



Alfa Laval M38L/H 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 M38L/H module is an energy-efficient module for the treatment of low to medium viscous products and fermentation broths by means of ultrafiltration (UF) and microfiltration (MF).

The module can be equipped with the entire range of flat sheet membranes from Alfa Laval for UF and MF.

Applications

The Alfa Laval M38L/H module is excellently used within the biotech and pharmaceuticals industry, the food, dairy and beverages industry as well as for pulp and paper applications. Some examples are:

Biotech and Pharmaceuticals

- amino acids/organic acids — whole broth clarification
- antibiotics — whole broth clarification
- dextrans — concentration of HMW dextrans
- industrial fermentation — whole broth clarification

Food, Dairy and Beverages

- dairy — cultured milk concentration
- gums — xanthan and pectin concentration
- sugar — clarification of saccharification liquid (HFCS)

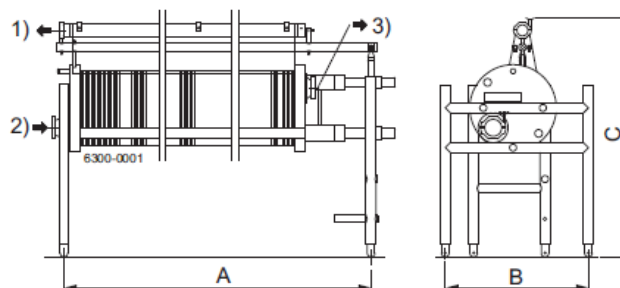
Pulp and Paper

- lignin — concentration
- liginosulphonate — concentration



Benefits

- open channel design for the handling of a wide range of viscosities
- accurate production up-scaling by increase of size or number of modules
- easy cleaning by CIP (Cleaning-In-Place)
- standard modules with up to 60 m² membrane area
- easy membrane failure detection and exchange on-site
- rugged yet flexible stainless steel and polymer construction
- low energy consumption
- operation at low pressure
- sanitary design with all components manufactured in compliance with FDA and EU regulations



- 1: size 51 clamp
- 2: size 76.1 clamp
- 3: size 76.1 clamp
- A: 755 - 2760 mm
- B: 720 mm
- C: 1025 mm

Standard sizes

The Alfa Laval M38L/H module is available with plates having low (L) or high (H) channels and in the following standard sizes defined by membrane area:

Membrane area, m ²	9	18	27	35	42	60 ¹
Length A, mm	755	1111	1450	1730	2010	2760
Shipping weight, kg	220	270	320	370	405	505
Shipping volume, m ³	0.7	0.9	1.1	1.5	1.5	1.5

¹ Only M38L

Module designation

Example: **Alfa Laval M38H-42-5-GR60PP**

Alfa Laval M38	=	Module type
H	=	High channel plates
42	=	Membrane area, m ²
5	=	Number of sections
GR60PP	=	Type of membrane

Module data

Model	Alfa Laval M38L module	Alfa Laval M38H module
Generic design	Plate-and-frame module for cross-flow membrane filtration	Plate-and-frame module for cross-flow membrane filtration
Plate-and-frame design	M38L-PSO plates in M38 frame	M38H-PSO plates in M38 frame
Membrane area, m ²	9 – 60	9 – 42
Membrane type ¹	All flat sheet membranes for microfiltration and ultrafiltration	All flat sheet membranes for microfiltration and ultrafiltration
Number of sections	1 or 3–5 etc. uniform sections connected in series	1 or 3–5 etc. uniform sections connected in series
Number of section plates	1 less than the actual number of sections	1 less than the actual number of sections
Number of support plates	1 per 0.15 m ² of membrane area installed	1 per 0.15 m ² of membrane area installed
Number of end plates	2 per module	2 per module
Number of flat sheet membranes	2 per support plate and section plate installed	2 per support plate and section plate installed
Cross-flow configuration within sections	Parallel membrane sheets of 0.075 m ²	Parallel membrane sheets of 0.075 m ²
Liquid capacity	1.3 l/m ² of membrane area installed	1.55 l/m ² of membrane area installed
Dry weight, kg	157 + 4.8 kg/m ² of membrane area installed	157 + 5.1 kg/m ² of membrane area installed

¹ Must be ordered separately

The module is mounted on adjustable legs and the inlet/outlet flanges are connected to each other by means of horizontal bolts. One end flange and the membrane support plates can slide along the bolts.

Operating data

Model	Alfa Laval M38L module	Alfa Laval M38H module
Max. inlet pressure, bar ¹	10 up to 40°C / 7.5 at 60°C / 5 at 80°C	10 up to 40°C / 7.5 at 60°C / 5 at 80°C
pH range	1 – 14	1 – 14
Max. temperature, °C ¹	80	80
Cross-flow range, l/min./plate	5 – 15 / support plate in one section	10 – 35 / support plate in one section
Differential pressure, bar/section	0.2 – 2	0.2 – 2
Viscosity range, apparent, cP	1 – 10	1 – 25
Max. plate stack pressure, bar	10 at 0 – 40°C / 5 at 80°C	10 at 0 – 40°C / 5 at 80°C
Max. plate stack compression force, kN ²	150	240
Max. back pressure at permeate tube outlet, bar	0.1 at static conditions / 0.3 at dynamic conditions	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

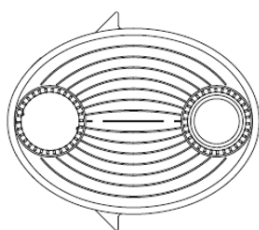
² Hydraulic tool kit, type T38, code No. 108496 to be used. Must be ordered separately

Module material

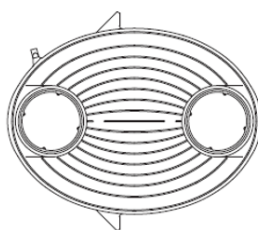
Support, section and end plates	Polysulphone (PSO)
Membrane lock ring	Polypropylene (PP)
Permeate hose	Silicone rubber (Si)
Gasket and o-ring	Nitrile rubber (NBR)
Internal/product wetted steel parts	Acid resistant steel, min. AISI 316
External steel parts	Stainless steel, min. AISI 304
Cross-flow in/outlet connections	Size 76.1 clamp ferrule ISO 2852
Permeate outlet tube connection	Size 51 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

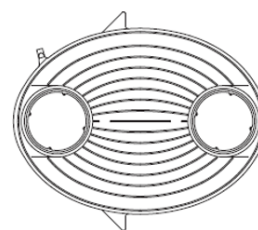
Plates and accessories



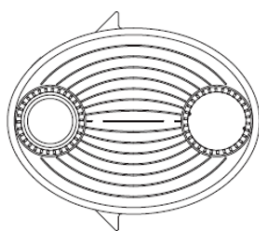
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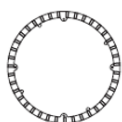
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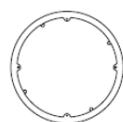
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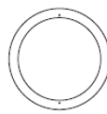
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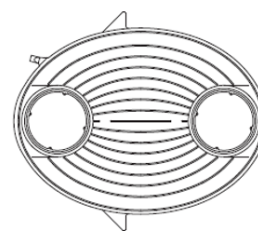
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Designation	Material	Code No.	
		Alfa Laval M38L module	Alfa Laval M38H module
End plate, top	Polysulphone	101607	101698
End plate, bottom	Polysulphone	101608	101699
Membrane support plate, type 0	Polysulphone	101730	101660
Membrane support plate, type 1	Polysulphone	101731	101661
Section plate, blue outlet ¹	Polysulphone	543358	542888
Section plate, grey outlet ²	Polysulphone	543359	542889
Lock ring ³	Polypropylene	101719	543315 ⁴
Passage ring ³	Polypropylene	101729	543325 ⁴
Stop disc	Stainless steel	101733	101733

¹ Blue ring at permeate outlet

² Grey ring at permeate outlet

³ Must be ordered separately

⁴ Marked blue + code number

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