



Culturefuge 100

Solids ejecting centrifuge

Many new biological products are derived from fragile organisms. Although relatively easy to separate the trick is accomplishing the separation in a gentle manner without destroying the shear sensitive cell wall membranes that isolate the complex intracellular proteins from the extracellular liquid. If this can be avoided, downstream purification of the target proteins becomes much easier.

Applications

The machine is designed for clarification duty. Especially when clarifying liquids from shear sensitive particles. Applications that requires low oxygen pick-up can also take advantage of the hermetic features this machine offers.

Standard design

The machine consists of a frame that has a horizontal drive shaft, worm gear, lubricating oil bath and hollow vertical bowl spindle in the lower part. The bowl is mounted on top of the spindle, inside the space formed by the upper part of the frame, the ring solids cover, the collecting cover, and the frame hood. The liquid discharge system also rests on this structure. All parts in contact with the process liquid are made of stainless steel. The bowl is of the solids-ejecting disc type with an automatic hydraulic operating system for discharging. It is a so-called timer triggered partial discharge system, meaning that only part of the bowl content is emptied during pre-set discharge intervals. The discharge takes place at full speed without any interruption of the feed. The centrifuge is available with main connections as sanitary flanges and all other utility connections clamp type. The electric motor is of standard type and has a built-in variable frequency drive. The design conforms with a number of EC directives, and machine is made in accordance with the general directives for machinery. Finally, the centrifuge is equipped with nozzles for flushing of the bowl top, the bowl bottom and the cyclone.

Standard equipment

Each Culturefuge 100 centrifuge comes with control unit,



Fig. 1 Culturefuge 100 centrifuge

electric motor, in- and outlet connections, spare parts kit and set of tools.

Material data

Bowl body, hood and lock ring	s.s. 1.4462 UNS S31803
Solids cover and frame hood	s.s. ASME SA-240 UNS 31603
Cyclone	s.s. ASME SA-240 UNS 31603
Bottom frame	Cast grey iron
In and outlet	s.s. mostly 1.4401 UNS 31600
Gaskets and O-rings	EPDM rubber (FDA approved)

Operating principles

The feed is introduced to the rotating centrifuge bowl (fig 2) from the bottom through a hollow spindle (1), and is accelerated in a distributor (2) before entering the disc stack (3), where the separation takes place. The separated liquid phase leaves through the liquid outlet (4) at the top of the bowl. The collected solids in the solid space (5) are intermittently discharged from the periphery of the bowl. During normal production the operating water keeps the sliding bowl bottom (6) closed against the bowl hood (7). During discharge the sliding bowl bottom drops for a short time (less than a second) and the solids are ejected through the discharge ports (8). The high velocity of the ejected solids is reduced in the cyclone.

Available models

The Culturefuge 100 centrifuge is available in pressure vessel designs according to ASME or to PED. In addition, different surface finish executions are available:

Bowl spindle	Ra 0.8
Bowl spindle	Ra 0.5 and electropolished
Machine top part	Inside: Ra 0.8, Outlet cover: Ra 0.5 and electropolished
Machine top part	Inside: Ra 0.8, Outlet cover: Ra 0.8
Machine top part	Inside: Ra 1.2, Outlet cover: Ra 1.2
Separator bowl	Inside: Ra 0.5 and electropolished, Outside: Ra 0.8
Separator bowl	Inside: Ra 0.8, Outside: Ra 0.8
Separator bowl	Inside: Ra 1.2, Outside: Ra 1.2

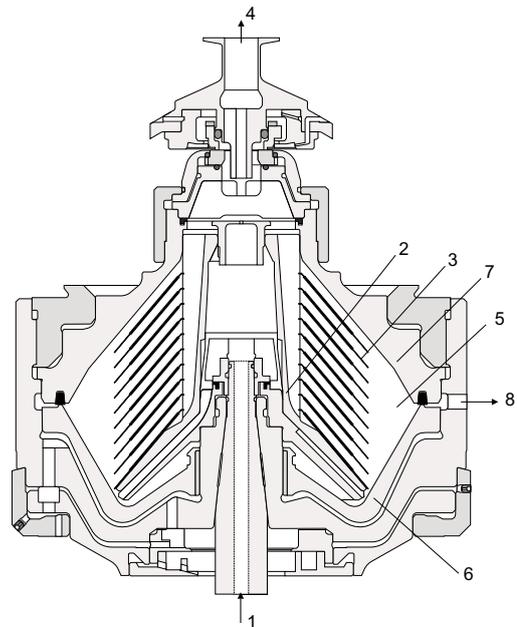


Fig. 2 Typical bowl for a hermetic solids-ejecting centrifuge. The details illustrated do not necessarily correspond to the centrifuge

Technical specification

Hydraulic capacity	max. 2.0 m ³ /h ¹⁾
G-force	max. 12200 g
Bowl speed	max. 9650 rpm
Motor power installed	7.5 kW
Sound pressure	74 dB(A) ²⁾
Overhead hoist lifting capacity	min. 100 kg

¹⁾ Actual capacity depends on feed material and separation demands

²⁾ In compliance to EN ISO 4871

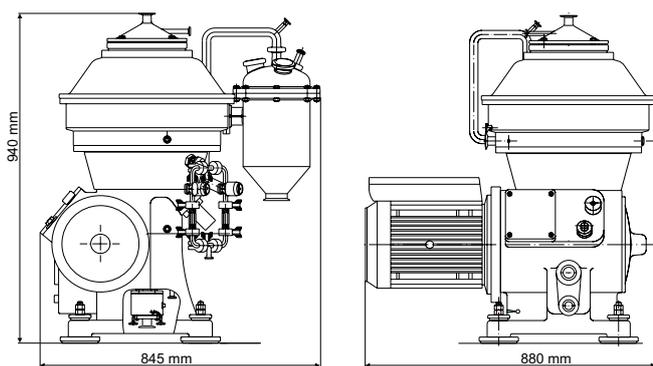
Utilities consumption

Electric power	5.5 kW
Operating water	0.3 l/discharge
Cyclone flush	0 - 8 l/discharge
Cooling for seals	max. 300 l/h
Flushing above the bowl	0 - 1 l/discharge
Flushing under the bowl	0 - 1 l/discharge
Steam per sterilization cycle	5 - 10 kg

Shipping data (approximate)

Centrifuge with bowl with motor	450 kg
Gross weight	600 kg
Volume	1.0 m ³

Dimensions (approximate)



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Alfa Laval reserves the right to change specifications without prior notification.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information direct.