

# FHM series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 400 l/min



## Description

## Technical data

### High Pressure filters

#### Manifold

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

**Flow rate up to 400 l/min**

FHM 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 top of the manifold, through the proper flanged interface.

#### Available features:

Available features:

- Manifold connections up to Ø30 mm, for a maximum flow rate of 400 l/min
- ISO 4401 CETOP 3 and CETOP 5 interface, for direct mounting on the CETOP valves
- 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

#### Filter housing materials

- Head  
Phosphatized cast iron: FHM 006-007-010  
Phosphatized steel: FHM 050-065-135-320-500
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

#### Pressure

- 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 (not available for FHM 006, FHM 007 and FHM 010)
- Microfibre filter elements - series H: 210 bar (not available for FHM 050 and FHM 500)
- Microfibre filter elements - series S: 210 bar (only for FHM 050 and FHM 500)
- Wire mesh filter elements - series N: 20 bar (not available for FHM 006)
- Wire mesh filter elements - series H: 210 bar (not available for FHM 050 and FHM 500)
- 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

## 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>FHM 006</b>		2.17	-	-	-	-		0.12	-	-	-	-
<b>FHM 007</b>		-	4.74	5.95	-	-		-	0.30	0.50	-	-
<b>FHM 010</b>		-	4.74	5.95	-	-		-	0.30	0.50	-	-
<b>FHM 050</b>		5.31	5.68	6.09	6.56	7.74		0.29	0.38	0.48	0.60	0.89
<b>FHM 065</b>		5.47	5.83	7.04	-	-		0.27	0.34	0.56	-	-
<b>FHM 135</b>		8.78	10.38	11.43	-	-		0.49	0.82	1.03	-	-
<b>FHM 320</b>		19.80	21.93	24.22	26.70	-		1.04	1.76	2.53	3.36	-
<b>FHM 500</b>		35.00	39.17	42.69	54.70	60.50		1.63	2.35	2.96	5.11	6.44

Filter series	Length	Filter element design - H Series					
		A03	A06	A10	A16	A25	M25
<b>FHM 006</b>	<b>1</b>	9	10	13	14	15	16
	<b>2</b>	13	13	15	16	16	16
<b>FHM 007</b>	<b>3</b>	15	15	16	16	17	17
	<b>2</b>	23	25	32	34	37	38
<b>FHM 010</b>	<b>3</b>	31	33	37	38	39	40

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>FHM 050</b>	<b>1</b>	38	37	65	67	81	101	28	36	50	52	62
	<b>2</b>	46	50	69	75	89	102	41	44	63	71	85
	<b>3</b>	57	59	76	81	93	103	51	53	71	77	90
	<b>4</b>	68	71	84	86	95	103	62	66	81	82	93
	<b>5</b>	82	83	93	95	98	105	73	75	83	89	97

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>FHM 065</b>	<b>1</b>	23	30	48	53	71	102	22	23	43	50	67
	<b>2</b>	30	45	59	64	81	103	30	34	56	62	76
	<b>3</b>	52	60	78	82	92	105	51	58	77	81	91
<b>FHM 135</b>	<b>1</b>	61	65	99	104	131	149	46	51	83	86	122
	<b>2</b>	91	96	118	119	155	167	79	92	109	111	134
	<b>3</b>	118	119	144	146	156	168	103	112	130	137	146
<b>FHM 320</b>	<b>1</b>	112	121	187	217	252	312	97	102	156	162	228
	<b>2</b>	200	214	281	293	320	328	161	181	237	241	282
	<b>3</b>	245	267	312	320	325	333	207	233	275	280	306
	<b>4</b>	267	281	315	325	336	341	232	247	279	283	309

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>FHM 500</b>	<b>1</b>	211	232	281	289	309	394	126	135	208	210	261
	<b>2</b>	242	262	303	308	330	397	187	206	258	266	285
	<b>3</b>	284	294	336	338	357	399	226	230	285	290	315
	<b>4</b>	302	325	346	350	361	401	251	273	314	315	341
	<b>5</b>	325	334	356	361	373	401	296	301	335	338	360

### 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).

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure.

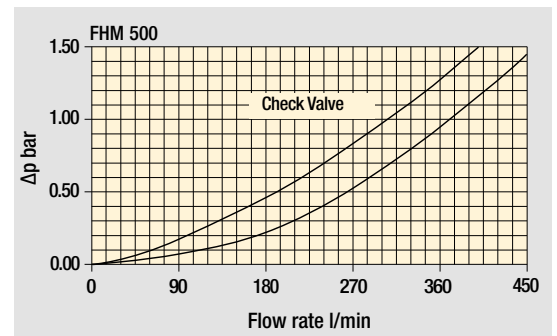
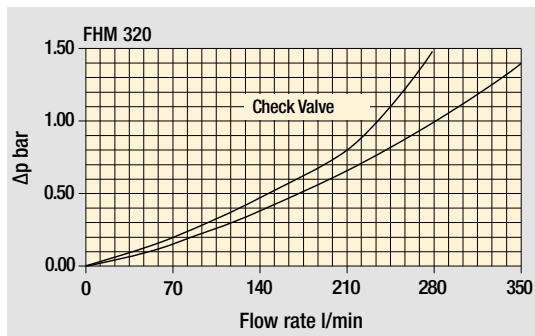
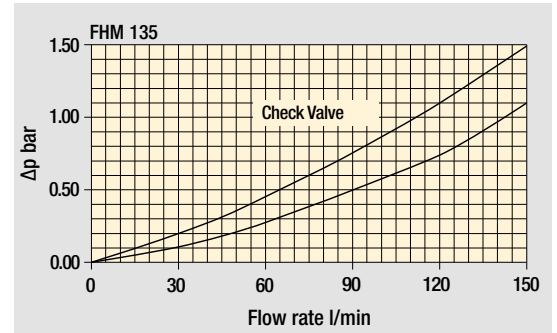
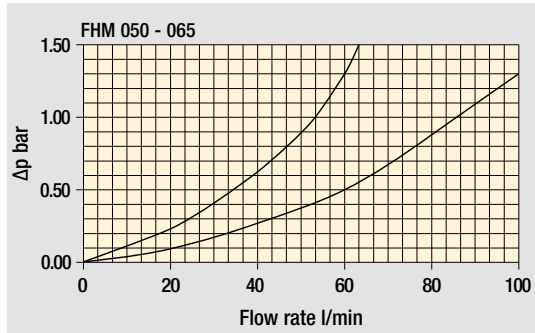
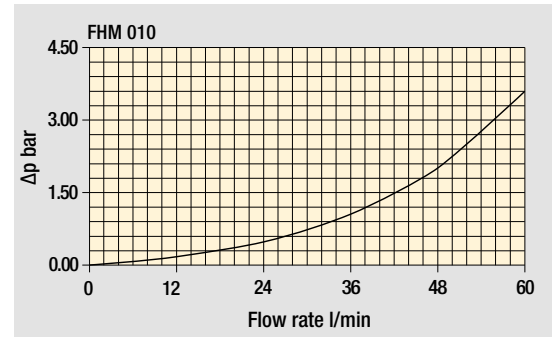
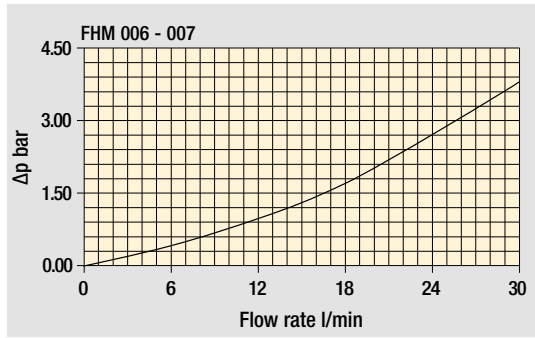
Please, contact our Sales Department for further additional information.

### Hydraulic symbols

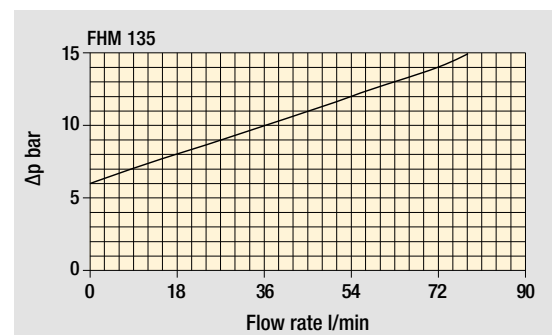
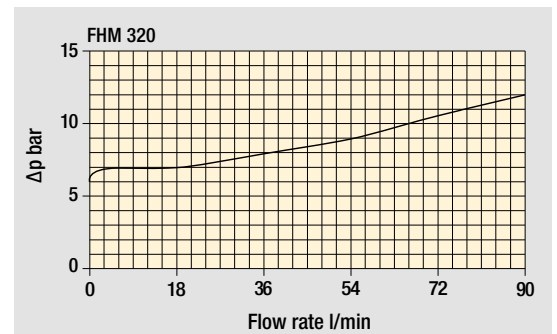
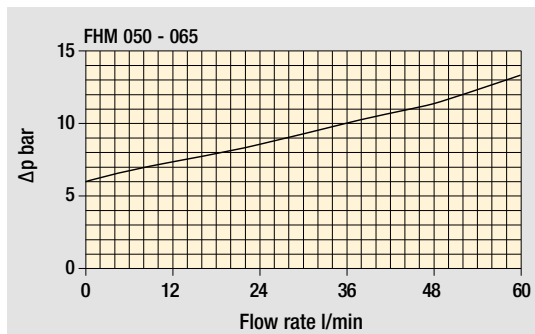
Filter series	Stile S	Stile S	Stile S	Stile B	Stile T	Stile D
<b>FHM 006</b>	•	-	-	-	-	-
<b>FHM 007</b>	•	-	-	-	-	-
<b>FHM 010</b>	-	•	-	-	-	-
<b>FHM 050</b>	-	-	•	•	•	•
<b>FHM 065</b>	-	-	•	•	•	•
<b>FHM 135</b>	-	-	•	•	•	•
<b>FHM 320</b>	-	-	•	•	•	•
<b>FHM 500</b>	-	-	•	•	•	•

## Pressure drop

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



### Bypass valve pressure drop



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.



## Designation & Ordering code

### COMPLETE FILTER

Series and size				Configuration example: FHM010 2 S V G1 A03 H P01						
FHM006   FHM007   FHM010										
Length	FHM006	FHM007	FHM010							
1	•	-	-							
2	-	•	•							
3	-	•	•							
Valves										
S Without bypass										
Seals										
A NBR										
V FPM										
Connections										
G1 Manifold side "A"										
G2 Manifold side "B"										
Filtration rating (filter media)										
A03	Inorganic microfiber	3 µm	A16	Inorganic microfiber	16 µm					
A06	Inorganic microfiber	6 µm	A25	Inorganic microfiber	25 µm					
A10	Inorganic microfiber	10 µm	M25	Wire mesh	25 µm					
				Element Δp		Execution				
				H 210 bar		P01 MP Filtri standard				
						Pxx Customized				

### FILTER ELEMENT

Element series and size				Configuration example: HP065 2 A03 A H P01						
FHM006   FHM007   FHM010										
HP011	•	-	-							
HP065	-	•	•							
Element length	FHM006	FHM007	FHM010							
2	-	•	•							
3	•	•	•							
Filtration rating (filter media)										
A03	Inorganic microfiber	3 µm								
A06	Inorganic microfiber	6 µm								
A10	Inorganic microfiber	10 µm								
A16	Inorganic microfiber	16 µm								
A25	Inorganic microfiber	25 µm								
M25	Wire mesh	25 µm								
				Seals		Element Δp		Execution		
				A NBR		H 210 bar		P01 MP Filtri standard		
				V FPM				Pxx Customized		

### CLOGGING INDICATORS

See page 687

DEA	Electrical differential indicator
DEM	Electrical differential indicator
DLA	Electrical / visual differential indicator
DLE	Electrical / visual differential indicator

DTA	Electrical differential indicator
DVA	Visual differential indicator
DVM	Visual differential indicator

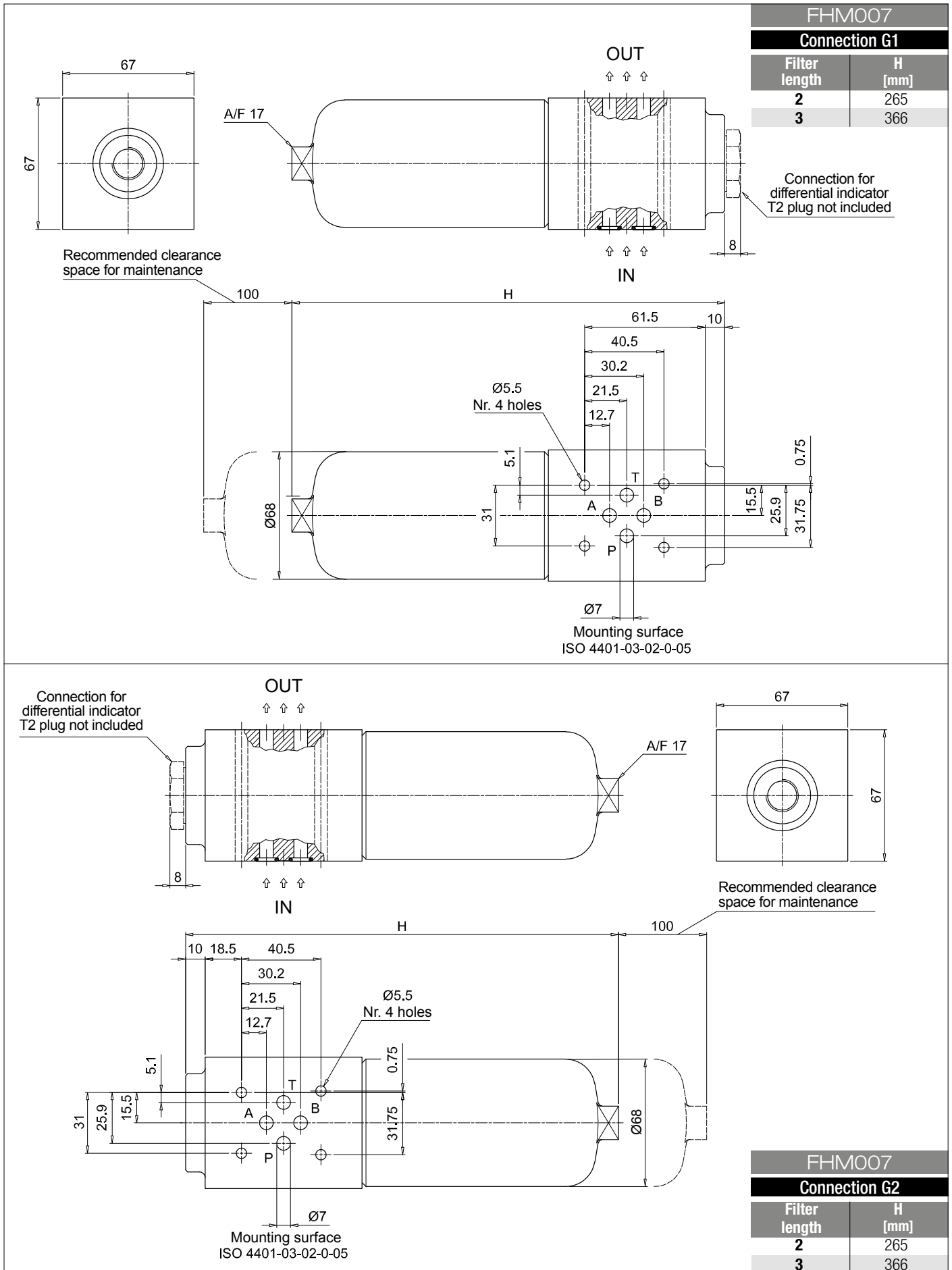
### PLUGS

See page 706

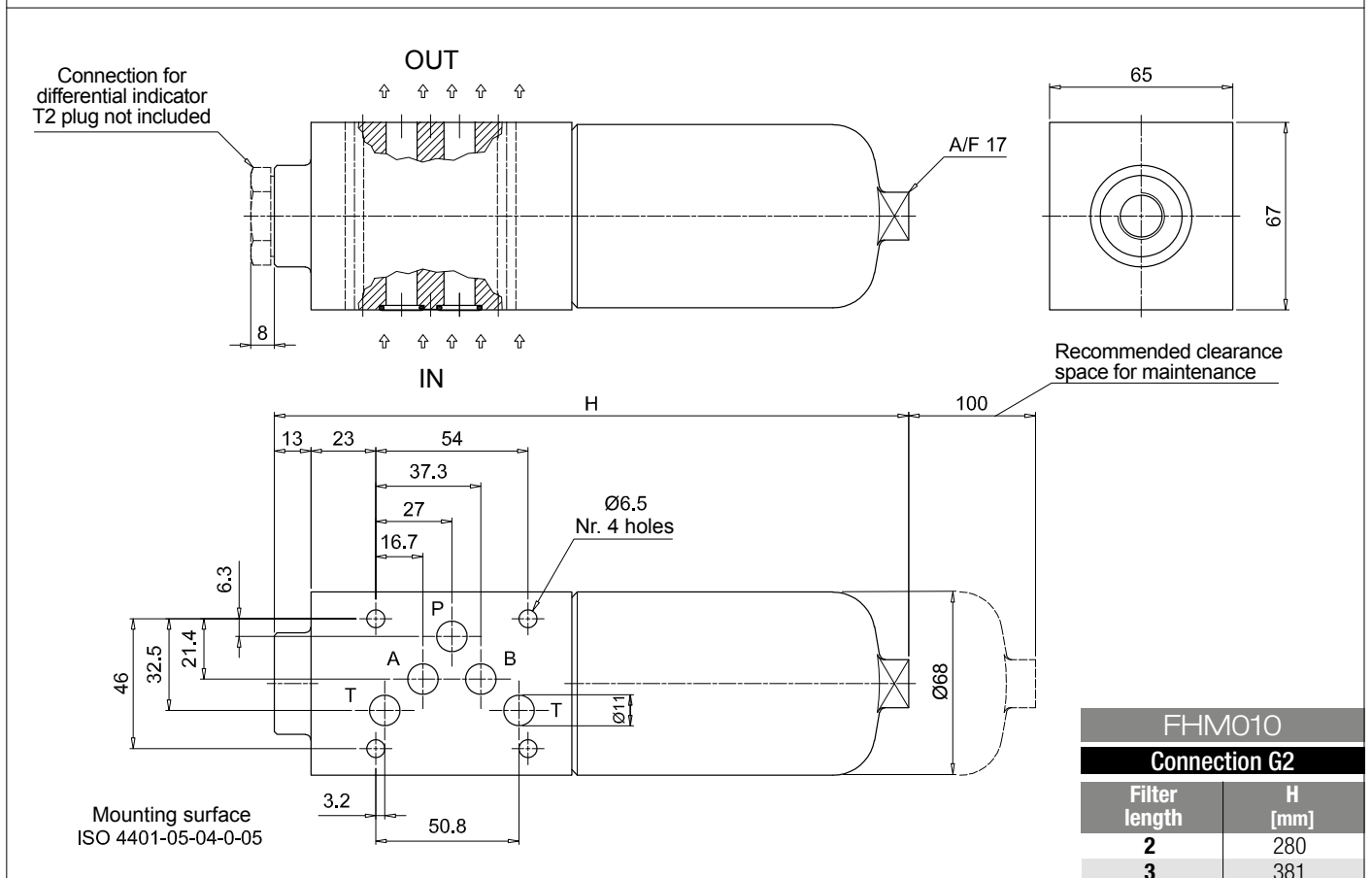
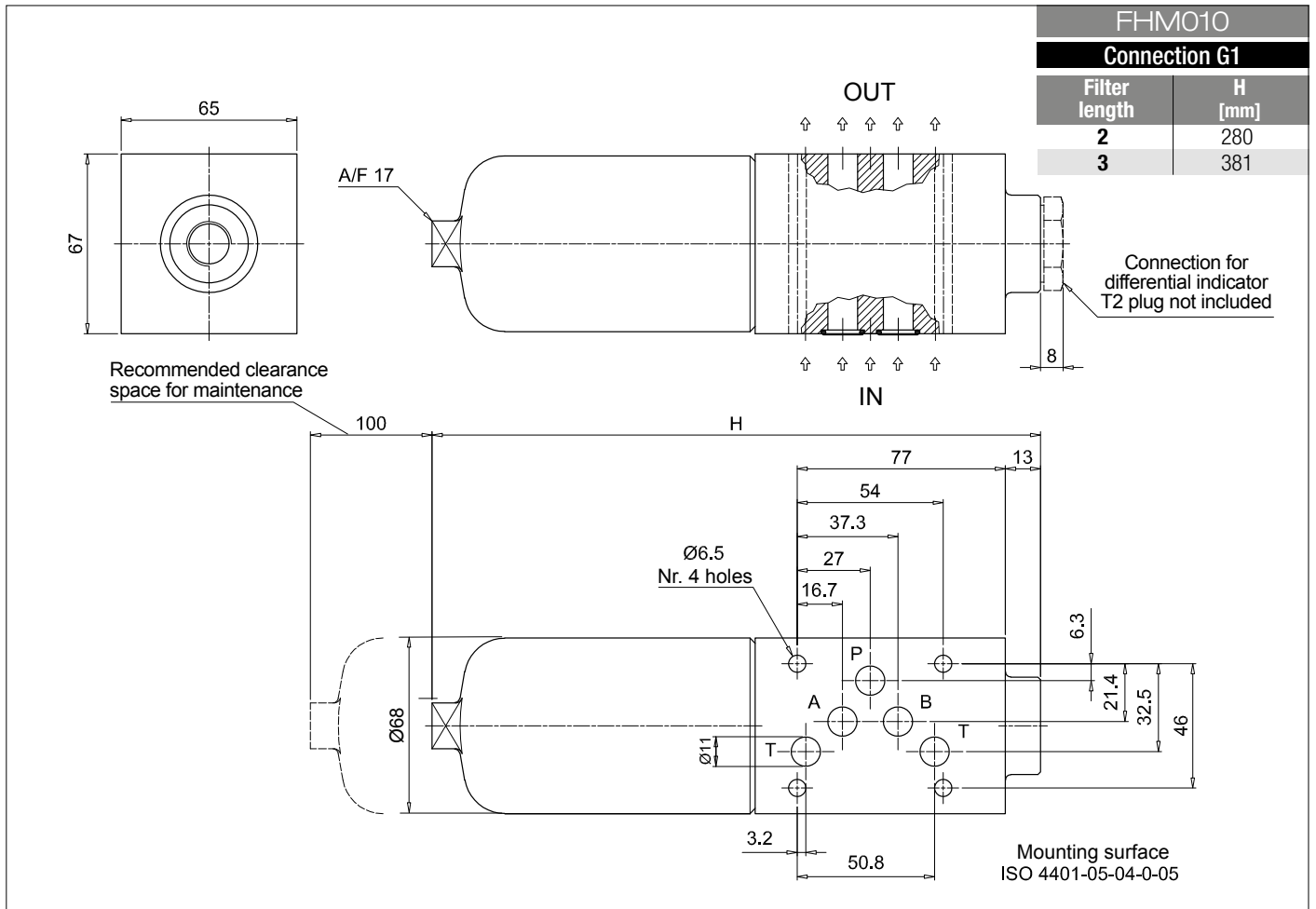
T2	Differential indicator plug (not included)
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## Dimensions







# FHM FHM050 - FHM065 - FHM135

Designation & Ordering code

## COMPLETE FILTER

Series and size Configuration example: **FHM135** | **3** | **S** | **A** | **F1** | **A10** | **H** | **P01**

**FHM050** | **FHM065** | **FHM135**

Length	FHM050	FHM065	FHM135
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

### Seals

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

### Connections

<b>F1</b>	Manifold
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### 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: FHM050				FHM065-135			
	S	B	T	D	S	B	T	D
<b>N</b> 20 bar	-	•	-	•	-	•	-	•
<b>H</b> 210 bar	-	-	-	-	•	-	•	-
<b>S</b> 210 bar	•	-	•	-	-	-	-	-

### Execution

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

## FILTER ELEMENT

Element series and size Configuration example: **HP135** | **3** | **A10** | **A** | **H** | **P01**

**HP050** | **HP065** | **HP135**

Element length	HP050	HP065	HP135
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

Element Δp	Seals		
	HP050	HP065	HP135
<b>N</b> 20 bar	•	•	•
<b>H</b> 210 bar	-	•	•
<b>S</b> 210 bar	•	-	-

### Execution

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

## CLOGGING INDICATORS

See page 687

<b>DEA</b>	Electrical differential indicator
<b>DEM</b>	Electrical differential indicator
<b>DLA</b>	Electrical / visual differential indicator
<b>DLE</b>	Electrical / visual differential indicator

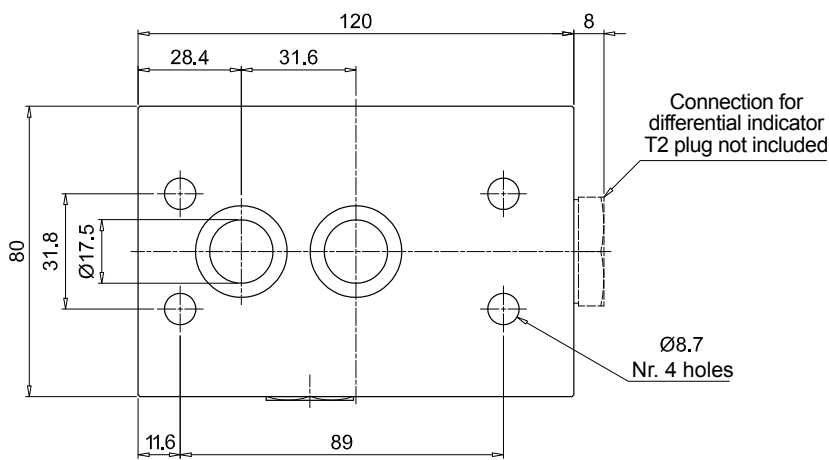
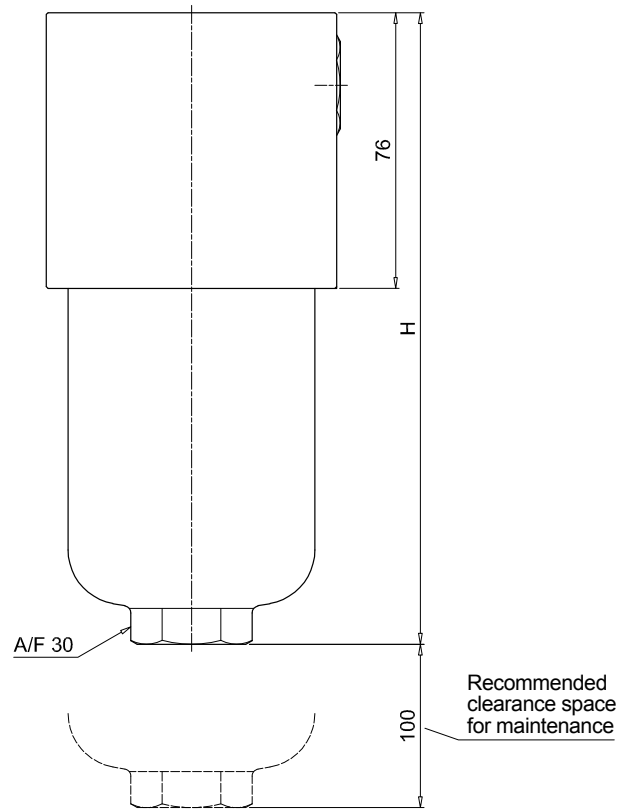
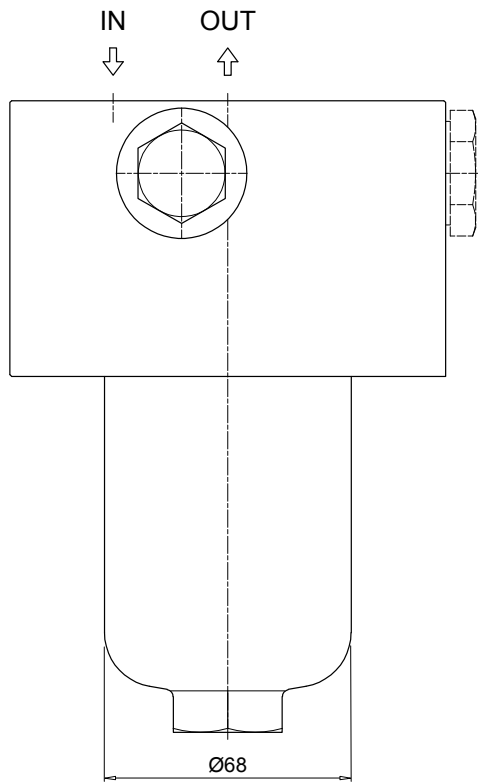
<b>DTA</b>	Electrical differential indicator
<b>DVA</b>	Visual differential indicator
<b>DVM</b>	Visual differential indicator

## PLUGS

See page 706

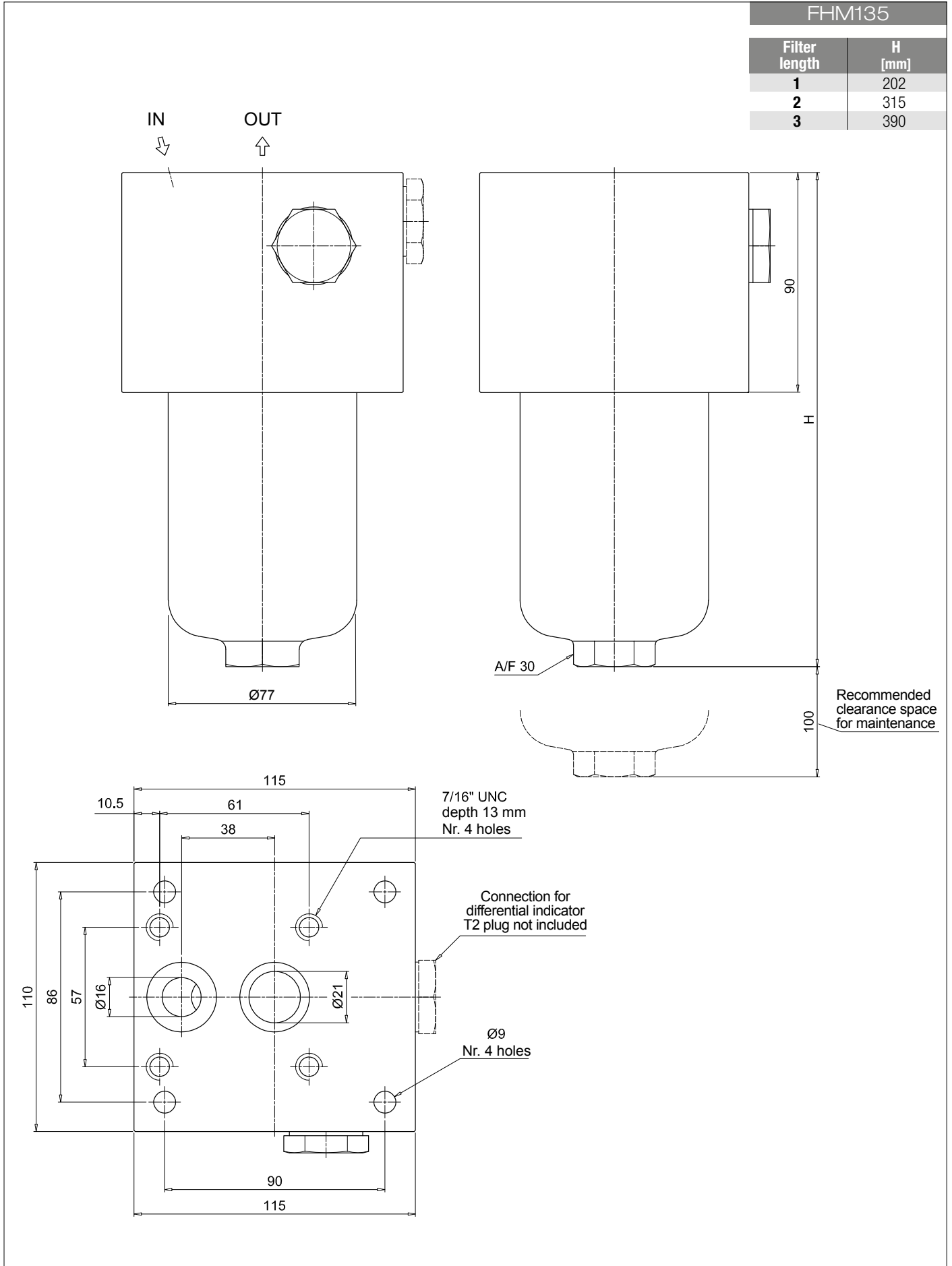
<b>T2</b>	Differential indicator plug (not included)
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FHM050		FHM065	
Filter length	H [mm]	Filter length	H [mm]
<b>1</b>	154	<b>1</b>	162
<b>2</b>	191	<b>2</b>	193
<b>3</b>	233	<b>3</b>	295
<b>4</b>	281		
<b>5</b>	403		



# FHM FHM050 - FHM065 - FHM135

## Dimensions





# FHM FHM320 - FHM500

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> FHM320   FHM500			Configuration example: <b>FHM320</b> <b>4</b> <b>D</b> <b>A</b> <b>F1</b> <b>A06</b> <b>N</b> <b>P01</b>							
<b>Length</b>	<b>FHM320</b>	<b>FHM500</b>								
<b>1</b>	•	•								
<b>2</b>	•	•								
<b>3</b>	•	•								
<b>4</b>	•	•								
<b>5</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					

Element	Δp	Valves:								Filter length				
		FHM320				FHM500				1	2	3	4	5
<b>N</b>	20 bar	-	•	-	•	-	•	-	•	•	•	•	•	•
<b>H</b>	210 bar	•	-	•	-	-	-	-	-	-	-	-	•	•
<b>S</b>	210 bar	-	-	-	-	•	-	•	-	-	-	-	-	-

Execution	1	2	3	4	5
<b>P01</b>	•	•	•	•	•
<b>P02</b>	-	-	-	-	-
<b>Pxx</b>	-	-	-	-	-

### FILTER ELEMENT

<b>Element series and size</b> HP320   HP500			Configuration example: <b>HP320</b> <b>4</b> <b>A06</b> <b>A</b> <b>N</b> <b>P01</b>					
<b>Element length</b>	<b>HP320</b>	<b>HP500</b>						
<b>1</b>	•	•						
<b>2</b>	•	•						
<b>3</b>	•	•						
<b>4</b>	•	•						
<b>5</b>	-	•						
<b>Filtration rating (filter media)</b>								
<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						
<b>Seals</b>								
<b>A</b>	NBR							
<b>V</b>	FPM							
<b>Element Δp</b>								
<b>N</b>	20 bar	•	•					
<b>H</b>	210 bar	•	-					
<b>S</b>	210 bar	-	•					
<b>Execution</b>								
<b>P01</b>	MP Filtri standard							
<b>Pxx</b>	Customized							

### CLOGGING INDICATORS

See page 687

<b>DEA</b>	Electrical differential indicator
<b>DEM</b>	Electrical differential indicator
<b>DLA</b>	Electrical / visual differential indicator
<b>DLE</b>	Electrical / visual differential indicator

<b>DTA</b>	Electrical differential indicator
<b>DVA</b>	Visual differential indicator
<b>DVM</b>	Visual differential indicator

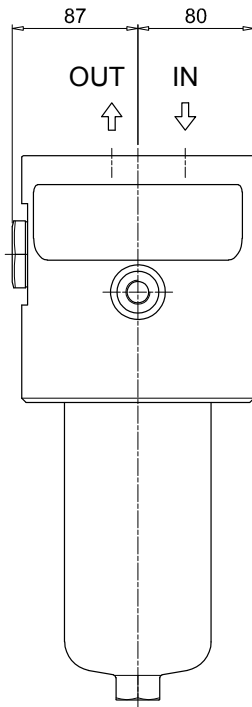
### PLUGS

See page 706

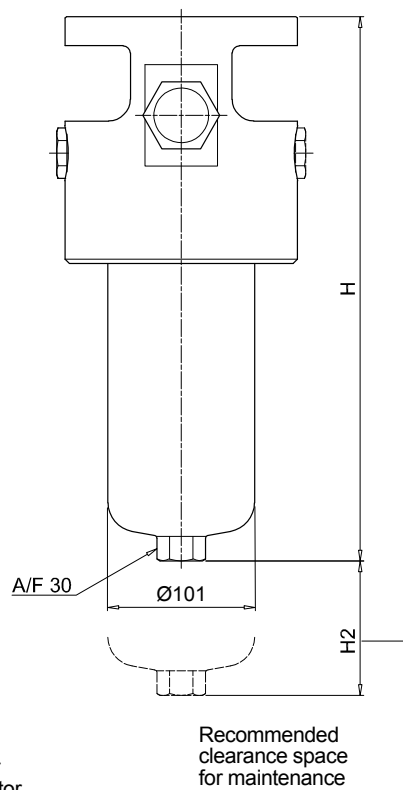
<b>T2</b>	Differential indicator plug (not included)
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### FHM320

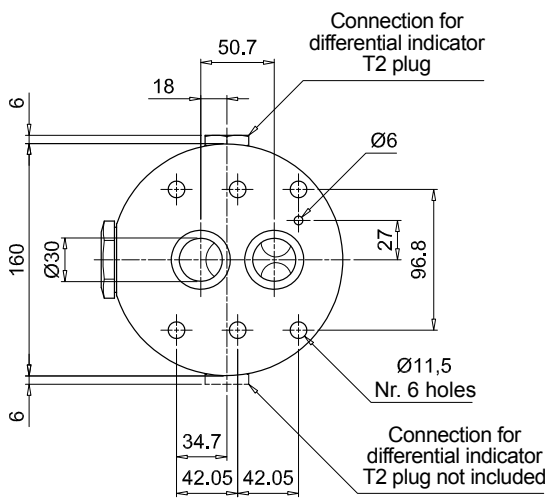
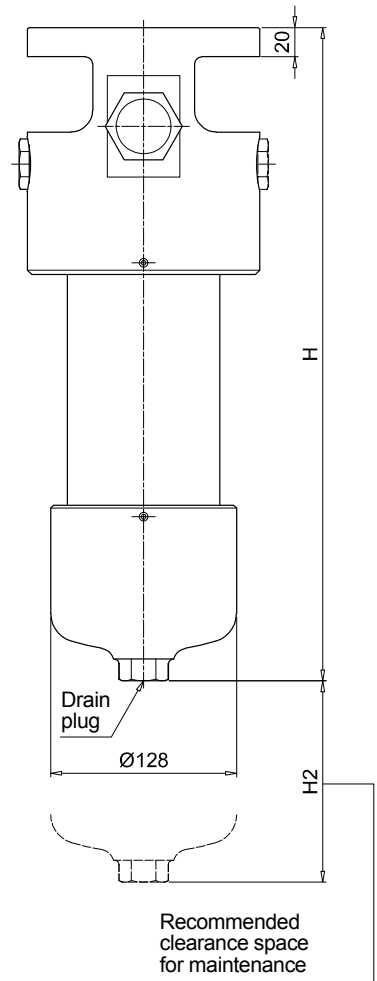
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	293	150	-
2	416	150	-
3	548	150	-
4	702	150	550



Length 1 - 2 - 3



Length 4

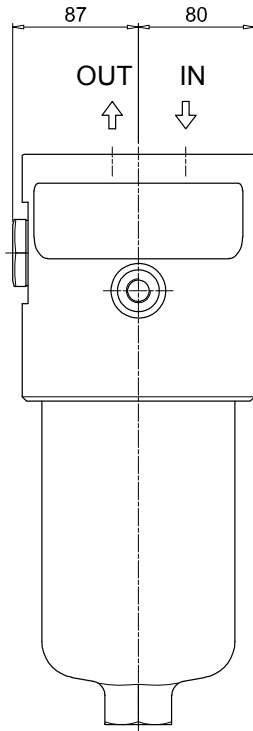


# FHM FHM320 - FHM500

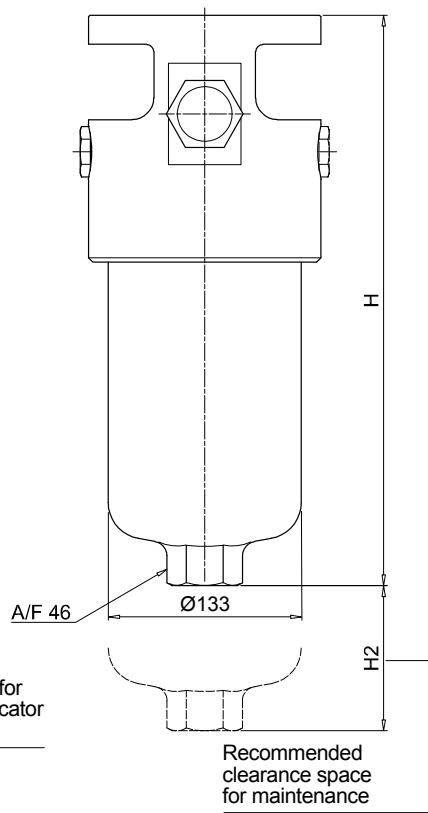
## Dimensions

### FHM500

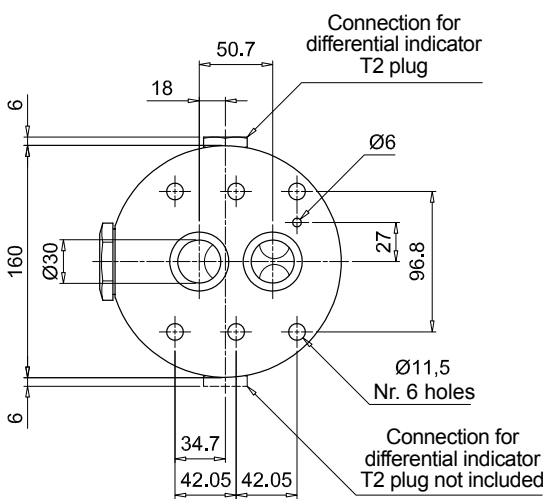
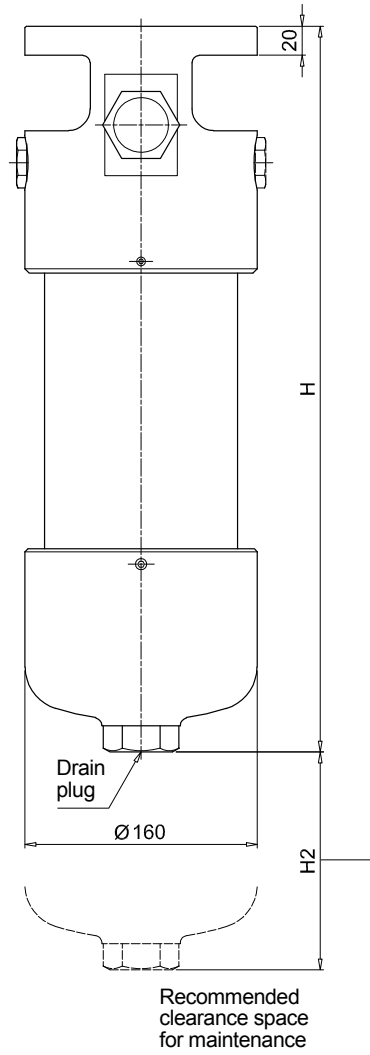
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
<b>1</b>	355	150	-
<b>2</b>	445	150	-
<b>3</b>	521	150	-
<b>4</b>	679	150	480
<b>5</b>	845	150	650



**Length 1 - 2 - 3**

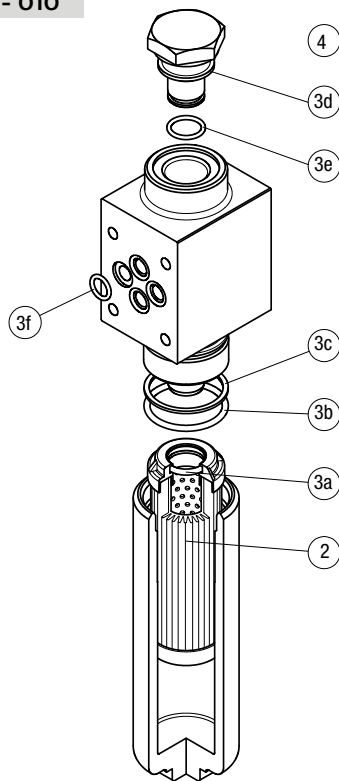


**Length 4 - 5**



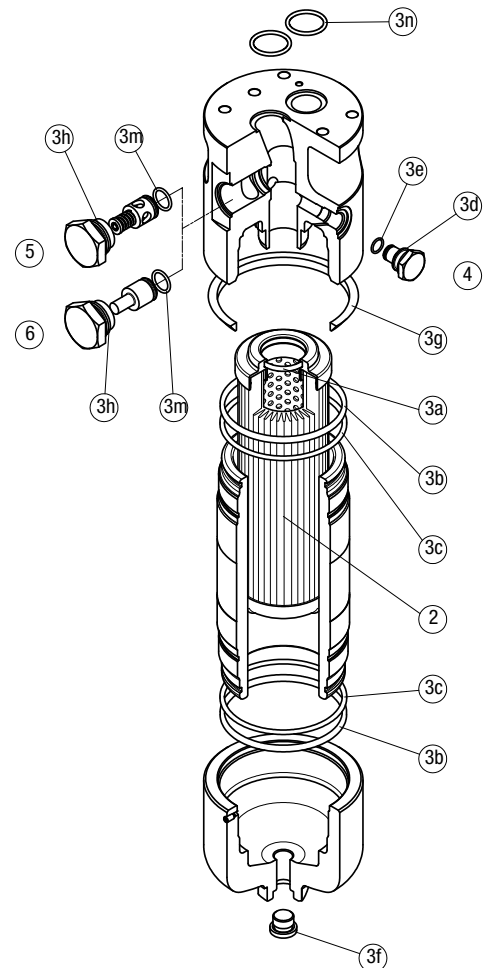


## FHM 006 - 007 - 010



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FHM 006	See order table	NBR	FPM	NBR	FPM
FHM 006	See order table	02050324	02050325		
FHM 007	See order table	02050600	02050601	T2H	T2V
FHM 010	See order table	02050320	02050321		

## FHM 050 - 065 - 135 - 320 - 500



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	
FHM 050	See order table	NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
FHM 050	See order table	02050410	02050411			02001400	02001401	02001402	02001403
FHM 065	See order table	02050268	02050279			02001400	02001401	02001402	02001403
FHM 135	See order table	02050271	02050282	T2H	T2V	02001404	02001405	02001406	02001407
FHM 320	See order table	02050275	02050286			02001408	02001409	02001410	02001411
FHM 500	See order table	02050332	02050333			02001408	02001409	02001410	02001411