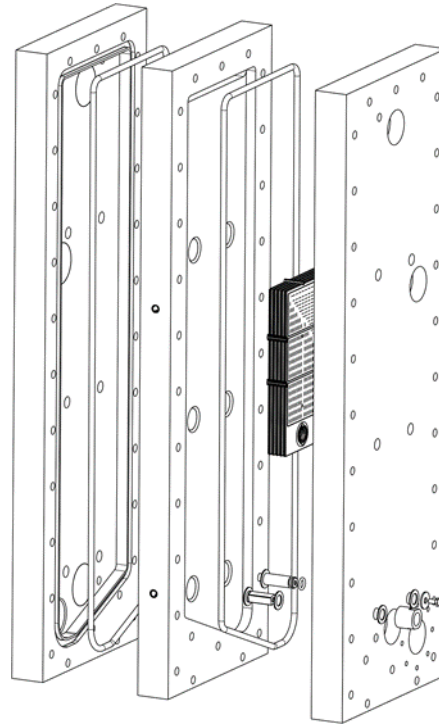


Free Flow Plate™ Pilot Module 2/4 m² – HPPM 06/12

The Sani Membranes Free Flow Plate Pilot™ Module HPPM are flexible flow channels for Free Flow Plate™ cross flow filtration. The Free Flow Plate™ Pilot Module holds 6 or 12 Free Flow Plate™ Pilot Elements (HPP) for MF or UF filtration. The modules can be equipped with up to 12 different membranes with individual permeate outlet for identifying the optimal membrane for a given application. The modules are designed with several inspection windows, making visual inspection of the membranes possible during filtration. The HPPM is ready for use in the Sani Membranes pilot equipment line or in a customized pilot setup. The design conforms to FDA materials and sanitary standards.



HPPM06



HPPM06 Blow Up Sketch

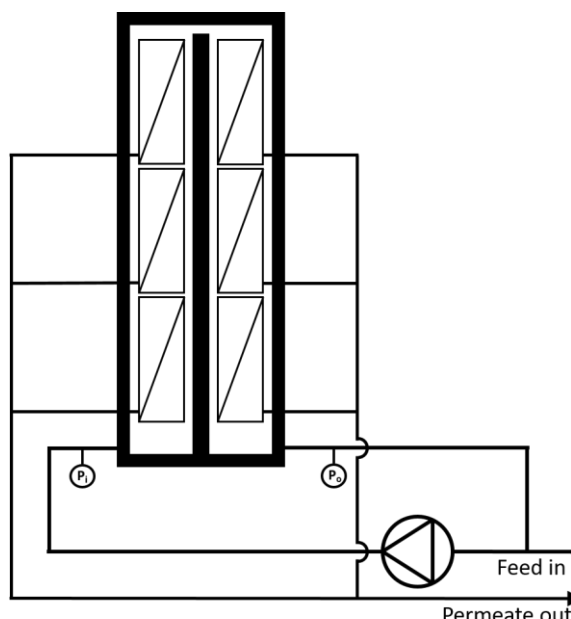
- The HPPM06 holds 6 x 0,35m² and the HPPM12 holds 12 x 0,35m² Free Flow Plate™ Pilot elements (HPP) in serial connection.
- The Free Flow Plate™ Pilot Modules are suitable for vertical or horizontal installation
- Inspection windows make it possible to visually follow fouling build-up and cleaning efficiency of all elements individually.
- Each element has individual permeate outlets – 6 or 12 different membranes can be tested simultaneously.
- Each element has 2 permeate outlets – This design gives you the possibility of CIP cleaning the permeate compartments effectively.
- The module design makes it possible to drain both the retentate and the permeate completely.
- The HPPM conforms to FDA materials and sanitary standards; No glue or bonding materials are used.
- Low differential pressure (P_i-P_c) - 0,17 bar at 7 m³/L water.

The Free Flow Plate™ Module is available in 3 different materials depending upon application.

- Sanitary standard modules are in Polypropylene Nature (off-white) for process industry and sanitary applications with CIP below 75°C.
- Water and wastewater modules are in Gray Polypropylene for industrial applications with CIP below 65°C.
- High temperature modules are in Nature Polypropylene is for sanitary applications with high temperature CIP (up to 85°).



Sani Membranes Tabletop MF/UF Pilot mounted with HPPM06



6 x HPP mounted in the HPPM06 in a schematic basic setup

Flow Characteristics

Flow	Flow Velocity over Membrane	Differential Pressure (P ₁ -P ₂) HPPM06 with 20°C Water	Differential Pressure (P ₁ -P ₂) HPPM12 with 20°C Water	Flow description
15 m ³ /h	2,10 m/s	0,75 bar		Turbulent
9,3 m ³ /h	1,30 m/s	0,30 bar		Turbulent
7,0 m ³ /h	0,98 m/s	0,17 bar		Turbulent
>6,5 m ³ /h	>0,9 m/s	>0,10 bar		Not Fully Turbulent

Module Materials

Code	Name	Material	Application	pH	Max-Temp.
S	Standard	Polypropylene Nature	Sanitary	1-14	75°C
W	Water	Polypropylene Gray	Water	1-14	65°C
H	High Temperature	Polypropylene HT	Sanitary	1-14	85°C

Module Data and Operating Conditions

Generic Design	Free Flow Plate™, Fused Polypropylenes
Membrane Type	HPP can be equipped with most organic membranes (MF, UF, NF, RO) or most filter types (woven, sintered etc.)
Membrane Area	HPPM06: 2,1 m ² (6 x 0,35 m ²) and HPPM12: 4,2 m ² (12 x 0,35 m ²)
Dimensions (L x W x H)	HPPM06: (300 mm x 148 mm x 91cm) and HPPM12: (300 mm x 148 mm x 164,4 cm)
Inspection Window Dimensions (number x D)	HPPM06 6 x 50 mm and HPPM12 8 x 50 mm
Feed Connections	2" DS union
Permeate Connections	12 mm push-in fittings
Viscosity Range, Apparent	1-1000 cP (e.g. Cream Cheese+)
Temperature Range	5-85°C *
pH Range	1-14 *
Cross Flow Velocity at Turbulent Flow	0,9 m/s, recommended Cross Flow Velocity 1,3 m/s (Water)
Operating Pressure	0-10 bar
Free Chlorine	Membrane dependent*

* Depending on membrane specifications