

Alfa Laval D545

Disc stack separator 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 has the most complete and diverse offering 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

- Gentle treatment of the product
- High separation efficiency
- Low power consumption
- Foam-free handling in absence of air
- No oxygen pick-up
- Corrosion resistant
- Designed with focus on CIP
- Easy to operate

Design

The D545 is available in different scopes of supply from a bare separator to a complete separation system.

The unique fully hermetic bottom fed design ensures very gentle treatment of the product and the hermetically sealed inlet and outlet prevent oxygen pick-up. Smooth acceleration of feed in the hollow rotating spindle helps maintain the sizes of the fat globules and other components. The hermetic design not only enhances separation efficiency, but also prevents increase of free fatty acids in the product, which might otherwise result in bad flavour, taste and a shortened shelf life. In addition to these benefits, the hermetic design offers the lowest power consumption in the market.

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. The model is available with certification according to 3-A sanitary standard for Centrifugal Separators and Clarifiers.

Scope of supply

- Disc stack separator
- Cyclone

Options

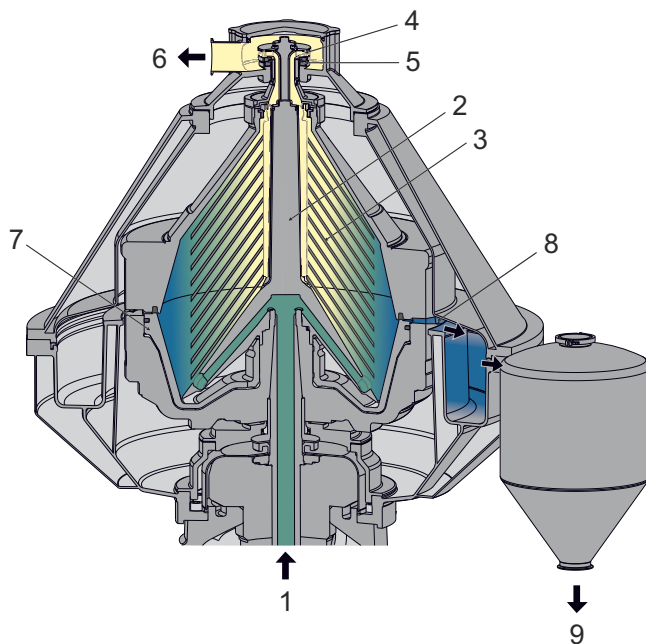
- Foundation plate
- Set of tools
- Intermediate service kit

Working principle

The milk or whey is continuously fed from the bottom into the rotating separator bowl through the hollow drive spindle. 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 pressurized by the impeller in the outlet housing and thereby working as a centrifugal pump.

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. The details illustrated do not necessarily correspond to the separator described.

1. Inlet
2. Distributor
3. Disc stack
4. Impeller
5. Hermetic seal
6. Liquid phase outlet
7. Sliding bowl bottom
8. Sludge discharge ports
9. Sludge outlet from cyclone

Technical data

Performance data

Capacity ¹	Max 40 000 l/h (10 400 US gallons/h)
Installed motor power	30 kW (40 HP)

¹ Dependent on position and fines content

Main connections

Feed inlet	ISO 2852 (Tri-Clamp) DN63.5
Product outlet	ISO 2852 (Tri-Clamp) DN63.5
Solids outlet	ISO 2852 (Tri-Clamp) DN101

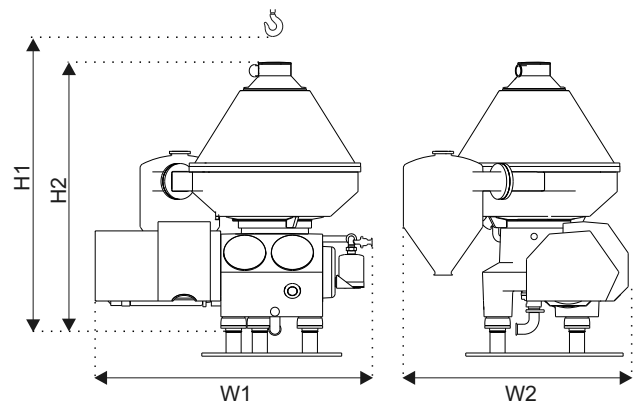
Material data

Bowl body	Super Duplex Stainless Steel, EN 1.4501, ASTM/UNS S32760
Gaskets (product wetted)	NBR (FDA approved materials)

Weights

Separator incl. bowl and motor	2080 kg (4580 lb)
Bowl	800 kg (1760 lb)

Dimensional drawing



Dimensions

H1 (minimum lifting height)	2 800 mm (9 ft 2 1/4 inches)
H2	1 694 mm (5 ft 6 11/16 inches)
W1	1 742 mm (5 ft 8 9/16 inches)
W2	1 414 mm (4 ft 7 11/16 inches)

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