



Flex separation systems, S-separators 805/815

Cleaning systems for heavy fuel oils*



Flex system components for S-separators 805/815.

* S-separators 805/815 can also be used to clean lighter fuel oils and lubricating oils.

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 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 all be combined in mixed ship sets, even within a single customer-specified module.

Application S-separators

S-separators are based on Alcap technology, which means they automatically adjust the oil/water interphase and also supervise the water content in the clean oil outlet. This makes them particularly suitable for separating heavy fuel oils with varying density, although they can be used to clean all of the following:

- Heavy fuel oils with densities up to 1 010 kg/m³ and viscosities up to 700 cSt/50°C (higher viscosities available upon request)
- Lubricating oils
- Distillates
- Lighter diesel oils

S-separators 805/815 optimized for lower flows onboard small ships combine ease of use, low operating cost and robust design ensuring high reliability. They are designed for automatic operation in periodically unmanned engine rooms 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 S-separators. Depending on the need, an S-separator can be supplied as a separator with ancillaries, as a customer-specified module or as part of a comprehensive package including services and order-specific documentation.

Flex system

An S-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 S-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.

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.
- *Optimum performance with Alcap technology*
A water transducer in the clean oil outlet automatically adjusts the oil/water interphase to maximize separation performance.
- *High separation efficiency*
An optimized design ensures the best possible separation efficiency from the bowl and disc stack.
- *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.
- *Low oil loss*
The separator's highly efficient displacement ensures that virtually no oil is lost.

Module examples



Single Flex module
with separator (excluding heater and pump)

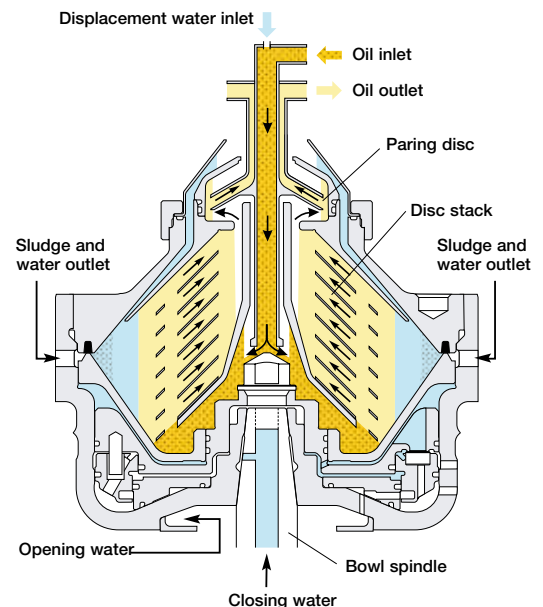


Single Flex module
with separator, heater and pump



Quadruple Flex module
with separators, heaters and pumps

- *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 S-separators 805/815 can be supervised remotely from the control room. A variety of alarm functions is 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 S-separators 805/815 is operated automatically by the EPC 60 controller, except at startup. 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 springs. During operation separated sludge and water accumulate at the bowl periphery and are intermittently discharged by the high-precision discharge system.

Operation of the separator is based on the Alcap principle, which means the separator automatically adjusts to the density of the oil. Thus, no gravity disc is needed. A water transducer in the clean oil outlet measures capacitive resistance and signals changes to the EPC 60 controller.

When the water content has increased or the timer setting has expired, the system automatically discharges the accumulated water and sludge through the bowl discharge ports during a controlled sludge discharge.

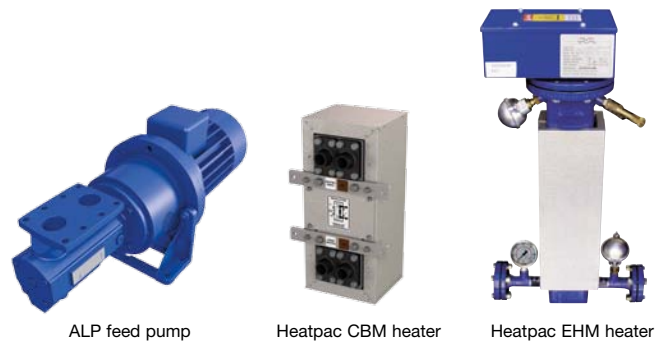
During normal operation, vital process parameters are monitored. These parameters, as well as alarms, are indicated by easy-to-understand text messages on the LCD display of the EPC 60 controller.

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 as well.

Optional equipment

Flex separation systems based on S-separators 805/815 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

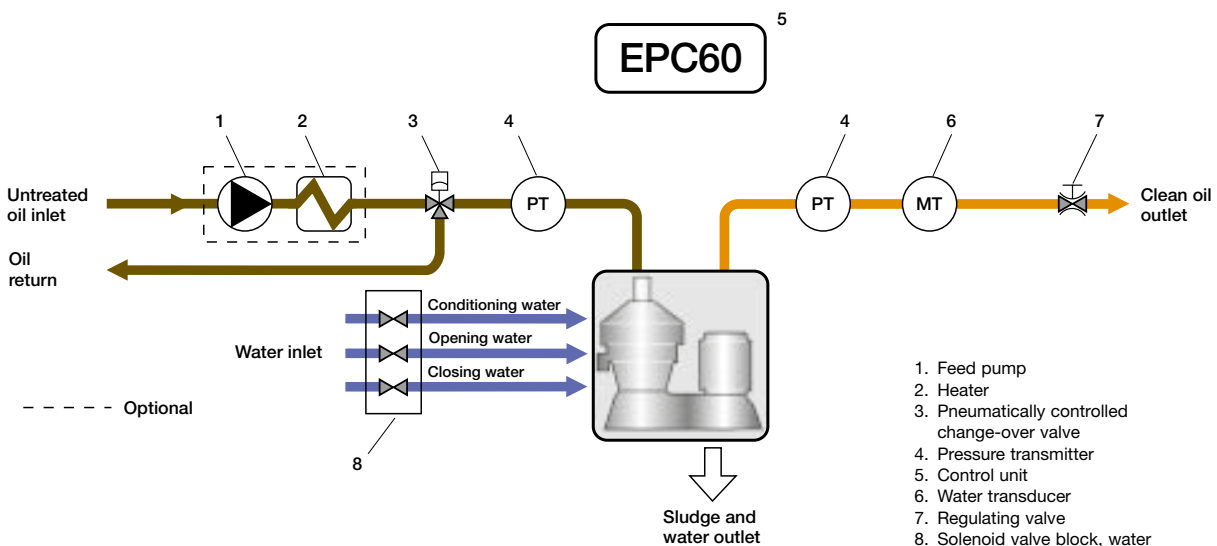


ALP feed pump

Heatpac CBM heater

Heatpac EHM heater

System layout

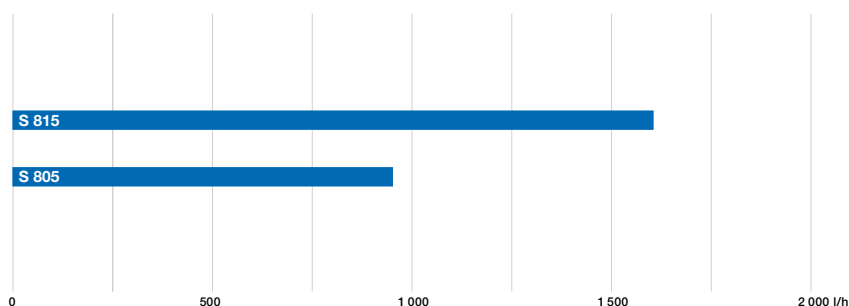


Operations

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 on HFO 380 cSt/50°C



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*
S 805	928 x 750 x 1035	286 kg
S 815	928 x 750 x 1035	293 kg

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

Flex module	Size (height x width x length)**	Net weight**
S 805	1750 x 750 x 1075	433 kg
S 815	1750 x 750 x 1075	438 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.

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