water, oil mist, aerosols, and fine particulates.
- **Extended Filter Lifetime with Minimal Maintenance**
  The combination of centrifugal pre-separation and self-cleaning bypass flow prevents membrane fouling and saturation, greatly reducing maintenance frequency.
- **Optimized for Multiphase and Contaminated Gas Streams**
  Handles challenging conditions with entrained liquids, oil droplets, and particles, making it ideal for oil & gas, refining, and chemical processing applications.
- **Low Bypass, High Separation Efficiency**
  Achieves effective gas-liquid separation with minimal sample loss—ideal for systems with limited sample flow or strict energy constraints.
- **Compact and Easy to Integrate**
  Space-saving design with flexible mounting options allows use in analyzer cabinets, field units, and mobile platforms.
- **Cross-Sector Versatility**
  Suitable for precision applications (e.g. hydrogen, pharma, environmental) as well as robust industrial settings, including offshore platforms, refineries, and process gas systems.
- **Minimizes downtime** – long service intervals and low maintenance

7. Dimensions



Specifications are subject to change without notice
as part of our continuous improvement efforts.

Analytical Filters Engineering KFT
Rozsa Utca 28A
1077 Budapest, Hungary

+36 1 901 0620
sales@analytical-filters.com
www.analytical-filters.com