## Contents

1 Safety Instructions  
2 Separator Basics  
  2.1 Basic principles of separation  
  2.2 Application  
  2.3 Description of main parts  
  2.4 Working principle (purifier)  
  2.5 Conversion kit  
  2.6 Working principle (clarifier)  
3 Operating Instructions  
  3.1 Operating routine  
  3.2 Before start  
  3.3 Start  
  3.4 Operation  
  3.5 Stop  
  3.6 Automatic stop  
4 Trouble shooting  
  4.1 The separator does not start  
  4.2 Low outlet flow (low outlet pressure)  
  4.3 No outlet flow (no outlet pressure)  
  4.4 The separator stops  
  4.5 The separator vibrates  
  4.6 Insufficient separation  
  4.7 Noise
5 Maintenance

5.1 Periodic cleaning  37
5.2 Preventive maintenance every year  38
5.3 Preventive maintenance every two years  38

6 Dismantling and assembly  41

6.1 Instructions  43
6.2 Operation chart selection  44

7 Technical data  63

7.1 Technical data  65
7.2 Basic size drawing  67
7.3 Connection diagram  71
Study instruction manuals and observe the warnings before installation, operation, service and maintenance.

Not following the instructions can result in serious accidents.

In order to make the information clear only foreseeable conditions have been considered. No warnings are given, therefore, for situations arising from the unintended usage of the machine and its tools.
1 Safety Instructions

The centrifugal separator includes parts that rotate at high speed. This means that:

- Kinetic energy is high
- Great forces are generated

Manufacturing tolerances are extremely fine. Rotating parts are carefully balanced to reduce undesired vibrations that can cause a breakdown. Material properties have been considered carefully during design to withstand stress and fatigue.

The separator is designed and supplied for a specific separation duty (type of liquid, rotational speed, temperature, density etc.) and must not be used for any other purpose.

Incorrect operation and maintenance can result in unbalance due to build-up of sediment, reduction of material strength, etc., that subsequently could lead to serious damage and/or injury.

The following basic safety instructions therefore apply:

- **Use the separator only for the purpose and parameter range specified by Alfa Laval.**
- **Strictly follow the instructions for installation, operation and maintenance.**
- **Ensure that personnel are competent and have sufficient knowledge of maintenance and operation, especially concerning emergency stopping procedures.**
- **Use only Alfa Laval genuine spare parts and the special tools supplied.**
DANGER

Disintegration hazards

- Use the separator only for the purpose and parameter range specified by Alfa Laval.
- If excessive vibrations occur, keep liquid feed on and stop separator.
- Welding or heating of parts that rotate can seriously affect material strength.
- Inspect regularly for corrosion and erosion damage. Inspect frequently if process liquid is corrosive or erosive.

Entrapment hazards

- Make sure that rotating parts have come to a complete standstill before starting any dismantling work.
- To avoid accidental start, switch off and lock power supply before starting any dismantling work.
- Assemble the machine completely before start. All covers and guards must be in place.

Electrical hazards

- Follow local regulations for electrical installation and earthing (grounding).
Warning signs in the text

Pay attention to the safety instructions in this manual. Below are definitions of the three grades of warning signs used in the text where there is a risk for injury to personnel.

**WARNING**

⚠️ Type of hazard

This type of safety instruction indicates a situation which, if not avoided, could result in **disabling injury** or disabling damage to health.

**CAUTION**

⚠️ Type of hazard

This type of safety instruction indicates a situation which, if not avoided, could result in **light injury** or light damage to health.

**NOTE**

This type of instruction indicates a situation which, if not avoided, could result in damage to the equipment.
Warning label

Warning label placed on the separator hood.
Interpretation:
Stop! Read the instruction manuals before installation, operation and maintenance.
Failure to strictly follow instructions can lead to fatal injury.

Machine plate

Plate placed on the separator base.
Text on label:

Separator type MIB 303S-13/33
Product number 881176-06-01
Speed max. 7 500 r/min
Rotation ----->
Supply voltage 230V ~50/60 Hz 110V ~50/60 Hz 24V DC
Current max. 4 A 8A 30A
2 Separator Basics

Contents

2.1 Basic principles of separation 13
2.2 Application 13
2.3 Description of main parts 14
2.4 Working principle (purifier) 16
2.5 Conversion kit 19
2.6 Working principle (clarifier) 20
2.1 Basic principles of separation

2.2 Application

The use of the separator is restricted to removal of water and solids from gasoil, mineral oil or marine diesel oil.

Marine diesel oils should be preheated to +70 °C which is the maximum permissible separation temperature.

Following are examples of oils to be treated:

<table>
<thead>
<tr>
<th>Oil type</th>
<th>Density at +15 °C</th>
<th>Viscosity at +40 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas oil</td>
<td>810 - 860 kg/m³</td>
<td>1.5 - 6 cSt</td>
</tr>
<tr>
<td>Marine diesel oil</td>
<td>850 - 920 kg/m³</td>
<td>up to 14 cSt</td>
</tr>
<tr>
<td>Lube oil</td>
<td>Max. 920 kg/m³</td>
<td>up to 150 cSt</td>
</tr>
<tr>
<td>Mineral oil</td>
<td>Max. 920 kg/m³</td>
<td>Max. 50 cS</td>
</tr>
</tbody>
</table>

**WARNING**

Do not use the MIB 303S-13/33 separator for separating any oils or liquids other than those specified above.
2.3 Description of main parts

A general view of the MIB 303S-13/33 separator is shown in fig 1.

The oil is fed to the oil inlet (A) and down to the rotating bowl (E) where separation takes place. Separated water runs down the water collecting channel (B) to the water outlet (C), while the cleaned oil leaves the separator at (D).

The bowl and motor (G) are suspended on rubber cushions (F).

The frequency converter (H) for the motor is mounted at the bottom of the separator.

More details shown in "Fig. 2 Separator main parts" on page 15
Separation takes place in the bowl (6) which is mounted directly on the motor shaft. The bowl contains a set of conical discs (7) between which the separation process takes place.

The bowl wall (6) and the paring chamber cover (2) are held in place by the lock nut (5).

**Note:** The lock nut has a conventional right-hand thread contrary to most Alfa Laval separators that have left-hand threaded lock rings.

The paring disc (3) is stationary, held by the paring disc knob (1). Below the paring disc is a level ring (4) the size of which has to be selected according to the type of fuel oil being used.

The motor flange rests on three rubber cushions (17) in the frame (8). An inclined channel in the motor flange directs water that has been separated from the oil down to the water outlet (10).

The motor (9) is powered via an electronic frequency converter (11), which converts the 50/60 Hz mains to 125 Hz. This gives the motor and bowl an operating speed of 7500 rpm. When the current is switched off the converter acts as a brake quickly reducing the speed.

The separator is equipped with the following safety devices:

A safety yoke (13) over the hood (14) and the oil connection housing (12) has a magnet (15) which operates a magnetic safety switch (16), so that power can only be supplied to the motor when the yoke is in its upright position. The yoke can be raised to this position only when both the mounting screws of the hood and the paring disc knob (1) have been tightened.

The separator also has built-in overload protection.

---

**Fig. 2 Separator main parts**

1. Paring disc knob
2. Paring chamber cover
3. Paring disc
4. Level ring
5. Lock nut
6. Bowl
7. Disc stack
8. Frame
9. Motor
10. Water outlet
11. Frequency converter
12. Oil connection housing
13. Safety yoke
14. Hood
15. Magnet
16. Magnetic safety switch
17. Rubber cushions
2.4 Working principle (purifier)

Uncleaned oil continuously enters at (1), in fig 3, and flows into the bowl (2). The bowl rotates at high speed generating powerful centrifugal forces. As the oil rotates with the bowl, the heavier contents of the oil, such as solid particles and water, move towards the periphery of the bowl. The particles are deposited on the bowl wall, while water collects in the water seal space (3) and drains at (4) into the water channel below the bowl.

The discs (5) in the bowl make the separation process very efficient and the cleaned oil leaves the bowl through the paring chamber at a constant pressure. The paring chamber which contains the stationary paring disc is not shown in this illustration.

The water seal is very important as it prevents oil from leaving the bowl through the water outlet. To establish the necessary water seal, a small amount of water has to be fed into the bowl before the uncleaned oil is fed to the bowl. The heavier water prevents the oil from escaping the wrong way.

More information about the theory of centrifugal separation can be obtained from your local Alfa Laval representative.

Fig. 3 Process principle (opposite page)

1. Oil inlet
2. Bowl
3. Water seal
4. Water outlet radius
5. Bowl discs
6. Oil outlet radius
Detta blad utbytes mot färgbild:

G-04490-1-1
2.5 Conversion kit

If the liquid to clean only contains smaller amounts of water and solids, the purifier bowl can be converted to a clarifier, using the optional conversion kit to replace the purifier parts in bowl see “6.2 Operation chart selection” on page 44 instruction C₁.

A brief explanation of the clarifying mode is given on page 20.
2.6 Working principle (clarifier)

Uncleaned oil continuously enters at (1), in fig 4, and flows into the bowl (2). The bowl rotates at high speed generating powerful centrifugal forces. As the oil rotates with the bowl, the heavier contents of the oil, such as solid particles and water, move towards the periphery of the bowl. The particles are deposited on the bowl wall, while water collects in the sludge and water space (3) and drains into the channel below the bowl, when the rotation is stopped.

The discs (4) in the bowl make the separation process very efficient and the cleaned oil (5) leaves the bowl through the paring chamber at a constant pressure. The paring chamber which contains the stationary paring disc is not shown in this illustration.

More information about the theory of centrifugal separation can be obtained from your local Alfa Laval representative.

Fig. 4 Process principle (opposite page)

1. Oil inlet
2. Bowl
3. Collected solid particles
4. Bowl discs
5. Oil outlet
Detta blad utbytes mot färgbild:

G-05192-1-1
# 3 Operating Instructions

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Operating routine</td>
<td>25</td>
</tr>
<tr>
<td>3.2 Before start</td>
<td>25</td>
</tr>
<tr>
<td>3.3 Start</td>
<td>26</td>
</tr>
<tr>
<td>3.4 Operation</td>
<td>26</td>
</tr>
<tr>
<td>3.5 Stop</td>
<td>26</td>
</tr>
<tr>
<td>3.6 Automatic stop</td>
<td>27</td>
</tr>
</tbody>
</table>

The operating procedure:

1. **Before start**
2. **Start and run-up**
3. **Running**
4. **Stop procedure**
### 3.1 Operating routine

#### WARNING

The separator is supplied with a safety yoke and a magnetic safety switch. Modifications to the machine which put the safety devices out of operation can lead to serious injury or damage.

These operating instructions describe routine procedures to follow before and during the start, running and stopping sequences of the separator.

#### NOTE

If there is a System Manual, always follow the operating instructions given therein. If there is no System Manual the instructions below are to be followed.

### 3.2 Before start

- Make sure that the separator is installed according to the instructions given in chapter “8.2 Installation” on page 78.
- Make sure that the correct level ring is installed:
  - For cleaning gas oil only, install the **white level ring** which has a 43 mm diameter hole.
  - For cleaning marine diesel oil and lube oil, install the **black level ring** which has a 50 mm diameter hole.
  - For alternating between marine diesel oil and gas oil, install the black level ring which has a 50 mm diameter hole.
• Make sure that the hood screws and the paring disc knob are firmly tightened and that the safety yoke is in its closed (vertical) position.

### 3.3 Start

1. Make sure that the outlet valve is open.
2. Start the separator. Note! hold the button depressed till the machine is running.
3. After 20 seconds, when the separator has gained full speed, feed at least one litre of water into the oil inlet line. This will create the water seal.
4. Turn on the oil feed to the separator.
5. Regulate the counter-pressure in the oil outlet line to 40-60 kPa.
6. After 1 minute, check that oil is not discharging from the separator through the water outlet (at the bottom). If oil escapes through the water outlet, stop the oil feed and follow the instructions given in “4.3 No outlet flow (no outlet pressure)” on page 32.

### 3.4 Operation

Check the separator for correct operation. This is especially important the first few times the separator is run after installation or after any dismantling and assembly has been carried out.

### 3.5 Stop

1. Turn off the oil feed.
2. Stop the separator.

The bowl will almost have stopped rotating after about 1 minute. Approximately 1 litre of oil and water will flow out of the water outlet at the bottom of the separator. This is the normal draining of the bowl as it stops.
3. Make sure that the valves are closed on both the feed and outlet sides of the separator. If this is not done oil may siphon off through the separator and the water collecting vessel will overflow.

### 3.6 Automatic stop

The separator is automatically stopped by the built-in electronic safety devices if one of the following situations should occur:

- too high current due to overload of the separator motor
- too high temperature in the frequency converter
- wrong frequency from converter.

Auxiliary safety devices, that also stop the separator: See “7.3 Connection diagram” on page 71, 72 and 73

**CAUTION**

If the separator stops, the oil feed must be stopped immediately or there will be serious oil overflow.

If the separator does not start or if it stops during operation, follow the instructions given in “4.1 The separator does not start” on page 31.
4  Trouble shooting

Contents

4.1 The separator does not start  31
4.2 Low outlet flow  
(low outlet pressure)  31
4.3 No outlet flow  
(no outlet pressure)  32
4.4 The separator stops  32
4.5 The separator vibrates  33
4.6 Insufficient separation  33
4.7 Noise  34
4.1 The separator does not start

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety yoke is not in the correct position.</td>
<td>Position the yoke correctly.</td>
</tr>
<tr>
<td>No power supplied to the separator.</td>
<td>Check the mains switch, fuses and supply line.</td>
</tr>
<tr>
<td>Defective magnetic safety switch.</td>
<td>Make sure that the switch opens and closes when the safety yoke is moved up and down. Measure across terminal points No. 5 and 6 on the frequency converter board. Replace the switch if faulty.</td>
</tr>
<tr>
<td>Incorrect assembly after cleaning.</td>
<td>Make sure that the bowl and motor shaft can rotate freely by turning the bottom end of the motor shaft with a suitable tool.</td>
</tr>
<tr>
<td>Incorrect height adjustment of paring disc after major overhaul.</td>
<td><strong>CHECK:</strong> The height adjustment of the paring disc is measured as shown in figure. The height A should be 48,5 ±0,5 mm and can be adjusted by the number of washers B (1-3 pcs) under the oil connection housing.</td>
</tr>
<tr>
<td>Defective frequency converter.</td>
<td>Have an Alfa Laval representative test the converter.</td>
</tr>
</tbody>
</table>

4.2 Low outlet flow (low outlet pressure)

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low feed flow.</td>
<td>Check feed line.</td>
</tr>
<tr>
<td>Paring disc knob is not completely tightened, causing leakage.</td>
<td>Tighten the knob.</td>
</tr>
<tr>
<td>Leakage caused by incorrect assembly.</td>
<td>Dismantle. Check especially that no O-rings are missing, defective or incorrectly installed. Assemble correctly.</td>
</tr>
</tbody>
</table>
### 4.3 No outlet flow (no outlet pressure)

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No feed.</td>
<td>Check feed line.</td>
</tr>
<tr>
<td>The feed functions properly but oil discharges through the water outlet (purifier only).</td>
<td>This happens if there is no water seal. Either no water was added at start-up or the water seal has broken during operation. Add 1 litre of water to create a new water seal. If this fault repeats itself so that oil again discharges through the water outlet the density of the oil is too high. Stop the separator and fit the black level ring instead of the white one. If the black level ring is already installed, this oil cannot be cleaned in the separator because the density of the oil is too high.</td>
</tr>
<tr>
<td>Leakage caused by incorrect assembly.</td>
<td>Dismantle. Check especially that no O-rings are missing, defective or incorrectly installed. Assemble correctly.</td>
</tr>
</tbody>
</table>

### 4.4 The separator stops

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The safety yoke has been moved out of its position.</td>
<td>Reposition the yoke. Running position = vertical.</td>
</tr>
<tr>
<td>Overload due to incorrect assembly.</td>
<td>Check the bowl assembly.</td>
</tr>
<tr>
<td>Defective frequency converter.</td>
<td>Have an Alfa Laval representative test the converter.</td>
</tr>
</tbody>
</table>
## 4.5 The separator vibrates

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowl out of balance due to:</td>
<td></td>
</tr>
<tr>
<td>‒ Insufficient or incorrect cleaning.</td>
<td>Clean the bowl carefully.</td>
</tr>
<tr>
<td>‒ Centre screw is missing.</td>
<td>Install the centre screw.</td>
</tr>
<tr>
<td>‒ Paring chamber cover and lock-nut are not correctly installed.</td>
<td>Dismantle. Assemble correctly. Press the paring chamber cover down firmly, (see fig.) otherwise the lock nut cannot be installed correctly.</td>
</tr>
<tr>
<td>Vibration dampers are worn.</td>
<td>Fit three new dampers.</td>
</tr>
<tr>
<td>Motor bearings are damaged.</td>
<td>Fit new bearings.</td>
</tr>
</tbody>
</table>

### Diagram

- Vibration dampers are worn. Fit three new dampers.
- Motor bearings are damaged. Fit new bearings.

## 4.6 Insufficient separation

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient cleaning.</td>
<td>Clean the bowl. Shorten the cleaning interval.</td>
</tr>
<tr>
<td>The black level ring is too large for present oil (purifier only).</td>
<td>Replace the black level ring with the smaller (white) level ring.</td>
</tr>
<tr>
<td>Oil feed rate is too high.</td>
<td>Reduction of the feed rate improves the separation result.</td>
</tr>
</tbody>
</table>
## 4.7 Noise

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect assembly.</td>
<td>Dismantle and assemble correctly.</td>
</tr>
<tr>
<td>Bearings damaged.</td>
<td>Fit new bearings.</td>
</tr>
<tr>
<td>Vibration dampers are worn</td>
<td>Fit new dampers.</td>
</tr>
</tbody>
</table>
5 Maintenance

Contents

5.1 Periodic cleaning 37
    5.1.1 Bowl cleaning 37

5.2 Preventive maintenance every year 38

5.3 Preventive maintenance every two years 38
    5.3.1 Disc stack replacement 38
    5.3.2 Vibration damper replacement 39
5.1  Periodic cleaning

**WARNING**

Switch off the main power supply before dismantling for repair. Lock the mains switch in its OFF position.

5.1.1  Bowl cleaning

The separator must be stopped at regular intervals and the bowl opened for removal of collected sludge. This is important for correct operation of the separator and achieving the desired result.

The length of the periods between cleaning depends on the feed rate of the oil and on the quantity of solid particles in the oil. During the initial period, open and inspect the bowl once every 24 hours to determine the necessary cleaning interval.

The bowl must be cleaned before the solids layer of the bowl has become thicker than 10 mm.

The cleaning procedure is shown in "6.2 Operation chart selection" on page 44.

**WARNING**

Never use cleaning agents with a pH below 6 or above 8 as they will damage the metal surfaces.
5.2 Preventive maintenance every year

Replace the O-rings with the new ones supplied in the O-ring Service Kit. Their positions are shown in the Spare Parts List and the dismantling and assembly procedures are shown in the Dismantling and Assembly chapter.

Before fitting, lubricate the O-rings with the silicone grease supplied in the service kit.

5.3 Preventive maintenance every two years

5.3.1 Disc stack replacement

At separation temperature 60 °C and below, it is recommended to fit a new stack every two years to ensure that the separation efficiency is maintained.

At separation temperature above 60 °C, it is recommended that the disc stack is replaced every year or at any sign of brittleness.

The replacement procedure is shown in the “6.2 Operation chart selection” on page 44.

The disc stack is available as a set.
5.3.2 Vibration damper replacement

Fit new vibration dampers every two years. Inspect the stop flanges of the dampers for possible damage and replace the stop flanges with new ones if necessary.

The replacement procedure is shown in the Dismantling and Assembly chapter “6.2 Operation chart selection” on page 44.

The vibration dampers are available as a set (see Spare Parts Catalogue).

**WARNING**

The separator must not be operated unless the stop flanges for the vibration dampers are correctly installed.
5.3 Preventive maintenance every two years
6 Dismantling and assembly

Contents

6.1 Instructions 43

6.2 Operation chart selection 44
6.1 Instructions

The illustrations on the following pages describe step by step how to dismantle, clean, replace and assemble the various parts of the separator.

The illustrations have only symbols to indicate the action required. The key to the symbols is given below.

A. Select the correct chart.
   The green introductory illustration (1) indicates the part which will be dealt with in the chart (see the chart designation letter (2)) and "6.2 Operation chart selection" on page 44.

B. Collect the tools needed.
   Tools required are marked in Yellow (3).

C. Follow the instructions in numerical order
   The part concerned is marked in blue (4). The symbol indicates the action required (5).
## 6.2 Operation chart selection

<table>
<thead>
<tr>
<th>Operation</th>
<th>Charts and illustrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowl cleaning</td>
<td>A + B</td>
</tr>
<tr>
<td>O-rings and disc stack replacement</td>
<td></td>
</tr>
<tr>
<td>Purifier</td>
<td>A + C + B</td>
</tr>
<tr>
<td>Clarifier</td>
<td>A + C₁ + B</td>
</tr>
<tr>
<td>Bearing replacement</td>
<td>A + D + B</td>
</tr>
<tr>
<td>Connection housing dismantling and assembly</td>
<td>E</td>
</tr>
<tr>
<td>Frequency converter replacement</td>
<td>F</td>
</tr>
<tr>
<td>Level ring replacement (purifier only)</td>
<td>A + C² / C¹⁵ + B</td>
</tr>
<tr>
<td>Vibration damper replacement</td>
<td>A + D¹¹ / D³³⁻⁴¹ + B</td>
</tr>
</tbody>
</table>
Detta blad utbytes mot färgbild:
G-04491-2-1
Detta blad utbytes mot färgbild:

G-04492-2-1
Detta blad utbytes mot färgbild:

G-04493-2-1
Detta blad utbytes mot färgbild:

G-05191-9-1
Detta blad utbytes mot färgbild:

G-04494-2-1
Detta blad utbytes mot färgbild:
G-04495-2-1
Detta blad utbytes mot färgbild:

G-04496-2-1
6.2 Operation chart selection

6 Dismantling and assembly
6 Dismantling and assembly

6.2 Operation chart selection

Detta blad utbytes mot färgbild:

G-04497-2-1
Detta blad utbytes mot färgbild:

G-04498-2-1
7 Technical data

Contents

7.1 Technical data 65
  7.1.1 Type designation 65
  7.1.2 Capacities 65
  7.1.3 Electric motor drive 65
  7.1.4 Lubrication 66
  7.1.5 Operation conditions 66
  7.1.6 Weight 66
  7.1.7 Dimensions 66
  7.1.8 Connections 66
  7.1.9 Sound 66
  7.1.10 Material 66

7.2 Basic size drawing 67
  7.2.1 Connection list 68
  7.2.2 Interface description 69

7.3 Connection diagram 71
  7.3.1 230 V AC 71
  7.3.2 110 V AC 72
  7.3.3 24 V DC 73
7.1 Technical data

7.1.1 Type designation

MIB 303S-13/33

7.1.2 Capacities

Hydraulic capacity 1 m³/h

Maximum density
  - of sediment 1600 kg/m³
  - of feed 1000 kg/m³

Feed temperature
  - Minimum +15 °C
  - Maximum +70 °C

7.1.3 Electric motor drive

The drive comprises a frequency converter and a motor. The motor is wired to suit the voltage and frequency delivered by the frequency converter.

Motor power 0.45 kW

Power consumption
  - Idling 0.2 kW
  - At maximum capacity 0.4 kW

Rated current
  - At 24 V DC 30 A
  - At 110 V AC 8 A
  - At 230 V AC 4 A

Speed 7500 r/min

Direction of rotation Counter-clockwise

Running up time 30 seconds

Stopping time 100 to 180 seconds

The frequency converter brakes the bowl speed to below 1000 r/min within 25 seconds after switching off the current.
7.1.4 Lubrication
Permanently lubricated bearings (no extra lubrication is required).

7.1.5 Operation conditions
Ambient temperature, maximum 55 °C
Feed temperature, maximum +70 °C
Enclosure class, motor and frequency converter IP 54

7.1.6 Weight
Total weight 18 kg

7.1.7 Dimensions
see “7.2 Basic size drawing” on page 67.

7.1.8 Connections
Oil inlet, oil outlet ISO G 3/8. See “7.2 Basic size drawing” on page 67

7.1.9 Sound
Sound power 7.9 Bel(A)
Sound press. level 65 dB(A)

7.1.10 Material
Bowl body AL 111 4212-06
7.2 Basic size drawing

All connections to be installed non-loaded and flexible

A + B. Valid for purifier see “7.3 Connection diagram” on page 71
B. Clarifier only
C. Cable with protection for 24 V DC
### 7.2.1 Connection list

**Alfa Laval ref. 554542 rev. 2**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Requirements/limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>MIB 303S-</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-13 230 VAC</td>
</tr>
<tr>
<td>201</td>
<td>Inlet for product</td>
<td>230 VAC</td>
</tr>
<tr>
<td></td>
<td>- Allowed temperature</td>
<td>Min. 15 °C, Max. +70 °C</td>
</tr>
<tr>
<td></td>
<td>- Viscosity</td>
<td>Max. 14 cSt</td>
</tr>
<tr>
<td></td>
<td>- Flowrate max.</td>
<td>0 - 1000 litres/h</td>
</tr>
<tr>
<td></td>
<td>- Pressure</td>
<td>0 - 60 kPa</td>
</tr>
<tr>
<td>220</td>
<td>Outlet for light phase</td>
<td>70-200 kPa</td>
</tr>
<tr>
<td></td>
<td>- Pressure</td>
<td></td>
</tr>
<tr>
<td>221</td>
<td>Outlet for heavy phase</td>
<td>0 kPa (Open)</td>
</tr>
<tr>
<td></td>
<td>- Pressure</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>Bowl drain outlet</td>
<td>0 kPa (Open)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>709</td>
<td>Electrical connection</td>
<td>See “7.2.2 Interface description”. The connection must be protected against voltage peaks (transients) of high amplitude.</td>
</tr>
<tr>
<td></td>
<td>- Power supply</td>
<td>230 V 1phase 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>- Fuse max.</td>
<td>10 A</td>
</tr>
<tr>
<td>760</td>
<td>Cover interlocking switch</td>
<td>See “7.2.2 Interface description”</td>
</tr>
<tr>
<td></td>
<td>- Type</td>
<td>Magnetic proximity switch</td>
</tr>
<tr>
<td></td>
<td>- Switch rating, resistive load max.</td>
<td>230V AC, 20VA</td>
</tr>
<tr>
<td>769</td>
<td>Frequency converter protection</td>
<td>See “7.2.2 Interface description”</td>
</tr>
<tr>
<td></td>
<td>- Motor overcurrent trip max.</td>
<td>2.5 A in 15 s</td>
</tr>
<tr>
<td></td>
<td>- Out frequency trip max.</td>
<td>140 Hz</td>
</tr>
<tr>
<td></td>
<td>- Overtemperature trip (heat sink)</td>
<td>70-75 °C</td>
</tr>
</tbody>
</table>
7.2.2 Interface description

Alfa Laval ref. 557647 rev. nr 0

General

In addition to the Connection list this document describes limitations and conditions for safe control, monitoring and reliable operation.

Definitions

Ready for start means:

– The machine is assembled correctly.
– All connections are installed according to connection list, Connection Diagram and Interface Description.

Start means:

– The power to separator is on.
– The acceleration is supervised to insure that a certain speed has been reached within a certain time, See “7.1 Technical data” on page 65.

The start procedure continues until the full speed has been reached and a stabilizing period has passed (about 1 minute).

Normal stop means:

– Stopping of the machine at any time with brake applied.

Safety stop means:

The machine must be stopped in the quickest way due to the interlocking switch function (769).

– The machine must not be restarted before the reason for the safety stop has been investigated and action has been taken.

In case of emergency condition in the plant, the machine must be stopped in a way that is described in EN 418.
Component description and signal processing

Electrical connections 709
- The three phase separator motor is fed from a built in frequency converter which in turn is fed from a single phase power supply.

Cover interlocking switch 760
- The separator is equipped with a safety yoke and an interlocking switch. When the cover is closed and the yoke is in the upright position the interlocking circuit in the starter control is closed and the separator could be started.

Signal processing:
- The cover interlocking switch should be connected so that starting and running of the motor is prevented when interlocking circuit is not closed.

Interlocking switch function 769
- The built in frequency converter interlocking switch function contains three sensors, connected in series for overtemperature, over frequency trip and overcurrent.

Signal processing:
If the interlocking switch function opens the machine must be stopped with automatic safety stop.
7.3 Connection diagram

7.3.1 230 V AC

Alfa Laval ref. 554581 rev. nr 2

A. Separator incl. frequency converter
B. Starting equipment (not included in all separators)
   a. Pump control
   b. External level guard
   c. Cable
   d. Power supply 230V AC 50/60 Hz max. fuse 10 A
   e. External emergency stop (replaces jumper when used)
   f. Stop
   g. Start
   h. Interlocking switch

F1 = Fuse 6,3A delayed action
7.3.2  110 V AC

Alfa Laval ref. 562879, rev. 0

A. Separator incl. frequency converter
B. Starting equipment (not included in all separators)
   a. Pump control
   b. External level guard
   c. Cable
   d. Power supply 110V AC 50/60 Hz max. fuse 16 A
   e. External emergency stop (replaces jumper when used)
   f. Stop
   g. Start
   h. Interlocking switch

F1 = Fuse 10A delayed action
7.3.3  24 V DC

Alfa Laval ref. 558253, rev. 0

A. Separator incl. frequency converter
B. Starting equipment (not incl. in all separators)

a. Interlocking switch
b. External level guard
c. Pump control
d. Start
e. Stop
f. Relay
7.3 Connection diagram