



Edible Oil Separation Solutions-Product Booklet

Alfa Laval Clara 200

Disc stack separation system for food and beverage applications

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 use of disc stack separators in different food and beverage applications goes back several decades. Based on the long-term cooperation with the food and beverage industry, Alfa Laval separators are specifically designed for the requirements and demands of this industry.

The Clara range of high-speed separators is specially developed for food, beverage and industrial fermentation applications. The Clara range offers gentle product treatment, high separation efficiency and low power consumption.

Application

The Alfa Laval Clara systems are designed for general use in the food and beverage industries and other hygienic applications. The Clara 200 is designed for clarification duties with high performance and maximized yield.

Typical separation applications are clarification of the following products:

- Wine
- Fruit juices
- Vegetable juices
- Coffee and tea
- Egg white

Benefits

- High separation efficiency
- Minimum oxygen pick-up
- Gentle treatment of the product
- Minimum product loss
- Easy to operate and maintain

Design

The Clara 200 separation system consists of a separator, a process & service liquid unit, and an electrical & control system. All components are skid mounted to facilitate “Plug and Play” installation, which results in a small footprint. It can be configured from a selection of basic and other optional standardized units and control functions.



It has a clarifier type of bowl with a conventional top-fed design. The liquid outlet is sealed by the Oxystop hydro-hermetic seal that prevents oxidation of the clarified product. The separator has variable discharge volume, which leads to minimum product loss.

All metallic parts in contact with the process liquid are made of stainless steel. Gaskets and seals in contact with the product are made of FDA approved materials and are approved according to food regulations (EC1935/2004).

The separation system is designed for completely automated cleaning-in-place (CIP).

Scope of supply

The standard Clara 200 skid mounted system includes the following main components:

- Disc stack separator
- Process & service liquid unit:
 - Valves, instruments and other components
 - Flow meter
 - Sight glasses
 - Sample valves
 - Timer triggered solids discharge function
- Electrical & control system:
 - Control cabinet with PLC and HMI
 - Motor starter cabinet with VFD
- Commissioning spares
- Set of special tools
- Documentation
- The system is available in two pipe size configurations:
High Flow and Low Flow

Options

Available standard options:

- Feed pump
- Solids receiving unit (a collection device and a transfer pump for the discharged solids)
- Turbidity triggered solids discharge function
- Service options:
 - Commissioning
 - Operators training (basic and advanced level)
 - Basic service agreement
 - Performance agreement

Working principle

The process & service liquid unit monitors and regulates the flow and pressure of the feed and utilities liquids in and out of the separator.

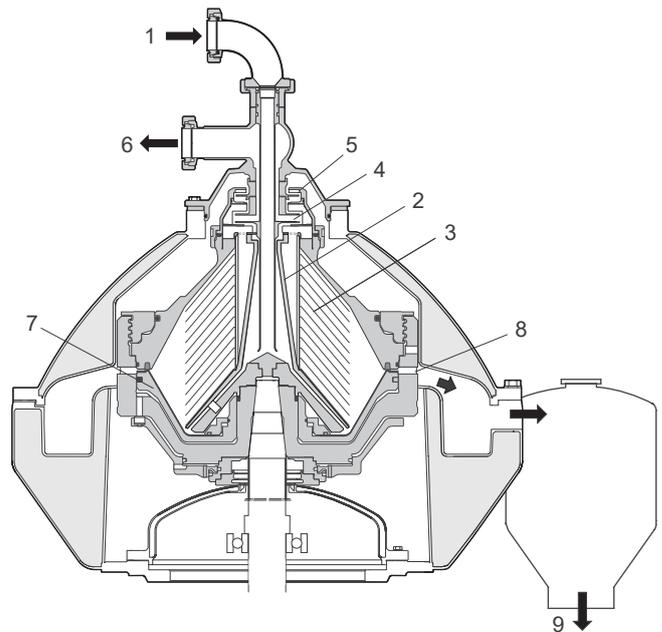
The feed enters the separator bowl from the top. Separation takes place between the bowl discs as a result of the centrifugal force that causes the solids to move towards the periphery.

The clarified/separated liquid is continuously pumped out of the hydro-hermetically sealed bowl by an integrated paring disc through the outlet at the top of the separator.

The solids collected in the periphery of the bowl are discharged intermittently through the discharge ports. The discharge is triggered by a timer or by an optional turbidity meter mounted on the clarified product outlet pipe.

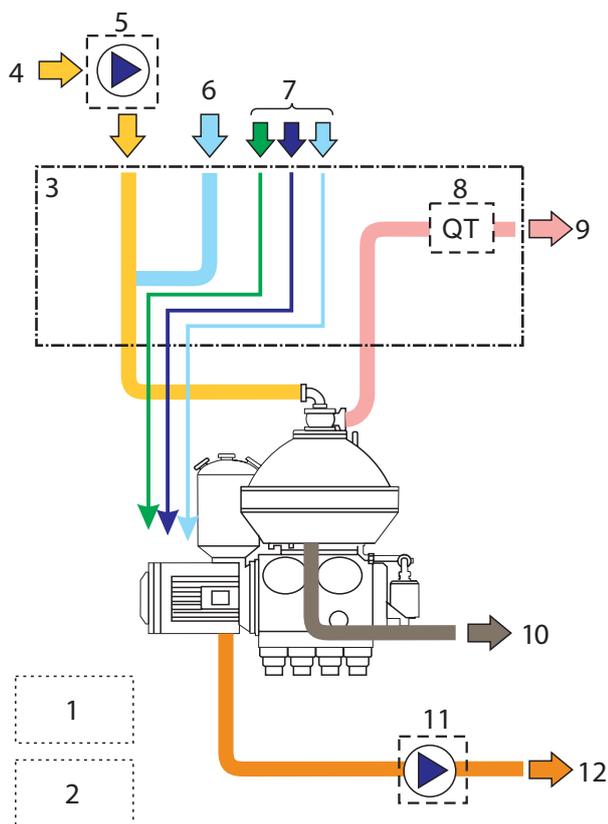
Water is used to control the movement of the sliding bowl bottom part that opens and closes the discharge ports. The discharged solids decelerate in the sludge cyclone and can be pumped out of the system by the optional solids receiving unit.

The process & service liquid unit also controls the separator's discharge system, flushing, and CIP.



Typical bowl drawing for a solids-ejecting separator. The details illustrated do not necessarily correspond to the separator described.

1. Feed inlet
2. Distributor
3. Disc stack
4. Paring disc
5. Hydro-hermetic seal (Oxystop)
6. Liquid phase outlet
7. Sliding bowl bottom
8. Solids discharge ports
9. Solids outlet from cyclone



Typical flow chart of a separator system. The details may differ slightly between different systems.

1. Control cabinet
2. Main motor starter cabinet and VFD
3. Process & service liquid unit
4. Product inlet
5. Feed pump (optional)
6. Standby water
7. Utilities
8. Turbidity meter for solids discharge (optional)
9. Clarified product outlet
10. Separator drain
11. Solids receiving unit (optional)
12. Discharged solids outlet

Technical data

Performance data¹

Capacity	High flow: 17 000 litre/h (75 US gpm)
	Low flow: 8 000 litre/h (35 US gpm)
Maximum motor power	18.5 kW (24.8 HP)

¹ Actual capacity and power consumption depend on operating conditions.

Main connections

Feed inlet	High flow: DIN 11851 DN50
	Low flow: DIN 11851 DN40
Product outlet	High flow: DIN 11851 DN50
	Low flow: DIN 11851 DN40
Solids outlet	DIN Flange DN65

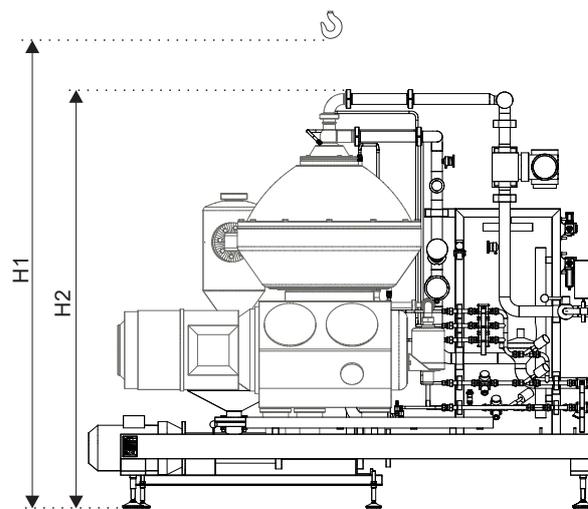
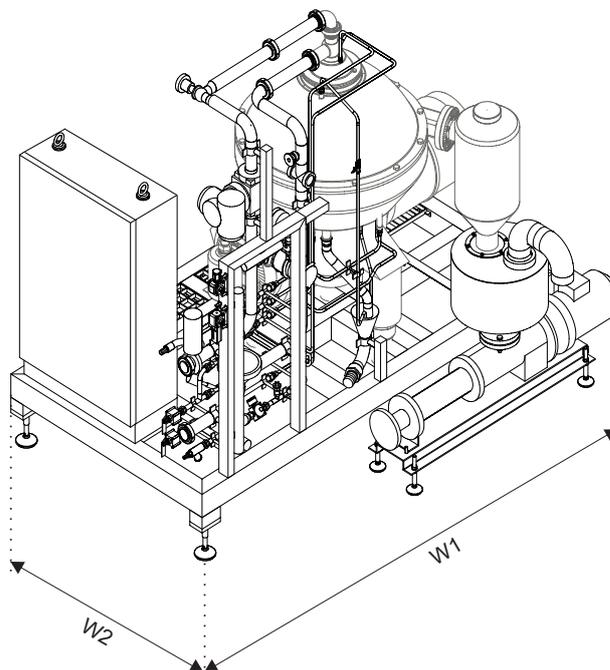
Material data

Bowl body	Stainless steel, EN 1.4418
Frame top part	Stainless steel 316, EN 1.4401, ASTM S31600
Gaskets piping (product wetted)	NBR and EPDM, FDA approved materials
Piping	Stainless steel, AISI 316L
Frame and cabinets	Stainless steel, AISI 304

Weights

System incl. separator, bowl and motor	1920 kg (4233 lbs)
Bowl	300 kg (661 lbs)

Dimensional drawing



Dimensions

H1 (minimum lifting height)	2500 mm (8 ft 2 7/16 inches)
H2	2045 mm (6 ft 8 1/2 inches)
W1	2470 mm (8 ft 1 1/4 inches)
W2	1905 mm (6 ft 3 inches)

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VO 5

Low capacity disc stack centrifuge for fats and oils refining

The Alfa Laval range of centrifuges for the vegetable oil refining industry is continuously modernized to take advantage of developments in materials, mechanical design and fluid dynamics. The VO 5 is a small-sized separator in this range of centrifuges.

Applications

Continuous degumming, neutralizing and washing of fatty oils, such as various vegetable oils, lard, tallow and fish oil.

Performance

The table below shows nominal capacities. Actual throughputs vary according to the type of oil and fat to be treated.

Degumming, neutralizing, washing 2500 kg/h

Standard design

The VO 5 is a top fed self-cleaning separator. The machine consists of a frame with a lubricating oil bath, a horizontal belt driving device, and a vertical bowl spindle. The bowl is fixed on top of the spindle and covered by the frame hood. All process wetted parts are made of stainless steel. The bowl is of the solids ejecting disc type, with a hydraulic operating system for sludge discharging. The separator is driven by a standard electrical motor with friction clutch. Gaskets and sealings are made of nitrile rubber.

Design features

The VO 5 is based on a simple, robust and well-proven, open design concept. Furthermore, the VO 5 is easy to maintain. The design reduces the pressure drop across the separator and results in a low feed pressure requirement to the machine. The bowl of the VO 5 is specifically designed for fatty oil separation. Its geometry permits minimal pressure drop and high flow rates. The outlets are equipped with stationary paring devices for removal of the different phases. The paring device on the light phase is a fixed paring disc, while the paring device on the heavy phase is adjustable.



VO 5 complete with motor

The diameter of the heavy phase paring device can easily be adjusted by changing the length of the paring tubes. This makes it possible to adjust the position of the separation interface in the disc stack, facilitating optimal separation.

With the working environment in mind, the VO 5 is designed to operate at low noise levels. This is achieved through a rubber-damped bearing assembly, and an outer bowl design engineered for low wind noise.

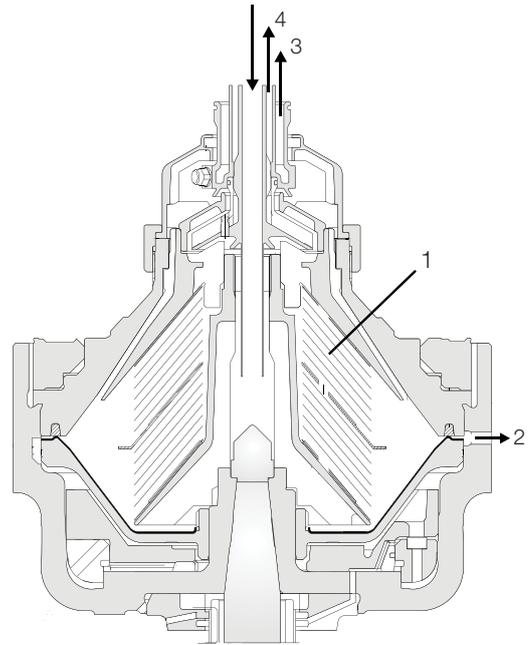
Standard equipment

Each VO 5 comes complete with starter and control unit, electric motor, inlet and outlet connections and auxiliary equipment.

Operating principles

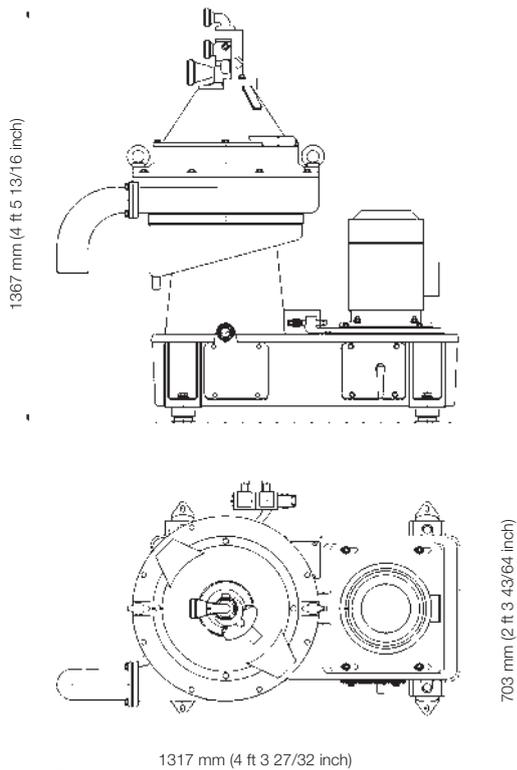
The centrifugal force causes separation in the disc stack (1), forcing the heavier particles (heavy phase and sludge) towards the periphery of the bowl and is discharged automatically through ports (2), while the light phase flows towards the centre of the bowl.

The heavy phase is pumped out of the separator through the heavy-phase outlet (3) at the top. Similarly, the lighter oil is pumped out for further processing through a separate light-phase outlet (4) also in the top of the separator.



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

Dimensions



Shipping data (approximate)

Centrifuge incl. bowl and motor	500 kg (1 102 lbs)
Bowl	140 kg (309 lbs)
Motor	50 kg (110 lbs)

Technical specifications

Throughput capacity	max. 6 m ³ /h
Bowl speed, synchronous 50/60 Hz	8375/8400 rpm
Bowl volume	6 l
Sludge space	2 l
Motor speed, synchronous 50/60 Hz	3000/3600 rpm
Motor power installed	7.5/8.6 kW
Starting time	approx. 6 min
Stopping time with brake	approx. 10 min
Inlet pressure	0-400 kPa
Pressure, light phase outlet	100-400 kPa
Pressure, heavy phase outlet	0 kPa
Sound pressure	84 dB(A) ¹⁾
Overhead hoist lifting capacity	min. 1000 kg

¹⁾ According to ISO 3744

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Alfa Laval VO 10, VO 20, VO 30

Medium-capacity disc stack separator for fats and oil refining

Introduction

The use of Alfa Laval disc stack separators in the vegetable oil and refining industries goes back to the end of 19th century. The application ranges from fats and oil refining to palm oil washing.

Application

The VO separator range is designed for and can be adapted to applications such as degumming, neutralization and washing.

Benefits

- Robust and reliable design
- Easy to operate and maintain
- Low water consumption
- Optimum separation by adjustable interface and liquid seal stability by using the Centrizoom™

Design

The separator consists of a machine bottom part which includes a gear drive and a lubrication system. The machine top part includes the bowl, bowl casing and outlets for the separated liquids and discharge sludge.

The separator is top fed and the bowl is of sediment ejecting type. By adjusting a positioner on the heavy phase outlet, the operator can reduce or enlarge the paring diameter of the paring tubes. This patented innovation is called Centrizoom™ and makes it possible to manually adjust the position of the separation interface during operation, facilitating optimal separation.

All metallic part in contact with the process liquid are made of stainless steel. Gaskets and seals in contact with product are made of nitrile rubber. The separator is designed for a standard highly efficient electric motor with rigid coupling and variable frequency drive (VFD).

Scope of supply

- Separator
- Set of tools
- Speed sensor kit
- Start & control cabinet
- Process liquid unit
- Service liquid unit
- Sight glass

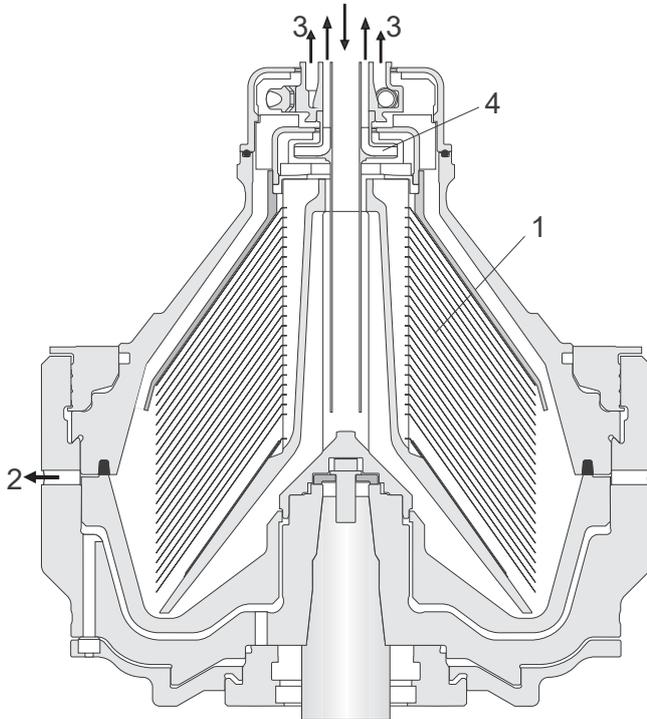


Options

- Associated system (foundation, inlet/outlet/utility piping, valves, gauges)
- Stainless steel frame top part
- Vibration sensor kit

Working principle

The feed enters the separator bowl from the top. Separation takes place between the bowl discs where the light liquid phase moves towards the centre of the bowl and the heavy phase and solids moves towards the periphery. The separated liquids leaves the separator bowl in the top, where the light phase is pressurized by a paring disc. The heavy phase is led over a top disc into a chamber where an adjustable paring device pumps it out of the separator. The solids are collected in the periphery of the bowl and discharged hydraulically.



Typical bowl drawing for a solids-ejecting separator. The details illustrated do not necessarily correspond to the separator described.

1. Disc stack
2. Discharge port
3. Heavy phase outlet
4. Light phase outlet

Technical data

Performance data VO 10	
Hydraulic capacity ¹⁾	10 m ³ /h (44 US gpm)
Nominal capacity ²⁾	100 TPD (220 462 US lbs/day)
Maximum discharge capacity	3 litre (0,79 gallon)
Maximum motor power	18.5 kW (24,8 HP)

¹⁾: Actual capacities depend on operating conditions, and type of oil and fat to be treated

²⁾: Crude palm oil washing application, capacities depends on operating conditions

Performance data VO 20

Hydraulic capacity ¹⁾	18 m ³ /h (79 US gpm)
Nominal capacity ²⁾	200 TPD (440 925 US lbs/day)
Maximum discharge capacity	3 litre (0,79 gallon)
Maximum motor power	18.5 kW (24,8 HP)

¹⁾: Actual capacities depend on operating conditions, and type of oil and fat to be treated

²⁾: Crude palm oil washing application, capacities depends on operating conditions

Performance data VO 30

Hydraulic capacity ¹⁾	20 m ³ /h (88 US gpm)
Nominal capacity ²⁾	300 TPD (661 387 US lbs/day)
Maximum discharge capacity	3 litre (0,79 gallon)
Maximum motor power	22 kW (29,5 HP)

¹⁾: Actual capacities depend on operating conditions, and type of oil and fat to be treated

²⁾: Crude palm oil washing application, capacities depends on operating conditions

Connections

Feed inlet	DN 50, SMS union
Light liquid phase outlet	DN 50, SMS union
Heavy liquid phase outlet	DN 65, SMS union
Solids outlet	107 mm 4 7/32" SMS union

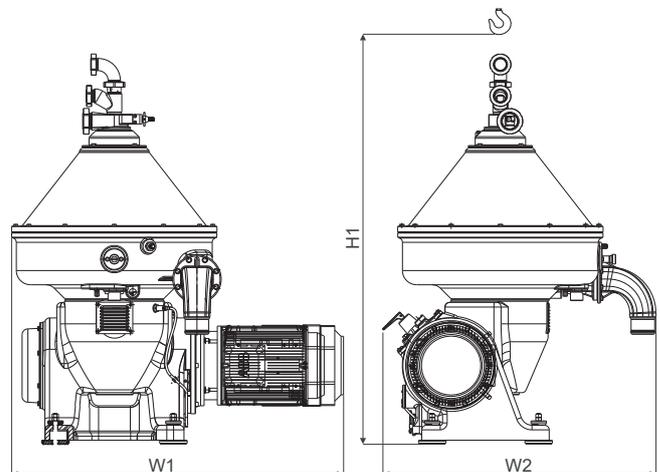
Material data

Bowl body	Stainless steel
Frame top part	Cast grey iron (option stainless steel)
Frame bottom part	Cast grey iron
Gaskets and O-rings	Nitrile

Shipping data (approximate)

Gross weight	1504 kg (3,316 lbs)
Bowl weight	279 kg (615 lbs)
Volume	5 m ³ (176 ft ³)

Dimensional drawing



Dimensions

H1	Minimum 2000 mm (6 ft 6 6/8 inch)
W1	1383 mm (4 ft 6 4/8 inch)
W2	1180 mm (3 ft 10 4/8 inch)

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PX 65 & PX 65EX

Medium-capacity disc stack centrifuge for fats and oils refining

The Alfa Laval range of centrifuges for the vegetable oil and animal fat refining industries is continuously modernized to take advantage of developments in materials, mechanical design and fluid dynamics. The PX 65/65EX is a medium-sized machine in this range of centrifuges.

Applications

Continuous degumming, neutralizing, dewaxing and washing of fatty oils, such as vegetable oils, lard, tallow and fish oil.

Performance

The table below shows nominal capacities. Actual throughputs vary according to the type of oil and fat to be treated.

Degumming, neutralization, washing	10,500 kg/h
Dewaxing	6,250 kg/h

Standard design

The machine consists of a frame with a base that contains a horizontal drive shaft, worm gear, lubricating oil bath and hollow vertical bowl spindle. The bowl is fixed on top of the spindle, inside the space formed by the upper part of the frame, the solids collecting cover and the frame hood. The hood carries the liquid discharge system.

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 intermittent solids discharge.

The standard electric motor is suitable for variable frequency drive.

Design features

The PX 65/65EX is based on a unique, semi-hermetic design concept. The hermetic, bottom-fed inlet ensures a gentle, non-destructive acceleration of the feedstock up to full bowl speed.

The flow area for the feedstock is designed to minimize inlet pressure drop. 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 devices for removal of the different phases. The paring disc on the light phase is fixed, while the paring tubes on the heavy phase are adjustable.



PX 65 complete with motor

By adjusting a positioner on the heavy phase outlet, the operator can reduce or enlarge the paring diameter of the paring tubes. This patented innovation makes it possible to adjust the position of the separation interface during operation, facilitating optimal separation.

With the working environment in mind, the PX 65/65EX is designed to operate at low noise levels. This is achieved by means of a rubber-damped bearing assembly, jacketed frame and an outer bowl design, which is engineered for low wind noise.

Basic executions

PX 65 for non-explosive environments.

PX 65EX for ATEX zone 2.

Standard equipment

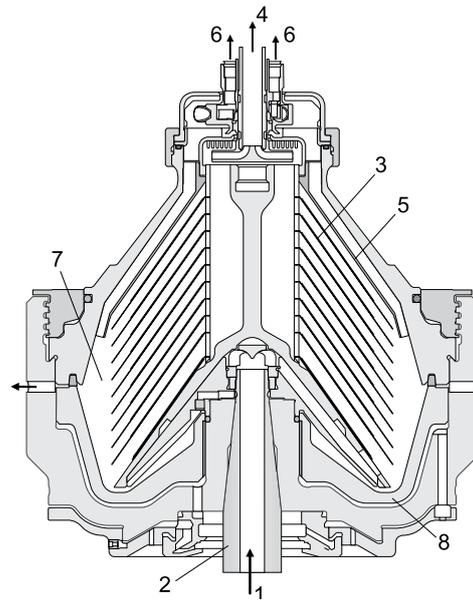
Each PX 65/65EX comes complete with control unit, electric motor, inlet and outlet connections, auxiliary equipment, a spare parts kit and a set of tools.

Operating principles

The oil 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 an adjustable 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.



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

Material data

Bowl body, hood and lock ring	s.s. 1.4418 UNS
Frame top part and hood	s.s. 1.4401 UNS S31600
Frame bottom part	Cast iron, clad with s.s. 1.4301 UNS 30400
Gaskets and O-rings	Nitrile rubber

Shipping data (approximate)

Separator incl. bowl and motor	1,425 kg (3,140 lbs)
Bowl	310 kg (685 lbs)
Gross weight	1,750 kg (3,860 lbs)
Volume	5 m ³ (177 cft)

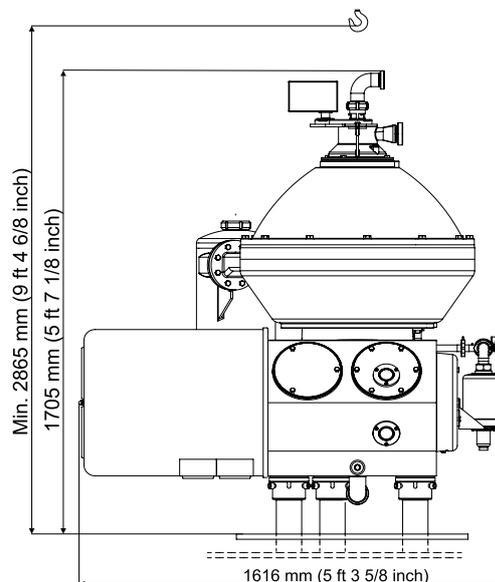
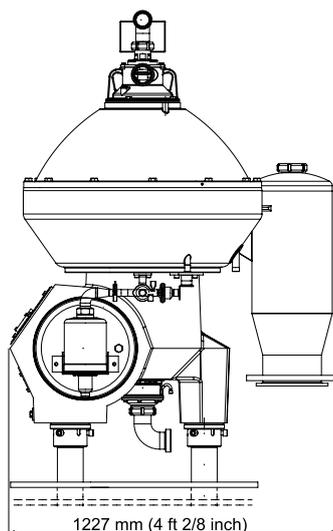
Technical specifications

Throughput capacity	max. 15 m ³ /h (66 US gpm)
Bowl speed, synchronous	7,450 rpm
Bowl volume	15 l (3.97 US gal)
Sludge space	4.6 l (1.2 US gal)
Motor power installed	25 kW (33.5 HP)
Inlet pressure at 15 m ³ /h (66 US gpm)	0 kPa
Sound pressure level	76 dB (A)
Overhead hoist lifting capacity	min. 900 kg (1,984 lbs)

ATEX design codes

EX II 3 G T4 X for zone 2

Dimensions



PCHS00087EN 1105

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PX 100 & PX 100EX

High-capacity disc stack centrifuge for fats & oil refining

The Alfa Laval range of centrifuges for the vegetable oil and animal fat refining industries is continuously modernized to take advantage of developments in materials, mechanical design and fluid dynamics. The PX 100/100EX is a large-sized machine in this range of centrifuges.

Applications

Continuous degumming, neutralizing, dewaxing, and washing of fatty oils, such as various vegetable oils, lard, tallow, and fish oil.

Performance

The table below shows nominal capacities. Actual throughputs vary according to the type of oil and fat to be treated.

Degumming, neutralization, washing	34,000 kg/h
Dewaxing	17,000 kg/h

Standard design

The machine consists of a frame with a base that contains a horizontal drive shaft, worm gear, lubricating oil bath and the hollow vertical bowl spindle. The bowl is fixed on top of the spindle inside the space formed by the upper part of the frame, the solids collecting cover and the frame hood. The hood carries the liquid discharge system. All parts in contact with the process liquid are made of stainless steel.

The bowl is of the solids-ejecting type with an automatic hydraulic operating system for intermittent solids discharge. The standard electric motor is suitable for variable frequency drive.

Design features

The PX 100/100EX is based on a unique, semi-hermetic design concept. The hermetic, bottom-fed inlet ensures a gentle, non-destructive acceleration of the feedstock up to full bowl speed.

The flow area for the feedstock is designed to minimize inlet pressure drop. 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 devices for removal of the different phases. The paring disc on the light phases is fixed, while the paring tubes on the heavy phase are adjustable.



PX 100 complete with motor

By adjusting a positioner on the heavy-phase outlet, the operator can reduce or extend the paring diameter of the paring tubes. This patented innovation makes it possible to adjust the flow rate of the heavy phase during operation, facilitating optimal separation. With the working environment in mind, the PX 100/100EX is designed to operate at low noise levels. This is achieved through a rubber-damped bearing assembly, jacketed frame and an outer bowl design, which is engineered for low wind noise.

Basic executions

PX 100 for non-explosive environments.

PX 100EX for ATEX zone 2.

Standard equipment

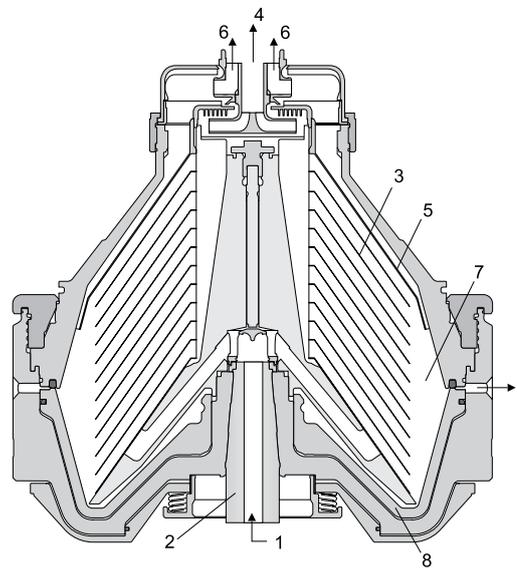
Each PX 100/100EX comes complete with control unit, electric motor, inlet and outlet connections, auxiliary equipment, a spare parts kit and set of tools.

Operating principles

The oil 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 an adjustable 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.



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

Material data

Bowl body, hood and lock ring	s.s. 1.4418
Frame top part and hood	s.s. 1.4401 UNS 31600
Frame bottom part	Cast iron clad with stainless steel 1.4301 UNS 30400
Gaskets and O-rings	Nitrile rubber

Shipping data (approximate)

Separator incl. bowl and motor	2,800 kg (6,200 lbs)
Bowl	1,160 kg (2,600 lbs)
Gross weight	3,200 kg (7,100 lbs)
Volume	5.4 m ³ (190 cuft)

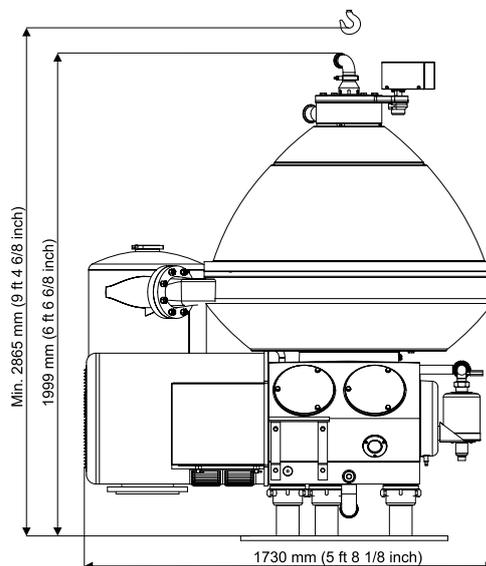
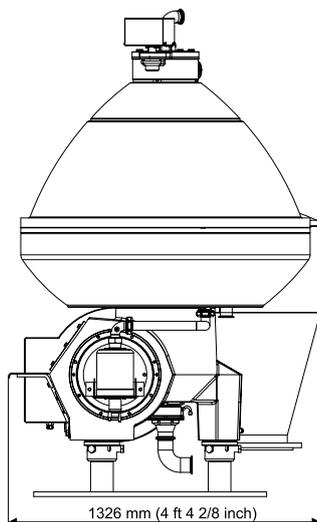
Technical specifications

Throughput capacity	max. 45 m ³ /h (200 US gpm)
Bowl speed	4,300 rpm
Bowl volume	72 l (19 US gal)
Sludge space	17 l (4.5 US gal)
Motor power installed	max. 37 kW (50 HP)
Inlet pressure at 38 m ³ /h (170 US gpm)	0 kPa
Sound pressure	78 dB(A)
Overhead hoist lifting capacity	min. 1,200 kg (2,700 lbs)

ATEX design codes

EX II 3 G T4 X for zone 2

Dimensions



PCHS00050EN 1105

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PX 115 & PX 115EX

High-capacity disc stack centrifuge for fats & oil refining

The Alfa Laval range of centrifuges for the vegetable oil and animal fat refining industries is continuously modernized to take advantage of developments in materials, mechanical design and fluid dynamics. The PX 115/115EX is a large-sized machine in this range of centrifuges.

Applications

Continuous degumming, neutralizing, dewaxing, and washing of fatty oils, such as various vegetable oils, lard, tallow, and fish oil.

Performance

The table below shows nominal capacities. Actual throughputs vary according to the type of oil and fat to be treated.

Degumming, neutralization, washing	54,000 kg/h
Dewaxing	25,000 kg/h

Standard design

The machine consists of a frame with a base that contains a horizontal drive shaft, worm gear, lubricating oil bath and the hollow vertical bowl spindle. The bowl is fixed on top of the spindle inside the space formed by the upper part of the frame, the solids collecting cover and the frame hood. The hood carries the liquid discharge system. All parts in contact with the process liquid are made of stainless steel.

The bowl is of the solids-ejecting type with an automatic hydraulic operating system for intermittent solids discharge. The standard electric motor is suitable for variable frequency drive.

Design features

The PX 115/115EX is based on a unique, semi-hermetic design concept. The hermetic, bottom-fed inlet ensures a gentle, non-destructive acceleration of the feedstock up to full bowl speed.

The flow area for the feedstock is designed to minimize inlet pressure drop. 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 devices for removal of the different phases. The paring disc on the light phases is fixed, while the paring tubes on the heavy phase are adjustable.



PX 115 complete with motor

By adjusting a positioner on the heavy-phase outlet, the operator can reduce or extend the paring diameter of the paring tubes. This patented innovation makes it possible to adjust the flow rate of the heavy phase during operation, facilitating optimal separation. With the working environment in mind, the PX 115/115EX is designed to operate at low noise levels. This is achieved through a rubber-damped bearing assembly, jacketed frame and an outer bowl design, which is engineered for low wind noise.

Basic executions

PX 115 for non-explosive environments.

PX 115EX for ATEX zone 2.

Standard equipment

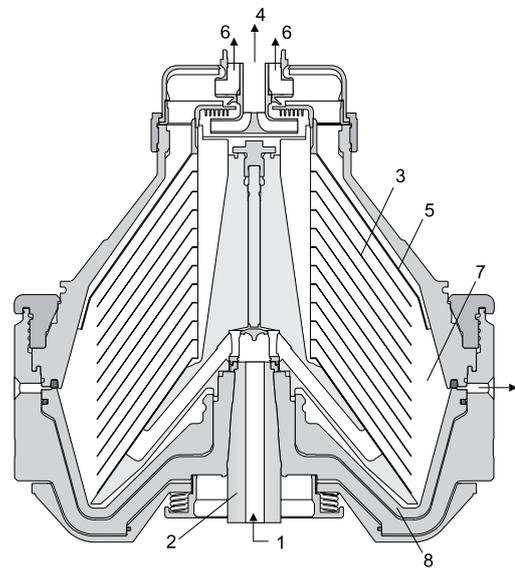
Each PX 115/115EX comes complete with control unit, electric motor, inlet and outlet connections, auxiliary equipment, a spare parts kit and set of tools.

Operating principles

The oil 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 an adjustable 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.



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

Material data

Bowl body, hood and lock ring	s.s. 1.4418
Frame top part and hood	s.s. 1.4401 UNS 31600
Frame bottom part	Cast iron clad with stainless steel 1.4301 UNS 30400
Gaskets and O-rings	Nitrile rubber

Shipping data (approximate)

Separator incl. bowl and motor	2,800 kg (6,200 lbs)
Bowl	1,160 kg (2,600 lbs)
Gross weight	3,200 kg (7,100 lbs)
Volume	5.4 m ³ (190 cuft)

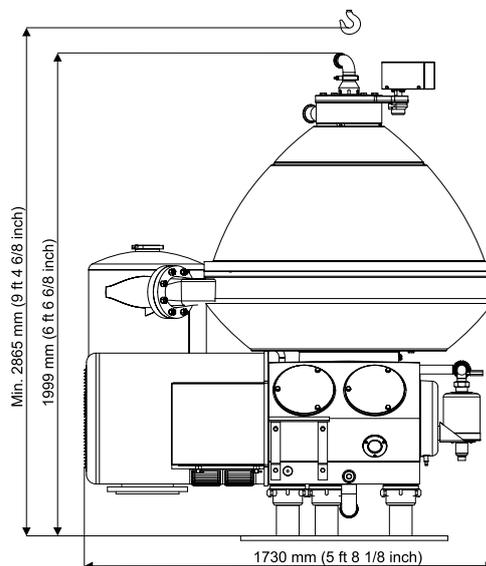
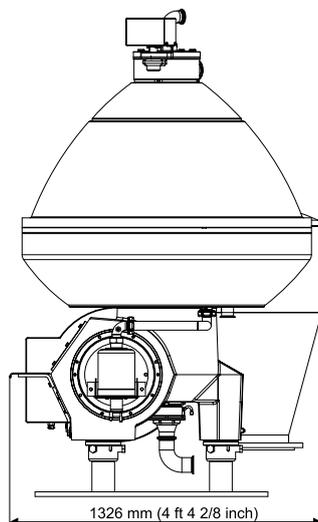
Technical specifications

Throughput capacity	max. 85 m ³ /h (370 US gpm)
Bowl speed	4,800 rpm
Bowl volume	72 l (19 US gal)
Sludge space	17 l (4.5 US gal)
Motor power installed	45 kW (60 HP)
Inlet pressure at 60 m ³ /h (260 US gpm)	0 kPa
Sound pressure	80 dB(A)
Overhead hoist lifting capacity	min. 1,200 kg (2,700 lbs)

ATEX design codes

EX II 3 G T4 X for zone 2

Dimensions



PCHS00051EN 1105

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

How to contact Alfa Laval

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

Press Oil Clarification Decanter

A continuous way to clarify the vegetable oil from the expeller press

Introduction

Alfa Laval Decanter Centrifuges for Pressed Oils makes the operation Continuous, Hygienic and reduces plant footprint. No more periodic shutdowns and labor intensive, messy removal of sticky/ oily cakes!

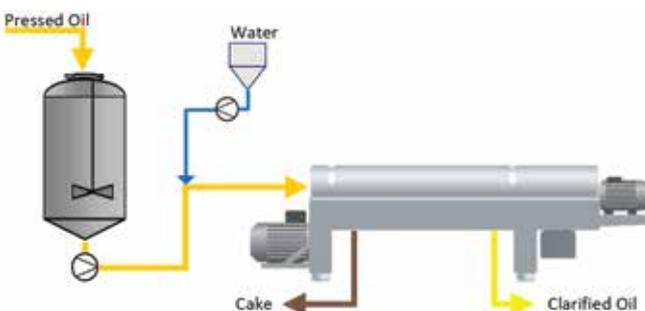
Conventional type filtration process uses Pressure Leaf Filter's (PLF) to filter expeller-cake from Seed Oils, like Corn, Mustard, Soya bean, Sunflower, and others.... Some oils to perform filtration will need a precoating of the PLF, which means additional filter aid consumption. To perform best, PLF requires dryer upstream, to avoid clogging of the filter due to moisture. PLF discharges cake discontinuously and therefore additional receiving tank with conveyor is required to be able to return separated impurities back into expeller with feed material

Alfa Laval Decanter Centrifuges use high centrifugal force to separate the cake from liquid, enables higher separation efficiency and reduces the footprint area by 1/3 of conventional technologies.

The technological know-how and experience of Alfa Laval both in decanter design and in the Vegetable Oil Industry have been combined to provide the best machine for the process. 'In plant' experience has shown the reliability of the Alfa Laval decanter with superior product quality on a wide variety of oils.

Process description

In most installations the Alfa Laval decanter is located downstream of the continuous expeller press. The expelled oil, typically containing up to 5-10 Vol % solids, passes in the decanter which handles the oil on a continuous basis.



To improve separation, hot water can be blended into the pressed oil. Water addition gives a partial degumming effect also. Clarified oil with less than 0,5% suspended solids and even down to 0,1% and less can be reached. The discharged solids or cake contain between 20 to 40 % Oil in Dry Matter, depending on process temperature.

Feed temperature is also a key parameter for separation efficiency and Alfa Laval decanter can accept feed temperature from cold press (< 60°C) to high temperature up to 130°C.



The clarified oil goes to storage or subsequent degumming /refining, whilst the cake is discharged continuously for feeding back to the expeller press. As the Alfa Laval decanter is self-cleaning, it can run for weeks without attention.

If the oil is to be degummed/refined within a short time, then no further treatment is required. However, if the oil is to be stored, then it should be vacuum dried, otherwise the residual moisture in the oil will hydrate the gums, which will precipitate in the storage tanks. After vacuum drying, the moisture content will be reduced to about 0.05 %.

Key features

- ✓ **Improved separation efficiency** via a clear separation between cake and liquid in the bowl. This allows to improve de-oiling of the cake and increase clarity of the oil.
- ✓ **Stable dryness of cake**, even with feed flow or composition variation, the torque regulation will maintain a constant cake outlet
- ✓ Decaners is **Easy to clean**: open liquid outlet design enables an effective cleaning at low water consumption.
- ✓ **Easy to service**: Due to its particularly smart design, Alfa Laval decaners centrifuge can be quick and cost effective serviced.
- ✓ **Friendly control interface PLUS** to control decanter assures an automated regulation of the performances.
- ✓ **Hygiene**: available for edible oil, with specific **Hygiene +** features, for the highest level of hygiene.