

Alfa Laval BD 120 P

Disc stack separator for biodiesel production

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 Alfa Laval BD range is available for clarification as well as for three phase separation in biodiesel production. It also offers non-ATEX design as well as ATEX approval for zone 1 and 2.

The BD range is also offered as modularized system that is easy to install and operate. The system is fully equipped with a user-friendly control panel, valves, instruments, and other components for process and utilities control.

Application

The BD 120 P is a high-performance separator, equipped with an optional control system, specifically designed and optimized for the production of biodiesel. Typical separation applications are the following:

- Glycerol and FAME separation after transesterification
- FAME washing

Benefits

- Gentle treatment of the process liquid
- Low power consumption
- Low sound level
- High separation efficiency

Design

The BD 120 P is based on a unique, semi-hermetic design concept. The hermetic, bottom-fed inlet ensures a gentle acceleration of the feedstock up to full bowl speed. This minimizes drop splitting, maximizing separation performance. The outlets on the heavy and light phases are open, reducing the pressure drop across the separator. The feed pressure requirement of the machine is therefore low. The outlets are equipped with stationary paring discs for removal of the different phases under pressure. With the working environment in mind, the BD 120 P is designed to operate at low noise levels. This is achieved by means of a rubber damped bearing assembly, a jacketed frame and an outer bowl design engineered for low wind noise.



When delivered as a modularized system, it can be configured from a selection of basic and other optional standardized units and control functions.

Scope of supply

The standard BD 120 P separator includes the following main components:

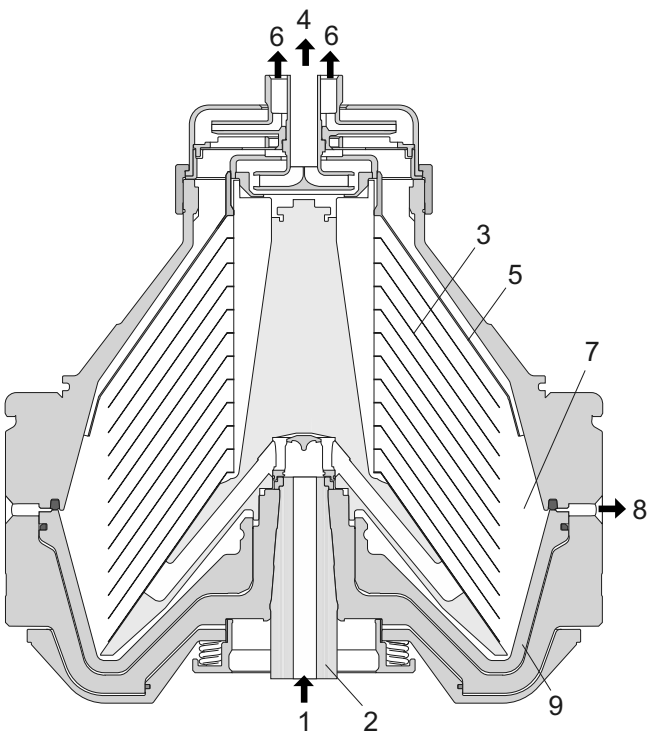
- Disc stack separator
- Cyclone
- OWM (Operating Water Module)
- Foundation plate

- Set of tools
- Commissioning spares
- Documentation

Options

- Module & control system
 - The disc stack centrifuge can be fully equipped with custom-made standard process liquid unit as well as electrical & control system unit upon customer's request.
- Service
 - Commissioning
 - Operators training (basic and advanced level)
 - Basic service agreement
 - Performance agreement
 - Connected services

Working principle



1. Inlet
2. Spindle
3. Disc stack
4. Light phase outlet
5. Top disc
6. Heavy phase outlet
7. Sludge space
8. Sludge discharge ports
9. Sliding bowl bottom

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 feed enters the separator bowl from the bottom via the drive spindle. Separation takes place between the bowl discs as a result of the centrifugal force that causes the solids to move towards the periphery.

The clarified light liquid phase moves towards the centre of the bowl and leave the separator by being pumped out by an impeller. The clarified heavy liquid phase moves towards the periphery and leave via the top disc and is pumped out by an impeller.

The solids collected in the periphery of the bowl are discharged intermittently through the discharge ports. Discharge is triggered by a timer. 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.

Technical data

Performance data	
Maximum capacity	60m ³ /h
Maximum discharge capacity	17 lt
Maximum motor power	67 kW
Sound pressure level	78 dB

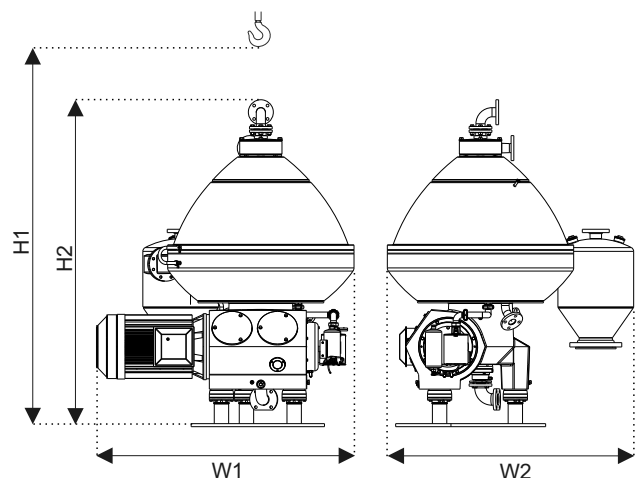
ATEX design codes	
EX II 2 G T4 X for Zone 1	Inert gas design
EX II 3 G T4 X for Zone 2	Electrically protected

Connections	
Feed inlet	DN65
Heavy phase outlet	DN50
Light phase outlet	DN50
Solids outlet	DN200

Material data	
Bowl body	s.s. 1.4418
Frame top part	s.s. 1.4401 UNS 31600
Frame bottom part	Cast iron
Gaskets (in contact with product)	Fluorocarbon rubber

Weights	
Separator incl. bowl and motor	2625 kg (5787 lbs)
Bowl	1200 kg (2645 lbs)

Dimensional drawing



Dimensions	
H1 (minimum lifting height)	2953 mm (9 ft 8 1/8 inch)
H2	2153 mm (7 ft 7/8 inch)
W1	1700 mm (5 ft 6 7/8 inch)
W2	1626 mm (5 ft 4 inch)

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