



Flex separation systems, P-separators 605/615

Cleaning systems for lubricating and lighter fuel oils*

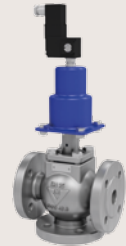
Separator



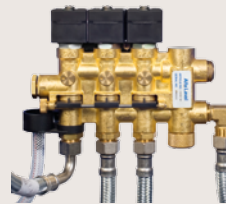
EPC 60 controller



Change-over valve



Water block



Control cabinet including EPC 60 and optional starter



Flex system components for P-separators 605/615.

* P-separators 605/615 can also be used to clean heavier oils with well-defined densities.

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 engine room and any oil separation application.

In addition, S and P Flex separation systems feature the 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.

The S and P Flex separation concept includes the complete S- and P-separator range. These can be combined in mixed ship sets, even within a single customer-specified module.

Application P-separators

P-separators are based on purifier technology, which means that the oil/water interphase is manually adjusted by means of a gravity disc. Because the separators do not automatically adjust to varying oil density, they are most suitable for economical cleaning of the following:

- Lubrication oils
- Distillates
- Lighter diesel oils

If the oil is well defined and does not vary in density, P-separators can also be manually adjusted to clean heavy fuel oils with densities up to 991 kg/m³ and viscosities up to 700 cSt/50°C.

P-separators are designed for automatic operation at sea and in automated power stations ashore.

Scope of supply

The S and P Flex separation concept provides a wide range of alternatives for P-separators. Depending on the need, a P-separator 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.

Flex system

A P-separator with ancillaries in the form of optimized block components provides full say over the use of space. This allows for local modularization or do-it-yourself assembly.

Flex modules

A compact P-separator 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 more S-separators and/or P-separators for the simultaneous treatment of different types of mineral oils. All Flex modules are factory tested to ensure faster start-up and commissioning.

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



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 engine room.

- **Simple installation**

No tank is needed to supply operating water and no pipe is needed to discharge it, which further simplifies installation.

- **Separate feed pump**

A separate feed pump reduces pipe-work to and from the preheater.

- **High separation efficiency**

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

- **Low oil loss**

The separator's highly efficient displacement ensures that virtually no oil is lost.

- **Efficient discharge**

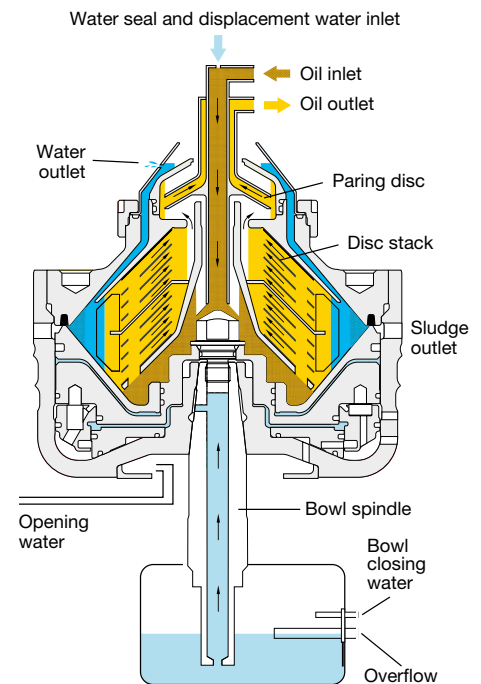
Separated sludge and water are efficiently removed from the system.

- **Easy operation and service**

The PLC based 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 troubleshooting. The EPC 60 also has a modular construction that enables faster troubleshooting and I/O board replacement.

- **Remote monitoring**

Using either Ethernet or Bus communication, Flex systems and modules based on P-separators 605/615 can be supervised remotely from the control room. A variety of alarm functions are available as standard, and extra I/O boards can be added to the EPC 60 controller in order to enhance its monitoring capabilities.



Operating principle

A Flex separation system based on a P-separator 605/615 is operated automatically by the EPC 60 controller, apart from the starting of the separator. Untreated oil, heated to the correct temperature, is fed continuously to the separator, which 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.

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 inter-phase 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.

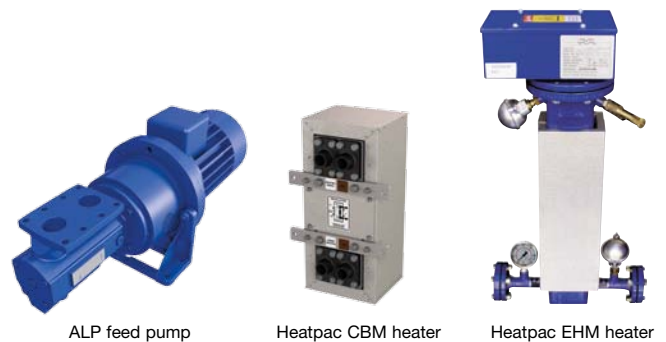
During normal operation, vital process parameters are monitored. These parameters, as well as alarms, are indicated by easy-to-understand text messages on the LCD display of the EPC 60 controller.

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 switch is fitted.

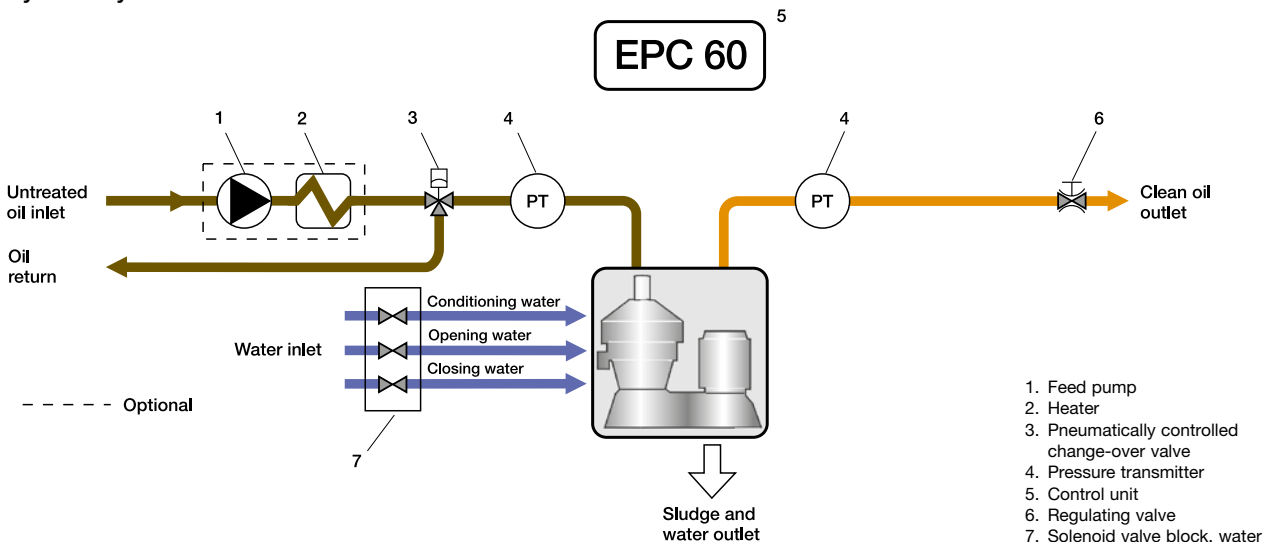
Optional equipment

Flex separation systems based on P-separators 605/615 can be complemented with the following equipment:

- Starter (included in module versions)
- Heatpac heaters
- Space heating
- Additional thermometers
- Vibration switch
- ALP feed pump
- Strainer
- Flow regulating system
- Sludge removal kit
- Sludge outlet butterfly valve kit
- Steam shut off valve kit
- Air pressure reducer valve
- Pipe arrangement for multiple modules, including heater cross connection
- Emergency safety shutdown
- Remote monitoring



System layout

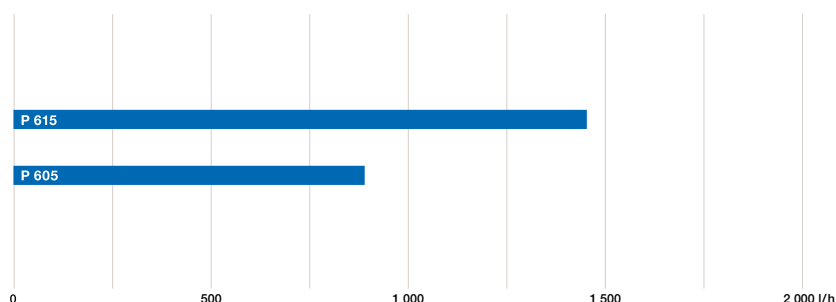


Operations

A preventive maintenance programme using Alfa Laval Service Kits ensures safe and easy maintenance.

- Recommended maintenance intervals:
 - Intermediate Service every 2 000 hours or 3 months
 - Major Service every 8 000 hours or 12 months
- Service kits contain all necessary spare parts for each service and tips for maintenance at regular intervals:
 - Intermediate Service Kit with O-rings and seals for separator bowl, inlet and outlet
 - Major Service Kit with parts for drive system, belt, bearings and friction pads
- 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 startup assistance and advice on operation and maintenance, are available from all Alfa Laval offices.
- Training in all aspects of oil treatment, freshwater generation and heat transfer is available.
- All services can be incorporated into specially tailored Nonstop Performance packages. Details are available from local Alfa Laval offices.

Max. recommended capacity, l/h on lubricating oils for trunk piston engines



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 8 bar

Flex system	Size (height x width x length)*	Net weight*
P 605	888 x 750 x 1035	278 kg
P 615	888 x 750 x 1035	285 kg

* Dimensions and weights for Flex systems do not include control cabinet.

Flex module	Size (height x width x length)**	Net weight**
P 605	1750 x 750 x 1075	425 kg
P 615	1750 x 750 x 1075	430 kg

** Dimensions and weights for Flex modules do not include pump and heater.



Conformity

The mark of conformity confirms that the equipment complies with European Economic Area (EEA) directives.

EMD00231EN 1304

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.com