Alfa Laval Brew 250

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 250 Plus 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
- No oxygen pick-up
- Gentle treatment of the product
- Low power consumption
- Robust and reliable design

Design

The Brew 250 separation system consists of a separator, a process & service liquid unit, and an electrical & control system.

The unique hermetic bottom fed design ensures superior separation performance and offers the lowest power consumption in the market. The bowl inlet and outlet are sealed mechanically and this prevents any oxygen pick-up in the clarified beer. Adjustable discharge volume function ensures discharge of solids with high dry matter content, thus minimizing product losses.

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 250 skid mounted system includes the following main components:

- Disc stack separator
- Process & service liquid unit:
  - Valves, instruments and other components
  - Back pressure regulation valves
  - Flow meter
  - Sight glass at outlet including lamp
  - Sample valves
  - Turbidity and timer triggered solids discharge function
  - Pressure gauge at inlet and outlet
  - Automatic flow control
  - Cyclone flushing
- 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	Select	Plus
Touch panel screen size	9″	15″
Upgrade to digital pressure transmitter at inlet	o	x
Upgrade to digital pressure transmitter at outlet	o	x
Turbidity triggered solids discharge function upgraded to calibrated EBC turbidity units	o	x
Capacity control by inlet turbidity	o	x
Sight glass at inlet	o	x
On/Off by-pass	o	o
Remote communication (Profilbus or Profinet)	o	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

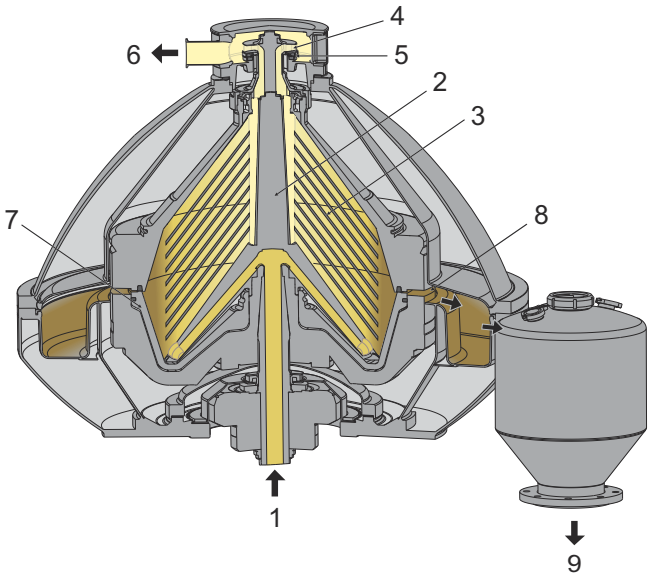
The process & service liquid unit monitors and regulates the flow and pressure of the feed and utility liquids in and out of the separator.

The process liquid is continuously fed from the bottom into the rotating separator bowl through the hollow drive spindle. 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 hermetically sealed separator by an integrated impeller 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 turbidity meter placed in the outlet of the system.

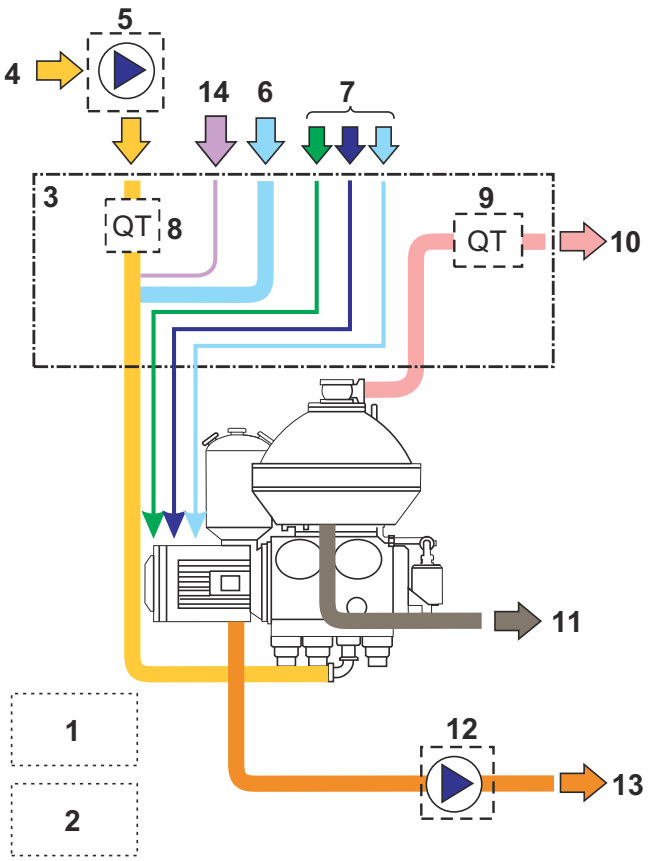
Water is used to control the movement of the sliding bowl bottom part that opens and closes the discharge ports. The discharged solids decelerate in the sludge cyclone and can be pumped out of the system by the optional solids receiving unit.

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



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

1. Control cabinet
2. Main motor starter and VFD
3. Process and service liquid module
4. Product inlet
5. Feed pump (optional)
6. Standby / Safety water
7. Utilities
8. Turbidity meter for capacity control (optional)
9. Turbidity meter for discharge triggering
10. Outlet for clarified product
11. Drain for separator
12. Solids receiving unit (optional)
13. Outlet of discharged solids
14. ProCarb™ (optional)

Technical data

Performance data[1]	
Max capacity	180 hl/h (151 bbl/h)
Max. motor power	18.5 kW (24.8 HP)

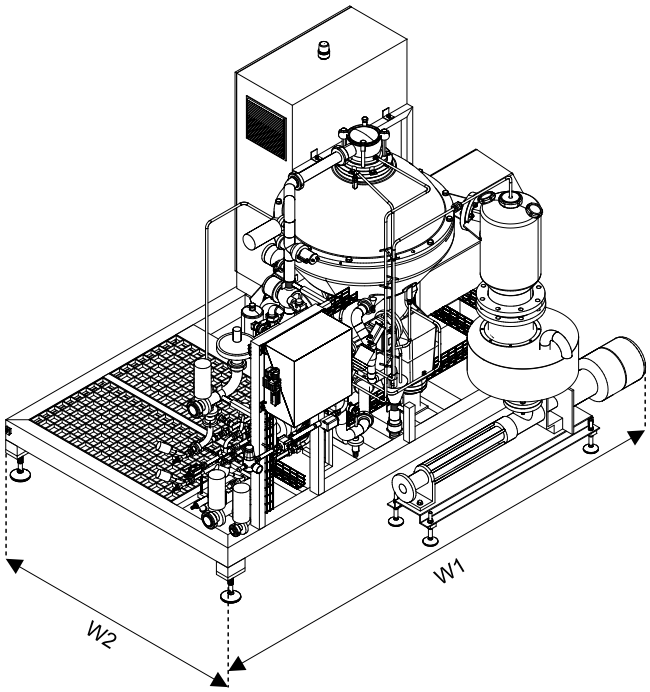
[1] Actual capacity and power consumption depend on application, solids content and operating conditions

Connections	
Feed inlet	DIN 11851 Union DN 50
Product outlet	DIN 11851 Union DN 50
Solids outlet	Flange DN 65 PN 16

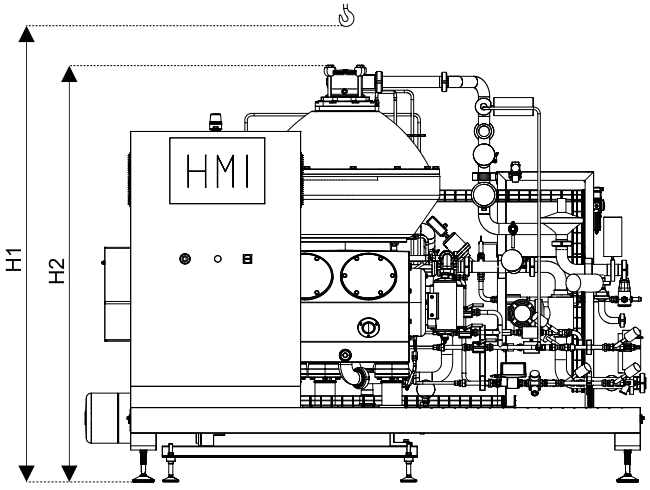
Material data	
Bowl body	Duplex Stainless Steel, EN 1.4462, ASTM/UNS S31803
Gaskets (product wetted)	EPDM (FDA approved materials)
Piping	Stainless steel 316L
Frame and cabinets	Stainless steel AISI 304

Weights	
System incl, separator, bowl and motor	2300 kg (5071 lbs)
Bowl	328 kg (723 lbs)

Dimensional drawing



Dimensional drawing of Brew 250 Plus



Dimensional drawing of Brew 250 Plus

Dimensions	Select	Plus
H1	2550 mm (8 ft 4 3/8 in)	2550 mm (8 ft 4 3/8 in)
H2	1960 mm (6 ft 5 3/16 in)	1960 mm (6 ft 5 3/16 in)
W1	2615 mm (8 ft 6 15/16 in)	2615 mm (8 ft 6 15/16 in)
W2	1885 mm (6 ft 2 3/16 in)	2085 mm (6 ft 10 1/16 in)

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