



Membrane Filtration System

Alfa Laval Flat Sheet Membrane Modules M30

The Module M30 is specially designed for reverse osmosis and nanofiltration tasks. Its unique features make this module the ideal choice for a large number of applications, including water desalination, reduction of alcohol content in beer and wine, and concentration of low molecular weight solutions such as apple juice, antibiotics and amino acids.

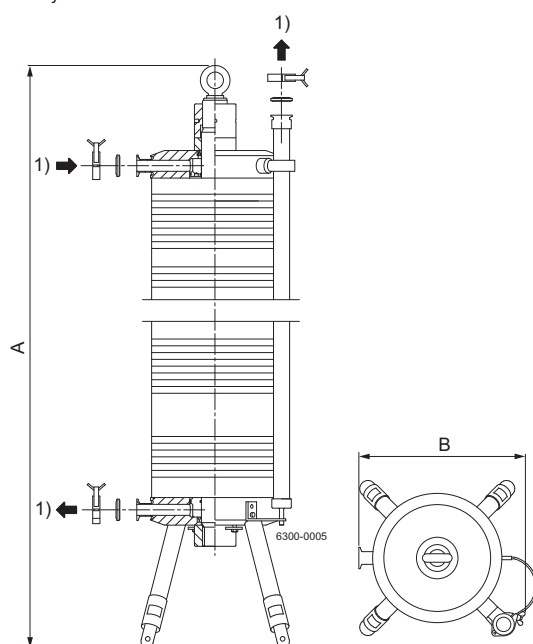
The Module M30 is available with membrane areas of up to 19 m². It can be equipped with all types of flat sheet reverse osmosis and nanofiltration membranes.

Advantages

- Hygienic design with all materials in compliance with FDA regulations
- Easy cleaning by CIP (Cleaning-In-Place)
- Low internal volume
- Easy membrane failure detection and exchange
- Low energy consumption
- Chemical and thermal tolerances set by the membranes and the type of plate material

Operating principles

The module can operate at pressures up to 60 bar at 40°C, sloping to 10 bar at 55°C, and pH between 1 and 9 (1-12 for CIP). The entire range of flat sheet membranes for reverse osmosis and nanofiltration can be used. Please consult the Alfa Laval product descriptions for flat sheet membranes for details of temperature, pressure and pH limits set by the membranes.



- 1) = DN38 (clamp)
 A = 1000-2200 mm
 B = 395 mm

The Module M30 comprises

- Flanges, pipes and fittings, all made of stainless steel
- Support plates, spacer plates and section plates are made of polyvinylidenfluoride (PVDF or PPO, PSO, POM)
- Permeate collecting tube is made of polysulphone (PSO)
- Gaskets made of nitril rubber
- Permeate hoses made of silicone rubber
- Frame: The module is mounted on adjustable legs. A single centre bolt connects top and bottom flanges.
- The hydraulic tool kit type T30, flat sheet membranes and lock rings must be ordered separately.

The Module M30 for reverse osmosis and nanofiltration comes in the following standard sizes defined by membrane area:

Membrane area	4.5 m ²	7.5 m ²	19 m ²
Height A, mm	1000	1700	2200
Shipping weight, kg	135	150	340
Shipping volume, m³	0.3	0.4	0.5

Module data

Module designation	M30 – m ² of membrane area – number of sections - type of membrane
Generic design	Plate-and-frame type cross-flow membrane filtration module
Plate-and-frame design	M30
Membrane area	4.5, 7.5 and 19 m ²
Membrane type	All flat sheet RO and NF membranes
Number of sections	1 or 3-5-7 uniform sections connected in parallel
Number of section plates	1 per section
Number of support plates	1 per 0.1 m ² of membrane area installed
Number of spacer plates	Same as number of support plates minus number of section plates
Number of membrane sheets	2 per support plate installed
Cross-flow configuration within sections	Membrane sheets of 0.05 m ² in series
Liquid capacity	1.65 l/m ² *
Weight, empty/dry	80 kg + 10 kg/m ² *

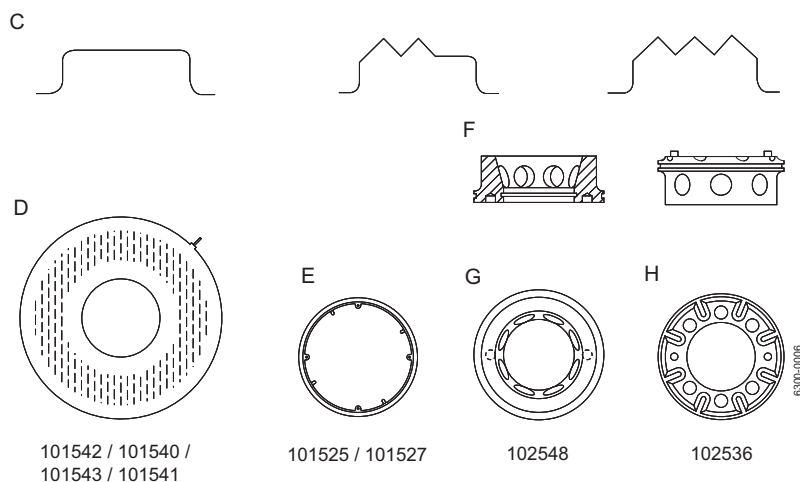
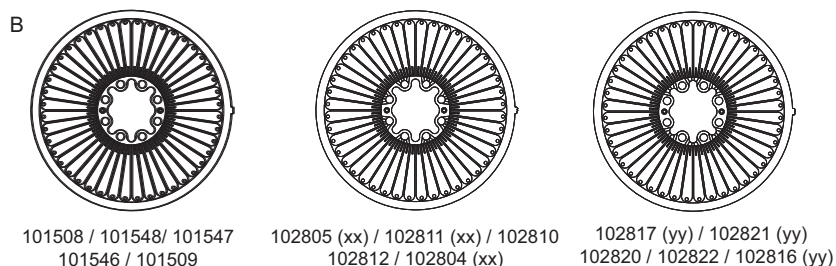
*of membrane area installed

Operating data

Cross-flow range (per plate in one section)	10-30 l/min./section
Inlet pressure	Max. 60 bar
Differential pressure	2-10 bar
Viscosity range, apparent	1-20 cP
Max. temperature	55°C pH range 1-9 (1-12 in CIP)
Plate stack pressure/temperature and pH range	60 bar at 0-40°C sloping to max. 10 bar at 55°C
Plate stack compression force	Max. 20 kN (tool kit, type T30 to be used)
Max. back pressure at permeate tube outlet	0.1 bar at static and 0.3 bar at dynamic conditions

Materials data

External steel	Stainless steel (min. AISI 304 type)
Internal/product wetted steel	Acid resistant (min. AISI 316 type)
Support, spacer and section plates	PPO, PSO, PVDF, POM (see accessories)
Permeate tube and connector	Polysulphone (PSO)
Permeate hose	Silicone rubber (Si)
Gasket and o-ring	Nitril rubber (NBR)
Membrane lock rings	Polyvinylidenfluoride (PVDF)
Membrane sheet	According to product descriptions
Connections at cross-flow in/outlets and at permeate outlet	38 mm, ISO 2852 clamp liner and ring



B = Spacer plates
C = Periphery
D = Support plates
E = Lock rings
F = Distribution rings
G = Inlet
H = Outlet
xx = Red
yy = Grey

Designation	Material*	Code No.		
Spacer plates	PPO-I (Industry)	101508	102805 (red)	102817 (Grey)
Spacer plates	PPO-S (Hygienic)	101548	102811 (red)	102821 (Grey)
Spacer plates	PSO	101547	102810	102820
Spacer plates	PVDF	101546	102812	102822
Spacer plates	POM	101509	102804 (red)	102816 (Grey)
Support plates	PPO		101542	
Support plates	PSO		101540	
Support plates	PVDF		101543	
Support plates	POM		101541	
Lock rings	PVDF		For PPO modules 101525	
Lock rings	PVDF		For PSO/PVDF/POM modules 101527	
Distribution rings inlet	Stainless steel (AISI 316)**		102548	
Distribution rings outlet	Stainless steel (AISI 316)**		102536	

* Material description: PPO: Polypropylene oxide, PSO: Polysulphone, PVDF: Polyvinylidenfluoride, POM: Polyoxymethylen

**C=0.05% Mo=1.5%

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