



Alfa Laval MIB 503 Module

A compact separator module for marine & diesel applications



Introduction

In marine and diesel industry, customers struggle with low-quality fuels that have high content in particles and water. Operating on such fuels reduces the efficiency and the lifetime of the engine while increases the risk of repair costs.

The MIB 503 Module is a complete separation solution from Alfa Laval that improves the reliability of the oil system and protects the main engine from serious wear and damages.

Application

- Marine gas oil
- Marine diesel oil
- Lubricating oil

Benefits

- Easy to install and start up
- Easy to operate
- Easy to maintain
- High separation efficiency
- Robust and reliable design

- Low operating costs
- Small footprint

Design

The module is available in a gas oil, diesel oil and a lube oil configuration.

The gas oil configuration consists of the separator, the control cabinet, the pump, the flexible hoses and the alarm sensors. All of the components are mounted in an optimally designed frame that can fit even the smallest engine rooms.

The MIB 503 separator consists of a solids-retaining bowl which can operate both as a purifier and a clarifier. Its unique drive technology is based on an electric motor mounted directly to the bowl, controlled by a frequency converter located in the control cabinet.

The pump installed on the module is a positive displacement pump with constant flow and is connected to the separator through flexible hoses.

To secure the correct operation of the separator, a pressure sensor and a level sensor are installed on the module. All functions and alarms are being handled from the control cabinet which has been designed for simplicity and ease of use.

Distillate fuel may require heating in winter conditions, therefore configurations with heater are available.

In lube oil configuration, the oil must reach the right temperature before the separation process starts. To accomplish that, a heater, a three way valve and a temperature sensor are included in the module.

Scope of supply

- MIB 503 Separator
- Pump
- Flexible hoses
- Control cabinet
- Sensors
- Frame with collecting tank

Options

- Heater
- Three way valve
- Wheel set
- Drip tray
- Emergency stop box
- Trolley (only for gas oil)

Working principle

In gas oil configuration, the fuel oil is being transferred directly from the pump to the separator. In configuration with heater, a heater and a three way valve are installed between the pump and the separator. The three way valve is being used to run the oil on recirculation 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 center of the bowl.

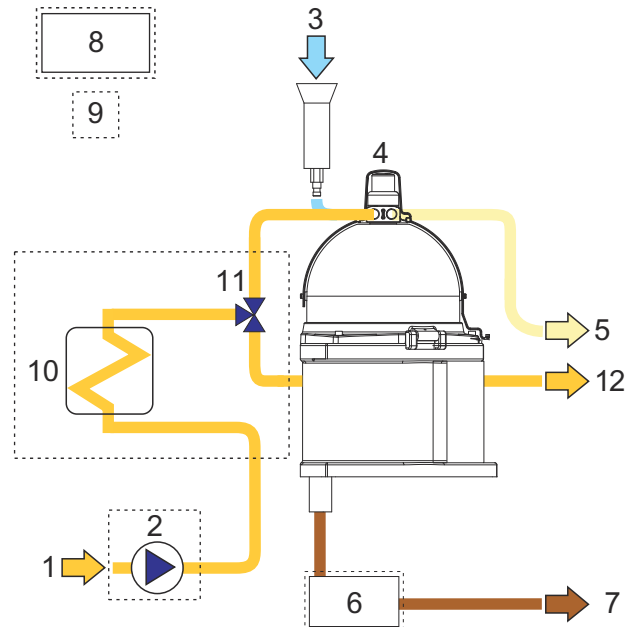
Water is being drained continuously to the collecting tank of the module. The separated particles need to be cleaned periodically by hand. The clean oil is being pumped by a paring disc out of the separator and from there to the daily service fuel tank or the lube oil sump.

A pressure sensor is installed in the oil outlet after the separator. The pressure sensor triggers an alarm during separation if the water seal interface is lost.

A level sensor is installed on the collecting tank of the module. The level sensor triggers an alarm if the separator overflows.

In configuration with heater, a temperature sensor is installed before the separator. The sensor triggers an alarm when temperature drops below setpoint.

All the sensors are connected to the pump which will stop automatically if there is an alarm. In that case, the crew is informed by the alarm lamp in the control cabinet of the module.



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

1. Feed inlet
2. Pump
3. Water for water seal (only for purifier)
4. Separator
5. Clean oil outlet
6. Collecting tank
7. Drain
8. Control cabinet
9. Emergency stop box (optional)
10. Heater (for configuration with heater)
11. Three way valve (for configuration with heater)
12. Recirculation

Technical data

Performance data	
Feed capacities:	
- Gas oil (1,5 – 6 cSt/40°C)	Max. 1250/1000 l/h — Clarifier/Purifier
- Marine diesel oil (13 cSt/40°C)	Max. 1000 l/h
- Lube oil	Max. 300 l/h
Power consumption separator and pump	Max. 0.7 kW (0.93 HP)
EHM power	7/14kW — LO/MGO-MDO
Feed temperature	Max. 95°C
Heating media	Hot water / electricity

Connections

Feed inlet	G 3/4 inch
Clean oil outlet	G 1/2 inch
Drain	G 1/2 inch
Heating media inlet ¹	G 3/4 inch
Heating media outlet ¹	G 3/4 inch

¹ for CBM heater configuration

Material data

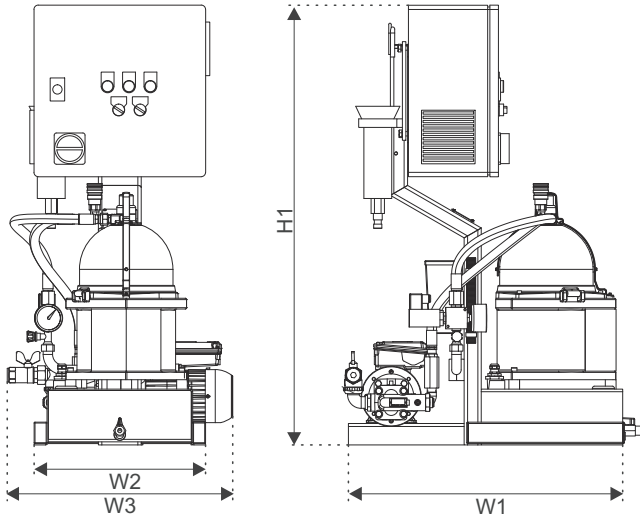
Separator frame	Surface coated aluminum
Separator bowl	Surface coated aluminum. High-grade polymer composite
Module frame	Structural steel
Gaskets and O-rings	Fluorocarbon rubber (Viton®)

Weights (approximate)

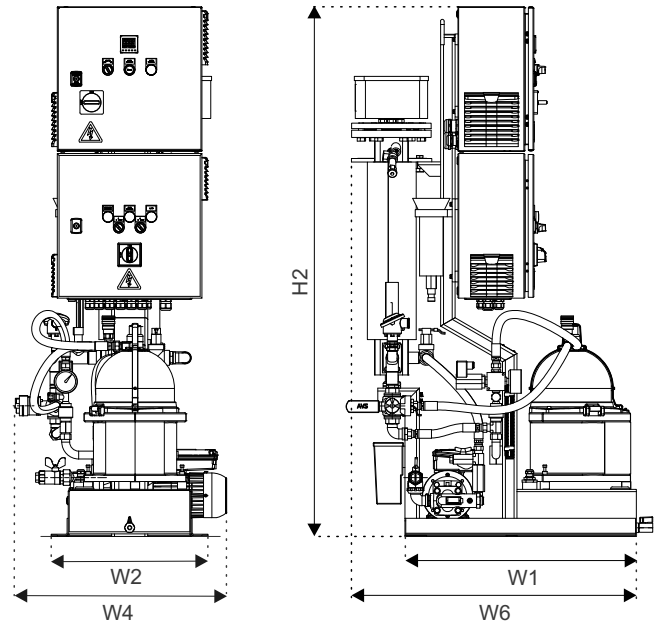
Gas oil module (net/gross)	68/98 kg (150/216 lbs)
CBM module (net/gross)	82/114 kg (181/251 lbs)
EHM module net/gross	95/130 kg (209/287 lbs)

Dimensional drawing

Gas oil configuration without heater



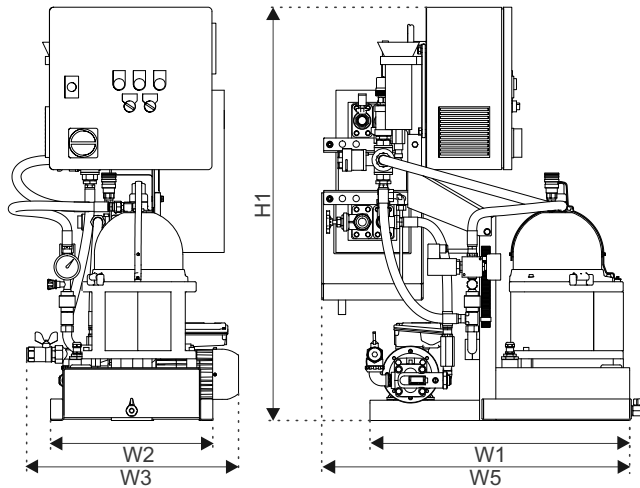
EHM heater configuration



Dimensions

H1	1026 mm (3 ft 4 3/8 inch)
H2	1465 mm (4 ft 10 7/16 inch)
W1	640 mm (2 ft 1 3/16 inch)
W2	400 mm (1 ft 3 3/4 inch)
W3	525 mm (1 ft 8 11/16 inch)
W4	585 mm (1 ft 11 7/32 inch)
W5	760 mm (2 ft 5 15/16 inch)
W6	770 mm (2 ft 6 11/16 inch)

CBM heater configuration



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