

FHM series

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



INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



FHM006



FHM007



FHM010



FHM050



FHM065



FHM135



FHM320



FHM500

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 [dm³]

Filter series	Weights [kg]					Volumes [dm ³]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
FHM 006		2.17	-	-	-	-		0.12	-	-	-	-
FHM 007		-	4.74	5.95	-	-		-	0.30	0.50	-	-
FHM 010		-	4.74	5.95	-	-		-	0.30	0.50	-	-
FHM 050		5.31	5.68	6.09	6.56	7.74		0.29	0.38	0.48	0.60	0.89
FHM 065		5.47	5.83	7.04	-	-		0.27	0.34	0.56	-	-
FHM 135		8.78	10.38	11.43	-	-		0.49	0.82	1.03	-	-
FHM 320		19.80	21.93	24.22	26.70	-		1.04	1.76	2.53	3.36	-
FHM 500		35.00	39.17	42.69	54.70	60.50		1.63	2.35	2.96	5.11	6.44

Flow rates [l/min]

Filter series	Length	Filter element design - H Series					
		A03	A06	A10	A16	A25	M25
FHM 006	1	9	10	13	14	15	16
	2	13	13	15	16	16	16
FHM 007	3	15	15	16	16	17	17
	2	23	25	32	34	37	38
FHM 010	3	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
FHM 050	1	38	37	65	67	81	101	28	36	50	52	62
	2	46	50	69	75	89	102	41	44	63	71	85
	3	57	59	76	81	93	103	51	53	71	77	90
	4	68	71	84	86	95	103	62	66	81	82	93
	5	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
FHM 065	1	23	30	48	53	71	102	22	23	43	50	67
	2	30	45	59	64	81	103	30	34	56	62	76
	3	52	60	78	82	92	105	51	58	77	81	91
FHM 135	1	61	65	99	104	131	149	46	51	83	86	122
	2	91	96	118	119	155	167	79	92	109	111	134
	3	118	119	144	146	156	168	103	112	130	137	146
FHM 320	1	112	121	187	217	252	312	97	102	156	162	228
	2	200	214	281	293	320	328	161	181	237	241	282
	3	245	267	312	320	325	333	207	233	275	280	306
	4	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
FHM 500	1	211	232	281	289	309	394	126	135	208	210	261
	2	242	262	303	308	330	397	187	206	258	266	285
	3	284	294	336	338	357	399	226	230	285	290	315
	4	302	325	346	350	361	401	251	273	314	315	341
	5	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 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on 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.

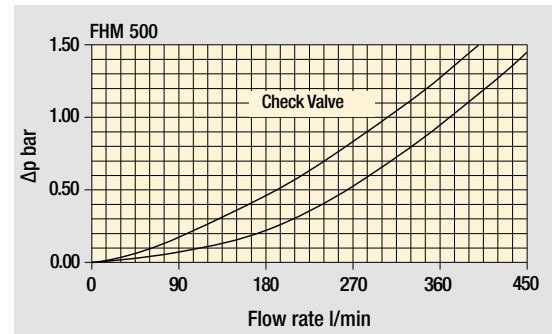
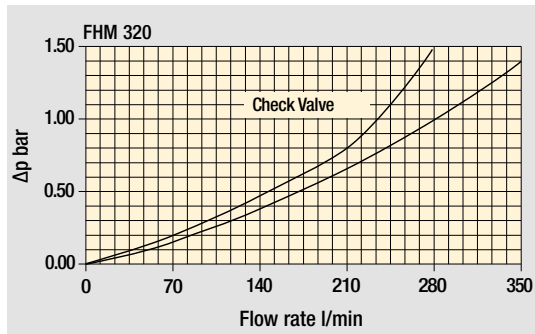
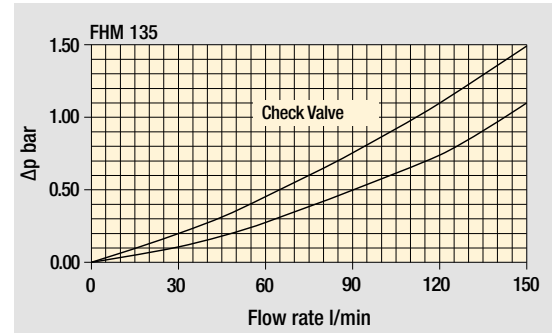
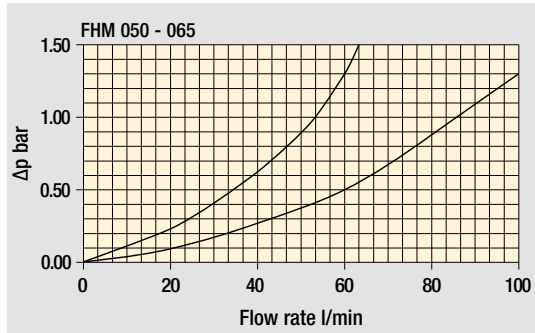
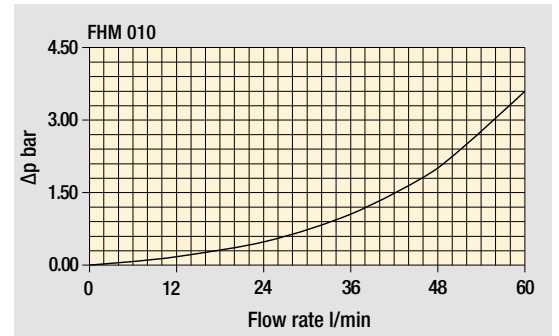
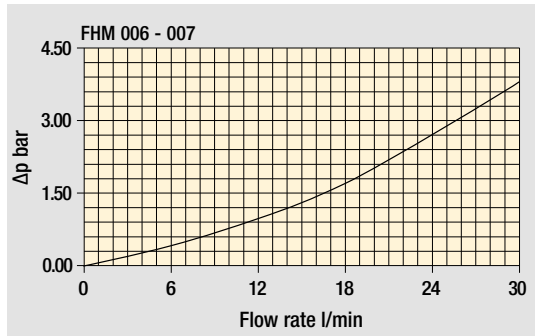
Hydraulic symbols

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

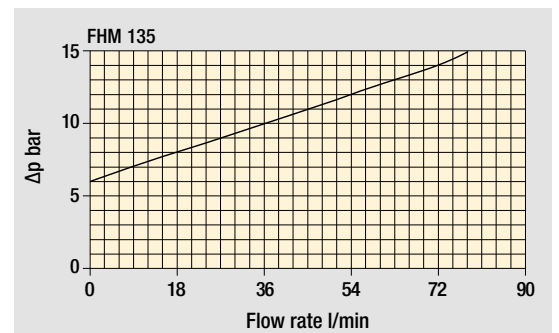
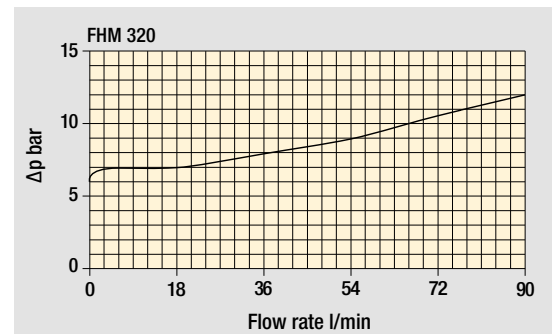
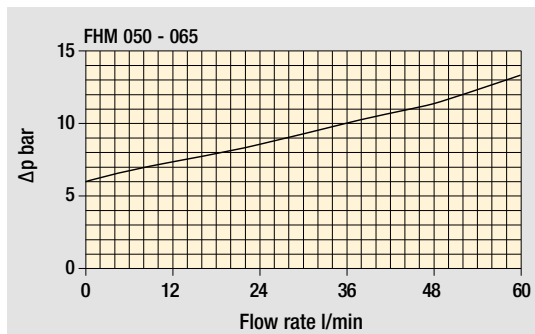
FHM GENERAL INFORMATION

Pressure drop

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp 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	H 210 bar			Execution	P01 MP Filtri standard Pxx Customized		

FILTER ELEMENT

Element series and size				Configuration example: HP065 2 A03 A H P01								
FHM006 FHM007 FHM010												
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	A NBR V FPM		Element Δp	H 210 bar		Execution	P01 MP Filtri standard Pxx Customized	

CLOGGING INDICATORS

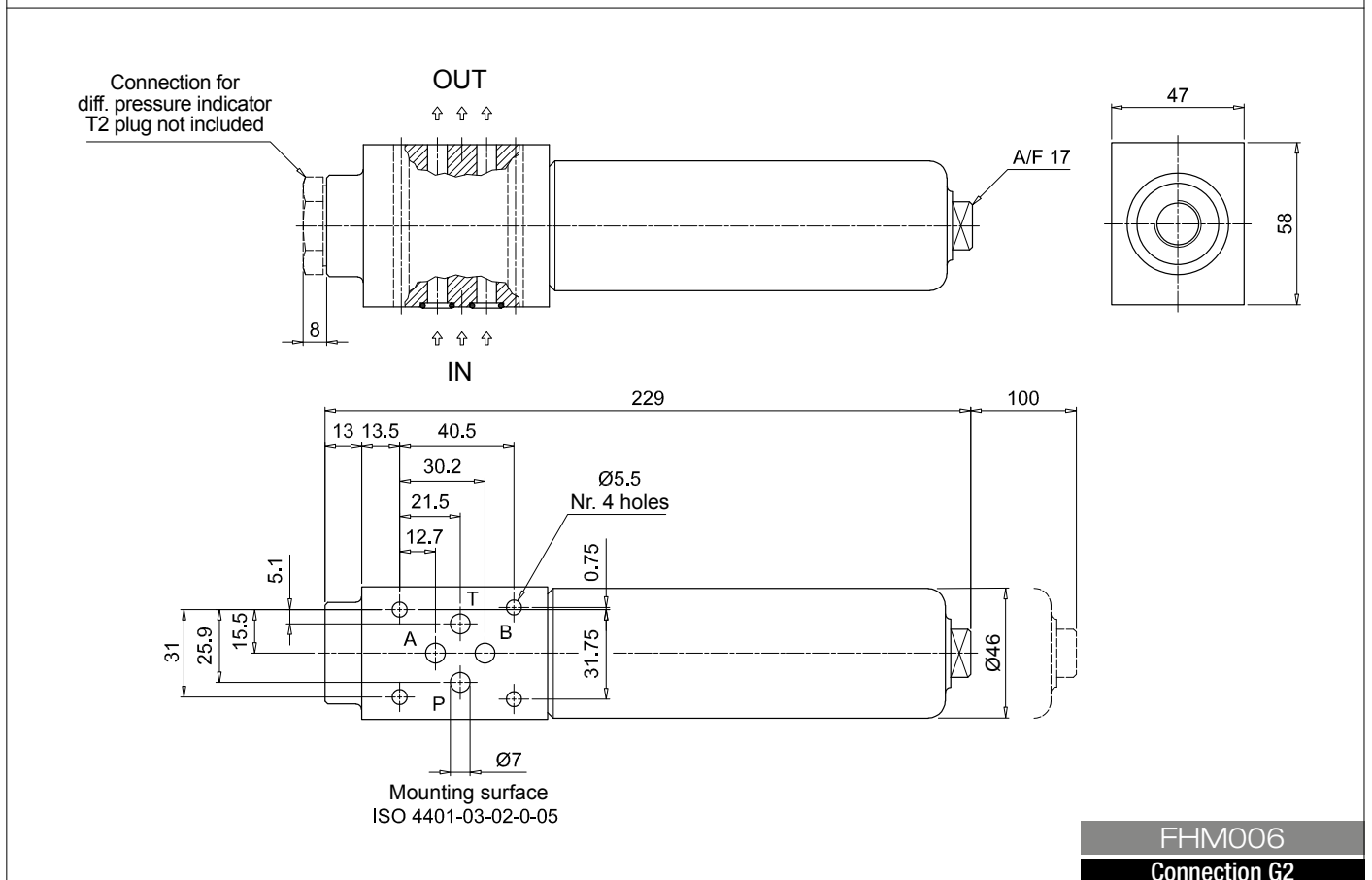
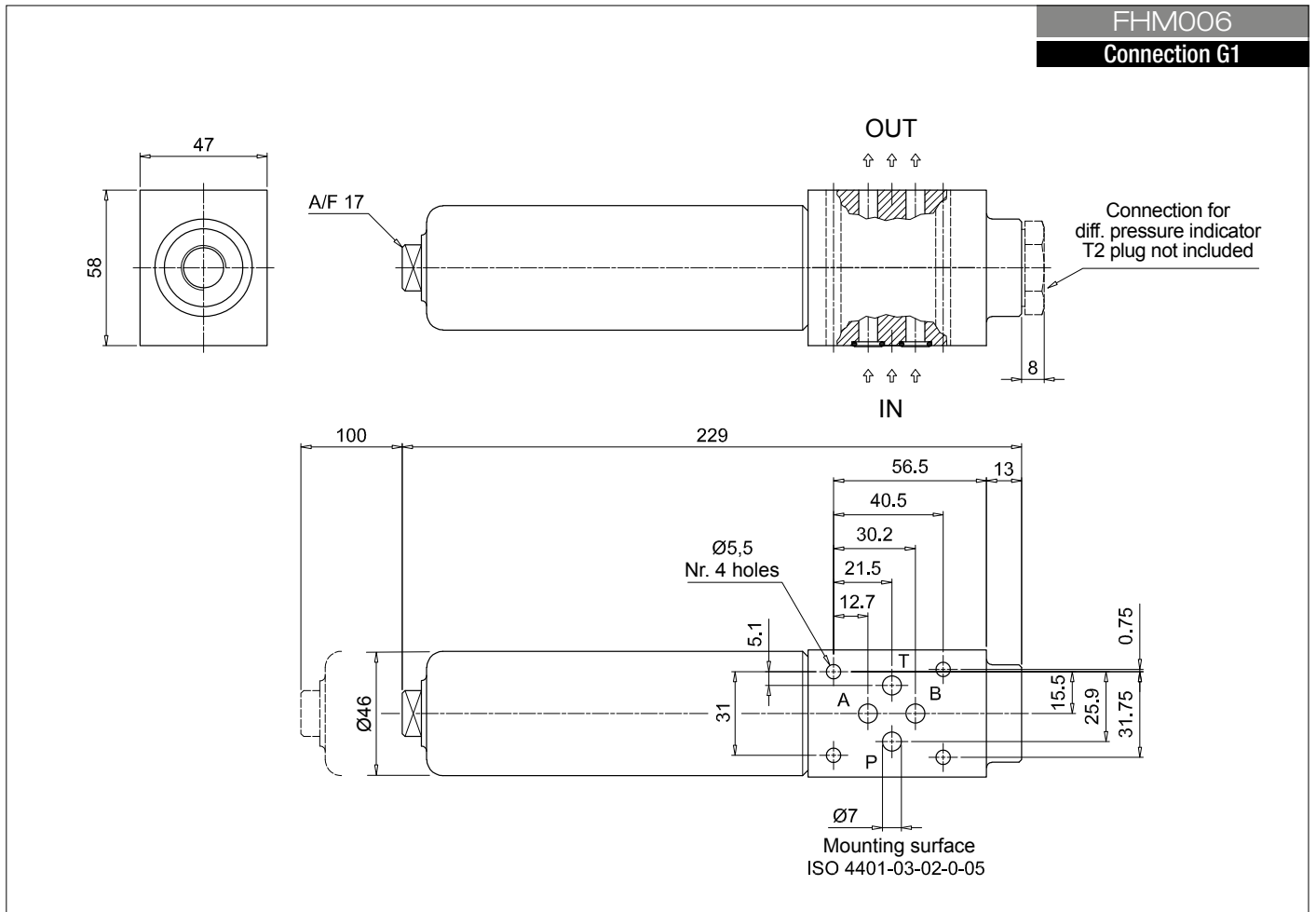
See page 723

DEA	Electrical differential pressure indicator	DLE	Electrical / visual differential pressure indicator
DEM	Electrical differential pressure indicator	DTA	Electronic differential pressure indicator
DEU	Electrical differential pressure indicator	DVA	Visual differential pressure indicator
DLA	Electrical / visual differential pressure indicator	DVM	Visual differential pressure indicator

PLUGS

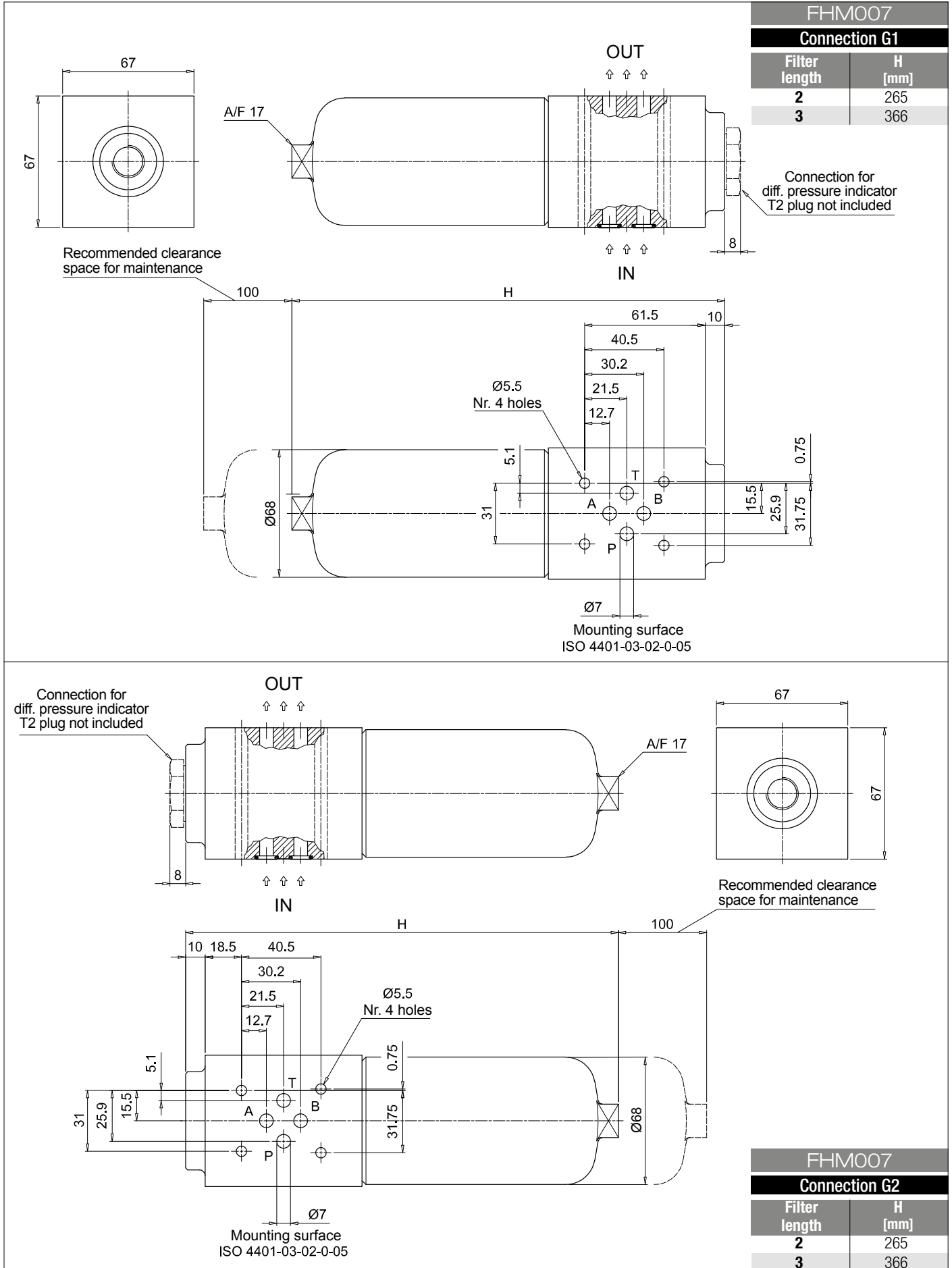
See page 743

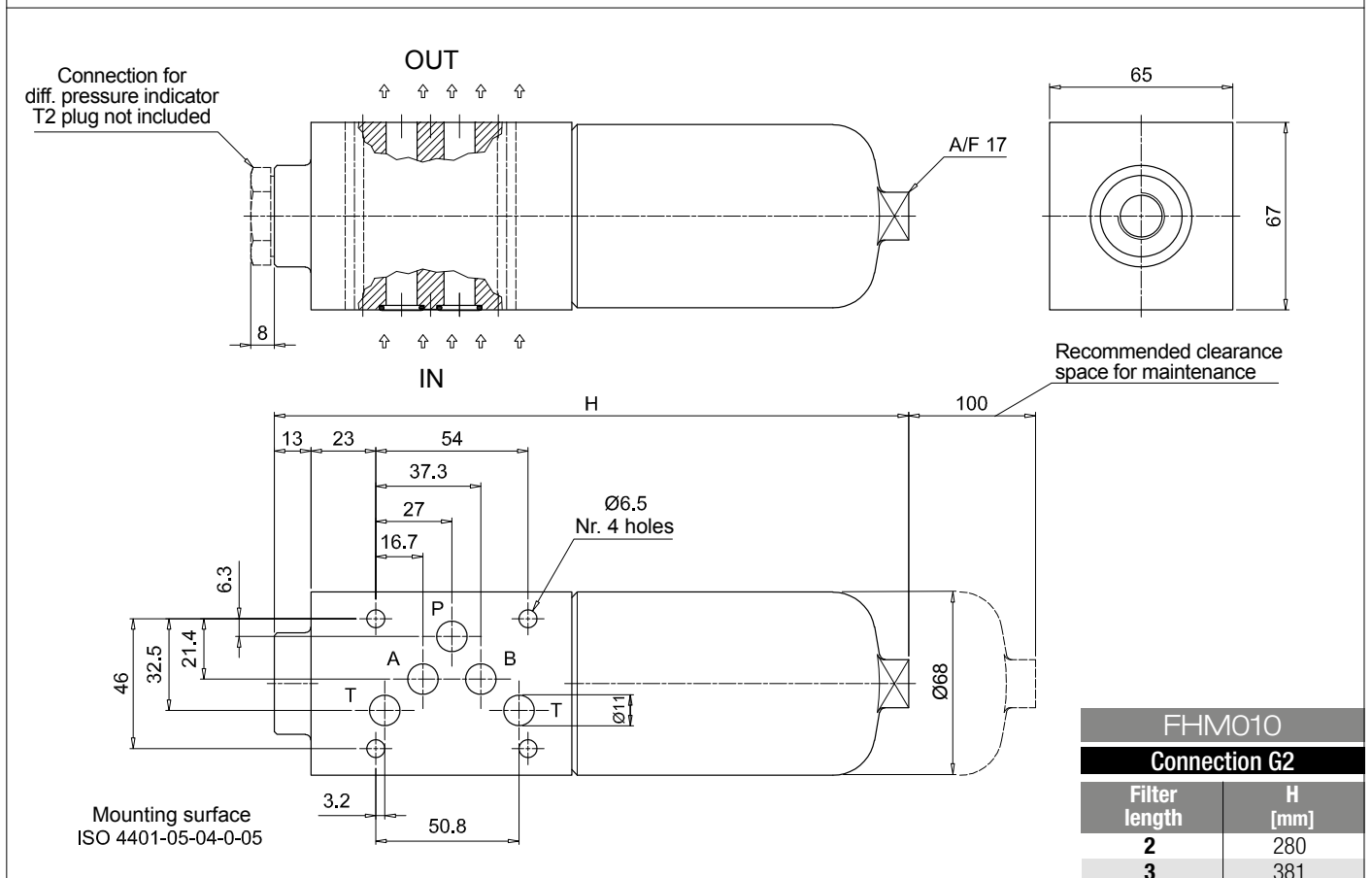
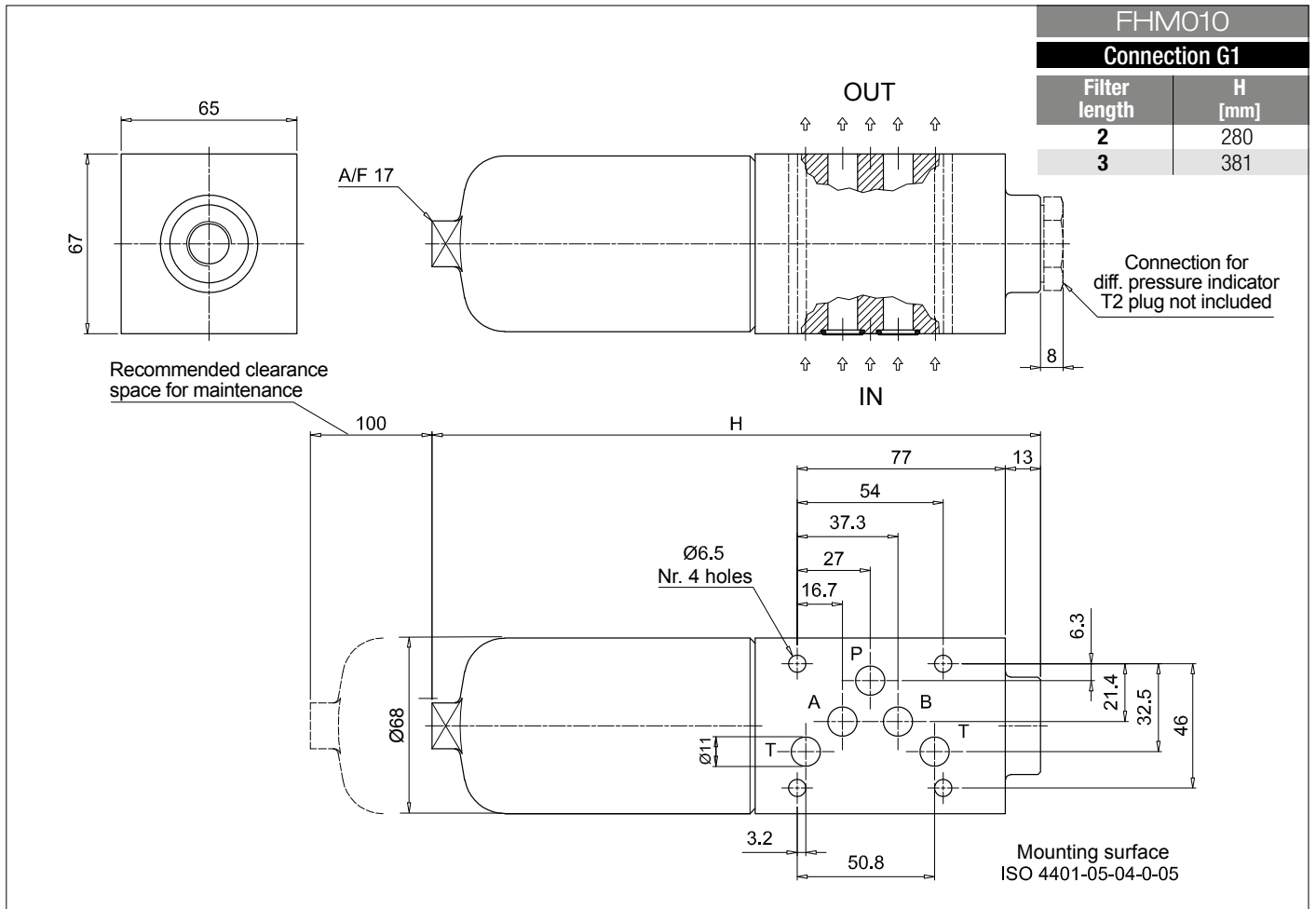
T2	Plug (not included)
----	---------------------



FHM006
Connection G2

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														
S	Without bypass													
B	With bypass 6 bar													
T	With check valve, without bypass													
D	With check valve, with bypass 6 bar													
Seals														
A	NBR													
V	FPM													
Connections														
F1	Manifold													
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												
				Valves:								Execution		
				FHM050				FHM065-135						
				Element Δp	S	B	T	D	S	B	T	D	P01	MP Filtri standard
				N	20 bar	-	•	-	•	-	•	-	Pxx	Customized
				H	210 bar	-	-	-	•	-	•	-		
				S	210 bar	•	-	•	-	-	-	-		

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)														
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	V	N	H	S	HP050	HP065	HP135			
				A	NBR	N	20 bar	•	•	•	P01	MP Filtri standard		
				V	FPM	H	210 bar	-	•	•	Pxx	Customized		
						S	210 bar	•	-	-				

CLOGGING INDICATORS

See page 723

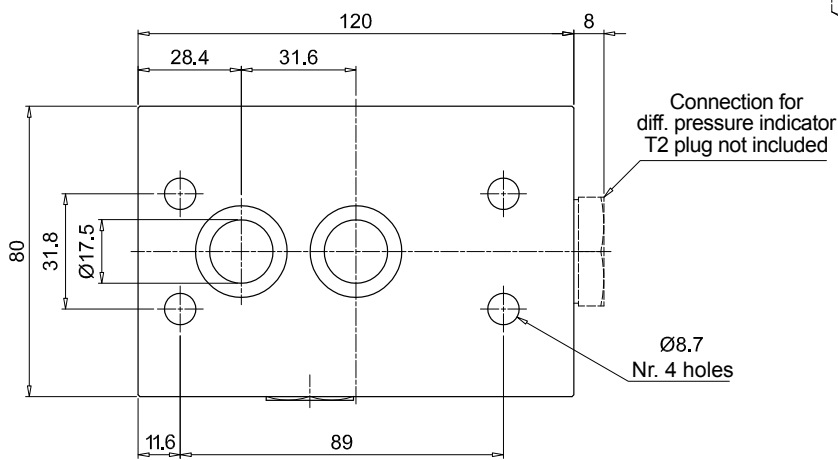
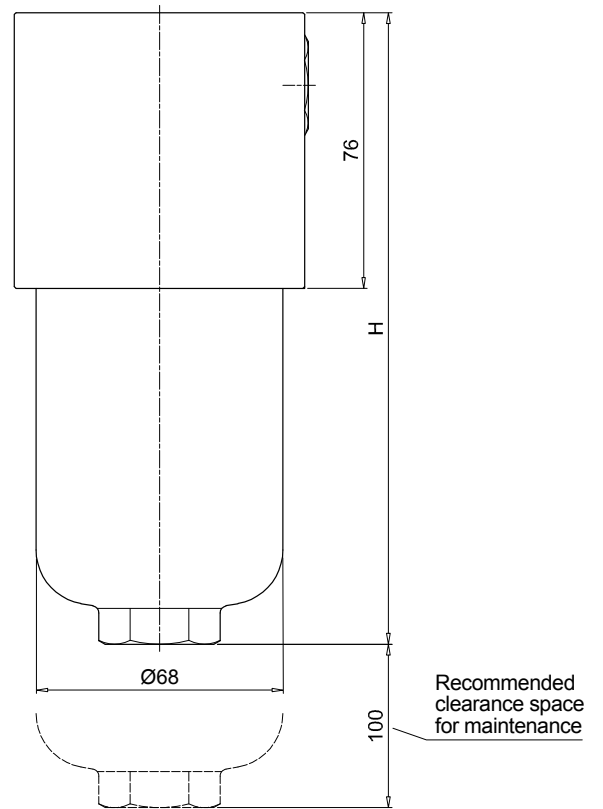
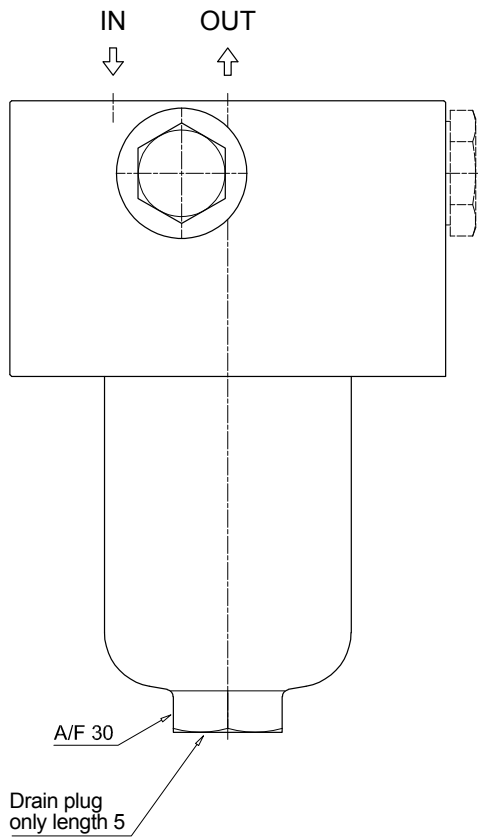
DEA	Electrical differential pressure indicator	DLE	Electrical / visual differential pressure indicator
DEM	Electrical differential pressure indicator	DTA	Electronic differential pressure indicator
DEU	Electrical differential pressure indicator	DVA	Visual differential pressure indicator
DLA	Electrical / visual differential pressure indicator	DVM	Visual differential pressure indicator

PLUGS

See page 743

T2	Plug (not included)
-----------	---------------------

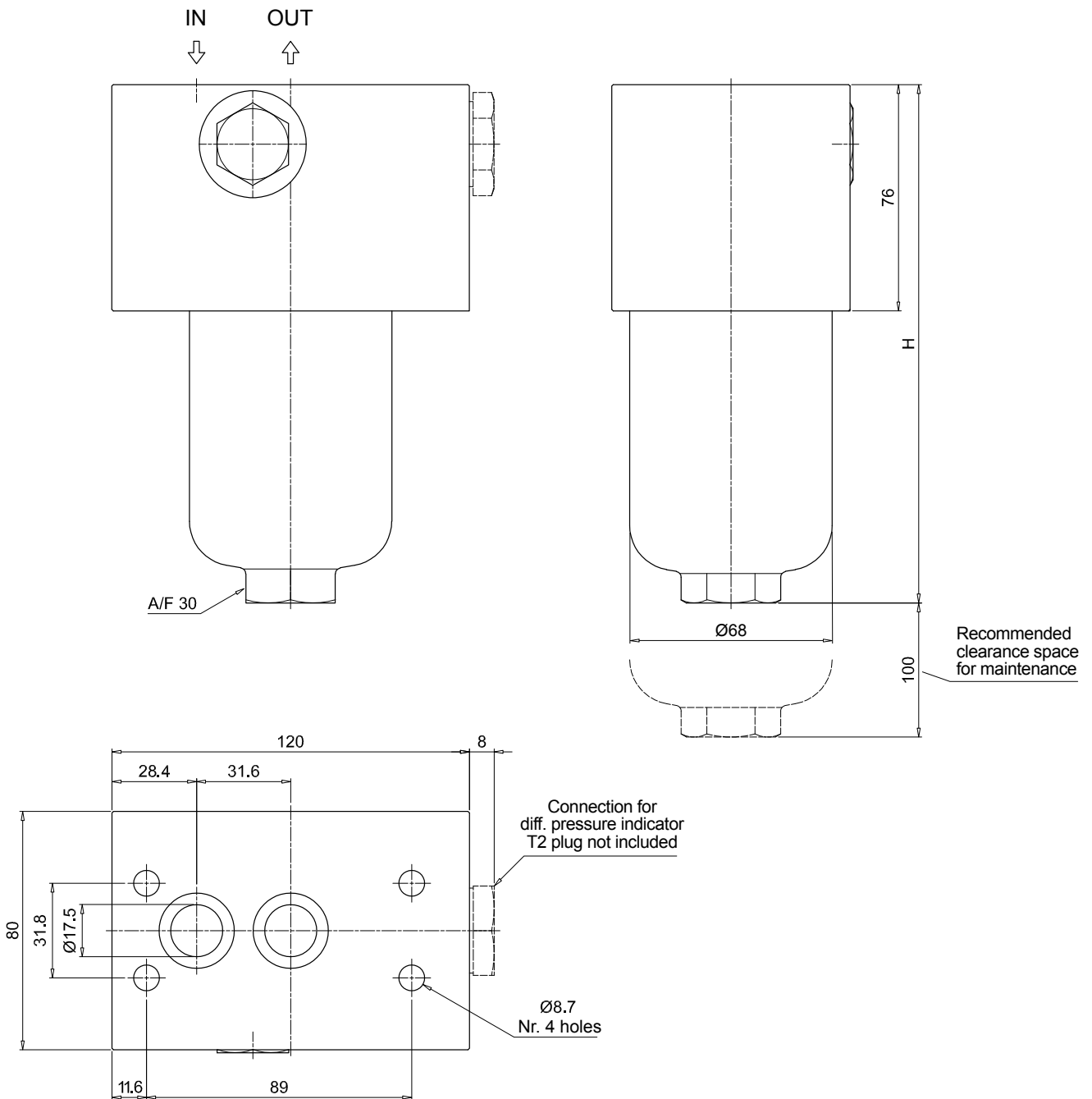
FHM050	
Filter length	H [mm]
1	154
2	191
3	233
4	281
5	403



Dimensions

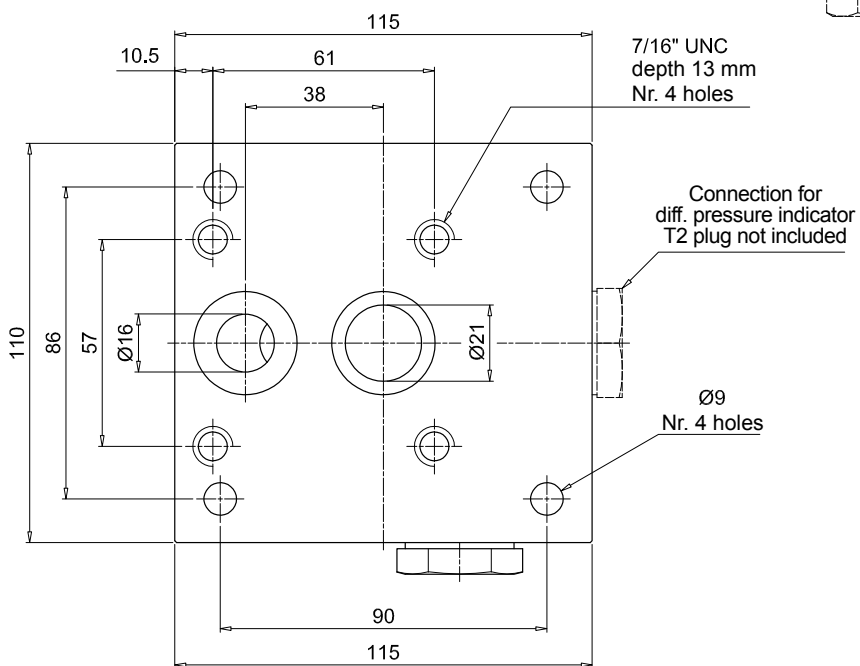
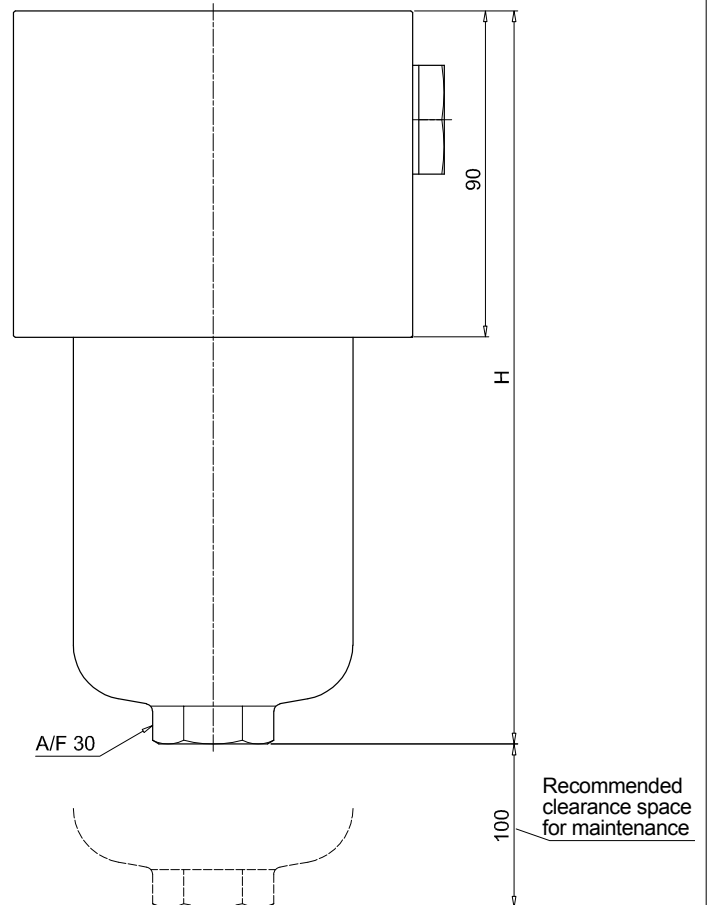
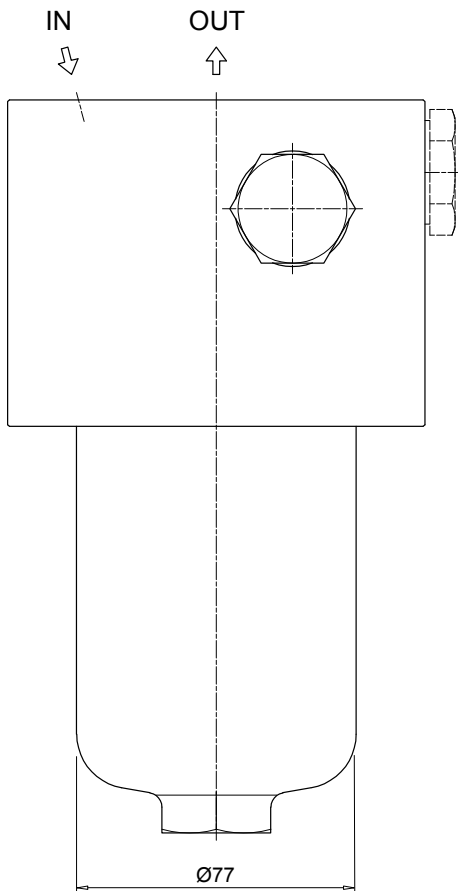
FHM065

Filter length	H [mm]
1	162
2	193
3	295



FHM135

Filter length	H [mm]
1	202
2	315
3	390



FHM FHM320 - FHM500

Designation & Ordering code

COMPLETE FILTER

Series and size FHM320 FHM500			Configuration example: FHM320 4 D A F1 A06 N P01							
Length	FHM320	FHM500								
1	•	•								
2	•	•								
3	•	•								
4	•	•								
5	-	•								
Valves										
S	Without bypass									
B	With bypass 6 bar									
T	With check valve, without bypass									
D	With check valve, with bypass 6 bar									
Seals										
A	NBR									
V	FPM									
Connections										
F1	Manifold									
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	Valves:								Filter length				
		FHM320				FHM500				1	2	3	4	5
N	20 bar	-	•	-	•	-	•	-	•	•	•	•	•	•
H	210 bar	•	-	•	-	-	-	-	-	-	-	-	•	•
S	210 bar	-	-	-	-	•	-	•	-	-	-	-	-	-

Execution	1	2	3	4	5
P01 MP Filtri standard	•	•	•	•	•
P02 Maintenance from the bottom of the housing	-	-	-	•	•
Pxx Customized	-	-	-	-	-

FILTER ELEMENT

Element series and size HP320 HP500			Configuration example: HP320 4 A06 A N P01					
Element length	HP320	HP500						
1	•	•						
2	•	•						
3	•	•						
4	•	•						
5	-	•						
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								
A	NBR							
V	FPM							
Element Δp								
N	20 bar	•	•					
H	210 bar	•	-					
S	210 bar	-	•					
Execution								
P01	MP Filtri standard							
Pxx	Customized							

CLOGGING INDICATORS

See page 723

DEA	Electrical differential pressure indicator
DEM	Electrical differential pressure indicator
DEU	Electrical differential pressure indicator
DLA	Electrical / visual differential pressure indicator

DLE	Electrical / visual differential pressure indicator
DTA	Electronic differential pressure indicator
DVA	Visual differential pressure indicator
DVM	Visual differential pressure indicator

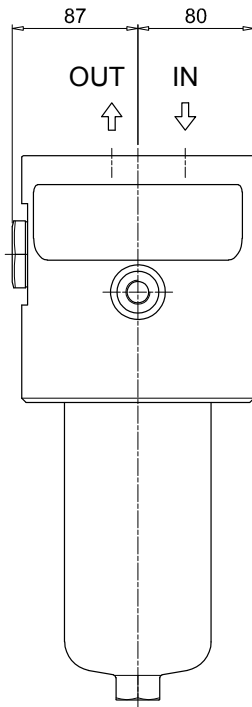
PLUGS

See page 743

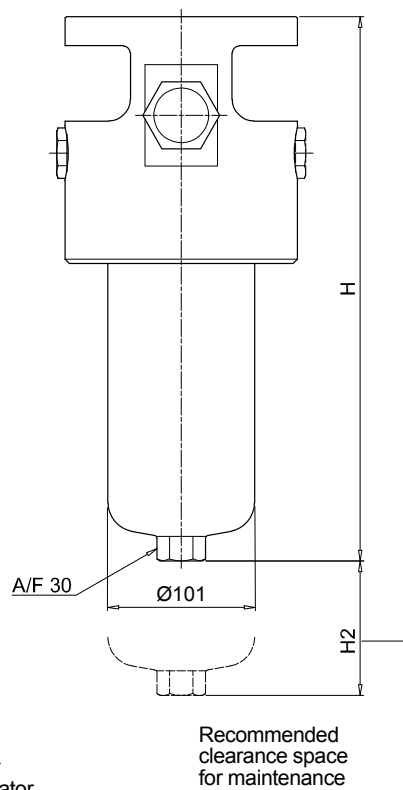
T2	Plug (not included)
-----------	---------------------

FHM320

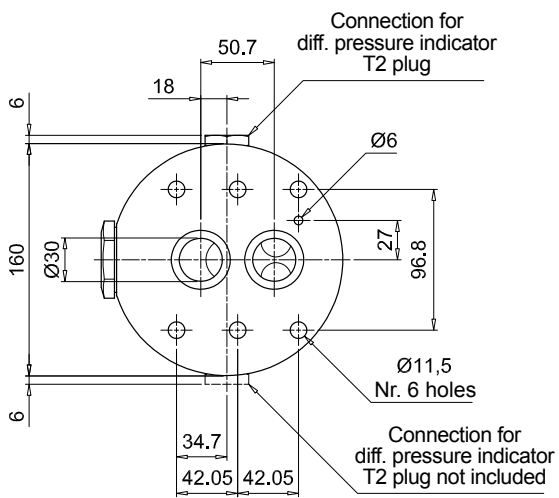
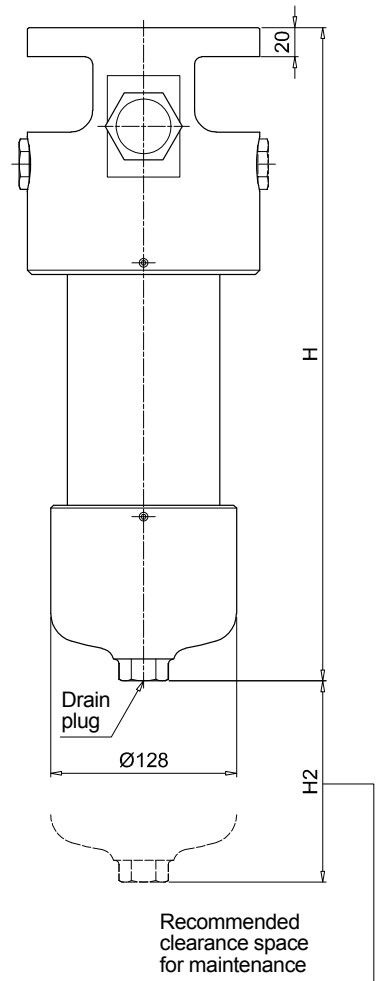
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	293	150	-
2	416	150	-
3	548	150	-
4	702	150	550



Length 1 - 2 - 3



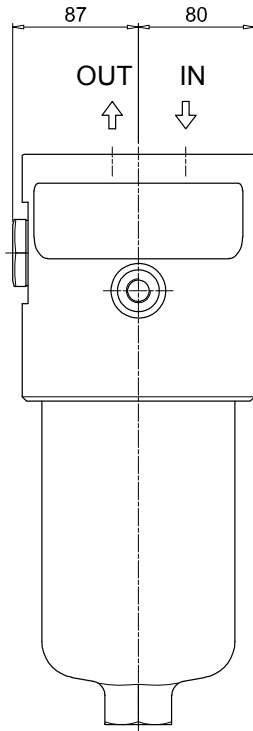
Length 4



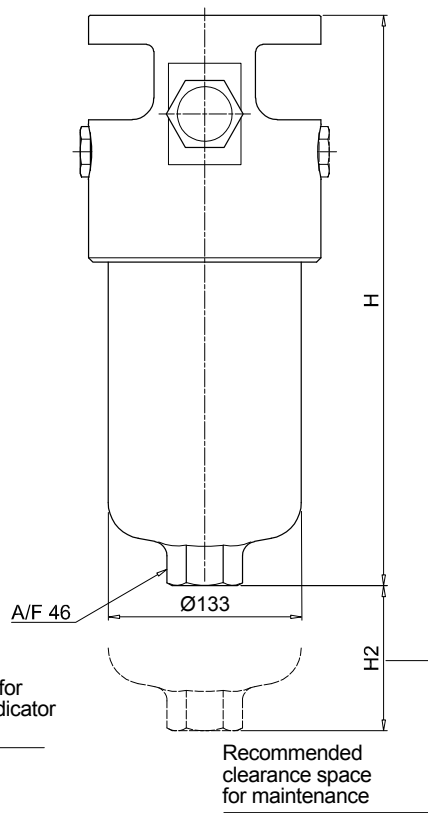
Dimensions

FHM500

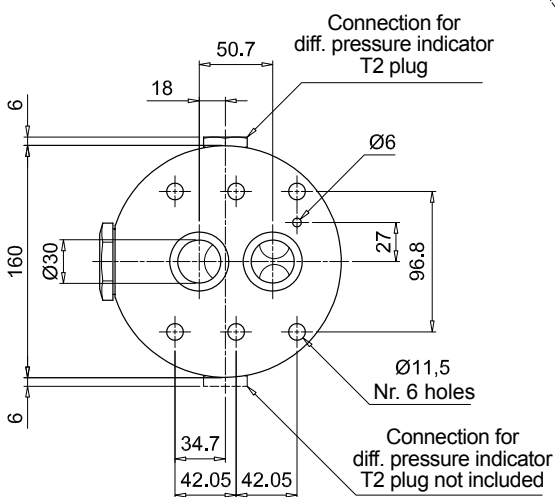
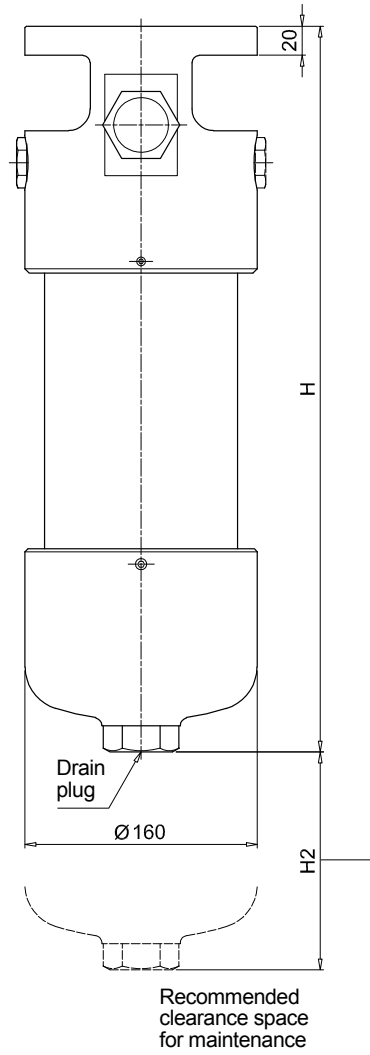
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	355	150	-
2	445	150	-
3	521	150	-
4	679	150	480
5	845	150	650



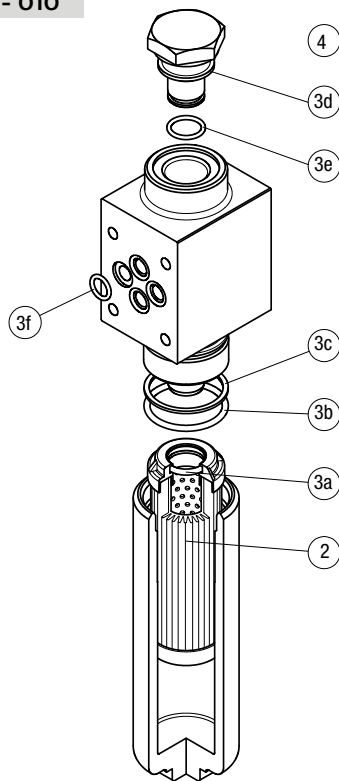
Length 1 - 2 - 3



Length 4 - 5

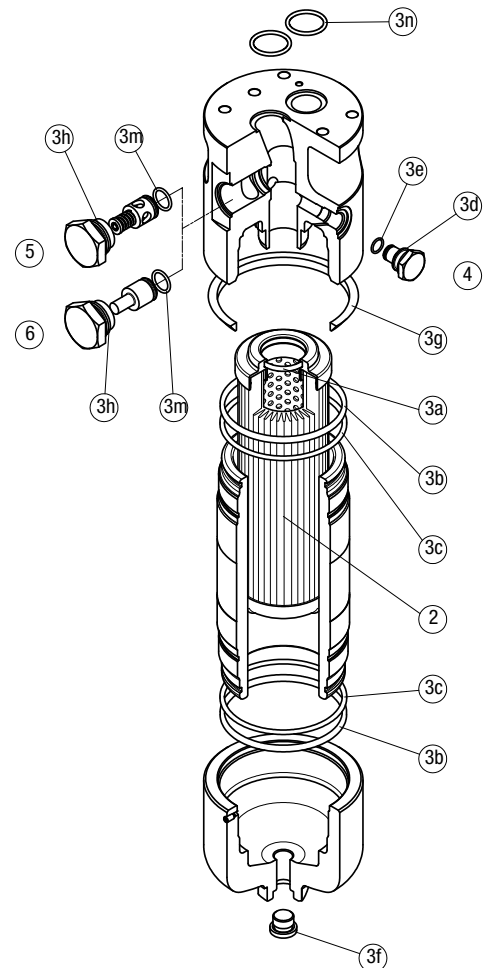


FHM 006 - 007 - 010



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

DIFFERENTIAL PRESSURE INDICATORS

Series	Configuration example 1:							Configuration example 2:		Configuration example 3:		Configuration example 4:		Configuration example 5:	
DE Electrical differential pressure indicator	DE	M	12	H	F	50	P01	DE	U	50	H	A	50	P01	UL
DL Electrical/Visual differential pressure indicator	DL	E	20	V	A	71	P01	DL	E	20	V	A	71	P01	
DT Electronic differential pressure indicator	DT	A	50	H	F	70	P01	DT	A	50	H	F	70	P01	
DV Visual differential pressure indicator	DV	M	70	V			P01	DV	M	70	V			P01	

Type	DE	DL	DT	DV
A Standard type	•	•	•	A With automatic reset
M With wired electrical connection	•	-	-	M With manual reset
U Standard type 210 bar, UL certified	•	-	-	
E For high power supply	-	•	-	

Pressure setting	DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM
50 5.0 bar	•	•	•	•	•	•	•	•
70 7.0 bar	•	•	•	•	•	•	•	•
95 9.5 bar	•	•	-	•	•	•	•	•

Seals	DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM
H HNBR	•	•	-	•	•	•	•	•
V FPM	•	•	•	•	•	•	•	•

Thermostat	DEA	DEM	DEU	DLA	DLE	DT
A Without thermostat	•	•	•	•	•	-
F With thermostat	-	•	-	-	•	•

Electrical connections	DEA	DEM	DEU	DLA	DLE	DT
10 Connection AMP Superseal series 1.5	-	•	-	-	-	-
20 Connection AMP Timer Junior	-	•	-	-	-	-
30 Connection Deutsch DT-04-2-P	-	•	-	-	-	-
35 Connection Deutsch DT-04-3-P	-	•	-	-	-	-
50 Connection EN 175301-803	•	-	•	-	•	-
51 Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	-	•	-	-
52 Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	-	•	-	-
70 Connection IEC 61076-2-101 D (M12)	-	-	-	-	-	•
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•	-	-

Option
P01 MP Filtri standard
Pxx Customized

Certifications	DEU	OTHERS
Without	-	•
UL UL certification	•	-

PLUGS

Series	Configuration example	
T2 Plug	T2	H

Seals
H HNBR
V FPM