Alfa Laval Brew 20

Disc stack separation system for brewery applications

Introduction

For more than 100 years, Alfa Laval has been supplying separators for various industries. Today, Alfa Laval has the most complete and diverse offering of separators – each fully optimized for its specific duty and supplied with all auxiliary systems and key components.

The use of disc stack separators in different brewery applications goes back several decades. Based on the long-term cooperation with the brewery industry, Alfa Laval separators are specifically designed for the requirements and demands of this industry.

Brew separators have a long history of enabling breweries around the world to achieve higher yields, meet shifts in demand and maintain profitability. Used in multiple brewery applications, they ensure minimal levels of oxygen pick up during passage through the separator and the highest standards of hygiene.

The product image on this page displays the Brew 20 Select model.

Application

Self-cleaning disc stack separation systems in the Brew series are specially designed for general beer clarification, beer pre-clarification or polishing duties with the target to produce the best quality beer with high performance clarification and a maximized yield.

Benefits

- High separation efficiency
- Minimized oxygen pick-up
- Easy to operate
- Robust and reliable design

Design

The Brew 20 separation system consists of a separator, a process & service liquid unit, and an electrical & control system.

The liquid outlet is sealed mechanically by an axial hermetic seal that prevents oxidation of the clarified product. The separator discharges solids intermittently at a fixed volume.

The system can be selected with an optional ProCarb ™ feature - a patented inline carbonation technology that boosts productivity by combining rapid clarification with carbonation. This combination reduces the processing time from crash cooling tanks to packaging from 3 days to 3 hours.

All components are skid mounted to facilitate “Plug and Play” installation, which results in a small footprint. It can be configured from a selection of basic and optional features and control functions.

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 metallic parts in contact with the process liquid are made of stainless steel. Gaskets and seals in contact with the product are made of FDA approved material and are approved according to food regulations (EC1935/2004).

The separation system is designed for automated Cleaning in Place (CIP).

Scope of supply

The standard Brew 20 skid mounted system includes the following main components:

- Disc stack separator
- Process & service liquid unit:
  - Valves, instruments and other components
  - Manual flow and back pressure regulation valves
  - Flow meter
  - Sight glass at outlet
  - Sample valves
  - Timer triggered solids discharge function
  - Pressure gauge at inlet
- Electrical & control system:
  - Control cabinet with PLC and touchscreen HMI
  - Motor starter cabinet with VFD
- Commissioning spares
- Set of special tools
- Documentation

Options

Options x = included o = option	Core	Select
Touch panel screen size		9″
Turbidity triggered solids discharge function	o	x
Turbidity triggered solids discharge function upgraded to calibrated EBC turbidity units	o	o
Sight glass at inlet		o
Remote communication (Profilbus or Profinet)		o
ProCarb™	o	o
Feed pump	o	o
Solids receiving unit (a collection tank and a transfer pump for the discharged solids	o	o

Service options:

- Commisioning
- Operators training (basic and advanced level)
- Basic service agreement
- Performance agreement

Working principle

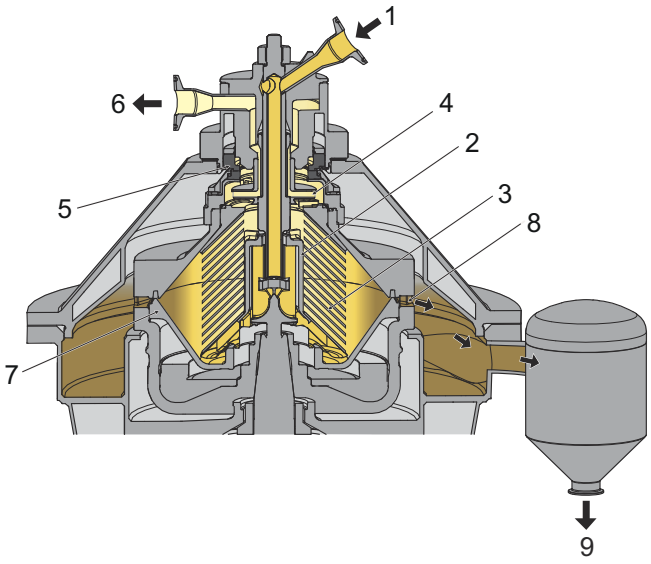
The process & service liquid unit monitors and regulates the flow and pressure of the feed and utility liquids in and out of the separator.

The process liquid is continuously fed from the top into the bowl through the inlet pipe. Separation takes place between the bowl discs due to the centrifugal force. The solids settle towards the periphery of the bowl. The clarified/separated liquid is continuously pumped out of the mechanically sealed bowl by an integrated paring disc through the outlet at the top of the separator.

The solids collected in the periphery of the bowl are discharged intermittently through the discharge ports. The discharge is triggered by a timer or by a turbidity meter, placed in the outlet of the system.

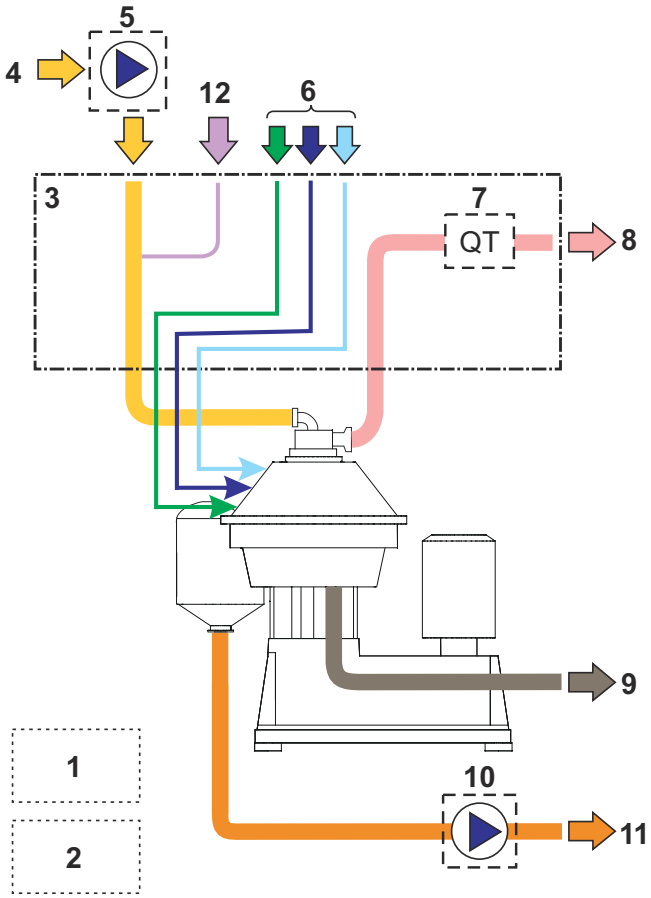
Water is used to control the movement of the sliding bowl bottom part that opens and closes the discharge ports. The discharged solids decelerate in the sludge cyclone and can be pumped out of the system by the optional solids receiving unit.

The process & service liquid unit also controls the separator's discharge system, flushing, and CIP.



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. Axial-Hermetic Seal
6. Clarified liquid phase outlet
7. Sliding bowl bottom
8. Solids discharge ports
9. Solids outlet from cyclone



Typical flow chart of a separator system. The details may differ slightly between different systems.

1. Control cabinet
2. Main motor starter cabinet and VFD

3. Process & service liquid module
4. Feed inlet
5. Feed pump (optional)
6. Utilities
7. Turbidity meter for discharge triggering (optional)
8. Clarified product outlet
9. Separator drain
10. Solids receiving unit (optional)
11. Discharged solids outlet
12. ProCarb™ (optional)

Technical data

Performance data[1]	
Max capacity	15 hl/h (12.6 bbl/h)
Max. motor power	4 kW (5.36 HP)

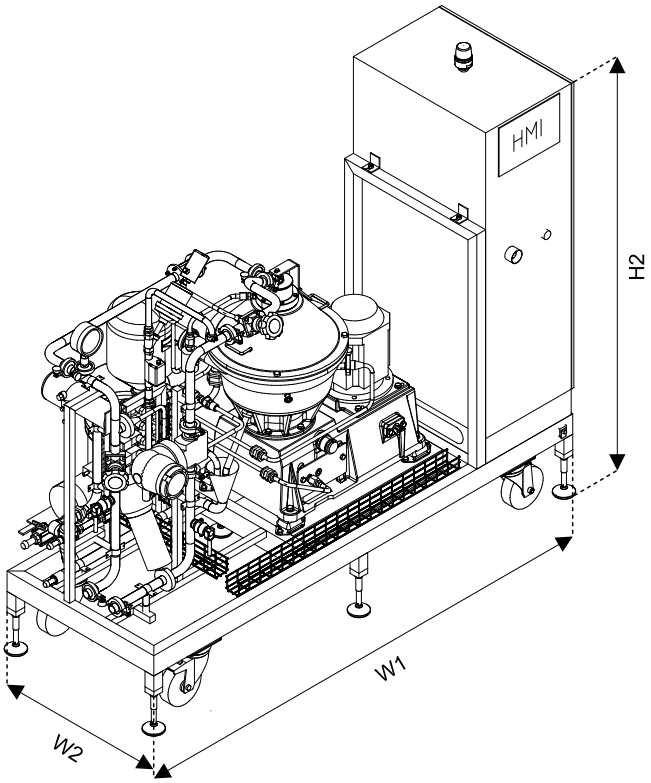
[1] Actual capacity and power consumption depend on application, solids content and operating conditions

Connections	
Feed inlet	Clamp ferrule DN25 DIN 32676
Product outlet	Clamp ferrule DN25 DIN 32676
Solids outlet	DN25 union SMS 1145

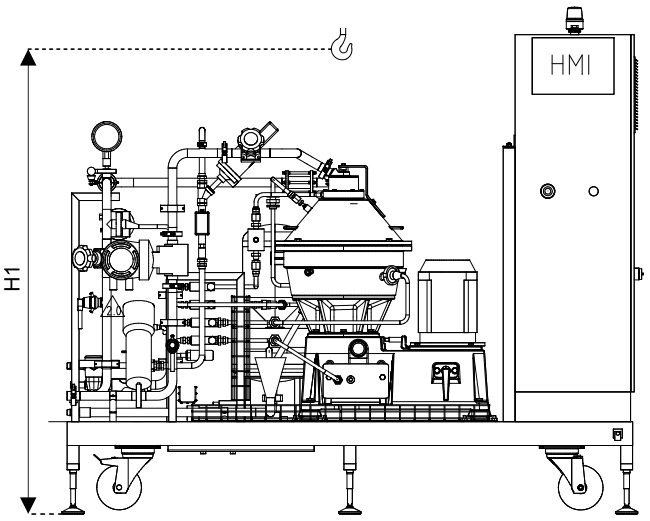
Material data	
Bowl body	Duplex Stainless Steel, EN 1.4462, ASTM/UNS S31803
Gaskets (product wetted)	EPDM (FDA approved materials)
Piping	Stainless steel 316L
Frame and cabinets	Stainless steel AISI 304

Weights	
System incl, separator, bowl and motor	500 kg (1103 lbs)
Bowl	37 kg (81 lbs)

Dimensional drawing



Dimensional drawing of Brew 20 Select



Dimensional drawing of Brew 20 Select

Dimensions	Core	Select
H1	1700 mm (5 ft 6 15/16 in)	1430 mm (4 ft 8 5/16 in)

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Dimensions		
H2	1635 mm (5 ft 4 3/16 in)	1630 mm (5 ft 4 3/16 in)
W1	1750 mm (5 ft 8 7/8 in)	1900 mm (6 ft 2 13/16 in)
W2	670 mm (2 ft 2 3/8 in)	665 mm (2 ft2 3/16 in)

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