Flex separation systems, P-separators 605/615

Cleaning systems for lubricating, diesel and hydraulic oil applications

Separator

EPC 60 controller

Change-over valve

Water block

Control cabinet incl EPC 60 and optional starter

Flex system components for P-separators 605/615.

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 605/615

P-separators 605/615 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 605/615 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 605/615. Depending on the need, a P-separator 605/615 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 605/615 Flex system (block components)

A P-separator 605/615 with ancillaries in the form of block components provides optimised use of space. This allows for local modularization or do-it-yourself assembly.

P 605/615 Flex modules

A compact P-separator 605/615 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 625/635 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

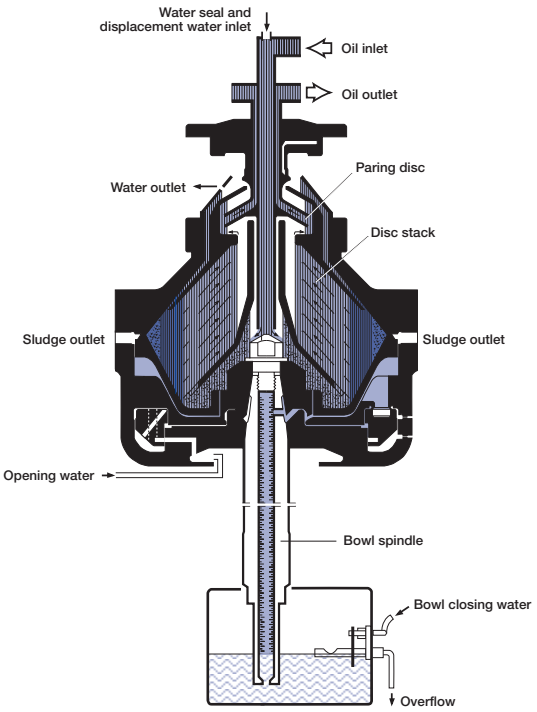
SINGLE FLEX MODULE
with separator (excluding heater and pump)

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 work shop.
- *No water tank or discharge pipe*
  No tank is needed to supply operating water, and no pipe is needed to discharge it. This further simplifies installation.
- *Separate feed pump*
  A separate feed pump reduces pipework to and from the preheater.
- *High separation efficiency*
  An optimized design ensures the best possible separation efficiency from the bowl and disc stack.
- *Efficient displacement*
  The separator's highly efficient displacement ensures that virtually no oil is lost.
- *Effective discharge*
  Separated sludge and water are efficiently removed from the system.
- *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 troubleshooting. The EPC 60 also has an interchangeable and flexible design enabelling faster trouble-shooting and I/O board replacement.
- *Remote monitoring*
  Using either Ethernet or MODBUS 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. Extra I/O boards can be added to the EPC 60 controller in order to enhance its monitoring capabilities.



Operating principle

A S and P Flex separation systems 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. 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.

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 switch is fitted.

Optional equipment

- Starter (always included in module version)
- Feed pump (see delivery options)
- Strainer
- Heater
- Space heating
- Temperature transmitter
- Additional thermometers
- Safety valve
- Pressure transmitters
- Steam shut-off valve kit
- Sludge removal kit
- Regulating valves
- Needle valves
- Air pressure reducer valve
- Vibration switch
- Flow regulating system
- Sludge outlet valve kit
- Emergency safety shutdown
- Remote monitoring
- Special cable glands, extended cables
- Tailored pipe arrangement for multiple modules, incl. heater cross connection

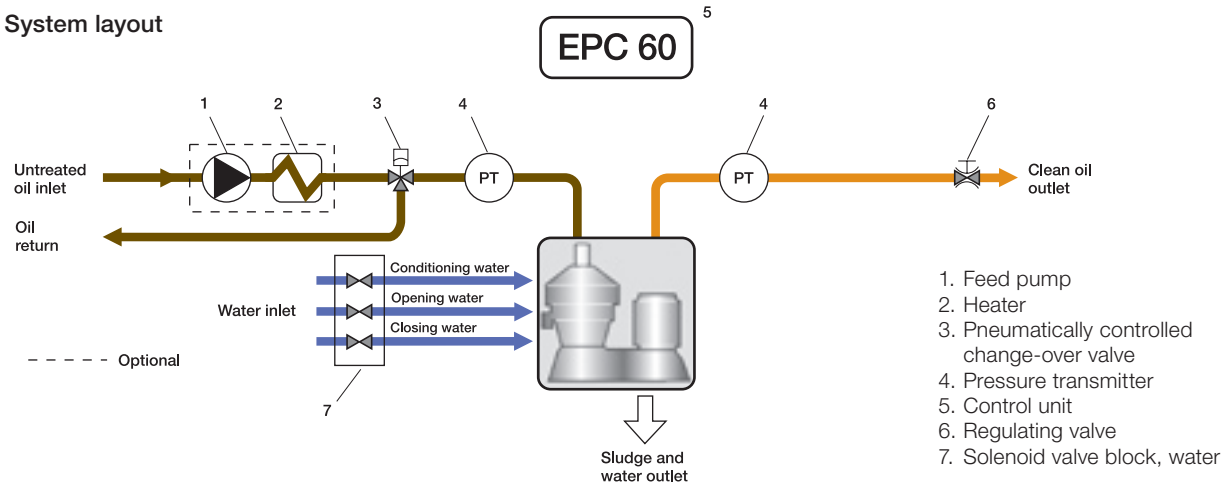
Feed pump options

Pump delivered loose

Pump mounted on skid

Pump module, 3 skids mounted together

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

Service and documentation

A preventive maintenance programme based on service kits has been developed.

- Maintenance intervals:
  - Intermediate Service every 2000 h or 3 months.
  - Major Service every 8000 h or 12 months.
- Service spares kits contain all necessary spare parts for each service and maintenance checkpoint:
  - 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 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 605/615 only. For data on the other separators within the Flex concept, refer to the Flex separation system leaflets for P-separators 625/635 and S-separators.

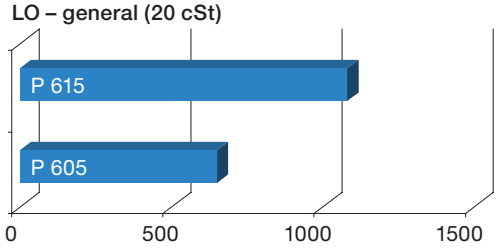
TECHNICAL DATA

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

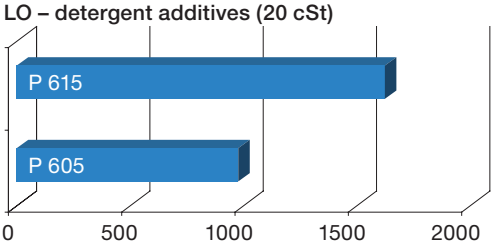
Conformity
The mark of conformity confirms that the equipment complies with European Economics Area (EEA) directives.

Flow rates at recommended viscosity (L/h)

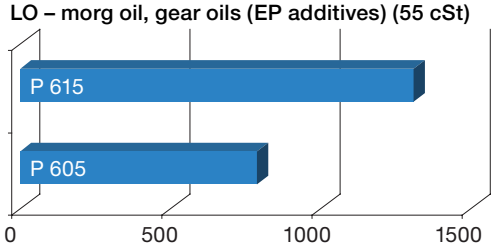
LO – general (20 cSt)



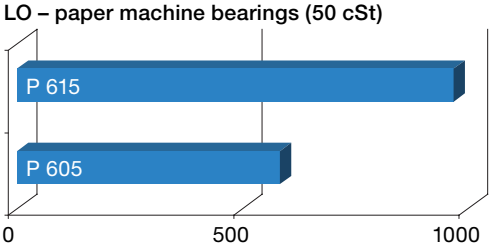
LO – detergent additives (20 cSt)



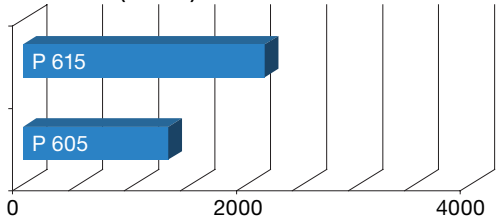
LO – morg oil, gear oils (EP additives) (55 cSt)



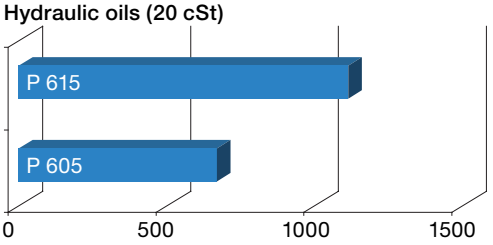
LO – paper machine bearings (50 cSt)



Diesel oils (20 cSt)



Hydraulic oils (20 cSt)



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How to contact Alfa Laval
Contact details for all countries are continually updated on our web site. Please visit www.alfalaval.com to access the information direct.