High-pressure filters

Made of stainless steel and steel

Table of contents

1 Description of the product

Filter elements are used to protect hydraulic elements against contaminations.
They are installed e.g. in front of valves and intensifiers and avoid penetration of swarf and contamination. Thereby the safety of functioning, as well as the life, are considerably increased.
Up to their complete clogging, all filters are pressure stable up to the max. operating pressure and due to their stainless steel version they can also be used for water and other liquids as e.g. cooling lubricants (except 3887-030).

2 Validity of the documentation

This document applies to the following products:
High-pressure filter of the data sheet F9.500. The following types or part numbers are concerned:

High-pressure filter with rectifier function:
- 3887 086
- 3887 153
- 3887 159

High-pressure filter:
- 3887 087

High-pressure filter, compact:
- 3887 067
- 3887 154
- 3887 162

High-pressure plug-in filter:
- 3887 066
- 3887 071
- 3887 104
- 3887 136

High-pressure screw-in filter:
- 3887 030

3 Target group of this document

- Specialists, fitters and set-up men of machines and installations with hydraulic expert knowledge.

Qualification of the personnel
Expert knowledge means that the personnel must
- be in the position to read and completely understand technical specifications such as circuit diagrams and product-specific drawing documents,
- have expert knowledge (electric, hydraulic, pneumatic knowledge, etc.) of function and design of the corresponding components.

An **expert** is somebody who has due to its professional education and experiences sufficient knowledge and is familiar with the relevant regulations so that he
- can judge the entrusted works,
- can recognize the possible dangers,
- can take the required measures to eliminate dangers,
- knows the acknowledged standards, rules and guidelines of the technology.
- has the required knowledge for repair and mounting.

4 Symbols and signal words

⚠ WARNING

Person damage
Stands for a possibly dangerous situation.
If it is not avoided, death or very severe injuries will result.

⚠ CAUTION

Easy injuries / property damage
Stands for a possibly dangerous situation.
If it is not avoided, minor injuries or material damages will result.

Hazardous to the environment
The symbol stands for important information for the proper handling with materials that are hazardous to the environment.
Ignoring these notes can lead to heavy damages to the environment.

Note

This symbol stands for tips for users or especially useful information. This is no signal word for a dangerous or harmful situation.

5 For your safety

5.1 Basic information

The operating instructions serve for information and avoidance of dangers when installing the products into the machine as well as information and references for transport, storage and maintenance.
Only in strict compliance with these operating instructions, accidents and property damages can be avoided as well as trouble-free operation of the products can be guaranteed.
Furthermore, the consideration of the operating instructions will:

- avoid injuries
- reduce down times and repair costs,
- increase the service life of the products.

5.2 Safety instructions

The product was manufactured in accordance with the generally accepted rules of the technology.
Observe the safety instructions and the operating instructions given in this manual, in order to avoid personal damage or material damage.

- Read these operating instructions thoroughly and completely, before you work with the product.
- Keep these operating instructions so that they are accessible to all users at any time.
- Pay attention to the current safety regulations, regulations for accident prevention and environmental protection of the country in which the product will be used.
- Use the ROEMHELD product only in perfect technical condition.
- Observe all notes on the product.
- Use only accessories and spare parts approved by the manufacturer in order to exclude danger to persons because of not suited spare parts.
- Respect the intended use.
- You only may start up the product, when it has been found that the incomplete machine or machine, in which the product shall be mounted, corresponds to the country-specific provisions, safety regulations and standards.
- Perform a risk analysis for the incomplete machine, or the machine.
  Due to the interactions between the product and the machine/fixture or the environment, risks may arise that only can be determined and minimized by the user, e.g. :
  - generated forces,
  - generated movements,
  - Influence of hydraulic and electrical control,
  - etc.

6 Application

6.1 Intended use

High-pressure filters are used to protect hydraulic elements against contaminations. They are installed e.g. in front of valves and intensifiers and avoid penetration of swarf and contamination. Thereby the safety of functioning is considerably increased.
Furthermore the following are possible uses:

- Use within the capacity indicated in the technical characteristics (see data sheet).
- The operation with the permitted hydraulic oils (see data sheet A 0.100).
- Use as per operating instructions.
- Compliance with service intervals.
- Qualified and trained personnel for the corresponding activities.
- Mounting of spare parts only with the same specifications as the original part.

6.2 Misapplication

⚠ WARNING

Injuries, material damages or malfunctions!

Modifications can lead to weakening of the components, reduction in strength or malfunctions.

- Do not modify the product!

The use of the products is not authorised:

- For domestic use.
- For use at fairgrounds and amusement parks.
- In food processing or in areas with special hygiene regulations.
- In mines.
- In ATEX areas (in explosive and aggressive environments, e.g. explosive gases and dusts).
- If physical effects (welding currents, vibrations or others) or chemically acting media damage the seals (resistance of the seal material) or components and this can lead to functional failure or premature failure.

Special solutions are available on request!

7 Installation

⚠ WARNING

Injury by high-pressure injection (squirting out of hydraulic oil under high pressure)!

Improper connection can lead to escapes of oil under high pressure at the connections.

- Mounting or dismounting of the element must only be made in depressurised mode of the hydraulic system.
- Connection of the hydraulic line as per DIN 3852/ISO 1179.
- Unused connections have to be locked professionally.
- Use all mounting holes.

Injury by high-pressure injection (squirting out of hydraulic oil under high pressure)!

Wear, damage of the seals, ageing and incorrect mounting of the seal kit by the operator can lead to escapes of oil under high pressure.

- Before using them make a visual control.

Poisoning due to contact with hydraulic oil.

Wear, damage of the seals, aging and incorrect mounting of the seal kit by the operator can lead to escapes of oil.
Incorrect connection can lead to escapes of oil at the ports.

- For handling with hydraulic oil consider the material safety data sheet.
- Wear protection equipment.

7.1 Design

⚠ WARNUNG

Incorrect flow direction

An incorrect flow direction through the filter cartridge can cause the high-pressure filter compact to become blocked and destroy the filter cartridge.
Ensure that the direction of installation is correct and follows the flow arrow!

Missing shut-off devices

Suitable shut-off valves for inlet, outlet, and relief must be installed on site upstream and downstream of the filter.
Failure to install these can lead to uncontrolled media leaks and increased maintenance costs.

NOTICE

When using high-pressure filters (except 3887086, 3887153 and 3887030) pay attention to the flow direction.

7.2 High-pressure filter with rectifier function

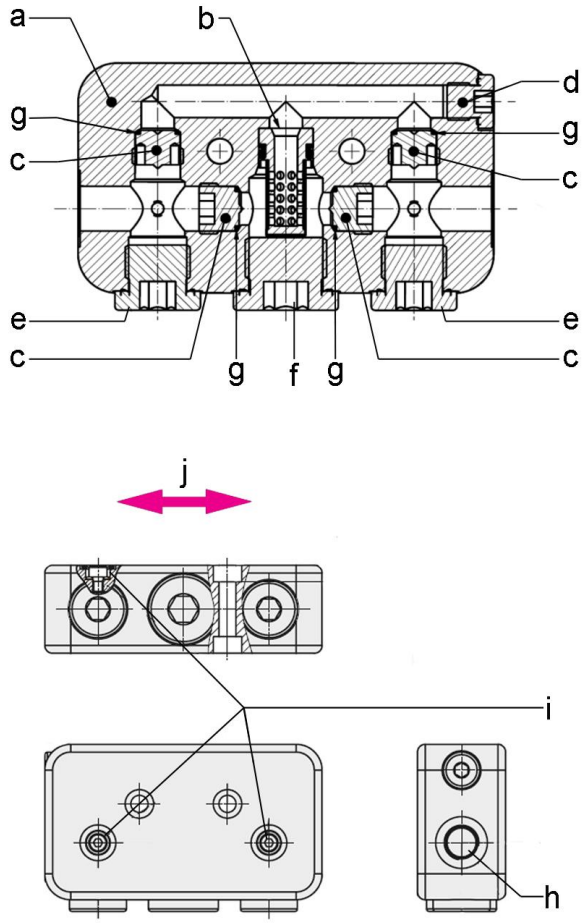

Fig. 1: High-pressure filter with rectifier function

a	Housing	g	Check valve sealing
b	Filter insert 10 µm or 30 µm	h	Symmetrically arranged thread connection G 1/4 at both sides
c	Check valve	i	Socket head cap screws M4 (after removal of socket head cap screws, use O-ring 10x2)
d	Screw plug	j	Flow direction
e	Screw plug for check valve		
f	Screw plug for filter insert		

7.2.1 Installation

The high-pressure filter with rectifier function is installed in the line upstream of the components to be protected. Optionally, the housing has two connecting holes on the rear side, which are closed in the factory with M4 cylinder screws (i). These enable direct manifold mounting. If the filter is manifold mounted, the G 1/4 (h) side inlets and outlets must be closed with suitable screw plugs in accordance with the data sheet. In addition, two suitable O-rings (see data sheet) must be inserted into the designated sealing grooves.

Ensure that the maximum permissible operating pressure (see technical characteristics) and the permissible differential pressure of the filter inserts are not exceeded.

7.3 High-pressure filter and high-pressure filter compact

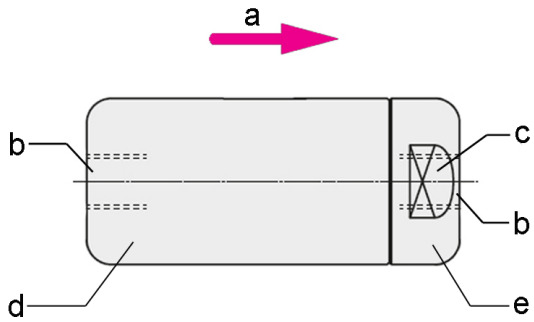

Fig. 2: High-pressure filter

a Flow direction b Thread connection G1/4	c Wrench size SW36 d Filter housing e Adapter

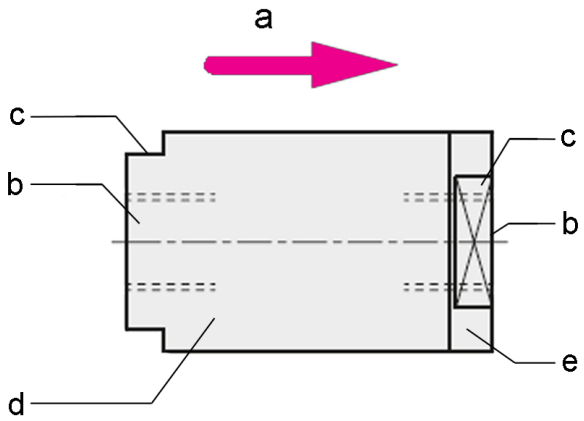

Fig. 3: High-pressure filter compact

a Flow direction b Thread connection G1/4	c Wrench size SW24 d Filter housing e Adapter

7.3.1 Installation

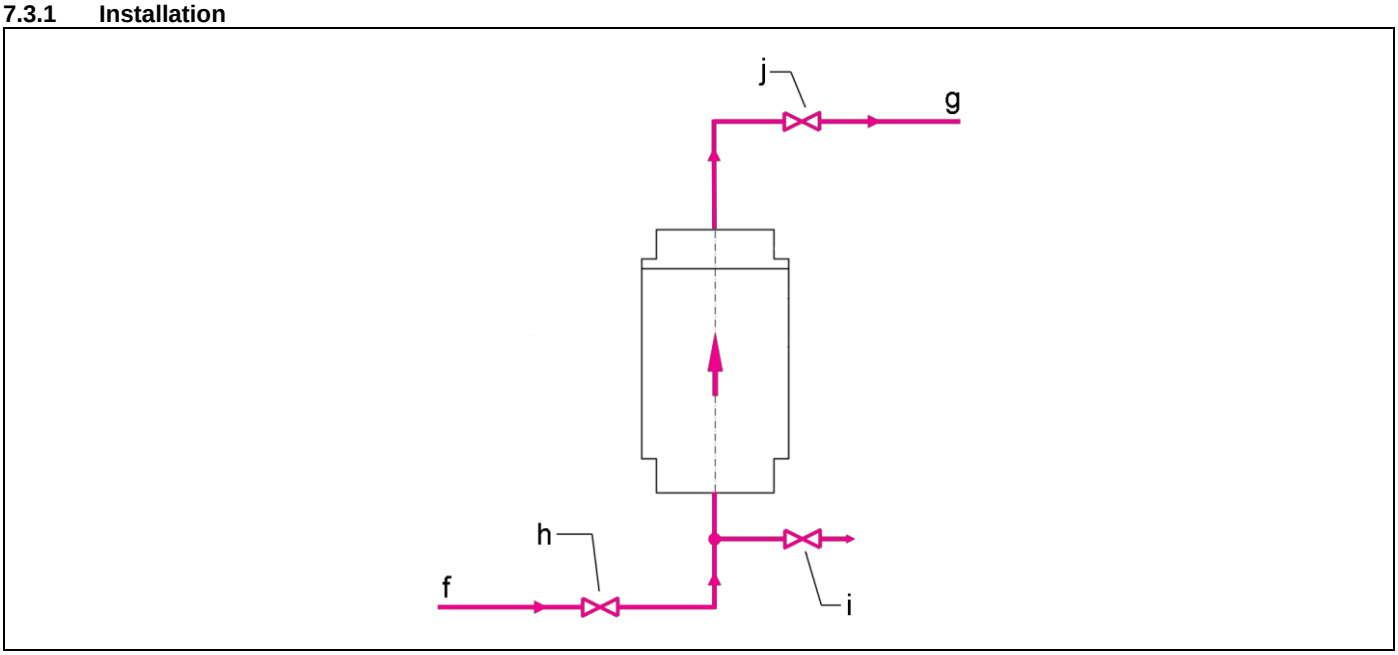

Fig. 4: Installation example

f	Input	h	Shut-off valve input
g	Output	i	Shut-off valve relief
		j	Shut-off valve output

The high-pressure filter is installed in the line upstream of the components to be protected. When connecting the input and output lines, ensure that the flow direction corresponds to the arrow marking (a).
If there is a risk of return flow, a check valve must be installed downstream of the high-pressure filter. Ensure that the maximum permissible operating pressure is not exceeded (see technical characteristics). The permissible differential pressure of the filter insert must also not be exceeded.
During installation, make sure that there is sufficient space to replace the filter insert at a later date. After installation, close all shut-off valves.

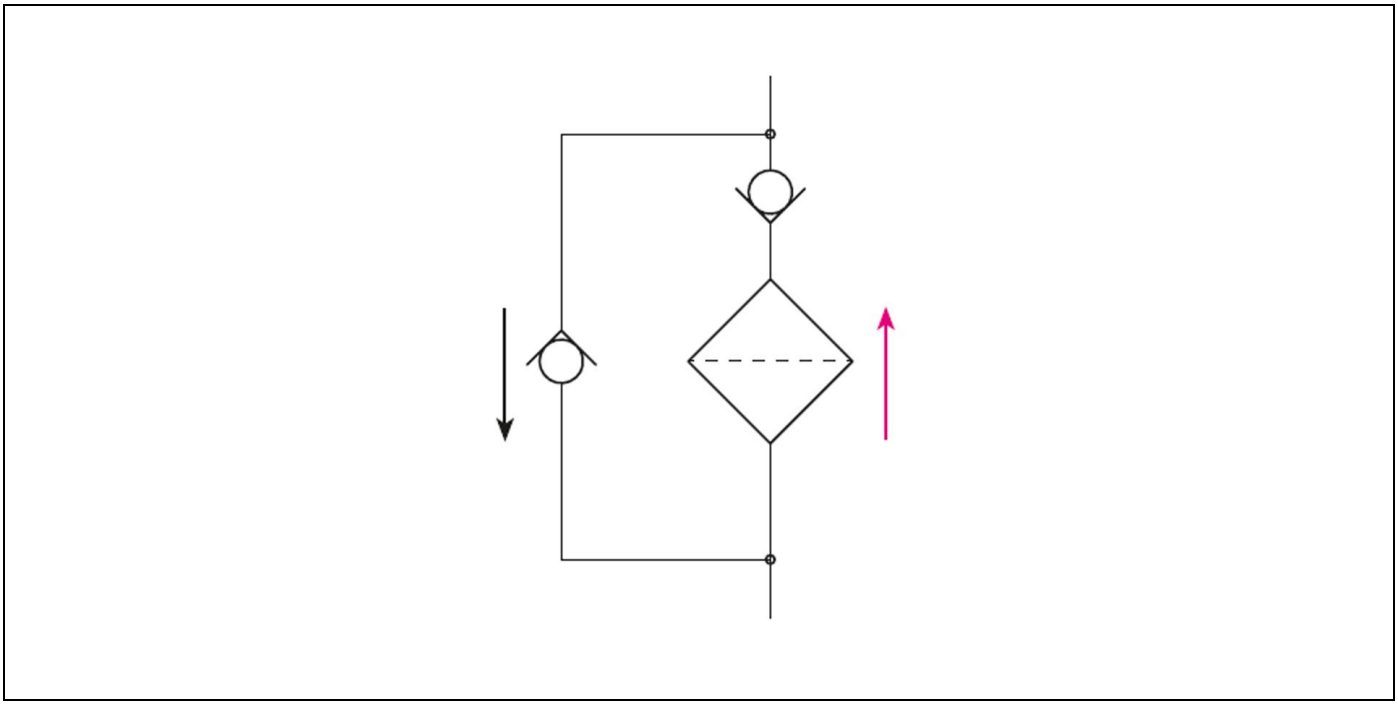

Fig. 5: Circuit example with only one flow direction

7.4 High-pressure screw-in filter

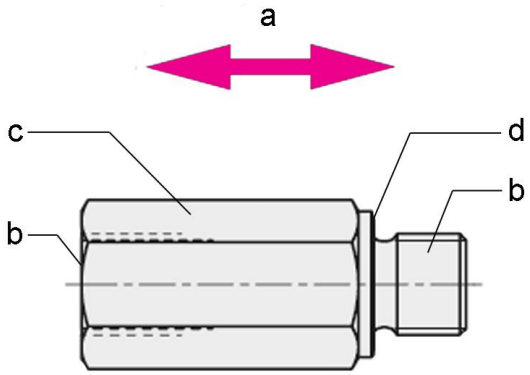

Fig. 6: High-pressure screw-in filter

a Flow direction	c Wrench size SW19
b Thread connection G1/4	d Sealing edge

7.5 High-pressure plug-in filter

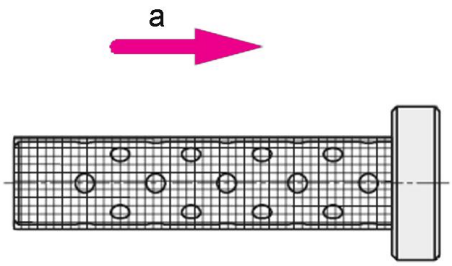

Fig. 7: High-pressure plug-in filter 3887066

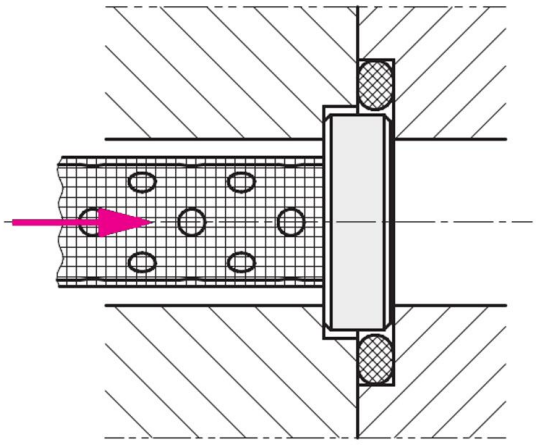

Fig. 8: Installation example for plug-in filter 3887066

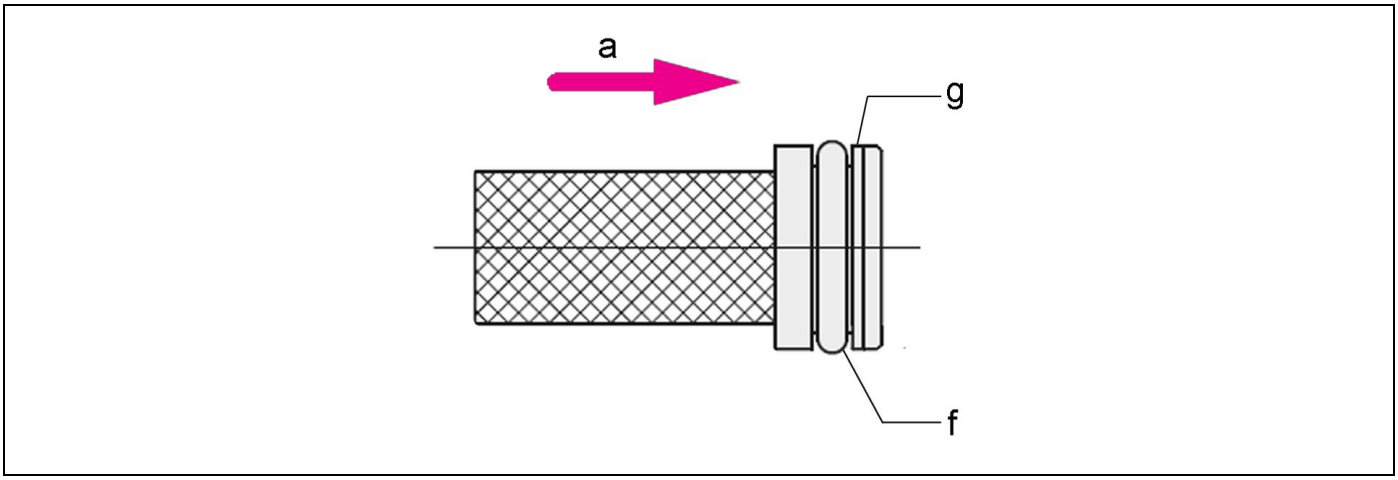

Fig. 9: High-pressure plug-in filter 3887071 and 3887104

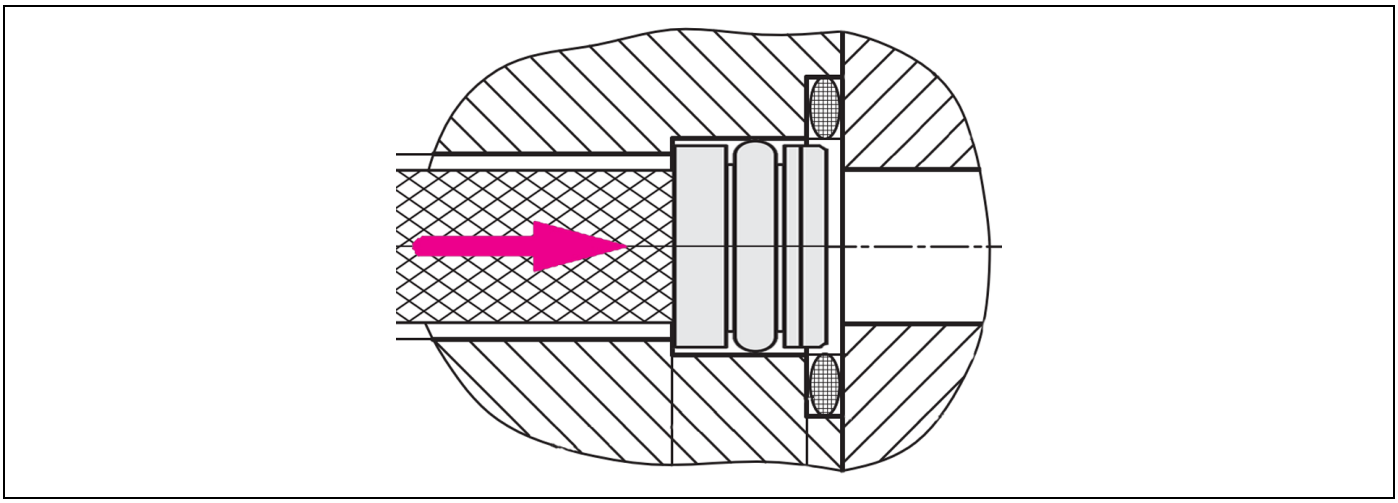

Fig. 10: Installation example

a Flow direction	f O-ring 10x2 g Back-up ring 14 x 10.5 x 0.8

8 Start up

⚠ WARNING

Injury caused by high-pressure injection

The filter may only be commissioned once it has been ensured that all connections have been made correctly and are secure.

1. **Preparation**
   Ensure that all shut-off valves are closed.
2. **Function test before commissioning**
   The high-pressure filter may only be put into operation once all connections have been correctly and professionally installed.
3. **Pressure build-up**
   Slowly open the shut-off valve at the input. Avoid opening it suddenly, as this can damage the filter housing or filter insert.
4. **Commissioning**
   The high-pressure filter is now ready for use.
   Next, slowly open the shut-off valve at the output as well. The filter is now a part of ongoing operation.
5. **Leak test**
   Carefully check the entire high-pressure filter for possible leaks.

9 Maintenance

⚠ WARNING

Injury caused by high-pressure injection

- Never perform maintenance work while pressure is present.

Injury by high-pressure injection (squirting out of hydraulic oil under high pressure)!

Wear, damage of the seals, ageing and incorrect mounting of the seal kit by the operator can lead to escapes of oil under high pressure.

- Before using them make a visual control.

Poisoning due to contact with hydraulic oil.

Wear, damage of the seals, aging and incorrect mounting of the seal kit by the operator can lead to escapes of oil.
Incorrect connection can lead to escapes of oil at the ports.

- For handling with hydraulic oil consider the material safety data sheet.
- Wear protection equipment.

The high-pressure filter must be serviced at regular intervals. The service interval depends on the degree of contamination by the medium and on possible pressure fluctuations in the system.
In the event of load changes or vibrations, the high-pressure filter must be checked regularly for damage and to ensure that all connections are secure.
If external leakage occurs, the seal in question must be replaced. If the leak persists, all sealing surfaces must be checked and defective components must be replaced immediately.

9.1 High-pressure filter with rectifier function

The filter element is subject to normal wear during operation and must therefore be checked at least once every 6 months.
If you notice any signs of wear or damage to components during the inspection, replace them immediately.

9.1.1 Pressure relief

1. Close the shut-off valve upstream of the high-pressure filter (input).
2. Next, close the shut-off valve downstream of the high-pressure filter (output).
3. Slowly open the screw plug (f) on the high-pressure filter until the pressure has been completely released.

9.1.2 Replacing the filter insert

1. Unscrew the screw plug (f) with an Allen key (wrench size 10).
2. Carefully pull out the filter insert (b) with pointed pliers.
3. Clean the filter insert with compressed air. Pay attention that the O-ring/back-up ring are clean.
4. Reinsert the filter insert (O-ring/back-up ring side first).
5. Screw in the screw plug and tighten with 80 Nm.

9.2 High-pressure filter and high-pressure filter compact

The service life of the filter insert depends on the flow rate and the degree of contamination of the liquid to be filtered. Therefore, it is not possible to specify a set interval for the frequency of filter insert replacement.
The filter insert must be replaced before the maximum permissible differential pressure is reached.

9.2.1 Pressure relief

1. First close the shut-off valve at the input.
2. Then close the shut-off valve at the output.
3. After closing both shut-off valves, slowly open the shut-off valve relief.

9.2.2 Replacing the filter insert in the high-pressure filter

No special tool is required to replace the filter insert.
When removing the filter insert from the housing, take care not to damage either the filter insert or the housing.
Do not use force or tilt the filter insert when removing it from the housing.
Install the new filter insert by following the steps described above. Ensure that it is straight and without tension in the housing.

9.2.3 Replacing the filter insert in the high-pressure filter compact

1. Unscrew the adapter (e) from the filter housing (d) (wrench size 24).
2. Pull the filter insert out of the adapter.
3. Clean the inside of the high-pressure filter and check for damage.
4. Lightly grease the O-ring (f) and support disk (g) of the new filter insert as well as the adapter (e).
5. Press the new filter insert into the adapter, ensuring that the O-ring and support disk are not damaged.
6. Screw the adapter and filter housing together.
7. Connect the output connection to the high-pressure filter.

10 Trouble shooting

10.1 High-pressure filter with rectifier function

Interference	Cause	Remedy
Leakage	Defective connections	Replace connections
	Defective seals	Replace seals
Insufficient filtering	Filter insert worn or defective	Replace filter insert
Differential pressure drops too quickly	Medium too heavily contaminated	Install prefilter
Defective check valve		Replace check valve

10.2 High-pressure filter

Interference	Cause	Remedy
Insufficient flow rate	Shut-off valves on the filter system not completely open	Completely open the filter system shut-off valves
	Filter insert too heavily contaminated	Replace or clean the filter insert
Initial differential pressure too high	Flow rate too high	Check and correct flow rate
	Filter system operating temperature too high	Check temperature setting and correct
Differential pressure is increasing too fast	Medium too heavily contaminated	Check degree of contamination, Römheld Service
Unsatisfactory filtering	Filter insert is defective or worn	Replace filter insert
	Air pockets in the filter chamber of the filter housing	Bleed the filter chamber

10.3 High-pressure filter compact

Interference	Cause	Remedy
Leakage	Defective connections	Replace connections
	Defective seals	Replace seals
Insufficient filtering	Filter insert worn or defective	Replace filter insert
Differential pressure drops too quickly	Medium too heavily contaminated	Install prefilter
		Change element fineness
Flow rate too low	Filter insert blocked	Replace filter insert
	Shut-off valve (input/ output) not completely open	Open shut-off valves completely
	Flow rate in supply system too low	Check supply system

NOTICE

If it is not possible to clearly locate or rectify the fault, the filter must be decommissioned and Römheld Service should be contacted.

11 Technical characteristics

Part no.	3887 086	3887 087	3887 088	3887 067	3887 071	3887 066	3887 030
Max. operating pressure [bar]	350						500
Filter capacity	10 µm						100 µm
Filter material	stainless steel						steel
Body material	stainless steel						steel, galvanized

Part no.	3887 153	3887 154	3887 104
Max. operating pressure [bar]	350		
Filter capacity	30 µm		
Filter material	stainless steel		
Body material	stainless steel		

Part no.	3887 159	3887 162	3887 136
Max. operating pressure [bar]	350		
Filter capacity	100 µm		
Filter material	stainless steel		
Body material	stainless steel		

11.1 Flow curves of the individual high-pressure filters

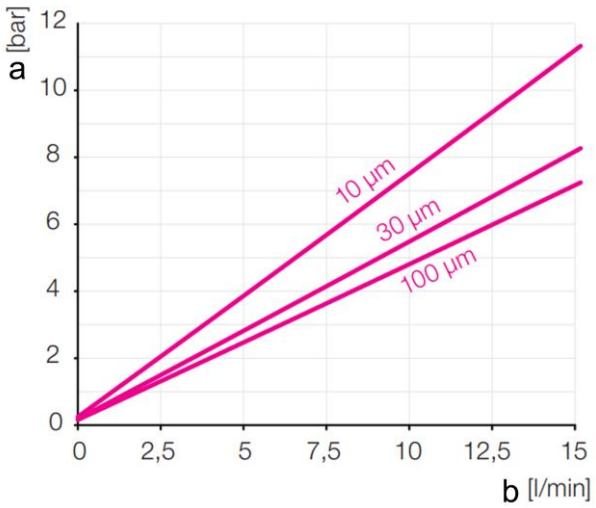

Figure 11: High-pressure filter with rectifier function

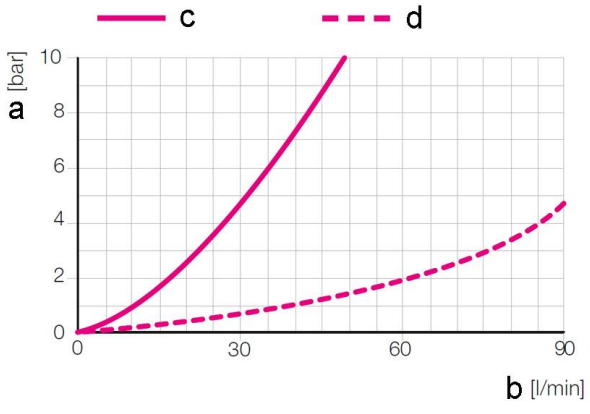

Figure 12: High-pressure filter

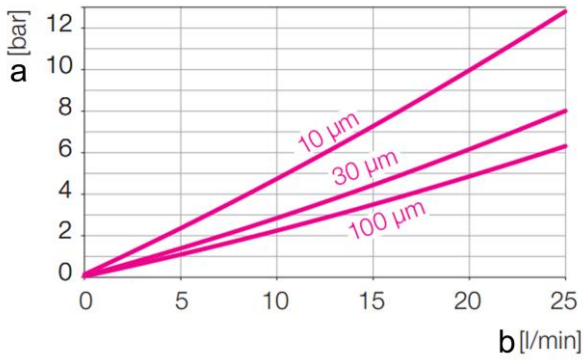

Figure 13: High-pressure filter compact

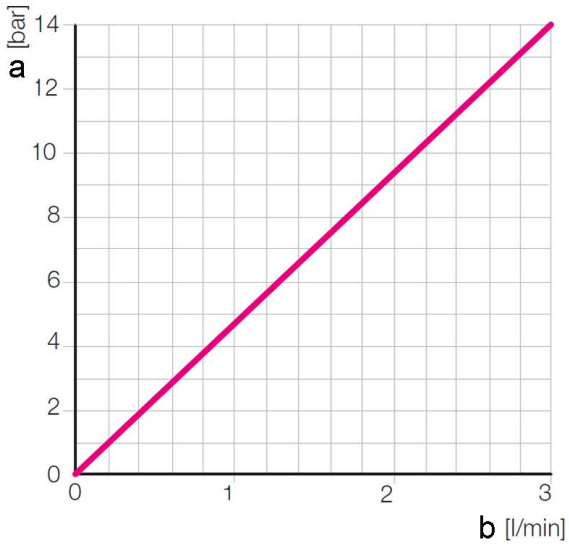

Figure 14: High-pressure plug-in filter 3887066

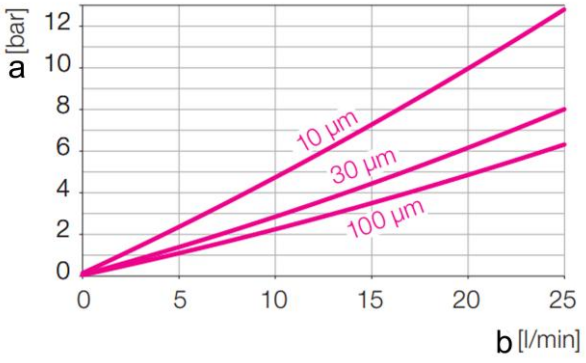

Figure 15: High-pressure plug-in filter

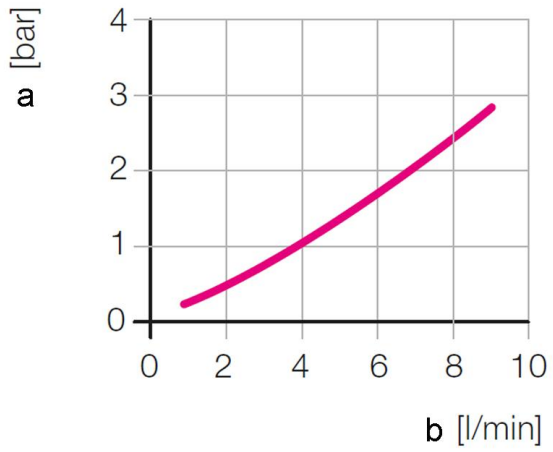

Figure 16: High-pressure screw-in filter

a Pressure loss b Flow rate	c Hydraulic oil d Water

NOTE

Further information

- For further technical data see ROEMHELD data sheet.

12 Disposal

Hazardous to the environment
Due to possible environmental pollution, the individual components must be disposed only by an authorised expert company.

The individual materials have to be disposed as per the existing regulations and directives as well as the environmental conditions. Special attention has to be drawn to the disposal of components with residual portions of hydraulic fluids. The instructions for the disposal at the material safety data sheet have to be considered.
For the disposal of electrical and electronic components (e.g. stroke measuring systems, proximity switches, etc.) country-specific legal regulations and specifications have to be kept.

13 Declaration of manufacture

Manufacturer

Römheld GmbH Friedrichshütte
Römheldstraße 1-5
35321 Laubach, Germany
Tel.: +49 (0) 64 05 / 89-0
Fax: +49 (0) 64 05 / 89-211
E-mail: info@roemheld.de
www.roemheld.com

Responsible person for the documentation:
Dipl.-Ing. (FH) Jürgen Niesner, Tel.: +49(0)6405 89-0.

Declaration of manufacture of the products

They are designed and manufactured in line with the relevant versions of the directives **2006/42/EC**(EC MSRL) and in compliance with the valid technical rules and standards.
In accordance with EC-MSRL, these products are components, that are not yet ready for use and are exclusively designed for the installation in a machine, a fixture or a plant.

According to the pressure equipment directives the products are not to be classified as pressure reservoirs but as hydraulic placing devices, since pressure is not the essential factor for the design, but the strength, the inherent stability and solidity with regard to static or dynamic operating stress.

The products may only be put into operation after it was assessed that the incomplete machine / machine, in which the product shall be installed, corresponds to the machinery directives (2006/42/EC).

The manufacturer commits to transmit the special documents of the products to state authorities on request.
The technical documentation as per appendix VII part B was prepared for the products.

Laubach, 17.09.2025