



MIB 303 Separation System

# System Description

Printed Book No.	Aug 1997 1810592-02 V1
---------------------	---------------------------

Alfa Laval reserve the right to make changes at any time without prior notice.

Any comments regarding possible errors and omissions or suggestions for improvement of this publication would be gratefully appreciated.

Copies of this publication can be ordered from your local Alfa Laval company.

**Published by:** Alfa Laval Separation AB  
Marine & Power Division  
S - 147 80 Tumba  
Sweden

© Copyright Alfa Laval Separation AB 1997.

---

# Contents

---

<b>1</b>	<b>Scope</b>	<b>1</b>
<b>2</b>	<b>System Overview</b>	<b>3</b>
<b>2.1</b>	<b>System Layout</b>	<b>4</b>
<b>2.2</b>	<b>The Oil Flow</b>	<b>6</b>
<b>3</b>	<b>The MIB 303 Oil Cleaning Process</b>	<b>7</b>
<b>3.1</b>	<b>Purifying</b>	<b>7</b>
<b>3.2</b>	<b>Clarifying</b>	<b>8</b>



---

# 1 Scope

---

This system description is valid for the MIB 303 separation system.

The MIB 303 separation system is designed for cleaning of the following types of oil:

- Marine diesel oil with a maximum viscosity of 14 cSt

Marine diesel oils should be preheated to +40 °C.

- Gas oil with a viscosity of 1.5 - 6 cSt
- Lube oil with a maximum viscosity of 60 cSt

Lube oil may be preheated to max. 70 °C, as this is the max. allowed separation temperature.



---

## 2 System Overview

---

In the MIB 303 process, oil is fed continuously through the separator to clean the oil from solid particles and water.

The system comprises:

- An MIB 303 separator and certain ancillary equipment.
- Optional equipment such as:
  - insulation transformer (for AC supply)
  - emergency stop box.

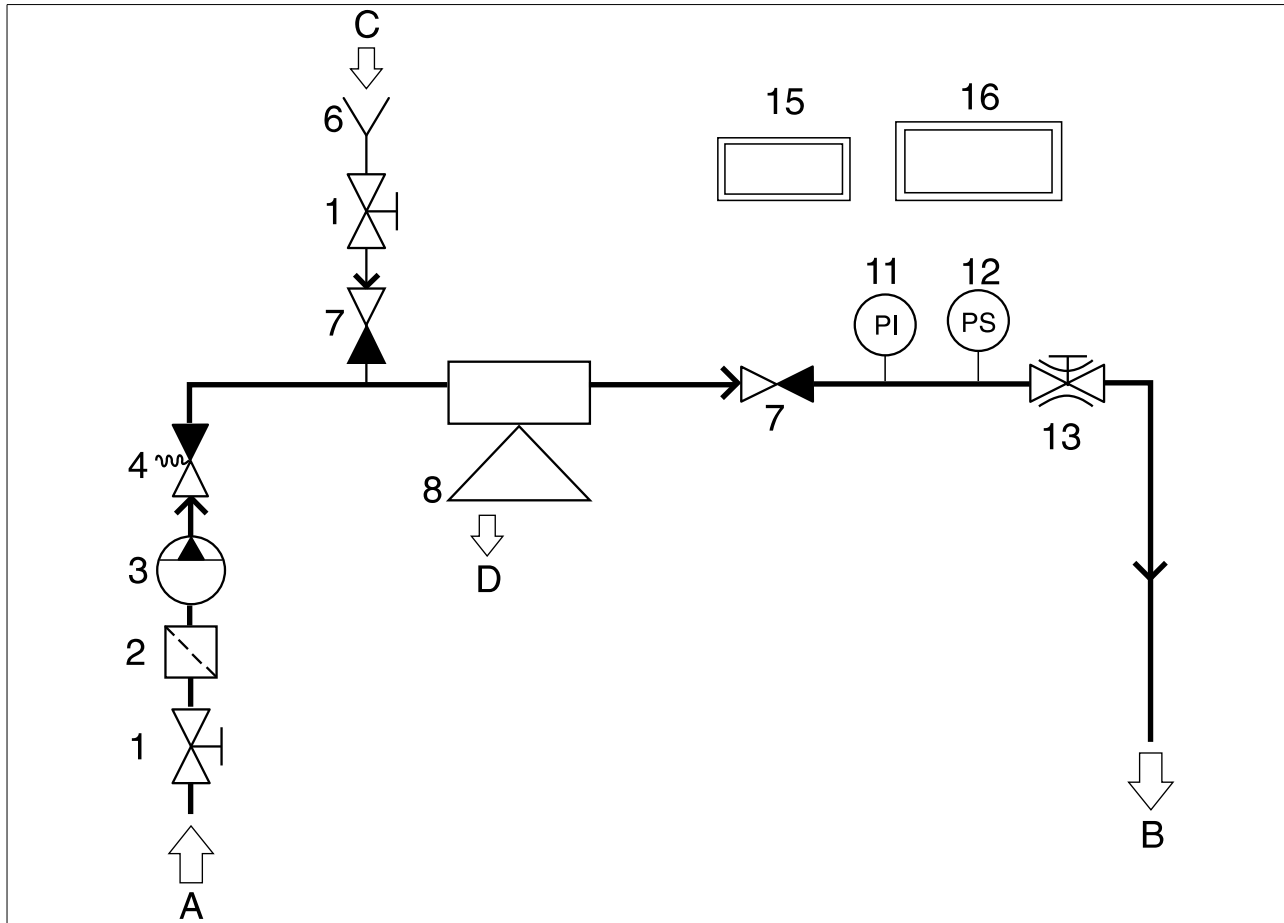
The starter/control unit can activate low pressure alarm and stop the oil flow.

Cleaned oil leaves the separator through the oil outlet. Sludge accumulates at the periphery of the separator bowl. During purifying, water drains into the water channel below the bowl. During clarifying, any water collects in the sludge space, and is drained off when the separator stops.

Sludge is removed by manual cleaning of the separator bowl.

## 2.1 System Layout

The MIB 303 system layout is illustrated by the following symbol diagram.









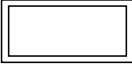
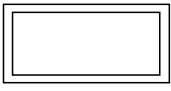


The inlet and outlet arrows indicate the following:

- A Unprocessed oil inlet
- B Cleaned oil outlet
- C Sealing water inlet (for purifier only)
- D Water and bowl drain outlet – purifier  
Bowl drain outlet – clarifier

Item	Symbol	Designation	Function
		Process line, flow direction	
1		Manual shut-off valve	Opens/closes water/oil inlet/outlet.
2		Strainer	Protects the feed pump from solid particles.



Item	Symbol	Designation	Function
3		Pump	Feeds unprocessed oil to the separator.
4		Spring-loaded non-return valve	Ensures that the feed line is closed if pump stops
6		Funnel	For manual addition of sealing water. (For purifier only.)
7		Non return valve	Prevents oil or water from flowing in the wrong direction.
8		Separator	Cleans the oil by removing water and solid particles.
11		Pressure gauge	Displays the pressure in the oil outlet.
12		Low pressure switch	Senses low pressure in the oil outlet.
13		Manual regulating valve	Regulates the back pressure in the oil outlet.
15		Starter for pump <sup>1</sup>	Starts the oil feed to the separator.
16		Starter for separator <sup>1</sup>	Starts the separator and administrates alarms.

1. The Module has a combined starter for pump and separator.

## 2.2 The Oil Flow

The unprocessed oil is fed by a vane pump, operating at a constant flow. An oil strainer placed before the pump protects it from solid particles. Depending on the type, the oil may need to be heated.

A spring-loaded non-return valve, placed after the pump and set for a pressure difference of 0.5 bar, ensures that the feed line is closed if the pump stops.

---

## 3 The MIB 303 Oil Cleaning Process

---

### 3.1 Purifying

Sealing water is added to the separator bowl through the water inlet.

The separator is equipped with a level ring, the suitable size of which depends on the type of oil to be cleaned. The level ring decides the position of the interface between oil and water seal.

During the purification process, cleaned oil is fed from the separator by the paring disc. Sludge collects at the periphery of the separator bowl. Water collects in the water seal space and drains into the water channel below the bowl.

After some time, the build-up of solid particles makes cleaning of the bowl necessary. This is done manually.

After cleaning of the separator bowl, the next process cycle can be started.

## 3.2 Clarifying

During the clarifying process, cleaned oil is fed from the separator by the paring disc. Sludge collects at the periphery of the separator bowl. If the unprocessed oil contains water, this collects in the sludge space.

Small amounts of water can be drained off by stopping the separator regularly (liquid drains when the separator stops).

After some time, the build-up of sludge makes cleaning of the bowl necessary. This is done manually.

After cleaning of the separator bowl, the next process cycle can be started.