



# The tubular heat exchanger series from Alfa Laval

## ViscoLine™ Monotube Unit

### Applications

The ViscoLine™ Monotube unit is a tube-in-tube heat exchanger. The Monotube is especially used for grape mash, diced tomato, diced vegetable and diced fruits and also sauces and soups that contain particles. Can also be used for the heating, cooling and pasteurization of products with low and average viscosity that contains fibres, particles.

### Standard design

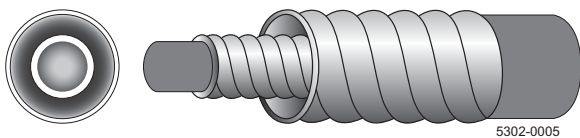
The ViscoLine Monotube heat exchanger consists of a single tube mounted inside an outer shell tube. The product medium flows inside this tube, and the service medium around it. It is a fully welded construction with a bellow on shell tube to absorb thermal expansion. ViscoLine Monotube modules are normally connected in series and mounted on support frame or full frame.

### Working principles

The product medium inside the tube flows in counter current to the service medium. The product tube is corrugated or it can be smooth. The shell tube is always corrugated. The installation is maintenance free, thus eliminating any need for spare parts.

### Standard materials

Product side (tubes): . . . .Stainless steel AISI 316  
 Service side (shell): . . . .Stainless steel AISI 304 or AISI 316L (optional)  
 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 Monotube Unit.

### Technical data

#### Mechanical design pressure

The ViscoLine Monotube unit was designed for a pressure of 15 barg on the product side (tube) and 10 barg 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 Monotube 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 160°C. All units are provided with an expansion joint to absorb any thermal expansion stresses that arise.



### Connections

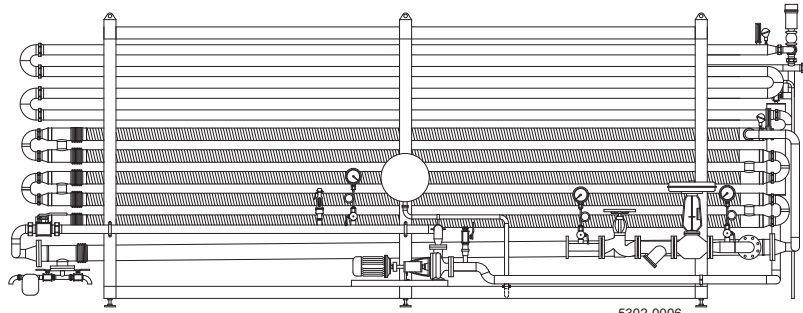
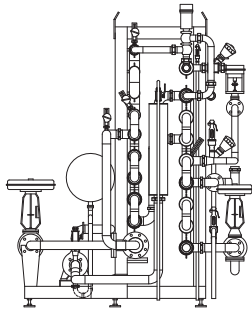
Product side (tubes): . . . . . SMS  
 DIN 11851  
 Tri-Clamp  
 Flange  
 Service side (shell): . . . . . SMS  
 DIN 11851  
 Tri-Clamp  
 Flange

### Options

- Protection sheets
- Insulation
- Shell in steel grade AISI 316L

Other pressure and temperature ratings on request

ViscoLine VLO as single tube



ViscoLine VLO on a full frame

**Designation**

VLO 51/76-6-316L/304-C :

- VLO: ViscoLine Monotube
- 51: outer diameter of product tube
- 76: outer diameter of service shell
- 6: module length (m)
- 316L: material product side (tube)
- 304: material service side (shell)
- C: corrugated inner tube
- S: smooth inner tube

All types are also available in 3 meter length

| Type          | Volume in product tube<br>[litres] | Heat transfer area<br>[m <sup>2</sup> ] |
|---------------|------------------------------------|---|
| VLO 16/25-6   | 0.92                               | 0.28                                    |
| VLO 20/38-6   | 1.53                               | 0.36                                    |
| VLO 25/40-6   | 2.49                               | 0.45                                    |
| VLO 28/52-6   | 2.95                               | 0.50                                    |
| VLO 34/52-6   | 4.53                               | 0.61                                    |
| VLO 38/63-6   | 5.81                               | 0.69                                    |
| VLO 40/63-6   | 6.45                               | 0.73                                    |
| VLO 38/70-6   | 5.81                               | 0.69                                    |
| VLO 40/70-6   | 6.45                               | 0.73                                    |
| VLO 51/76-6   | 10.8                               | 0.93                                    |
| VLO 52/76-6   | 11.3                               | 0.95                                    |
| VLO 51/85-6   | 10.8                               | 0.93                                    |
| VLO 52/85-6   | 11.3                               | 0.95                                    |
| VLO 63/89-6   | 16.7                               | 1.16                                    |
| VLO 70/89-6   | 20.5                               | 1.28                                    |
| VLO 70/102-6  | 20.5                               | 1.28                                    |
| VLO 70/104-6  | 20.5                               | 1.28                                    |
| VLO 76/104-6  | 24.5                               | 1.40                                    |
| VLO 76/114-6  | 24.5                               | 1.40                                    |
| VLO 85/114-6  | 30.9                               | 1.56                                    |
| VLO 76/129-6  | 24.5                               | 1.40                                    |
| VLO 85/129-6  | 30.9                               | 1.56                                    |
| VLO 102/140-6 | 44.9                               | 1.88                                    |
| VLO 102/154-6 | 44.9                               | 1.88                                    |

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ESE02092EN 1201

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