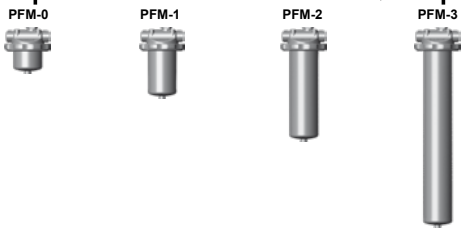
Process Filter Medium, High Pressure PFM, PFH

up to 120 l/min, up to 100 bar



1. TECHNICAL SPECIFICATIONS

1.1 GENERAL

HYDAC stainless steel inline filters, types PFM and PFH are designed for use in process engineering and chemical plants. They are suitable for separating contamination from low and high viscosity fluids. The range of different sizes, filter materials and sealing materials means that the filters can be adapted to the particular application conditions.

Depending on the required cleanliness level, the following stainless steel filter elements can be used: Chemicron®, pleated wire mesh or slotted tube. Contamination of the filter elements can be monitored by means of a clogging indicator (differential pressure monitoring) fitted to the filter.

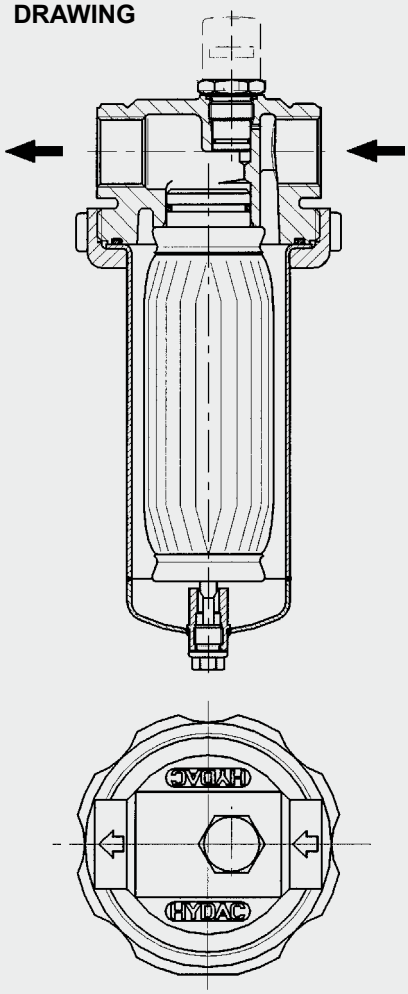
The direction of flow through the filter elements is from the outside to the inside. They can be cleaned several times, thereby saving the costs of disposal and re-purchase.

1.2 SUMMARY OF AVAILABLE SIZES AND CONNECTIONS

Series	Connection size	Pressure range
PFM	G 1	PN 40
PFH	G 1	PN 100

The selection of the filter bowl length depends on the level of contamination of the fluid and on the associated filter area.

1.3 SECTIONAL FUNCTIONAL DRAWING



2. FILTER SPECIFICATIONS

2.1 SUMMARY OF TECHNICAL SPECIFICATIONS OF THE FILTER HOUSING (STANDARD CONFIGURATION)

Series	Size	Connection size	Materials		Max. operating pressure [bar]	Max. temperature [°C]	Weight [kg]	Volume [l]
			Cover	Lock nut				
PFM	0	G 1	Stainless steel	Stainless steel	PN 40	100	4.4	0.4
	1						4.9	0.8
	2						5.6	1.6
	3						6.8	3.2
PFH	0				PN 100		4.5	0.4
	1						5.0	0.8
	2						5.7	1.6
	3						6.9	3.2

* max. operating temperatures will reduce the pressure range:
PFM: max. 200 °C at Pmax = 16 bar
PFH: max. 200 °C at Pmax = 75 bar

2.2 FURTHER SPECIFICATIONS OF THE FILTER HOUSING (STANDARD CONFIGURATION)

2.2.1 **Material of seal**
FPM (Viton)

2.2.2 **Documentation**
Operating and Maintenance Instructions

2.3 SUMMARY OF TECHNICAL SPECIFICATIONS OF FILTER ELEMENTS

Size	Filter area		Filter materials and filtration ratings [µm]				Permiss. diff. pressure across element [bar]
	Pleated element	Slotted tube	Chemicron® (metal fibre)	Wire mesh	Slotted tube (with bonded end caps)	Slotted tube (with welded end caps)	
SZ-0	676	116	1, 3, 5, 10, 20	25, 40, 60, 100, 150, 200, 250	50, 100, 200, 300, 500, 1000, 1500, 2000		40
SZ-1	1710	262					
SZ-2	3421	552					
SZ-3	6842	1133					

2.4. OPTIONAL VERSIONS

There are a range of optional versions available for the PFM/PFH process filters. For technical details and prices, please contact our Technical Sales Department at Head Office.

2.4.1 **Flange connections**
Various adaptations to the cylindrical pipe thread are available to suit flanges

- DIN
- ANSI
- JIS

These can either be piped or welded.

2.4.2 **Seal materials**
- FEP encapsulated Viton seals
- Various seal materials on request, depending on the resistance to the fluid

2.4.3 **Differential pressure monitoring**
- Visual
- Electrical
- Visual electrical
- Option of piping indicator separately for fluid temperatures > 100 °C

2.4.4 **Filter elements**
- Welded end caps on slotted tube filter elements
- Support spring

2.4.5 **Duplex filter model**
All PFM, PFH are available as duplex filters including pipework and change-over valve.

2.4.6 **Documentation**
- Manufacturer's test certificates
- Material certificates (3.1 according to DIN EN 10204)
- and many others on request

Further optional models on request.

3. MODEL CODE

3.1 FILTER HOUSING PFM/PFH

PFM - 1 - G - 2 - V - X - L24 / ES

Filter type
PFM (stainless steel lock nut)
PFH (stainless steel lock nut)

Size
0 = short filter bowl
1 = medium filter bowl
2 = long filter bowl
3 = very long filter bowl

Type of connection
G = threaded connection 1"

Clogging indicator
0 = without clogging indicator
1 = visual indicator (PVD 2 B.1)
2 = visual-electrical indicator (PVD 2 D.0/-L..)
6 = electrical clogging indicator(PVD 2 C.0) *

Seal material
V = FPM (Viton), (max. +200 °C, standard)
E = EPDM (max. +150 °C)
N = NBR (max. +120 °C)
T = FEP encapsulated O-ring (max. +150 °C)
Other seals on request

Modification number

Supplementary details

Element code

* see Brochure on Clogging Indicators for Process Filters No. 7.706.../...

3.2 FILTER ELEMENT

SZ - 1 - 20 - M - V

Element type

Size
0
1
2
3

Filtration rating in µm
1; 3; 5; 10; 20 Chemicron® (metal fibre)
25; 40; 60; 100; 150; 200; 250 (wire mesh)
50; 100; 200; 300; 500; 1000; 1500; 2000 (slotted tube)

Material of filter element
M = Chemicron® (metal fibre)
MS = Chemicron® (metal fibre) with support spring
D = wire mesh
DS = wire mesh with support spring
S = slotted tube

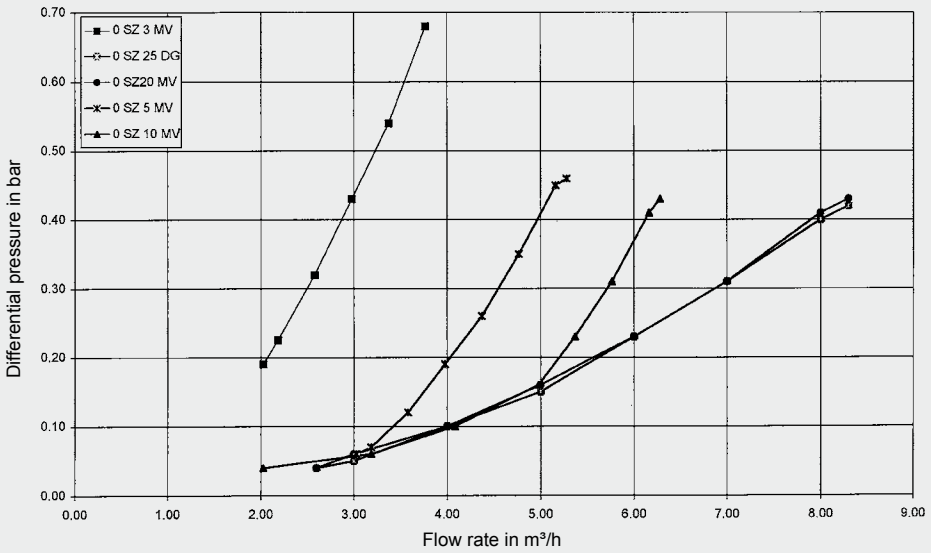
Seal material
V = FPM (Viton) (max. +200 °C, standard)
E = EPDM (max. +150 °C)
N = NBR (max. +120 °C)
T = FEP encapsulated O-ring (max. +150 °C)
Other seals on request

4. FILTER CALCULATION / SIZING

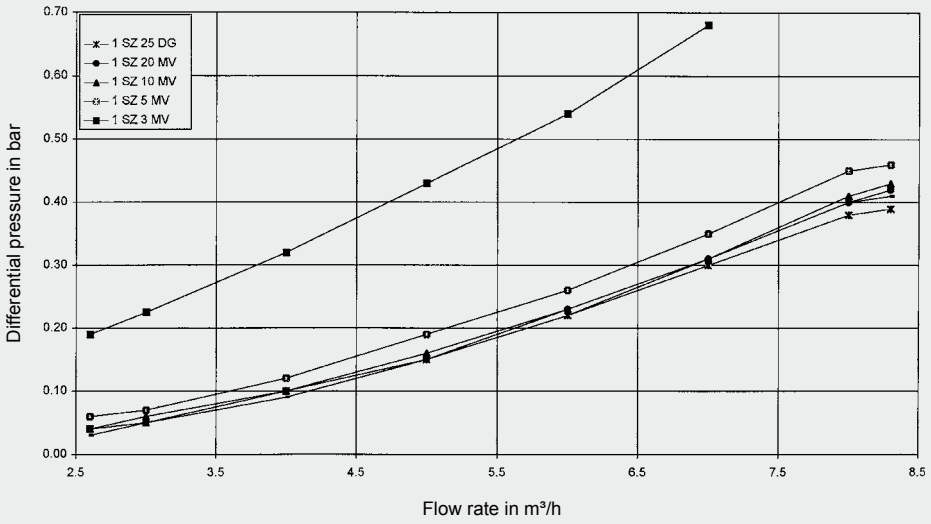
The curves apply to water at 20 °C or fluids to 15 mm²/s.

4.1. PRESSURE DROP CURVES HOUSING

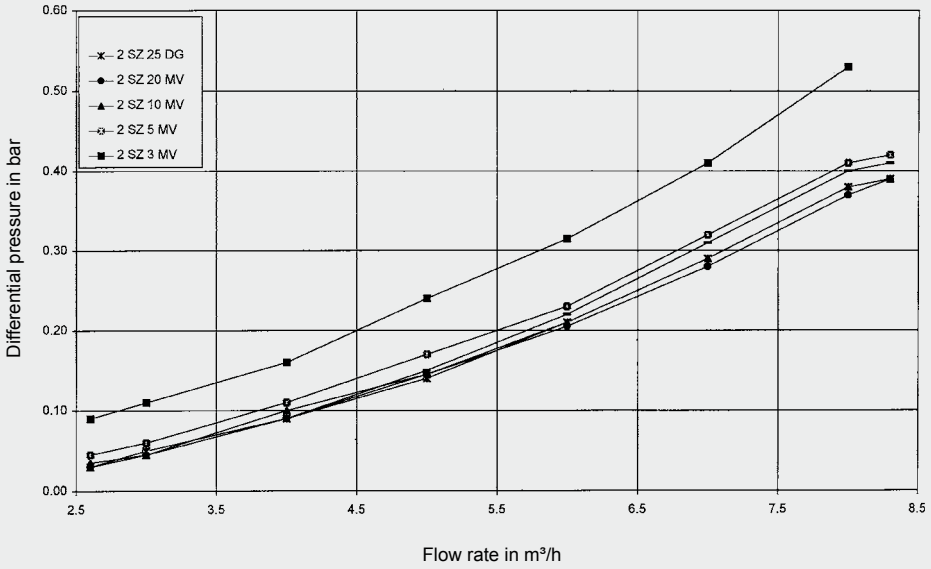
4.1.1 Pressure drop PFM/PFH Size 0



4.1.2 Pressure drop PFM/PFH Size 1



4.1.3 Pressure drop PFM/PFH Sizes 2 and 3



In order to be able to size the filter correctly, the following design data should be available:

- Flow rate
- Type of medium
- Materials/resistance
- Viscosity
- Required filtration rating
- Particulate loading in the fluid
- Type of contamination
- Operating pressure
- Operating temperature

Use the pressure drop curves to calculate the Stainless Steel Process Inline Filters PFM, PFH. Generally speaking, an initial - Δp (clean filter condition) of 0.2 bar should not be exceeded.

A further factor in the calculation is the flow velocity through the filter inlet. It should not exceed 4 m/s.

3.2.1 FILTRATION PERFORMANCE

- Retention rates for wire mesh and slotted tube:

  Nominal retention rates
  The filtration rating given in the model code is based on a HYDAC factory standard filter test.

  This test is carried out by introducing a large amount of dust (ISO MTD) at the beginning of the filter test and subsequently separating the contamination particles over 1 hour. The test filter must retain 90 - 95 % of all particles larger than the given filtration rating.

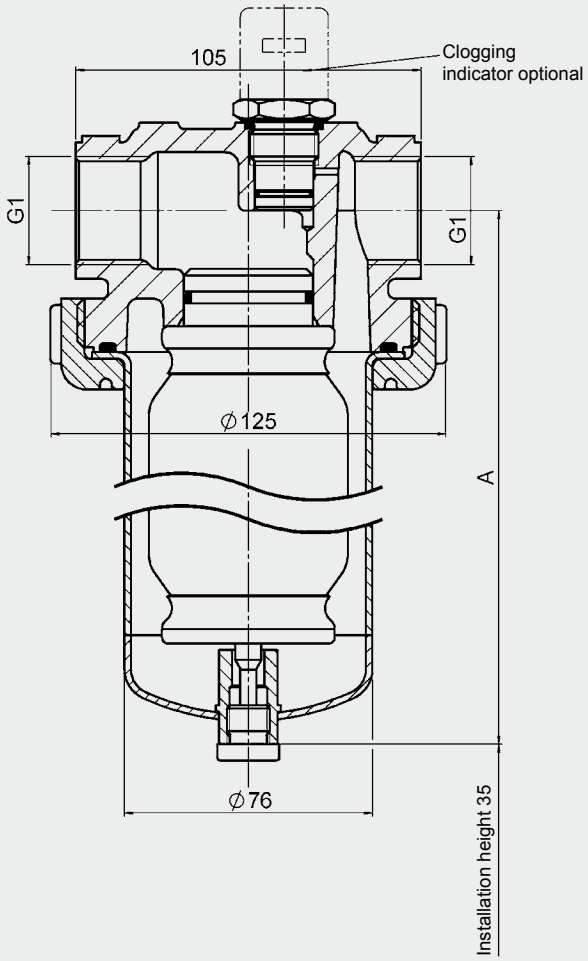
- Retention rates for Chemicron® (metal fibre):

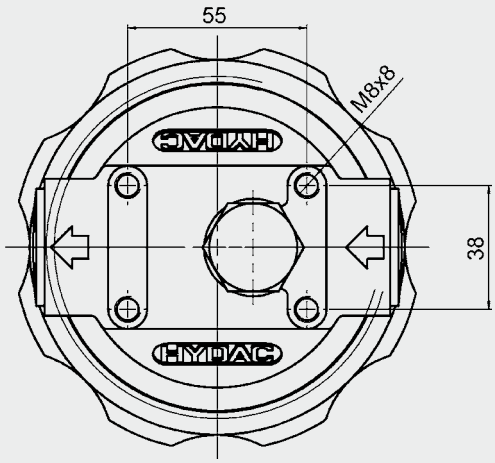
  Absolute retention rate
  The filtration rates given in the brochure are determined by the multi-pass test carried out on the HYDAC test rig, based on ISO 4572 (multi-pass test for the determination and proof of the filtration performance, extended to finest filtration).

  In this test at least 99 % of all particles larger than the given rating must be retained, and this up to the max. permissible differential pressure across the filter element. A filtration rate of 99 % corresponds to a βx-value of 100, which denotes absolute filtration.

5. DIMENSIONS

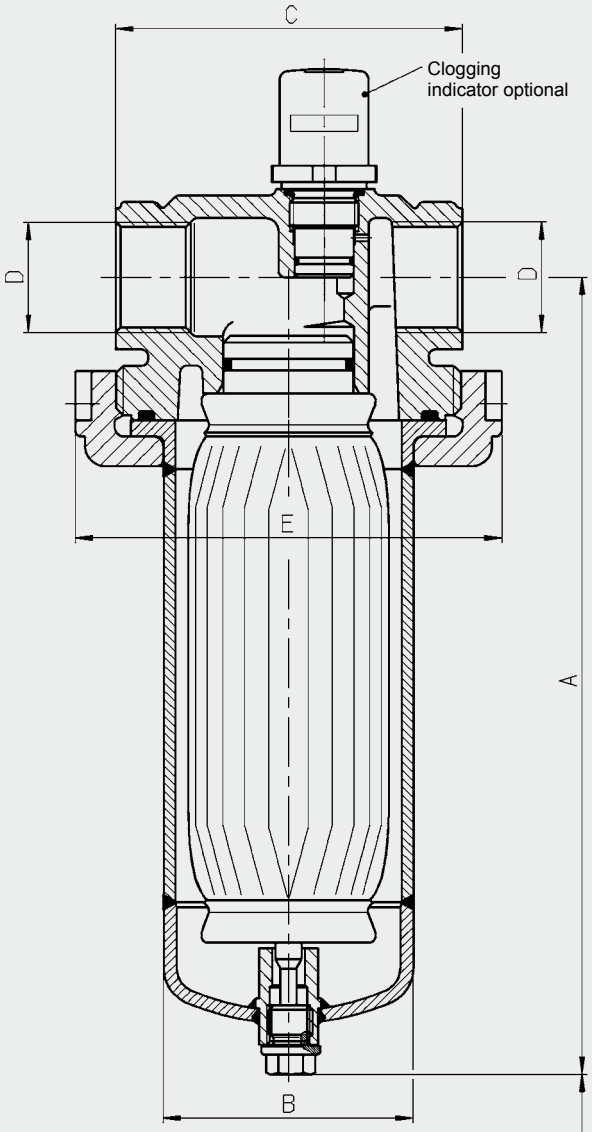
5.1 SINGLE HOUSING PFM

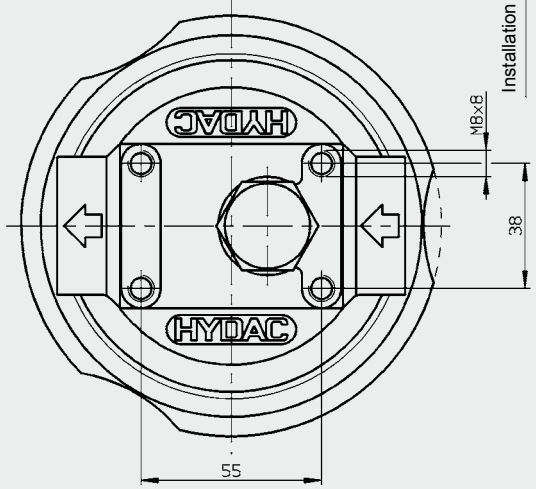




Size	A	Installation height
0	146	35
1	240	35
2	400	35
3	725	35

5.2 SINGLE HOUSING PFH

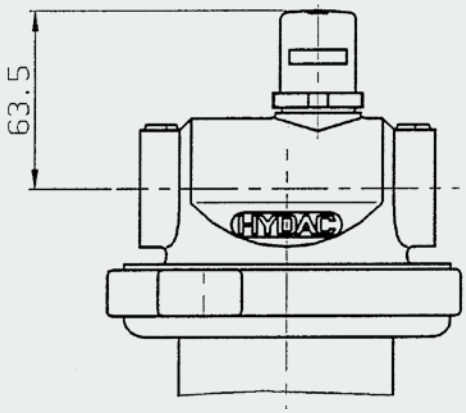




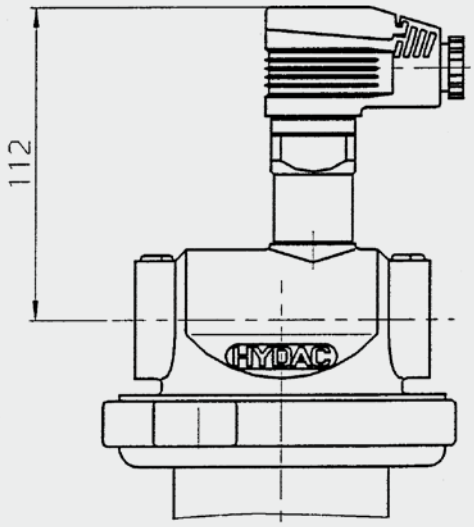
Size	A	B	C	D	E	F
0	146	76.1	106	G1	130	35
1	240	76.1	106	G1	130	35
2	400	76.1	106	G1	130	35
3	729.5	76.1	106	G1	130	35

5.3. CLOGGING INDICATORS

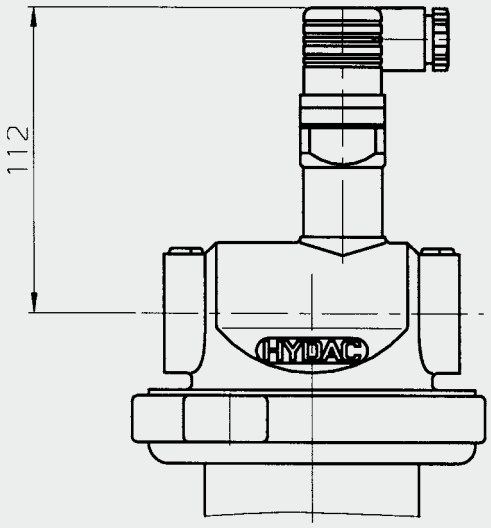
5.3.1 **Visual clogging indicator**



5.3.2 Visual-electrical clogging indicator

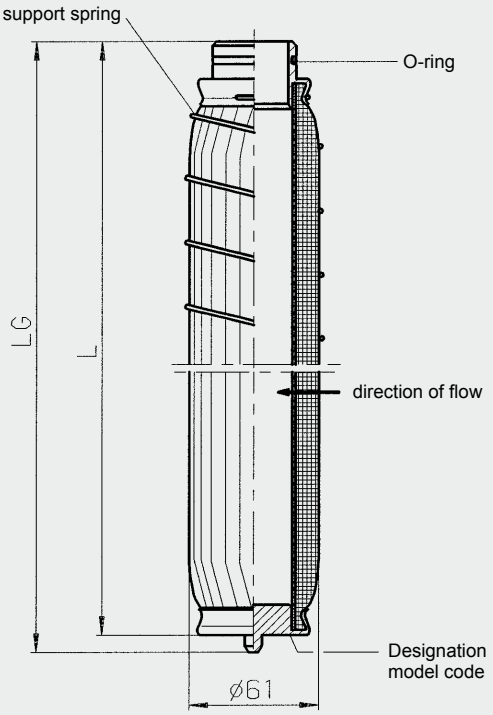


5.3.3 Electrical clogging indicator



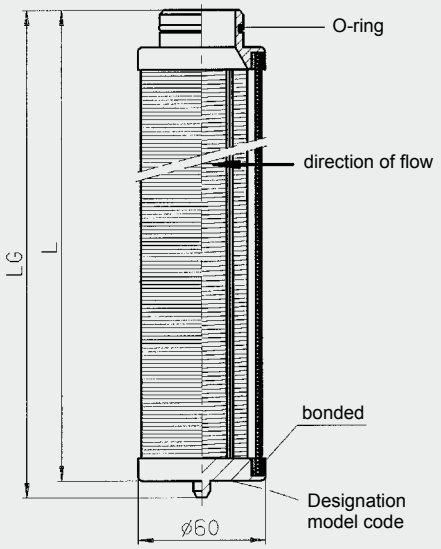
5.4. FILTER ELEMENTS

5.4.1 **Wire mesh**



Size	L	LG	O-ring dimensions
0	88	96	34.6 x 2.6
1	185	193	34.6 x 2.6
2	347	355	34.6 x 2.6
3	672	680	34.6 x 2.6

5.4.2 **Slotted tube**



Size	L	LG	O-ring dimensions
0	88	96	34.6 x 2.6
1	185	193	34.6 x 2.6
2	347	355	34.6 x 2.6
3	672	680	34.6 x 2.6

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.

HYDAC Process Technology GmbH
Am Wrangelflöz 1
D-66538 Neunkirchen
Tel.: +49 (0)6897 - 509-1241
Fax: +49 (0)6897 - 509-1278
Internet: www.hydac.com
E-Mail: prozess-technik@hydac.com