



## Flex separation systems, P-separators 625/635

Cleaning systems for lubricating, diesel and hydraulic oil applications



Flex system components for P-separators 625/635.

### S and P Flex separation systems

Alfa Laval's S and P Flex separation systems combine the high efficiency, low sludge output and low operating cost of Alfa Laval centrifugal separators with a flexible scope of supply. Extensive possibilities for the separation system layout and assembly make it possible to suit any installation and any oil separation application.

In addition, S and P Flex separation systems feature the new EPC 60 controller, which enables the intuitive navigation of menus, parameters and alarms. The EPC 60 controller also has a modular construction for easy I/O board addition and replacement.

Included in the S and P Flex separation concept are all S-separator models and P-separators 625/635, whose mechanical platform includes CentriLock and CentriShoot, as well as P-separators 605/615. These can be combined in mixed sets, even within a single customer-specified module.

### Application: P-separators 625/635

P-separators 625/635 are based on purifier technology, which means that the oil/water interphase is manually adjusted by means of a gravity disc. The separators are suitable for economical cleaning of the following:

- Lubrication oils
  - LO general
  - LO detergent type
  - LO morg oil / gear box (EP additives)
  - LO paper machines bearings
- Diesel oil
- Hydraulic oil

If the oil is well defined and does not vary in density, P-separators 625/635 can also be manually adjusted to clean heavy and viscous oils.

## Scope of supply

The S and P Flex separation concept provides a wide range of alternatives for P-separators 625/635. Depending on the need, a P-separator 625/635 can be supplied as a separator and ancillaries, as a customer-specified module, or as part of a comprehensive package including services and order-specific documentation.

### P 625/635 Flex system (block components)

A P-separator 625/635 with ancillaries in the form of block components provides optimised use of space. This allows for local modularization or do-it-yourself assembly.

### P 625/635 Flex modules

A compact P-separator 625/635 module can be built to a customer-specified configuration from a wide range of modular skids and machine blocks. Multi-modules are possible, as well as mixed modules including one or several S-separators and/or P-separators 605/ 615 for the simultaneous treatment of different types of mineral oils. All Flex modules are factory tested to ensure faster start-up and commissioning.

## Features and benefits

### ■ Small footprint, high flexibility

The small separator and the modular nature of the surrounding components allow easy installation and flexible positioning in the work shop.

### ■ No water tank

No tank is needed to supply operating water, which further simplifies installation.

### ■ High separation efficiency

An optimized design ensures the best possible separation efficiency from the bowl and disc stack.

### ■ CentriShoot

The CentriShoot discharge system greatly reduces sludge volumes. Its fixed discharge side flexes gently to expose the discharge ports, thereby eliminating metal-to-metal wear.

### ■ CentriLock

The CentriLock bowl-locking system uses a lightweight, non-threaded snap ring. This prevents wear by allowing easy removal without a sledgehammer.

### ■ Long service intervals

Wear-preventing features like CentriShoot and CentriLock reduce the consumption of spare parts and allow planned maintenance to be performed less often. This reduces operating costs.

## Module examples



**SINGLE FLEX MODULE**  
with separator (excluding heater and pump)



**SINGLE FLEX MODULE**  
with separator, heater and pump



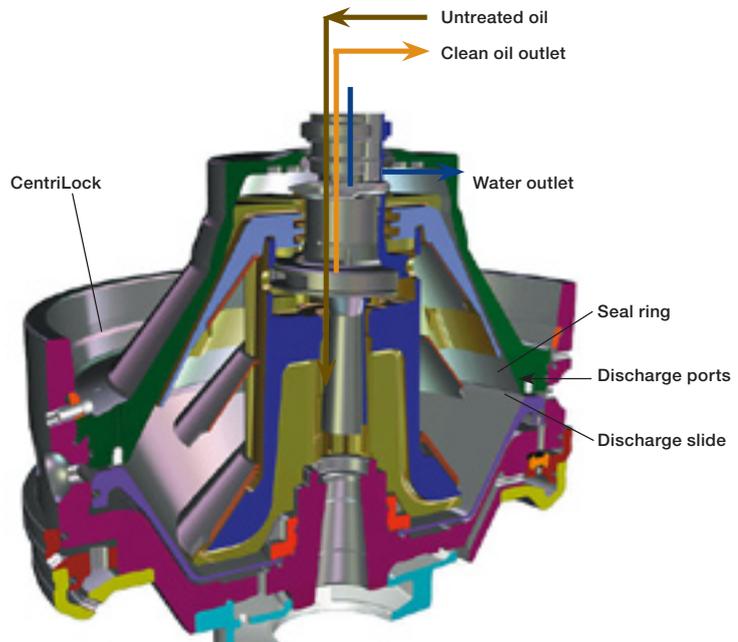
**QUADRUPLE FLEX MODULE**  
with separators, heaters and pumps

### ■ Easy operation and service

The new EPC 60 controller is designed for "one-button" starts and stops, as well as intuitive menu navigation. Information about parameters and alarms can be easily accessed, which simplifies both operation and trouble shooting. The EPC 60 also has an interchangeable and flexible design enabling faster troubleshooting and I/O board replacement.

### ■ Remote control and monitoring

Using Ethernet or MODBUS communication, Flex systems and modules based on P-separators 625/635 can be operated and supervised remotely from the control room. A variety of alarm functions are available as standard. Extra I/O boards can be added to the EPC 60 controller in order to enhance its operating and monitoring capabilities.



## Optional equipment

Flex separation systems based on P-separators 625/635 can be complemented with the following equipment:

- Starter (included in module versions)
- Heater
- Heater control board in EPC 60 controller
- Space heating
- Additional thermometers
- Vibration sensor kit
- Feed pump
  - Supplied loose
  - Mounted on a separate skid
  - Incorporated into a module
  - As a pump module (multiple pump skids mounted together)
- Flow regulating system
- Sludge removal kit
- Sludge outlet butterfly valve kit
- Pressure indicators
- Root valves for PI
- Needle valves
- Steam shut-off valve kit
- Air pressure reducer valve
- Special cable glands, extended cables
- Tailored pipe arrangement for multiple modules, including heater cross-connection
- Emergency safety shutdown
- Remote monitoring and control
- Separator lifting tool

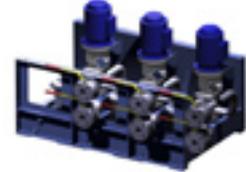
### Feed pump options



Pump delivered loose



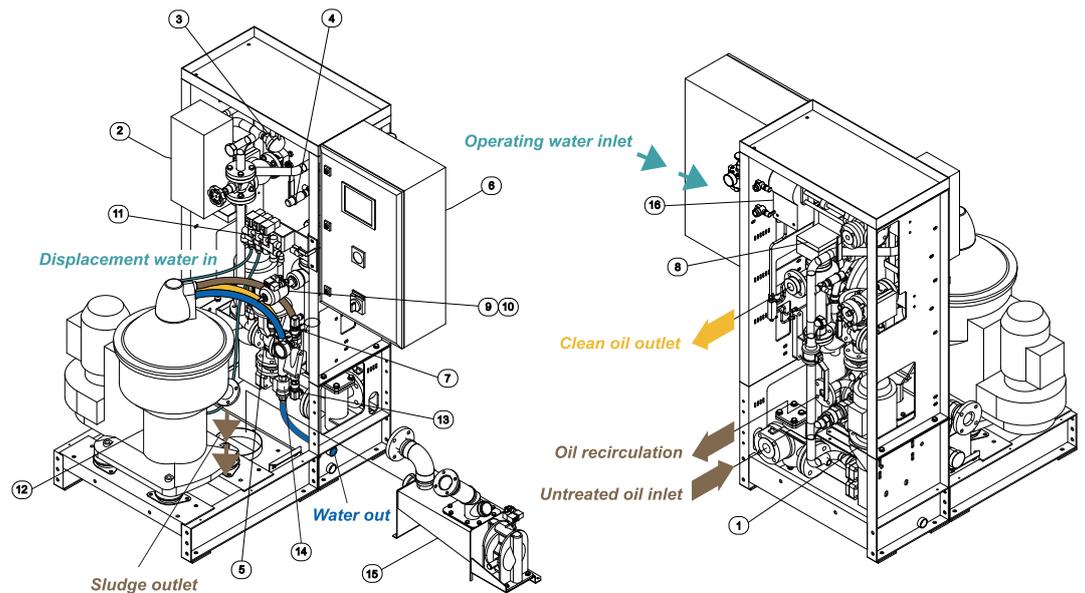
Pump mounted on skid



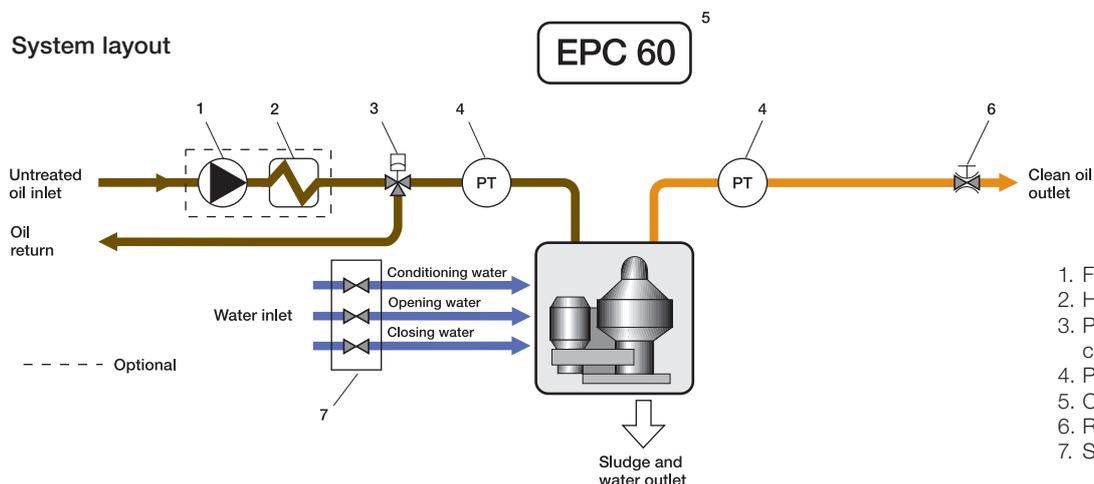
Pump module, 3 skids mounted together

### Schematic diagram

- 1 Feed pump
- 2 Heater
- 3 Temperature transmitter
- 4 Safety valve
- 5 Change-over valve
- 6 Process controller
- 7 Pressure transmitter – oil
- 8 Complete regulating valve
- 9 Regulating valve – oil
- 10 Pneumatic shut-off valve
- 11 Valve block water
- 12 Separator
- 13 Pressure transmitter – water
- 14 Drain valve
- 15 Sludge removal kit
- 16 Regulating valve



### System layout



1. Feed pump
2. Heater
3. Pneumatically controlled change-over valve
4. Pressure transmitter
5. Control unit
6. Regulating valve
7. Solenoid valve block, water

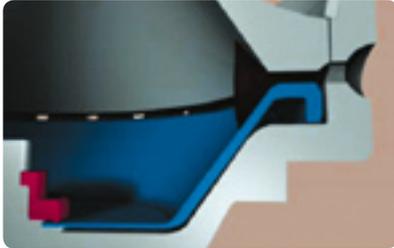
## CentriShoot

Instead of a sliding bowl bottom, the CentriShoot discharge system features a fixed discharge slide that flexes at its edge. This increases discharge accuracy and does away with metal-to-metal wear.



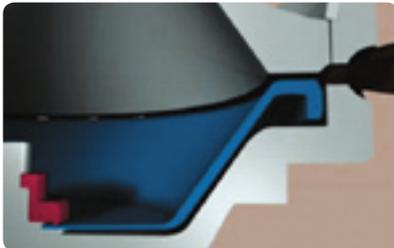
### STEP ONE:

The CentriShoot discharge slide is fixed at the centre. During separation, the slide covers the discharge ports.



### STEP TWO:

During sludge discharge, the edge of the slide flexes downward, exposing the discharge ports.



### STEP THREE:

After discharge, the slide moves gently back into position to close the ports. This is done hydraulically, without any springs.

## CentriLock

Conventional lock rings are threaded and must be removed with a sledgehammer. Over time, the metal-to-metal wear between bowl and lock ring can lead to expensive bowl repair or replacement.

Instead of a conventional lock ring, the CentriLock bowl-locking system features a non-threaded snap ring. This lightweight ring snaps quickly into place and is easily removed with only an Allen key.



An Allen key is the only tool needed to work with CentriLock. No sledgehammer is necessary.



The CentriLock snap ring lifts out and snaps in easily – without any threads to wear.

## Operating principle

A S and P Flex separation systems based on a P-separator 625/635 is operated automatically by the EPC 60 controller. Untreated oil, heated to the correct temperature, is fed continuously to the separator. The separator is driven by an electric motor via a friction clutch and belt.

The separator bowl is fixed at the top of a spindle, which is supported by bearings and special composite springs. This bowl can be arranged as a purifier or as a clarifier. Both configurations remove sludge, which accumulates at the bowl periphery and is intermittently discharged by the high-precision CentriShoot discharge system.

In a purifier configuration, both sludge and water are separated from the oil, which means that water is continuously discharged from the bowl. The EPC 60 controller automatically controls the admission of water for the water seal and the displacement of oil prior to sludge discharge, but a gravity disc is needed to establish the correct interphase position in the separator bowl, i.e. the boundary between the oil and the water seal. The size of the gravity disc must be matched to the oil's density, viscosity/temperature and feed rate to the separator.

In a clarifier configuration, a clarifier disc is fitted instead of a gravity disc. The water outlet is blocked, which means that the separator's water-handling capacity is limited and that water accumulates like sludge.

During normal operation, vital process parameters are monitored. These parameters, as well as alarms, are indicated by easy-to-understand text messages on the LCD display of the EPC 60 controller.

The EPC 60 controller provides many alarm functions, including alarms for low oil pressure, high sludge tank level (if the optional sludge removal kit is included) and power failure. Additional functions are available for a vibration alarm when the optional vibration sensor is fitted.

## Service and documentation

Preventive maintenance procedures are handled quickly and simply with the help of a compression tool. The snap ring of the patented CentriLock bowl-locking system is non-threaded and requires only an Allen key to remove.

### ■ Maintenance intervals:

- Inspection Service every 4000 h or 6 months.
- Overhaul Service every 12 000 h or 18 months.

### ■ Service spares kits contain all necessary spare parts for each service and maintenance checkpoint:

- Inspection Kit with O-rings and seals for separator bowl.
- Overhaul Kit with parts for drive system, belt, bearings and pads. Also contains an Inspection Kit.
- Support Kit with strategic spares for operation and maintenance backup.

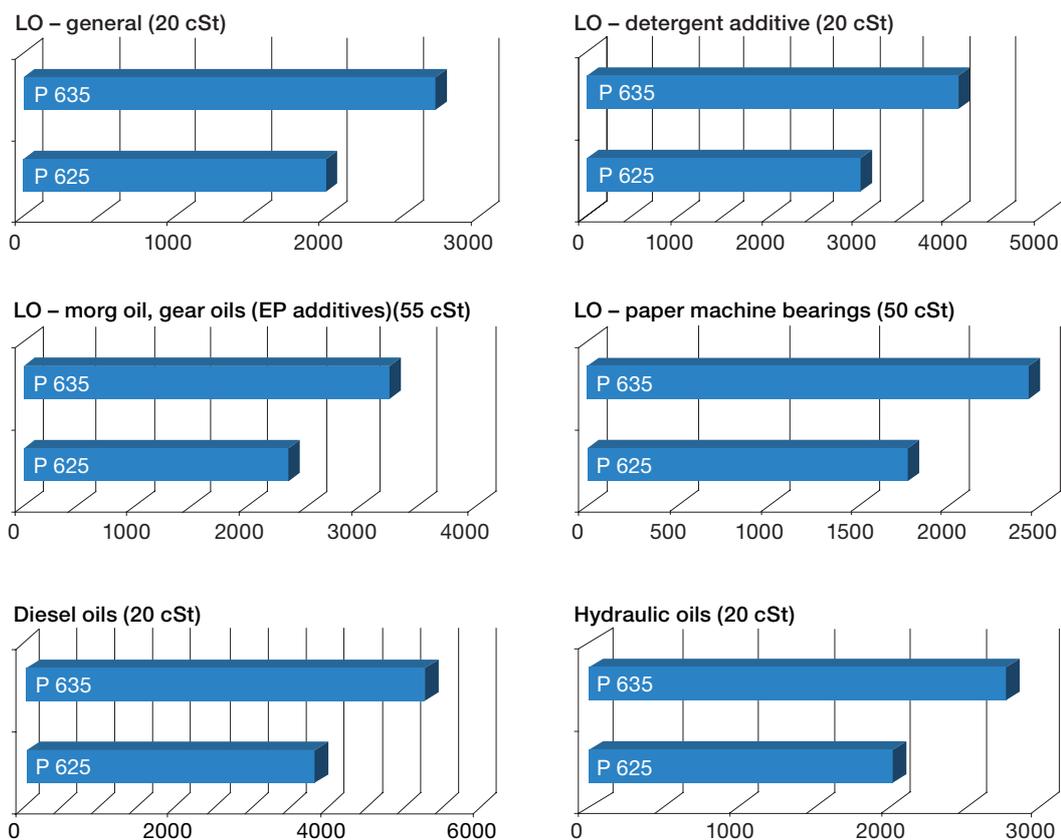
- The System Manual includes detailed information in electronic or printed form:
  - Installation instructions.
  - Operating instructions.
  - Alarms and troubleshooting.
  - Service and spare parts.
- Commissioning and technical services including start-ups, are available from all Alfa Laval offices.
- All services can be incorporated into specially tailored Nonstop Performance packages. Details are available from local Alfa Laval offices.

This leaflet contains data for Flex systems and modules based on P-separators 625/625 only. For data on the other separators within the Flex concept, refer to the Flex separation system leaflets for P-separators 605/615 and S-separators.

**TECHNICAL DATA**

Main supply voltage	3-phase, 220 V up to 690 V
Control voltage	1-phase, 100/110/115/230 V
Frequency	50 or 60 Hz
Control air	Min 5 bar, max 8 bar
Operating water pressure	Min 2 bar, max 6 bar

**Flow rates at recommended viscosity (L/h)**



**How to contact Alfa Laval**

Contact details for all countries are continually updated on our web site. Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information direct.