



BD 55

Separation system for biodiesel processing



BD 55 is a small sized member of the biodiesel separation system family. It is available in two different Ex-executions; inerted for separation of flammable liquids and electrically protected for separation of non-flammable liquids.

Applications

The BD 55 is specially designed for use in the production of biodiesel and is particularly suitable in the following applications:

- Separation of glycerol from methylesters after esterification and transesterification reactions
- Washing of methylesters
- Purification of glycerol

Special features of the centrifuge

The hermetic inlet ensures gentle acceleration of shear-sensitive agglomerates and particles and also prevents emulsification. Combined with a new patented disc stack design, these significant improvements of the fluid dynamics lead to maximum separation efficiency, and reduce power consumption at the same time.

The discharge volume is adjustable, thereby preventing any risk of liquid seal breakage.

The system is modularized and designed for one floor installation.

A specially designed variable frequency drive (VFD) system provides low starting current.

The built-in paring discs for the liquid phases eliminate the need for external pumps.

The bottom part and top part are gastight and suitable for blanketing at a low inert gas consumption.

Standard design

The BD 55 separation system consists of a self-cleaning disc stack centrifuge and all the auxiliary equipment needed for a safe, efficient operation. This includes:

- Process and service liquid module, comprising valves, fittings and instruments for process and service liquids entering and leaving the centrifuge. All product-wetted parts are made in high-grade stainless steel. Liquid-wetted rubber gaskets are made in Viton rubber. The components are premounted on a stainless steel frame.
- Set of connection fittings.
- Starting equipment for VFD drive of the centrifuge motor, also including a transformer for power distribution to other electric components in the system. For installation in non-hazardous area.
- Control equipment, including a PLC, type Siemens, pre-programmed to control and supervise the separation system. For installation in non-hazardous area.
- Operator's control panel for local operation of the separation system. For installation in hazardous area.
- Pneumatic unit, comprising a cabinet with pressure switch, pressure reducing valve and solenoid valves, for instrument air supply to the separation system. For installation in hazardous area.
- The centrifuge is equipped with sensors for monitoring bowl speed and vibration level.

Operating principle

The suspension to be separated is fed (1) into the separator bowl from the bottom through a hollow spindle (2) and enters the disc stack (3). The heavy phase and heavy sludge are forced towards the periphery of the bowl, while the light phase flows towards the centre of the bowl, from where it is pumped out (4) for further processing. The heavy phase is led over a top disc (5) into a chamber where a paring device pumps it out of the separator (6).

Sludge collects in the sludge space (7) and is discharged intermittently and automatically. The discharge is achieved by a hydraulic system, which at preset suitable intervals forces the sliding bowl bottom (8) to drop down, thus opening the sludge ports at the bowl periphery. The sludge is collected in the frame, and leaves the centrifuge via a cyclone.

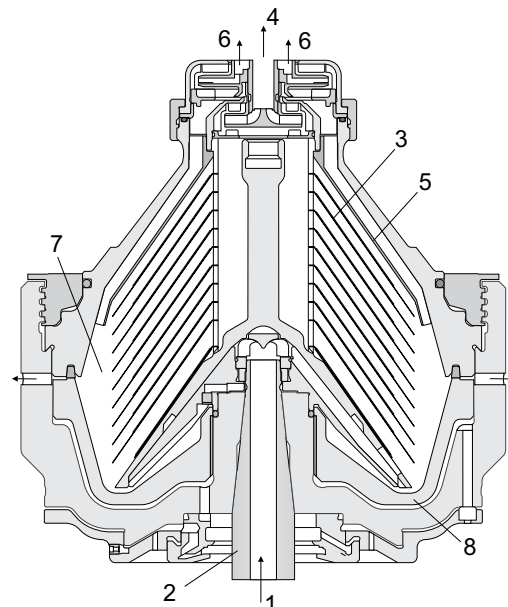
Additional equipment for inerted Ex-execution, including:

- Seal pot unit, for maintaining an inert gas overpressure in the centrifuge and to minimize the inert gas consumption. Made in stainless steel.
- Solids receiving unit, consisting of a solids pump of eccentric screw type, with motor, starter and connection pieces between the centrifuge cyclone and the pump. A level probe and a spray turbine for the centrifuge cyclone is also included.
- Inert gas regulating unit, comprising valves, fittings and instruments for inert gas supply.

Optional extras

The BD 55 centrifuge is available with a cover-interlocking kit to eliminate any risk of starting the separator unless it is properly assembled.

Five different service kits are available for maintenance of the centrifuge.



Typical bowl drawing for solids ejecting hermetic centrifuge. Drawing details do not necessarily correspond to the centrifuge described.

Technical specification

Capacity	50–170 tpd
Feed temperature range	0–100 °C (32–212 °F)
Feed pressure required	0–200 kPa (29 psi)
Outlet pressure, light phase, available	0–500 kPa (73 psi)
Outlet pressure, heavy phase, available	0–500 kPa (73 psi)
Sound pressure	79 dB(A) ¹⁾
Centrifuge motor	22 kW (30 hp)

¹⁾ In compliance with EN ISO 4871.

Shipping data (approximate)

Centrifuge incl. bowl & motor	1,435 kg (3165 lbs)
Bowl weight	300 kg (665 lbs)
Complete separation system	2,100 kg (4630 lbs)
Gross weight	2,500 kg (5515 lbs)

ATEX design codes

 II 2 G T4	Inert gas design
 II 3 G T4	Electrically protected

Utilities consumption

Water consumption discharge	1 litre (0,26 US gallon)
Recommended water pressure	300 kPa (44 psi)
Inert gas supply pressure	100 kPa (15 psi)
Inert gas flow for purging at start	10 Nm ³ /h
Inert gas maintenance flow	400 NI/h

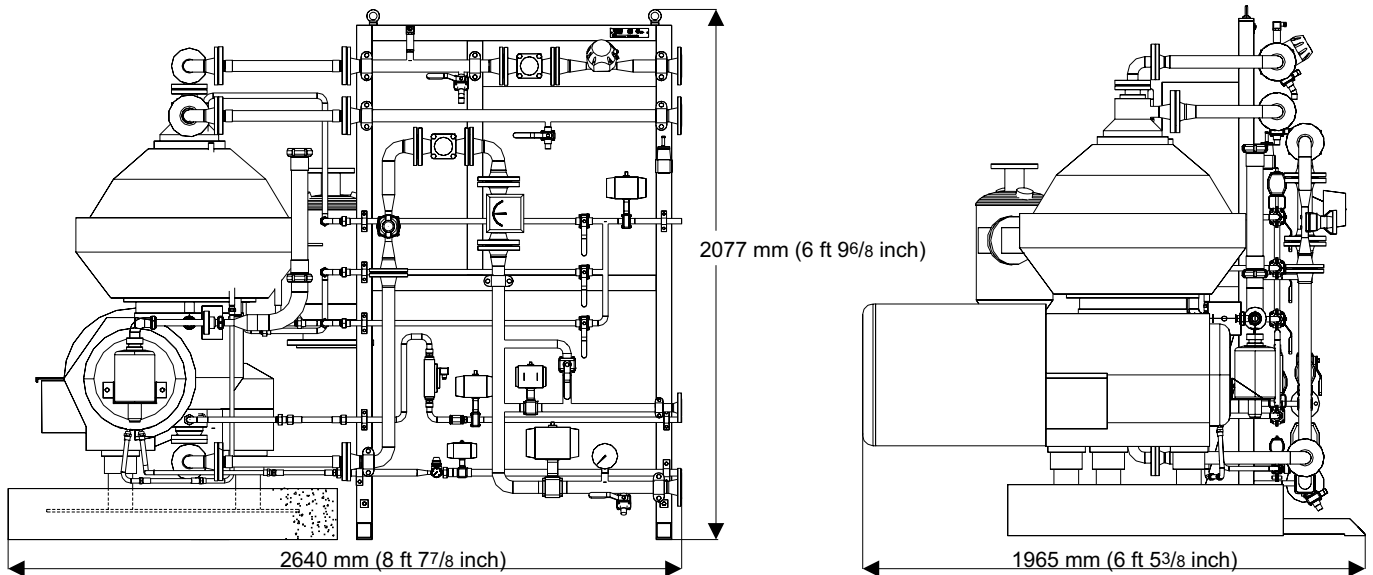
Material data

Bowl body	s.s. 1.4418
Bowl hood and lock ring	s.s. 1.4418
Distributor	s.s. 1.4401 UNS 31600
Solids cover and frame hood	s.s. 1.4401 UNS 31600
In and outlet parts	s.s. 1.4401 UNS 31600
Frame bottom part	Cladded in stainless steel
Piping	s.s. 1.4404 UNS 31603
Gaskets and O-rings	Viton

Connections

Product inlet, outlet	DN 40 (ISO 1127)
Service liquid	DN 15/20 (ISO 1127)
Solids cyclone	Flange DN 200 (DIN) 2642)

Dimensions



How to contact Alfa Laval

Up-to-date Alfa Laval contact details
for all countries are always available
on our website at www.alfalaval.com