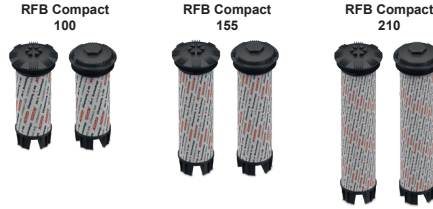
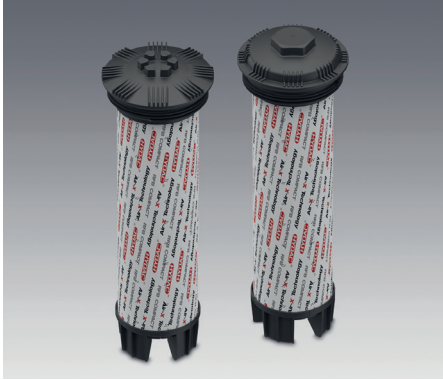




## Return Line Filter RFB Compact



### 1. TECHNICAL SPECIFICATIONS

#### 1.1 FILTER HOUSING Design

The RFB filters are suitable for smaller flow rates. The filter is mounted in the tank and flow passes through it through a pipe connection from below. The optimal flow conditions created by flow from beneath guarantee optimum air separation, high pulsation stability and very long filter service lives.

#### Standard equipment

- With bypass valve
- Inlet as plug-in connection
- Patented filter
- Without clogging indicator
- With non-return valve

#### 1.2 FILTER ELEMENTS

RT filter elements are validated and their quality is constantly monitored according to the following standards: ISO 2941, ISO 2942, ISO 2943, ISO 3724, ISO 3968, ISO 11170, ISO 16889.

The filter elements are available with 6 bar pressure stability values.

#### 1.3 FILTER SPECIFICATIONS

Nominal pressure	10 bar
Maximum nominal flow rate	210 l/min
Temperature range	-20 °C to +100 °C
Material of filter head	PA 66 GF30
Bypass cracking pressure	2.5 bar

#### 1.4 SEALS

NBR (= Perbunan)

#### 1.5 MOUNTING

As in-tank filter

#### 1.6 SPECIAL MODELS AND ACCESSORIES

- Seals in FKM
- Without non-return valve
- Bypass 0.8 bar, other pressures on request
- Filter cover with spherical dome for larger tolerance range for installation dimension
- Helios pleat in element for lower pressure losses at filter element

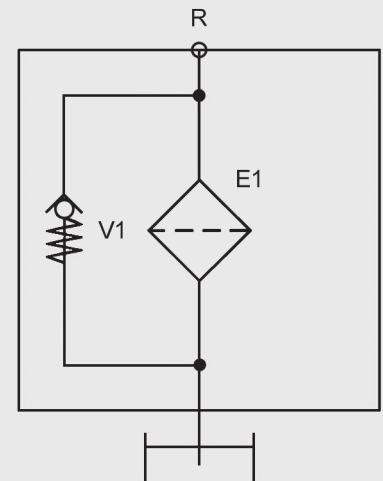
#### 1.7 SPARE PARTS

See spare parts list

#### 1.8 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- Hydraulic oils HL to HVLP (DIN 51524)
- Lubrication oils (DIN 51517, API, ACEA, DIN 51515, ISO 6743)
- Compressor oils (DIN 51506)
- Biodegradable operating fluids: HETG, HEES, HEPG (VDMA 24568)

#### Symbol



## 2. MODEL CODE (also order example)

RFB 155 UMC 010 V X B V F 0 V N A VX X 1 /-XXX

### 2.1 FILTER ASSEMBLY

#### Filter type

RFB

#### Size

100, 155, 210

#### Filter material

ULP glass fibre  
UMC glass fibre with pre-filter

#### Filtration rating in mm

ULP 010, 025  
UMC 010, 020

#### Bypass valve

C with 0.8 bar bypass valve  
V standard: with 2.5 bar bypass valve

#### Magnetic core

X without magnetic core

#### Pressure range

B 10 bar

#### Connection position

V centrally from below

#### Tube version

F outlet film at element

#### Orientation of pipe connection to clogging indicator

0 without indicator

#### Non-return valve

X without valve  
V with valve

#### Seal

N NBR (Perbunan)  
V FKM

#### Cover version

A with central thread without spherical dome  
B with central thread with spherical dome ("swivel" version)

#### Clogging indicator

VX without clogging indicator

#### Response pressure of clogging indicator

X without

#### Modification number

X the latest version is always supplied

#### Supplementary details

H helios pleat in element

## 2.2 SPARE ELEMENT

UMC - 0010 - 089 - X513 - Q - P - RT /x

### Filter medium/ design

ULP  
UMC

### Filtration rating

0010; 0025 for ULP  
0010; 0020 for UMC

### Diameter

089 RFB compact

### Model code

X510 for RFB 0100 ...  
X513 for RFB 0155 ...  
X516 for RFB 0210 ...

### Quality protection

Q with QP  
K with QP and with valve flap

### Seal

P moulded-on sealing lip

### Packaging

RT RT package

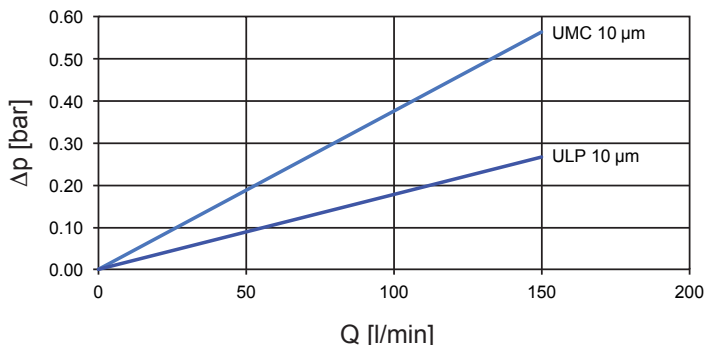
### Supplementary details

### 3. FILTER CALCULATION / DIMENSIONING

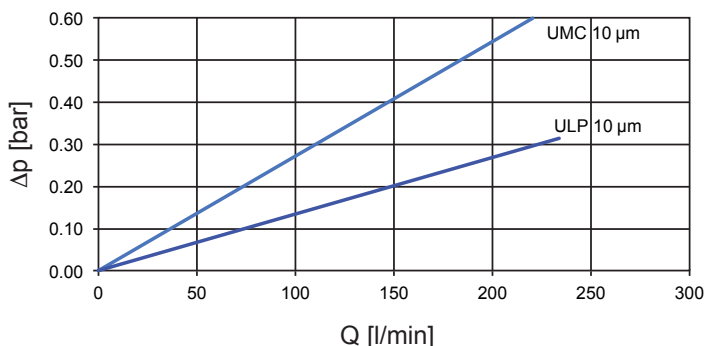
#### 3.1 PERFORMANCE CURVES FOR FILTER ASSEMBLY

The total performance curves for element UMC/ULP... apply to mineral oil with a density of 0.86 kg/dm<sup>3</sup> and a kinematic viscosity of 30 mm<sup>2</sup>/s.

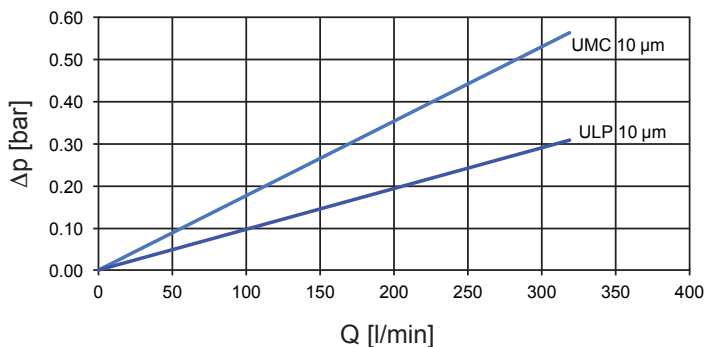
##### RFB 100



##### RFB 155



##### RFB 210



#### 3.2 MAXIMUM PEAK FLOW RATE

The following maximum permitted peak flow rates ( $Q_{max}$ ) in l/min are possible for the various sizes:

Size	$Q_{max}$ [l/min]
100	150
155	230
210	320

##### Information regarding dimensioning:

The hydraulic load on the filter element is primarily determined by the flow rate and the geometry of the particular filter element. Exceeding the maximum permitted flow rate ( $Q_{max}$ ) and therefore the permitted hydraulic load can destroy the filter element.

Even the choice of operating medium can influence system performance and lead to problems during use such as electrostatic discharges.

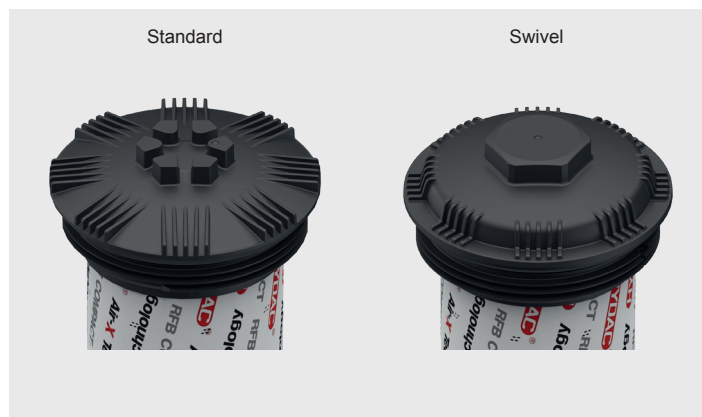
Adherence to the maximum permitted flow rate should always be ensured throughout the system project planning process.

If you have any questions regarding dimensioning or project planning, please contact the technical sales department at RT-Filtertechnik.

#### 3.3 COVER VERSION

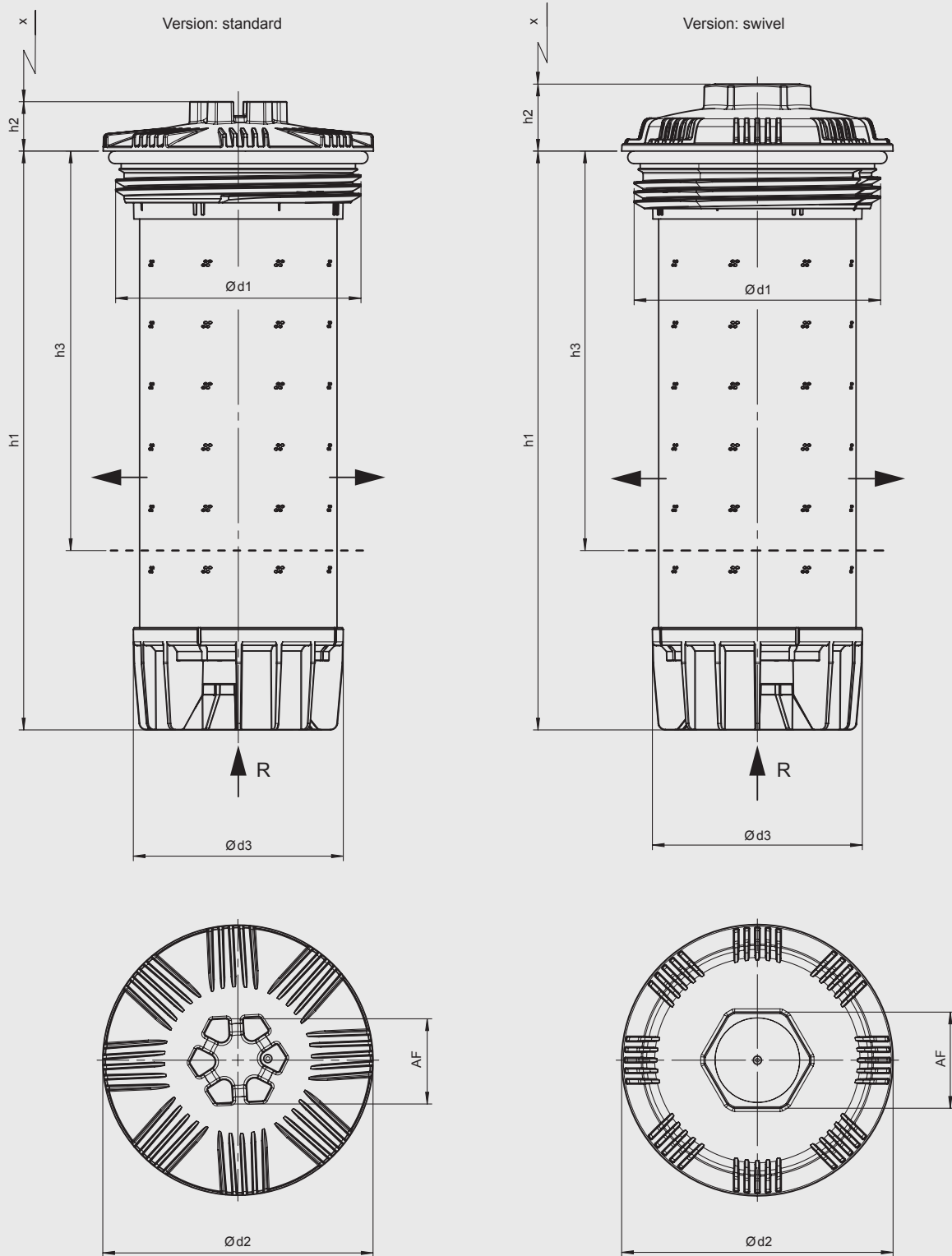
To balance out manufacturing tolerances specifically in the case of plastic tanks, an optional cover version with integrated spherical dome is available for the RFB Compact.

This "swivel" version provides perfect balancing of process-related production tolerations in the tank construction. The maximum tolerances are given in section 4.2.



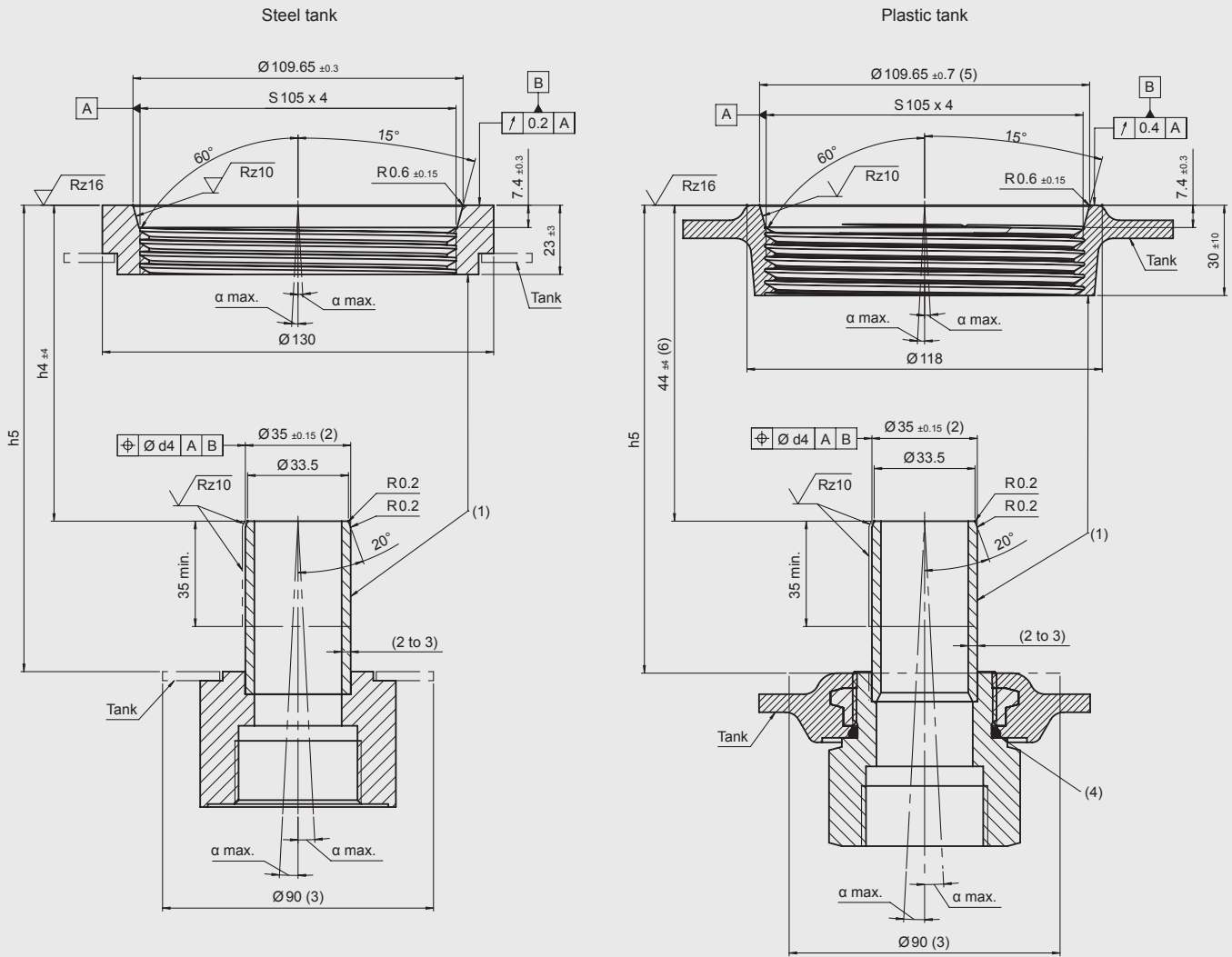
## 4. DIMENSIONS

### 4.1 HOUSING DIMENSIONS



Size	Version	h1	h2	h3	x	Ød1	Ød2	Ød3	AF	Weight incl. element [kg]						
100	Standard	246	21.0	170	267.0	S 105 x 4	115	89.4	36	0.56						
	Swivel		28.5		274.5				41	0.61						
150	Standard	331	21.0	235	352.0				S 105 x 4	115	89.4	36	0.69			
	Swivel		28.5		359.5							41	0.73			
210	Standard	416	21.0	304	437.0							S 105 x 4	115	89.4	36	0.80
	Swivel		28.5		444.5										41	0.85

## 4.2 TANK FLANGE AND PIPE CONNECTION



### Notice:

1. Flanges, piping and screw connections are not included in the scope of delivery
2. Dimension of piping in acc. with DIN EN 10305
3. Area under the filter element
4. Possible design of the return line connection. Sealing between tank and port in acc. with ISO 6149.
5. Take seal shrinkage into account with critical oils
6. Tolerance for operation-related deformation not taken into account – permitted range must be defined between customer and manufacturer

Size	Version	h4	h5	Ød4	α
100	Standard	202	251	4.0	0.5°
	Swivel			20.0	3.0°
150	Standard	287	336	5.5	0.5°
	Swivel			26.0	3.0°
210	Standard	372	421	7.0	0.5°
	Swivel			32.0	3.0°

## 5. MAINTENANCE

### 5.1 MAINTENANCE

#### Design

Please follow the maintenance instructions on the last page!

#### Installation

Before installing the filter, check the permitted operating pressure of the system – it must be lower than permitted operating pressure of the filter. Refer to the identification plate on the filter!

#### Start-up

Check that the correct filter element is fitted, apply the cover and secure it. Switch on the hydraulic system and check filter for leakage.

Vent filter at an appropriate point in the system.

#### Tightening torques

Thread, cover	Recommended tightening torque
S105 x 4	30 Nm

### 5.2 CHANGING THE ELEMENT

#### Removing the element

1. Switch off hydraulic system and release filter pressure (if necessary release the pressure in the tank).
2. Loosen the cover by turning it anticlockwise and pull out the cover with the element, allowing any adhering oil to drip off.
3. Loosen the bayonet connection between cover and element from the catch with an anticlockwise rotation and remove cover.
4. Clean cover and examine for mechanical damage.
5. Check O-ring – replace if necessary.

#### Fitting the element

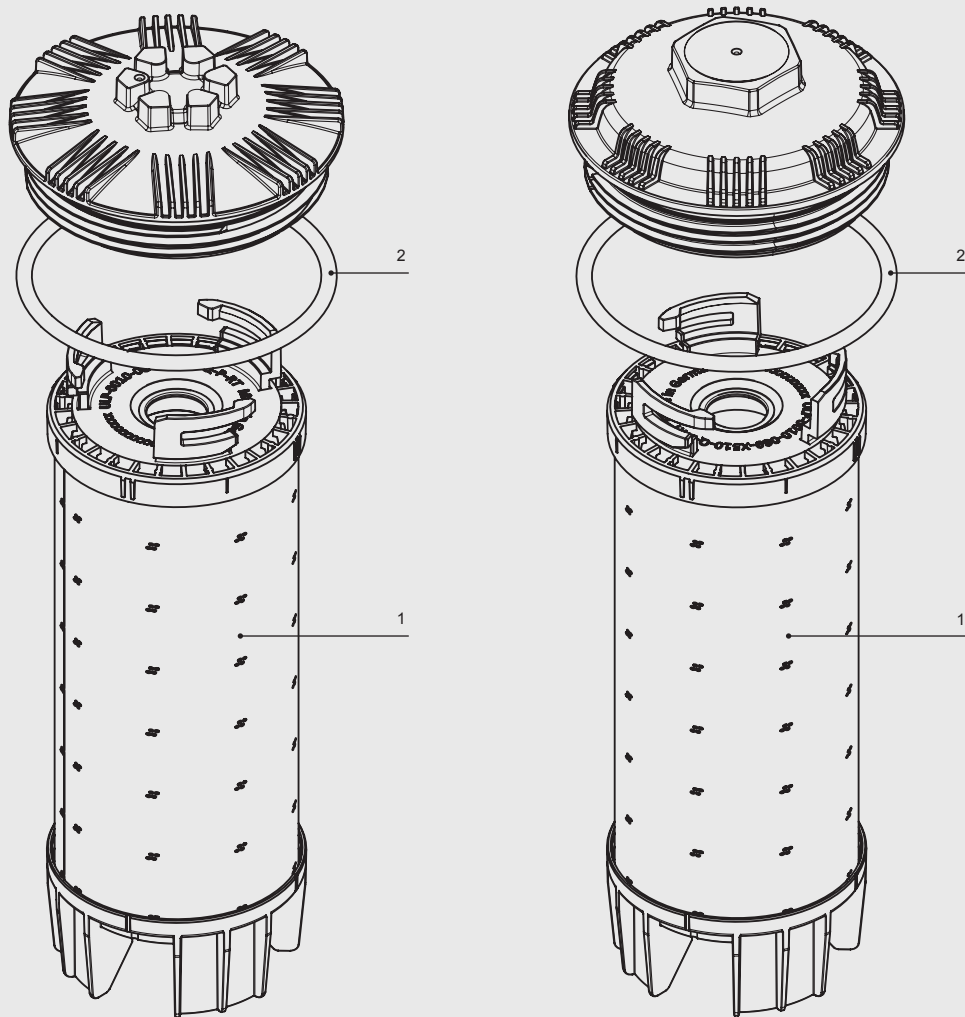
1. Clean all removed parts and check for damage. Replace damaged parts and ensure that sealing surfaces, threads and O-rings are wetted with clean operating fluid.
2. When installing a new filter element (1), check that the designation corresponds to that of the old element (1).
3. Place element (1) on the cover and turn it clockwise until the bayonet connection has engaged. For the “swivel” cover version, align the thread coaxially to the element. This makes it easier to insert the connection in the tank.
4. Push element with cover into the housing flange and push the element onto the connection.
5. Place the cover on the thread flange and tighten it to the stop clockwise and finger-tight – recommended torque 30 Nm. For the “swivel” cover version, ensure that the thread moves freely – the cover can be tilted to align it to the internal thread on the flange.
6. Switch on hydraulic system and vent filter at a suitable point in the system.
7. Check filter for leakage.

#### NOTICE:

Filter elements are to be disposed of in an environmentally safe manner.

## 6. SPARE PARTS

### 6.1 SPARE PARTS DRAWING



### 6.2 SPARE PARTS LIST

No.	Version	Part number	
1	Filter element	–	See point 2.2 Spare element
2	Seal, cover	200337	O-ring 97.8 x 5.33 – NBR – 70Sh



## 7. MAINTENANCE INSTRUCTIONS

### 7.1 USER INSTRUCTIONS FOR FILTERS



Danger

Caution: filter under pressure: before any work is carried out on the filter, ensure the pressure chamber concerned (filter housing) is depressurised.

On no account may any modifications (welding, drilling, opening by force etc.) be carried out on the filter.

Filter housing must be earthed.

When working on, or in the vicinity of, hydraulic systems, naked flames, spark generation and smoking are forbidden.

Hydraulic oils and water-polluting fluids must not be allowed to enter the soil, watercourses or sewer systems. Please ensure safe and environmentally friendly disposal of hydraulic oils and fluids. The relevant regulations in the country concerned with regard to ground water pollution, used oil and waste must be complied with.

Whenever work is carried out on the filter, be prepared for hot oil to escape which can cause injury or scalding as a result of its high pressure or temperature.



Warning

The owner must take appropriate action (e.g. air venting) to prevent the formation of air pockets.

Repairs, maintenance work and commissioning must only be carried out by trained personnel. Allow the filter to cool before handling. The stipulations in the machine or system operating instructions must be followed.

Statutory accident prevention regulations, safety regulations and safety data sheets for fluids must be observed.



Info

This filter must only be put into operation in conjunction with a machine or system.

The filter must only be used as stipulated in the operating instructions of the machine or system.

This filter must only be operated using hydraulic or lubricating fluid.

It is the responsibility of the operator to comply with the water regulations of the country concerned.

### 7.2 MAINTENANCE, GENERAL

This section describes maintenance work which must be carried out periodically. The operational safety and service life of the filter, and whether it is ready for use, depend to a large extent on regular and careful maintenance.

### 7.3 BASIC PRINCIPLES

This document is for information purposes and for the avoidance of dangers during installation, during the operation of the system and for the handling of operating materials.

Safe and economical operation of the system is only possible if the installation manual is observed closely.

This installation manual does not substitute the operating instructions of the device or the system.

The individual installation instructions for the installed components of the overall system also apply.

### 7.4 QUALIFICATIONS OF PERSONNEL / TARGET GROUP

This installation manual is exclusively geared towards use by trained specialists and it must be made accessible at the place of use.

### 7.5 INTENDED USE

The filter is only suitable for the filtration of operating fluids.

The filter is not useable on its own. The filter is intended for installation in a hydraulic system.

Any alternative or more extensive use shall not be considered intended use. RT-Filtertechnik GmbH will assume no liability for any loss or damage as the result thereof.

### 7.6 MAINTENANCE MEASURES

- Spare parts must conform to the technical requirements specified by the manufacturer. This is always ensured when using original RT spare parts.
- Tools, working area and devices are to be kept clean.
- After disassembling the filter, clean all parts, check them for damage or wear and replace them if necessary.
- When changing a filter element, a high level of cleanliness must be observed!

### 7.7 EXPLANATION OF SYMBOLS AND WARNINGS

This type of safety symbol or instruction ...



#### Danger

indicates a situation that is dangerous in a threatening manner and will lead to death or serious injury if it is not avoided.



#### Warning

indicates a situation that could lead to death or serious injury, or serious harm to health, if it is not avoided.



#### Info

indicates a notice regarding correct handling of the pressure equipment. Non-observance of these notes may lead to damage of the pressure equipment or its immediate surroundings.



#### Disposal

identifies special measures for environmental protection. Professional, environmentally friendly material disposal.



#### Notice

indicates a notice regarding special user tips and other specially useful or important information.

### 7.8 INTERVAL BETWEEN ELEMENT CHANGES

In principle we recommend that the filter element is changed after one year of operation at the latest.

If no external clogging indicator can be fitted, we recommend changing the elements at specific intervals (the frequency of changing the filter elements depends on the filter calculation and the conditions under which the filter is operated). When filter elements are subject to high dynamic loading it may prove necessary to change them more frequently. The same applies when the hydraulic system is commissioned or repaired or when the oil is changed.

## 7.9 CUSTOMER INFORMATION CONCERNING THE MACHINERY DIRECTIVE 2006/42/EC

Hydraulic filters are fluid power parts/components and are therefore excluded from the scope of the Machinery Directive. They do not bear the CE mark!

Before using these components, ensure compliance with the specifications provided by RT-Filtertechnik GmbH in this documentation.

The specifications also contain information on the relevant essential health and safety requirements (based on Machinery Directive 2006/42/EC) that are to be applied by the user.

We hereby declare that the filters are intended to be incorporated into machinery within the terms of the Machinery Directive 2006/42/EC.

It is prohibited to put the filters into service until the device as a whole conforms to the provisions of the Machinery Directive. Furthermore, our Terms of Sale and Delivery are available on our website ([www.rt-filter.de](http://www.rt-filter.de)).

## NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

In accordance with our Terms of Sale and Delivery, guarantees are subject to the use of original RT parts only and correct fitting, as per service and maintenance instructions.

## EXCLUSION OF LIABILITY

This installation manual was made to the best of our knowledge. Nevertheless and despite the greatest care, it cannot be excluded that mistakes could have crept in.

Therefore please understand that in the absence of any provisions to the contrary hereinafter, our warranty and liability – for any legal reasons whatsoever – are excluded in respect of the information in this installation manual.

In particular, we shall not be liable for lost profit or other financial loss.

This exclusion of liability does not apply in cases of intent or gross negligence. Moreover, it does not apply to defects which have been deceitfully concealed or whose absence has been guaranteed, nor in cases of culpable harm to life, physical injury and damage to health. If we negligently breach any material contractual obligation, our liability shall be limited to foreseeable damage. Claims due to product liability shall remain unaffected.

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