Alfa Laval MIB 503 System

A compact separation system 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 System 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

- Distillate oil
- Marine diesel oil
- Lubricating oil

Benefits

- Easy to install and start up
- Easy to operate
- High separation efficiency
- Robust and reliable design
- Small footprint
- Low power consumption

Design

The system is being delivered with the standard components of the latest MIB 503 separator and the ancillary kit including the inlet and outlet flexible hoses.

The 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.

To secure the optimum operation of the separator the following optional equipment are available.

A control cabinet with an integrated frequency converter to start/stop the separation process as well as troubleshoot alarms. A positive displacement pump with constant flow which is connected to the separator through the standard flexible hoses.

A pressure switch kit to indicate if the water seal interface is lost. A collecting tank with an integrated level sensor to protect the system from overflow.

A heater block including an Alfa Laval CBM heat exchanger. In the heater block there are additionally a three-way valve and a temperature switch which allow the system to run in recirculation mode to warm up the oil.

A transformer from 230V to 110V or 440V, a drip tray to collect oil leakages and an emergency stop button.

Scope of supply

- MIB 503 Separator
- Ancillary kit
- Documentation

Options

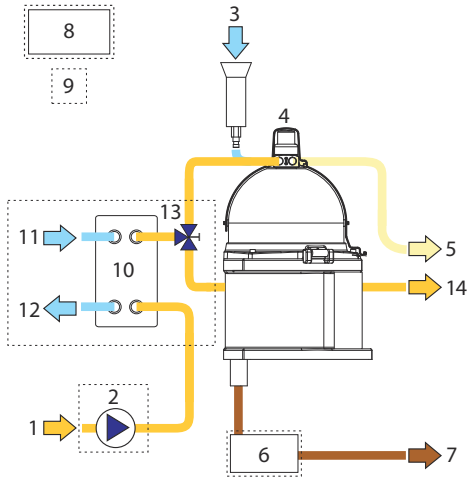
- Control cabinet
- Feed pump
- Pressure switch kit
- Collecting tank
- Heater block
- Transformer
- Drip tray
- Emergency stop button

Working principle

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



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

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

Technical data

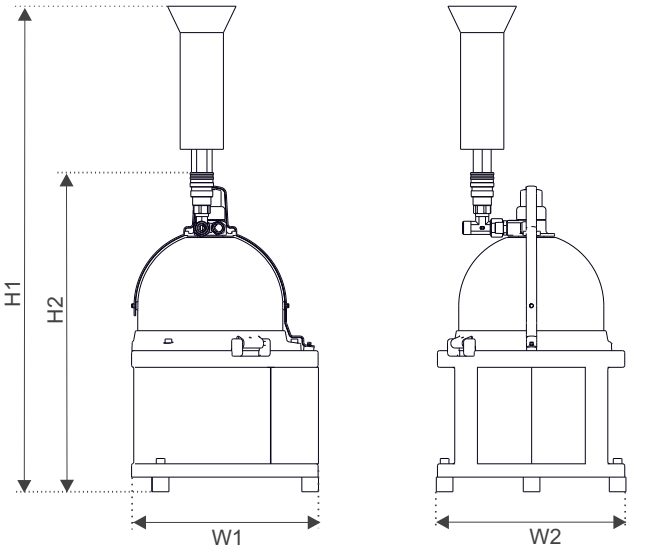
Performance data	
Feed capacities:	
- Gas oil (1,5 – 6 cSt/40°C)	Max. 1250/1000 l/h — Clarifier/Purifier
- Marine diesel oil (13 cSt/40°C)	Max. 1000 l/h
- Lube oil (Trunk/95°C)	Max. 300 l/h
Separator motor power consumption	0,45 kW (0,60 HP)
Pump motor power consumption	0,25 kW (0,33 HP)
Feed temperature	Max. 95°C
Voltage	110 V, 230 V, 440 V

Connections	
Feed inlet	G 3/8 inch
Light phase outlet	G 3/8 inch
Heavy phase outlet	Ø 27 mm

Material data	
Separator frame	Surface coated aluminium
Separator bowl	Surface coated aluminium. High-grade polymer composite
Gaskets and O-rings	Fluorocarbon rubber (Viton®)

Weights (approximate)	
Separator weight incl. bowl and motor	18 kg (39,7 lbs)
Bowl weight	4 kg (8,8 lbs)

Dimensional drawing



Dimensions	
H1	Min. 729 mm (2 ft 4 11/16 inch)
H2	479 mm (1 ft 6 7/8 inch)
W1	280 mm (11 inch)
W2	280 mm (11 inch)

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