Alfa Laval M30 module

System modules for membrane filtration

Introduction

Alfa Laval offers a range of system modules which are based on the unique plate-and-frame design.

The Alfa Laval M30 module is specially developed for the treatment of low to medium viscous products by means of reverse osmosis (RO) and nanofiltration (NF).

The module tolerates operation at high pressure (up to 60 bar). It can be equipped with the entire range of flat sheet membranes from Alfa Laval for RO and NF.

Applications

The Alfa Laval M30 module is excellently used within the biotech and pharmaceuticals industry, the food and beverages industry as well as for the treatment of water and waste. Some examples are:

Biotech and Pharmaceuticals

- amino acids/organic acids — concentration
- antibiotics — concentration
- low-molecular weight solutions — concentration

Food and Beverages

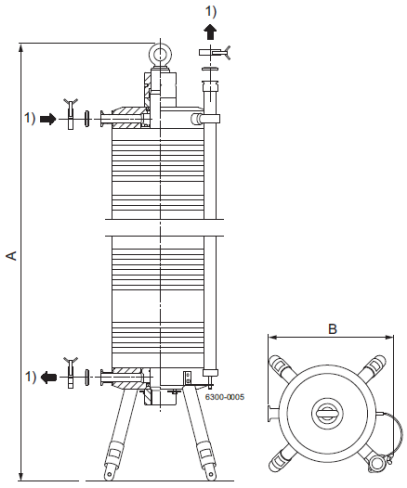
- diluted food and beverages — concentration

Water and Waste Treatment

- industrial water and waste treatment

Benefits

- open channel design for the handling of a wide range of viscosities
- concentration of heat sensitive and low molecular weight solutions
- accurate production up-scaling by increase of size or number of modules
- easy cleaning by CIP (Cleaning-In-Place)
- easy membrane failure detection and exchange on-site
- rugged yet flexible stainless steel and polymer construction
- low energy consumption
- low internal volume
- sanitary design with all components manufactured in compliance with FDA and EU regulations



1: size 38 clamp
A: 1000 — 2200 mm
B: 395 mm

Standard sizes

The Alfa Laval M30 module is available in the following standard sizes defined by membrane area:

Membrane area, m²	4.5	7.5	19
Height A, mm	1000	1700	2200
Shipping weight, kg	135	150	340
Shipping volume, m³	0.3	0.4	0.5

Module designation

Example: **Alfa Laval M30-19–3–RO98 pHt™**		
Alfa Laval M30	=	Module type
19	=	Membrane area, m²
3	=	Number of sections
RO98 pHt™	=	Type of membrane

Module data

Model	Alfa Laval M30 module
Generic design	Plate-and-frame module for cross-flow membrane filtration
Plate-and-frame design	M30 plates in M30 frame
Membrane area, m²	4.5 — 19
Membrane type[1]	All flat sheet membranes for reverse osmosis and nanofiltration
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 m² of membrane area installed
Number of spacer plates	Same as number of support plates minus number of section plates
Number of flat sheet membranes	2 per support plate installed
Cross-flow configuration within sections	Membrane sheets of 0.05 m² in series
Liquid capacity	1.65 l/m² of membrane area installed
Dry weight, kg	80 + 10 kg/m² membrane area installed

[1] Must be ordered separately

The module is mounted on adjustable legs. A single centre bolt connects top and bottom flanges.

Operating data

Model	Alfa Laval M30 module
Max. inlet pressure, bar[1]	60
pH range	1 – 9 (1 – 12 in CIP)
Max. temperature, °C[1]	55
Cross-flow range, l/min./plate	10 — 30 / support plate in one section
Differential pressure, bar	2 — 10
Viscosity range, apparent, cP	1 – 20
Max. plate stack pressure, bar	60 at 0 – 40°C / 10 at 55°C
Max. plate stack compression force, kN[2]	20
Max. back pressure at permeate tube outlet, bar	0.1 at static conditions / 0.3 at dynamic conditions

[1] For detailed information about operating conditions, please see the specifications for the membrane type applied

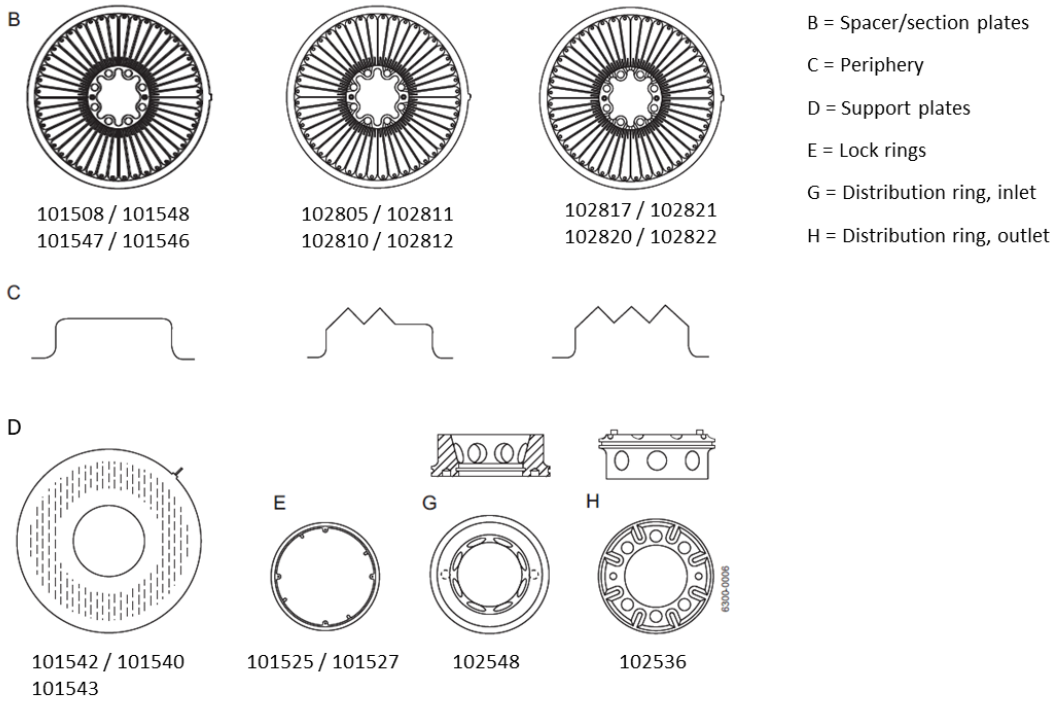
[2] Hydraulic tool kit, type T30, code No. 108491 to be used. Must be ordered separately

Module material

Support, spacer and section plates	Polypropylene oxide (PPO), Polysulphone (PSO), Polyvinylidene fluoride (PVDF)
Membrane lock ring	Polyvinylidene fluoride (PVDF)
Permeate hose	Silicone rubber (Si)
Gasket and o-ring	Nitrile rubber (NBR)
Internal/product wetted steel parts	Acid resistant steel, min. AISI 316
External steel parts	Stainless steel, min. AISI 304
Cross-flow in/outlet connections	Size 38 clamp ferrule ISO 2852
Permeate outlet tube connections	Size 38 clamp ferrule ISO 2852
Permeate tube and hose connector	Polysulphone (PSO)
Membrane sheet	Polymer[1]

[1] For detailed information about the membrane material, please see the specifications for the membrane type applied

Plates and accessories



Designation	Material	Code No.		
Spacer/section plate	Polypropylene oxide (PPO-I, Industry)	101508	102805	102817
Spacer/section plate	Polypropylene oxide (PPO-S, Sanitary)	101548	102811	102821
Spacer/section plate	Polysulphone (PSO)	101547	102810	102820
Spacer/section plate	Polyvinylidene fluoride (PVDF)	101546	102812	102822
Support plate	Polypropylene oxide (PPO)		101542	
Support plate	Polysulphone (PSO)		101540	
Support plate	Polyvinylidene fluoride (PVDF)		101543	
Lock ring, for PPO module[1]	Polyvinylidene fluoride (PVDF)		101525	
Lock ring, for PSO/PVDF module[1]	Polyvinylidene fluoride (PVDF)		101527	
Distribution ring, inlet	Stainless steel, AISI 316[2]		102548	
Distribution ring, outlet	Stainless steel, AISI 316[2]		102536	

[1] Must be ordered separately

[2] C=0.05% Mo=1.5%

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