



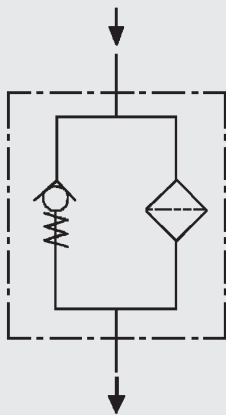
# RT FILTER TECHNIK

## Return line filter RFB

Flow direction from inside  
to outside up to 600 l/min; up to 10 bar



Symbol for hydraulic systems:



### 1. SIZES

RFB 0170		RFB 0300		RFB 0400		RFB 0600	

### 2. TECHNICAL DATA

#### Filter characteristics

Nominal pressure	10 bar
Temperature range	-30 °C to +100 °C
Material of filter head and end cap	EN-AC-47000
Material of housing tube	Steel
Material of base section (inlet)	PA66-GF30
Cracking pressure, bypass	2.5 bar (others on request)

## 3. TECHNICAL DESCRIPTION

### 3.1 FILTER HOUSING

#### Design

RFB filters are suitable for smaller to medium flow rates. The filter is mounted in the tank and is exposed to flow passing from below or from the side through a pipe connection. The optimum flow conditions brought about by flow passing into the element from underneath guarantee the best air separation, high pulsation stability and very long filter service lives.

The filter housings are designed in accordance with international codes. They are made up of a housing tube, filter head and filter end cap. The element can be removed from above.

#### Standard equipment:

- Fixing holes on filter head
- With bypass valve
- Inlet as connector
- Outlet via diffuser (window with outflow grille)
- Multi-patented filter (incl. integrated housing seal, bypass split into two)
- Without clogging indicator
- With non-return valve

### 3.2 FILTER ELEMENTS

The HYDAC filter elements are validated in accordance with the following standards and constantly quality-controlled: ISO 2941, ISO 2942, ISO 2943, ISO 3724, ISO 3968, ISO 11170, ISO 16889.

The filter elements are available with the following collapse pressure strengths:

Plastic fibre (ULP):	6 bar
Glass fibre with pre-filter fleece (UMC):	6 bar

### 3.3 SEALS

NBR (= Perbunan)

### 3.4 INSTALLATION

Installed as tank installation filter

### 3.5 SPARE PARTS AND ACCESSORIES

- Proof of originality on element (no-element / imitation element) possible with clogging indicator
- Differential pressure measurement on element (clogging indicator)
- FKM seals
- Without non-return valve

### 3.6 SPARE PARTS

See original spare parts list

### 3.7 COMPATIBILITY WITH PRESSURISED FLUIDS ISO 2943

- Hydraulic oils up to HLPD DIN 51524
- Lubricating oils (DIN 51517, API, ACEA, DIN 51515, ISO 6743)
- Compressor oils (DIN 51506)
- Biodegradable hydraulic fluids  
VDMA 24568 HETG, HEES, HEPG

## 4. MODEL CODE

### 4.1 COMPLETE FILTER

**RFB 0400 UMC 010 V X B V R 0 V N J1 VX X 1 /-XXX**

#### Filter type

RFB

#### Size

0170, 0300, 0400, 0600

#### Filter material

ULP glass fibre  
UMC glass fibre with pre-filter fleece

#### Filtration rating in $\mu\text{m}$

ULP 010, 025  
UMC 010, 020

#### Bypass valve

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

#### Magnetic plug

X without magnetic plug

#### Setting range

B 10 bar

#### Connection position

V central from below  
H on side

#### Tube design

R standard: with diffuser (window with outflow grille)

#### Design of tube connection with clogging indicator

0 0° to clogging indicator (others on request!)

#### Non-return valve

X without valve  
V with valve

#### Seal

N NBR (Perbunan)  
V FKM

#### Position of clogging indicator

J1 bored, for alignment see item 6.

#### Clogging indicator

VA visual/electric  
VE electric  
VO visual  
VX without clogging indicator, closed up with locking screw

#### Response pressure of clogging indicator

C 0.8 bar  
D 2.0 bar  
X without (when no clogging indicator is installed)

#### Modification number

X the latest version of the specific type is always supplied

#### Supplementary details

## 4.2 REPLACEMENT ELEMENTS RFB

UMC-0010-xxx-xxxx-x-N-RT /-XXX

### Filter material

ULP, UMC

### Filtration rating in $\mu\text{m}$

ULP 0010, 0025  
UMC 0010, 0020

### RT code

### Seal

N NBR (Perbunan)  
V FKM

### Packaging

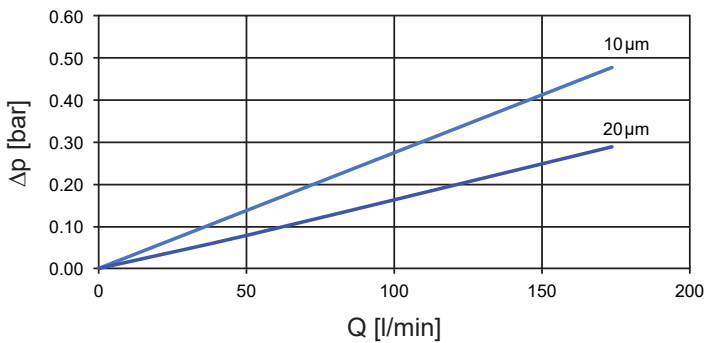
### Supplementary details

## 5. FILTER DESIGN / DIMENSIONING

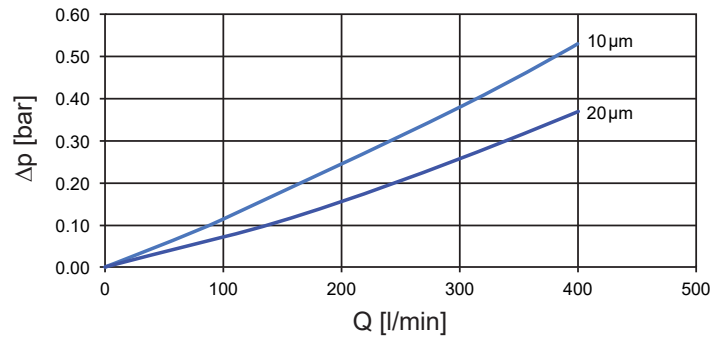
### 5.1 COMPLETE FILTER CHARACTERISTICS

The overall characteristic curves with element UMC... apply to mineral oil with a density of  $0.86 \text{ kg/dm}^3$  and a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$ .

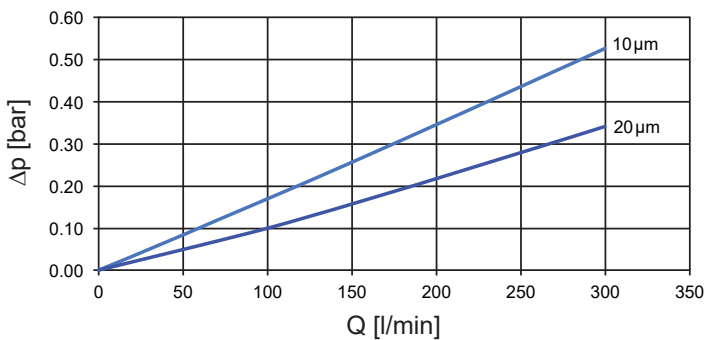
#### RFB 0170



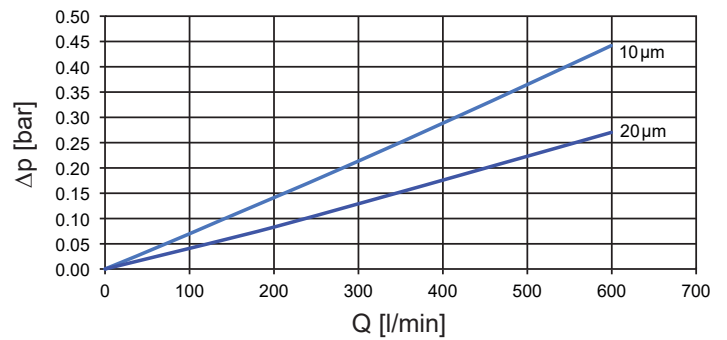
#### RFB 0400



#### RFB 0300

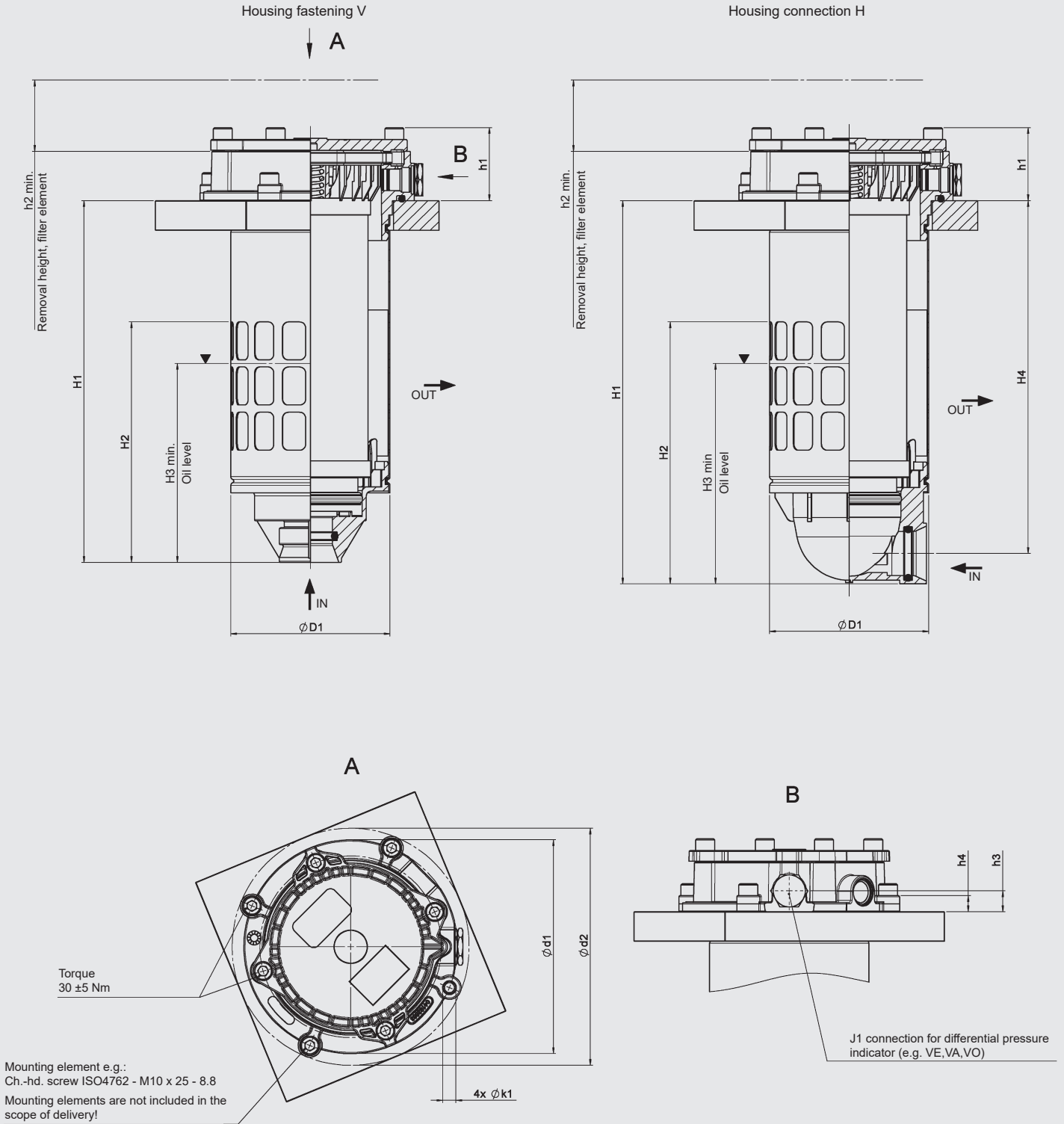


#### RFB 0600



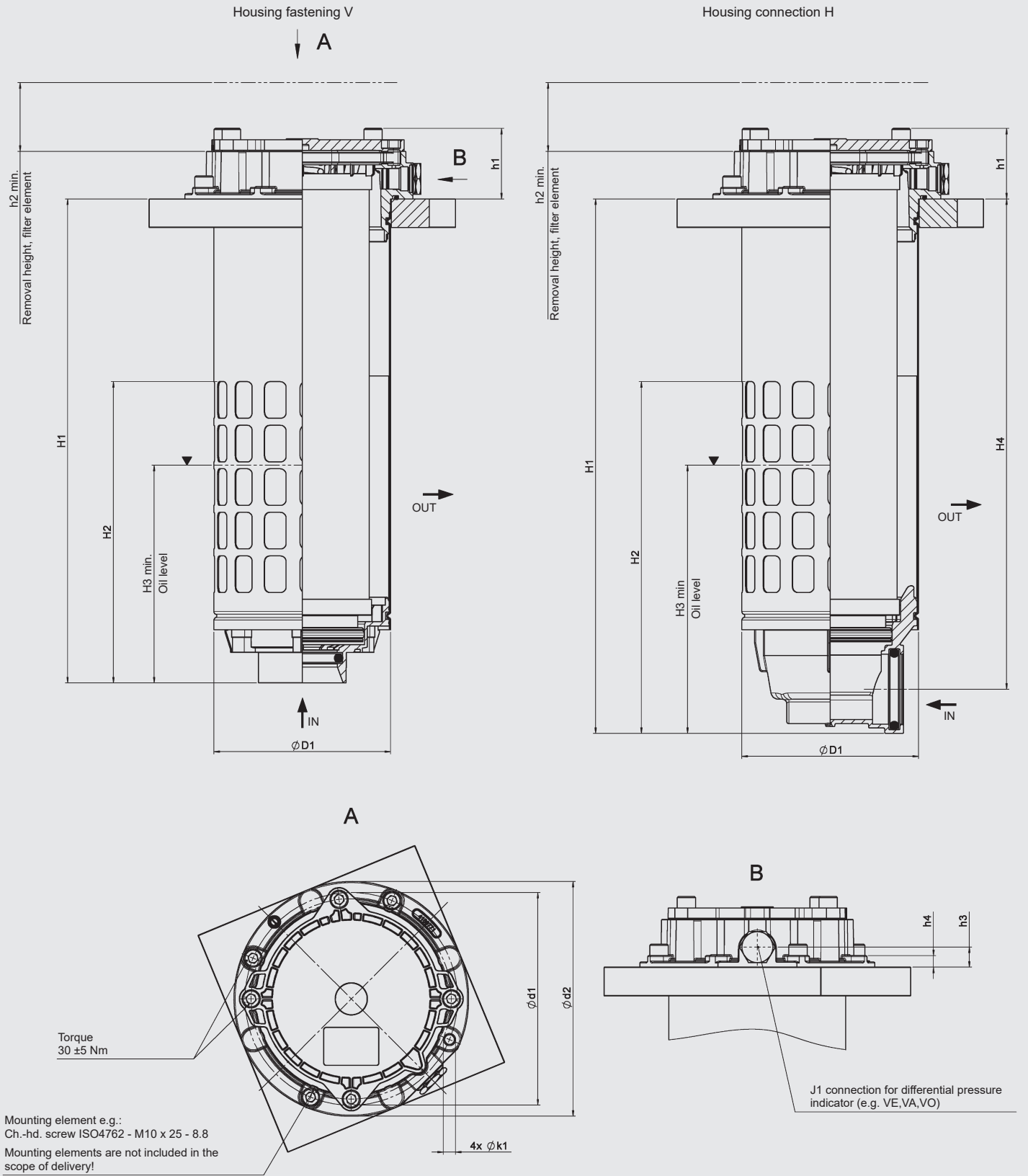
# 6. UNIT DIMENSIONS

## 6.1 RFB 0170 – 0300



Type	Version	Connection position	H1	H2	H3	H4	h1	h2	h3	h4	$\varnothing D1$	$\varnothing d1$	$\varnothing d2$	$\varnothing k1$	Weight [kg]
RFB 0170	Diffuser with window	H	322.5	220.5	186	297	61.5	300	17.5	13.5	134	180	200	11	3.5
		V	304.5	202.5	168	-									3.4
H		472.5	296.5	224	447	450		4.3							
V		454.5	278.5	206	-			4.2							

## 6.2 RFB 0400 – 0600



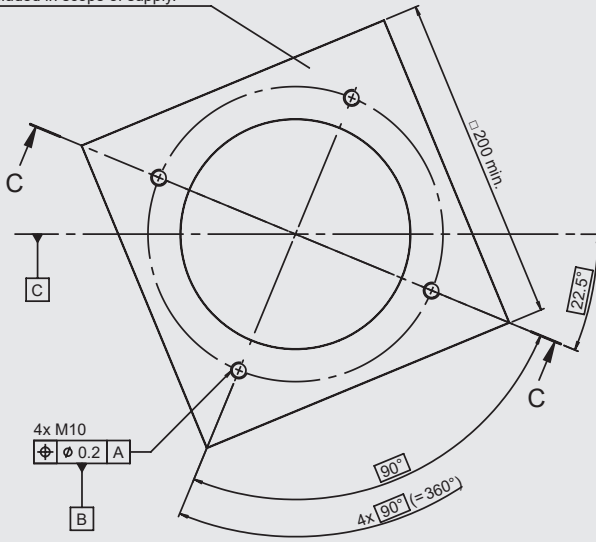
Type	Version	Connection position	H1	H2	H3	H4	h1	h2	h3	h4	ØD1	Ød1	Ød2	Øk1	Weight [kg]
RFB 0400	Diffuser with window	H	466.5	307	234	428	61.5	430	17.5	10.0	154	185.7	205	11	4.8
		V	422.5	263	190	—									4.8
H		613.5	383	310	575	580		5.8							
V		569.5	339	266	—			5.8							

## 7. SPECIFICATIONS FOR THE TANK FLANGE

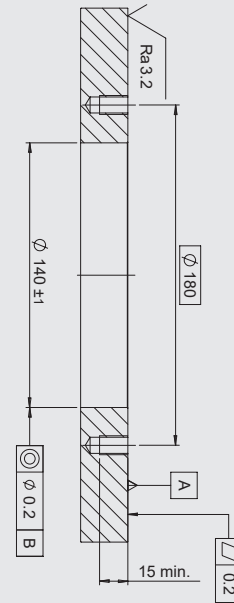
1. The tank flange in the area of the contact surface of the filter should not exceed a flatness of 0.2 mm and a roughness of Ra 3.2  $\mu\text{m}$ .
2. The contact surface should also be free from damage and scratches.
3. The mounting holes of the flange must not be drilled all the way through – the filter should be mounted with sealed-in stud bolts. Alternatively, the flange can be counter-welded from the inside.
4. The tank plate or the filter mounting flange must be designed in such a way that the deformation of the seal during tightening does not result in any deformation of the tank plate or the flange.

### 7.1 RFB 0170, 0300

Tank flange  
not included in scope of supply.



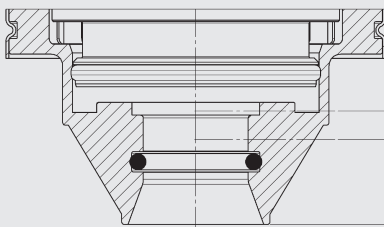
C-C



Tank flange not included in scope of supply.

1:1

Housing fastening V



Sealing face area

40 min.

$1 \times 30^\circ$   
Ra 3.2

30 min.  
Installation depth

40 max.  
Installation depth

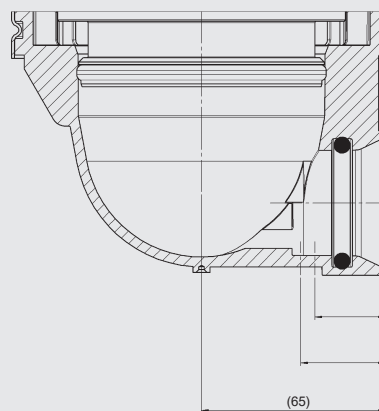
Tube not part  
of scope of supply

$\varnothing 35 \pm 0.2$

$\ominus \varnothing 2$  B

1:1

Housing connection H



Tube not part  
of scope of supply

Ra 3.2

$1 \times 30^\circ$

$\varnothing 35 \pm 0.2$

25 min.  
Installation depth  
30 max.  
Installation depth

40 min.

Ra 3.2

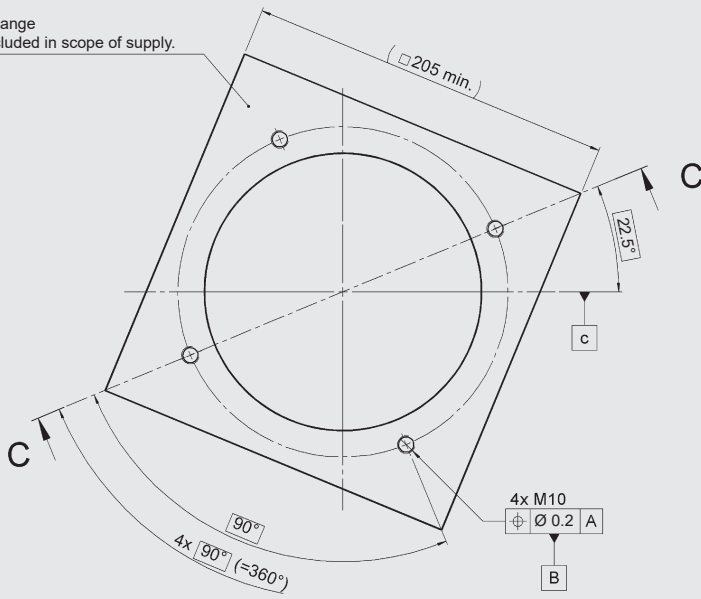
(65)

H4

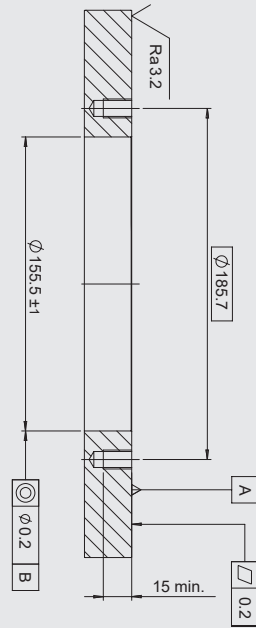
$\varnothing 2$  A  
 $\varnothing 2$  C

7.2 RFB 0400, 0600

Tank flange not included in scope of supply.



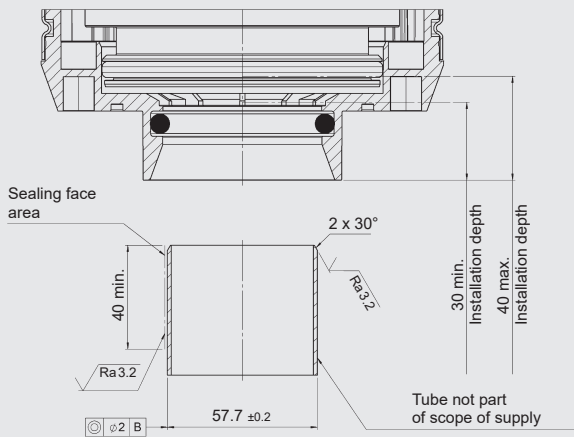
C-C



Tank flange not included in scope of supply.

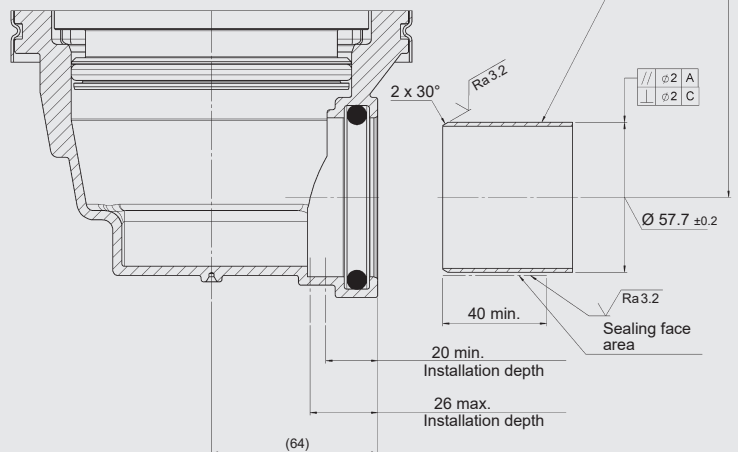
1:1

Housing fastening V



1:1

Housing connection H





## 8. MAINTENANCE

### 8.1 MAINTENANCE

#### General

Please observe the maintenance instructions in chapter 10!

#### Tools required for maintenance

RFB	Torque	Internal hex key
0170, 0300	30 Nm	SW 8
0400, 0600	30 Nm	SW 8

#### Tightening torques for clogging indicators

RFB	Max. tightening torque
0170, 0300	33 Nm
0400, 0600	33 Nm

#### Installation:

Type RFB filters are designed for tank installation. Suitable connection flanges aligned for assembly must be available on the tank side.

The RFB filter is installed into the tank from above and fastened with screws supplied by the machine manufacturer (M10), with attention given to the alignment of the interface in the filter base. The filter is connected to the hydraulic return line by means of a tube plug-in connector.

The removal height of the filter element must be taken into account. Observe the type label of the filter!

#### Startup:

Check that the intended filter element is inserted. Apply the end cap and tighten the end cap screws crosswise. Switch on hydraulic system and vent filter at an appropriate place in the system.

Check filter for leakage.

### 8.2 ELEMENT CHANGE

#### Element removal:

1. Switch off the hydraulic system and depressurise the filter (depressurise the tank if necessary).
2. Loosen end cap screws and lift up and remove end cap.
3. Pull filter element out of the filter housing and allow residue oil to drip into the filter housing.
4. Check the surface of the filter element for contamination residue and larger particles. These can indicate damage to components.
5. Exchange filter element.
6. Clean end cap with bypass valve poppet.
7. Examine filter, especially sealing surfaces, for mechanical damage.
8. Check seals – replace parts if necessary.

#### Element installation:

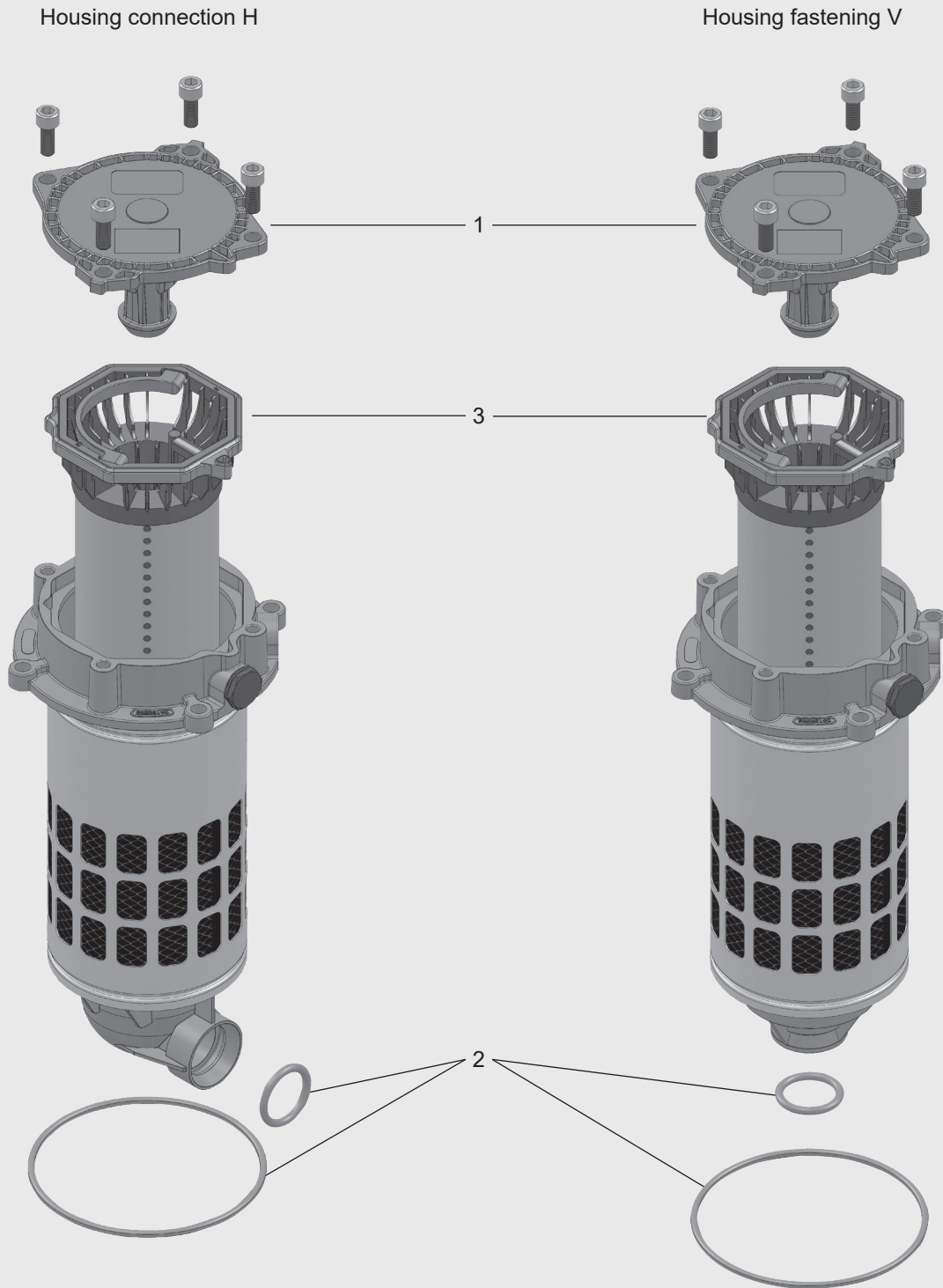
1. Wet sealing surfaces on the filter housing and end cap and moulded seal with clean operating fluid.
2. When fitting a new filter element, check that the designation corresponds to that of the old element.
3. Insert filter element in the filter housing and press it into the seal seat.
4. Apply end cap, paying attention to the alignment for mounting the clogging indicator.  
Press end cap down again the bypass spring and screw on nuts by hand. Then tighten crosswise, observing the tightening torque in accordance with the machine manufacturer's specifications.
5. Top up hydraulic oil as needed.
6. Switch on hydraulic system and vent filter at a suitable point in the system.
7. Check the filter for leakage.

#### Please note:

Filter elements that cannot be cleaned must be disposed of in accordance with environment protection regulations.

## 9. SPARE PARTS

### 9.1 SPARE PARTS DRAWING RFB 0170, 0300



### 9.2 SPARE PARTS LIST RFB 0170, 0300 (specifications in NBR seals)

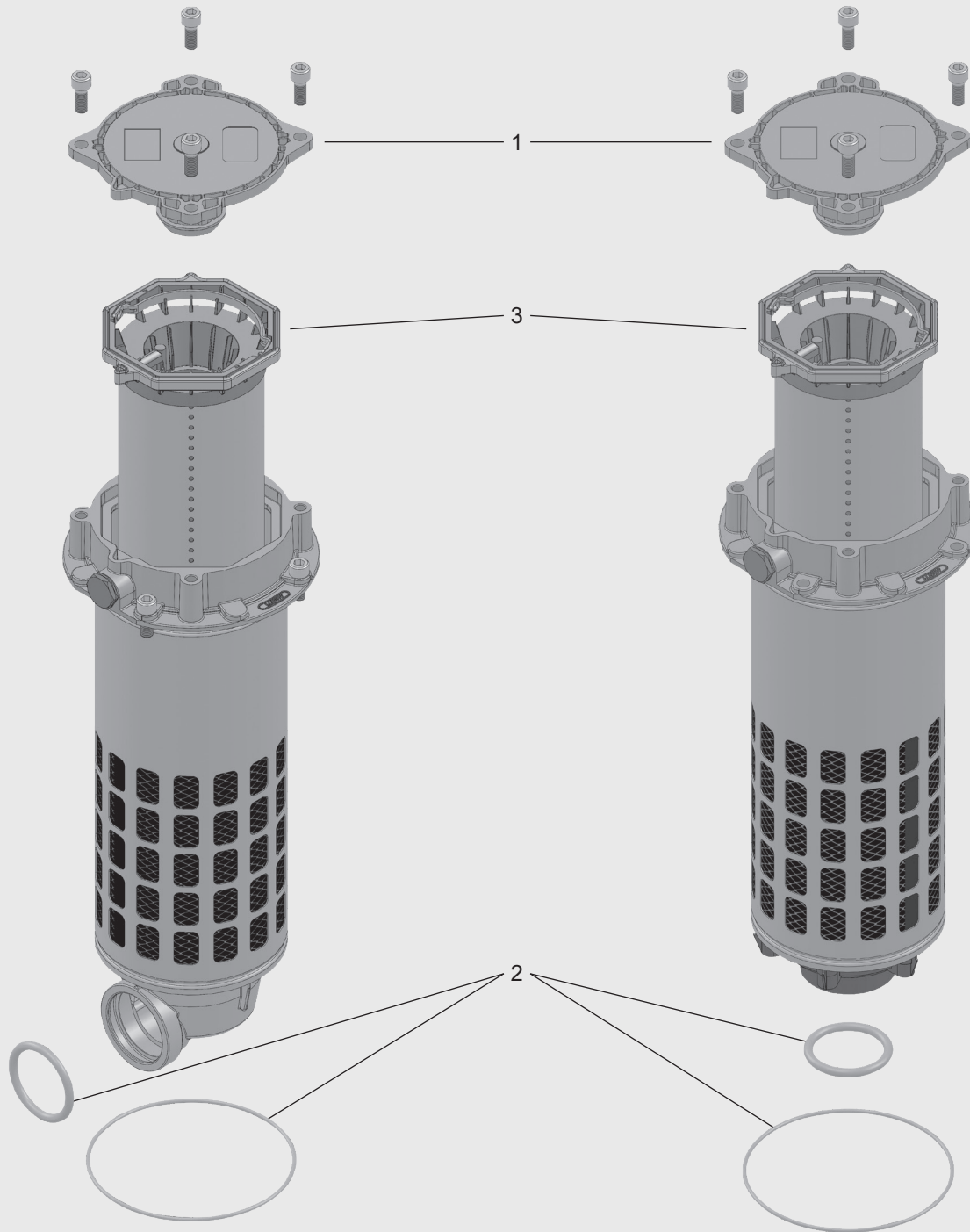
Item	RFB 0170	RFB 0300
1.		End cap RFB 0170 – 0300 (part no.: 200127)
2.		Seal kit RFB 0170 – 0300 (part no.: 200128) Housing: O-ring 148.59x-5.33-N-NBR-70Sh O-ring 35.2 x 5.7-NBR-70Sh
3.	Filter element ULP-00xx-101-X512-S-N-RT UMC-00xx-101-X512-S-N-RT	Filter element ULP-00xx-101-X518-S-N-RT UMC-00xx-101-X518-S-N-RT
	xx = filtration rating	

Special FKM seal design on request!

### 9.3 SPARE PARTS DRAWING RFB 0400, 0600

Housing connection H

Housing fastening V



### 9.4 SPARE PARTS LIST RFB 0400, 0600 (specifications in NBR seals)

Item	RFB 0400	RFB 0600
1.	End cap RFB 0400 – 0600 (part no.: 200129)	
2.	Seal kit RFB 0400 – 0600 Housing connection H and V (part no. 200131) O-ring 162 x 3.53-NBR-70Sh O-ring 56x7.5-NBR-70Sh	
3.	Filter element ULP-00xx-121-X517-S-N-RT UMC-00xx-121-X517-S-N-RT	Filter element ULP-00xx-121-X523-S-N-RT UMC-00xx-121-X523-S-N-RT

xx = filtration rating

Special FKM seal design on request!

## 10. MAINTENANCE NOTES

### 10.1 EXPLANATION OF SYMBOLS AND NOTES

This type of safety sign or instruction ...



#### Danger

indicates a dangerous situation which, if not avoided, will result in death or serious injury.



#### WARNING

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



#### Info

indicates information on handling the pressure vessel correctly. Failure to observe this information may result in damage to the pressure vessel or to environment damage in its surroundings.



#### Disposal

indicates special measures to protect the environment. Correct and environmentally sound disposal of material.



#### Note

indicates labelling of special user tips and other particularly useful or important information.

### 10.2 GENERAL MAINTENANCE

This section describes maintenance work that is to be performed on a regular basis. The operational readiness, operational safety and service life of the filter are largely dependent on regular and thorough maintenance.



#### Note

For each filter used, original filter elements must be kept in stock and replaced if necessary.

### 10.3 FUNDAMENTALS AND BASICS

This document is intended to provide information and prevent hazards during installation, operation of the system and handling of operating materials.

Safe and economical operation of the system is only possible if the installation instructions are strictly observed.

These installation instructions are not a substitute for the operating instructions for the machine or system.

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

### 10.4 QUALIFICATIONS OF PERSONNEL / TARGET GROUP

These installation instructions are intended exclusively for use by trained specialist personnel<sup>1</sup> and must be kept accessible at the place of use.

### 10.5 INTENDED USE

The filter is only suitable for filtering hydraulic fluids.

The filter is not capable of being used alone. The filter intended for installation in a hydraulic system.

Any other use or use beyond this is considered improper use. HYDAC Filbertechnik GmbH will assume no liability for any resulting loss or damage.

### 10.6 MAINTENANCE MEASURES

- The spare parts have to satisfy the manufacturer's technical specifications.  
This is always ensured if HYDAC original parts are used.
- Keep tools, work area and devices clean.
- After dismantling the filter, clean all parts, check for damage or wear and replace parts if necessary.
- Ensure maximum cleanliness when replacing a filter element!

### 10.7 USER INSTRUCTIONS FOR FILTERS



Danger

Caution Filter is pressurised: when carrying out any work on the filter, ensure that the relevant pressure chamber (filter housing) is depressurised.

No modifications (welding, drilling, forcible opening, etc.) may be made to the filter.

Filter housings must be earthed.

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

Hydraulic oils and fluids that are hazardous to waters must not be allowed to enter the soil or bodies of water/sewerage systems. Ensure that hydraulic oils and fluids are disposed of in a safe and environmentally sound way. Observe relevant national regulations concerning groundwater hazards, used oils and waste.

When working on the filter, hot oil must be expected to escape, which can cause injuries and scalding due to high pressure or high temperature.



Warning

The operator must take suitable measures (e.g. venting) to prevent the formation of air pockets.

Repair, maintenance and initial start-up must only be carried out by specialist personnel<sup>1</sup>. Only touch the filter when it is in a cooled state. The specifications given in the operating manual of the machine or system must be observed.

Observe statutory accident prevention regulations, safety regulations and safety data sheets for fluids.

If electrical clogging indicators are used, the system must be de-energised before removing the clogging indicator plug.



Info

This filter may be used only in conjunction with a machine or system.

The filter may be used only as intended in accordance with the operating instructions for the machine or system.

This filter may be operated only with hydraulic or lubricating fluid.

The obligations of the owner under the Federal German Water Act (WHG) / State Water Act (LWG) or other national regulations must be observed.

## 10.8 ELEMENT CHANGE INTERVAL

We generally recommend changing the filter element after one year of operation at the latest.

The filter should be equipped with a clogging indicator for monitoring the filter element. If the clogging indicator responds, the filter element must be changed without delay.

If no external clogging indicator can be attached, we recommend changing the elements on the basis of set intervals (element change is dependent on the filter dimensioning and the conditions that apply at the filter).

The filter should be equipped with a clogging indicator for monitoring the filter element. If the clogging indicator responds, the filter element must be changed without delay.

## 10.9 CUSTOMER INFORMATION IN THE CONTEXT OF 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 a CE mark.

The information in this HYDAC Filtertechnik GmbH documentation must be observed when using the components.

These also contain information on the basic health and safety requirements to be applied by the user (based on the Machinery Directive 2006/42/EC).

We hereby declare that the filters are intended for installation in a machine within the meaning of the Machinery Directive 2006/42/EC.

Initial start-up of the filter is prohibited until the machine as a whole corresponds to the provisions of the Machinery Directive. In addition, our General Conditions of Sale and Delivery on our website ([www.hydac.com](http://www.hydac.com)).

<sup>1</sup> Specialised personnel/electrician:

These individuals have appropriate specialist training and several years of work experience. They are able to assess and perform the work assigned to them and to recognise potential hazards.

## NOTE

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

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

Only if original HYDAC parts are used and the work has been carried out professionally can a warranty claim be made under our terms and conditions of sale and delivery!

## EXCLUSION OF LIABILITY

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

We therefore ask for your understanding that, unless otherwise stated below, we exclude our warranty and liability – regardless of the legal grounds – for the information in these installation instructions.

In particular, we are not liable for loss of profit or other financial losses.

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 the foreseeable damage. Claims arising from product liability remain unaffected.

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