

# FHP series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 750 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  $\Delta pc$  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  $\Delta pe$  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**

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

$\Delta pe$  = 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)**

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

$\Delta p \text{ Tot.} = \Delta pc + \Delta pe$

**Verification formula**

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

**Maximum total pressure drop ( $\Delta p \text{ max}$ ) 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)

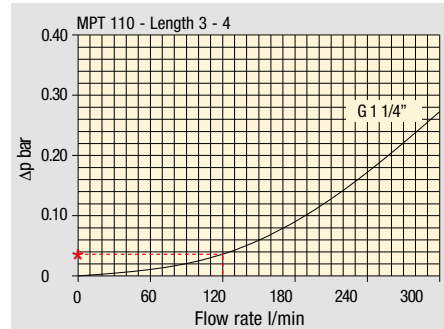
Oil density =  $0.86 \text{ kg}/\text{dm}^3$

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

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

Calculation:

$\Delta pc = 0.03 \text{ bar}$  (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.

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

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	2	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	3	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
MF 030 MFX 030	1	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
	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

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

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

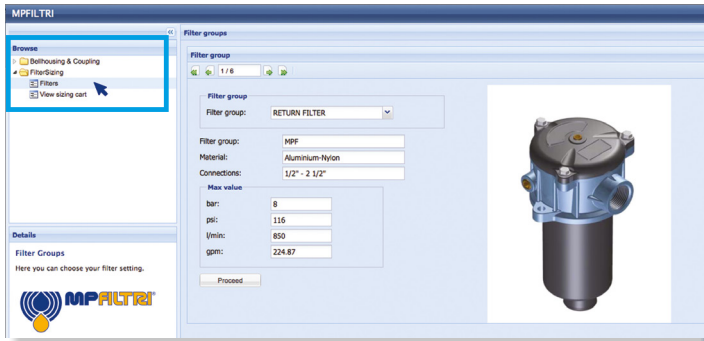
## Stainless steel high pressure filters

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

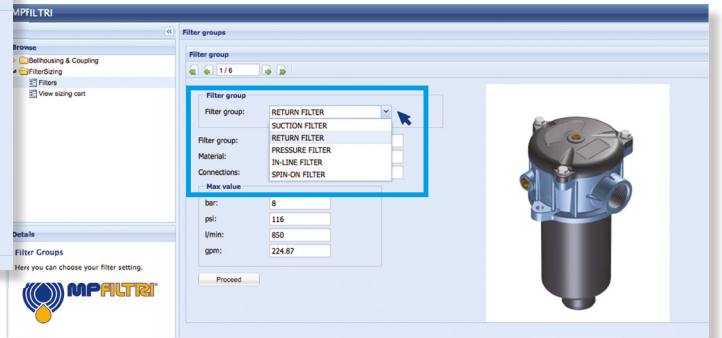
Filter element		Absolute filtration H - U Series				
Type		A03	A06	A10	A16	A25
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
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

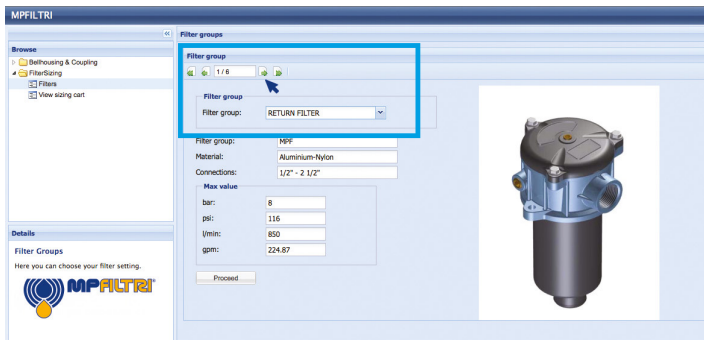
## Step 1 Select "FILTERS"



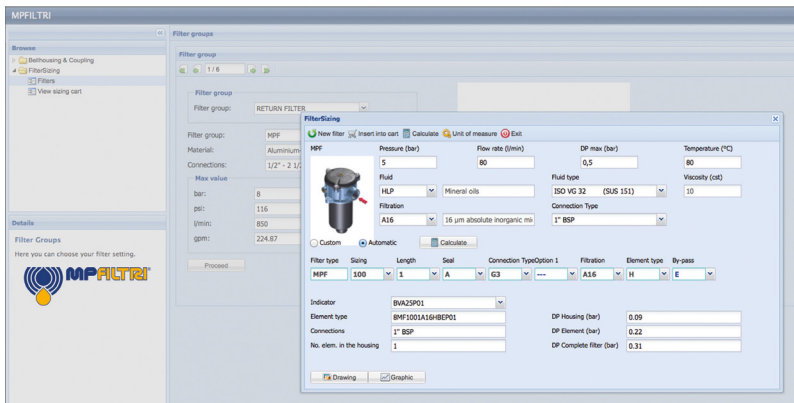
## Step 2 Choose filter group (Return Filter, Pressure Filter, etc.)



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



## Step 4 Push "PROCEED"



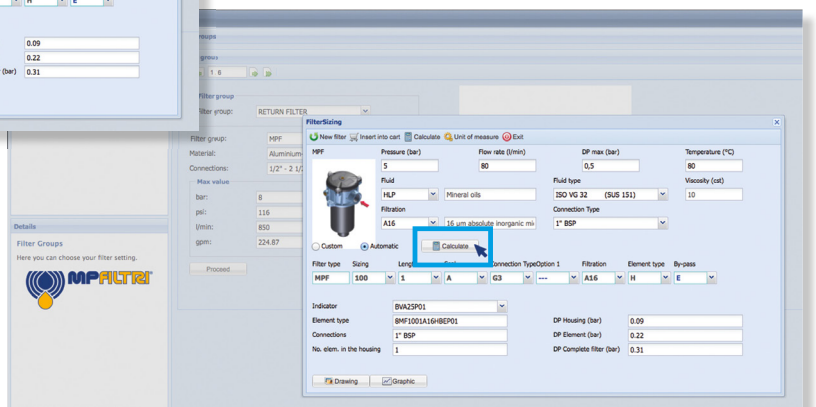
## Step 5

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"

# FHP series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 750 l/min



## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 750 l/min**

FHP is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the industrial equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 2", for a maximum return flow rate of 750 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
- Reverse flow valve, to allow bidirectional flow through the filter housing. The back flow is not filtered. The filter requires the use of internal check valves to direct the flow through the element in one direction and around the element in the other
- 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
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow 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  
AISI 316L: FHP 010 - 011  
Brass: FHP 065 - 135 - 320  
Steel: FHP 500
- Reverse Flow  
Steel: FHP 320 - FHP 500
- Check valve: Steel

#### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 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 R: 20 bar (not available for FHP 010-011 and FHP 500)
- Microfibre filter elements - series H: 210 bar
- Microfibre filter elements - series S: 210 bar (only for FHP 500)
- 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

FHP 010 - 065 - 135 - 500:  
In-line Inlet/Outlet

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FHP 011 - 320:  
90° Inlet/Outlet

#### Note

FHP filters are provided for vertical mounting

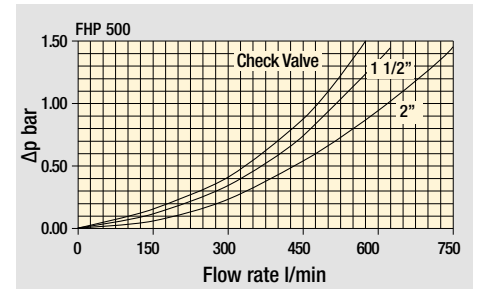
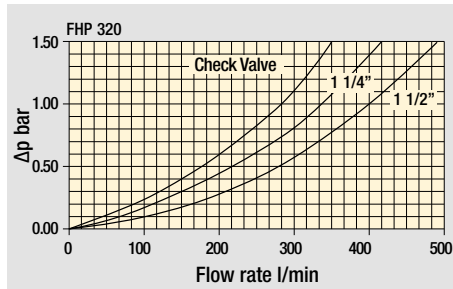
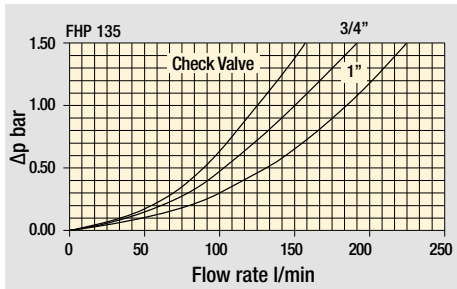
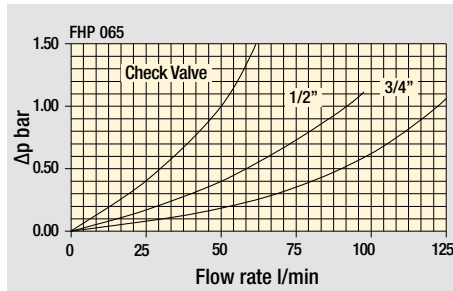
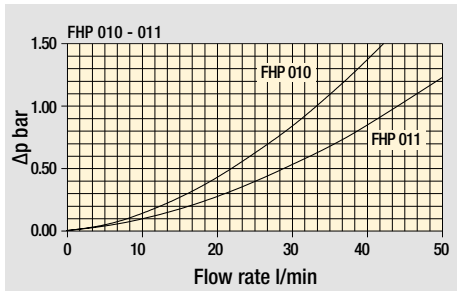


## Weights [kg] and volumes [dm<sup>3</sup>]

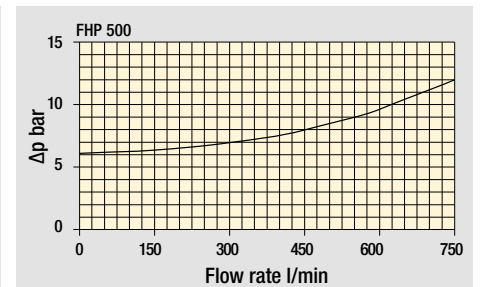
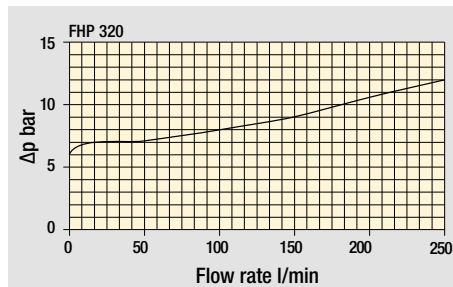
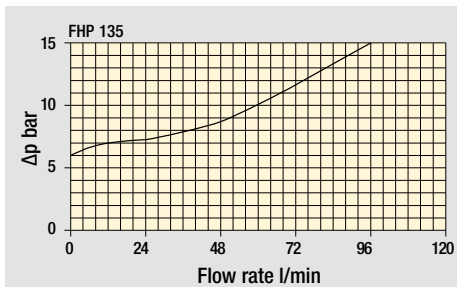
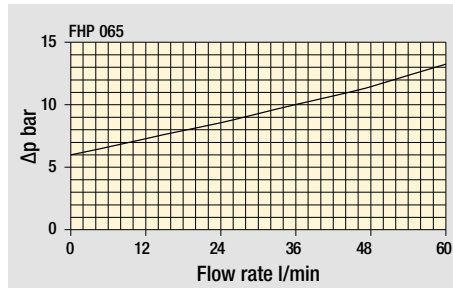
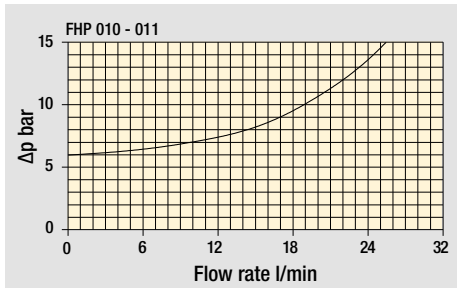
Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHP 010 - 011</b>		2.05	2.18	2.64	3.13	-		0.10	0.12	0.15	0.20	-
<b>FHP 065</b>		4.26	4.62	5.83	-	-		0.25	0.30	0.50	-	-
<b>FHP 135</b>		7.11	8.71	9.76	-	-		0.43	0.76	0.97	-	-
<b>FHP 320</b>		13.95	16.08	18.37	20.85	-		1.00	1.72	2.49	3.32	-
<b>FHP 500</b>		27.00	31.17	34.69	46.70	52.5		1.71	2.43	3.04	5.18	6.51



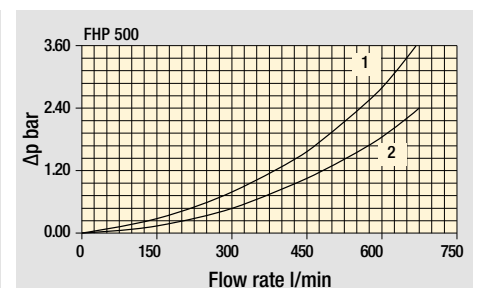
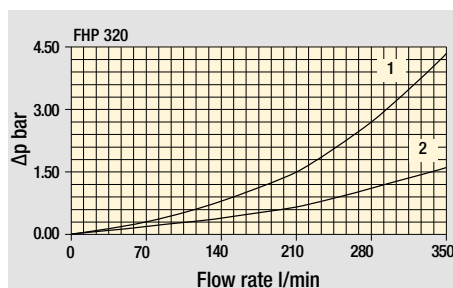
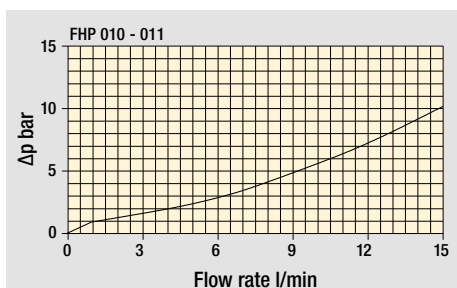
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Valves



Filter housing with check valve

Pressure drop in reverse flow valves

Pressure drop in reverse flow valves

- 1 - Reverse flow
- 2 - In filter direction

The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  
 $\Delta p$  varies proportionally with density.

# FHP GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	Filter element design - H Series					Filter element design - N Series					
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	M25
<b>FHP 010</b>	<b>1</b>	3	5	6	7	8	4	6	8	9	10	37
	<b>2</b>	5	7	13	16	22	6	8	16	19	24	40
	<b>3</b>	10	13	22	25	30	11	14	23	26	31	41
	<b>4</b>	12	15	25	27	32	16	19	27	30	33	41
<b>FHP 011</b>	<b>1</b>	3	5	6	7	9	4	6	8	9	11	47
	<b>2</b>	5	7	14	17	24	7	9	17	21	28	52
	<b>3</b>	11	14	25	29	36	11	14	26	30	37	53
	<b>4</b>	12	16	28	32	38	17	21	32	36	40	54
<b>FHP 065</b>	<b>1</b>	24	25	50	59	84	25	33	56	63	90	142
	<b>2</b>	33	38	68	77	98	34	52	72	79	106	143
	<b>3</b>	61	70	100	107	123	61	73	101	108	125	147
<b>FHP 135</b>	<b>1</b>	49	55	95	98	147	67	72	115	122	159	184
	<b>2</b>	89	106	129	131	163	105	111	140	142	192	209
	<b>3</b>	120	132	158	166	180	141	143	176	179	193	211
<b>FHP 320</b>	<b>1</b>	97	102	156	162	228	112	121	187	217	253	313
	<b>2</b>	161	181	238	241	283	200	214	282	294	321	330
	<b>3</b>	207	234	276	281	307	246	268	313	322	327	335
	<b>4</b>	233	247	280	284	311	268	281	316	326	338	342
<b>FHP 500</b>	<b>1</b>	144	157	265	268	355	269	305	390	406	444	612
	<b>2</b>	232	262	350	363	398	321	357	433	441	484	619
	<b>3</b>	293	301	398	408	455	396	416	497	499	537	622
	<b>4</b>	336	377	452	455	507	430	475	516	524	545	626
	<b>5</b>	420	428	494	500	544	475	493	535	545	569	627

## 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	Style V	Style Z
<b>FHP 010 - 011</b>	•	•			•	•
<b>FHP 065</b>	•	•	•			
<b>FHP 135</b>	•	•	•			
<b>FHP 320</b>	•	•	•	•	•	•
<b>FHP 500</b>	•	•	•	•	•	•



# FHP FHP010 - FHP011

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FHP010** | **2** | **B** | **A** | **B** | **2** | **A03** | **N** | **P01**

**Series and size**  
**FHP010** | **FHP011**

**Length**  
**1** | **2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM

**Connections**  
**A** G 1/4"  
**B** 1/4" NPT  
**C** SAE 5 - 1/2" - 20 UNF  
**D** G 3/8"  
**E** 3/8" NPT  
**F** SAE 6 - 9/16" - 18 UNF

**Connection for differential indicator**  
**1** Without  
**2** With connection

**Filtration rating (filter media)**

<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

Element Δp	Valves				Execution
	S	B	V	Z	
<b>N</b> 20 bar		•		•	<b>P01</b> MP Filtri standard
<b>H</b> 210 bar	•		•		<b>Pxx</b> Customized

### FILTER ELEMENT

Configuration example: **HP011** | **2** | **A03** | **A** | **N** | **P01**

**Element series and size**  
**HP011**

**Element length**  
**1** | **2** | **3** | **4**

**Filtration rating (filter media)**

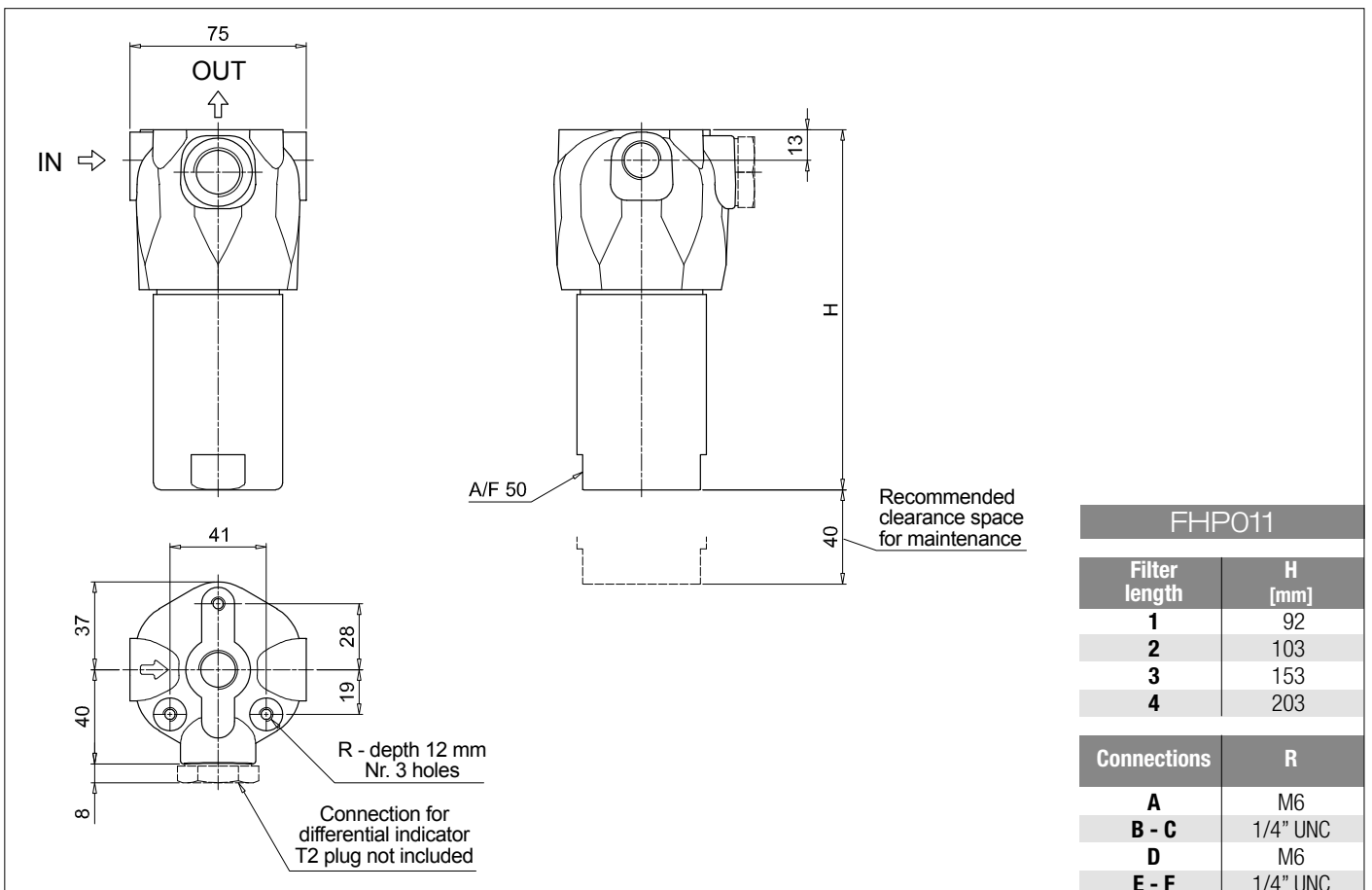
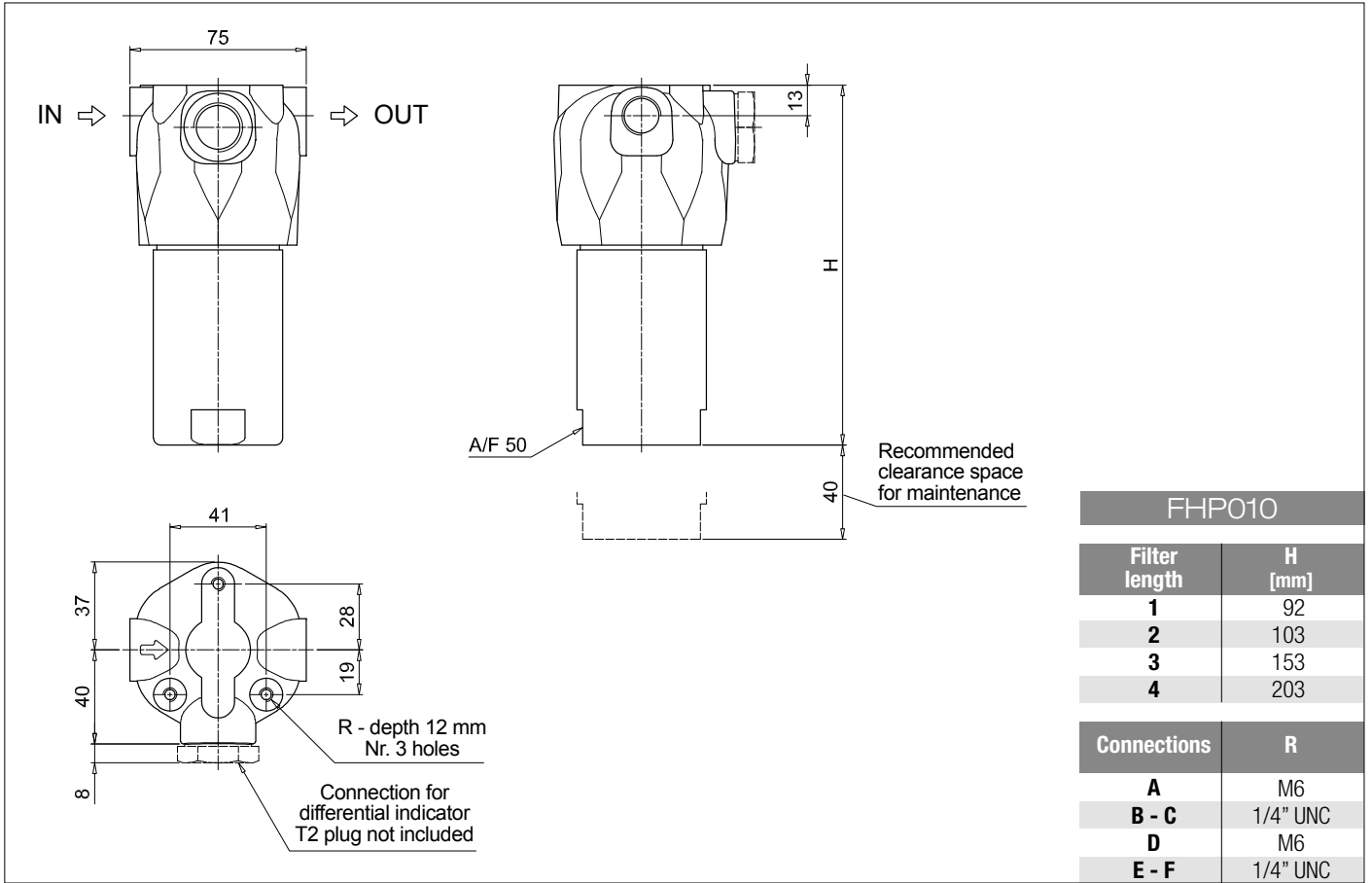
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm

**Seals**  
**A** NBR  
**V** FPM

Element Δp	Execution	
	N	Pxx
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard	
<b>H</b> 210 bar	<b>Pxx</b> Customized	

### ACCESSORIES

Differential indicators		page			page
<b>DEA</b> Electrical differential indicator		565	<b>DLE</b> Electrical / visual differential indicator		568
<b>DEH</b> Hazardous area electronic differential indicator		565-566	<b>DTA</b> Electronic differential indicator		569
<b>DEM</b> Electrical differential indicator		566-567	<b>DVA</b> Visual differential indicator		569
<b>DLA</b> Electrical / visual differential indicator		567-568	<b>DVM</b> Visual differential indicator		569
Additional features		page			
<b>T2</b> Plug		570			



# FHP FHP065 - FHP135 - FHP320

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHP320** **4** **V** **A** **G1** **A06** **S** **P01**

**FHP065** | **FHP135** | **FHP320**

Length	FHP065	FHP135	FHP320
<b>1</b>	•	•	•
<b>2</b>	•	•	•
<b>3</b>	•	•	•
<b>4</b>			•

Valves	FHP065	FHP135	FHP320
<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>V</b> With reverse flow, without bypass			•
<b>Z</b> With reverse flow, with bypass 6 bar			•

Seals	FHP065	FHP135	FHP320
<b>A</b> NBR			•
<b>V</b> FPM			•

Connections	FHP065	FHP135	FHP320
<b>G1</b>	G 1/2"	G 3/4"	G 1 1/4"
<b>G2</b>	G 3/4"	G 1"	G 1 1/2"
<b>G3</b>	1/2" NPT	3/4" NPT	1 1/4" NPT
<b>G4</b>	3/4" NPT	1" NPT	1 1/2" NPT
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN
<b>F1</b>	-	3/4" SAE 3000 psi/M	1 1/4" SAE 3000 psi/M
<b>F2</b>	-	1" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M
<b>F3</b>	-	3/4" SAE 3000 psi/UNC	1 1/4" SAE 3000 psi/UNC
<b>F4</b>	-	1" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC
<b>F5</b>	-	3/4" SAE 6000 psi/M	1 1/4" SAE 6000 psi/M
<b>F6</b>	-	3/4" SAE 6000 psi/UNC	1 1/4" SAE 6000 psi/UNC

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>N</b> 20 bar		•				
<b>R</b> 20 bar				•		•
<b>H</b> 210 bar	•					
<b>S</b> 210 bar			•		•	

Execution	Filter length			
	1	2	3	4
<b>P01</b> MP Filtri standard	•	•	•	•
<b>P02</b> Maintenance from the bottom of the housing				•
<b>Pxx</b> Customized				

### FILTER ELEMENT

Element series and size Configuration example: **HP320** **4** **A06** **A** **S** **P01**

**HP065** | **HP135** | **HP320**

Element length	HP065	HP135	HP320
<b>1</b>	•	•	•
<b>2</b>	•	•	•
<b>3</b>	•	•	•
<b>4</b>			•

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Seals
<b>A</b> NBR
<b>V</b> FPM

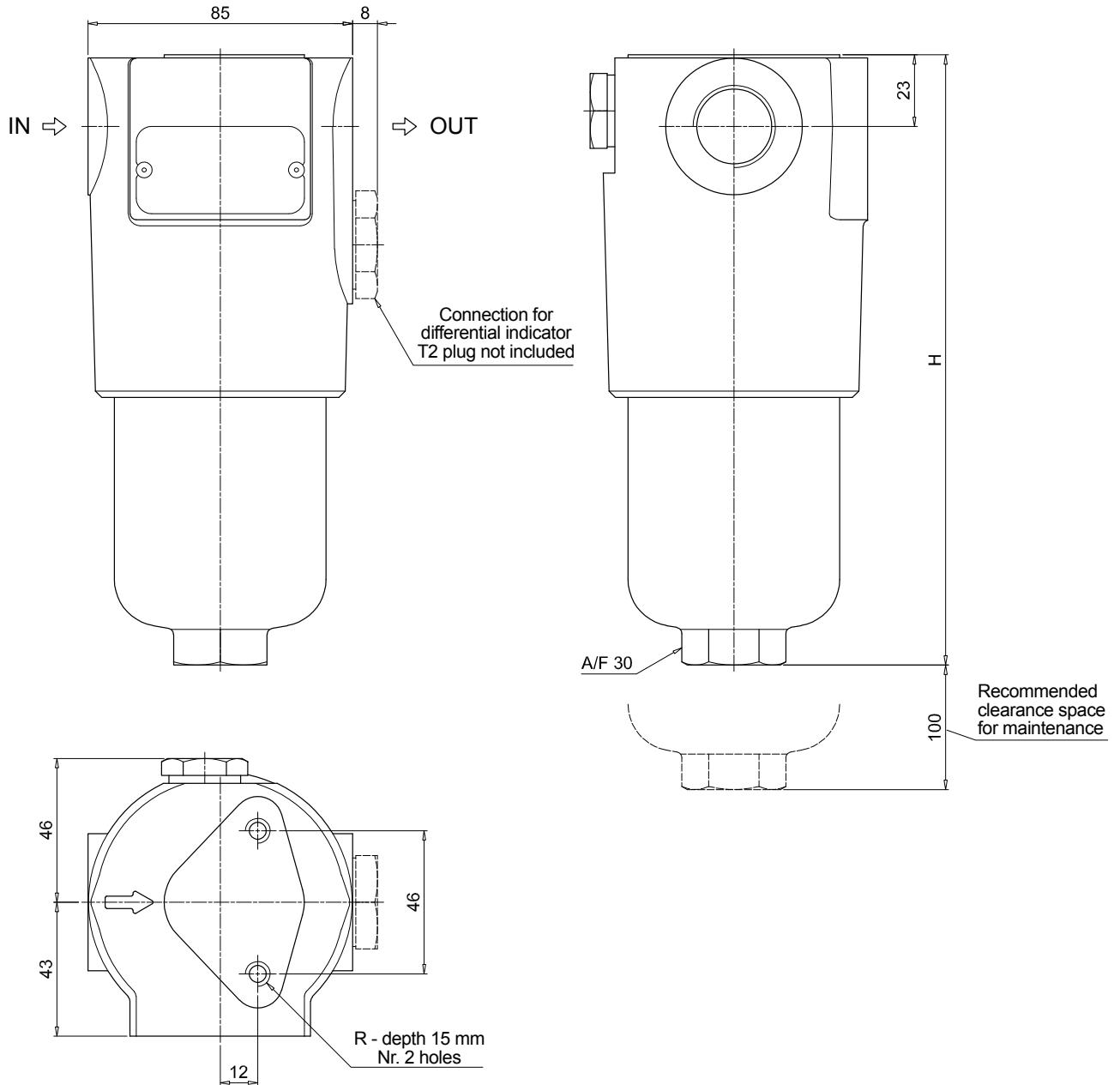
Element Δp
<b>N</b> 20 bar
<b>R</b> 20 bar
<b>H</b> 210 bar
<b>S</b> 210 bar

Execution
<b>P01</b> MP Filtri standard
<b>Pxx</b> Customized

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	565	<b>DLE</b> Electrical / visual differential indicator	568
<b>DEH</b> Hazardous area electronic differential indicator	565-566	<b>DTA</b> Electronic differential indicator	569
<b>DEM</b> Electrical differential indicator	566-567	<b>DVA</b> Visual differential indicator	569
<b>DLA</b> Electrical / visual differential indicator	567-568	<b>DVM</b> Visual differential indicator	569

Additional features	page
<b>T2</b> Plug	570

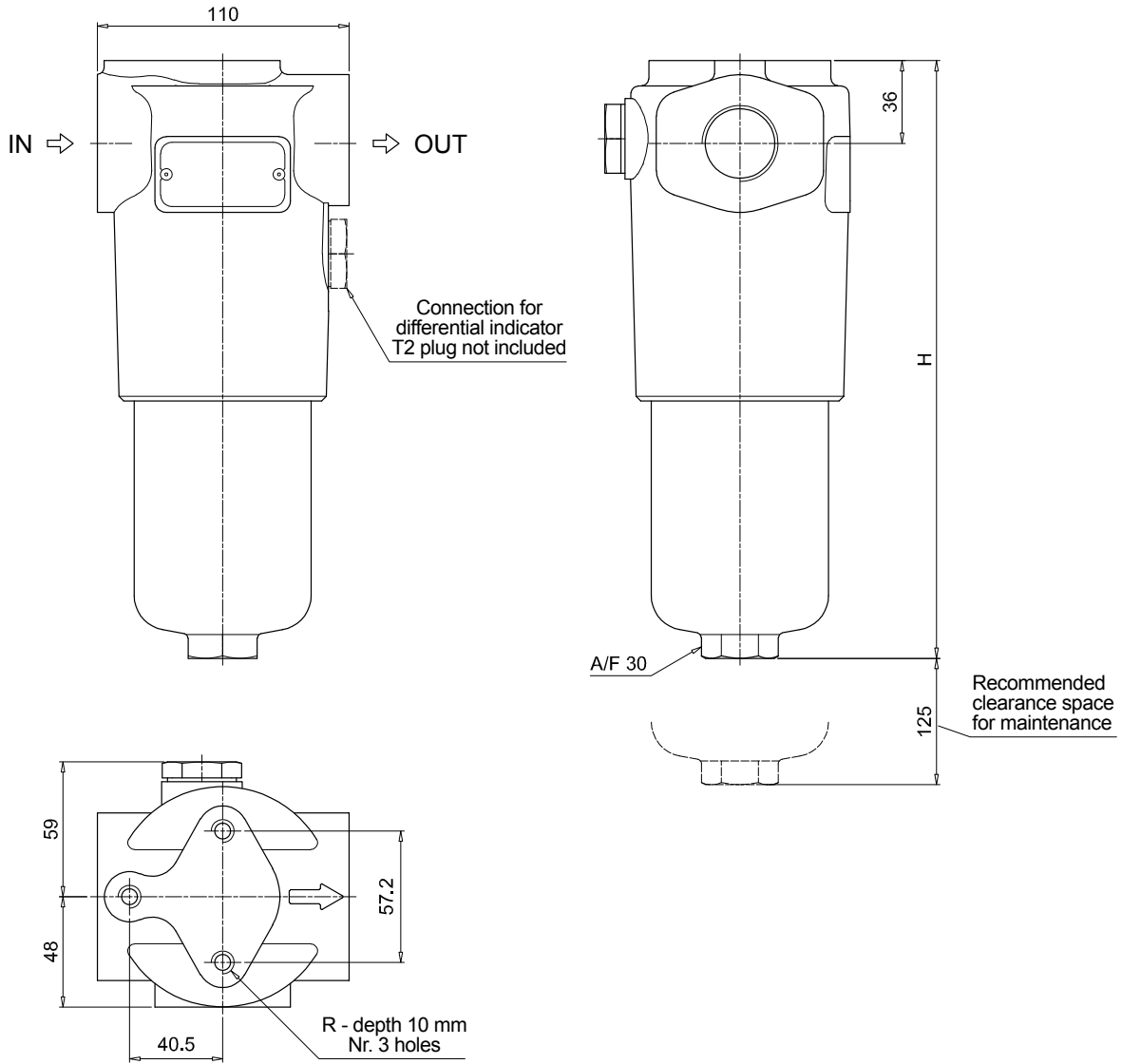


### FHP065

Filter length	H [mm]
<b>1</b>	196
<b>2</b>	227
<b>3</b>	329
Connections	R
<b>G1-G2</b>	M8
<b>G3-G4-G5-G6</b>	5/16" UNC

# FHP FHP065 - FHP135 - FHP320

## Dimensions



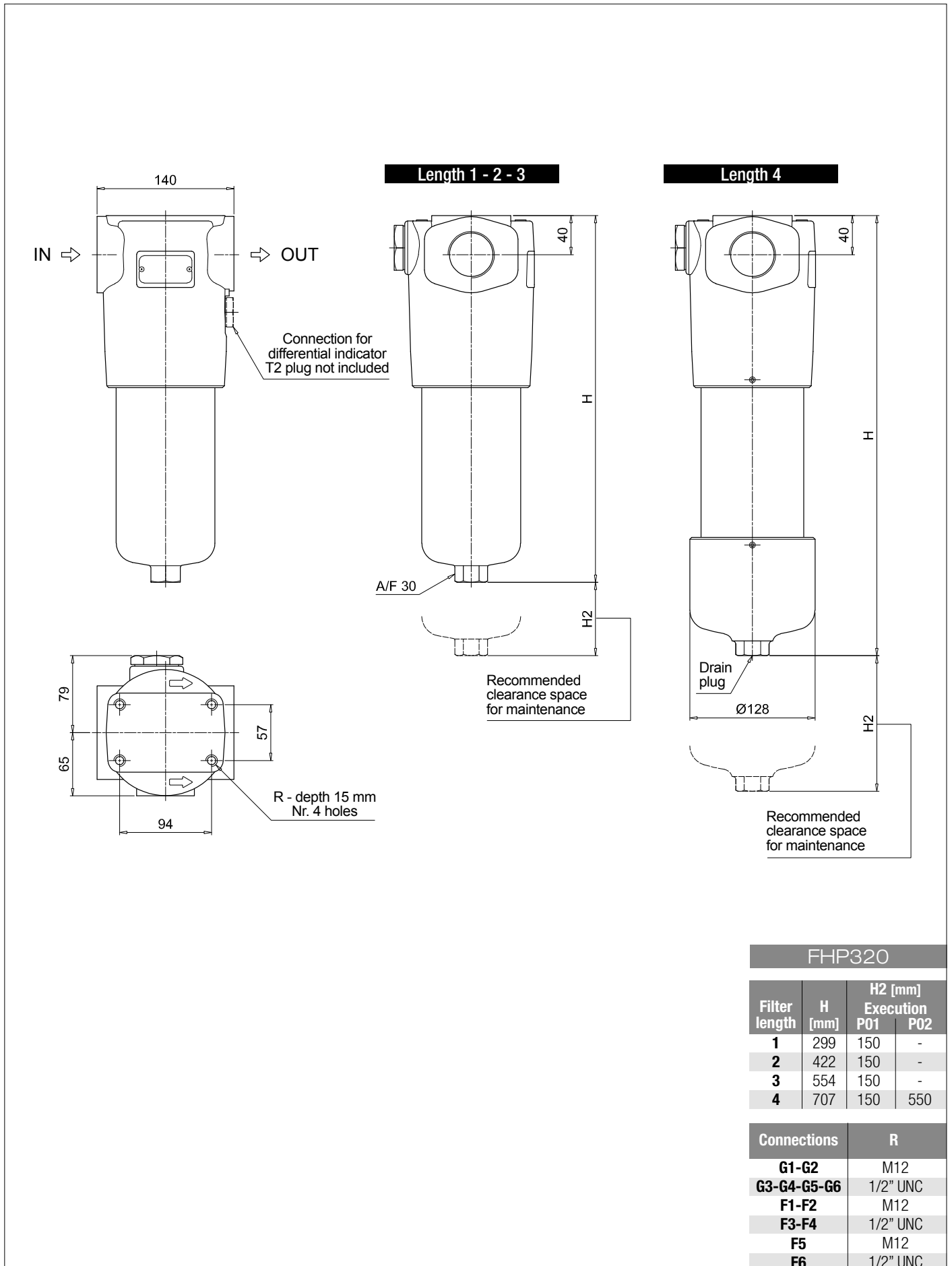
### FHP135

Filter length	H [mm]
<b>1</b>	260
<b>2</b>	373
<b>3</b>	448

Connections	R
<b>G1-G2</b>	M10
<b>G3-G4-G5-G6</b>	3/8" UNC
<b>F1-F2</b>	M10
<b>F3-F4</b>	3/8" UNC
<b>F5</b>	M10
<b>F6</b>	3/8" UNC





FHP320			
Filter length	H [mm]	H2 [mm] Execution	
		P01	P02
1	299	150	-
2	422	150	-
3	554	150	-
4	707	150	550

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC
F5	M12
F6	1/2" UNC

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHP500** | **4** | **V** | **A** | **G1** | **A06** | **S** | **P01**

#### FHP500

#### Length

1 | 2 | 3 | 4 | 5

#### Valves

<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>V</b>	With reverse flow, without bypass
<b>Z</b>	With reverse flow, with bypass 6 bar

#### Seals

<b>A</b>	NBR
<b>V</b>	FPM

#### Connections

<b>G1</b>	G 1 1/2"	<b>F4</b>	2" SAE 3000 psi/UNC
<b>G2</b>	1 1/2" NPT	<b>F5</b>	1 1/2" SAE 6000 psi/M
<b>G3</b>	SAE 24 - 1 7/8" - 12 UN	<b>F6</b>	1 1/2" SAE 6000 psi/UNC
<b>F1</b>	1 1/2" SAE 3000 psi/M	<b>F7</b>	2" SAE 6000 psi/M
<b>F2</b>	1 1/2" SAE 3000 psi/UNC	<b>F8</b>	2" SAE 6000 psi/UNC
<b>F3</b>	2" SAE 3000 psi/M		

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>N</b> 20 bar		•				
<b>R</b> 20 bar				•		•
<b>S</b> 210 bar	•		•		•	

#### Execution

Execution	Filter length				
	1	2	3	4	5
<b>P01</b> MP Filtri standard	•	•	•	•	•
<b>P02</b> Maintenance from the bottom of the housing				•	•
<b>P03</b> Drain plug on length 1 - 2	•	•			
<b>Pxx</b> Customized					

### FILTER ELEMENT

Element series and size Configuration example: **HP500** | **4** | **A06** | **A** | **S** | **P01**

#### HP500

#### Element length

1 | 2 | 3 | 4 | 5

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

#### Seals

<b>A</b>	NBR
<b>V</b>	FPM

#### Element Δp

<b>N</b>	20 bar
<b>R</b>	20 bar
<b>S</b>	210 bar

#### Execution

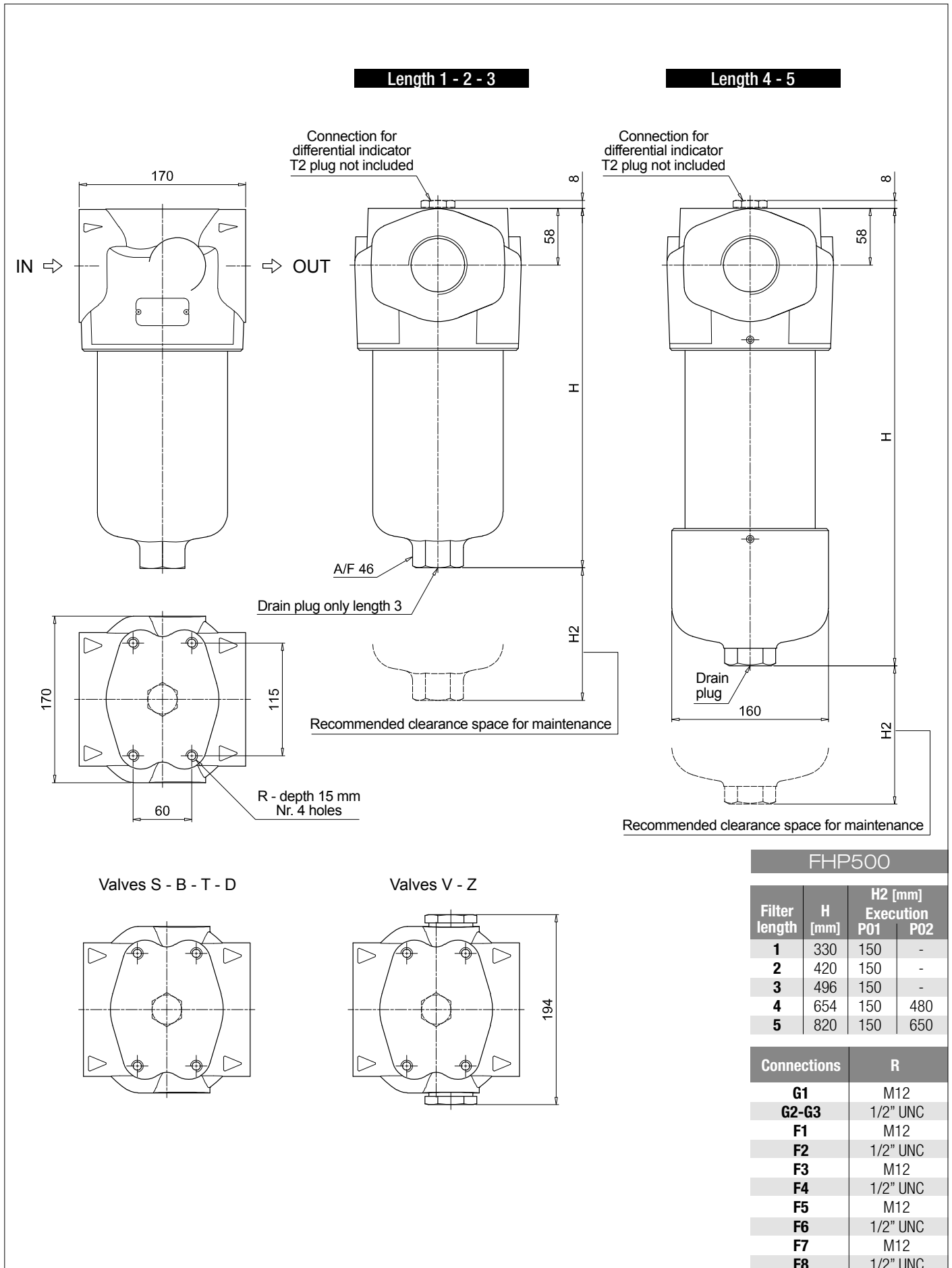
<b>P01</b>	MP Filtri standard
<b>Pxx</b>	Customized

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	565	<b>DLE</b> Electrical / visual differential indicator	568
<b>DEH</b> Hazardous area electronic differential indicator	565-566	<b>DTA</b> Electronic differential indicator	569
<b>DEM</b> Electrical differential indicator	566-567	<b>DVA</b> Visual differential indicator	569
<b>DLA</b> Electrical / visual differential indicator	567-568	<b>DVM</b> Visual differential indicator	569

#### Additional features

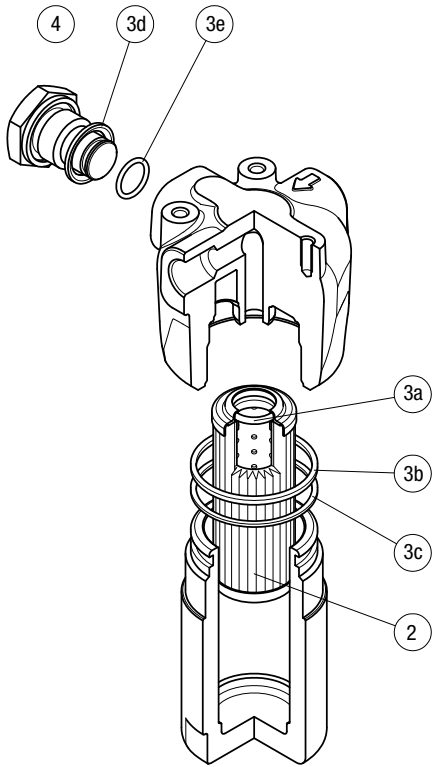
Additional features	page
<b>T2</b> Plug	570



# FHP SPARE PARTS

Order number for spare parts

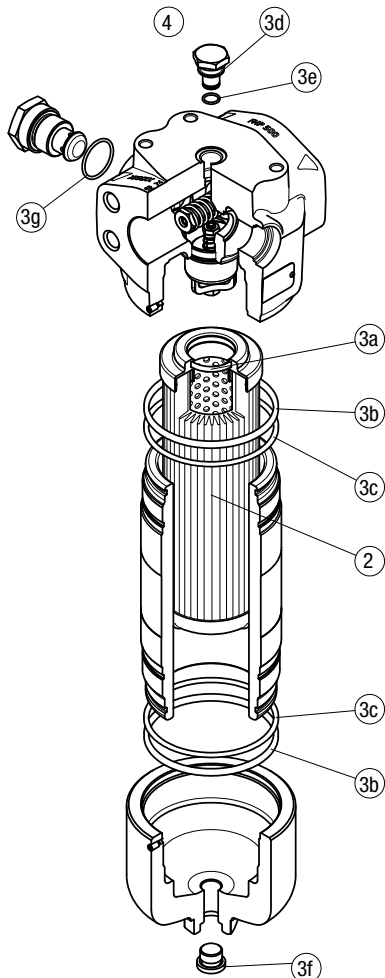
## FHP 010 - 011



Q.ty:  
nr. 0 pcs. for version 1  
(without indicator port)  
  
nr. 1 pc. for version 2  
(with indicator port)

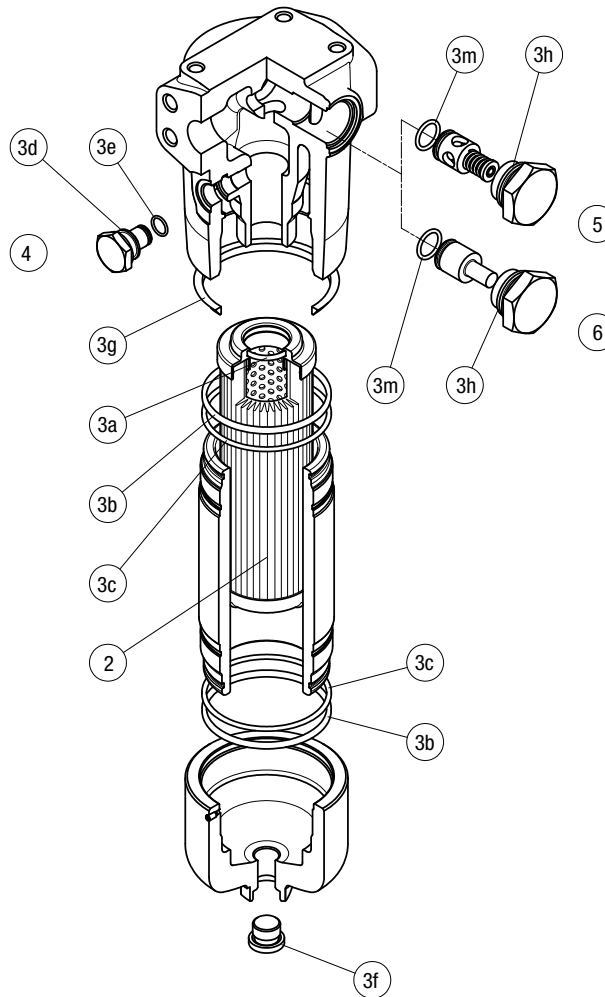
Filter series	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
	Item: 2	Filter element	Seal Kit code number 3 (3a ÷ 3e)		Indicator connection plug 4	
		NBR	FPM	NBR	FPM	
<b>FHP 010-011</b>	See order table	02050501	02050492	T2H	T2V	

## FHP 500



Filter series	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
	Item: 2	Filter element	Seal Kit code number 3 (3a ÷ 3g)		Indicator connection plug 4	
		NBR	FPM	NBR	FPM	
<b>FHP 500</b>	See order table	02050330	02050331	T2H	T2V	

FHP 065 - 135 - 320



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
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>FHP 065</b>	See order table	02050265	02050276	T2H	T2V	02001116	02001136	02001142	02001139
<b>FHP 135</b>		02050269	02050280			02001117	02001137	02001143	02001392
<b>FHP 320</b>		02050272	02050283			02001118	02001138	02001144	02001395