BREW 2001

High capacity solids-ejecting centrifuge for the brewery industry

The Alfa Laval centrifuges for breweries are available in many different sizes and configurations, each one designed and adapted to the widely varying separation tasks encountered.

A new range of Brewery separators is developed with the focus on high hygiene, low power consumption and high separation performance.

With a feed flow capacity of up to 750 hl/h (330 US gpm)* and very high solids handling capability the BREW 2001 is ideal for conditions common in the brewery industry. It is a clarifier that provides automatic intermittent discharge of solids with high dry matter content thanks to the SmartEject system.

The BREW 2001 is semi-hermetic and features Oxy-Stop, a hydrohermetic seal for minimal oxygen pick-up of the clarified liquid.

* Actual capacity depends on application

BREW 2001 complete with direct drive system

Applications

The BREW 2001 is typically used in the following steps in the brewing process:

- Pre-clarification
- Green beer separation
- Hot wort separation

Because the BREW 2001 is designed to be flexible, it performs equally well in the different conditions met with in each of these processes.

Standard design

All metallic parts that come in contact with the process liquid are made of high-grade stainless steel. Liquid-wetted rubber gaskets are made of FDA approved nitrile rubber. The frame upper part and the hood are cooled with water, which reduces temperature increase of the process medium to a minimum and at the same time acts as a sound dampener.

The centrifuge is equipped with sensors for monitoring bowl speed, vibration level and bearing temperature. Flushing takes place inside, above and under the bowl, in the cyclone and in the Oxy-Stop seal. The eDrive™ system features a permanent magnet motor, powered by a frequency inverter.

Design features

Inlet. The BREW 2001 is based on a unique design concept. The hermetic, bottom-fed inlet ensures a gentle, low-shear acceleration of the feedstock up to full bowl speed, minimizing particle splitting and maximizing separation performance. Together with eDrive™, the inlet principle used means a power saving of up to 30%. The inlet has been designed to minimize inlet pressure.

Outlet. The hydro-hermetic Oxy-stop seal minimises oxygen pick-up. It is equipped with a built-in stationary paring disc for the separated product, eliminating the need for an external pump.

Adjustable discharge volume. Together with the SmartEject triggering system, based on turbidity of the separated liquid, it ensures discharge of solids with high dry matter content, thus minimising product losses.

Cooling. The bowl casing is jacketed for cooling and sound dampening. The cooling of the solids collecting chute and the cyclone eliminates burning-on of proteins.

Erosion protection. The sliding bowl bottom is fitted with an easily exchangeable erosion liner for protection against possible abrasive solids.

Low noise level. With the working environment in mind, the BREW 2001 is designed to operate at low noise levels. The jacketed frame and the outer bowl design minimises the noise.

Direct drive system, eDrive. The electric motor of the eDrive is integrated in the drive system that is well-proven since more than two decades. The motor type has a higher efficiency than conventional induction motors. The motor is water-cooled and controlled by frequency inverter. This will mean a low starting current, and a short-time power supply at external power failure.

Small footprint. The compact design of the eDrive means a small footprint and saving of valuable floor area.

Operating principles

The feed is introduced into the rotating centrifuge bowl from the bottom via the hollow bowl spindle (1) and accelerated in a distributor (2) before entering the disc stack (3). The separation takes place between the discs.
The liquid phase moves towards the centre of the bowl from where it is pumped out (4) by a non-rotating paring disc. The heavier solids phase is collected at the periphery of the bowl where it is discharged intermittently via the centrifuge cyclone.
The solids are discharged by a hydraulic system below the separation space in the bowl, which at certain intervals forces the sliding bowl bottom (5) to drop down thus opening the solids ports (6) at the periphery of the bowl.
The triggering system functions by outlet turbidity and/or timer.

Lubrication system. The lubrication system consists of tank, pump and filter.

Control and supervision. Mounted behind an easily removable cover are valves, sensors and a Controller for control and/or supervision of following functions:

- Cooling of motor and bowl casing
- Cooling and lubrication of mechanical seals
- Flushing of outside of bowl and inside of bowl casing
- Control of the frequency converter and the bowl speed
- Control and supervision of lubrication and bearing tempera tures
- Control and supervision of discharge system
- Supervision of vibration
- Communication with plant control system via Modbus TCP.

The PLC program is built in modules for easy incorporation of different combinations of functions.

Basic equipment

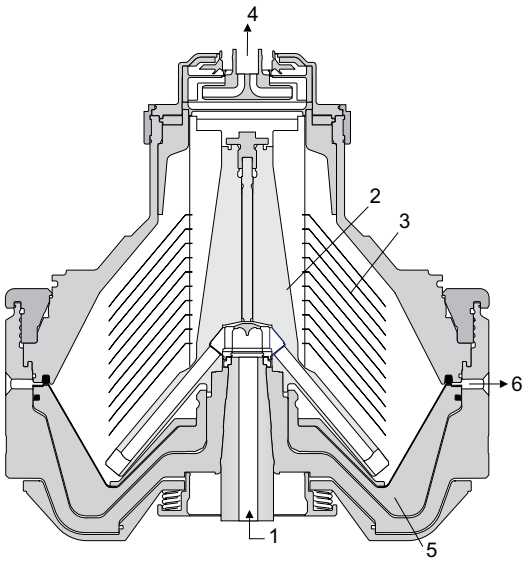
Centrifuge with motor and frequency inverter, speed sensor, vibration switch, vibration-dampening feet, set of tools and standard set of spares.

Options

The disc stacks are available with three different diameters, giving different solids space volumes, and with two different disc spacings

Optional extras

Additionally, the BREW 2001 is available with a cover-interlocking kit to make it impossible to start the centrifuge unless it is properly assembled, and additional service kits. The BREW 2001 can be delivered as a complete fully automated system, including valve modules for process and service liquids, starter and control system. The system can also include Capacity Control, an automatic flow regulation function to adapt to changing solids content in the feed.



Typical semi-hermetic bowl for a solids-ejecting clarifying centrifuge. The details illustrated do not necessarily correspond to the centrifuge described.

Material data

Bowl body, hood and lock ring	s.s. 1.4418
Solids cover and frame hood	s.s. 1.4401 UNS 31600
Bottom frame	Cast iron / s.s. 1.4401 UNS 31600 Covered with s.s. 1.4301 UNS 30400
Inlet and outlet	stainless steel 1.4401 UNS 31600
Gaskets and O-rings	Nitrile rubber [1)]

[1)] In accordance with FDA CFR 21§177.2600

Shipping data (approximate)

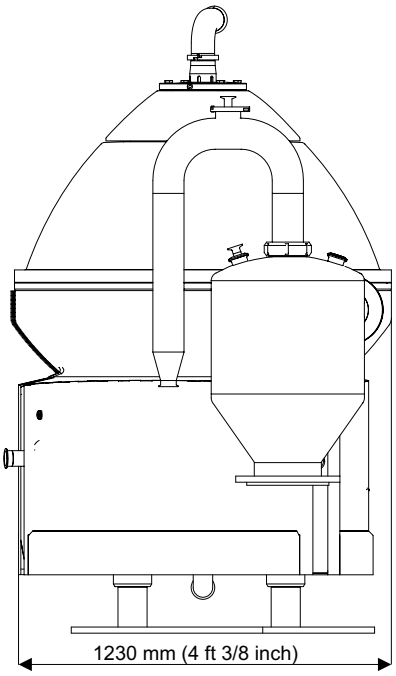
Separator incl. bowl and motor	3,300 kg (7,300 lbs)
Bowl	1,150 kg (3,300 lbs)
Gross weight	3,700 kg (8,200 lbs)
Volume	4,4 m^3 (190 cuft)

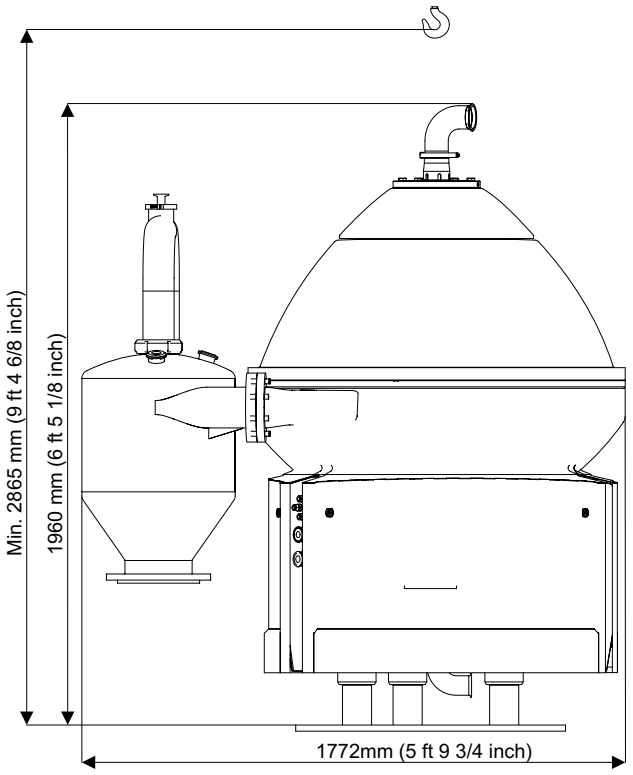
Technical specifications

Hydraulic capacity	750 hl/h (330 US gpm)
Bowl speed	4,800 rpm
Sludge space volume	max. 33 l (9 US gal)
Motor power installed	55 kW (75 HP)
Feed temperature range	-5^0 C-100^0 C (23–212^{0}F)
Inlet pressure at 50m^3/h at inlet flange	250 kPa (36 psig)
Sound pressure	78 dB(A) [1)]
Overhead hoist lifting capacity	min. 1,200 kg (2,700 lbs)

[1)] In compliance with EN ISO 3744

Dimensions





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