

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

Note

FHM filters are provided for vertical 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 |

| 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.

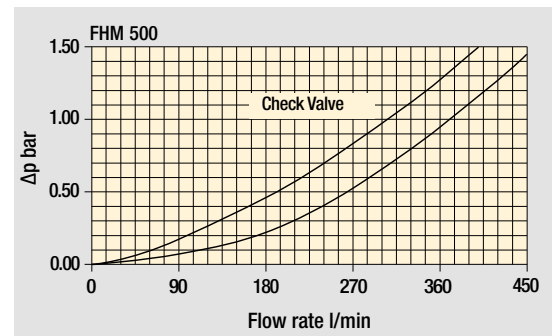
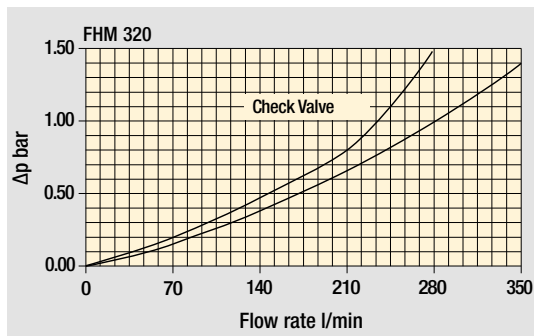
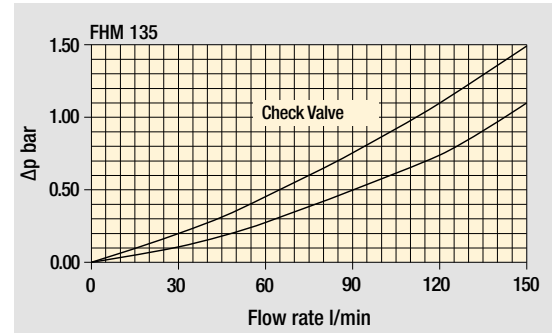
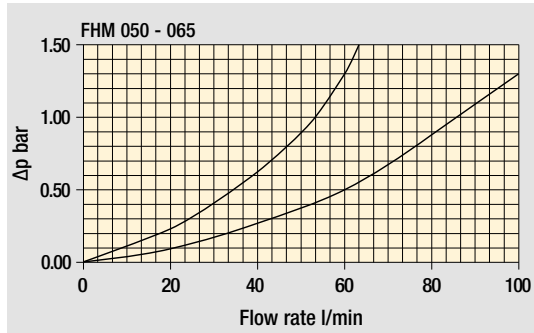
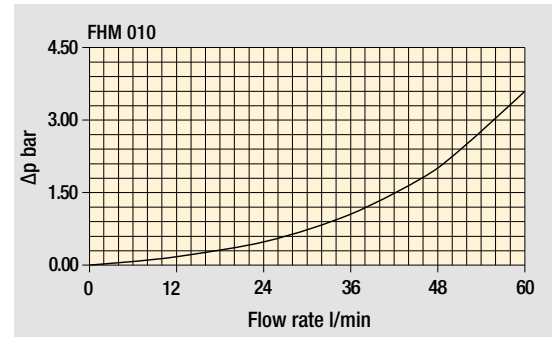
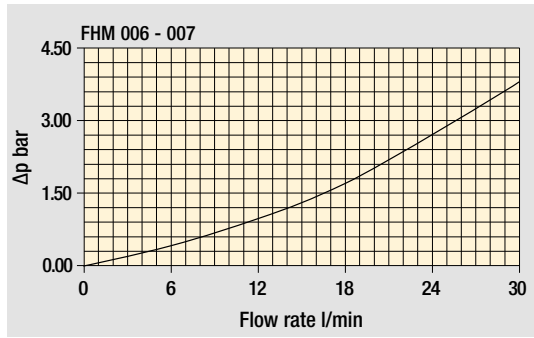
Hydraulic symbols

| 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 | | | • | • | • | • |
| | | | | | | |

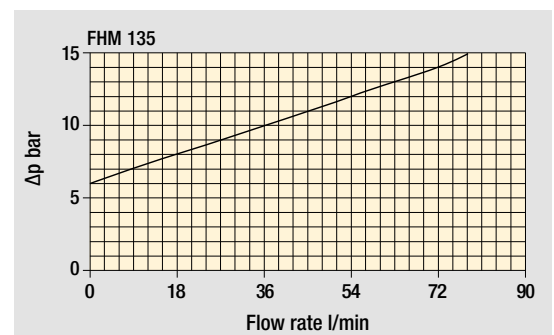
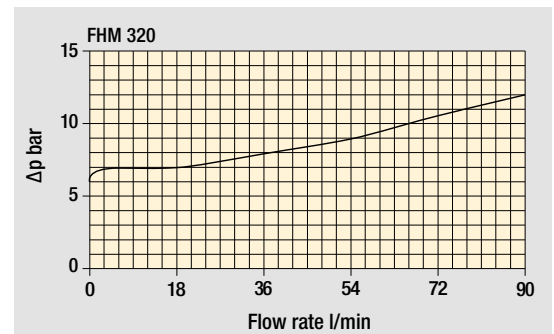
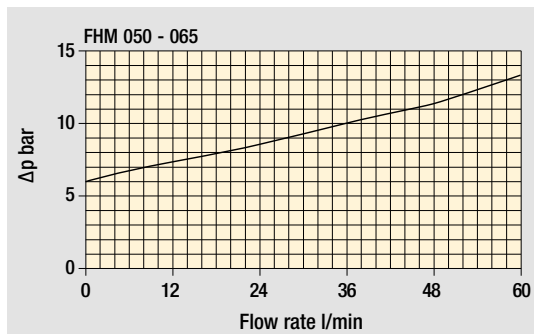
FHM GENERAL INFORMATION

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

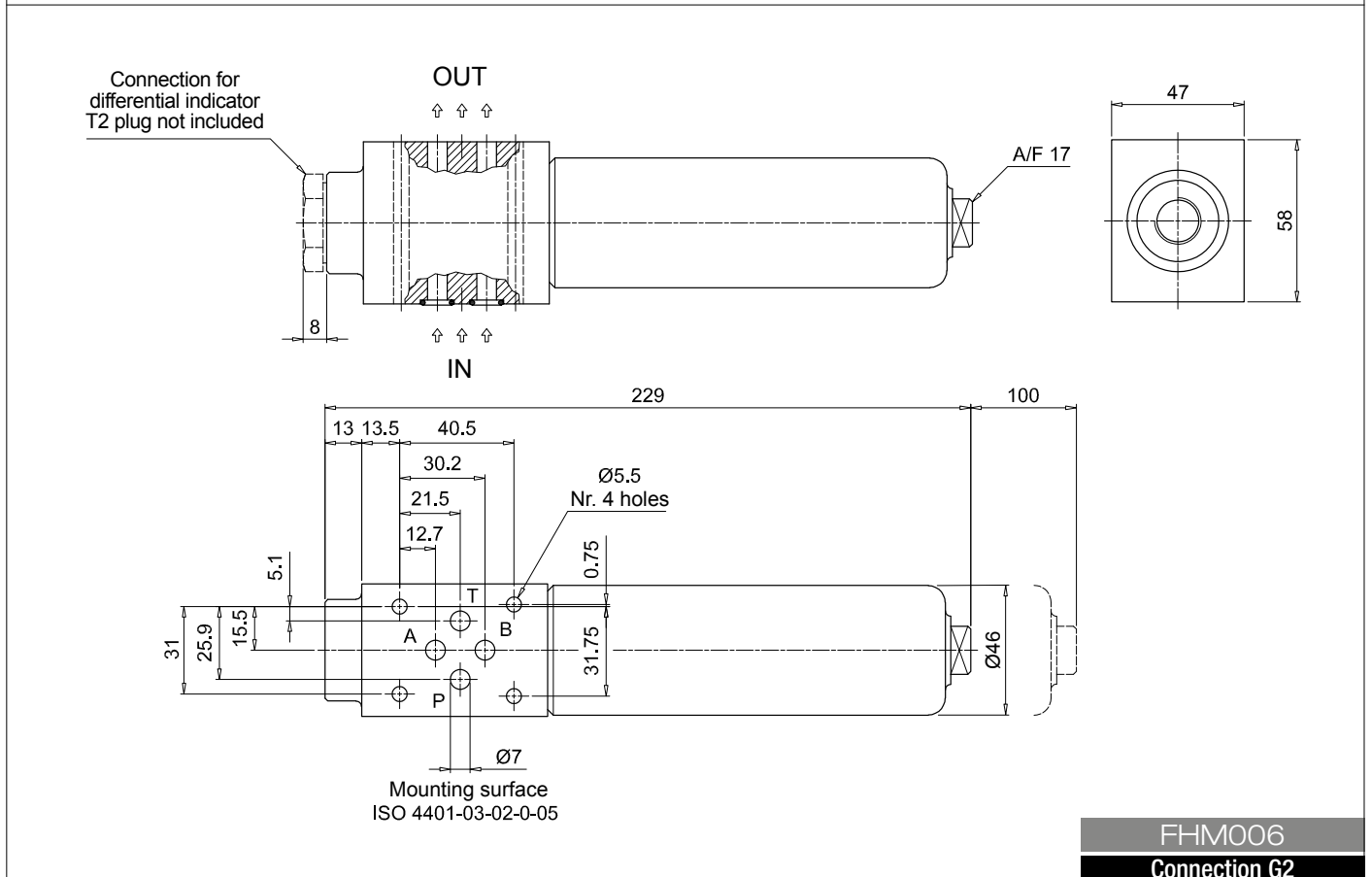
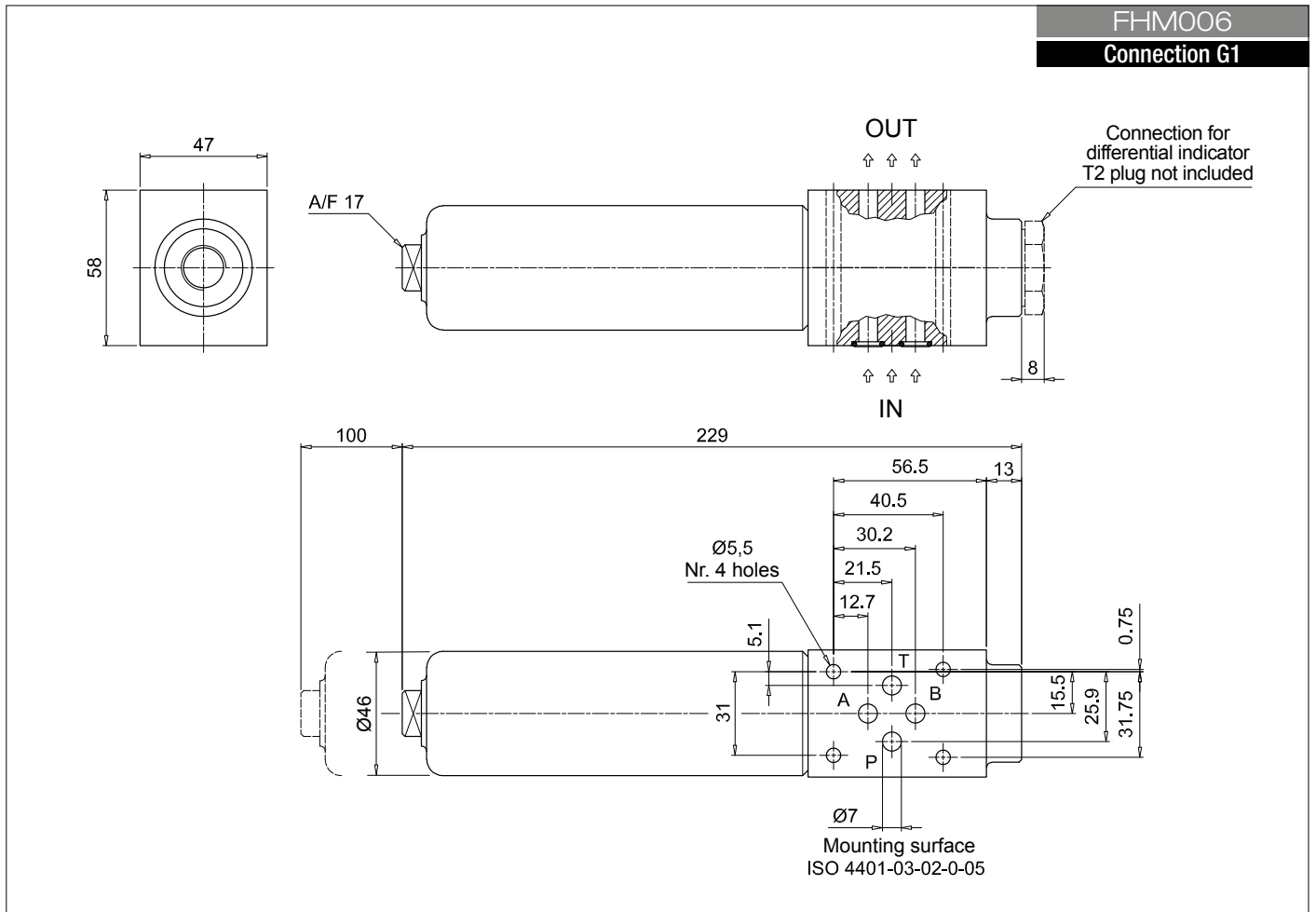
| Series and size | | | | Configuration example: FHM010 2 S V G1 A03 H P01 | | | | | | |
|----------------------------------|----------------------|--------|--------|--|-------|------------------------|--|--|--|--|
| FHM006 FHM007 FHM010 | | | | | | | | | | |
| Length | FHM006 | FHM007 | FHM010 | | | | | | | |
| 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 | | Execution | | | | |
| | | | | H 210 bar | | P01 MP Filtri standard | | | | |
| | | | | | | Pxx Customized | | | | |

FILTER ELEMENT

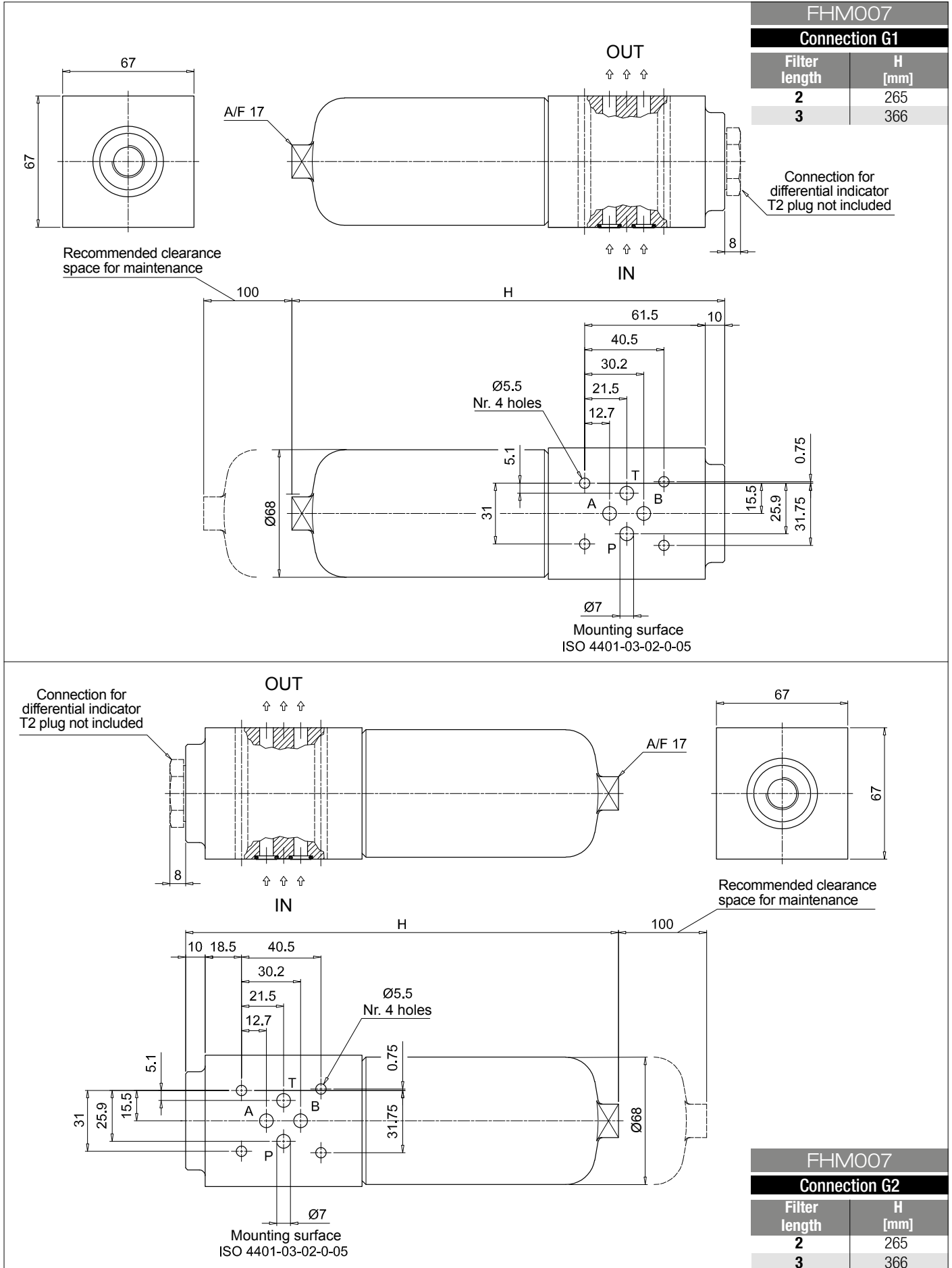
| Element series and size | | | | Configuration example: HP065 2 A03 A H P01 | | | | | | |
|----------------------------------|----------------------|--------|--------|--|-------|------------|--|------------------------|--|--|
| FHM006 FHM007 FHM010 | | | | | | | | | | |
| HP011 | • | | | | | | | | | |
| HP065 | | • | • | | | | | | | |
| Element length | FHM006 | FHM007 | FHM010 | | | | | | | |
| 2 | | • | • | | | | | | | |
| 3 | • | • | • | | | | | | | |
| Filtration rating (filter media) | | | | | | | | | | |
| A03 | Inorganic microfiber | 3 µm | 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 | | | | | |
| | | | | Seals | | Element Δp | | Execution | | |
| | | | | A NBR | | H 210 bar | | P01 MP Filtri standard | | |
| | | | | V FPM | | | | Pxx Customized | | |

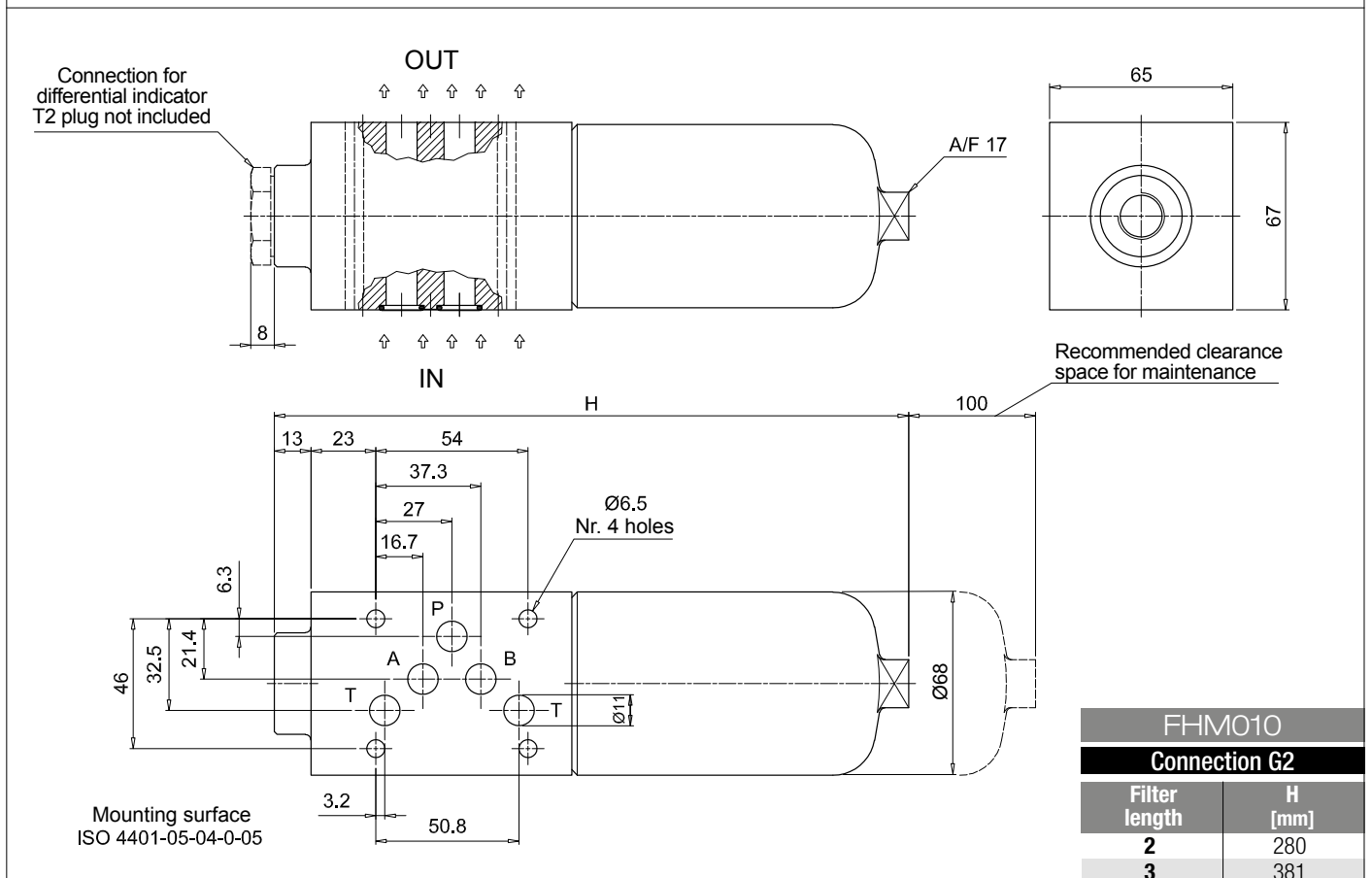
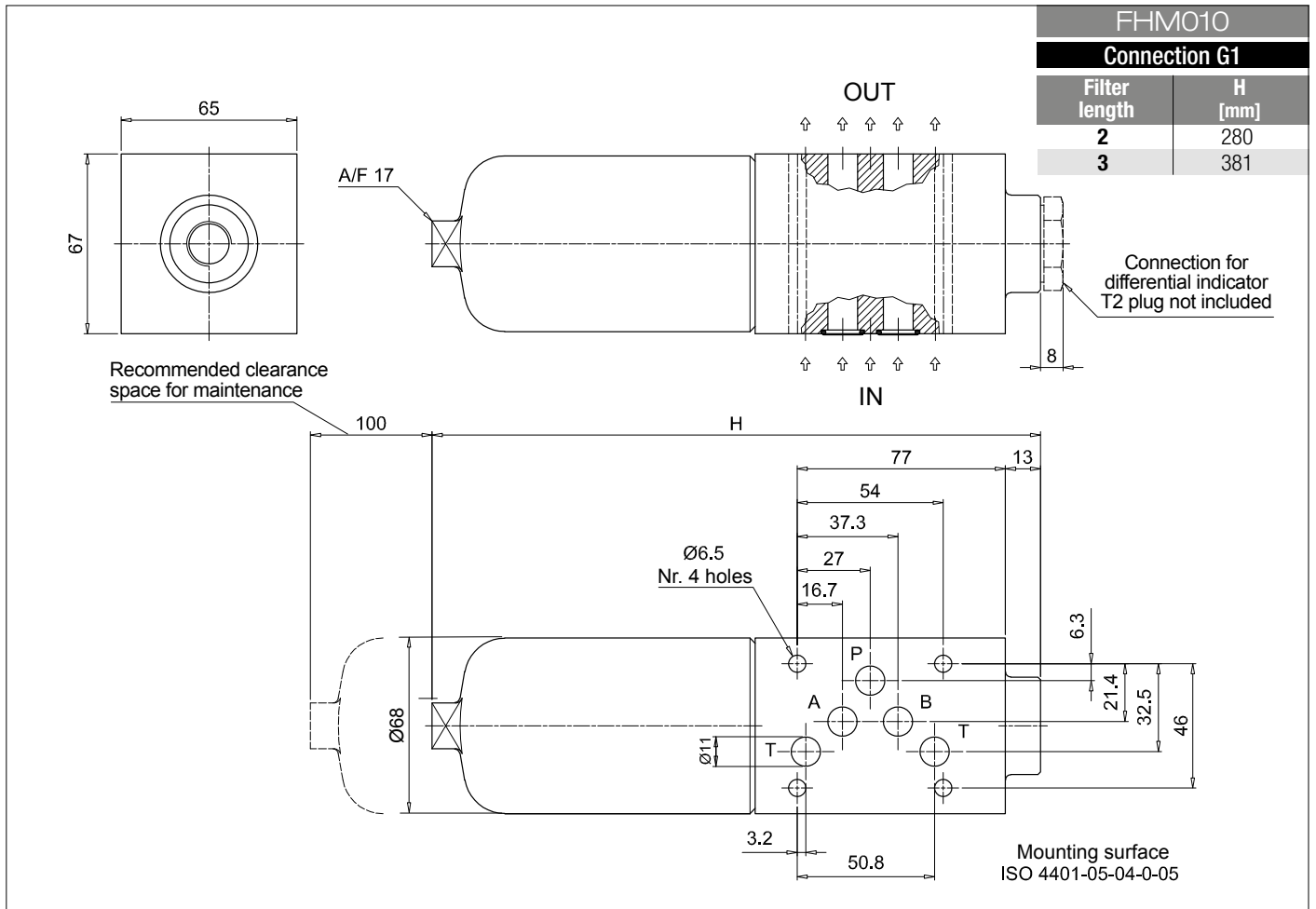
ACCESSORIES

| Differential indicators | | page | | | page |
|-------------------------|--|---------|-----|--|------|
| DEA | Electrical differential indicator | 577 | DLE | Electrical / visual differential indicator | 580 |
| DEH | Hazardous area electronic differential indicator | 577-578 | DTA | Electronic differential indicator | 581 |
| DEM | Electrical differential indicator | 578-579 | DVA | Visual differential indicator | 581 |
| DLA | Electrical / visual differential indicator | 579-580 | DVM | Visual differential indicator | 581 |
| Additional features | | page | | | |
| T2 | Plug | 582 | | | |



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 | 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: FHM050 | | | | FHM065-135 | | | | Execution |
|------------------|----------------|---|---|---|------------|---|---|---|-------------------------------|
| | S | B | T | D | S | B | T | D | |
| N 20 bar | | • | | • | | • | | • | P01 MP Filtri standard |
| H 210 bar | | | | | | | • | • | Pxx Customized |
| 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 | 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 |

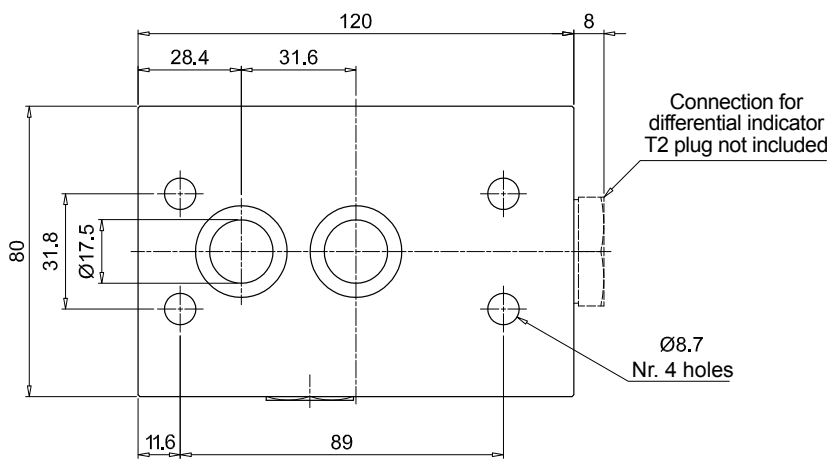
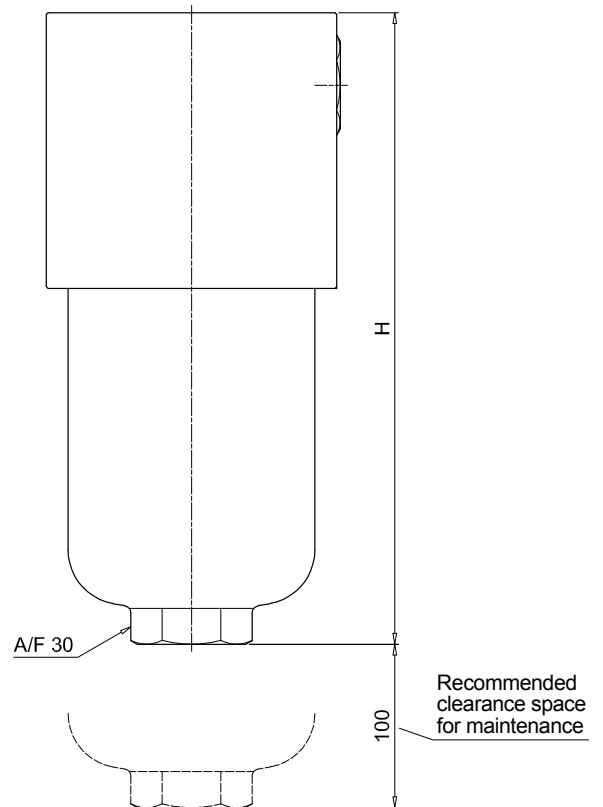
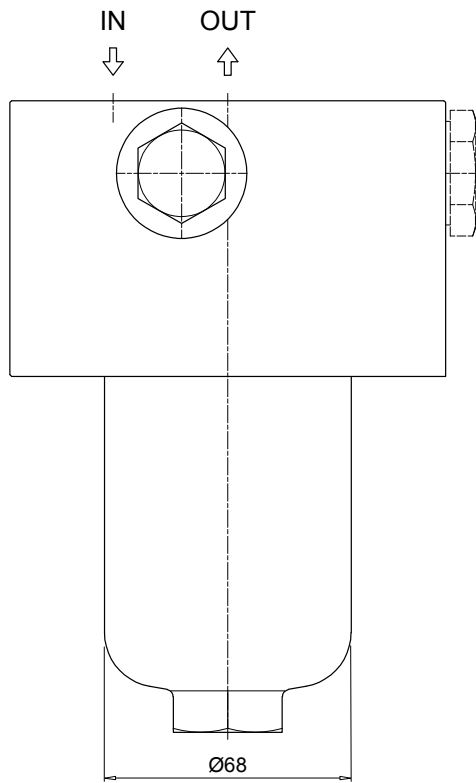
| Seals | Element Δp | HP050 | HP065 | HP135 | Execution |
|--------------|------------------|-------|-------|-------|-------------------------------|
| A NBR | N 20 bar | • | • | • | P01 MP Filtri standard |
| V FPM | H 210 bar | | • | • | Pxx Customized |
| | S 210 bar | • | | | |

ACCESSORIES

| Differential indicators | page | | page |
|---|---------|---|------|
| DEA Electrical differential indicator | 577 | DLE Electrical / visual differential indicator | 580 |
| DEH Hazardous area electronic differential indicator | 577-578 | DTA Electronic differential indicator | 581 |
| DEM Electrical differential indicator | 578-579 | DVA Visual differential indicator | 581 |
| DLA Electrical / visual differential indicator | 579-580 | DVM Visual differential indicator | 581 |

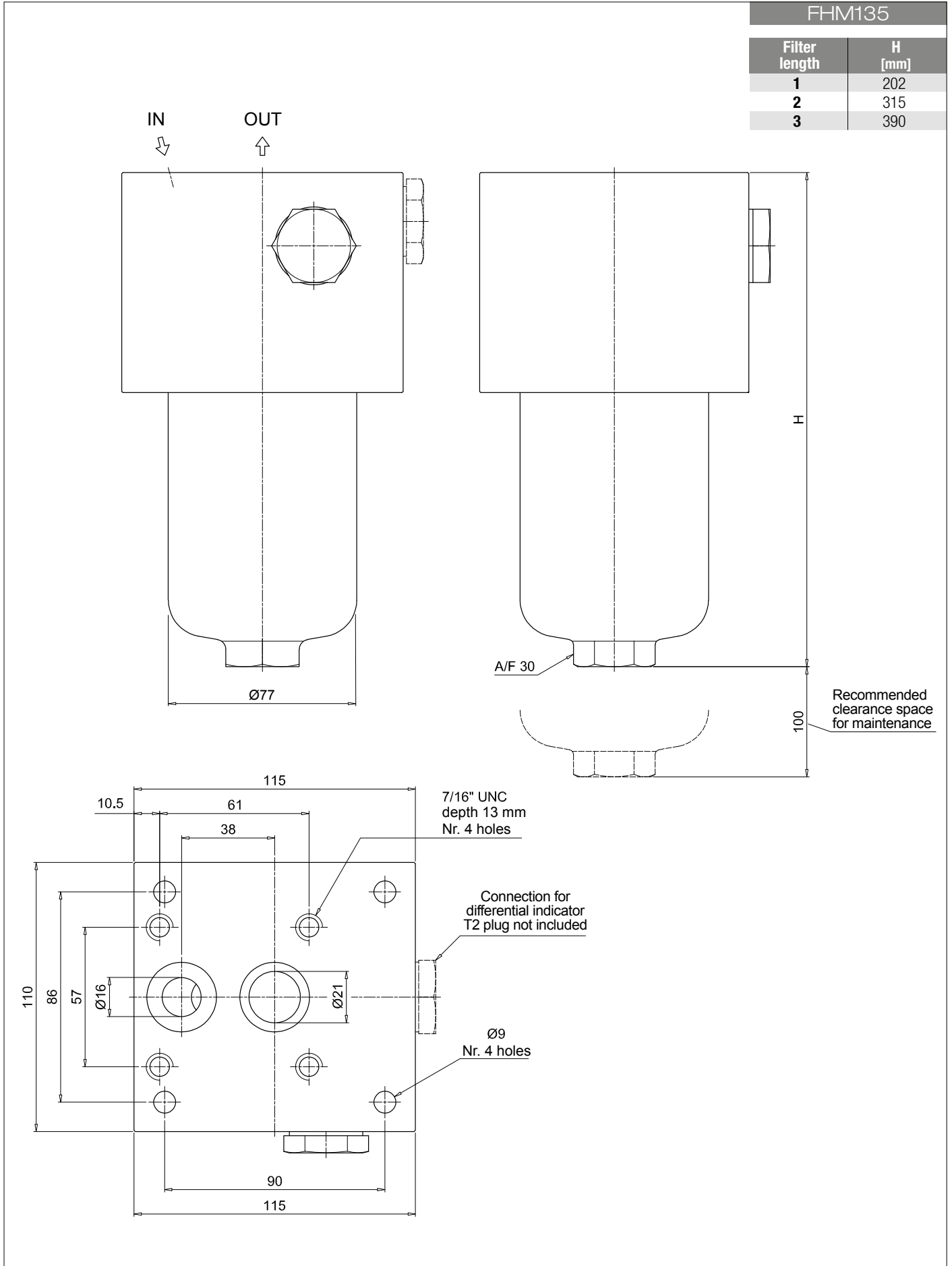
| Additional features | page |
|---------------------|------|
| T2 Plug | 582 |

| FHM050 | | FHM065 | |
|---------------|--------|---------------|--------|
| Filter length | H [mm] | Filter length | H [mm] |
| 1 | 154 | 1 | 162 |
| 2 | 191 | 2 | 193 |
| 3 | 233 | 3 | 295 |
| 4 | 281 | | |
| 5 | 403 | | |



FHM FHM050 - FHM065 - FHM135

Dimensions



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 |
| 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 |

| Element Δp | | Valves: FHM320 | | | | FHM500 | | | |
|------------|---------|----------------|---|---|---|--------|---|---|---|
| | | S | B | T | D | S | B | T | D |
| N | 20 bar | | • | | • | | | | • |
| H | 210 bar | • | | • | | | | | |
| S | 210 bar | | | | | • | | • | |

| Execution | Filter length | | | | |
|------------|---------------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| P01 | • | • | • | • | • |
| P02 | | | | • | • |
| Pxx | | | | | |

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 | HP320 | HP500 |
|------------|---------|-------|
| N | 20 bar | • |
| H | 210 bar | • |
| S | 210 bar | • |

| Execution | |
|------------|--------------------|
| P01 | MP Filtri standard |
| Pxx | Customized |

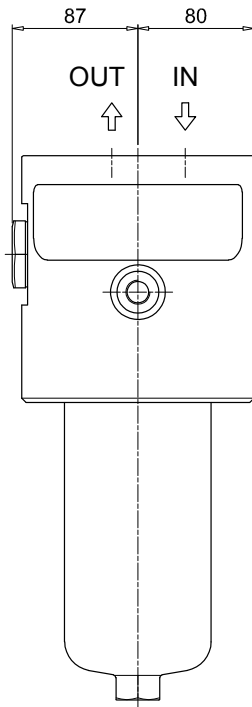
ACCESSORIES

| Differential indicators | page | | page |
|---|---------|---|------|
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| DEH Hazardous area electronic differential indicator | 577-578 | DTA Electronic differential indicator | 581 |
| DEM Electrical differential indicator | 578-579 | DVA Visual differential indicator | 581 |
| DLA Electrical / visual differential indicator | 579-580 | DVM Visual differential indicator | 581 |

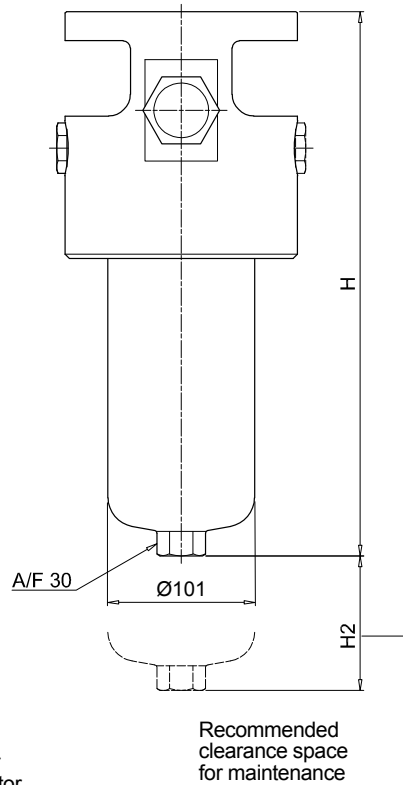
| Additional features | page |
|---------------------|------|
| T2 Plug | 582 |

FHM320

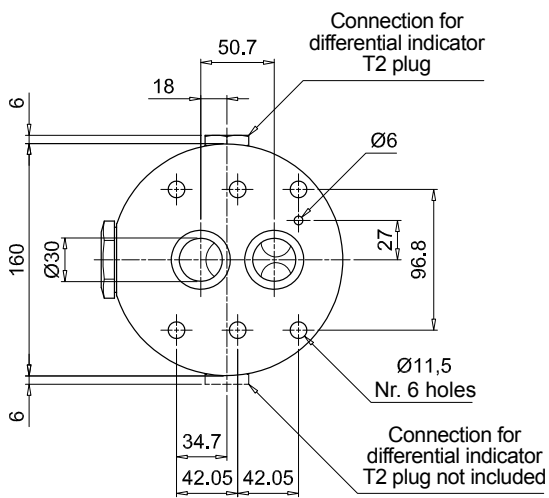
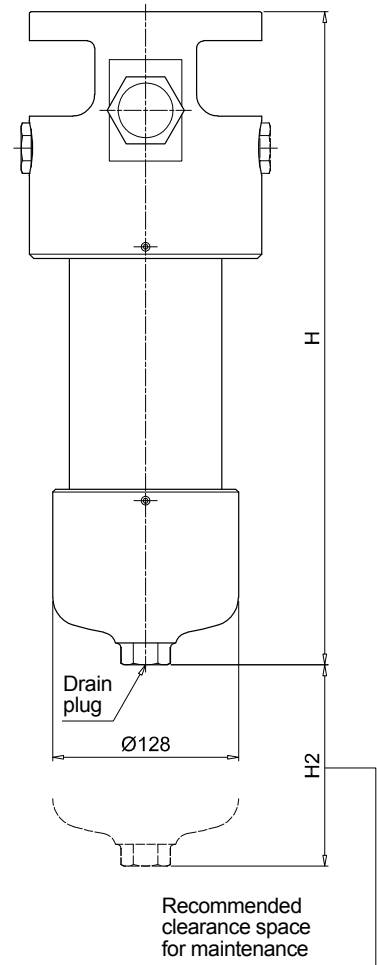
| Filter length | H [mm] | H2 [mm] | |
|---------------|--------|---------------|---------------|
| | | Execution P01 | Execution P02 |
| 1 | 293 | 150 | - |
| 2 | 416 | 150 | - |
| 3 | 548 | 150 | - |
| 4 | 702 | 150 | 550 |



Length 1 - 2 - 3



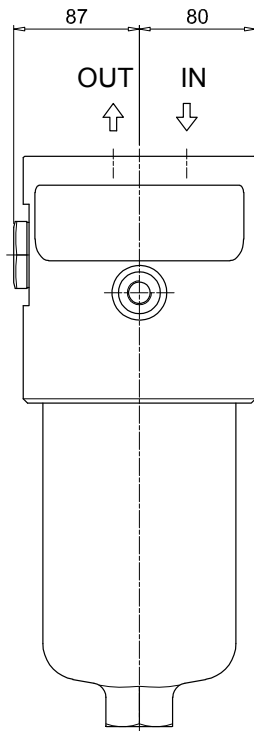
Length 4



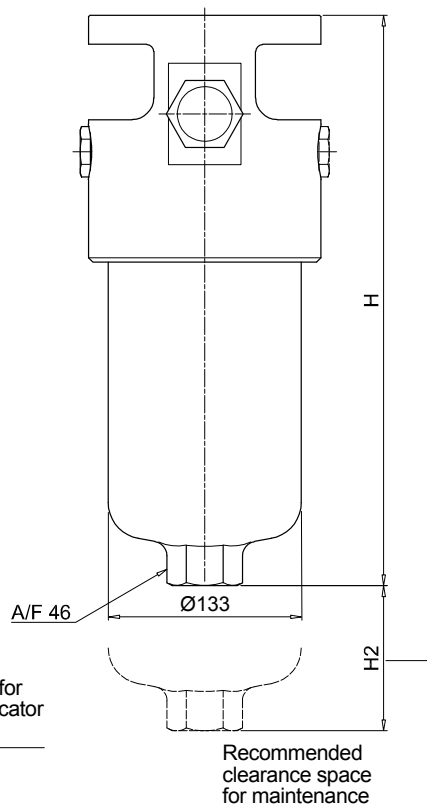
Dimensions

FHM500

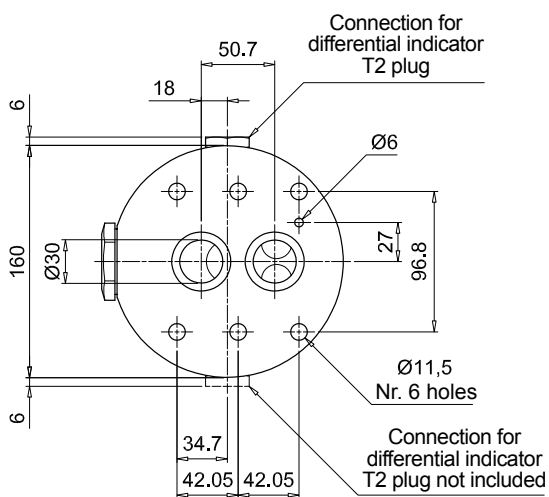
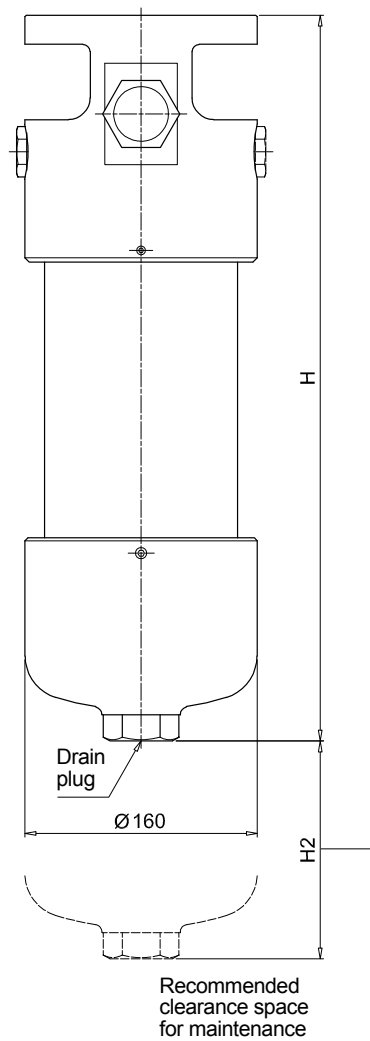
| Filter length | H [mm] | H2 [mm] | |
|---------------|--------|---------------|---------------|
| | | Execution P01 | Execution P02 |
| 1 | 355 | 150 | - |
| 2 | 445 | 150 | - |
| 3 | 521 | 150 | - |
| 4 | 679 | 150 | 480 |
| 5 | 845 | 150 | 650 |



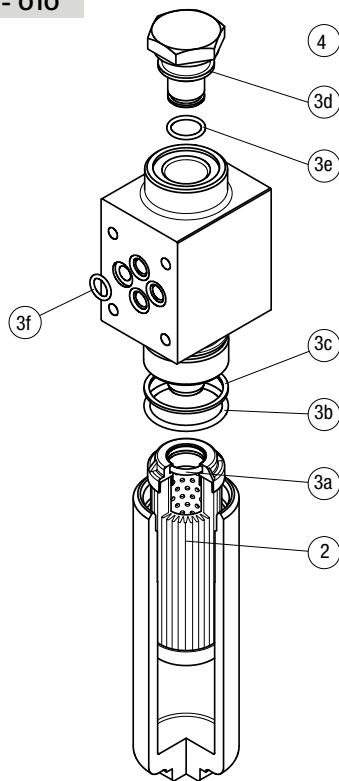
Length 1 - 2 - 3



Length 4 - 5

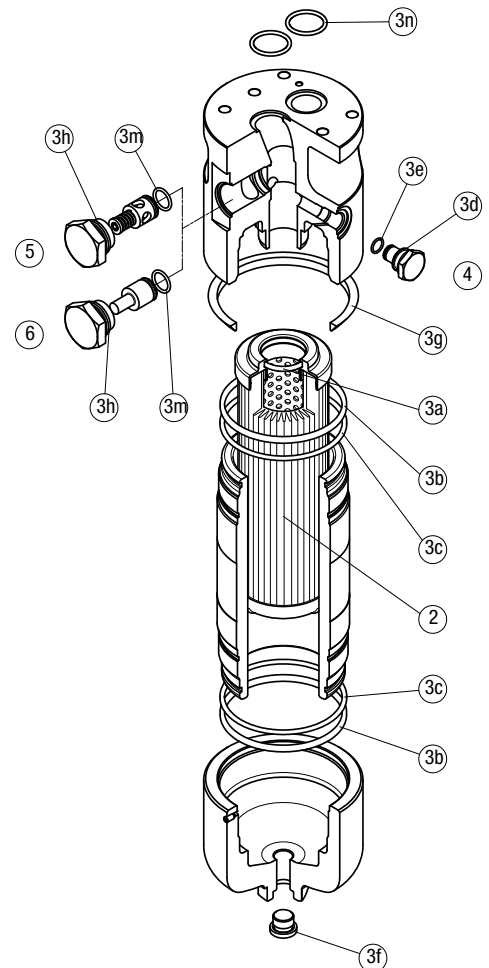


FHM 006 - 007 - 010



| 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 |