



Culturefuge 100

Pilot plant separation system



A steam sterilizable, aseptic and contained Culturefuge 100 separation system. Its small size but high performance makes it ideal for pilot plants and small-scale production.

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.

Unique hollow spindle design

Alfa Laval has worked for many years with machines that are bottom fed through a hollow spindle. Liquids entering the Culturefuge 100 are gradually accelerated as they move upwards through the spindle. The feed zone of the machine is completely filled with rotating liquid and there is no air/liquid interface. This smooth acceleration minimizes shear forces acting on the liquid and thus prevents cell lysis.

Hermetic outlet

Another feature of the Culturefuge 100 is the completely hermetic outlet. Clarified centrates are discharged via a sealed outlet that precludes any contact with air. This is particularly desirable when the liquids are prone to foam or where the products are susceptible to oxidation.

Hygienic design

Hygienic considerations were of the utmost importance in the design of the Culturefuge 100. It is fully steam sterilizable and has a cleaning-in-place capability. Pressure vessel designs according to ASME or PED are available. Cooling jackets surrounding the centrifuge bowl provide efficient temperature control and also contribute to a low noise level.

The “dosing ring” solids-ejecting system with its rapid, distinct discharge action ensures low product losses and drier solids. Flushing nozzles spray the outside of the centrifuge bowl, cyclone and the inside of the frame hood for maximum hygiene.

Complete system

The centrifuge is mounted on a fixed base frame, which includes process piping for service liquids and process liquids entering and leaving the centrifuge. Typically, a steam sterilizable pump removes the solids phase. The built-in electrical system includes starter, PLC control system and pneumatic unit. An integral motor with built-in VFD is standard and this provides considerable space savings for a complete system.

Materials

All product contact parts are made of high-grade stainless steel. Various grades of surface finish are available 1.2 µm Ra, 0.8 µm Ra or 0.5 µm Ra with electropolish. Gaskets are made of FDA-approved EPDM elastomer.

Available configurations

The skid-mounted modular design can be delivered for open operation, contained running, steam sterilizable aseptic operation or steam decontamination-only operation.

Working principles

The feed is introduced to the rotating centrifuge bowl (see figure 1) from the bottom through a hollow spindle (1). It 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. During discharge the sliding bowl bottom drops for a short time (less than a second) and the solids are ejected through the discharge ports (7). The high velocity of the ejected solids is reduced in the cyclone.

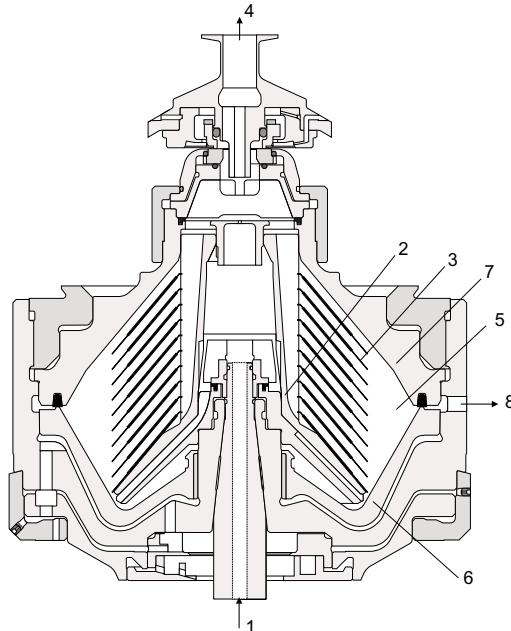
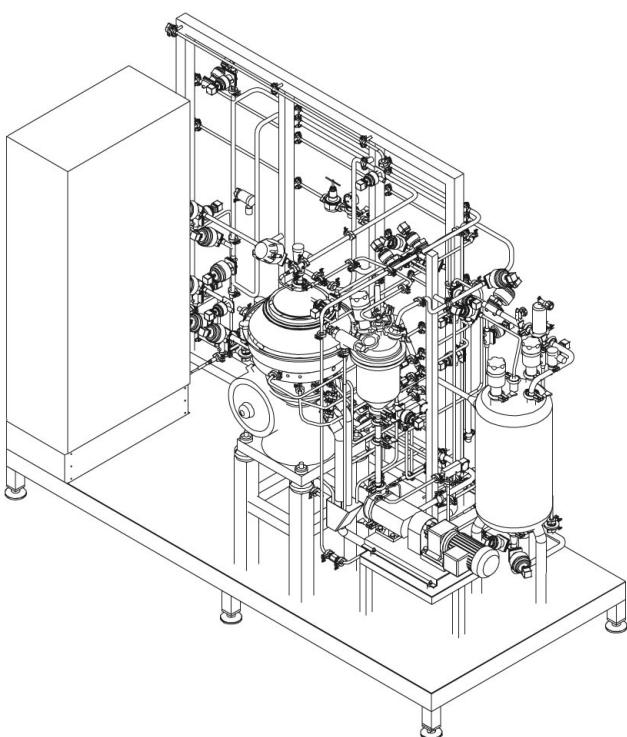


Fig. 1. Typical bowl for a hermetic solids-ejecting centrifuge. The details illustrated do not necessarily correspond to the centrifuge described.

Technical specifications

Max. hydraulic capacity	1.2 m ³ /h*
Max. G-force	12,200
Max. bowl speed	9,650 rpm
Installed motor power, control torque	7.5 kW
Sound pressure	74 ±3 dB(A)

* Actual capacity depends on feed material and separation demands.

Main dimensions**

Height	2,140 mm
Width	2,780 mm
Depth	1,270 mm

** Can vary according to specific demands.

Shipping data (approximate)***

Net weight	1,400 kg
Gross weight	1,760 kg
Volume	12 m ³

*** Complete system with bowl and motor.

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.