Return Line Filter HF4R
up to 450 l/min, up to 10 bar

1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head, filter bowl and a bolt-on cover plate.

Standard equipment:

- with bypass valve
- connection for a clogging indicator

1.2 FILTER ELEMENTS

HYDAC filter elements are validated and their quality is constantly monitored according to the following standards:

- ISO 2941
- ISO 2942
- ISO 2943
- ISO 3724
- ISO 3968
- ISO 11170
- ISO 16889

Filter elements are available with the following pressure stability values:

Betamicron® (BN):	10 bar
Stainl. steel wire mesh (W/HC):	10 bar
Paper (P)	10 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure	10 bar
Fatigue strength	At nominal pressure 10^6 cycles from 0 to nominal pressure
Temperature range	-30 °C to +100 °C
Material of filter head	Aluminium
Material of filter bowl	Steel
Type of clogging indicator	VMF (return line indication)
Pressure setting of the clogging indicator	2 bar (others on request)
Bypass cracking pressure	3 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 MOUNTING

As inline filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Without bypass valve
- Without port (no clogging indicator)

1.7 SPARE PARTS

See Original Spare Parts List

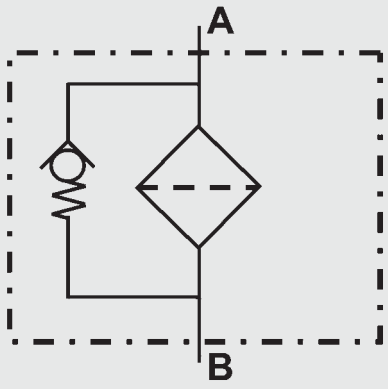
1.8 CERTIFICATES AND APPROVALS

On request

1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- Hydraulic oils H to HLPD DIN 51524
- Lubrication oils DIN 51517, API, ACEA, DIN 51515, ISO 6743
- Compressor oils DIN 51506
- Biodegradable operating fluids VDMA 24568 HETG, HEES, HEPG
- Fire-resistant fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

Symbol for hydraulic systems



2. MODEL CODE (also order example)

HF4R BN 09 G 3 C 1 . X /12 V-B6

2.1 COMPLETE FILTER

Filter type
HF4R

Filter material of elements
BN Betamicron® (BN)
W Wire mesh
P Paper

Size of filter or element
09 9"
18 18"
27 27"

Port
G threaded port
F flange port

Filtration rating in µm
BN : 3, 5, 10, 20
W/HC : 25, 74, 149
P : 10, 20

Type of clogging indicator
W without port (no clogging indicator)
A plastic blanking plug in indicator port
B visual
C electrical
D visual and electrical
(for other clogging indicators, see brochure no. 7.050../..)
J electrical switch (Brad Harrison 5 Pin Mini)
J4 electrical switch (Brad Harrison 4 Pin Micro)

Type code
1 1 inlet
2 2 inlets

Modification number
X the latest version is always supplied

Supplementary details
0 BSPP 1¼"
3 NPT 1½"
12 SAE-24-O-ring boss
16 SAE 1½" flange (210 bar)

B. bypass cracking pressure (e.g. B1 = 1 bar); no details = without bypass valve
L... light with appropriate voltage (24, 48, 110, 220 Volt)
LED 2 light emitting diodes up to 24 Volt
(only for clogging indicator type "D")
V FPM seals
W suitable for HFA and HFC emulsions

2.2 REPLACEMENT ELEMENT

5.03.09 D 03 BN /-V

Size
09 9"
18 18"
27 27"

Type
D

Filtration rating in µm
BN : 03, 05, 10, 20
W/HC : 25, 74, 149
P : 10, 20

Filter material
BN, W/HC, P

Supplementary details
V, W (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VMF 2 D . X /-L24

Type of indicator
VMF return line pressure indicator

Pressure setting
2 standard 2 bar, others on request

Type of clogging indicator
D (see point 2.1)

Modification number
X the latest version is always supplied

Supplementary details
L..., LED, V, W (for descriptions, see point 2.1)

3. FILTER CALCULATION / SIZING

The total pressure drop of a filter at a certain flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{total} = \Delta p_{housing} + \Delta p_{element}$$

$$\Delta p_{housing} = \text{(see Point 3.1)}$$

$$\Delta p_{element} = Q \cdot \frac{SK^*}{1000} \cdot \frac{viscosity}{30}$$

(*see point 3.2)

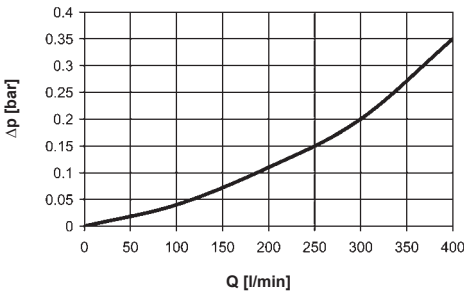
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

3.1 Δp-Q HOUSING CURVES BASED ON ISO 3968

The housing curves apply to mineral oil with a density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/s. In this case, the differential pressure changes proportionally to the density.

HF4R

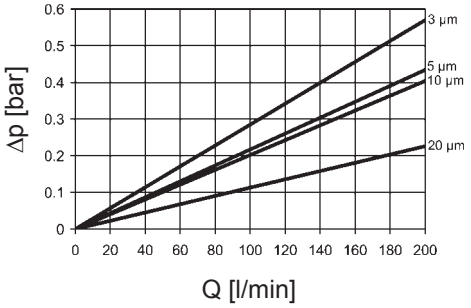


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

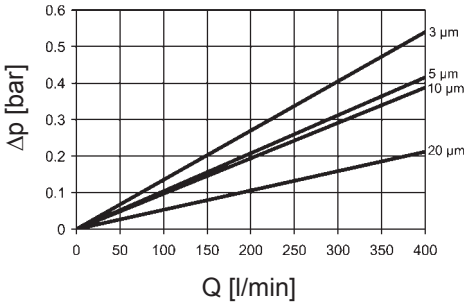
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

HF4R	BN				W
	3 µm	5 µm	10 µm	20 µm	-
09	2.85	2.17	2.02	1.13	0.128
18	1.35	1.04	0.97	0.53	0.073
27	0.88	0.67	0.62	0.35	0.036

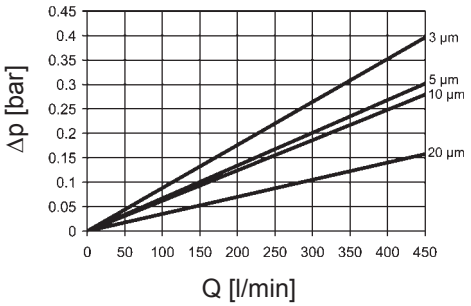
09 BN:



18 BN:



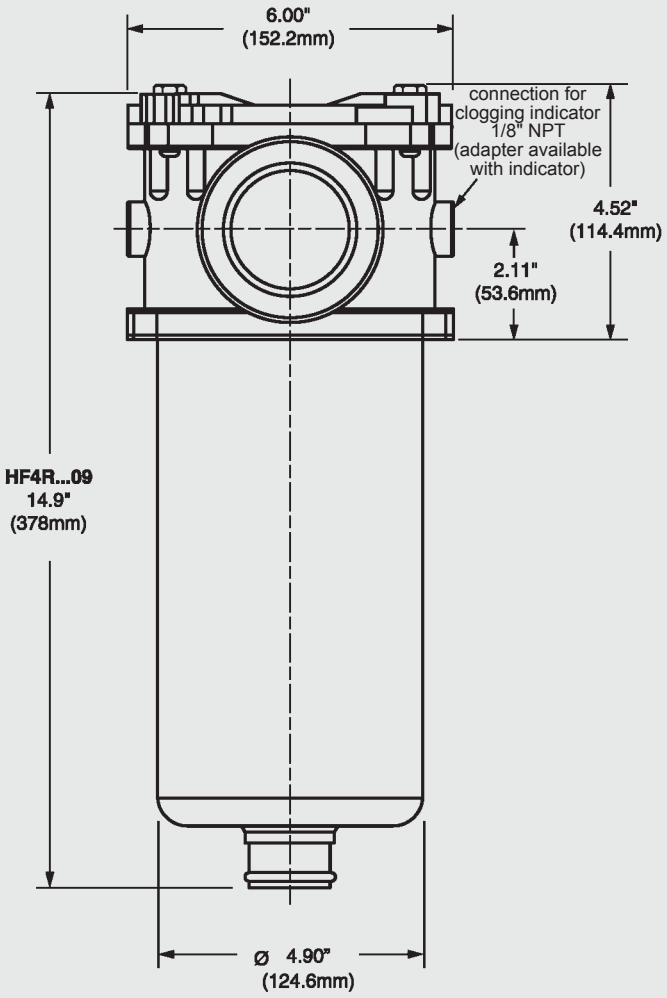
27 BN:



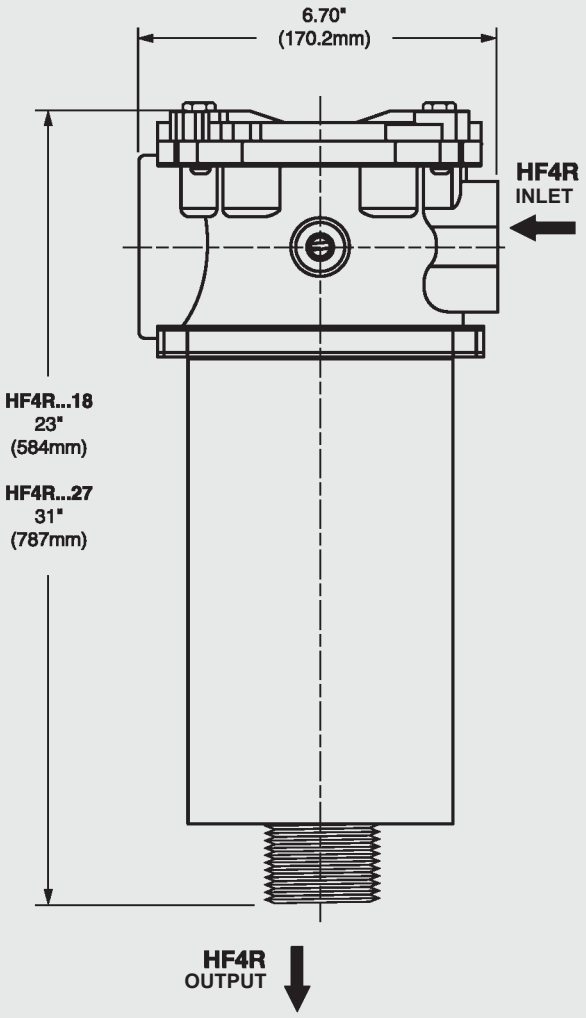
4. DIMENSIONS

HF4R

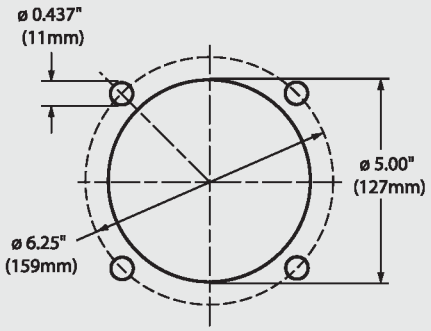
Size 9



Size 18 and 27



Mounting specifications



HF4R	Weight incl. element [kg]
09	4.53
18	6.58
27	8.44

NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC FILTERTECHNIK GMBH
Industriegebiet
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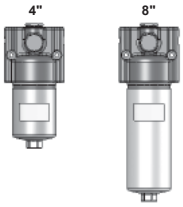
Fax: 0 68 97 / 509-300
Internet: www.hydac.com
E-mail: filter@hydac.com

Inline Filter or Pressure Filter for Manifold Mounting HF2P

up to 100 l/min, up to 280 bar



1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head and a screw-in filter bowl.

Standard equipment:

- bypass valve
- connection for a clogging indicator

1.2 FILTER ELEMENTS

HYDAC filter elements are validated and their quality is constantly monitored according to the following standards:

- ISO 2941
- ISO 2942
- ISO 2943
- ISO 3724
- ISO 3968
- ISO 11170
- ISO 16889

Filter elements are available with the following pressure stability values:

Betamicron® (BN): 20 bar
Betamicron® (BH): 210 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure	280 bar
Fatigue strength	At nominal pressure 10^6 cycles from 0 to nominal pressure
Temperature range	-30 °C to +100 °C
Material of filter head	EN-GJS
Material of filter bowl	Steel
Type of clogging indicator	VD (differential pressure measurement up to 420 bar operating pressure)
Pressure setting of the clogging indicator	5 bar (others on request)
Bypass cracking pressure	6 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 INSTALLATION

As inline and manifold-mounted filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Without bypass valve
- Without port (no clogging indicator)

1.7 SPARE PARTS

See Original Spare Parts List

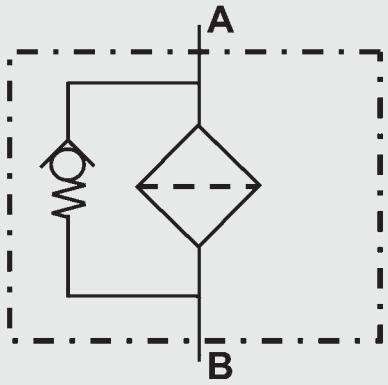
1.8 CERTIFICATES AND APPROVALS

On request

1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- Hydraulic oils H to HLPD DIN 51524
- Lubrication oils DIN 51517, API, ACEA, DIN 51515, ISO 6743
- Compressor oils DIN 51506
- Biodegradable operating fluids VDMA 24568 HETG, HEES, HEPG
- Fire-resistant fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

Symbol for hydraulic systems



2. MODEL CODE (also order example)

HF2P BN 04 G 3 C 1 . X /12 V-B6

2.1 COMPLETE FILTER

Filter type
HF2P

Filter material of element
BN Betamicron® (BN)
BH Betamicron® (BH)

Size of filter or element
04 4"
08 8"

Port
G thread connection
P manifold mounting

Filtration rating in µm
BN : 3, 6, 12, 25
BH : 3, 6, 10, 17

Type of clogging indicator
W without port (no clogging indicator)
A plastic blanking plug in indicator port
B visual
C electrical
D visual and electrical
(for other clogging indicators, see brochure no. 7.050../..)
J electrical switch (Brad Harrison 5 Pin Mini)
J4 electrical switch (Brad Harrison 4 Pin Micro)

Type code
1

Modification number
X the latest version is always supplied

Supplementary details
no details = manifold mounting
0 G ¾" BSPP
12 SAE-12-O-ring boss

B. bypass cracking pressure (z.B. B3 = 3 bar); without details = without bypass valve
L... light with appropriate voltage (24, 48, 110, 220 Volt) (only for clogging indicators type "D")
LED 2 light-emitting diodes up to 24 Volt
V FPM seals
W suitable for HFA and HFC emulsions

2.2 REPLACEMENT ELEMENT

1.07.04 D 03 BN /-V

Size
04 4"
08 8"

Type
D

Filtration rating in µm
BN: 03, 06, 12, 25
BH: 03, 06, 10, 17

Filter material
BN, BH

Supplementary details
V (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VD 5 D . X /-L24

Type
VD differential pressure indicator up to 420 bar operating pressure

Pressure setting
5 standard 5 bar, others on request

Type of clogging indicator
D (see point 2.1)

Modification number
X the latest version is always supplied

Supplementary details
L..., LED, V, W (for descriptions, see point 2.1)

3. FILTER CALCULATION / SIZING

The total pressure drop of a filter at a certain flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{total} = \Delta p_{housing} + \Delta p_{element}$$

$$\Delta p_{housing} = \text{(see Point 3.1)}$$

$$\Delta p_{element} = Q \cdot \frac{SK^*}{1000} \cdot \frac{viscosity}{30}$$

(*see Point 3.2)

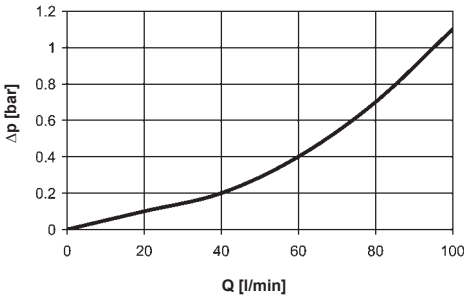
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

3.1 Δp-Q HOUSING CURVES BASED ON ISO 3968

The housing curves apply to mineral oil with a density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/s. In this case, the differential pressure changes proportionally to the density.

HF2P

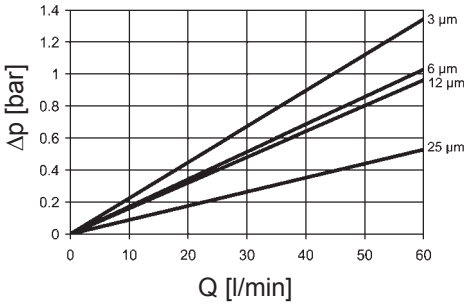


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

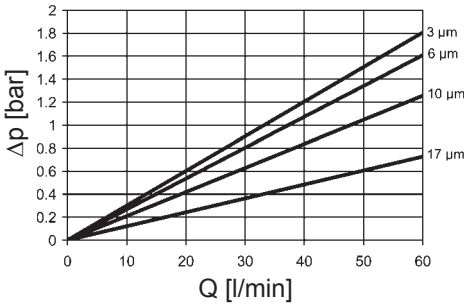
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

HF2P	BN				BH			
	3 µm	6 µm	12 µm	25 µm	3 µm	6 µm	10 µm	17 µm
04	22.40	17.14	16.03	8.81	30.11	26.81	20.93	12.12
08	11.14	8.45	7.96	4.41	14.57	13.10	10.16	5.88

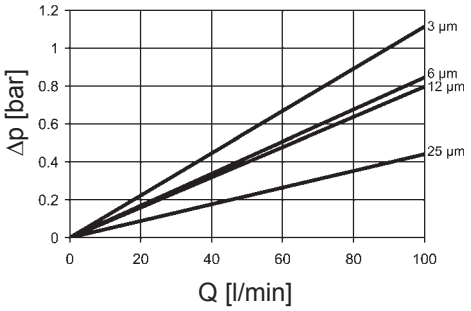
04 BN:



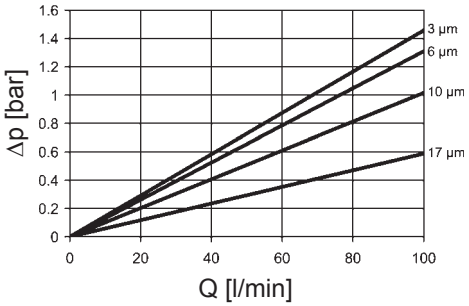
04 BH:



08 BN:

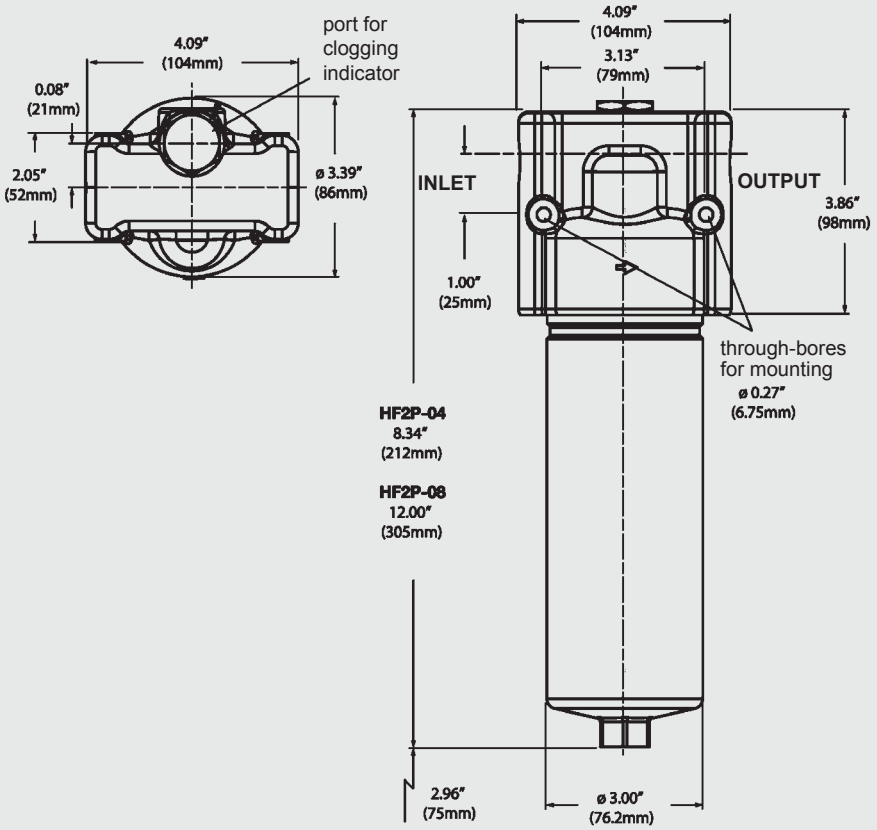


08 BH:



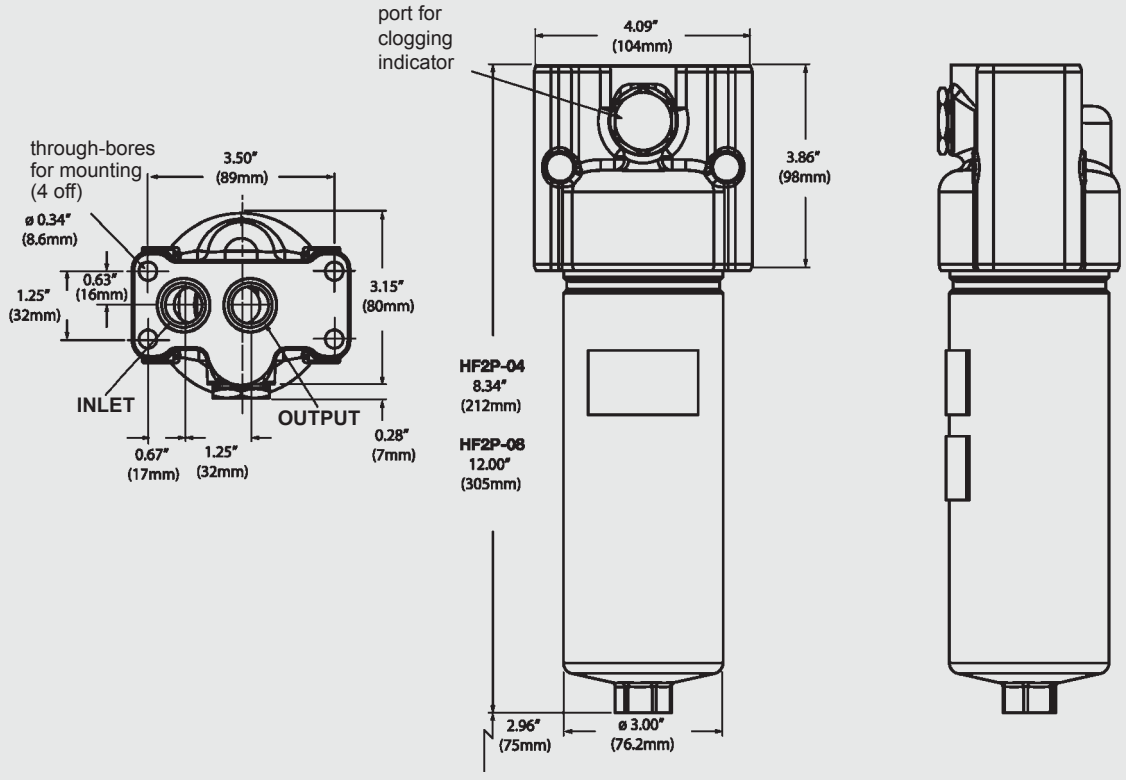
4. DIMENSIONS

HF2P



HF2P	Weight incl. element [kg]
04	4.58
08	6.08

MANIFOLD MOUNTING



NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC FILTERTECHNIK GMBH
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E-mail: filter@hydac.com

Inline Filter or Pressure Filter for Manifold Mounting HF4P

up to 450 l/min, up to 350 bar

1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head and a screw-on filter bowl.

Standard equipment:

- bypass valve
- connection for a clogging indicator

1.2 FILTER ELEMENTS

HYDAC filter elements are validated and their quality is constantly monitored according to the following standards:

- ISO 2941
- ISO 2942
- ISO 2943
- ISO 3724
- ISO 3968
- ISO 11170
- ISO 16889

Filter elements are available with the following pressure stability values:

Betamicron® (BN):	20 bar
Betamicron® (BH):	210 bar
Wire mesh (W):	20 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure	420 bar
Fatigue strength	At nominal pressure 10^6 cycles from 0 to nominal pressure
Temperature range	-30 °C to +100 °C
Material of filter head	EN-GJS
Material of filter bowl	Steel
Type of clogging indicator	VD (differential pressure measurement up to 420 bar operating pressure)
Pressure setting of the clogging indicator	5 bar (others on request)
Bypass cracking pressure	6 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 INSTALLATION

As inline filter or manifold mounted filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Without bypass valve
- Without port (no clogging indicator)

1.7 SPARE PARTS

See Original Spare Parts List

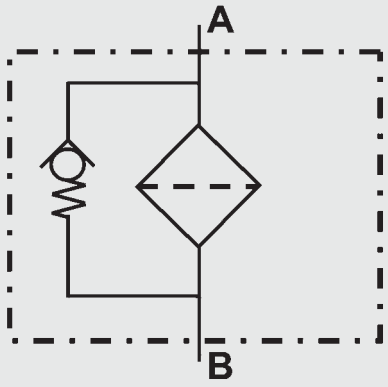
1.8 CERTIFICATES AND APPROVALS

On request

1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- Hydraulic oils H to HLPD DIN 51524
- Lubrication oils DIN 51517, API, ACEA, DIN 51515, ISO 6743
- Compressor oils DIN 51506
- Biodegradable operating fluids VDMA 24568 HETG, HEES, HEPG
- Fire-resistant fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

Symbol for hydraulic systems



2. MODEL CODE (also order example)

HF4P BN 09 G 3 C 1 . X /12 V-B6

2.1 COMPLETE FILTER

Filter type
HF4P

Filter material of element
BN Betamicron® (BN)
BH Betamicron® (BH)
W Wire mesh

Size of filter or element
09 9"
18 18"
27 27"

Port
G thread port
F flange port
P manifold mounting

Filtration rating in µm
BN, BH : 3, 5, 10, 20
W : 25, 74, 149

Type of clogging indicator
W without port (no clogging indicator)
A plastic blanking plug in indicator port
B visual
C electrical
D visual and electrical
(for other clogging indicators, see brochure no. 7.050../..)
J electrical switch (Brad Harrison 5 Pin Mini)
J4 electrical switch (Brad Harrison 4 Pin Micro)

Type code
1

Modification number
X the latest version is always supplied

Supplementary details
no details = manifold mounting
0 BSPP 1½"
12 SAE-24-O-ring boss
16 SAE 1½" flange (210 or 420 bar)

B. bypass cracking pressure (e.g. B6 = 6 bar); without details = without bypass valve
L... light with appropriate voltage (24, 48, 110, 220 Volt) (only for clogging indicator type "D")
LED 2 light emitting diodes 24 Volt
V FPM seals
W suitable for HFA and HFC emulsions

2.2 REPLACEMENT ELEMENT

5.03.09 D 03 BN /-V

Size
09 9"
18 18"
27 27"

Type
D

Filtration rating in µm
BN, BH : 03, 05, 10, 20
W : 25, 74, 149

Filter material
BN, BH, W

Supplementary details
V (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VD 5 D . X /-L24

Type
VD differential pressure indicator up to 420 bar operational pressure

Pressure setting
5 standard 5 bar, others on request

Type of clogging indicator
D (see point 2.1)

Modification number
X the latest version is always supplied

Supplementary details
L..., LED, V, W (for descriptions, see point 2.1)

3. FILTER CALCULATION / SIZING

The total pressure drop of a filter at a certain flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{total} = \Delta p_{housing} + \Delta p_{element}$$

$$\Delta p_{housing} = \text{(see Point 3.1)}$$

$$\Delta p_{element} = Q \bullet \frac{SK^*}{1000} \bullet \frac{viscosity}{30}$$

(*see Point 3.2)

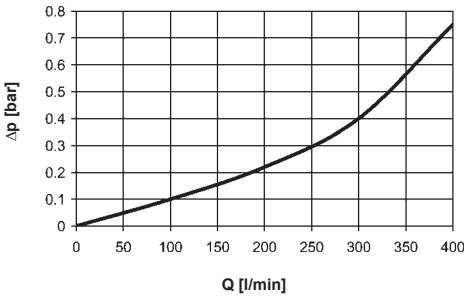
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

3.1 Δp-Q HOUSING CURVES BASED ON ISO 3968

The housing curves apply to mineral oil with a density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/s.
In this case, the differential pressure changes proportionally to the density.

HF4P

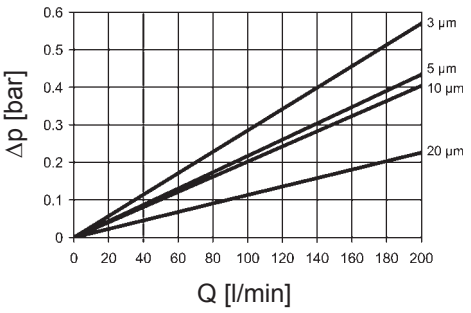


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

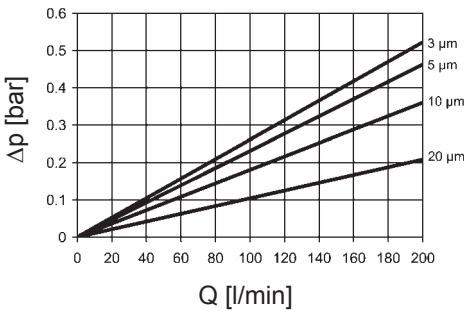
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

HF4P	BN				BH				W
	3 µm	5 µm	10 µm	20 µm	3 µm	5 µm	10 µm	20 µm	-
09	2.85	2.17	2.02	1.13	2.61	2.31	1.80	1.04	0.128
18	1.35	1.04	0.97	0.53	1.21	1.05	0.84	0.49	0.073
27	0.88	0.67	0.62	0.35	0.80	0.71	0.55	0.32	0.036

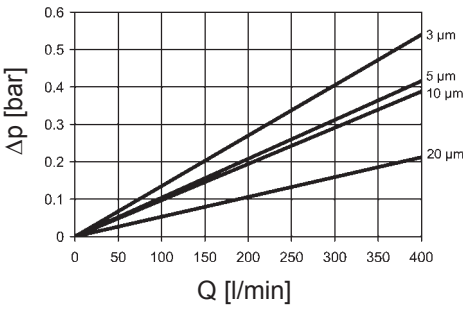
09 BN:



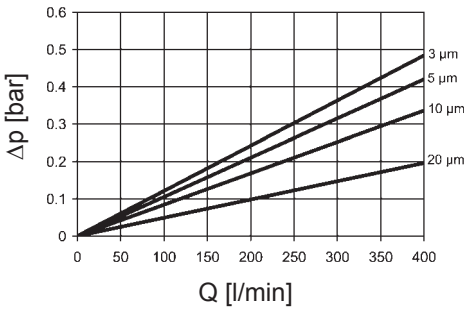
09 BH:



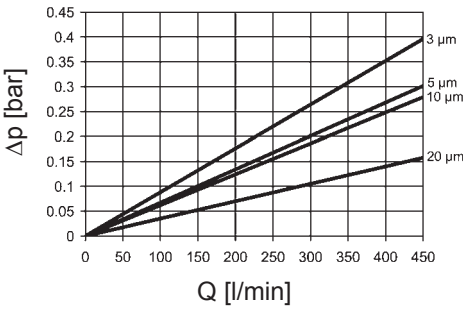
18 BN:



18 BH:



27 BN:



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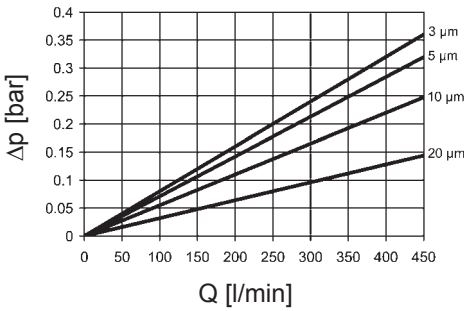
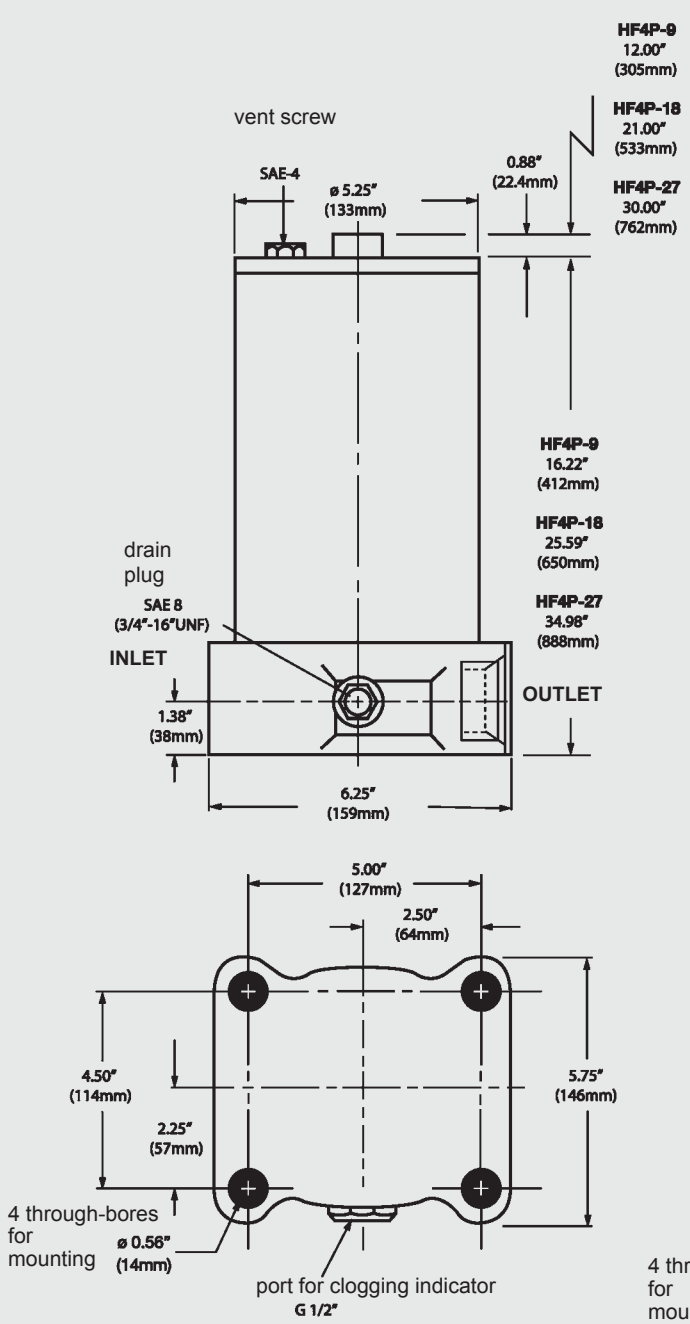


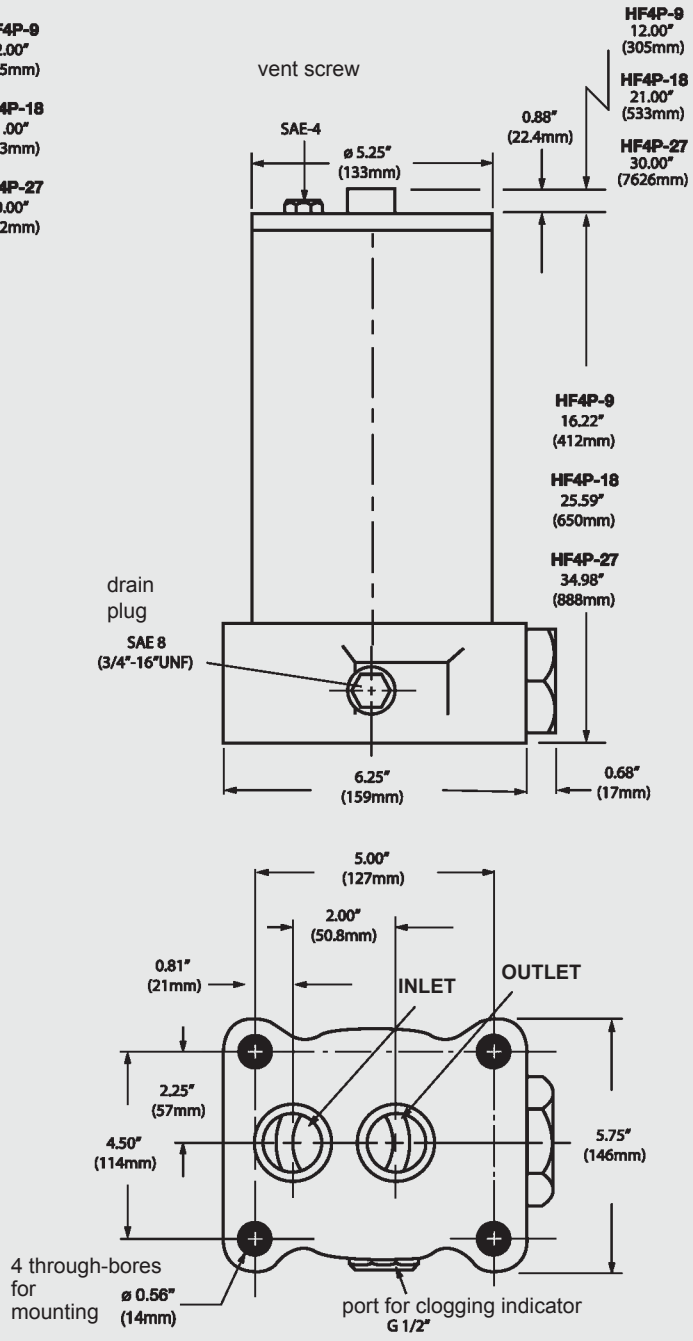
4. DIMENSIONS

HF4P

As inline filter



As manifold mounted filter



HF4P	Weight incl. element [kg]
09	26.94
18	35.97
27	47.90

NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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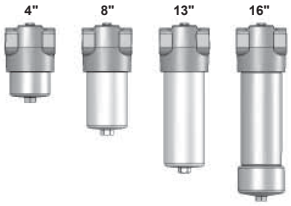
Internet: www.hydac.com
E-mail: filter@hydac.com

Inline Filter HF3P

up to 450 l/min, up to 420 bar



1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head and a screw-in filter bowl.

Standard equipment:

- bypass valve
- connection for a clogging indicator

1.2 FILTER ELEMENTS

HYDAC filter elements are validated and their quality is constantly monitored according to the following standards:

- ISO 2941
- ISO 2942
- ISO 2943
- ISO 3724
- ISO 3968
- ISO 11170
- ISO 16889

Filter elements are available with the following pressure stability values:

Betamicron® (BN): 20 bar
Betamicron® (BH): 210 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure	420 bar
Fatigue strength	At nominal pressure 10^6 cycles from 0 to nominal pressure
Temperature range	-30 °C to +100 °C
Material of filter head	EN-GJS
Material of filter bowl	Steel
Type of clogging indicator	VD (differential pressure measurement up to 420 bar operating pressure)
Pressure setting of the clogging indicator	5 bar (others on request)
Bypass cracking pressure	6 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 INSTALLATION

As inline filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Without bypass valve
- Without port (no clogging indicator)

1.7 SPARE PARTS

See Original Spare Parts List

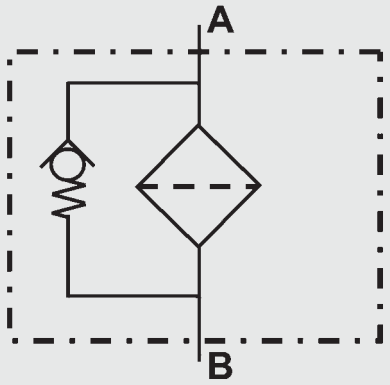
1.8 CERTIFICATES AND APPROVALS

On request

1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- Hydraulic oils H to HLPD DIN 51524
- Lubrication oils DIN 51517, API, ACEA, DIN 51515, ISO 6743
- Compressor oils DIN 51506
- Biodegradable operating fluids VDMA 24568 HETG, HEES, HEPG
- Fire-resistant fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

Symbol for hydraulic systems



2. MODEL CODE (also order example)

HF3P BN 08 G 3 C 1 . X /12 V-B6

2.1 COMPLETE FILTER

Filter type
HF3P

Filter material of element
BN Betamicron® (BN)
BH Betamicron® (BH)

Size of filter or element
04 4"
08 8"
13 13"
16 16"

Port
G threaded port
F flange port

Filtration rating in µm
BN : 3, 6, 12, 25
BH : 3, 6, 10, 17

Type of clogging indicator
W without port (no clogging indicator)
A steel blanking plug in indicator port
B visual
C electrical
D visual and electrical
(for other clogging indicators, see brochure no. 7.050../..)
J electrical switch (Brad Harrison 5 Pin Mini)
J4 electrical switch (Brad Harrison 4 Pin Micro)

Type code
1 2" flange (420 bar) or SAE 24" or G ½
2 1½" flange (210 bar)
3 1" SAE 16 or G 1" thread

Modification number
X the latest version is always supplied

Supplementary details
0 G 1½" or G 1 BSPP
12 SAE 24" or 16" O-ring boss
16 SAE 2" flange (420 bar) or 1½" (210 bar)
B. bypass cracking pressure (e.g. B3 = 3 bar); no details = without bypass valve
L... light with appropriate voltage (24, 48, 110, 220 Volt) (only for clogging indicators type "D")
LED 2 light-emitting diodes up to 24 Volt
V FPM seals
W suitable for HFA and HFC emulsions

2.2 REPLACEMENT ELEMENT

1.11.08 D 03 BN /-V

Size
04 4"
08 8"
13 13"
16 16"

Type
D

Filtration rating in µm
BN: 03, 06, 12, 25
BH: 03, 06, 10, 17

Filter material
BN, BH

Supplementary details
V (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VD 5 D . X /-L24

Type of indicator
VD Differential pressure indicator up to 420 bar operating pressure

Pressure setting
5 standard 5 bar, others on request

Type of clogging indicator
D (see point 2.1)

Modification number
X the latest version is always supplied

Supplementary details
L..., LED, V, W (for descriptions, see point 2.1)

3. FILTER CALCULATION / SIZING

The total pressure drop of a filter at a certain flow rate Q is the sum of the housing Δp and the element Δp and is calculated as follows:

$$\Delta p_{total} = \Delta p_{housing} + \Delta p_{element}$$

$$\Delta p_{housing} = \text{(see Point 3.1)}$$

$$\Delta p_{element} = Q \bullet \frac{SK^*}{1000} \bullet \frac{viscosity}{30}$$

(*see Point 3.2)

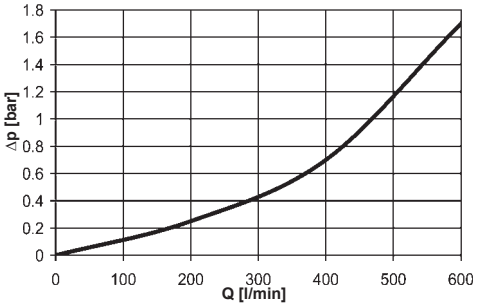
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

3.1 Δp-Q HOUSING CURVES BASED ON ISO 3968

The housing curves apply to mineral oil with a density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/s. In this case, the differential pressure changes proportionally to the density.

HF3P

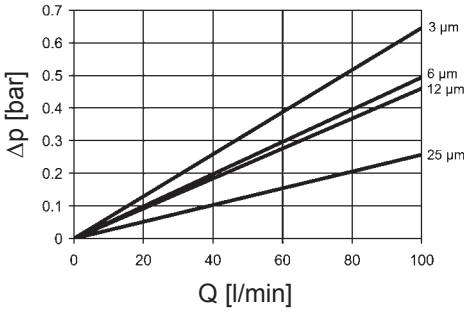


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

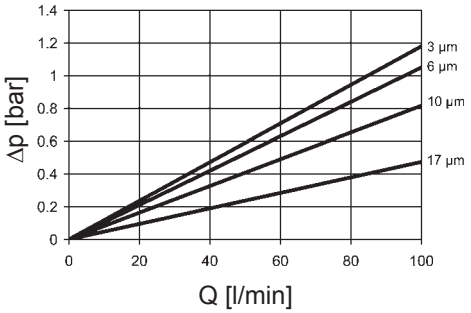
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

HF3P	BN				BH			
	3 µm	6 µm	12 µm	25 µm	3 µm	6 µm	10 µm	17 µm
04	6.46	4.94	4.60	2.57	11.79	10.49	8.16	4.74
08	3.28	2.51	2.43	1.30	5.73	5.10	3.98	2.30
13	1.98	1.52	1.41	0.78	3.44	3.06	2.38	1.38
16	1.51	1.15	1.08	0.60	2.59	2.28	1.80	1.04

04 BN:



04 BH:



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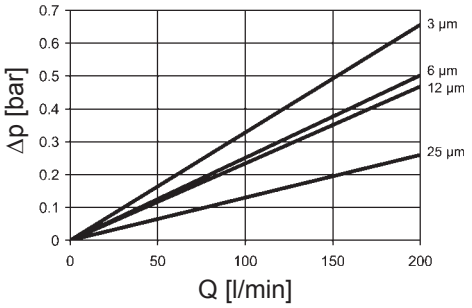

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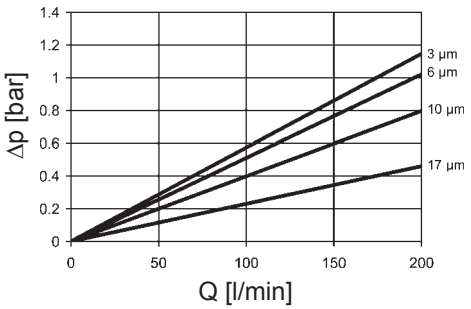
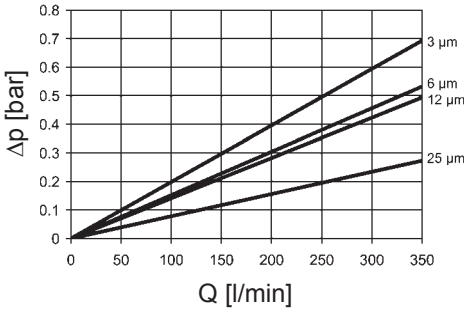
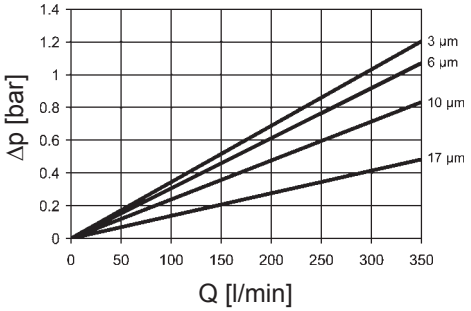


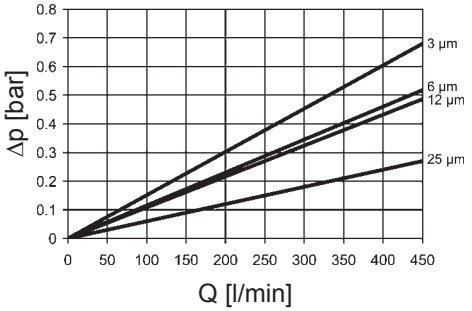
13 BN:



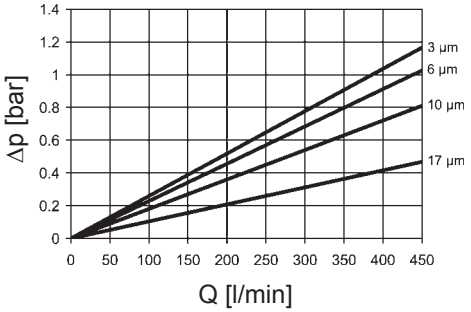
13 BH:



16 BN:

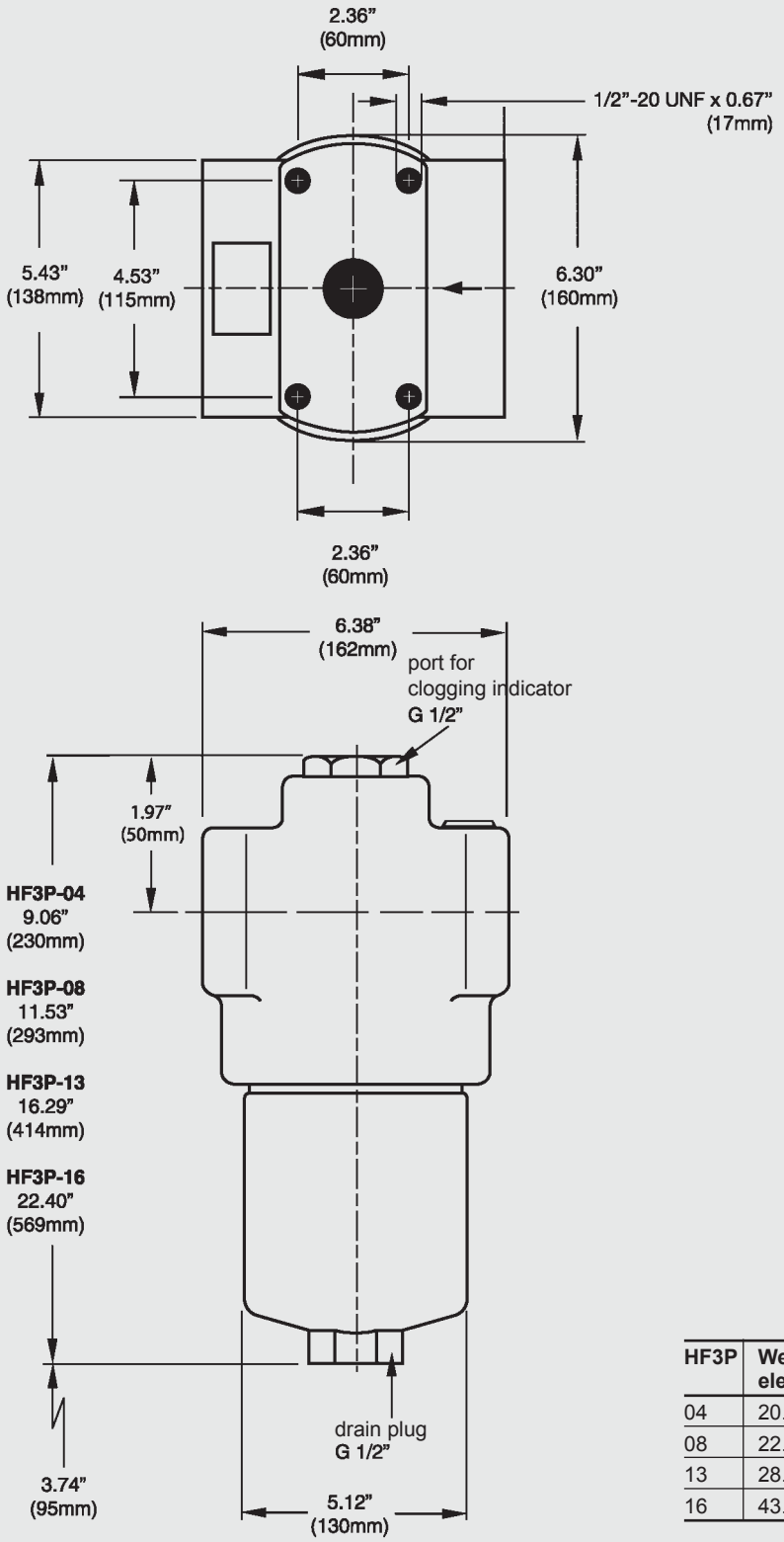


16 BH:



4. DIMENSIONS

HF3P



HF3P	Weight incl. element [kg]
04	20.32
08	22.45
13	28.53
16	43.41

NOTE

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