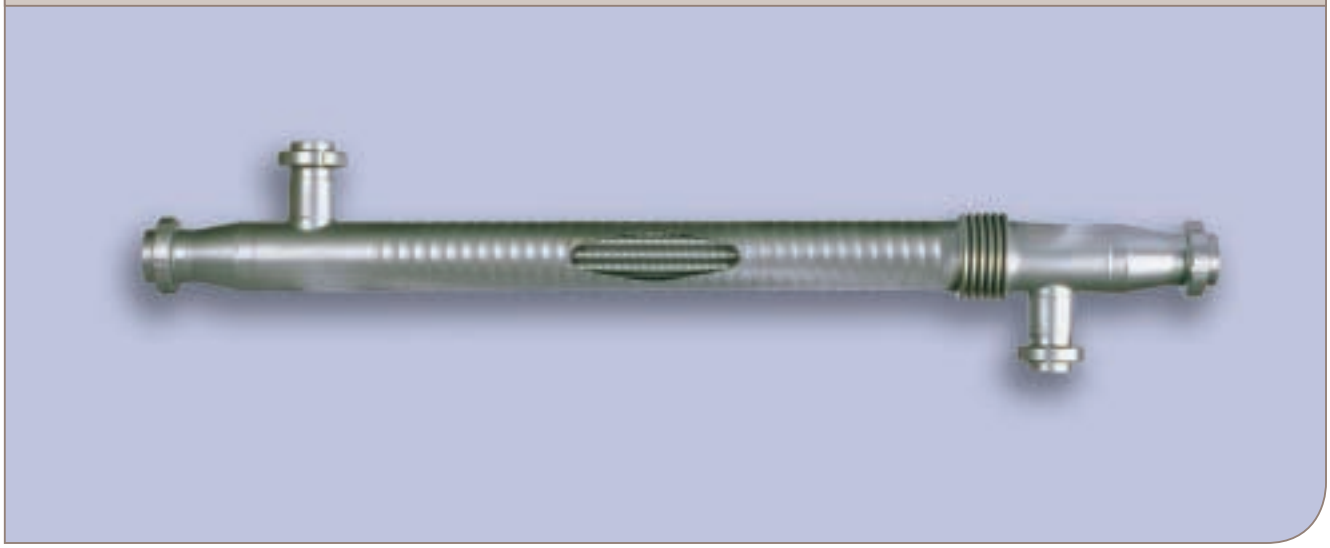
Gillain & Co
HYGIENIC EQUIPMENT FOR FOOD & LIFE SCIENCES

ViscoLine™ Multitube Unit

The tubular heat exchanger series from Alfa Laval



ViscoLine Multitube with open sectional view, hard corrugated

Applications

The ViscoLine™ Multitube unit is ideal for the heating, cooling and pasteurization of products with low and average viscosity, and products that contain fibres and small particulates.

These units are used in conjunction with a wide range of products, including milk, water, yellow fats, whole egg, egg white, egg yolk, fruit purée, baby food, many kinds of fruit juices containing pulp, fruit concentrates, beer mash, tomato juice and nectar, protein solutions, yeast and soft drinks.

Standard design

The ViscoLine Multitube unit consists of a bundle of tubes mounted inside an outer shell, and welded onto tube plates at both ends. The product medium flows inside these tubes, and the service medium between and around them.

All the product tubes are connected in parallel and so that the flow is counter-current in relation to the service medium. If required, these product tubes can feature a corrugated surface with either hard or dimple patterns. The service media shell is hard corrugated.

ViscoLine Multitube modules are normally connected in series and grouped on a common frame.

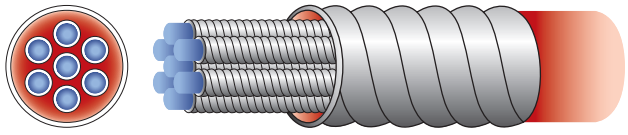
The eccentric reducers can be welded, clamped or flanged. The tube plates have a conic tube hole to ease the flow of the product inside the tubes.

The installation is maintenance free, thus eliminating any need for spare parts.

Standard materials

Product side (tubes)	Stainless steel AISI 316L or SMO254
Service side (shell)	Stainless steel AISI 304 or AISI 316
Frame	Stainless steel AISI 304 (units can be angled for self-draining on request)

Other materials are available on request.



Graphic representation of the flow pattern in the ViscoLine Multitube Unit.

Technical data

Mechanical design pressure

The ViscoLine Multitube Unit was designed for a pressure of 25 bar (363 PSI) on the product side (tubes) and 10 bar (145 PSI) on the service side (shell), depending on the connection. The unit can, however, accommodate higher pressure ratings, depending on component thickness and connection type.

The ViscoLine Multitube unit complies with the European Pressure Equipment Directive (PED), and is entitled to bear the CE mark, though depending on the design of the connections.

It is designed to operate at a temperature of 140°C (284°F). All units are provided with an expansion joint to absorb any thermal expansion stresses that arise.

Connections

Product side (tubes)[1)]	ISO clamps, aseptic ISO clamps, sterile flanges, Tri-Clamps and ANSI flanges
Service side (shell)[1)]	DIN 2576 flanges, ISO clamps and ANSI flanges

Other connections are available on request.

[1)] In compliance with DIN 11851

Tube plate

The tube plate is designed to minimize any clogging that might arise due to the processing of products that contain fibres, particles and particulates.



The tube plate, in which the tubes are fixed, is a special design feature for the tubular heat exchanger series.

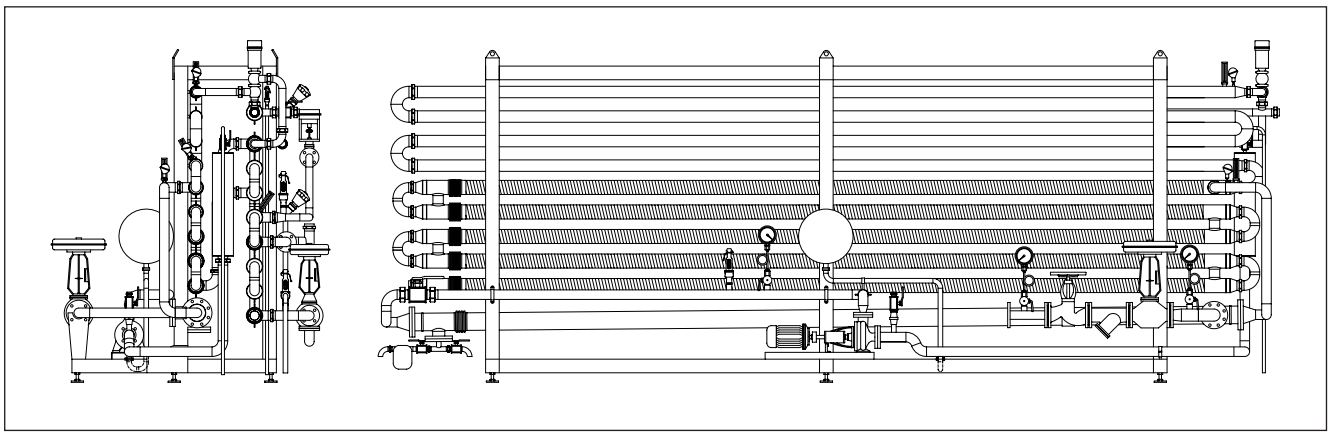


The ViscoLine tubular heat exchanger connected in series and grouped on a common frame

Options

A number of additional features are available for use with the ViscoLine Multitube unit:

- Concentric reducers, welded, clamped or flanged to the shell
- Double tube sheet, to avoid cross-contamination between product and service media
- Tubes can be roller expanded into the tube sheet
- Seamless inner tubes
- Protection sheets
- Thermal insulation

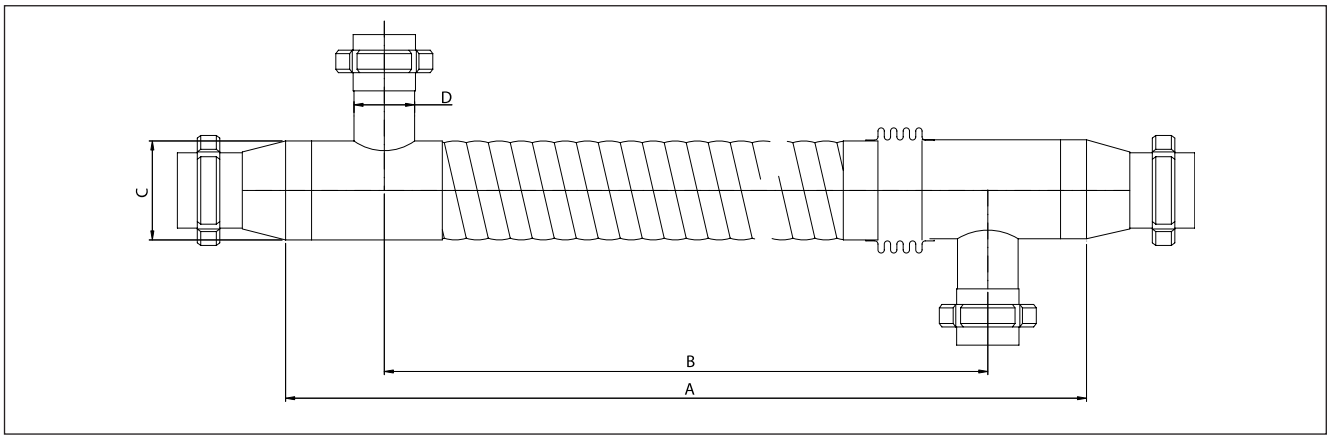


Welded Monotube units in a common frame

Measurements in mm (inches)

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	A		B		C		D	
Type	mm	(inches)	mm	(inches)	mm	(inches)	mm	(inches)
VLM3x16/51-3.0	2925	(115)	2802	(110)	50.8	(2.00)	38.1	(1.50)
VLM3x16/51-6.0	5925	(233)	5802	(228)	50.8	(2.00)	38.1	(1.50)
VLM4x16/63-3.0	2925	(115)	2802	(110)	63.5	(2.50)	38.1	(1.50)
VLM4x16/63-6.0	5925	(233)	5802	(228)	63.5	(2.50)	38.1	(1.50)
VLM4x18/63-3.0	2925	(115)	2802	(110)	63.5	(2.50)	38.1	(1.50)
VLM4x18/63-6.0	5925	(233)	5802	(228)	63.5	(2.50)	38.1	(1.50)
VLM7x16/76-3.0	2925	(115)	2802	(110)	76.2	(3.00)	63.5	(2.50)
VLM7x16/76-6.0	5925	(233)	5802	(228)	76.2	(3.00)	63.5	(2.50)
VLM7x18/76-3.0	2925	(115)	2802	(110)	76.2	(3.00)	63.5	(2.50)
VLM7x18/76-6.0	5925	(233)	5802	(228)	76.2	(3.00)	63.5	(2.50)
VLM7x20/89-3.0	2925	(115)	2802	(110)	88.9	(3.50)	63.5	(2.50)
VLM7x20/89-6.0	5925	(233)	5802	(228)	88.9	(3.50)	63.5	(2.50)
VLM7x22/89-3.0	2925	(115)	2802	(110)	88.9	(3.50)	63.5	(2.50)
VLM7x22/89-6.0	5925	(233)	5802	(228)	88.9	(3.50)	63.5	(2.50)
VLM12x16/89-3.0	2925	(115)	2802	(110)	88.9	(3.50)	63.5	(2.50)
VLM12x16/89-6.0	5925	(233)	5802	(228)	88.9	(3.50)	63.5	(2.50)
VLM7x25/104-3.0	2925	(115)	2802	(110)	104,0	(4.09)	76.2	(3.00)
VLM7x25/104-6.0	5925	(233)	5802	(228)	104,0	(4.09)	76.2	(3.00)
VLM12x18/104-3.0	2925	(115)	2802	(110)	104,0	(4.09)	76.2	(3.00)
VLM12x18/104-6.0	5925	(233)	5802	(228)	104,0	(4.09)	76.2	(3.00)
VLM19x16/104-3.0	2925	(115)	2802	(110)	104,0	(4.09)	76.2	(3.00)
VLM19x16/104-6.0	5925	(233)	5802	(228)	104,0	(4.09)	76.2	(3.00)
VLM7x28/114-3.0	2925	(115)	2802	(110)	114.3	(4.50)	76.2	(3.00)
VLM7x28/114-6.0	5925	(233)	5802	(228)	114.3	(4.50)	76.2	(3.00)
VLM12x20/114-3.0	2925	(115)	2802	(110)	114.3	(4.50)	76.2	(3.00)
VLM12x20/114-6.0	5925	(233)	5802	(228)	114.3	(4.50)	76.2	(3.00)
VLM7x33/129-3.0	2925	(115)	2802	(110)	129,0	(5.08)	104,0	(4.09)
VLM7x33/129-6.0	5925	(233)	5802	(228)	129,0	(5.08)	104,0	(4.09)
VLM12x22/129-3.0	2925	(115)	2802	(110)	129,0	(5.08)	104,0	(4.09)
VLM12x22/129-6.0	5925	(233)	5802	(228)	129,0	(5.08)	104,0	(4.09)
VLM19x18/129-3.0	2925	(115)	2802	(110)	129,0	(5.08)	104,0	(4.09)
VLM19x18/129-6.0	5925	(233)	5802	(228)	129,0	(5.08)	104,0	(4.09)
VLM19x20/129-3.0	2925	(115)	2802	(110)	129,0	(5.08)	104,0	(4.09)
VLM19x20/129-6.0	5925	(233)	5802	(228)	129,0	(5.08)	104,0	(4.09)
VLM12x25/140-3.0	2925	(115)	2802	(110)	139.7	(5.50)	104,0	(4.09)
VLM12x25/140-6.0	5925	(233)	5802	(228)	139.7	(5.50)	104,0	(4.09)
VLM19x22/140-3.0	2925	(115)	2802	(110)	139.7	(5.50)	104,0	(4.09)
VLM19x22/140-6.0	5925	(233)	5802	(228)	139.7	(5.50)	104,0	(4.09)
VLM19x25/168-3.0	2925	(115)	2802	(110)	154,0	(6.06)	104,0	(4.09)
VLM19x25/168-6.0	5925	(233)	5802	(228)	154,0	(6.06)	104,0	(4.09)
VLM37x16/154-3.0	2925	(115)	2802	(110)	154,0	(6.06)	104,0	(4.09)
VLM37x16/154-6.0	5925	(233)	5802	(228)	154,0	(6.06)	104,0	(4.09)
VLM37x18/168-3.0	2925	(115)	2802	(110)	154,0	(6.06)	104,0	(4.09)
VLM37x18/168-6.0	5925	(233)	5802	(228)	154,0	(6.06)	104,0	(4.09)



Designation

VLM19x25/168-6.0-SMO254/316-D or H

VLM:	ViscoLine Multitube
19:	number of product tubes
25:	outer diameter of product tubes
168:	diameter of service gasket
6.0:	length (m)
SMO254:	product side (tube)
316:	material service side (shell)
D:	tubes are dimple corrugated
H:	tubes are hard corrugated

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Type	No. of tubes	Tube Ø mm	Tube Ø (inches)	Shell Ø mm	Shell Ø (inches)	Module length m	Module length (inches)	Volume tubes litres	Volume tubes (US gallons)	Heat transfer area m^2	Heat transfer area (ft^2)
VLM3x16/51-3.0	3	16	(0.63)	51	(2.01)	3.0	(118)	1.4	(0.37)	0.45	(4.88)
VLM3x16/51-6.0	3	16	(0.63)	51	(2.01)	6.0	(236)	2.8	(0.74)	0.91	(9.77)
VLM4x16/63-3.0	4	16	(0.63)	63	(2.48)	3.0	(118)	1.8	(0.48)	0.60	(6.51)
VLM4x16/63-6.0	4	16	(0.63)	63	(2.48)	6.0	(236)	3.6	(0.95)	1.21	(13.0)
VLM4x18/63-3.0	4	18	(0.71)	63	(2.48)	3.0	(118)	2.4	(0.63)	0.68	(7.33)
VLM4x18/63-6.0	4	18	(0.71)	63	(2.48)	6.0	(236)	4.8	(1.27)	1.36	(14.6)
VLM7x16/76-3.0	7	16	(0.63)	76	(2.99)	3.0	(118)	3.2	(0.84)	1.06	(11.4)
VLM7x16/76-6.0	7	16	(0.63)	76	(2.99)	6.0	(236)	6.4	(1.69)	2.11	(22.8)
VLM7x18/76-3.0	7	18	(0.71)	76	(2.99)	3.0	(118)	4.2	(1.11)	1.19	(12.8)
VLM7x18/76-6.0	7	18	(0.71)	76	(2.99)	6.0	(236)	8.4	(2.22)	2.38	(25.7)
VLM7x20/89-3.0	7	20	(0.79)	89	(3.50)	3.0	(118)	5.3	(1.40)	1.32	(14.2)
VLM7x20/89-6.0	7	20	(0.79)	89	(3.50)	6.0	(236)	10.6	(2.80)	2.64	(28.5)
VLM7x22/89-3.0	7	22	(0.87)	89	(3.50)	3.0	(118)	6.6	(1.74)	1.45	(15.7)
VLM7x22/89-6.0	7	22	(0.87)	89	(3.50)	6.0	(236)	13.2	(3.48)	2.90	(31.3)
VLM12x16/89-3.0	12	16	(0.63)	89	(3.50)	3.0	(118)	5.5	(1.45)	1.81	(19.5)
VLM12x16/89-6.0	12	16	(0.63)	89	(3.50)	6.0	(236)	11.0	(2.90)	3.62	(39.1)
VLM7x25/104-3.0	7	25	(0.98)	104	(4.09)	3.0	(118)	8.7	(2.30)	1.65	(17.8)
VLM7x25/104-6.0	7	25	(0.98)	104	(4.09)	6.0	(236)	17.4	(4.59)	3.30	(35.6)
VLM12x18/104-3.0	12	18	(0.71)	104	(4.09)	3.0	(118)	7.2	(1.90)	2.03	(22.0)
VLM12x18/104-6.0	12	18	(0.71)	104	(4.09)	6.0	(236)	14.4	(3.80)	4.07	(43.9)
VLM19x16/104-3.0	19	16	(0.63)	104	(4.09)	3.0	(118)	8.8	(2.32)	2.87	(30.9)
VLM19x16/104-6.0	19	16	(0.63)	114	(4.49)	6.0	(236)	17.6	(4.65)	5.73	(61.9)
VLM7x28/114-3.0	7	28	(1.10)	114	(4.49)	3.0	(118)	10.3	(2.72)	1.85	(19.9)
VLM7x28/114-6.0	7	28	(1.10)	114	(4.49)	6.0	(236)	20.6	(5.44)	3.69	(39.9)
VLM12x20/114-3.0	12	20	(0.79)	114	(4.49)	3.0	(118)	9.1	(2.40)	2.26	(24.4)
VLM12x20/114-6.0	12	20	(0.79)	114	(4.49)	6.0	(236)	18.2	(4.80)	4.52	(48.9)
VLM7x33/129-3.0	7	33	(1.30)	129	(5.08)	3.0	(118)	14.8	(3.91)	2.18	(23.5)
VLM7x33/129-6.0	7	33	(1.30)	129	(5.08)	6.0	(236)	29.6	(7.81)	4.35	(47.0)
VLM12x22/129-3.0	12	22	(0.87)	129	(5.08)	3.0	(118)	11.3	(2.98)	2.49	(26.9)
VLM12x22/129-6.0	12	22	(0.87)	129	(5.08)	6.0	(236)	22.6	(5.97)	4.98	(53.7)
VLM19x18/129-3.0	19	18	(0.71)	129	(5.08)	3.0	(118)	11.5	(3.04)	3.22	(34.8)
VLM19x18/129-6.0	19	18	(0.71)	129	(5.08)	6.0	(236)	23.0	(6.07)	6.45	(69.6)
VLM19x20/129-3.0	19	20	(0.79)	129	(5.08)	3.0	(118)	14.5	(3.83)	3.58	(38.7)
VLM19x20/129-6.0	19	20	(0.79)	129	(5.08)	6.0	(236)	29.0	(7.66)	7.16	(77.3)
VLM12x25/140-3.0	12	25	(0.98)	140	(5.51)	3.0	(118)	14.9	(3.93)	2.83	(30.5)
VLM12x25/140-6.0	12	25	(0.98)	140	(5.51)	6.0	(236)	29.8	(7.87)	5.65	(61.1)
VLM19x22/140-3.0	19	22	(0.87)	140	(5.51)	3.0	(118)	17.9	(4.73)	3.94	(42.6)
VLM19x22/140-6.0	19	22	(0.87)	140	(5.51)	6.0	(236)	35.8	(9.45)	7.88	(85.1)
VLM19x25/168-3.0	19	25	(0.98)	168	(6.61)	3.0	(118)	23.7	(6.26)	4.48	(48.4)
VLM19x25/168-6.0	19	25	(0.98)	168	(6.61)	6.0	(236)	47.4	(12.51)	8.95	(96.7)
VLM37x16/154-3.0	37	16	(0.63)	154	(6.06)	3.0	(118)	17.1	(4.51)	5.58	(60.3)
VLM37x16/154-6.0	37	16	(0.63)	154	(6.06)	6.0	(236)	34.2	(9.03)	11.16	(120.5)
VLM37x18/168-3.0	37	18	(0.71)	168	(6.61)	3.0	(118)	17.1	(4.51)	5.58	(60.3)
VLM37x18/168-6.0	37	18	(0.71)	168	(6.61)	6.0	(236)	34.2	(9.03)	11.16	(120.5)

Alfa Laval reserves the right to change specifications without prior notification.