

Alfa Laval OCM Light 305

A robust and reliable separation system for mineral oil applications

Introduction

Water and solids present in lube oils reduce the lifetime of machinery and increase the risk of unplanned production stops. Untreated fuel oils reduce the efficiency and the lifetime of engines and turbines while increasing the risk of repair costs.

The OCM Light 305 is a complete separation solution from Alfa Laval that improves the reliability of the oil system and protects the machinery/engine/turbine from serious wear and damage.

Application

- Lubricating oils (ISO VG, turbine, hydraulic, compressor etc.)
- Fuel oils (Marine gas oil, Marine diesel oil)

Benefits

- Plug-and-play installation
- Easy to operate
- Easy to maintain
- High separation efficiency

Design

The separator module consists of the separator, the frame, the feed pump, the inlet block, the outlet block, the flexible hose kit, the control cabinet and the emergency stop box.

The MAB 305 separator, installed on the OCM Light 305 module, belongs to Alfa Laval's family of solid bowl separators and consist of a solids-retaining bowl which can operate both as a purifier and a clarifier.

The pump block consists of a positive displacement pump with constant flow and an electric motor.

The inlet block is mounted on the pump and it is delivered with a ball valve, a strainer to protect the system from large particles, a non-return valve and a pressure gauge.

The outlet block is positioned in the oil outlet of the separator and consists of a non-return valve, a pressure switch, a pressure gauge and a regulating valve to control the back-pressure of the system. The pressure switch triggers an alarm if the water seal is lost during operation.



Both the inlet and the outlet block are connected to the separator through flexible hoses which are included in the flexible hose kit.

A flow regulation kit with a regulation valve which is installed in the inlet block of the module.

All functions and alarms are being handled from the control cabinet which has been designed for simplicity and ease of use.

An emergency stop box is included to shut down the system in case of danger.

In addition to the standard configuration the following equipment can be selected as options:

- A drip tray installed in the bottom of the frame to collect any leakage media that may occur.
- A collecting tank installed after the sludge outlet of the separator with an integrated level switch. The level switch will trigger an alarm if overflow occurs during operation.
- A trolley to move the module from tank to tank.

And in addition:

A stand-alone external electric heater module, consisting of an EHM electric heater, control cabinet, power unit and a three-way valve, to ensure the right separation temperature during operation.

Scope of supply

- MMB 305 separator
- Frame
- Feed pump
- Flow regulating system
- Inlet block
- Outlet block
- Flexible hose kit
- Control cabinet
- Emergency stop box

Options

- External Electric Heater module
- Drip tray
- Collecting tank
- Trolley
- Set of tools
- Service kits

Working principle

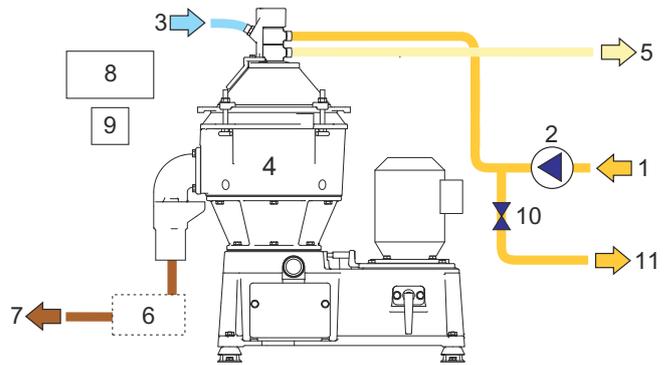
The oil is being transferred directly from the pump to the separator. If it is required to warm up the oil, an optional heater module with a three-way valve is installed between the pump and the separator. The three-way valve runs the oil on recirculation between the tank and the heater until the correct separation temperature is reached.

The separator starts up. When the separator reaches full speed, water is added to establish the appropriate water seal (applicable only for purifier setup). Subsequently, the pump starts up and oil is fed to the separator.

The separation process takes place within the bowl. Due to the centrifugal forces, oil, water and particles are being separated based on their specific gravity. The heavy phases, water and particles, are moving to the periphery of the bowl while the light phase, oil, is moving towards the centre of the bowl.

Water is being drained automatically to the collecting tank. The separated particles need to be cleaned periodically by hand. The clean oil is being pumped by a paring disc out of the separator and from there to the daily service fuel tank or the lube oil tank.

To secure the optimum operation of the separator a pressure switch, a level switch and two temperature switches are installed in the system. All the sensors are connected to the pump which will stop automatically if there is an alarm. In that case, the alarm lamp on the control cabinet will indicate this.



General flow chart of a separator system. The detail may differ slightly between different systems.

1. Feed inlet
2. Pump
3. Water for water seal (only for purifier)
4. Separator
5. Clean oil outlet
6. Collecting tank (optional)
7. Drain
8. Control cabinet
9. Emergency stop box
10. Flow control valve
11. Oil heat up recirculation

Technical data

Performance data

Feed capacities:

Lube oils	Max. 4700 l/h (20.7 US gpm)
Gas oil (1,5 – 6 cSt/40°C)	Max. 4700 l/h (20.7 US gpm)
Marine diesel oil (13 cSt/40°C)	Max. 3700 l/h (16.3 US gpm)

Separator motor power consumption 3 kW (4,1 HP)

Pump motor power consumption	0,37 - 4 kW
Ambient temperature	Max. 55°C (131°F)
Feed temperature	Max. 100°C (212°F)
Bowl speed	9510 rpm
Voltage	220, 230, 380, 400, 415, 440, 460 V, 480 V, 690 V
Frequency	50 - 60 Hz

Connections

Feed inlet (1)	G 3/4 inch
Oil recirculation (11)	G 3/4 inch
Clean oil outlet (5)	G 3/4 inch
Sealing water inlet (3)	G 1/2 inch
Drain (7)	Ø 76 mm

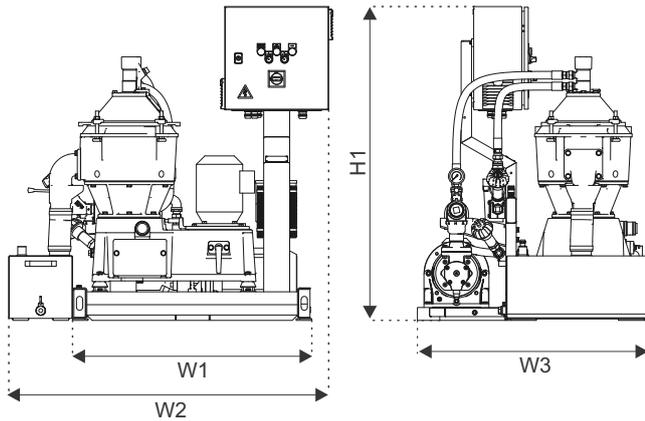
Material data

Separator frame	Cast iron
Separator bowl	Stainless steel, Brass
Module frame	Cast iron
Gaskets and O-rings	Nitrile rubber

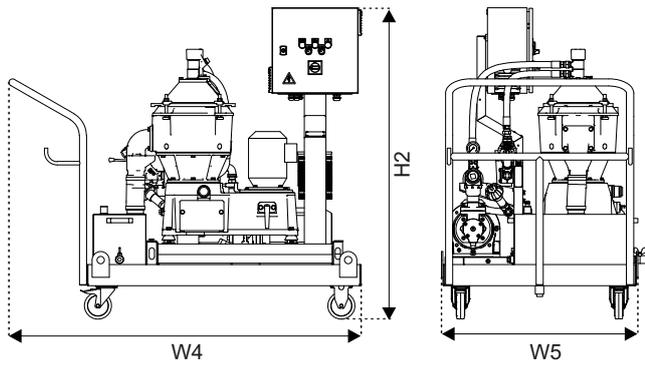
Weights (approximate)

Bowl weight	32 kg (70 lbs)
Separator weight without motor	179 kg (394 lbs)
Module weight (net/gross)	325 kg (716 lbs)
Volume	1,2 m ³

Dimensional drawing



Standard module, height, length and width



Standard module with trolley, height and width

Standard module with drain tank, width

Dimensions	
H1	1176 mm (3 ft 10 5/16 inch)
H2	1455 mm (4 ft 9 9/32 inch)
W1	920 mm (3 ft 1/4 inch)
W2	1240 mm (4 ft 13/16 inch)
W3	886 mm (2 ft 10 7/8 inch)
W4	1636 mm (4 13/32 inch)
W5	912 mm (3 ft)

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