

Alfa Laval D1

Disc stack separation system for the dairy industry

Introduction

For more than 130 years, Alfa Laval has been supplying disc stack separators for the dairy industry. Today Alfa Laval offers the most complete and diverse portfolio of separators, each fully optimized for its specific duty.

Alfa Laval's range of disc stack separators has been setting the standards for gentle and efficient separation, meeting the strictest hygiene and performance requirements of modern dairies.

Application

Self-cleaning disc stack separators in the D series are specially designed to clarify milk or whey prior to further processing. The milk clarification can be done either hot or cold depending on the duty. For whey, the separator will remove cheese fines before skimming.

Benefits

- High yield
- Robust and reliable design
- Easy to operate
- Easy to maintain
- Plug-and-play installation
- Corrosion resistant
- Easy CIP

Design

The Alfa Laval Compacta series separators are specially designed to meet the requirements of small-scale dairies in order to secure high efficiency milk clarification performance. The self-cleaning separators provide safe, gentle, and consistent treatment to safeguard the quality of the product.

The separator is self-discharging, which means that impurities are automatically removed to enable a continuous process. This improves process efficiency while reducing the manual labour requirements.

All components are skid mounted to facilitate "Plug and Play" installation, which results in a small footprint. The control system includes a PLC and a user-friendly HMI to monitor and control the separation process parameters. The system can be configured for remote operation.

All parts in contact with the product are in compliance with European food contact material regulation - (EC) No.



1935/2004. The metallic product contact parts are made of high-grade stainless-steel ensuring corrosion resistance and the non-metallic product contact parts, including gaskets and seals, are made of materials according to FDA requirement.

Scope of supply

- Disc stack separator
- Cyclone
- Process & service liquid unit:
 - Valves, instruments and other components
 - Manual flow and back pressure regulation valves
 - Sample valves
- Electrical & control system
 - Control cabinet with PLC and HMI
 - Motor starter cabinet with VFD
- Commissioning spares
- Documentation
- Set of special tools

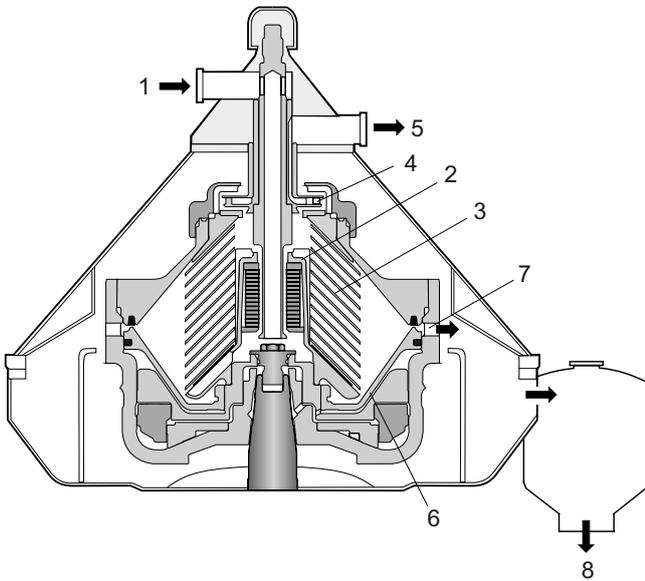
Options

- Flowmeter

Working principle

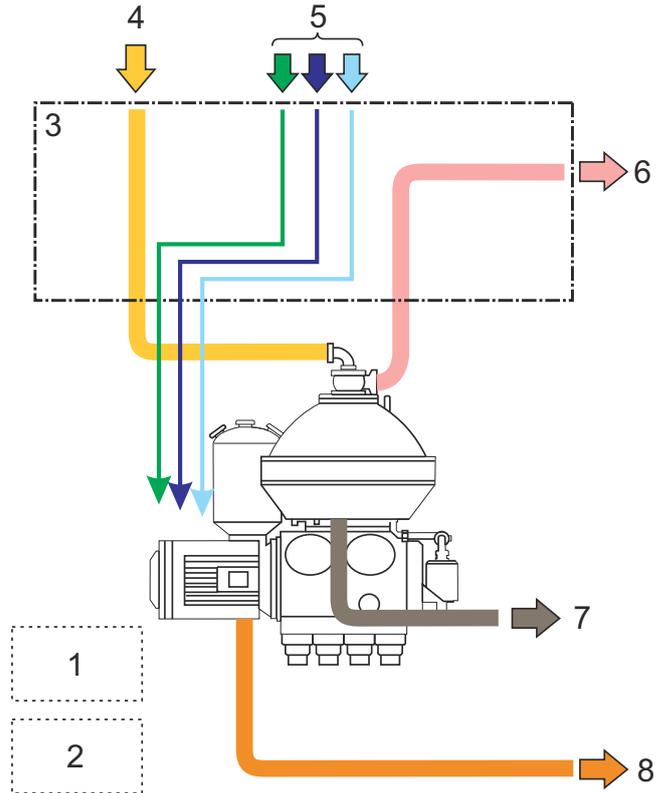
The milk or whey is continuously fed from the top into the rotating separator bowl through the inlet pipe. Separation takes place between the bowl discs due to the centrifugal force. The clarified milk or whey moves towards the centre of the bowl and the impurities or cheese fines towards the periphery. The separated liquid is continuously pumped out by the paring disc through the outlet at the top of the separator.

Separated sludge is collected in the sediment space and is discharged intermittently via the cyclone. While the sludge is accumulating in the sediment space, the sliding bowl bottom is kept closed against the bowl hood by means of operating water. The sliding bowl bottom lowers, while the machine is operating at full speed, to discharge separated sludge through the discharge ports. The sequential pulses of operating water are used to control the movement of the sliding bowl bottom part that opens and closes the discharge ports.



Typical bowl drawing for a solids-ejecting separator. The details illustrated do not necessarily correspond to the separator described.

1. Feed inlet
2. Distributor
3. Disc stack
4. Paring disc
5. Liquid phase outlet
6. Sliding bowl bottom
7. Solids discharge ports
8. Solids outlet from cyclone



1. Control cabinet
2. Main motor starter cabinet and VFD
3. Process & service liquid unit
4. Product inlet
5. Utilities
6. Clarified product outlet
7. Separator drain
8. Discharged solids outlet

Technical data

Performance data

Capacity ¹	Max 1000 l/h (264 US gallon/h)
Installed motor power	3 kW (4 HP)

¹ Actual capacity and power consumption depend on application, performance and operating conditions.

Main connections

Feed inlet	Clamp Ferrule – DN10 – DIN 32676
Product outlet	Clamp Ferrule – DN10 – DIN 32676
Solids outlet	Clamp DN63.5

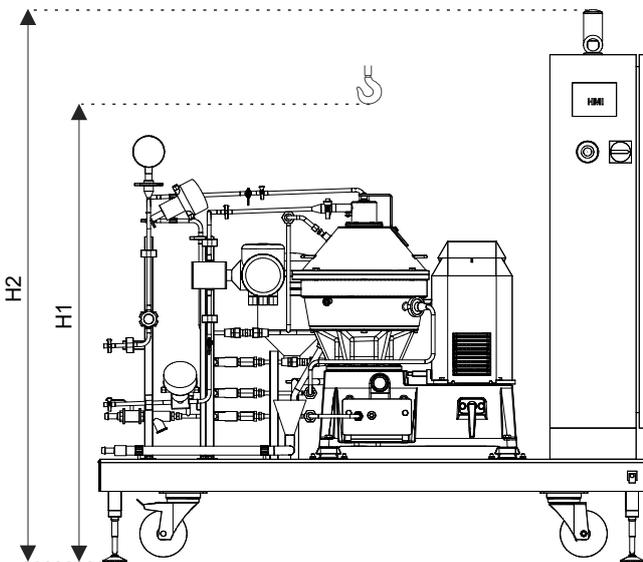
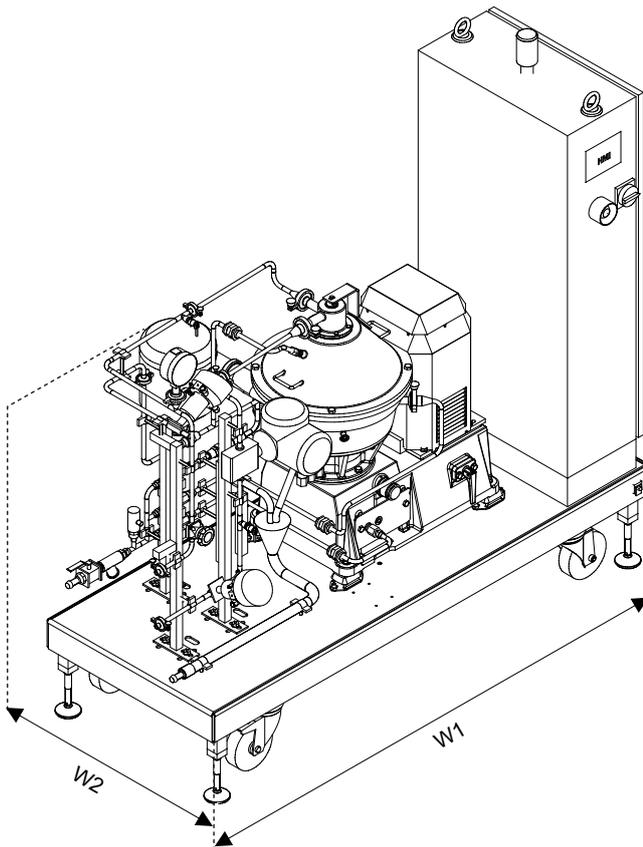
Material data

Bowl body	Duplex Stainless Steel, EN 1.4462, ASTM/UNS S31803
Gaskets (product wetted)	EPDM, NBR, and TFM FDA approved
Piping	Stainless steel, AISI 304
Frame and cabinets	Stainless steel, AISI 304

Weights

System incl. separator bowl and motor	500 kg (1102 lb)
Bowl	37.5 kg (82.7 lb)

Dimensional drawing



Dimensions

H1 (minimum lifting height) ¹	1100 mm (3 ft 7 5/16 inches)
H2	1780 mm (5 ft 10 1/16 inches)
W1	1650 mm (5 ft 4 15/16 inches)
W2	865 mm (2 ft 10 1/16 inches)

¹ Lifting height for the separator only

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