

# Alfa Laval P separators 626/636/646

Cleaning systems for lubricating, diesel and hydraulic oil applications



## Introduction

Alfa Laval's 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, P Flex separation systems feature the new EPC 70 controller, which enables the intuitive navigation of menus, parameters and alarms. The EPC 70 controller also has a modular construction for easy I/O board addition and replacement.

Included in the Flex separation concept are all S separator models and P separators P separators 626/636/646, whose mechanical platform includes CentriLock and CentriShoot, as well as P separators P separators 626/636/646. These can

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

## Application

P separators P separators 626/636/646 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

For treatment of other oil types, please consult your local Alfa Laval office.

If the oil is well defined and does not vary in density, P separators P separators 626/636/646 can also be manually adjusted to clean heavy and viscous oils.

## 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.
- *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.
- *Easy operation and service* — The PLC based EPC 70 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 70 also has an interchangeable and flexible design that enables faster troubleshooting and I/O board replacement.
- *Remote control and monitoring* — Using Ethernet or MODBUS communication, Flex systems and modules based on P separators 626/636/646 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 70 controller in order to enhance its operating and monitoring capabilities.
- *Future proof design* — The EPC 70 control system has a new, more powerful, CPU which provides better processing capacity. It is prepared for integrated communication with other systems and Alfa Laval connected services.

## Design



1. Single Flex module with separator (excluding heater and pump)
2. Single Flex module with separator, heater and pump
3. Quadruple Flex module with separators, heaters and pumps

The P Flex separation concept provides a wide range of alternatives for P separators 626/636/646. Depending on the need, a P separator P separators 626/636/646 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 626/636/646 system** (block components) — A P separator P separators 626/636/646 with ancillaries in the form of block components provides optimized use of space. This allows for local modularization or do-it-yourself assembly.

**P 626/636/646 Flex modules** — A compact P separator P separators 626/636/646 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 626/636 for the simultaneous treatment of different types of mineral oils. All Flex modules are factory tested to ensure faster start-up and commissioning.

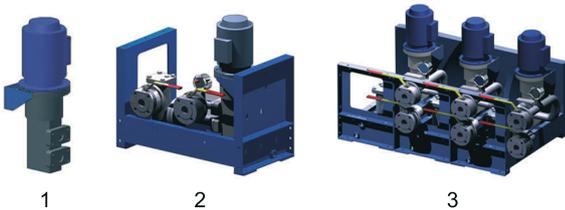
## Scope of supply

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 4 000 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 startup assistance and advice on operation and maintenance, are available from all Alfa Laval offices.
- All services can be incorporated into specifically tailored Nonstop Performance packages. Details are available from local Alfa Laval offices.

### Options



1. Pump delivered separately
2. Pump mounted on skid
3. Pump module, 3 skids mounted together

Flex separation systems based on P separators 626/636/646 can be complemented with the following equipment:

- Starter (always included in module version)
- Heater
- Heater control board in EPC 70 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

### Working principle

The P Flex separation systems based on P separators 626/636/646 are operated automatically by the EPC 70 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.

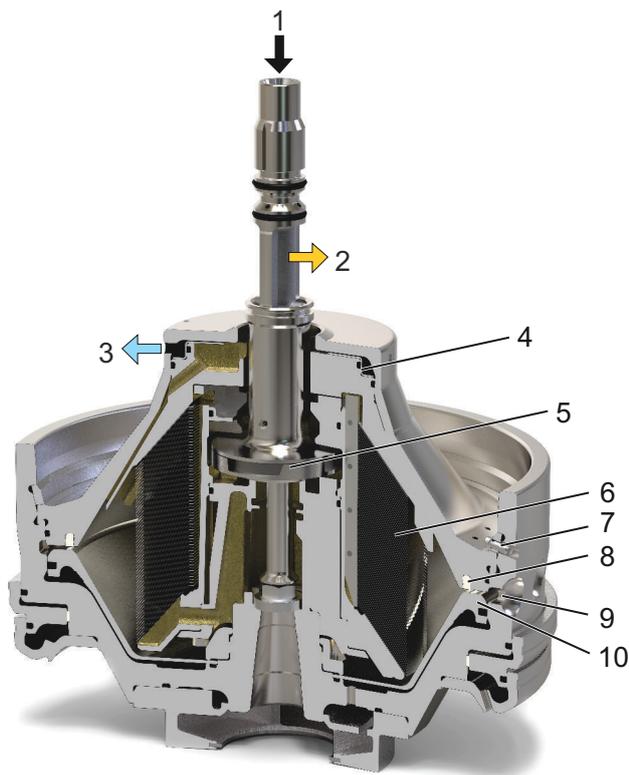
The separator bowl is fixed at the top of a spindle, which is supported by bearings and special composite springs. This bowl can be arranged as a purifier or as a clarifier. Both configurations remove sludge, which accumulates at the bowl periphery and is intermittently discharged by the high-precision 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 70 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.

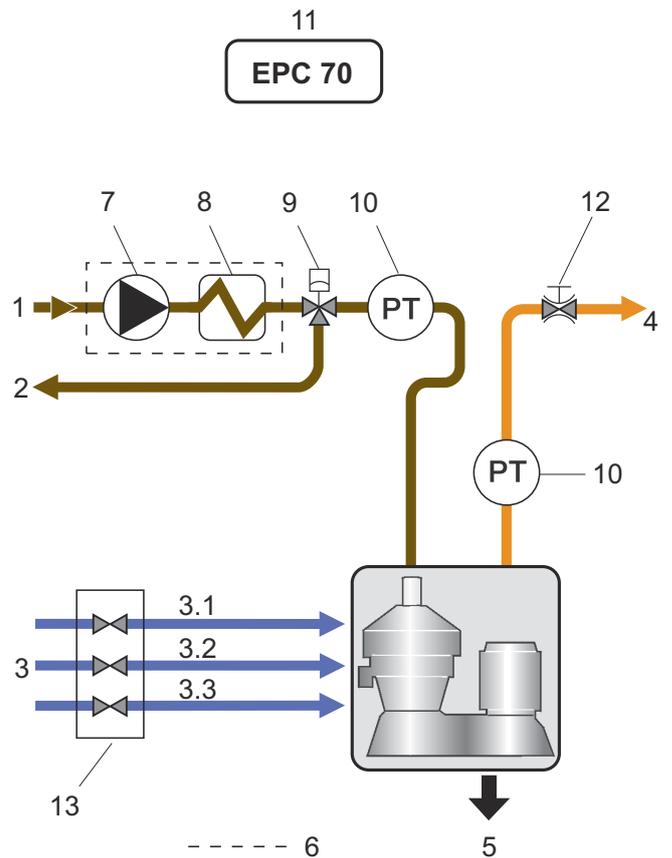
In a clarifier configuration, a clarifier disc is fitted instead of a gravity disc. The water outlet is blocked, which means that the separator's water-handling capacity is limited and that water accumulates like sludge.

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 70 controller.

The EPC 70 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.

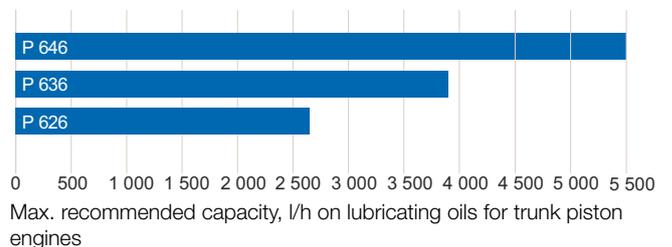


1. Untreated oil
2. Clean oil
3. Separated water
4. Gravity disc
5. Paring disc
6. Disc stack
7. CentriLock
8. Seal ring
9. Discharge port
10. Discharge slide



1. Untreated oil inlet
2. Oil return
3. Water inlet (C1 = Conditioning water, C2 = Opening water, C3 = Closing water)
4. Clean oil outlet
5. Sludge and water outlet
6. Optional
7. Feed pump
8. Heater
9. Pneumatically controlled change-over valve
10. Pressure transmitter
11. Control unit
12. Regulating valve
13. Solenoid valve block, water

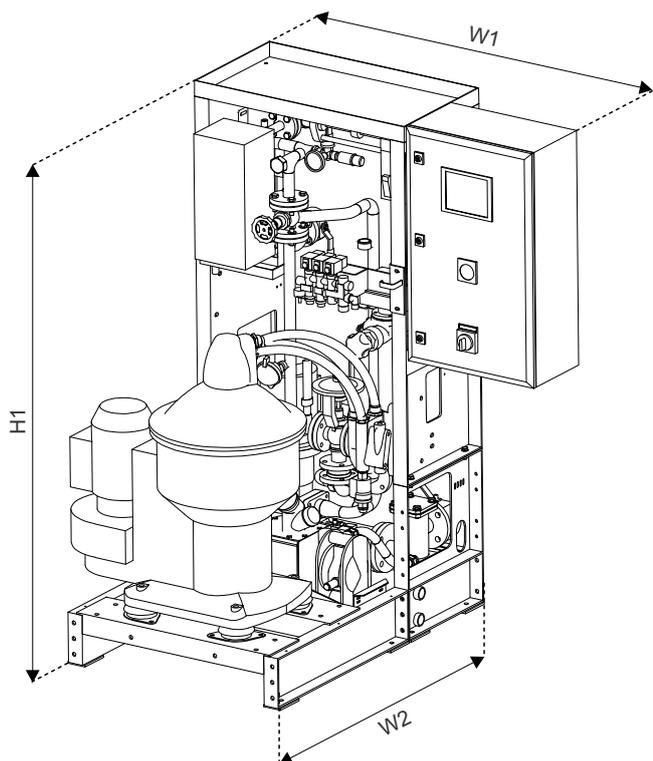
#### Technical data



#### 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

## Dimensional drawing



### Flex module with CBM heater

Type	Size (H1 x W1 x W2)	DN	Net weight (kg) <sup>1</sup>
P 626	1650 x 1200 x 1100	25	825
P 636	1650 x 1300 x 1220	25	830
P 646	1650 x 1300 x 1220	25	1010
P 646	1900 x 1450 x 1450	40/50	1210

<sup>1</sup> Including ALP feed pump, CBM heater and SRK

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