

# FHB series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 485 l/min



# FILTER SIZING

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**THE CORRECT FILTER SIZING HAVE TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING BY THE APPLICATION.**

FOR EXAMPLE, THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN RETURN FILTER HAVE TO BE IN THE RANGE 0.4 ÷ 0.6 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop  $\Delta p_c$  of the housing is proportional to the fluid density ( $\text{kg}/\text{dm}^3$ ); all the graphs in the catalogue are referred to mineral oil with density of  $0.86 \text{ kg}/\text{dm}^3$ .

The filter element pressure drop  $\Delta p_e$  is proportional to its viscosity ( $\text{mm}^2/\text{s}$ ), the corrective factor Y have to be used in case of an oil viscosity different than  $30 \text{ mm}^2/\text{s}$  (cSt).

**Sizing data for single filter element, head at top**

$\Delta p_c$  = Filter housing pressure drop [bar]

$\Delta p_e$  = Filter element pressure drop [bar]

Y = Corrective factor Y (see correspondent table), depending on the filter type, on the filter element size, on the filter element length and on the filter media

Q = flow rate (l/min)

V1 reference oil viscosity =  $30 \text{ mm}^2/\text{s}$  (cSt)

V2 = operating oil viscosity in  $\text{mm}^2/\text{s}$  (cSt)

**Filter element pressure drop calculation with an oil viscosity different than  $30 \text{ mm}^2/\text{s}$  (cSt)**

$\Delta p_e = Y : 1000 \times Q \times (V2:V1)$

$\Delta p_{Tot.} = \Delta p_c + \Delta p_e$

**Verification formula**

$\Delta p_{Tot.} \leq \Delta p_{max \text{ allowed}}$

**Maximum total pressure drop ( $\Delta p_{max}$ ) allowed by a new and clean filter**

Application	Range (bar)
Suction filters	0.08 ÷ 0.10
Return filters	0.4 ÷ 0.6
	0.4 ÷ 0.6 return lines
	0.3 ÷ 0.5 lubrication lines
Low & Medium Pressure filters	0.3 ÷ 0.4 off-line in power systems
	0.1 ÷ 0.3 off-line in test benches
	0.4 ÷ 0.6 over-boost
High Pressure filters	0.8 ÷ 1.5
Stainless Steel filters	0.8 ÷ 1.5

**Generic filter calculation example**

Application data:

Tank top return filter

Pressure Pmax = 10 bar

Flow rate Q = 120 l/min

Viscosity V2 =  $46 \text{ mm}^2/\text{s}$  (cSt)

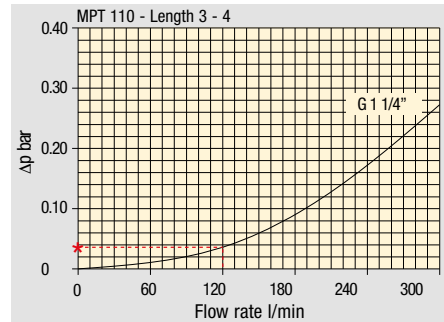
Oil density =  $0.86 \text{ kg}/\text{dm}^3$

Required filtration efficiency =  $25 \mu\text{m}$  with absolute filtration

With bypass valve and G 1 1/4" inlet connection

Calculation:

$\Delta p_c = 0.03 \text{ bar}$  (see graphic below)



Filter housings  $\Delta p$  pressure drop. The curves are plotted using mineral oil with density of  $0.86 \text{ kg}/\text{dm}^3$  in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

$\Delta p_e = (2.00 : 1000) \times 120 \times (46 : 30) = 0.37 \text{ bar}$

Filter element	Absolute filtration H Series					Nominal filtration N Series		
	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
Type								
Return filters								
MF 020	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	2	29.20	24.12	8.00	7.22	5.00	3.33	2.85
	3	22.00	19.00	6.56	5.33	4.33	1.68	1.44
MF 030	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MFX 030	1	28.20	24.40	8.67	8.17	6.88	4.62	3.96
	2	17.33	12.50	6.86	5.70	4.00	3.05	2.47
	3	10.25	9.00	3.65	3.33	2.50	1.63	1.32
	4	6.10	5.40	2.30	2.20	2.00	1.19	0.96

$\Delta p_{Tot.} = 0.03 + 0.37 = 0.4 \text{ bar}$

The selection is correct because the total pressure drop value is inside the admissible range for top tank return filters.

In case the allowed max total pressure drop is not verified, it is necessary to repeat the calculation changing the filter length/size.

# FILTER SIZING Corrective factor

Corrective factor Y to be used for the filter element pressure drop calculation. The values depend to the filter size and length and to the filter media.  
Reference oil viscosity 30 mm<sup>2</sup>/s

## Return filters

Filter element	Absolute filtration H Series					Nominal filtration N Series			
	Type	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
MF 020	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	2	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
	3	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
MF 030 MFX 030	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MF 100 MFX 100	1	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	2	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	3	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	4	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82
MF 180 MFX 180	1	3.67	3.05	1.64	1.56	1.24	1.18	1.06	0.26
	2	1.69	1.37	0.68	0.54	0.51	0.43	0.39	0.12
MF 190 MFX 190	2	1.69	1.37	0.60	0.49	0.44	0.35	0.31	0.11
MF 400 MFX 400	1	3.20	2.75	1.39	1.33	1.06	0.96	0.87	0.22
	2	2.00	1.87	0.88	0.85	0.55	0.49	0.45	0.13
	3	1.90	1.60	0.63	0.51	0.49	0.39	0.35	0.11
MF 750 MFX 750	1	1.08	0.84	0.49	0.36	0.26	0.21	0.19	0.06
MLX 250	2	3.00	3.04	1.46	1.25	1.17	-	-	M25 0.20
MLX 660	2	1.29	1.26	0.52	0.44	0.38	-	-	M25 0.10
CU 025		78.00	48.00	28.00	24.00	9.33	9.33	8.51	1.25
CU 040		25.88	20.88	10.44	10.00	3.78	3.78	3.30	1.25
CU 100		15.20	14.53	5.14	4.95	2.00	2.00	0.17	1.10
CU 250		3.25	2.55	1.55	1.35	0.71	0.71	0.59	0.25
CU 630		1.96	1.68	0.85	0.72	0.42	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04
MR 100	1	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	2	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	3	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	4	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	5	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MR 250	1	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	2	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	3	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	4	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MR 630	1	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	2	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	3	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	4	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	5	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MR 850	1	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	2	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	3	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	4	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

## Return / Suction filters

Filter element	Absolute filtration			
	Type	A10	A16	A25
RSX 116	1	5.12	4.33	3.85
	2	2.22	1.87	1.22
RSX 165	1	2.06	1.75	1.46
	2	1.24	1.05	0.96
	3	0.94	0.86	0.61

Filter element	Absolute filtration N Series								
	Type	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
CU 110	1	16.25	15.16	8.75	8.14	5.87	2.86	2.65	0.14
	2	12.62	10.44	6.11	6.02	4.16	1.60	1.49	0.12
	3	8.57	7.95	5.07	4.07	2.40	1.24	1.15	0.11
	4	5.76	4.05	2.80	2.36	1.14	0.91	0.85	0.05

## Low & Medium pressure filters

Filter element	Absolute filtration N-W Series					Nominal filtration N Series			
	Type	A03	A06	A10	A16	A25	P10	P25	M25
CU 110	1	16.25	15.16	8.75	8.14	5.87	2.86	2.65	0.14
	2	12.62	10.44	6.11	6.02	4.15	1.60	1.49	0.12
	3	8.57	7.95	5.07	4.07	2.40	1.24	1.15	0.11
	4	5.76	4.05	2.80	2.36	1.14	0.91	0.85	0.05
CU 210	1	5.30	4.80	2.00	1.66	1.32	0.56	0.43	0.12
	2	3.44	2.95	1.24	1.09	0.70	0.42	0.35	0.09
	3	2.40	1.70	0.94	0.84	0.54	0.33	0.23	0.05
DN	016	7.95	7.20	3.00	2.49	1.98	0.84	0.65	0.18
	025	5.00	4.53	1.89	1.57	1.25	0.53	0.41	0.11
	040	3.13	2.66	1.12	0.98	0.63	0.38	0.32	0.08
CU 400	2	3.13	2.55	1.46	1.22	0.78	0.75	0.64	0.19
	3	2.15	1.70	0.94	0.78	0.50	0.40	0.34	0.10
	4	1.60	1.28	0.71	0.61	0.40	0.34	0.27	0.08
	5	1.00	0.83	0.47	0.34	0.20	0.24	0.19	0.06
	6	0.82	0.58	0.30	0.27	0.17	0.22	0.18	0.05
	CU 900	1	0.86	0.63	0.32	0.30	0.21	-	-
CU 950	2	1.03	0.80	0.59	0.40	0.26	-	-	0.05
	3	0.44	0.40	0.27	0.18	0.15	-	-	0.02
MR 630	7	0.88	0.78	0.36	0.34	0.16	0.12	0.96	0.47

**Corrective factor Y to be used for the filter element pressure drop calculation. The values depend to the filter size and length and to the filter media.**  
Reference oil viscosity 30 mm<sup>2</sup>/s

## High pressure filters

Filter element		Absolute filtration N - R Series					Nominal filtration N Series
Type		A03	A06	A10	A16	A25	M25
HP 011	1	332.71	250.07	184.32	152.36	128.36	-
	2	220.28	165.56	74.08	59.13	37.05	-
	3	123.24	92.68	41.48	33.08	20.72	-
	4	77.76	58.52	28.37	22.67	16.17	-
HP 039	2	70.66	53.20	25.77	20.57	14.67	4.90
	3	36.57	32.28	18.00	13.38	8.00	2.90
	4	26.57	23.27	12.46	8.80	5.58	2.20
HP 050	1	31.75	30.30	13.16	12.3	7.29	1.60
	2	24.25	21.26	11.70	9.09	4.90	1.40
	3	17.37	16.25	8.90	7.18	3.63	1.25
	4	12.12	10.75	6.10	5.75	3.08	1.07
	5	7.00	6.56	3.60	3.10	2.25	0.80
HP 065	1	58.50	43.46	23.16	19.66	10.71	1.28
	2	42.60	25.64	16.22	13.88	7.32	1.11
	3	20.50	15.88	8.18	6.81	3.91	0.58
HP 135	1	20.33	18.80	9.71	8.66	4.78	2.78
	2	11.14	10.16	6.60	6.38	2.22	1.11
	3	6.48	6.33	3.38	3.16	2.14	1.01
HP 150	1	17.53	15.91	7.48	6.96	5.94	1.07
	2	8.60	8.37	3.54	3.38	3.15	0.58
	3	6.53	5.90	2.93	2.79	2.12	0.49
HP 320	1	10.88	9.73	5.02	3.73	2.54	1.04
	2	4.40	3.83	1.75	1.48	0.88	0.71
	3	2.75	2.11	1.05	0.87	0.77	0.61
	4	2.12	1.77	0.98	0.78	0.55	0.47
HP 500	1	4.44	3.67	2.30	2.10	1.65	0.15
	2	3.37	2.77	1.78	1.68	1.24	0.10
	3	2.22	1.98	1.11	1.09	0.75	0.08
	4	1.81	1.33	0.93	0.86	0.68	0.05
	5	1.33	1.15	0.77	0.68	0.48	0.04

Filter element		Absolute filtration N Series					Nominal filtration N Series
Type		A03	A06	A10	A16	A25	M25
HF 320	1	3.65	2.95	2.80	1.80	0.90	0.38
	2	2.03	1.73	1.61	1.35	0.85	0.36
	3	1.84	1.42	1.32	1.22	0.80	0.35

## Suction filters

Filter element	Nominal filtration N Series	
Type	P10	P25
SF 250	65	21

## Stainless steel high pressure filters

Filter element		Absolute filtration N Series				
Type		A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36
	2	220.28	165.56	74.08	59.13	37.05
	3	123.24	92.68	41.48	33.08	20.72
	4	77.76	58.52	28.37	22.67	16.17
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
HP 050	1	31.75	30.30	13.16	12.3	7.29
	2	24.25	21.26	11.70	9.09	4.90
	3	17.37	16.25	8.90	7.18	3.63
	4	12.12	10.75	6.10	5.75	3.08
	5	7.00	6.56	3.60	3.10	2.25
HP 135	1	20.33	18.80	9.71	8.66	4.78
	2	11.14	10.16	6.60	6.38	2.22
	3	6.48	6.33	3.38	3.16	2.14

Filter element		Absolute filtration H - U Series				
Type		A03	A06	A10	A16	A25
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
HP 050	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	14.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.60	4.44
	3	8.96	7.46	4.89	4.16	3.07

# FILTER SIZING Selection Software

**Step 1** Select "FILTERS"



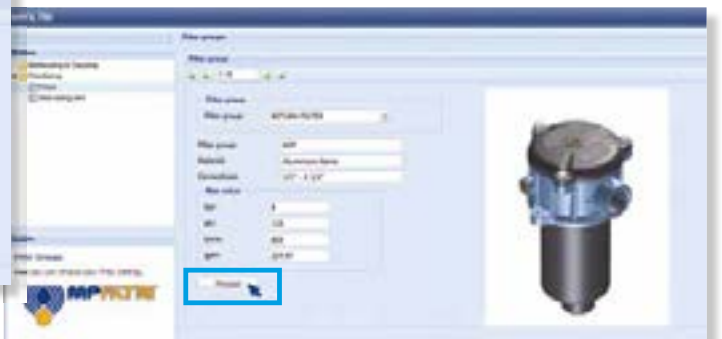
**Step 2** Choose filter group (Return Filter, Pressure Filter, etc.)



**Step 3** Choose filter type (MPF, MPT, etc.) in function of the max working pressure and the max flow rate



**Step 4** Push "PROCEED"



**Step 5**

Insert all application data to calculate the filter size following the sequence:

- working pressure
- working flow rate
- working pressure drop
- working temperature
- fluid material and fluid type
- filtration media
- connection type

**Step 6**

Push "CALCULATE" to have result; in case of any mistake, the system will advice which parameter is out of range to allow to modify/adjust the selection



**Step 7**

Download PDF Datasheet "Report.aspx" pushing the button "Drawing"



# FHB series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 485 l/min



## Description

## Technical data

### High Pressure filters

#### Manifold

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 485 l/min**

FHB is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the side of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø30 mm, for a maximum flow rate of 485 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

#### Pressure

- Working pressure: 32 MPa (320 bar)
- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series H: 210 bar (not available for FHB050)
- Microfibre filter elements - series S: 210 bar (only for FHB050)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

Manifold mounting

#### Note

FHB filters are provided for vertical mounting

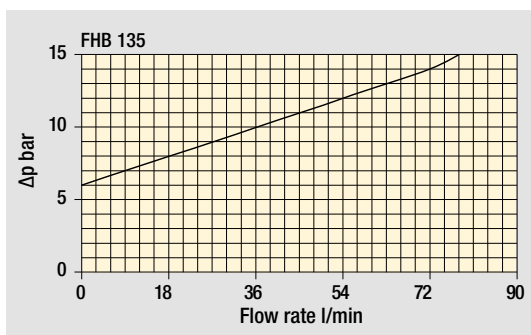
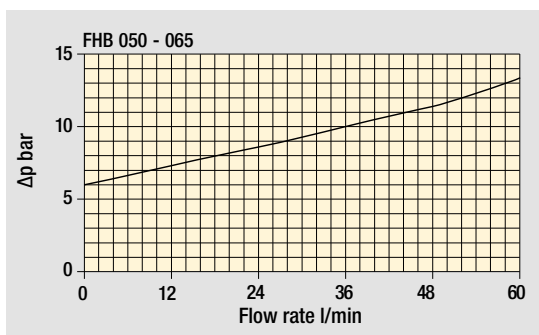
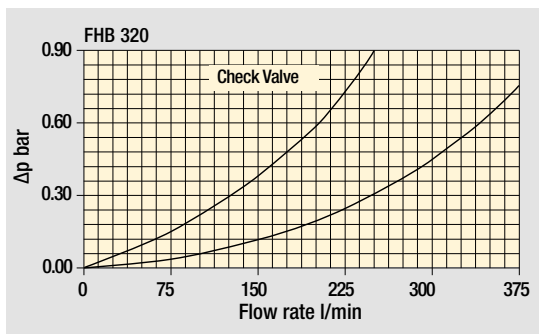
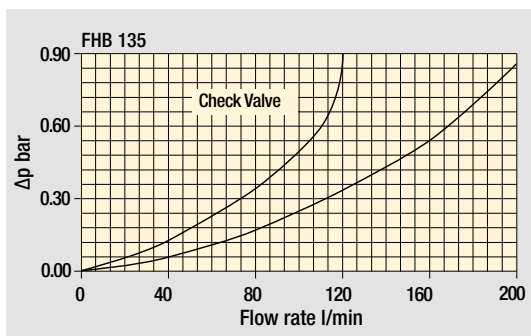
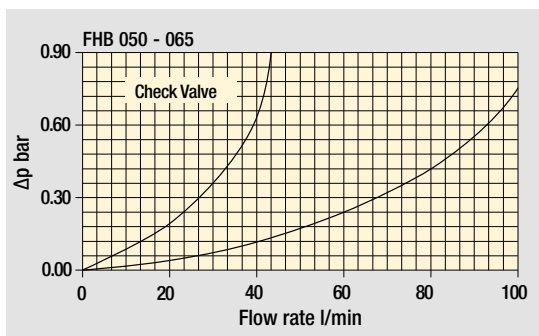


## Weights [kg] and volumes [dm<sup>3</sup>]

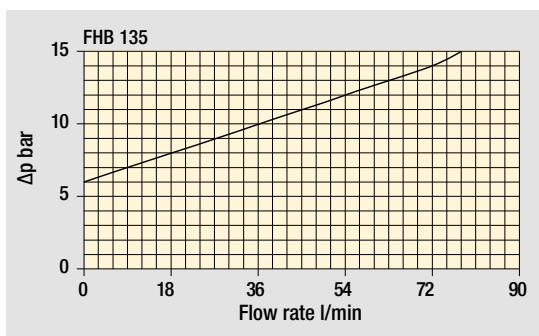
Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHB 050</b>		2.61	2.98	3.39	3.86	5.04		0.21	0.30	0.40	0.52	0.81
<b>FHB 065</b>		3.33	3.69	4.90	-	-		0.20	0.27	0.49	-	-
<b>FHB 135</b>		6.61	8.21	9.21	-	-		0.40	0.73	0.94	-	-
<b>FHB 320</b>		12.95	15.08	17.37	26.77	-		0.91	1.63	2.40	3.59	-



Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of  $0.86 \text{ kg/dm}^3$  in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

# FHB GENERAL INFORMATION

## Flow rates [l/min]

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHB 050</b>	<b>1</b>	43	42	79	81	101	131	30	40	58	60	74
	<b>2</b>	53	58	84	93	112	132	46	50	76	86	108
	<b>3</b>	67	70	94	101	119	133	59	62	87	95	115
	<b>4</b>	82	87	106	108	122	134	74	80	101	103	119
	<b>5</b>	102	104	119	122	127	136	90	92	105	113	126

Filter series	Length	Filter element design - N Series						Filter element design - H Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHB 065</b>	<b>1</b>	25	33	55	62	87	133	23	25	49	58	81
	<b>2</b>	33	51	70	76	101	134	33	38	66	75	94
	<b>3</b>	60	71	97	103	118	138	60	68	95	102	116
<b>FHB 135</b>	<b>1</b>	67	72	120	129	177	212	49	55	97	100	160
	<b>2</b>	109	116	152	154	224	250	90	110	137	140	182
	<b>3</b>	153	155	201	205	226	253	126	142	175	187	207
<b>FHB 320</b>	<b>1</b>	130	143	238	286	343	442	110	117	192	201	304
	<b>2</b>	259	281	391	409	454	468	200	230	319	325	392
	<b>3</b>	332	368	441	455	463	476	269	312	381	389	432
	<b>4</b>	368	390	446	462	481	488	311	334	388	394	437

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

Please, contact our Sales Department for further additional information.

## Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D
<b>FHB 050</b>	•	•	•	•
<b>FHB 065</b>	•	•	•	•
<b>FHB 135</b>	•	•	•	•
<b>FHB 320</b>				

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## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>FHB050</b>	Configuration example: <b>FHB050</b>	<b>2</b>	<b>T</b>	<b>A</b>	<b>F1</b>	<b>A06</b>	<b>S</b>	<b>P01</b>
<b>Length</b> 1   2   3   4   5								
<b>Valves</b> S Without bypass B With bypass 6 bar T With check valve, without bypass D With check valve, with bypass 6 bar								
<b>Seals</b> A NBR V FPM								
<b>Connections</b> F1 Manifold								
<b>Filtration rating (filter media)</b>								
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm							
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm							
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm							
			Valves					
			<b>Element Δp</b>	<b>S</b>	<b>B</b>	<b>T</b>	<b>D</b>	<b>Execution</b>
			<b>N</b> 20 bar		•		•	<b>P01</b> MP Filtri standard
			<b>S</b> 210 bar	•		•		<b>Pxx</b> Customized

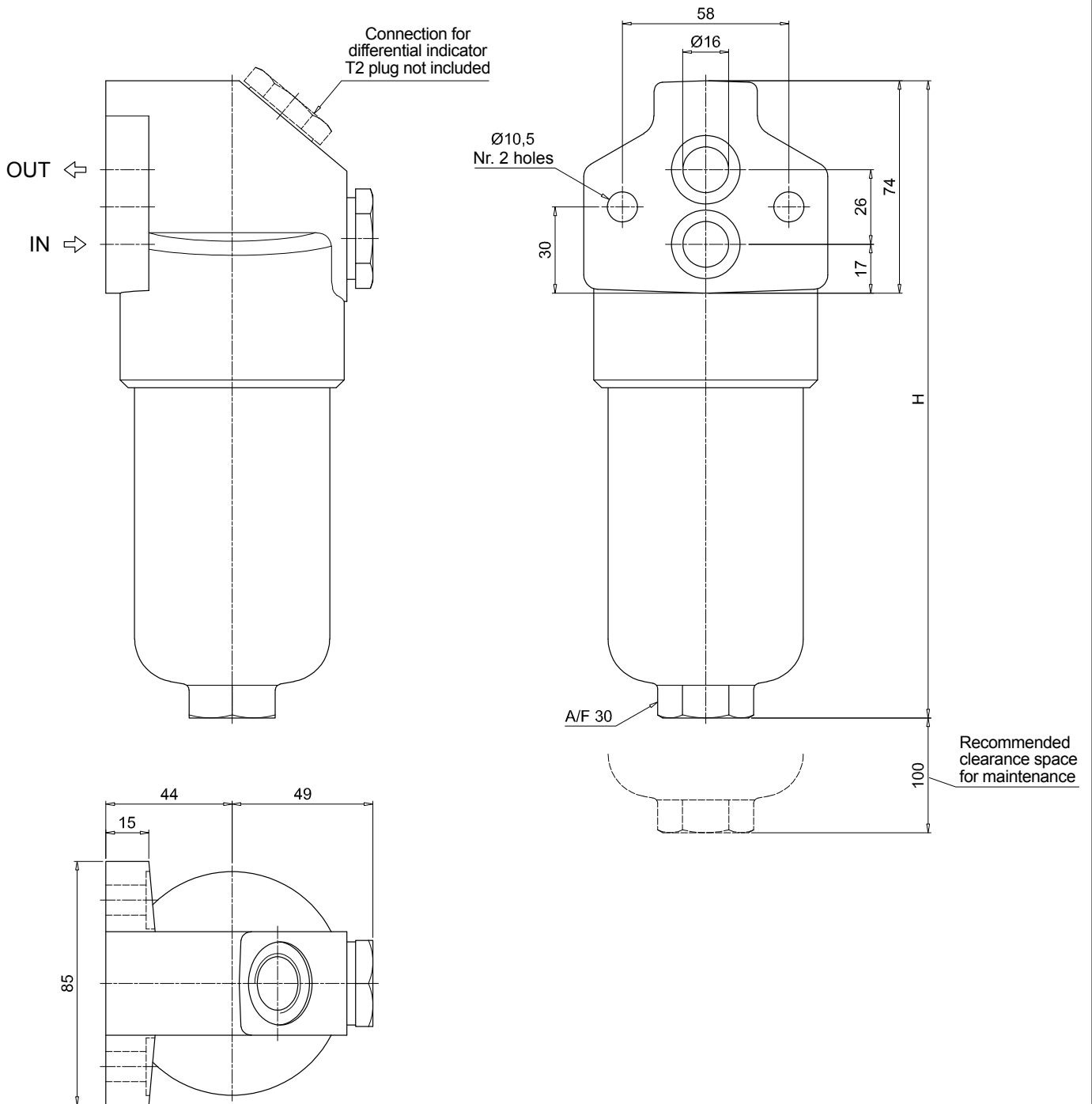
### FILTER ELEMENT

<b>Element series and size</b> <b>HP050</b>	Configuration example: <b>HP050</b>	<b>2</b>	<b>A06</b>	<b>A</b>	<b>S</b>	<b>P01</b>
<b>Element length</b> 1   2   3   4   5						
<b>Filtration rating (filter media)</b>						
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm					
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm					
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm					
			<b>Seals</b>	<b>Element Δp</b>	<b>Execution</b>	
			<b>A</b> NBR	<b>N</b> 20 bar	<b>P01</b> MP Filtri standard	
			<b>V</b> FPM	<b>S</b> 210 bar	<b>Pxx</b> Customized	

### ACCESSORIES

<b>Differential indicators</b>	page		page
<b>DEA</b> Electrical differential indicator	563	<b>DLE</b> Electrical / visual differential indicator	566
<b>DEH</b> Hazardous area electronic differential indicator	563-564	<b>DTA</b> Electronic differential indicator	567
<b>DEM</b> Electrical differential indicator	564-565	<b>DVA</b> Visual differential indicator	567
<b>DLA</b> Electrical / visual differential indicator	565-566	<b>DVM</b> Visual differential indicator	567
<b>Additional features</b>	page		
<b>T2</b> Plug	568		

FHB050	
Filter length	H [mm]
1	185
2	222
3	264
4	312
5	434



# FHB FHB065 - FHB135 - FHB320

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>				Configuration example: <b>FHB320</b>   <b>4</b>   <b>S</b>   <b>A</b>   <b>F1</b>   <b>A06</b>   <b>H</b>   <b>P01</b>																			
<b>FHB065</b>   <b>FHB135</b>   <b>FHB320</b>																							
<b>Length</b>	<b>FHB065</b>	<b>FHB135</b>	<b>FHB320</b>																				
<b>1</b>	•	•	•																				
<b>2</b>	•	•	•																				
<b>3</b>	•	•	•																				
<b>4</b>			•																				
<b>Valves</b>																							
<b>S</b>	Without bypass																						
<b>B</b>	With bypass 6 bar																						
<b>T</b>	With check valve, without bypass																						
<b>D</b>	With check valve, with bypass 6 bar																						
<b>Seals</b>																							
<b>A</b>	NBR																						
<b>V</b>	FPM																						
<b>Connections</b>																							
<b>F1</b>	Manifold																						
<b>Filtration rating (filter media)</b>																							
<b>A03</b>	Inorganic microfiber	3 µm	<b>A16</b>	Inorganic microfiber	16 µm																		
<b>A06</b>	Inorganic microfiber	6 µm	<b>A25</b>	Inorganic microfiber	25 µm																		
<b>A10</b>	Inorganic microfiber	10 µm	<b>M25</b>	Wire mesh	25 µm																		
				<b>Element Δp</b>				<b>Valves</b>				<b>Execution</b>											
				<b>N</b>	20 bar	<b>S</b>		<b>B</b>	•	<b>T</b>		<b>D</b>	•	<b>P01</b>	MP Filtri standard	<b>1</b>	•	<b>2</b>	•	<b>3</b>	•	<b>4</b>	•
				<b>H</b>	210 bar	<b>S</b>	•	<b>B</b>		<b>T</b>	•	<b>D</b>		<b>P02</b>	Maintenance from the bottom of the housing	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	•
												<b>Pxx</b> Customized											

### FILTER ELEMENT

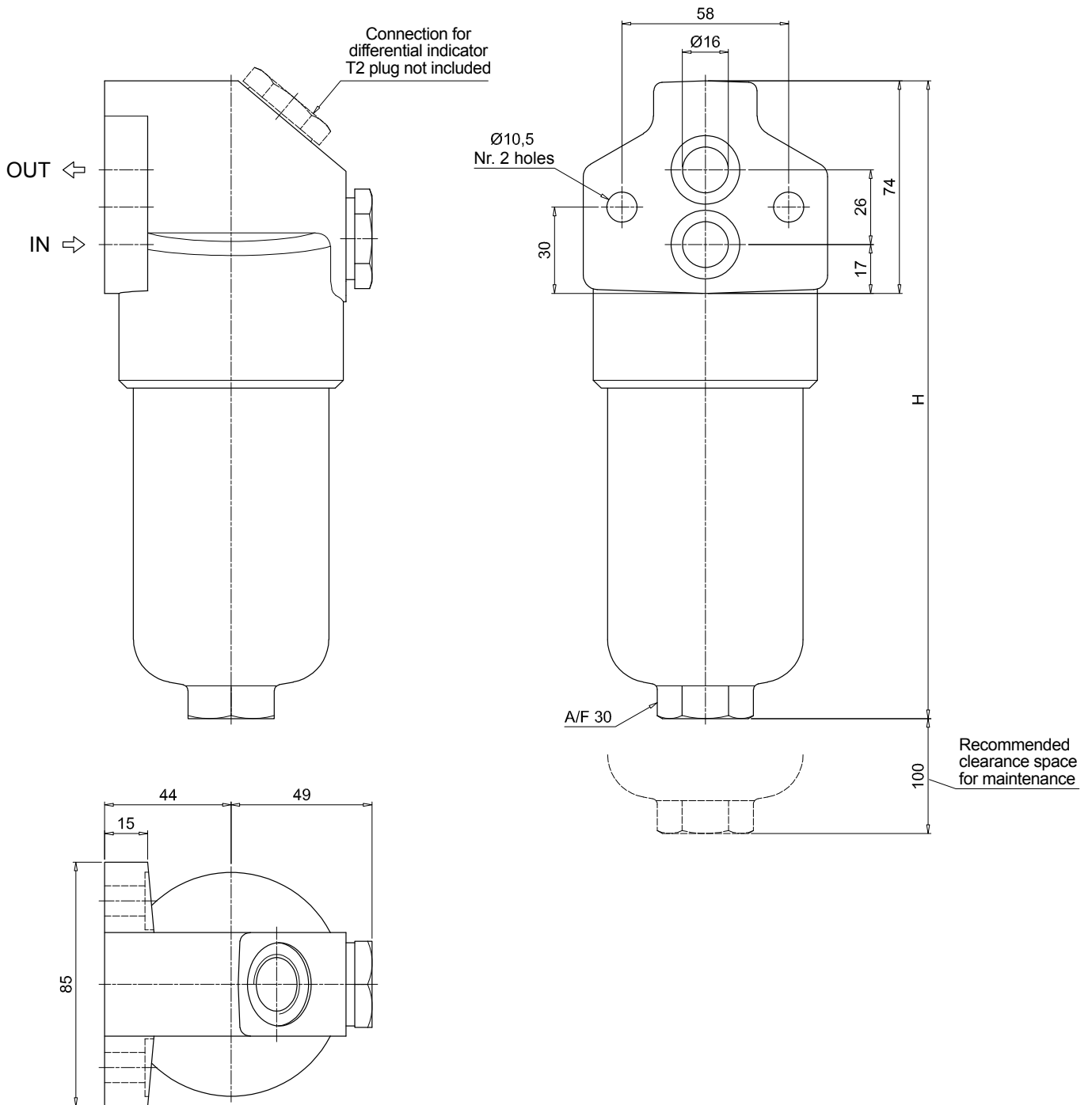
<b>Element series and size</b>				Configuration example: <b>HP320</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>H</b>   <b>P01</b>												
<b>HP065</b>   <b>HP135</b>   <b>HP320</b>																
<b>Element length</b>	<b>HP065</b>	<b>HP135</b>	<b>HP320</b>													
<b>1</b>	•	•	•													
<b>2</b>	•	•	•													
<b>3</b>	•	•	•													
<b>4</b>			•													
<b>Filtration rating (filter media)</b>																
<b>A03</b>	Inorganic microfiber	3 µm	<b>A16</b>	Inorganic microfiber	16 µm											
<b>A06</b>	Inorganic microfiber	6 µm	<b>A25</b>	Inorganic microfiber	25 µm											
<b>A10</b>	Inorganic microfiber	10 µm	<b>M25</b>	Wire mesh	25 µm											
				<b>Seals</b>				<b>Element Δp</b>				<b>Execution</b>				
				<b>A</b>	NBR	<b>N</b>	20 bar	<b>P01</b>				MP Filtri standard				
				<b>V</b>	FPM	<b>H</b>	210 bar	<b>Pxx</b>				Customized				

### ACCESSORIES

<b>Differential indicators</b>		page			page
<b>DEA</b>	Electrical differential indicator	563	<b>DLE</b>	Electrical / visual differential indicator	566
<b>DEH</b>	Hazardous area electronic differential indicator	563-564	<b>DTA</b>	Electronic differential indicator	567
<b>DEM</b>	Electrical differential indicator	564-565	<b>DVA</b>	Visual differential indicator	567
<b>DLA</b>	Electrical / visual differential indicator	565-566	<b>DVM</b>	Visual differential indicator	567
<b>Additional features</b>		page			
<b>T2</b>	Plug	568			

### FHB065

Filter length	H [mm]
<b>1</b>	194
<b>2</b>	225
<b>3</b>	327

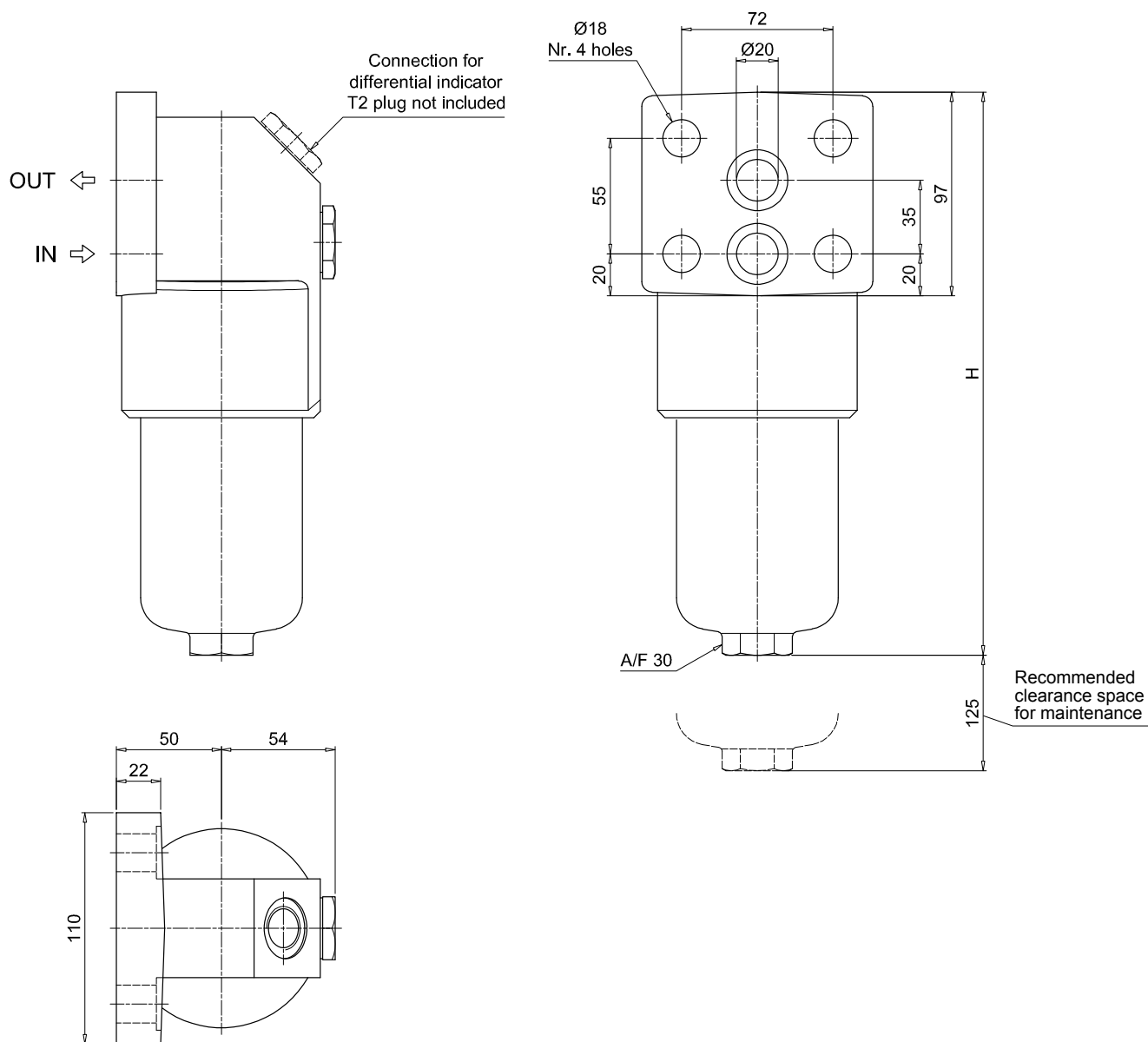


# FHB FHB065 - FHB135 - FHB320

## Dimensions

FHB135

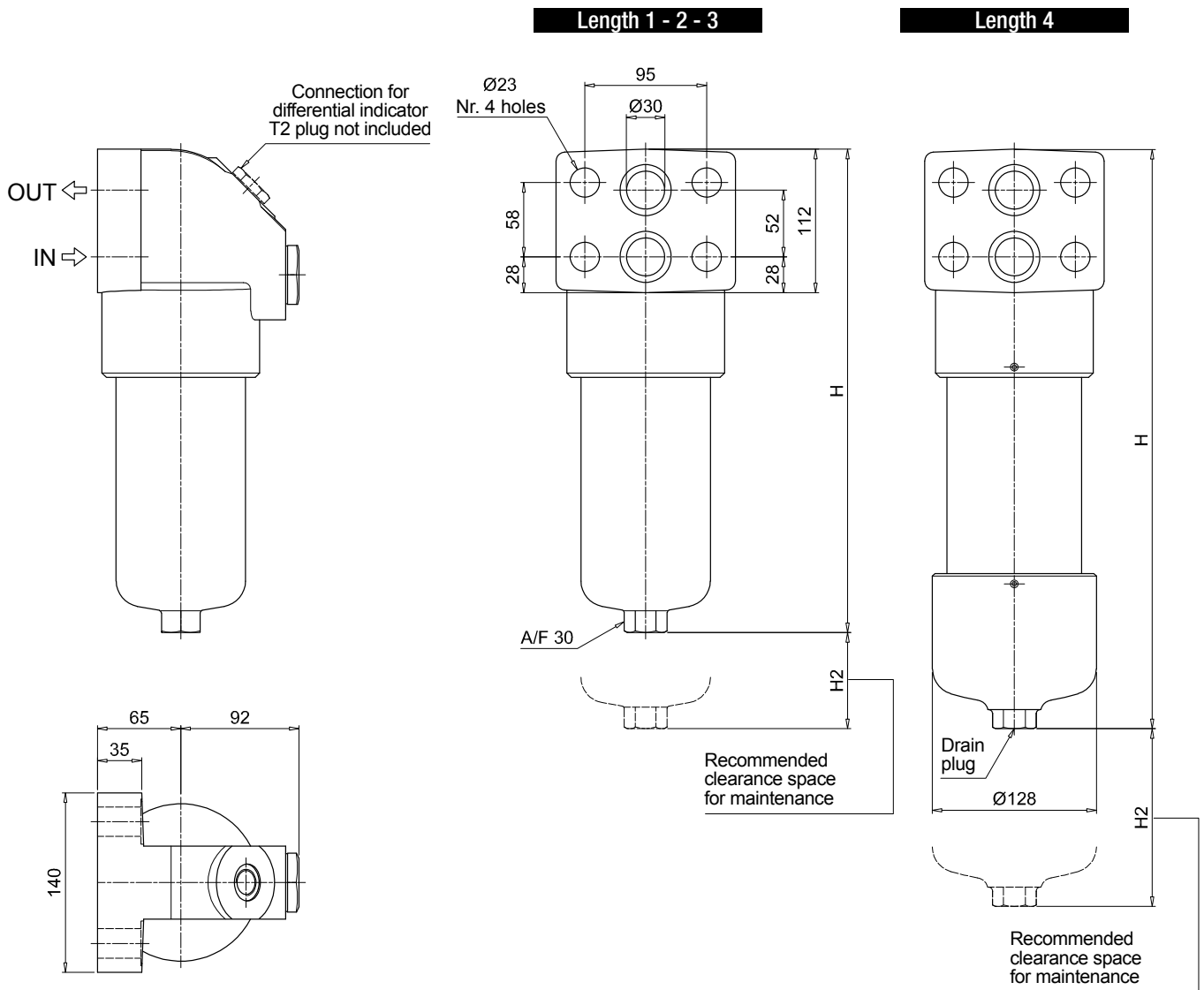
Filter length	H [mm]
1	268
2	381
3	456





### FHB320

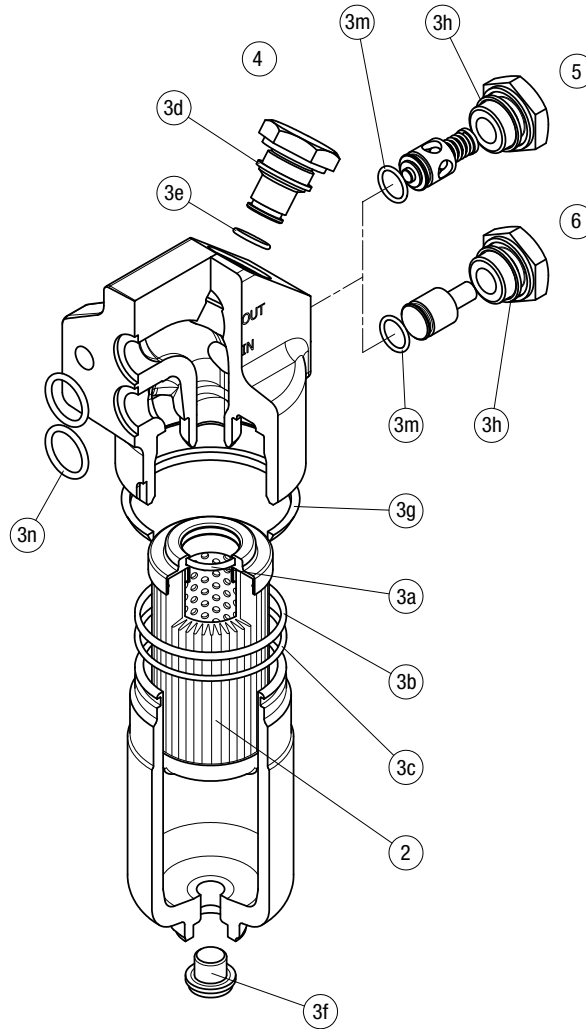
Filter length	H [mm]	H2 [mm]	
		P01	P02
1	301	150	-
2	424	150	-
3	556	150	-
4	709	150	550



# FHB SPARE PARTS

Order number for spare parts

FHB 050 - 065 - 135 - 320



Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3n)		Q.ty: 1 pc. <b>4</b>		Q.ty: 1 pc. <b>5</b>		Q.ty: 1 pc. <b>6</b>	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FHB 050</b>	See order table	02050412	02050413	T2H	T2V	02001312	02001385	02001314	02001386
<b>FHB 065</b>		02050266	02050277			02001312	02001385	02001314	02001386
<b>FHB 135</b>		02050270	02050281			02001312	02001385	02001314	02001386
<b>FHB 320</b>		02050273	02050284			02001381	02001382	02001383	02001384