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 Астана (7172)727-132
 Астрахань (8512)99-46-04
 Барнаул (3852)73-04-60
 Белгород (4722)40-23-64
 Брянск (4832)59-03-52
 Владивосток (423)249-28-31
 Волгоград (844)278-03-48
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 Тверь (4822)63-31-35
 Томск (3822)98-41-53
 Тула (4872)74-02-29
 Тюмень (3452)66-21-18
 Ульяновск (8422)24-23-59
 Уфа (347)229-48-12
 Хабаровск (4212)92-98-04
 Челябинск (351)202-03-61
 Череповец (8202)49-02-64
 Ярославль (4852)69-52-93

<https://alaval.nt-rt.ru> || avb@nt-rt.ru

Alfa Laval M37 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 M37 module is our high-concentration module for extremely high-viscous products. Many products are non-Newtonian so tend to thin as flow velocity is increased. This effect is fully utilized in the extraordinary design of the thin-channel system of the module M37, making the module usable for products untreatable by most other ultrafiltration systems.

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

Applications

The Alfa Laval M37 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)

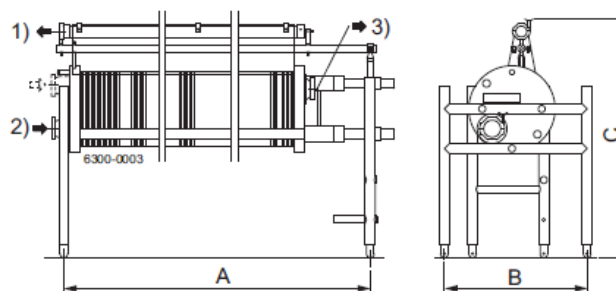
Pulp and Paper

- lignin — concentration
- lignosulphonate — 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 27 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 EEC regulations



- 1: size 51 clamp
- 2: size 76.1 clamp
- 3: size 76.1 clamp
- A: 691 - 2071 mm
- B: 720 mm
- C: 1205 mm

Standard sizes

The Alfa Laval M37 module is available in the following standard sizes defined by membrane area:

Membrane area, m ²	4.5	6.6	9.0	13.5	18.0	22.5	27.0
Length A, mm	691	811	961	1241	1521	1791	2071
Shipping weight, kg	205	215	230	255	280	310	335
Shipping volume, m ³	0.6	0.6	0.8	1.0	1.0	1.4	1.4

Module designation

Example: **Alfa Laval M37-13.5-3-GR60PP**

Alfa Laval M37	=	Module type
13.5	=	Membrane area, m ²
3	=	Number of sections
GR60PP	=	Type of membrane

Module data

Model	Alfa Laval M37 module
Generic design	Plate-and-frame module for cross-flow membrane filtration
Plate-and-frame design	M37-PSO plates in M37 frame
Membrane area, m ²	4.5 – 27
Membrane type ¹	All flat sheet membranes for microfiltration and ultrafiltration
Number of sections	1 or 2–3–4–5 etc. uniform sections connected in series
Number of section plates	1 less than the actual number of sections
Number of support plates	1 per 0.11 m ² of membrane area installed
Number of end plates	2 per module
Number of flat sheet membranes	2 per support plate and section plate installed
Cross-flow configuration within sections	Parallel membrane sheets of 0.055 m ²
Liquid capacity	2.3 l/m ² of membrane area installed
Dry weight, kg	157 + 5.8 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 M37 module
Max. inlet pressure, bar ¹	15
pH range	1 – 14
Max. temperature, °C ¹	80
Cross-flow range, l/min./plate	20 – 35 / support plate in one section
Differential pressure, bar/section	0.2 – 2
Viscosity range, apparent, cP	50 – 250
Max. plate stack pressure, bar	15 at 0 – 40°C / 5 at 80°C
Max. plate stack compression force, kN ²	240
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

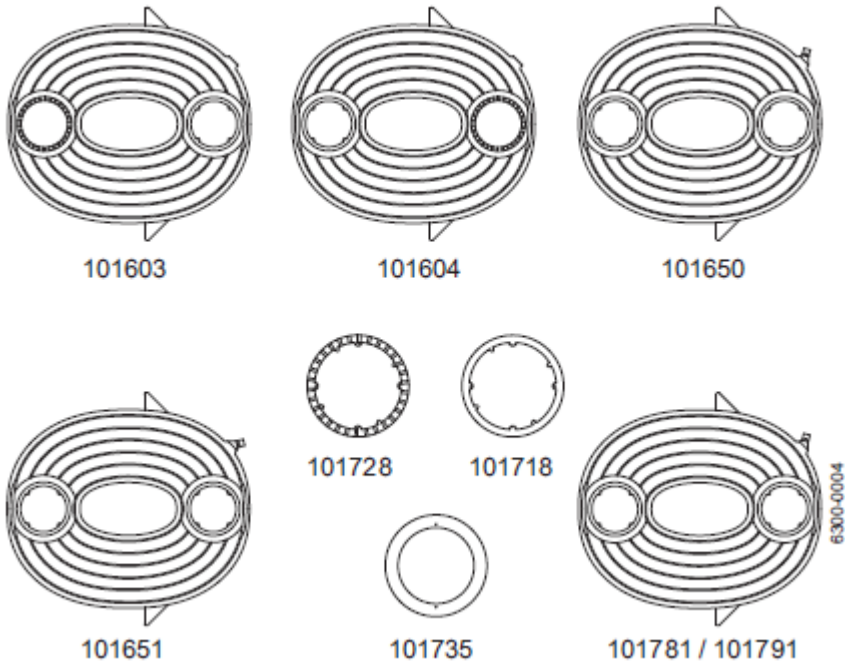
² Hydraulic tool kit, type T38, code No. 108496 to be used. Must be ordered separately

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 connections	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



Designation	Material	Code No.
End plate, top	Polysulphone	101603
End plate, bottom	Polysulphone	101604
Membrane support plate, type 0	Polysulphone	101650
Membrane support plate, type 1	Polysulphone	101651
Passage ring	Polypropylene	101728
Lock ring ¹	Polypropylene	101718
Section plate, blue outlet	Polysulphone	101781
Section plate, grey outlet	Polysulphone	101791
Stop disc	Stainless steel	101735

¹ Must be ordered separately



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

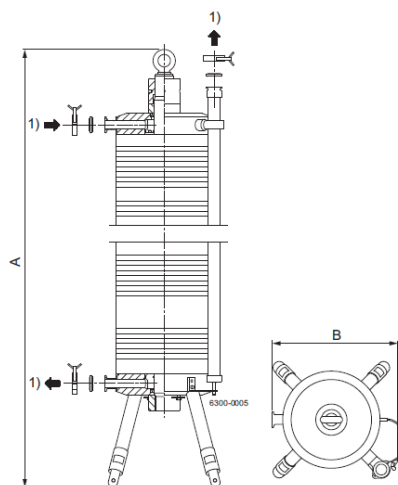
- diluted food and beverages — concentration

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 EEC 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, m ²	4.5	7.5	19
Height A, mm	1000	1700	2200
Shipping weight, kg	135	150	340
Shipping volume, m ³	0.3	0.4	0.5

Module designation

Example: **Alfa Laval M30-19-3-RO98 pHt™**

Alfa Laval M30	=	Module type
19	=	Membrane area, m ²
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, m ²	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 m ² 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 m ² in series
Liquid capacity	1.65 l/m ² of membrane area installed
Dry weight, kg	80 + 10 kg/m ² 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

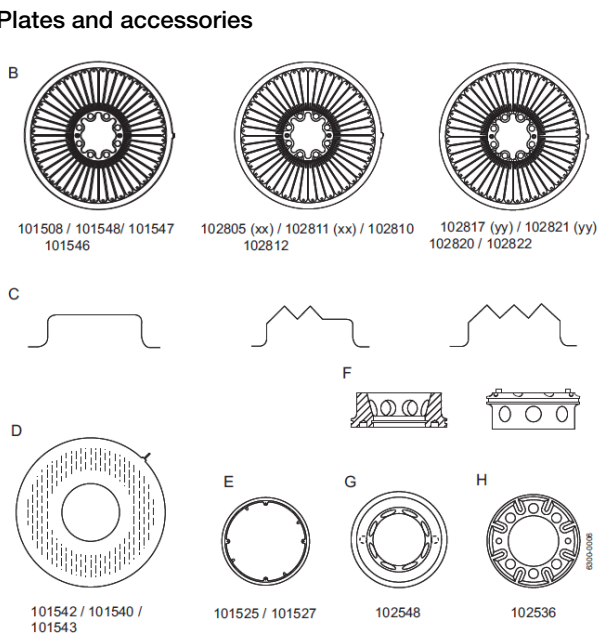
² Hydraulic tool kit, type T30, code No. 108491 to be used. Must be ordered separately

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



B: Spacer/section 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/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%



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)

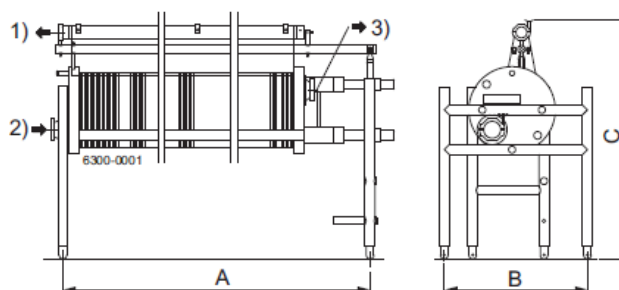
Pulp and Paper

- 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 EEC 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 2-3-4-5 etc. uniform sections connected in series	1 or 2-3-4-5 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	10
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

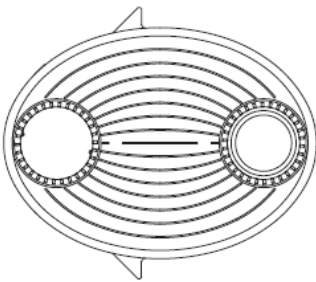
² Hydraulic tool kit, type T38, code No. 108496 to be used. Must be ordered separately

Module material

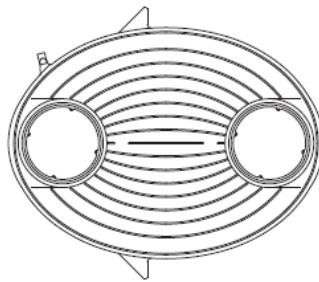
Support, section and end plates	Polysulphone (PSO)
Membrane lock ring	Polypropylene (PP)
Permeate hose	Silicone rubber (Si)
Gasket and o-ring	Nitrile rubber (NBR)
Internal/product wetted steel parts	Acid resistant steel, min. AISI 316
External steel parts	Stainless steel, min. AISI 304
Cross-flow in/outlet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

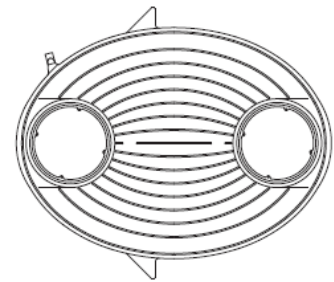
Plates and accessories



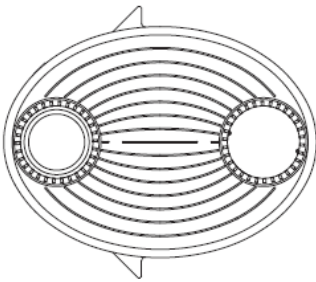
101607 / 101698



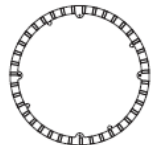
101730 / 101660



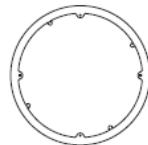
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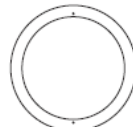
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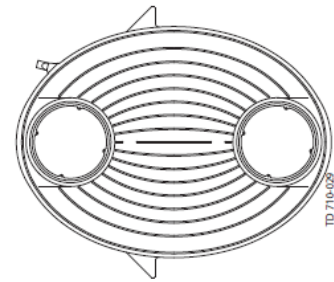
101729 / 101725



101719 / 101715



101733



101731 / 101661

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	Polysulphone	101758	101788
Section plate, grey outlet	Polysulphone	101759	101789
Lock ring, blue ¹	Polypropylene	101719	101715
Passage ring, blue	Polypropylene	101729	101725
Stop disc	Stainless steel	101733	101733

¹ Must be ordered separately



Alfa Laval M39L/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 M39L/H module is specially developed for ultrafiltration (UF) and microfiltration (MF) of high-viscous products and fermentation broths.

It is developed to meet the future demands for optimized flow dynamics, low energy consumption, and low pressure operation.

The M39L/H module can be equipped with the entire range of flat sheet membranes from Alfa Laval for UF and MF.

Applications

The Alfa Laval M39L/H module is excellently used within the biotech and pharmaceuticals industry as well as for food, dairy and beverages 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)

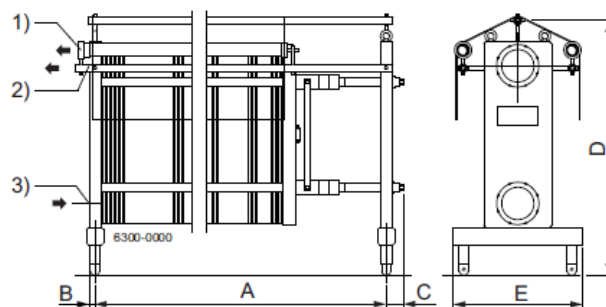
Benefits

- 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
- sanitary design with all components manufactured in compliance with FDA and EEC regulations

Compared to previous module types, the Alfa Laval M39L/H module is superior in respect of:



- up to 6 times bigger section sizes
- approx. 1.5 times bigger module size
- up to 15% increase in concentration degree
- up to 30% increase in flux
- up to 30% reduction in energy consumption
- approx. 1.5 times reduction in operating pressure
- all in all, reduction in system price by 10–30%



- 1: size 51 clamp
- 2: DN 150 flange
- 3: DN 150 flange
- A: 720 - 2390 mm
- B: 189.5 mm
- C: 78.5 mm
- D: 1180 mm
- E: 600 mm

Standard sizes

The Alfa Laval M39L/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	6	9	18	30	36	40	54	60
Length A, mm	720	815	1065	1540	1615	1740	2130	2390
Shipping weight, kg	500	520	580	650	680	710	790	830
Shipping volume, m ³	0.8	0.9	1.1	1.4	1.5	1.6	1.9	2.2

Module designation

Example: **Alfa Laval M39H-54-1-RC70PP**

Alfa Laval M39	=	Module type
H	=	High channel plates
54	=	Membrane area, m ²
1	=	Number of sections
RC70PP	=	Type of membrane

Module data

Model	Alfa Laval M39L module	Alfa Laval M39H 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	M39L-PSO plates in M39 frame	M39H-PSO plates in M39 frame
Membrane area, m ²	6 – 60	6 – 60
Membrane type ¹	All flat sheet membranes for microfiltration and ultrafiltration	All flat sheet membranes for microfiltration and ultrafiltration
Number of sections	1	1
Number of support plates	1 per 0.2 m ² of membrane area installed	1 per 0.2 m ² of membrane area installed
Number of end plates	2	2
Number of flat sheet membranes	2 per support plate installed	2 per support plate installed
Cross-flow configuration within sections	Parallel membrane sheets of 0.1 m ²	Parallel membrane sheets of 0.1 m ²
Liquid capacity	2.15 l/m ² of membrane area installed	2.65 l/m ² of membrane area installed
Dry weight, kg	400 + 5.8 kg/m ² of membrane area installed	400 + 5.5 kg/m ² of membrane area installed

¹ Must be ordered separately

The module is mounted on adjustable legs, the stationary and the support flanges are connected to each other by means of horizontal bolts. The movable flange and the membrane support plates can slide along the bolts.

Operating data

Model	Alfa Laval M39L module	Alfa Laval M39H module
Max. inlet pressure, bar ¹	8	8
pH range	1 – 14	1 – 14
Max. temperature, °C ¹	80	80
Cross-flow range, l/min./plate	5 – 20 / plate in one section	20 – 50 / plate in one section
Differential pressure, bar	0.2 – 2	0.2 – 2
Viscosity range, apparent, cP	1 – 5	1 – 30
Max. plate stack pressure, bar	8 at 0 – 40°C / 5 at 80°C	8 at 0 – 40°C / 5 at 80°C
Max. plate stack compression force, kN ²	100	100
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

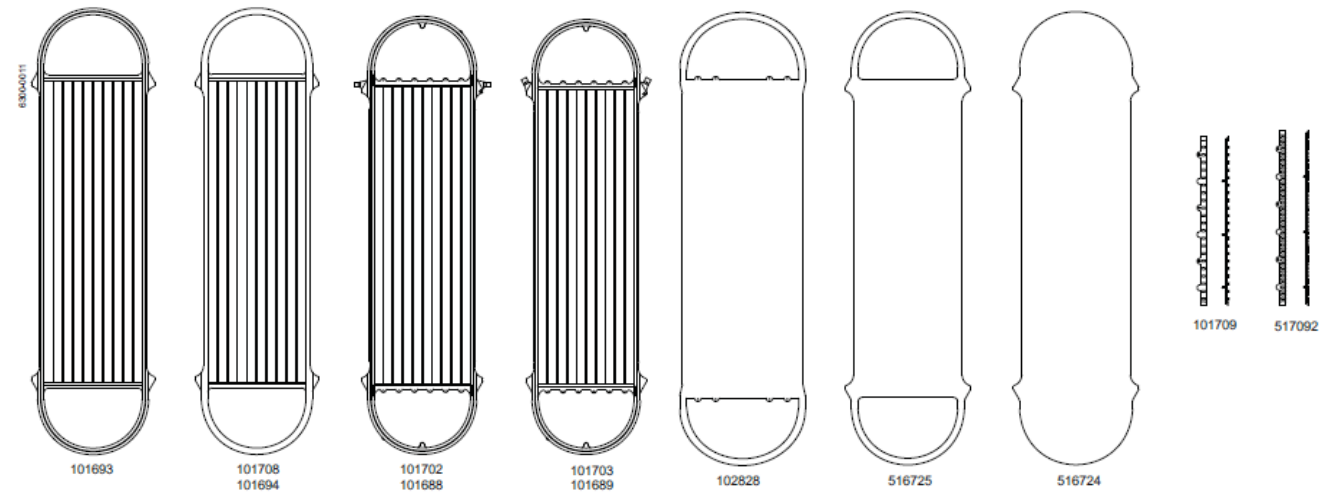
² Hydraulic tool kit, type T39, code No. 108495 to be used. Must be ordered separately

Module material

Support and end plates	Polysulphone (PSO)
Membrane locking strip	Polyvinylidene fluoride (PVDF)
Permeate hose	Silicone rubber (Si)
Gasket and o-ring	Nitrile rubber (NBR) / EPDM
Internal/product wetted steel parts	Acid resistant steel, min. AISI 316
External steel parts	Stainless steel, min. AISI 304
Cross-flow in/outlet connections	Flange DN 150, Alfa Laval
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



Designation	Material	Code No.	
		Alfa Laval M39L module	Alfa Laval M39H module
End plate with seal	Polysulphone	101693	101693
End plate without seal	Polysulphone	101708	101695
Membrane support plate, type 0	Polysulphone	101702	101688
Membrane support plate, type 1	Polysulphone	101703	101689
Paper gasket	Polysulphone	102828	102828
Tightening plate, top/bottom	Polypropylene	516725	516725
Tightening plate, without hole	Polypropylene	516724	516724
Locking strip ¹	Polyvinylidene fluoride	101709	101709
Locking strip, blue ¹	Polyvinylidene fluoride	517092	517092

¹ Must be ordered separately

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 Астрахань (8512)99-46-04
 Барнаул (3852)73-04-60
 Белгород (4722)40-23-64
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