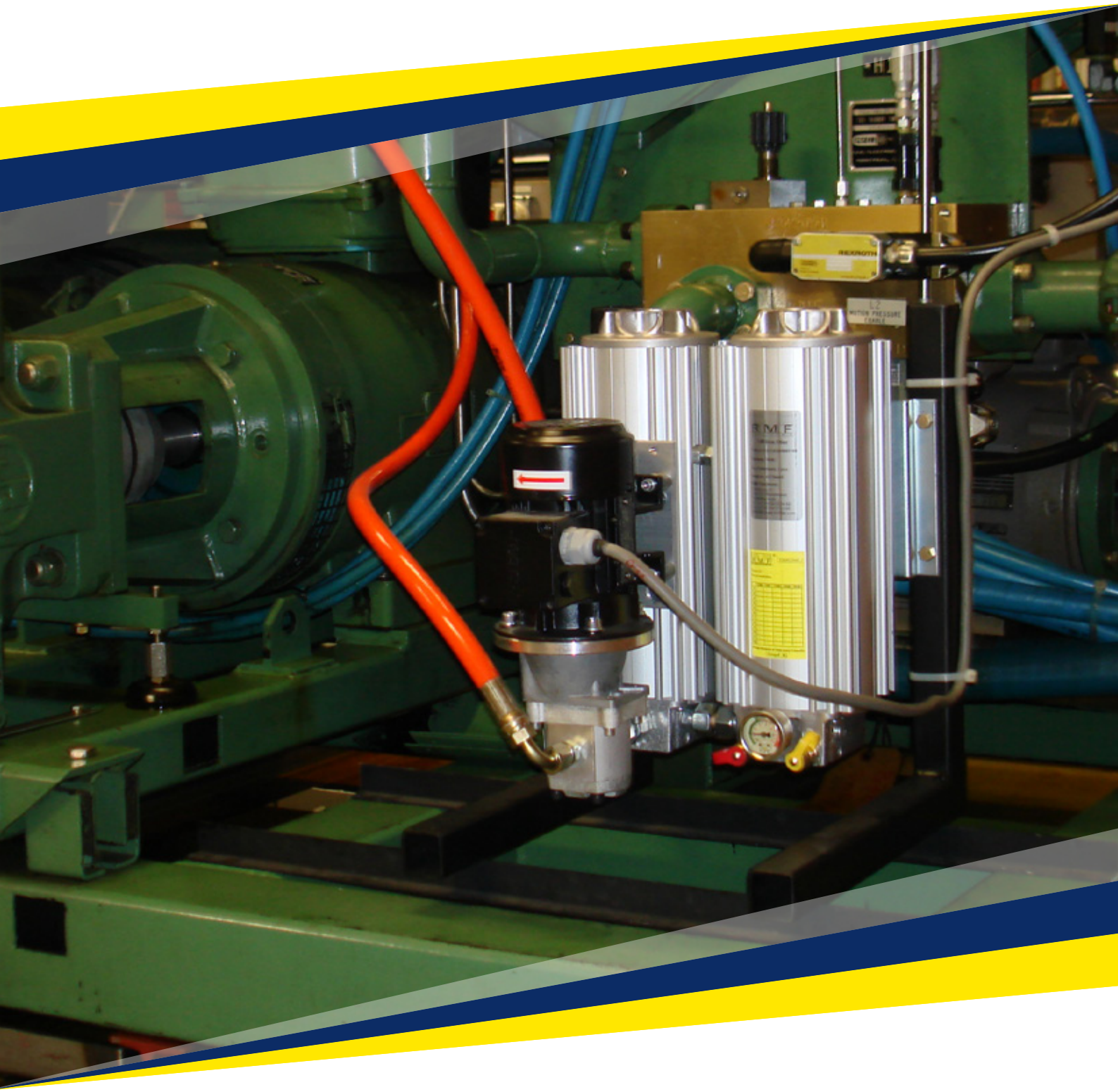
RMF SYSTEMS

September 2024



RMF SYSTEMS

www.bsf-filtertechniek.com

User Manual
OLU, OLUW, OLUH

INTRODUCTION

Thank you for buying this RMF Systems off-line filter. Please read this manual as it contains important information regarding the unique features of this off-line filter.

IMPORTANT

To secure optimum efficiency from your RMF off-line filter, we recommend that you read and follow the instructions as set out in this manual. Should you have any questions or queries, contact your RMF Systems supplier or Doedijns Hydraulics B.V.

EXCLUSION OF LIABILITY

RMF Systems has made every endeavour to ensure the accuracy of the content of this manual. However errors cannot be ruled out. Consequently we accept no liability for such errors as may exist nor for any damage or loss what so ever which may arise as a result of such errors. The content of the manual is checked regularly, any corrections required will be incorporated in subsequent editions.

All details are subject to modifications.

Content

1. Explanation of symbols and notes

The following designations and symbols for dangers are used in this manual:

This symbol denotes safety precautions, the non-observance of which can endanger persons.

This symbol denotes safety precautions, the non-observance of which can endanger persons by electrical voltage.

This symbol denotes safety precautions, the non-observance of which can endanger persons by Temperature hazard.

This symbol marks an important note for the proper use of the off-line unit. The non observance of these notes can lead to damage to the off-line unit.

This symbol is followed by user tips and other useful information. They help you to obtain optimum function from all sections of your system.

2. Safety precautions

2.1. Dangers

The RMF off-line filter is designed to comply with latest technological and safety standards. Nevertheless its usage can hold dangers to life and limb of the user or third party.
In addition the RMF off-line filter could be damaged due to transport or by improper handling!

The Filter must only be used:

- for the specified correct usage.
- when in perfect working order with regard to safety regulations.

Faults which could affect safety must be rectified immediately!

In addition to the installation manual, the general and local regulations concerning accident prevention and environment (and conservation respectively) must be observed and followed.

2.2. Danger by electricity

All work on the electrical equipment of the RMF off-line unit may only be carried out by a qualified electrician.

Check the electrical equipment of the filtration unit regularly. Remove loose connections and damaged wires immediately.

2.3. Safety precautions during normal operation

All safety installations must be in place and fully functional before starting up the system. Check from time to time if there are exterior damages and if it works correctly.

HOW TO BEHAVE IN CASE OF EMERGENCY

In case of emergency press the emergency off on the hydraulic system, immediately!

2.4. Structural alterations

Do not carry out any alterations, conversions or additions to the RMF off-line filter unit without the written consent of RMF Systems. Defective parts have to be replaced immediately by original spare parts. If you use other parts, there is no guarantee that they are suitable for their use and built according to safety standards.

We recommend to run the RMF Systems off-line filter with mineral oils or mineral oil in accordance with DIN 51524, 51525.

Do not operate on other fluids without the consent of RMF Systems.

3. Scope of supply

The RMF Systems off-line filter (see fig.1) comes ready assembled. It consists of a hydraulic gear pump fitted to an electric motor by means of a flexible coupling and bell housing. The pump motor unit is bolted to an assembly plate which in turn is fitted to the filter housing.

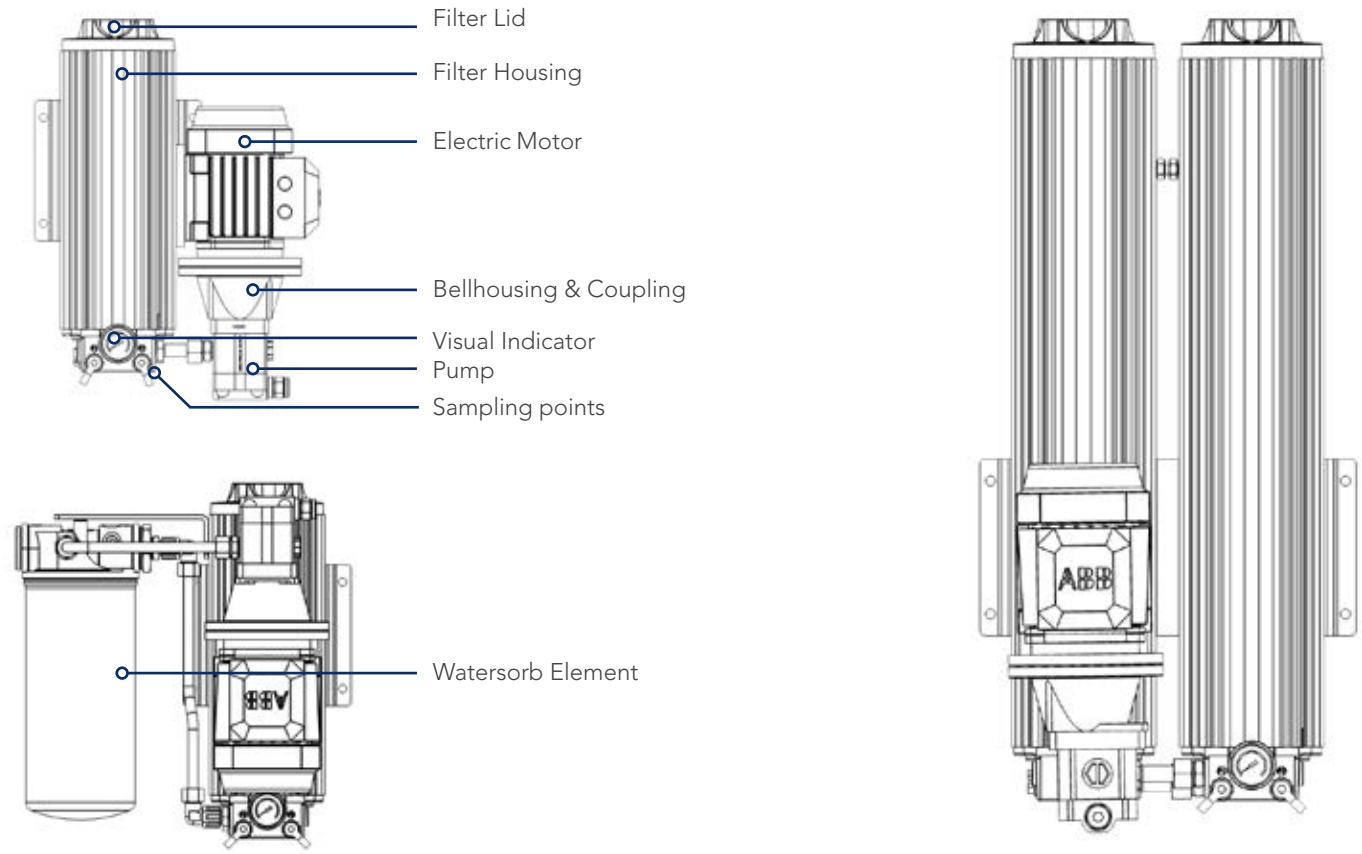


Fig. 1

The Illustrations above are standard units, the units may vary depending on the ordering code you selected.

The pump type may vary depending on the execution off the off-line filter but can be identified through the order code or the identification label (fig.2).

The filter housing comes with a manifold at the base and a lid at the top. One manifold contains an internal by-pass valve, two sampling points and a visual indicator for indication of element saturation.

The filter housing contains the filter element, the units are always supplied with an element inside!

The type of element can be determined from the order code or the identification label on the filter housing (fig 2).
The filter housing and pump/motor are all fitted to a mounting plate ready for assembly.

Hydraulic hoses are not part of the supply unless specifically ordered.
Electrical cables are not part of the supply unless specifically ordered.

Off-line filter

Type nr: OLU**********
Art nr: *********
Element: 30**
No. of elements: * pcs

For type see Ordering code

Serial nr.: *****

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Fig. 2

4. Installation

4.1. Mounting instructions

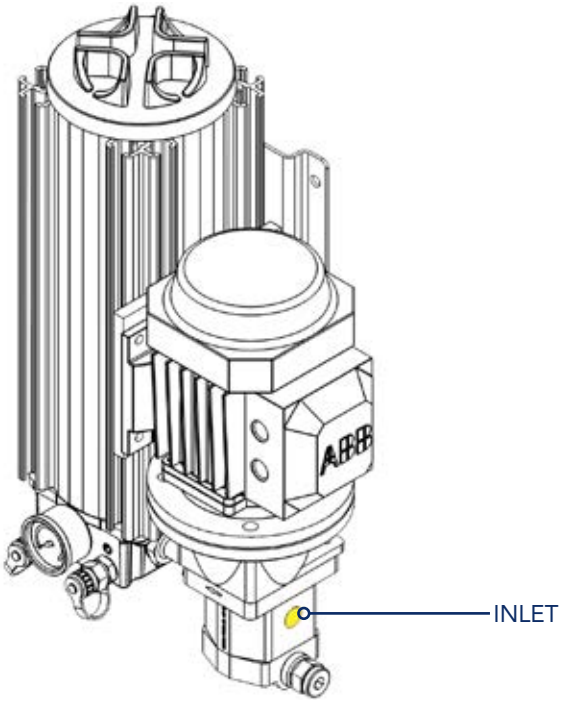
Let a qualified specialist carry out the installation of the off-line filter.

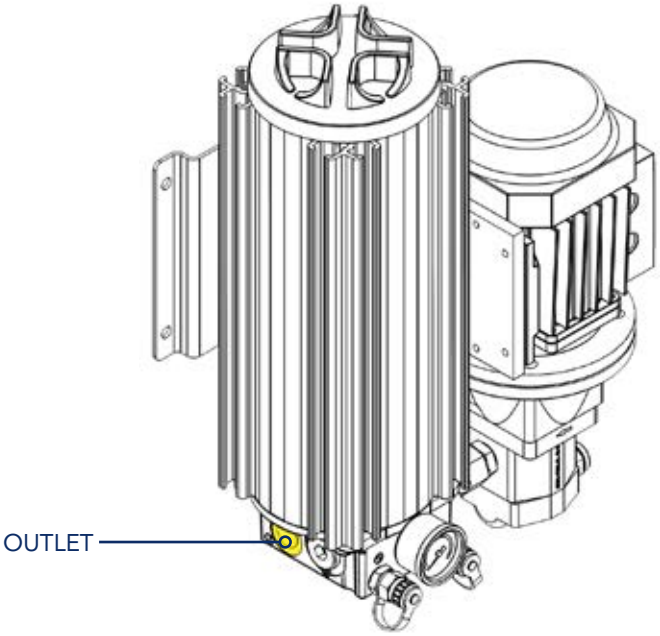
- Install the filter unit upright in a vertical position.
- Ensure a free distance of 400 to 700 mm (depends on your order) over the filter top for element removal.
- Mount the filter on a shock or vibration free surface, in case this is not possible please utilise shock or vibration absorbers for mounting.
- Use the filter mounting plate for fitting (4 holes, diameter 8,5 mm)
- Make sure the pressure gauge is properly visible at all times.
- Enable access to sampling points.
- Protect the filter housing and motor against corrosion or aggressive environments if necessary.

4.2. Hydraulic connection

Let a qualified specialist carry out the hydraulic installation of the off-line filter unit.

- The inlet of the filter unit is the suction side of the pump, the inlet connection may vary from 3⁄8" BSP to 3/4" BSP internal thread, depending on pump size.
- Connect the suction side of the pump to the reservoir by means of a hydraulic hose, use the correct internal diameter.
- Keep suction hose as short as possible, make sure the suction pressure never exceeds -0,4 bar, to avoid pump cavitation.
- Preferably connect the suction line to the lowest point of the reservoir, e.g. the drain. If this is not possible find suitable spot or use a down pipe through the filter lid.
- Point of suction must always be below the fluid level!
- The outlet of the filter unit is on the side of the manifold at the base of the filter housing., the outlet connection may vary from 1⁄2" BSP to 22L internal thread. Return line pressure may not exceed 1 bar.
- Use correct hydraulic fittings and hydraulic hoses for the installation.
- Do not use Teflon tape or liquid sealants.





Do not fit ball valve or any obstructions in the return line of the filter unit, the return line must flow free back to tank.

- Keep the return line a short as possible and use hydraulic hose of correct internal diameter (1⁄2")
- Make sure the point of return on the reservoir is as far away as possible from suction point (Fig. 3).

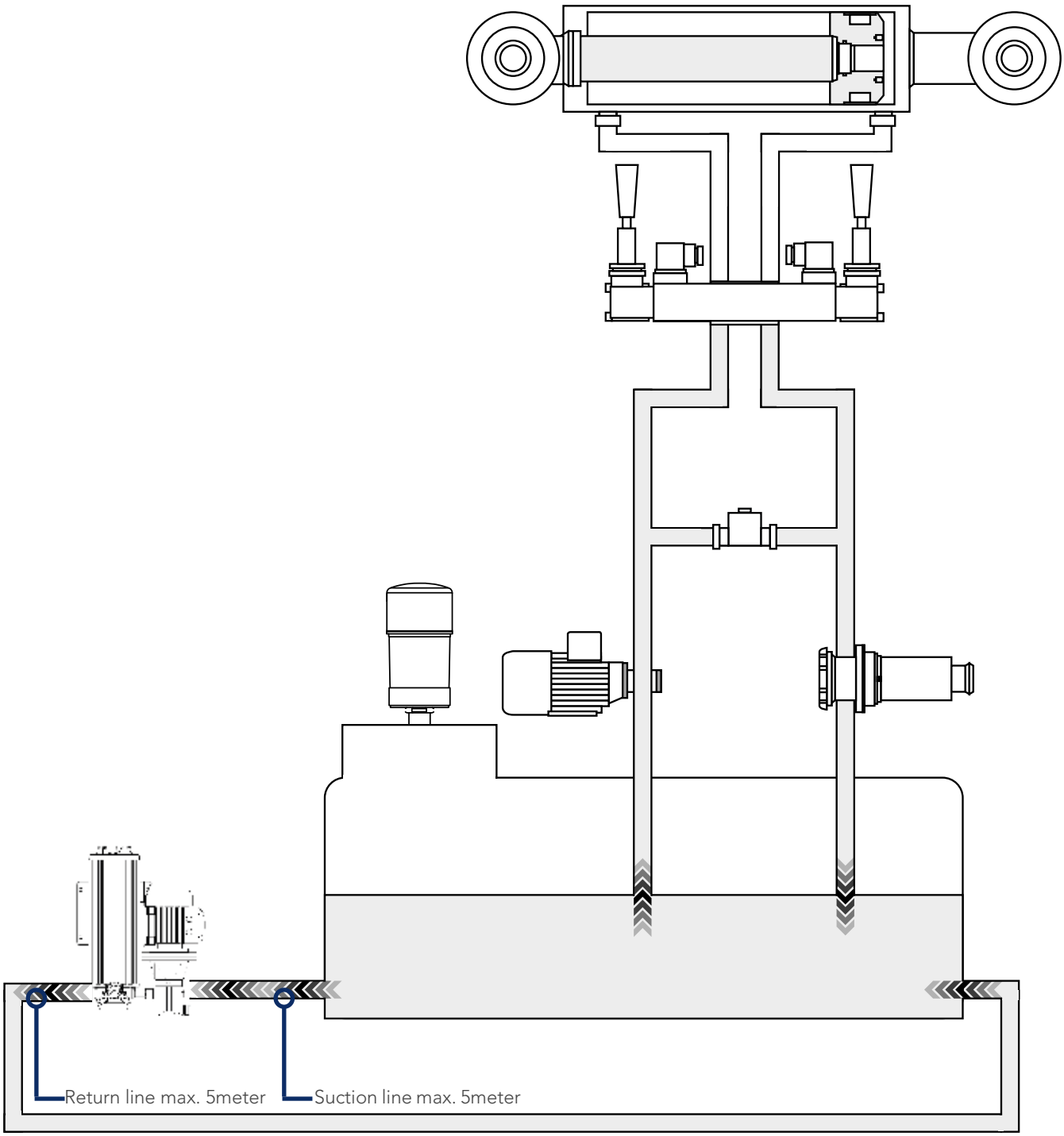


Fig. 3

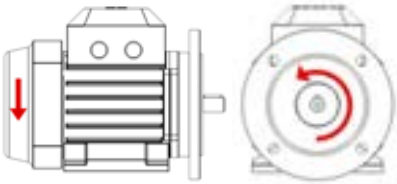
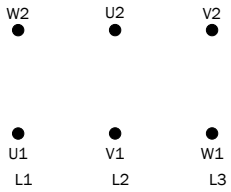
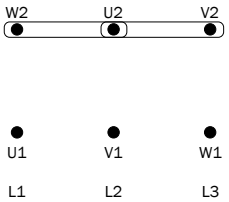
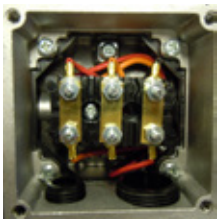
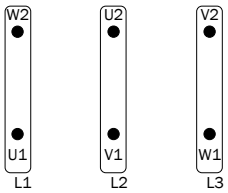
5. Electrical equipment

5.1. Electrical connection

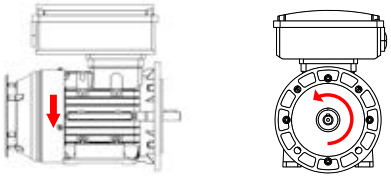
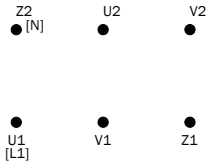
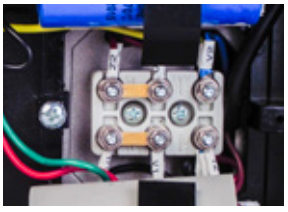
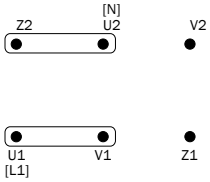
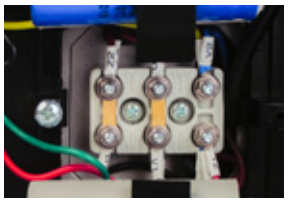
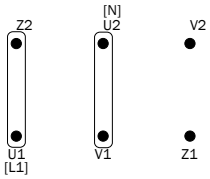
Let a qualified electrician carry out the electric installation of the off-line filter unit.

- Check before installation if the electrical data of the electric motor corres ponds with the data of the local electrical supply.
- Connection 3 phase/ 1 phase (see table 1)
- Ensure that the electric motor rotates in accordance with the arrow on the electric motor!

5.2. Wiring Diagram electric motor

DESCRIPTION	VISUAL	SCHEMATIC
3 PHASE MOTOR		
NOT CONNECTED		
Y-STAR		
Δ-TRIANGLE		

The 1 phase electric motor may vary depending on the unit.

ROTOR		
DESCRIPTION	VISUAL	SCHEMATIC
1 PHASE MOTOR		
NOT CONNECTED		
CLOCKWISE ROTATION		
COUNTER CLOCKWISE ROTATION		

TECHNICAL DETAIL E-MOTOR 50 / 60 HZ				
DESCRIPTION	VOLTAGE	NOMINAL CURRENT	RPM	SETTING MOT. PROTECTION
RMF - 0,18kW	230/400VAC	1,03 A / 0,60 A	1345	Nominal current
RMF - 0,18kW	200/400VAC	1,03 A / 0,60 A	1345	
RMF - 0,29kW	230/400VAC	1,65 A / 0,95 A	1320	
RMF - 0,37kW	230/400VAC	1,90 A / 1,10 A	1350	
RMF - 0,60kW	230/400VAC	2,75 A / 1,60 A	1350	

TECHNICAL DETAIL E-MOTOR 50 HZ 1 PHASE				
DESCRIPTION	VOLTAGE	NOMINAL CURRENT	RPM	SETTING MOT. PROTECTION
RMF - 0,18kW	110 VAC	3,30 A	1415	Nominal current
RMF - 0,18kW	230 VAC	1,30 A	1415	
RMF - 0,37kW	110 VAC	6,10 A	1400	
RMF - 0,37kW	230 VAC	2,90 A	1400	

TECHNICAL DETAIL E-MOTOR 60 HZ 1 PHASE				
DESCRIPTION	VOLTAGE	NOMINAL CURRENT	RPM	SETTING MOT. PROTECTION
RMF - 0,18kW	110 VAC	2,70 A	1710	Nominal current
RMF - 0,18kW	230 VAC	1,30 A	1710	
RMF - 0,37kW	110 VAC	5,20 A	1700	
RMF - 0,37kW	230 VAC	2,50 A	1700	

6. Element change

- Elements must be replaced on indicator 6,3 bar (cellulose) and 4,5 bar (glass fibre) or at least every 6 months.
- Check on the identification sticker of the filter unit which element is fitted.
- Make sure you have the correct replacement element available.
- Cellulose elements 30H and 60H, 0,5µ with NBR (B) FPM (V) seals available.
- Glass Fibre elements 30G and 60G are available in different filter fineness with NBR (B) or FPM (V) Seals.
- Switch off the unit.
- Make sure that no one else can switch on the unit during maintenance. Tag the switch!

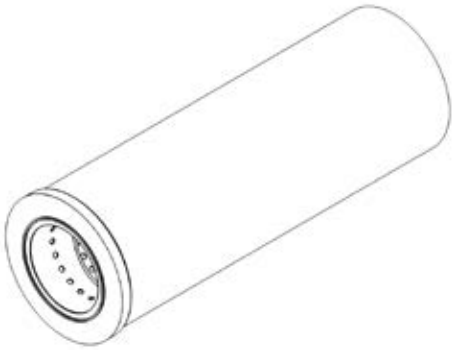


Fig. 4

- Check that the filter housing is free of pressure (Fig. 5).

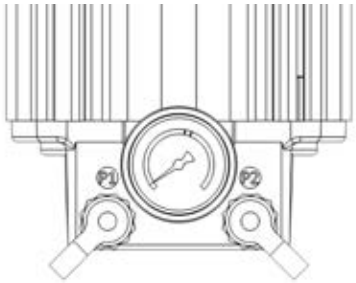


Fig. 5

- Remove filter lid by turning anti-clockwise (Fig. 6).
- Lift the lid and the filter element carefully from the housing, check that the housing is not overflowing from oil out of the hydraulic lines connected to the filter unit. Make sure the "O" ring does not fall from the lid into the housing (Fig. 7).

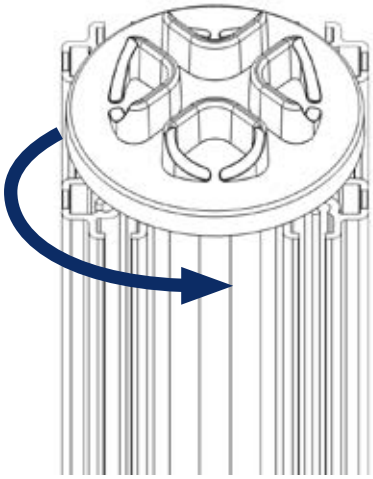


Fig. 6

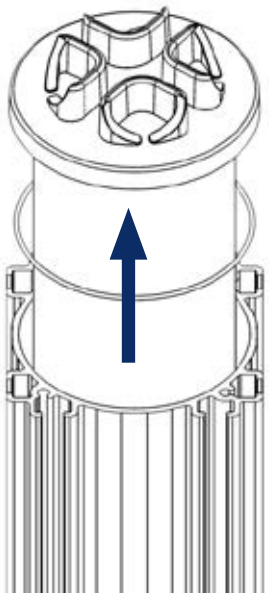
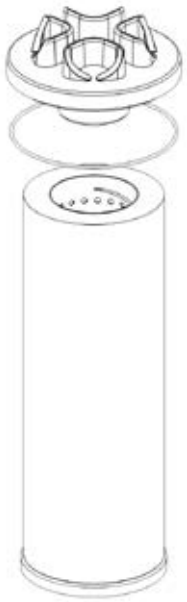


Fig. 7

▶ Remove the filter element from the lid (fig. 7) and dispose off in accordance with local regulation.

A-filter element



b-filter element

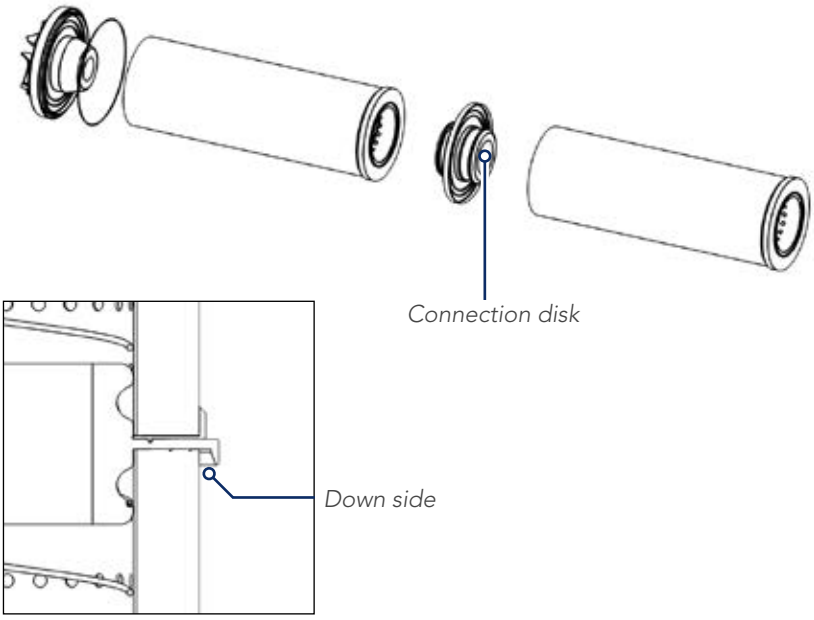


Fig. 7

▶ Wet new "O" ring (provided with the new element) with hydraulic fluid, fit to the lid and fit new element onto lid with the side that contains no silicon seal. Push element hard onto filter lid until it mates properly.

▶ If you would like to stack 30G elements, please make sure to use the correct o-rings on both sides of the connection disc (Fig. 8e).

Fig. 8a

Fig. 8b

Fig. 8c

Fig. 8e

Fig. 8d

- Carefully insert new filter element into filter housing. (Fig. 9)
- Turn lid clock wise and close upon the housing, observe that the "O"-ring fits in place properly. (Fig. 10)

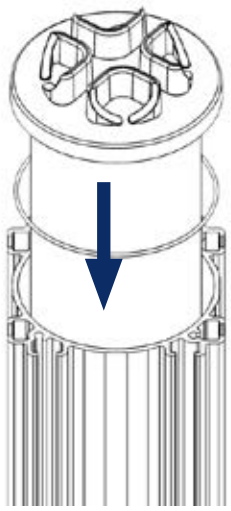


Fig. 9

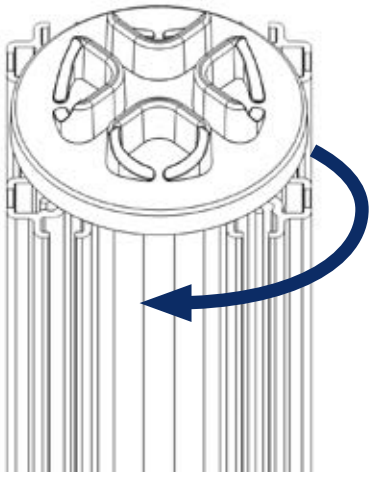


Fig. 10

- Close and tighten properly, use spanner, prying bar or tool, but do not over tighten! (Fig 11)

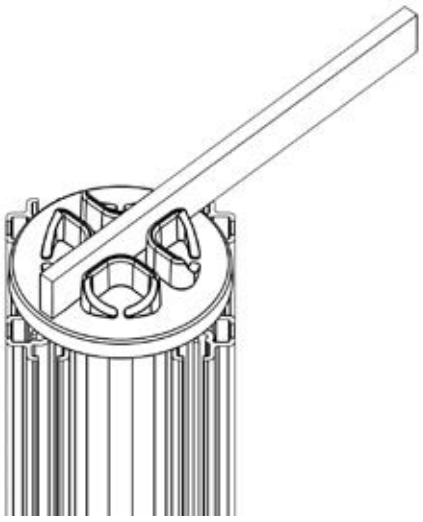


Fig. 11

- Tightening torque ± 20 Nm.
- When replacing a 30H element there is no need to push the element into the filter lid, the element can be lowered into the filter housing. Following that the filter lid can be placed on the element/housing. All other steps remain the same!
- Re-start the filter unit and observe to make sure there are no leaks.

7. Heated unit (Only in OLUH units)

7.1. Technical information heated unit section

Installed power:	2000 Watt / 4000 Watt (depending on your configuration)
Specific heat input:	Max. 2,5 w/cm²
Voltage / frequency:	230/400 VAC 50Hz or 255/460 VAC 60Hz (must be specified on order)
Max allowed temp.:	60° Celsius
Controlled by:	Thermostat Bi-metal
Overheat protection:	Yes

7.2. Thermostat

To adjust the temperature of the heater element:

- Remove cover as shown in figure 18.
- Turn the thermostat to required temperature, max. 60°C.
- Put the cover back on.

Fig. 12

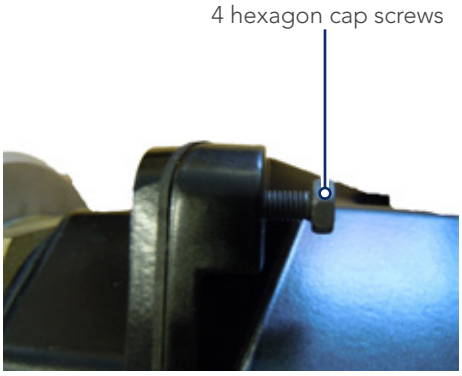


Fig. 13

Fig. 14

7.3. Heater Element exchange

To exchange the heater element:

- To remove the heater element, turn heater element anti clockwise. Use spanner 90.
- To insert the heater element, turn the heater element. Use spanner 90 to tight de heater element.

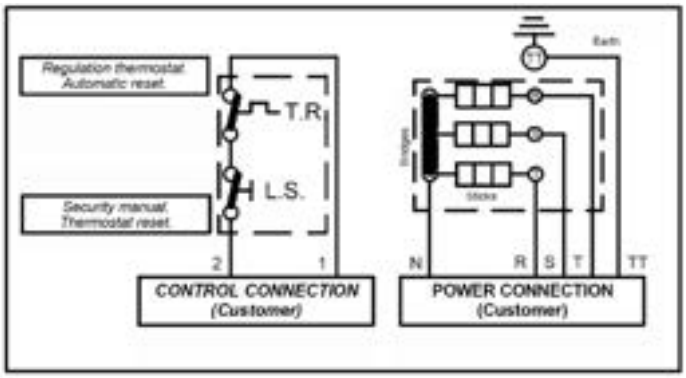
Fig. 15

7.4. Connection diagrams

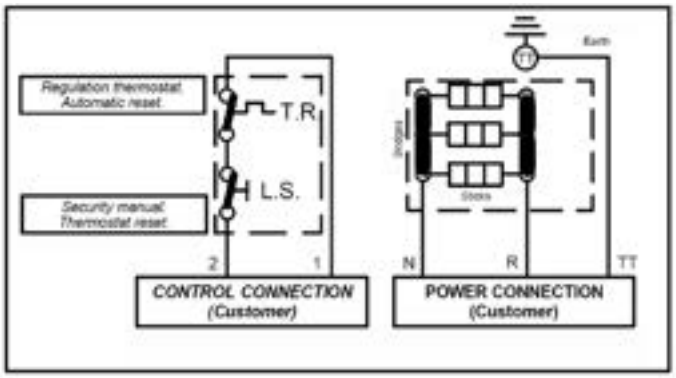
- Let a qualified electrician carry out the electric installation of the heated unit.
- Check before installation if the electrical data of the heater element corresponds with the data of the local electrical supply.
- Connection 3 phase (see fig. below).

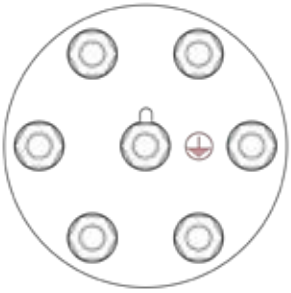
Heated unit must be energized together with the pump.

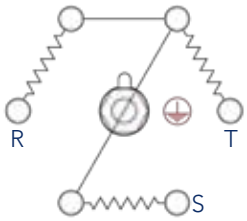
THREE PHASE CONNECTION (STAR)

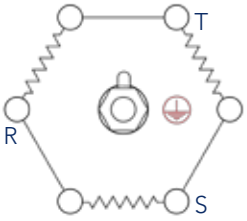


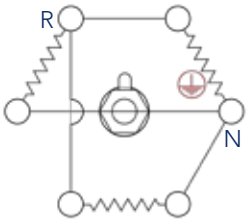
SINGLE PHASE CONNECTION PARALLEL











	Y CONNECTION	Δ CONNECTION	SINGLE CONNECTION
ELEMENT LABELLED	POWER SUPPLY VOLTAGE	POWER SUPPLY VOLTAGE	POWER SUPPLY VOLTAGE
220/380 V	3~380 V	3~220 V	2~220 V
230/400 V	3~400 V	3~230 V	2~230 V
240/415 V	3~415 V	3~240 V	2~240 V
254/440 V	3~440 V	3~254 V	2~254 V
127/220 V	3~220 V	3~127 V	2~127 V

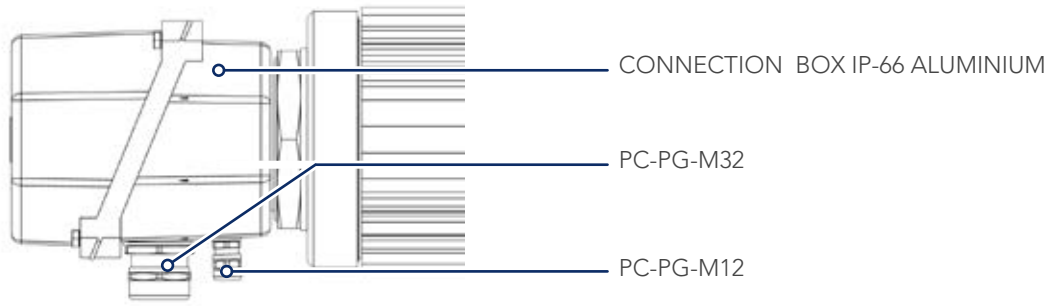


Fig. 16

7.5. Overheat protection reset

If the heater exceed the set temperature, security relay wil be activated. To reset the relay:

- Remove cover as shown in figure 18.

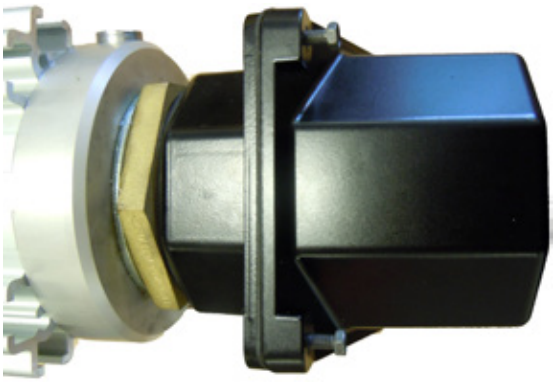


Fig. 17

4 hexagon cap screws

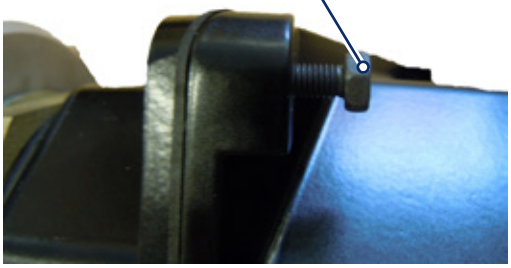


Fig. 18

- Remove the black lid as shown in figure 19.

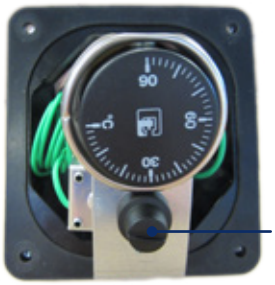


Fig. 19

Fig. 20

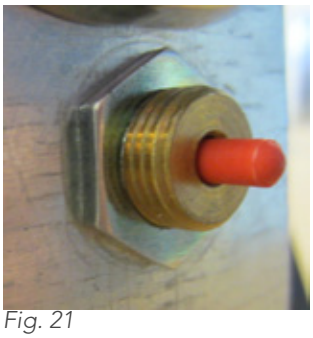


Fig. 21

- Press the thermostate reset (Fig. 21).
- Put the black lid back.
- Put the cover back on.

Fig. 22

4 hexagon cap screws

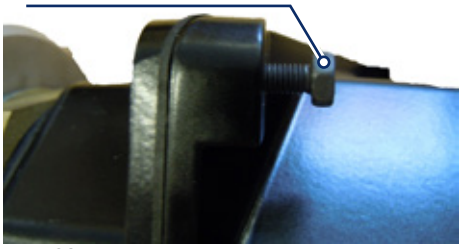


Fig. 23

8. Change of watersorb element (Only in OLUW units)

- Change watersorb element always at same time as filterelements.
- Make sure you have the correct H2O sorb replacement element available.
- Remove watersorb filter element by turning anti-clockwise. (See Fig. 24)
- If this cannot be done by hand, use special tool for filter removal (See for example Fig. 25)

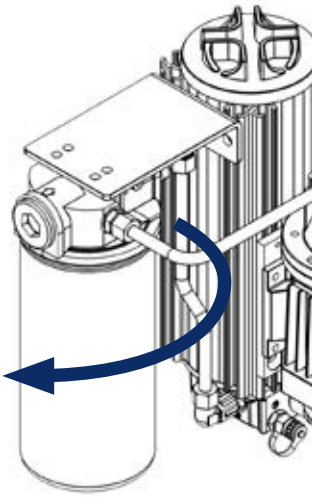


Fig. 24

Fig. 25

- Use a new seal included with watersorb packaging, lubricate and observe that the seal fits in place properly.
- Close clockwise and tighten new watersorb element by hand, do not over tighten! (see Fig. 26)

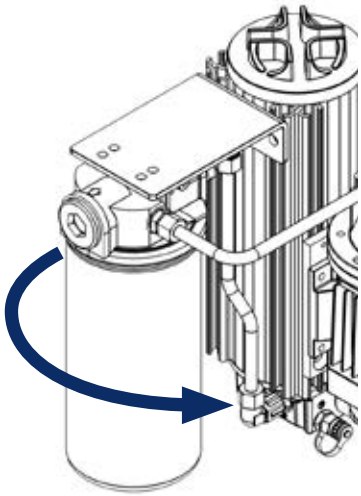


Fig. 26

- Dispose off old watersorb element in accordance with local regulation.
- Re-start the filter unit and observe to make sure there are no leaks.

9. Spare parts

For a complete spare parts list please contact your RMF distributor with complete details of your type and serial number

10. Fault finding

NO OIL FLOW:

- Check rotation of electric motor if incorrect change the electrical connection.
- Pump is not drawing fluid, pre-fill the suction hose with oil and start again.

FILTER IS LEAKING AT THE TOP:

- Check if "O"ring in filter lid is fitted properly if not adjust or replace.
- Check if filter lid is tightened properly, if not retighten.

ELECTRIC MOTOR KEEPS TRIPPING:

- Check local grid with motor identification plate.
- Check motor protection switch for setting and adjust according to electric motor identification label. Adjust to nominal Amperage +10%.

FILTER ELEMENT INDICATOR IS IN RED:

- Filter element is saturated, replace.
- Oil is to cold/ fluid viscosity to high, warm up the fluid.
- Fluid viscosity to high, check specification of filter unit and fluid.

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RMF SYSTEMS

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