

TECHNICAL CHARACTERISTICS

The filters of the HF760 and HF761 series are connected to the pressure line of the circuit and protect the system's components against contaminant particles.

The standard filters are supplied with by-pass valve calibrated at 87 psi (6 bar).

HF761 serie differs from the HF760 one because adopts HE K-86 elements.

For applications which need maximum protection of the system, such as servo drives or proportional controls, the filters are equipped with highly resistant filtering elements (versions "HC") and do not have a by-pass valve.

- Flow up to 120 US gpm (450 l/min)
- Maximum working pressure 6090 psi (420 bar)
- High efficiency multilayer system
- Flanged ports SAE 3000 e SAE 6000

MATERIALS

Head	Spheroidal cast iron GS 450-10 UNI ISO 1083
Bowl	Extruded steel
Seals	Buna - Viton
End cap	Zinc plated steel
Inner tube	Zinc plated steel
Filter media	Inorganic micro-fibre glass

FLUID COMPATIBILITY

Conforming to ISO 2943 (Norm ISO 6743/4)

Oil mineral (1)	HH - HL - HM - HR - HV - HG
Water emulsion (1)	HFAE - HFAS
Water glycol (1)	HFC
Syntetic fluid (2)	HS - HFDR - HFDU - HFDS
(1) With Buna seals	
(2) With Viton seals	

FLOW

Flow max.	120 US gpm (450 l/min)
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PRESSURE

Working pressure	6090 psi (420 bar)
Testing pressure	8700 psi (600 bar)
Burst pressure	18275 psi (1260 bar)
Element collapse pressure	290 psi (20 bar) (version LC)
rating (conforming to ISO 2941)	3045 psi (210 bar) (version HC)

BY-PASS VALVE

By-pass setting	87 psi (6 bar)
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OPERATING TEMPERATURE

With Buna seals	-22 ÷ 195 °F (-30 ÷ 90 °C)
With Viton seals	-4 ÷ 230 °F (-20 ÷ 110 °C)

ENDURANCE STRENGTH

Size 20 and 30	1.000.000 cycle 0 ÷ 6090 psi (0 ÷ 420 bar)
Size 40(3)	1.000.000 cycle 0 ÷ 4060 psi (0 ÷ 280 bar)

DEGREE OF FILTRATION

Multi-pass test conforming to ISO 16889 (regulation in force)
Contaminant ISO MTD - final Δp 87 psi (6 bar)

Code	Degree of filtration	Ratio $\beta_{x(c)}$	Percentage of efficiency
FG003	5 μm	$\beta_{5(c)} \geq 200$	99,5 %
FG006	7 μm	$\beta_{7(c)} \geq 200$	99,5 %
FG010	10 μm	$\beta_{10(c)} \geq 200$	99,5 %
FG025	21 μm	$\beta_{21(c)} \geq 200$	99,5 %

Multi-pass test conforming to ISO 4572 (previous regulation)
Contaminant ACFTD - final Δp 87 psi (6 bar)

Code	Degree of filtration	Ratio β_x	Percentage of efficiency
FG003	3 μm	$\beta_3 \geq 200$	99,5 %
FG006	6 μm	$\beta_6 \geq 200$	99,5 %
FG010	10 μm	$\beta_{10} \geq 200$	99,5 %
FG025	25 μm	$\beta_{25} \geq 200$	99,5 %

INDICATORS (4)

Visual differential indicator

Visual electrical differential indicator

Visual electrical differential indicator with thermostat

(3) Special version with endurance strength 1.000.000 cycles from 0 to 420 bar available on request.

(4) Characteristics and dimension pag. 14

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SIZING – PRESSURE DROP

The total pressure drop of the filter is calculated by summing the pressure drop value in the housing to the one filtering element.

Total $\Delta p = \Delta p$ in housing + Δp in element

In filters of series HF760 and HF761 in normal working conditions, the total Δp must not be more than 11 psi (0,75 bar) whereas, for use in harsh conditions, it must be within 14.5 ÷ 22 psi (1 ÷ 1,5 bar).

To establish the values of pressure drop involved, the following pages provide some diagrams with curves referred to the use of mineral oils ISO VG46 with kinematic viscosity of 120 SSU (30 cSt) and density of 7.29 lb/gal (0,856 kg/dm³).

Calculation example

Filter HF760-20.106-AS-FG010-LC-B60-GD-B-DD-G

Flow rate= 12 US gpm (45 l/min)

Kinematic viscosity: 120 SSU (30 cSt)

Oil density : 7.29 lb/gal (0,856 kg/dm³)

Filtering degree: 10 μ m

Data obtained from the diagrams:

Δp in housing = 2.00 psi (0,14 bar) (page 4)

Δp in element = 7,25 psi (0,50 bar) (page 5)

Total $\Delta p = 2.00 + 7.25 = 9.25$ psi (0,64 bar) (Δp is lower than maximum value admitted – therefore sizing is correct)..

If oil with different kinematic viscosity and different density is used, the values obtained from the diagrams will be re-calculated considering the following indications:

1) The pressure drop of the housing is proportional with the oil density, therefore for oil with density different to 7.29 lb/gal (0,856 kg/dm³) the value of the Δp in the head-bowl will be:

$$\Delta p \text{ in housing} = \frac{\Delta p \text{ of diagram (psi)} \cdot \text{Oil density (lb/gal)}}{7.29 \text{ (lb/gal)}} \quad [\text{psi}]$$

Or

$$\Delta p \text{ in housing} = \frac{\Delta p \text{ of diagram (bar)} \cdot \text{Oil density (kg/dm}^3\text{)}}{0,856 \text{ (kg/dm}^3\text{)}} \quad [\text{bar}]$$

2) The pressure drop of the element is proportional with the oil density and kinematic viscosity, therefore for oil with density different to 7.29 lb/gal (0,856 kg/dm³) and kinematic viscosity different to 120 SSU (30 cSt) the value of Δp in the element will be:

$$\Delta p \text{ element} = \Delta p \text{ of diagram (psi)} \cdot \frac{\text{Oil density (lb/gal)}}{7.29 \text{ (lb/gal)}} \cdot \frac{\text{Oil viscosity (SSU)}}{120 \text{ (SSU)}} \quad [\text{psi}]$$

Or

$$\Delta p \text{ element} = \Delta p \text{ of diagram (bar)} \cdot \frac{\text{Oil density (kg/dm}^3\text{)}}{0,856 \text{ (kg/dm}^3\text{)}} \cdot \frac{\text{Oil viscosity (cSt)}}{30 \text{ (cSt)}} \quad [\text{bar}]$$

Now you sum the values of the pressure drop of the housing to the value of the pressure drop of the filtering element, always making sure the total Δp does not exceed the pressure limit of 11 psi (0,75 bar).

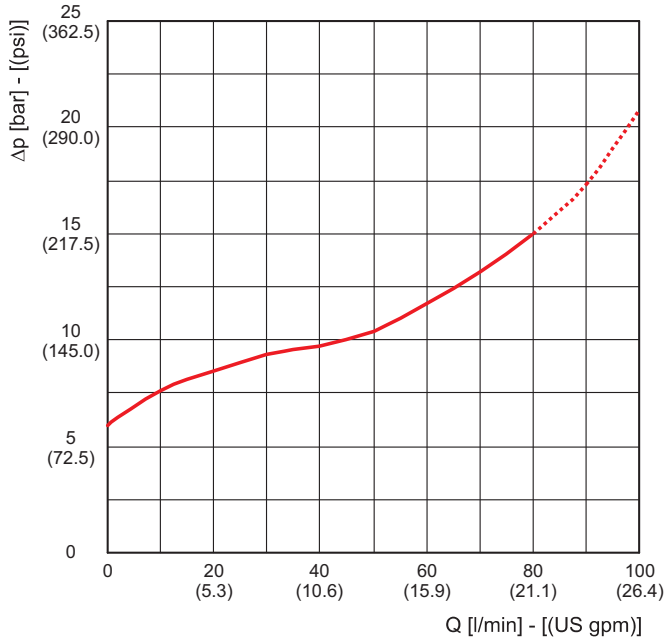
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PRESSURE DROP CURVES THROUGH THE BY-PASS VALVES

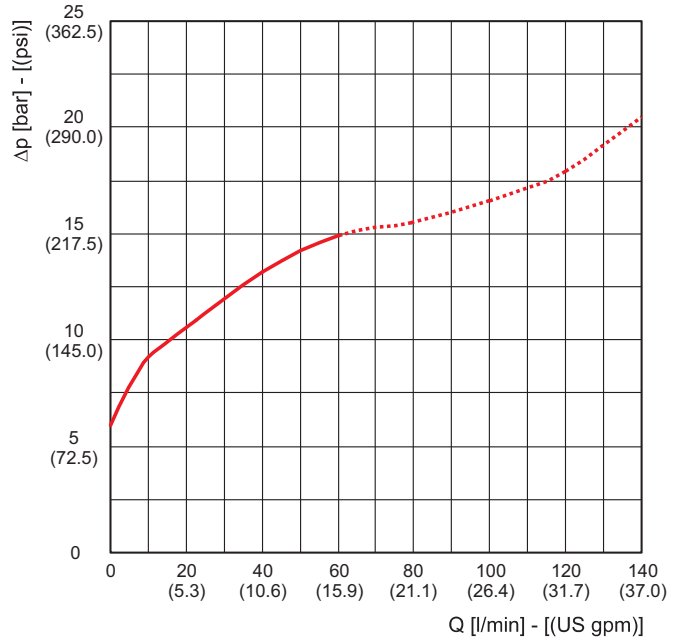
The pressure drop values are directly proportional with the specific weight of the fluid and do not affect the establishment of the total pressure drop of the complete filter.

The curves are obtained in the following conditions:
 Mineral oil type ISO VG46
 Kinematic viscosity 120 SSU (30 cSt)
 Density 7.29 lb/gal (0,856 kg/dm³).

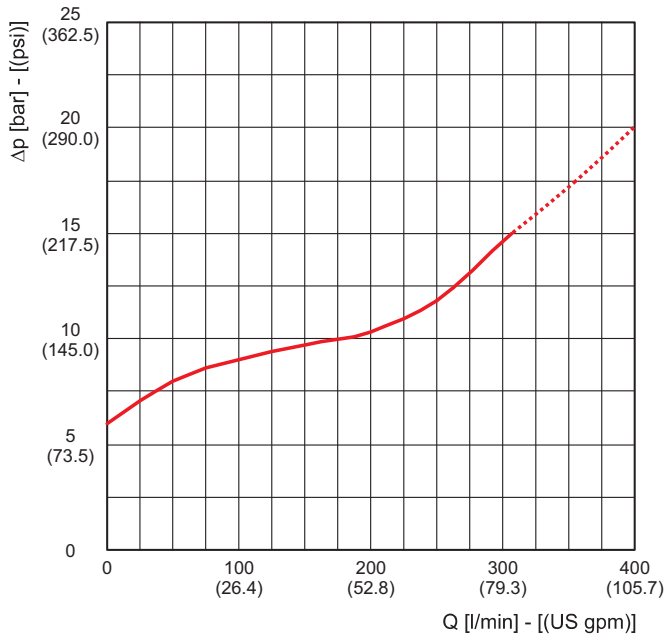
HF760-20



HF760-30 / HF761-30



HF760-40 / HF761-40



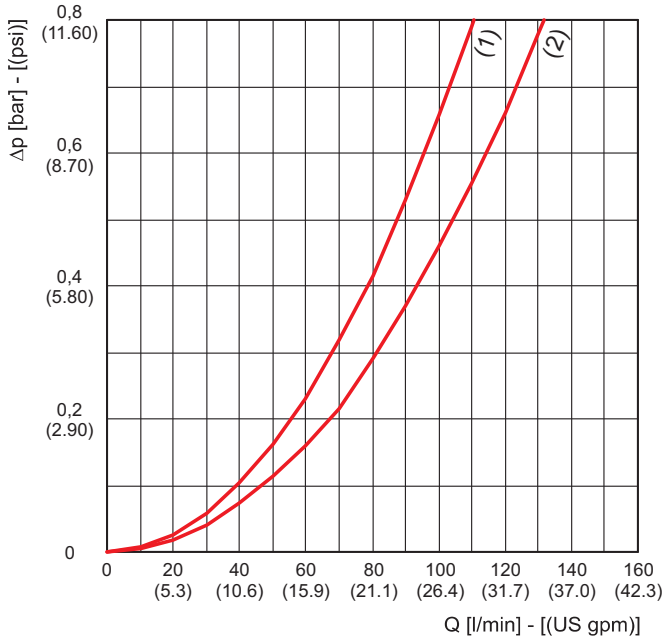
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PRESSURE DROP CURVES THROUGH THE HOUSING

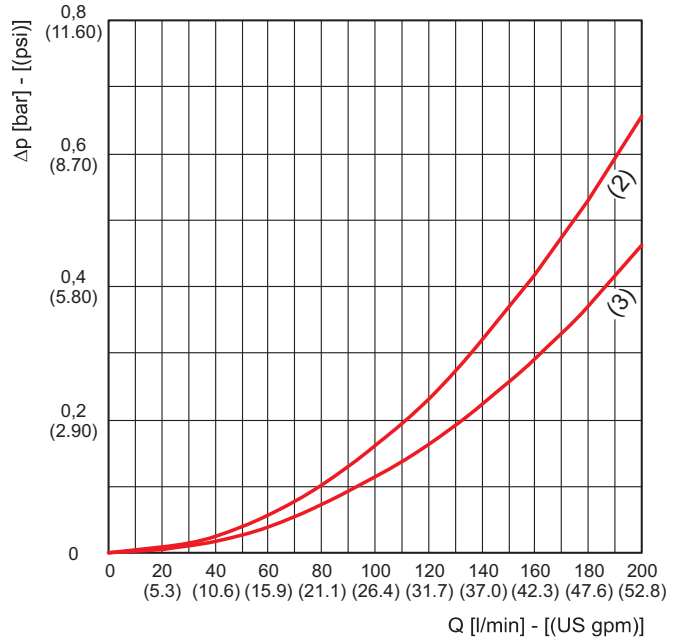
The curves are obtained in the following conditions:
 Mineral oil type ISO VG46
 Kinematic viscosity 120 SSU (30 cSt)
 Density 7.29 lb/gal (0,856 kg/dm³).

- (1) G 1/2
- (2) G 3/4
- (3) G 1
- (4) G 1 1/4
- (5) G 1 1/2

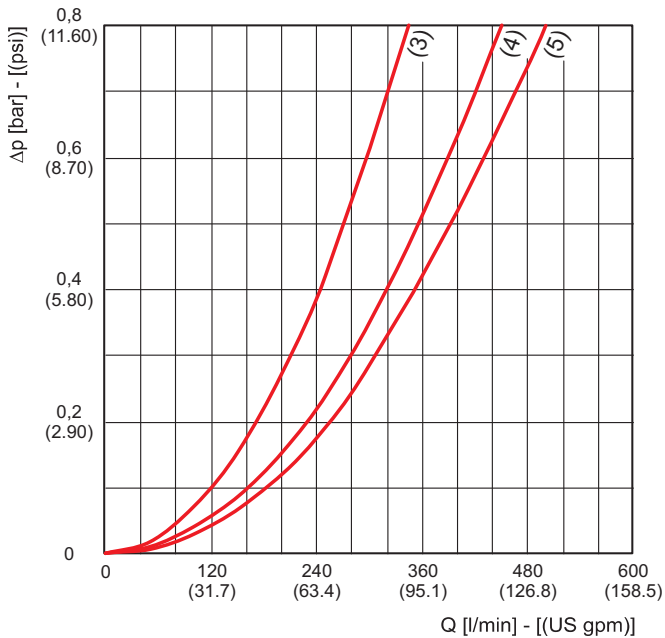
HF760-20



HF760-30 / HF761-30



HF760-40 / HF761-40



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PRESSURE DROP CURVES THROUGH THE ELEMENT HEK85-20

The curves are obtained in the following conditions:

Mineral oil type ISO VG46

Kinematic viscosity 120 SSU (30 cSt)

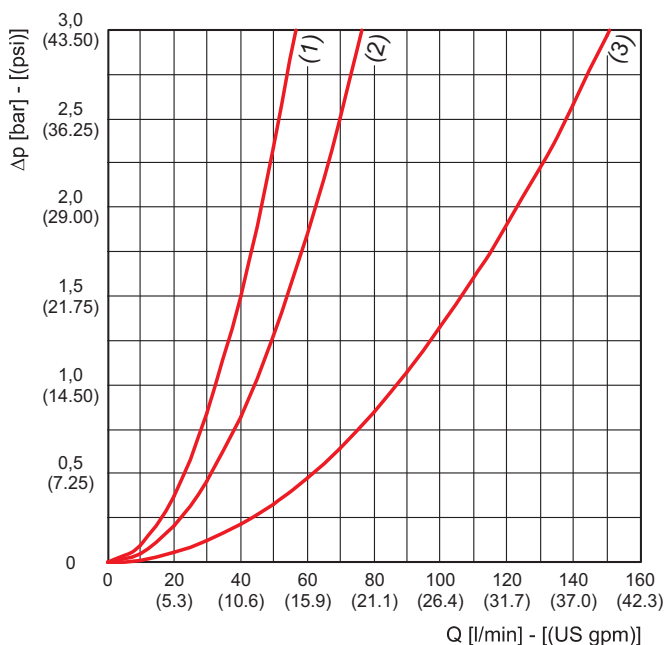
Density 7.29 lb/gal (0,856 kg/dm³).

(1) HEK85-20.080

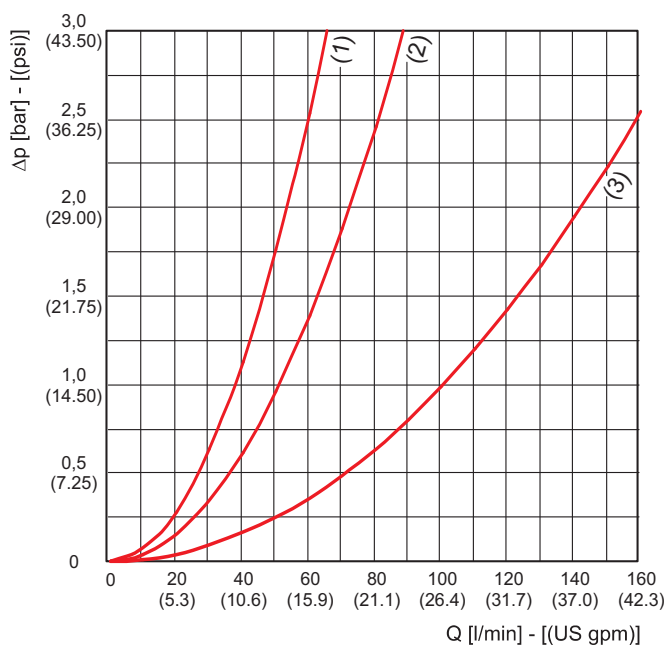
(2) HEK85-20.106

(3) HEK85-20.203

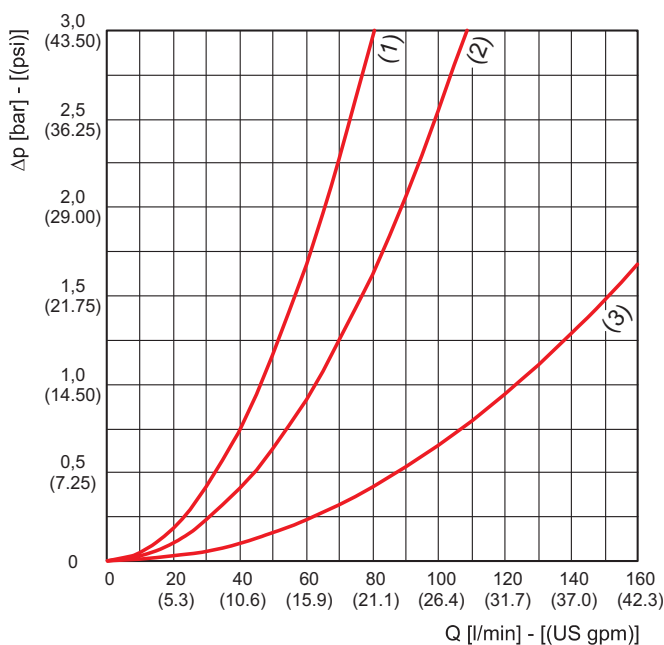
FG003



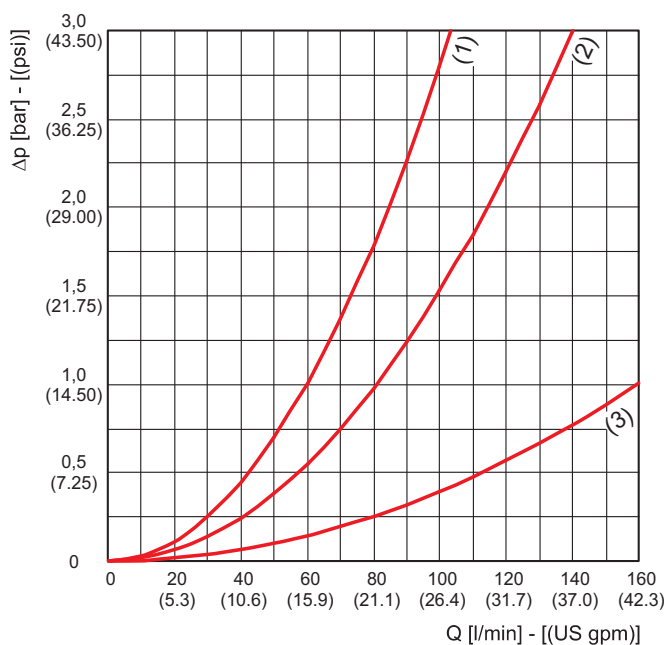
FG006



FG010



FG025



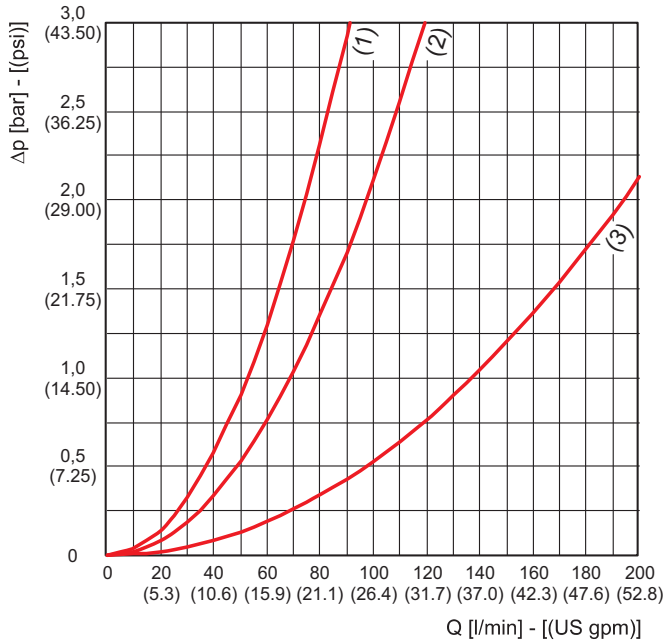
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PRESSURE DROP CURVES THROUGH THE ELEMENT HEK85-30 / HEK86-30

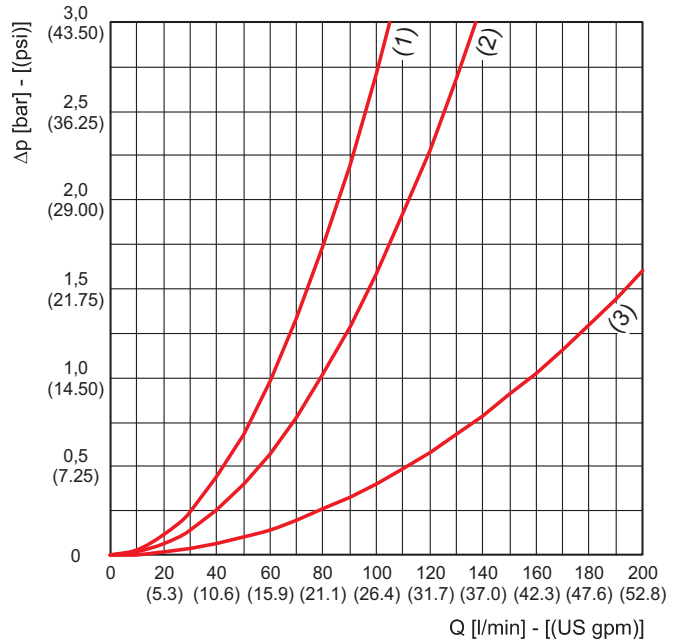
The curves are obtained in the following conditions:
 Mineral oil type ISO VG46
 Kinematic viscosity 120 SSU (30 cSt)
 Density 7.29 lb/gal (0,856 kg/dm³).

- (1) HEK86-30.087
- (2) HEK85-30.115 / HEK86-30.116
- (3) HEK85-30.223 / HEK86-30.209

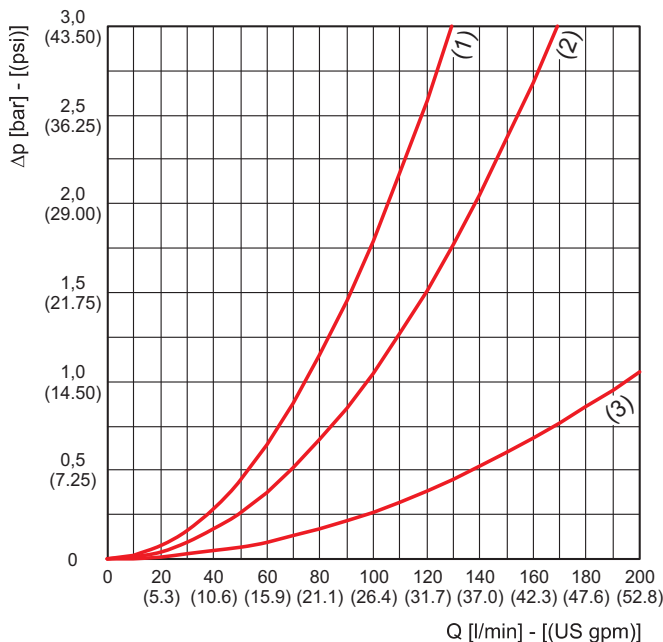
FG003



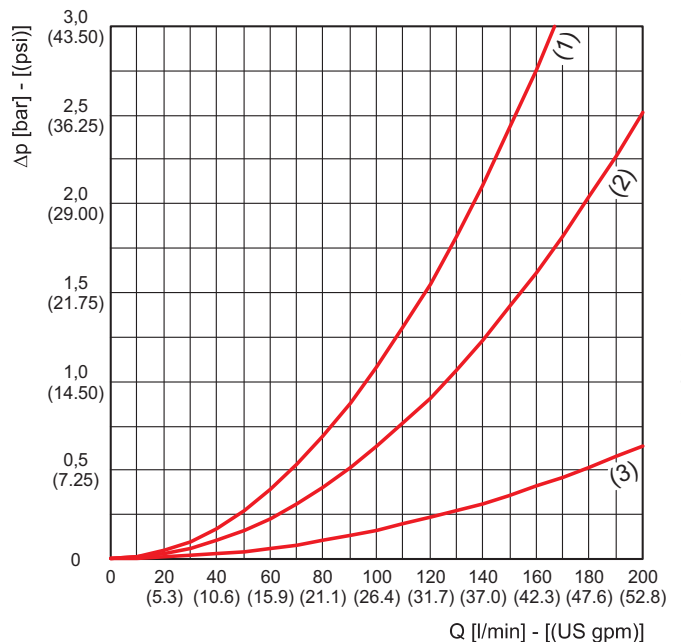
FG006



FG010



FG025



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PRESSURE DROP CURVES THROUGH THE ELEMENT HEK85-40 / HEK86-40

The curves are obtained in the following conditions:

Mineral oil type ISO VG46

Kinematic viscosity 120 SSU (30 cSt)

Density 7.29 lb/gal (0,856 kg/dm³).

(1) HEK85-40.102 / HEK86-40.115

(2) HEK85-40.132

(3) HEK86-40.210

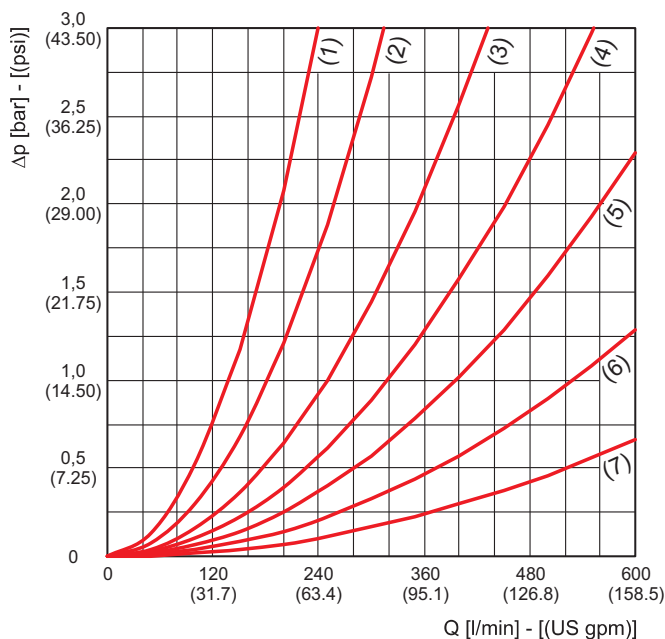
(4) HEK85-40.227

(5) HEK86-40.329

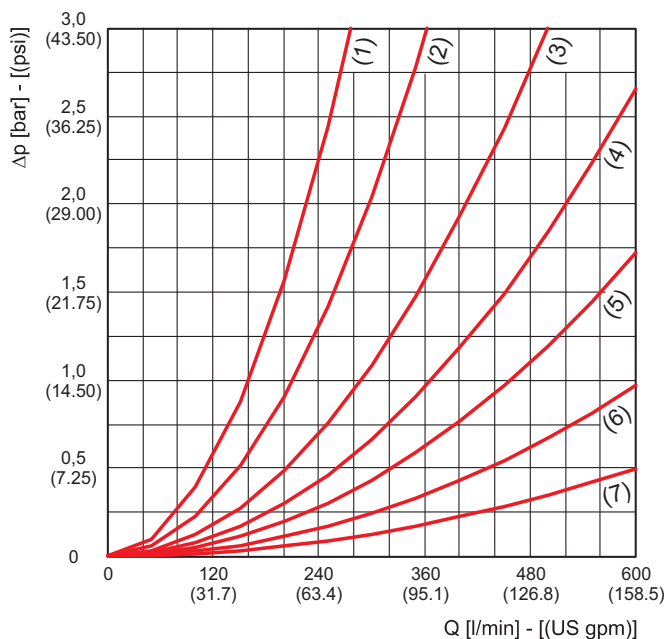
(6) HEK85-40.372 / HEK86-40.428

(7) HEK85-40.517

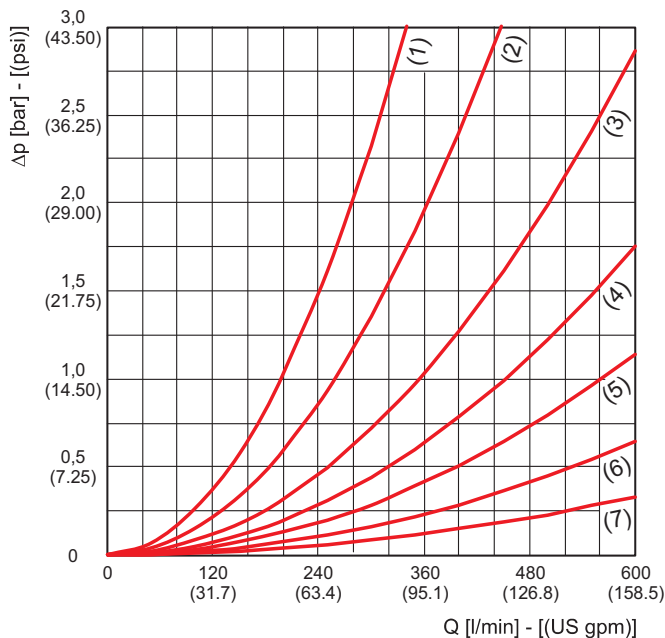
FG003



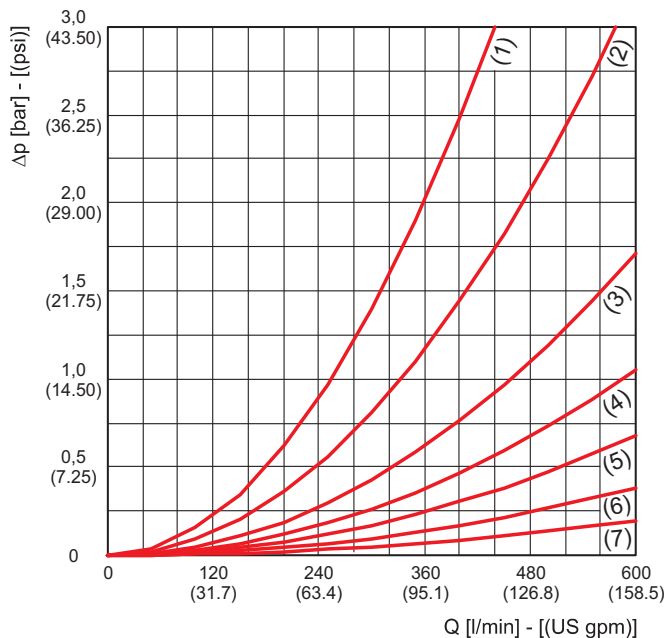
FG006



FG010



FG025

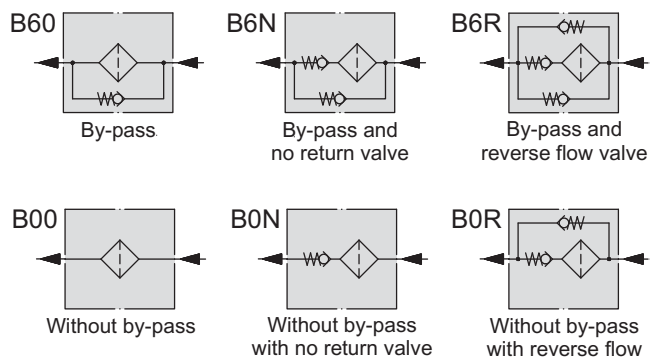
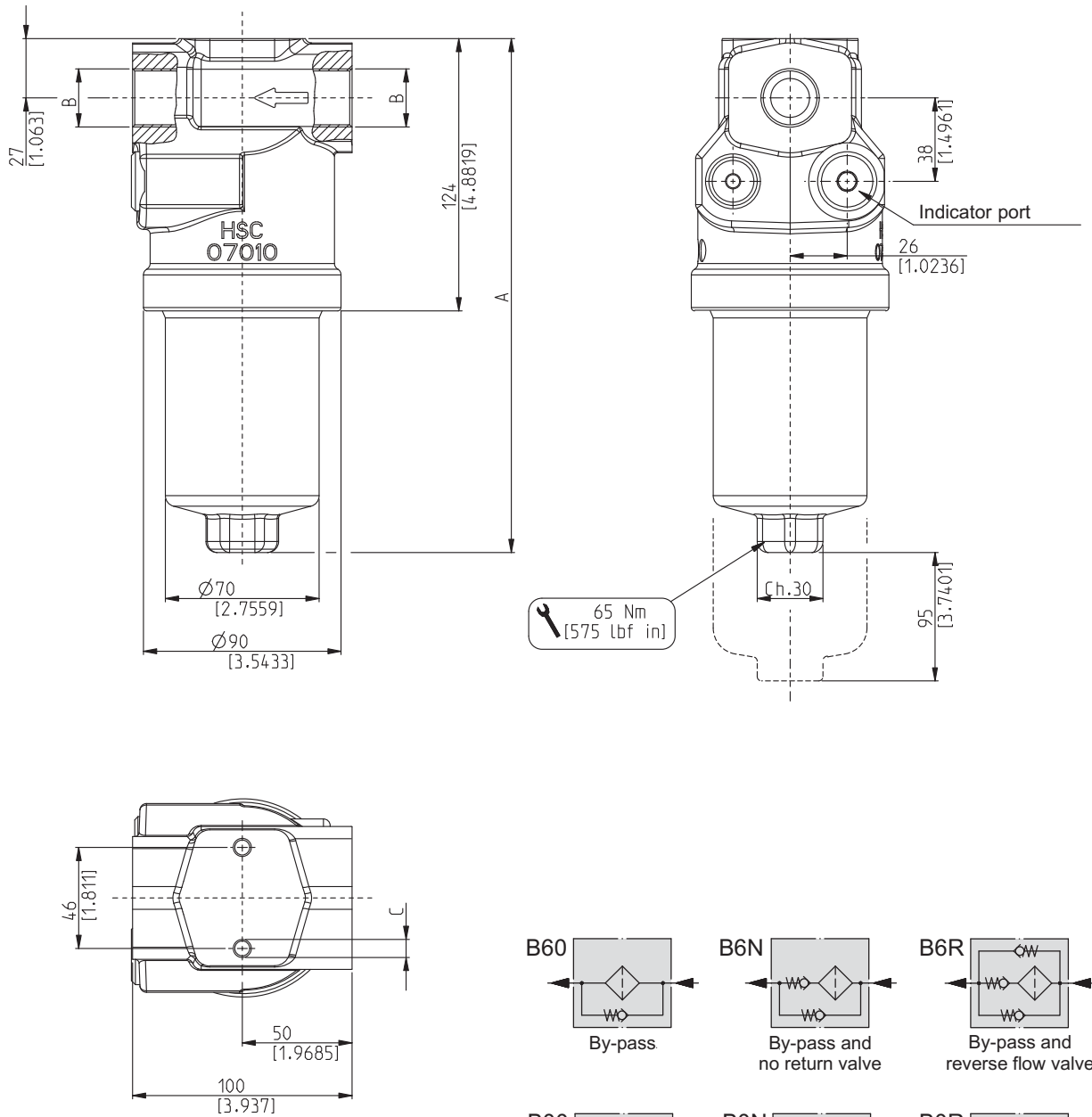


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FLOW

Filter type	Ports IN/OUT				Degree of filtration			
					FG003	FG006	FG010	FG025
					Flow Δp= 11 psi (0.75 bar)			
GAS (BSPP)	NPT	SAE J514b	SAE J518b Nom. size	US gpm (l/min)				
HF760-20.080	G 1/2	1/2 NPT	3/4-16 UNF-2B		6.6 (25)	7.9 (30)	9.2 (35)	11.9 (45)
	G 3/4	3/4 NPT	1 1/16-12 UN-2B		6.6 (25)	7.9 (30)	9.2 (35)	11.9 (45)
HF760-20.106	G 1/2	1/2 NPT	3/4-16 UNF-2B		9.2 (35)	10.6 (40)	13.2 (50)	15.9 (60)
	G 3/4	3/4 NPT	1 1/16-12 UN-2B		9.2 (35)	10.6 (40)	13.2 (50)	15.9 (60)
HF760-20.203	G 1/2	1/2 NPT	3/4-16 UNF-2B		15.9 (60)	17.2 (65)	19.8 (75)	22.5 (85)
	G 3/4	3/4 NPT	1 1/16-12 UN-2B		17.2 (65)	18.5 (70)	21.1 (80)	25.1 (95)
HF761-30.087	G 3/4	3/4 NPT	1 1/16-12 UN-2B	3/4	11.9 (45)	13.2 (50)	15.9 (60)	19.8 (75)
	G 1	1 NPT	1 5/16-12 UN-2B	1	11.9 (45)	13.2 (50)	15.9 (60)	21.1 (80)
HF760-30.115 HF761-30.116	G 3/4	3/4 NPT	1 1/16-12 UN-2B	3/4	15.9 (60)	17.2 (65)	21.1 (80)	26.4 (100)
	G 1	1 NPT	1 5/16-12 UN-2B	1	15.9 (60)	18.5 (70)	22.5 (85)	27.7 (105)
HF760-30.223 HF761-30.209	G 3/4	3/4 NPT	1 1/16-12 UN-2B	3/4	27.7 (105)	31.7 (120)	35.7 (135)	40.9 (155)
	G 1	1 NPT	1 5/16-12 UN-2B	1	29.1 (110)	33.0 (125)	38.3 (145)	44.9 (170)
HF760-40.102 HF 761-40.115	G 1	1 NPT	1 5/16-12 UN-2B		29.1 (110)	33.0 (125)	39.6 (150)	48.9 (185)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	30.4 (115)	34.3 (130)	42.3 (160)	51.5 (195)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	31.7 (120)	35.7 (135)	43.6 (165)	52.8 (200)
HF760-40.132	G 1	1 NPT	1 5/16-12 UN-2B		37.0 (140)	42.3 (160)	48.9 (185)	56.8 (215)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	38.3 (145)	43.6 (165)	52.8 (200)	63.4 (240)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	39.6 (150)	44.9 (170)	54.2 (205)	64.7 (245)
HF761-40.210	G 1	1 NPT	1 5/16-12 UN-2B		47.6 (180)	52.8 (200)	59.4 (225)	67.4 (255)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	51.5 (195)	56.8 (215)	66.0 (250)	77.9 (295)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	52.8 (200)	58.1 (220)	68.7 (260)	80.6 (305)
HF760-40.227	G 1	1 NPT	1 5/16-12 UN-2B		55.5 (210)	60.8 (230)	67.4 (255)	74.0 (280)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	62.1 (235)	67.4 (255)	76.6 (290)	87.2 (330)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	63.4 (240)	70.0 (265)	80.6 (305)	92.5 (350)
HF761-40.329	G 1	1 NPT	1 5/16-12 UN-2B		63.4 (240)	67.4 (255)	72.6 (275)	77.9 (295)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	71.3 (270)	76.6 (290)	85.9 (325)	95.1 (360)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	74.0 (280)	80.6 (305)	89.8 (340)	100.4 (380)
HF760-40.372 HF761-40.428	G 1	1 NPT	1 5/16-12 UN-2B		71.3 (270)	74.0 (280)	77.9 (295)	81.9 (310)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	83.2 (315)	88.5 (335)	95.1 (360)	101.7 (385)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	87.2 (330)	93.8 (355)	101.7 (385)	111.0 (420)
HF760-40.517	G 1	1 NPT	1 5/16-12 UN-2B		77.9 (295)	79.3 (300)	81.9 (310)	84.5 (320)
	G 1 1/4	1 1/4 NPT	1 5/8-12 UN-2B	1 1/4	95.1 (360)	99.1 (375)	103.0 (390)	108.3 (410)
	G 1 1/2	1 1/2 NPT	1 7/8-12 UN-2B	1 1/2	101.7 (385)	105.7 (400)	112.3 (425)	118.9 (450)

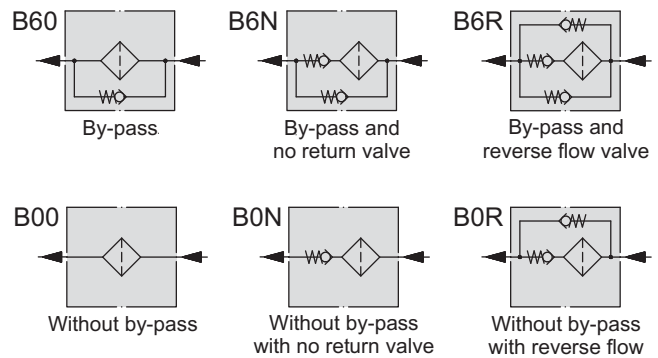
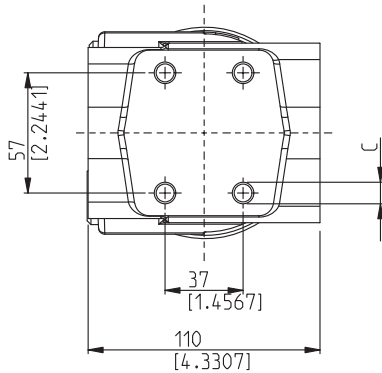
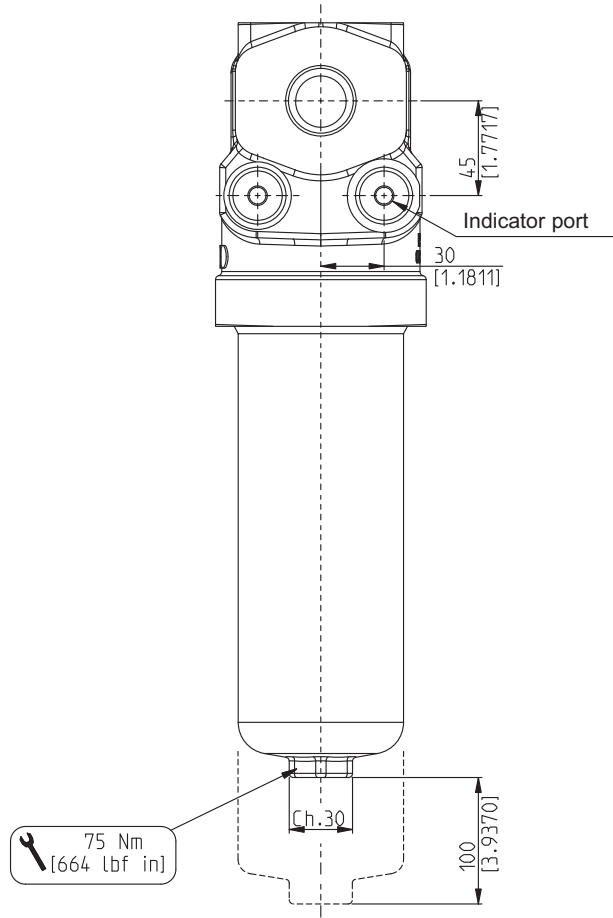
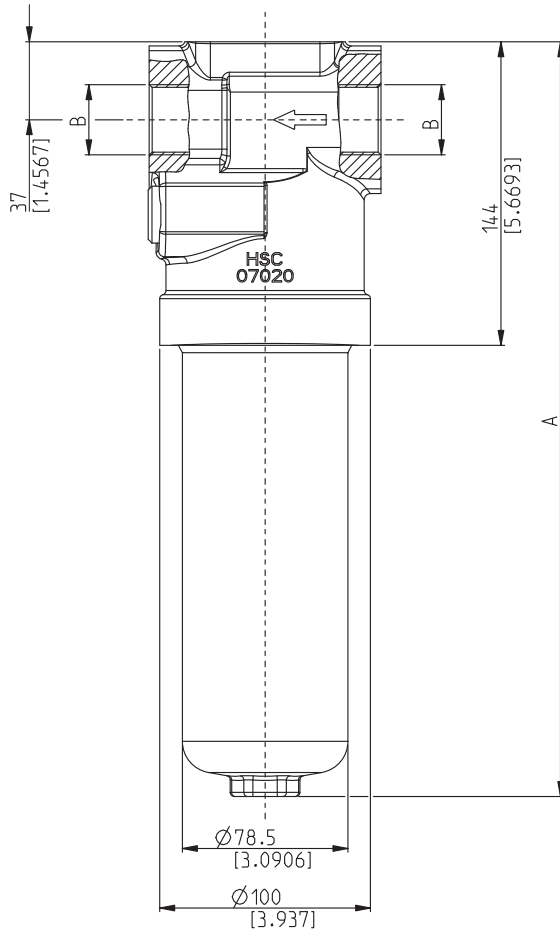
05/03.2016

HF760-20 DIMENSIONS

 05/03.2016
 ICAT_011_001_HF760

Filter type	Weight	A	B (Ports) (1)	C (2)
	kg (lbs)	mm (in)	Availability	
HF760-20.080	5,3 (11.69)	208 (8.1889)	GAS (BSPP)	
HF760-20.106	5,7 (12.57)	234 (9.2126)	NPT	M 8
HF760-20.203	7,2 (15.87)	331 (13.0315)	SAE J514b	

(1) Ports dimensions: see pages 15 ÷ 18
 (2) The respective threads 5/16-18 UNC-2B are available.
On request, mounting holes can have special threads and different locations between center lines.

HF760-30 - HF761-30 DIMENSIONS



ICAT_011_002_HF760

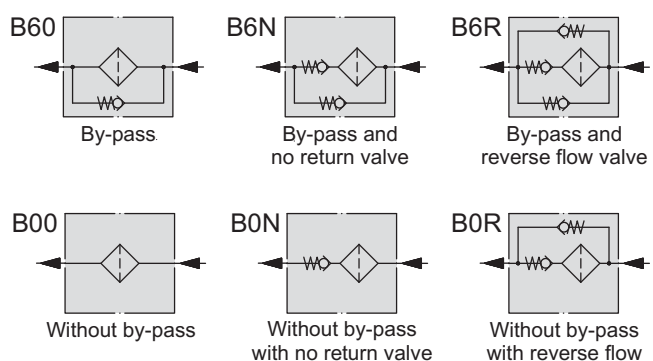
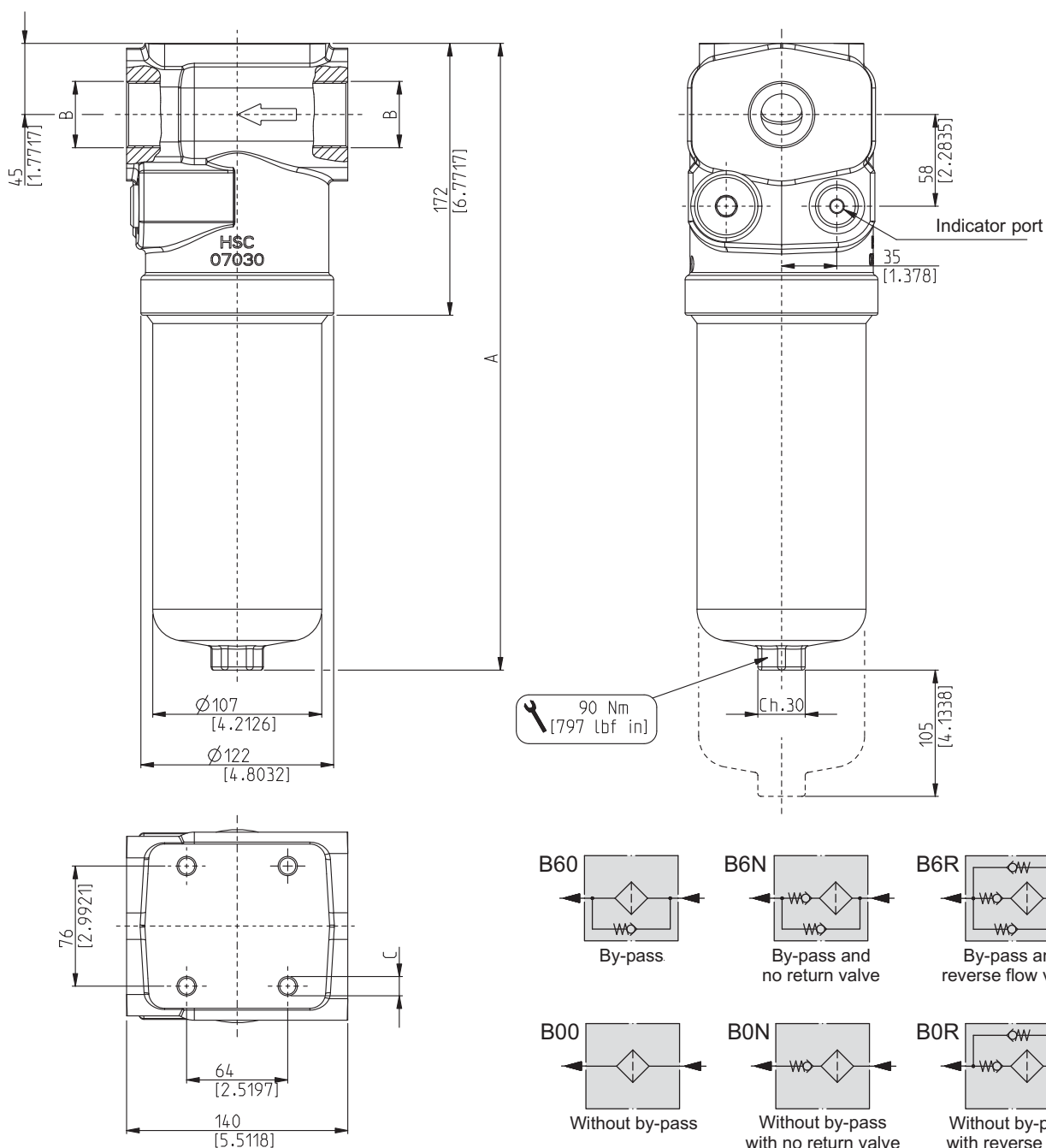
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Filter type	Weight		A	B (ports) (1)	C (2)
	kg (lbs)		mm (in)	Availability	
HF761-30.087	7,6 (16.75)		215 (8.4646)	GAS (BSPP)	
HF760-30.115 HF761-30.116	8,2 (18.08)		250 (9.8425)	NPT	M 10 (2)
HF760-30.223 HF761-30.209	10 (22.05)		358 (14.0945)	SAE J514b SAE J518	

(1) Ports dimensions: see pages 15 ÷ 18

(2) The respective threads 3/8-16 UNC-2B are available.

On request, mounting holes can have special threads and different locations between center lines.

HF760-40 - HF761-40 DIMENSIONS


Filter type	Weight		A	B ((ports) (1))	C (2)
	kg (lbs)		mm (in)	Availability	
HF760-40.102 HF761-40.115	14,3 (31.53)		274 (10.7874)		
HF760-40.132	15,2 (33.51)		304 (11.9685)	GAS (BSPP)	
HF760-40.227 HF761-40.210	18 (39.68)		399 (15.7087)	NPT	M 12 (2)
HF760-40.372 HF761-40.329	22 (48.50)		544 (21.4173)	SAE J514b	
HF760-40.517 HF761-40.428	28,5 (62.83)		689 (27.1260)	SAE J518	

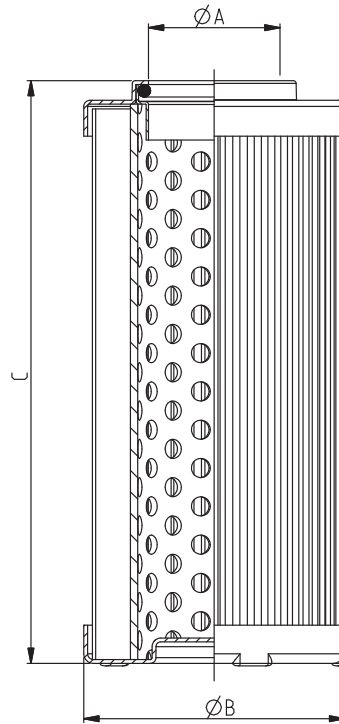
(1) Ports dimensions: see pages 15 ÷ 18

(2) The respective threads 1/2-13 UNC-2B are available.

On request, mounting holes can have special threads and different locations between center lines.

05/03.2016

ELEMENTS DIMENSIONS FOR HF760



ICAT_011_004_HF760

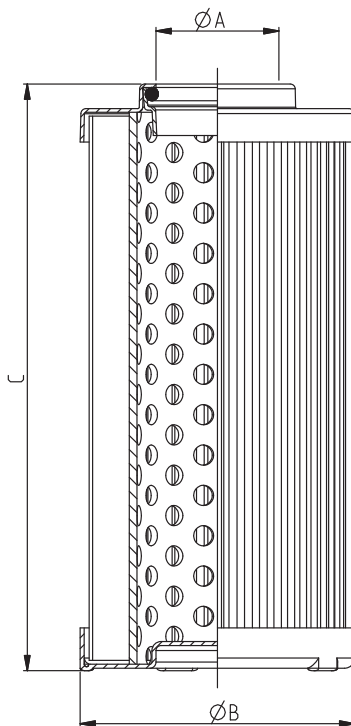
Filtering elements with Δp - collapse pressure of 3046 psi (210 bar) are also available (please consult our technical department).

Technical data for (MS) version elements are available on request.

Element type	Ø A	Ø B	C	Filtering surface (AS)	Dirt holding capacity (ISO MTD)			
					$\Delta p = 72.5 \text{ psi (5 bar)}$			
					FG003	FG006	FG010	FG025
mm (in)	mm (in)	mm (in)	cm ² (in ²)	gr (lbs)	gr (lbs)	gr (lbs)	gr (lbs)	
HEK85-20.080			87 (3.4252)	415 (64.3251)	2,3 (0.0051)	3,0 (0.0066)	3,3 (0.0073)	4,8 (0.0106)
HEK85-20.106	25,5 (1.0039)	46,5 (1.8307)	113 (4.4488)	560 (86.8002)	3,1 (0.0069)	4,0 (0.0089)	4,5 (0.0099)	6,5 (0.0143)
HEK85-20.203			210 (8.2677)	1103 (170.9653)	6,2 (0.0136)	7,9 (0.0175)	8,8 (0.0195)	12,8 (0.0282)
HEK85-30.115	27,5 (1.0827)	54,5 (2.1457)	122 (4.8031)	908 (140.7403)	5,1 (0.0112)	6,5 (0.0144)	7,3 (0.0160)	10,5 (0.0232)
HEK85-30.223			230 (9.0551)	1808 (280.2405)	10,1 (0.0223)	13,0 (0.0287)	14,5 (0.0319)	21,0 (0.0462)
HEK85-40.102			110 (4.3307)	1757 (272.3355)	9,8 (0.0217)	12,7 (0.0279)	14,1 (0.0310)	20,4 (0.0449)
HEK85-40.132			140 (5.5118)	2306 (357.4307)	12,9 (0.0285)	16,6 (0.0366)	18,4 (0.0407)	26,7 (0.0590)
HEK85-40.227	40,5 (1.5945)	78 (3.0709)	235 (9.2520)	4045 (626.9762)	22,7 (0.0499)	29,1 (0.0642)	32,4 (0.0713)	46,9 (0.1034)
HEK85-40.372			380 (14.9606)	6700 (1038.5020)	37,5 (0.0827)	48,2 (0.1064)	53,6 (0.1182)	77,7 (0.1713)
HEK85-40.517			525 (20.6693)	9350 (1449.2528)	52,4 (0.1154)	67,3 (0.1484)	74,8 (0.1649)	108,5 (0.2391)

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ELEMENTS DIMENSIONS FOR HF761



ICAT_011_005_HF760

Filtering elements with Δp - collapse pressure of 3046 psi (210 bar) are also available (please consult our technical department).

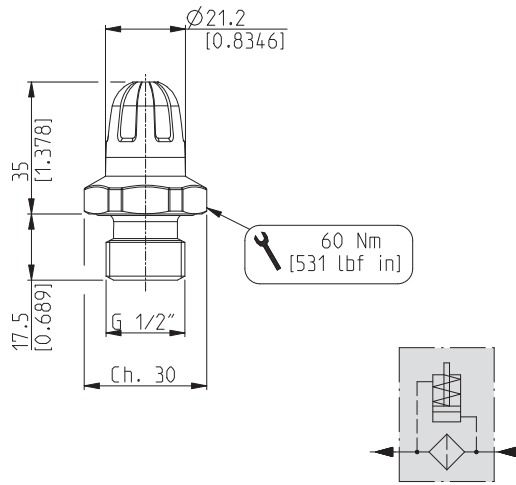
Technical data for (MS) version elements are available on request.

Element type	Ø A	Ø B	C	Filtering surface (AS)	Dirt holding capacity (ISO MTD) $\Delta p = 72.5 \text{ psi (5 bar)}$			
					FG003	FG006	FG010	FG025
	mm (in)	mm (in)	mm (in)	cm ² (in ²)	gr (lbs)	gr (lbs)	gr (lbs)	gr (lbs)
HEK86-30.087			87 (3.4252)	667 (103.3852)	3,7 (0.0082)	4,8 (0.0106)	5,3 (0.0118)	7,7 (0.0171)
HEK86-30.116	24,5 (0.9645)	53 (2.0866)	116 (4.5669)	923 (143.0653)	5,2 (0.0114)	6,6 (0.0147)	7,4 (0.0163)	10,7 (0.0236)
HEK86-30.209			209 (8.2283)	1719 (266.4455)	9,6 (0.0212)	12,4 (0.0273)	13,8 (0.0303)	19,9 (0.0440)
HEK86-40.115			115 (4.5276)	1685 (261.1755)	9,4 (0.0208)	12,1 (0.0267)	13,5 (0.0297)	19,5 (0.0431)
HEK86-40.210	43,2 (1.7008)	78 (3.0709)	210 (8.2677)	3167 (490.8860)	17,7 (0.0391)	22,8 (0.0503)	25,3 (0.0559)	36,7 (0.0810)
HEK86-40.329			329 (12.9528)	5023 (778.5665)	28,1 (0.0620)	36,2 (0.0797)	40,2 (0.0886)	58,3 (0.1285)
HEK86-40.428			428 (16.8504)	6568 (1018.0420)	36,8 (0.0811)	47,3 (0.1043)	52,5 (0.1158)	76,2 (0.1680)

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INDICATORS

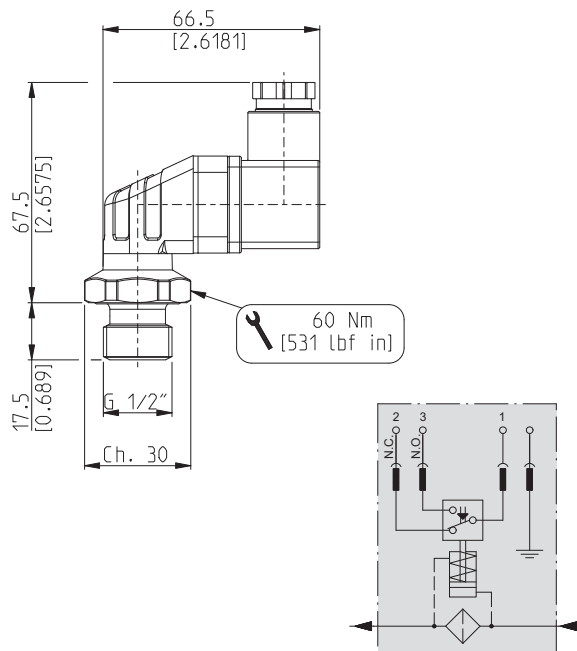
VISUAL DIFFERENTIAL

 Code: **H**


ICAT_011_006_HF760

Differential pressure setting	116 psi (8 bar) without by-pass
	72.5 psi (5 bar) with by-pass

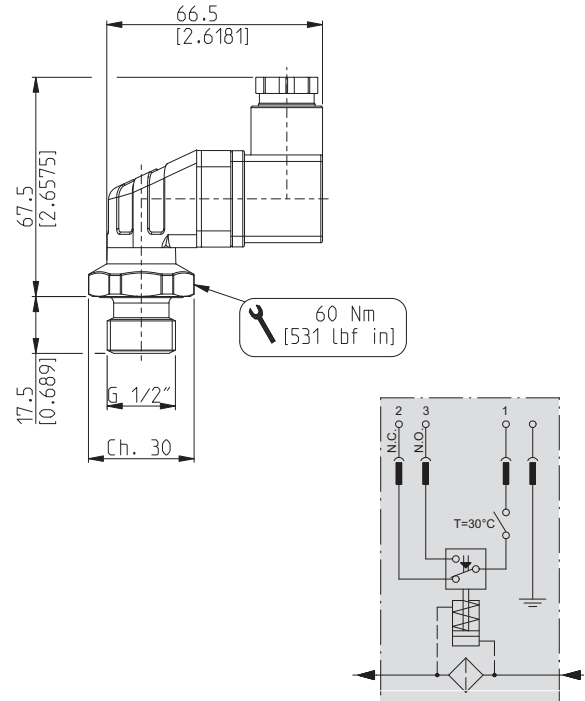
VISUAL ELECTRICAL DIFFERENTIAL

 Code: **U**


ICAT_011_007_HF760

Differential pressure setting	116 psi (8 bar) without by-pass
	72.5 psi (5 bar) with by-pass
Max. working voltage	250 VAC
	30 VCC
Max. working current	3 A (resistivity)
	3 A (inductive)
Protection class	IP 66 - Cable clamp PG 11

VISUAL ELECTRICAL DIFFERENTIAL WITH THERMOSTAT

 Code: **W**


ICAT_011_011_HF760

Differential pressure setting	116 psi (8 bar) without by-pass
	72.5 psi (5 bar) with by-pass
Max. working voltage	250 VAC
	30 VCC
Max. working current	3 A (resistivity)
	3 A (inductive)
Protection class	IP 66 - Cable clamp PG 11
Min. function temperature	86 °F (30 °C)

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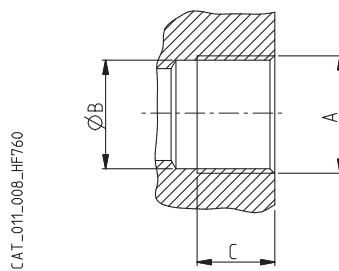
PORTS IN/OUT

Filter type	PORTS TYPE							
	Nominal size	Gas BSP	NPT	SAE ODT	Split SSM		Split SSS	
					(3000 PSI)	(6000 PSI)	(3000 PSI)	(6000 PSI)
HF760-20	1/2"	GD	ND	OB	—	—	—	—
	3/4"	GE	NE	OD	—	—	—	—
HF760-30	3/4"	GE	NE	OD	MB	QB	SB	VB
HF761-30	1"	GF	NF	OF	MC	QC	SC	VC
HF760-40	1"	GF	NF	OF	MC	QC	SC	VC
	1" 1/4	GG	NG	OG	MD	QD	SD	VD
HF761-40	1" 1/2	GH	NH	OH	ME	QE	SE	VE

GAS STRAIGHT THREAD PORTS

BSP

British standard pipe parallel (55°) conforms to UNI - ISO 228



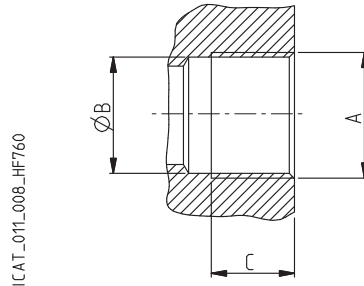
05/03.2016

CODE	Nominal size	A	Ø B		C	Nm (lbf in)
			mm (in)	mm (in)	mm (in)	
GD	1/2"	G 1/2	19,0 (0.7480)	16,0 (0.6299)	50 ^{+2,5} (443 ÷ 465)	
GE	3/4"	G 3/4	24,5 (0.9646)	18,0 (0.7087)	90 ⁺⁵ (797 ÷ 841)	
GF	1"	G 1	30,5 (1.2008)	20,0 (0.7874)	130 ⁺¹⁰ (1151 ÷ 1239)	
GG	1" 1/4	G 1 1/4	39,5 (1.5551)	22,0 (0.8661)	170 ⁺¹⁰ (1505 ÷ 1593)	
GH	1" 1/2	G 1 1/2	45,5 (1.7913)	24,0 (0.9449)	210 ⁺¹⁵ (1859 ÷ 1991)	

PORTS IN/OUT

NPT STRAIGHT THREAD PORTS
NPT

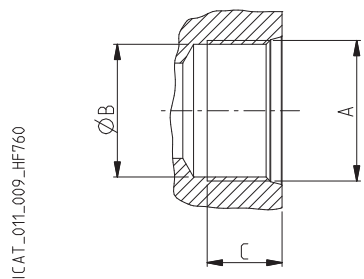
NPT thread (60°) conforms to ANSI - ASME B1-20



CODE	Nominal size	A	Ø B	C	Nm (lbf in)
			mm (in)	mm (in)	
ND	1/2"	1/2 NPT	18,0 (0.7087)	13,5 (0.5315)	45 ^{+2,5} (398 ÷ 420)
NE	3/4"	3/4 NPT	23,5 (0.9252)	14,0 (0.5512)	75 ⁺⁵ (664 ÷ 708)
NF	1"	1 NPT	29,5 (1.1614)	17,5 (0.6890)	120 ⁺¹⁰ (1062 ÷ 1151)
NG	1" 1/4	1 1/4 NPT	38,5 (1.5157)	18,0 (0.7087)	250 ⁺²⁰ (2213 ÷ 2390)
NH	1" 1/2	1 1/2 NPT	44,0 (1.7323)	18,5 (0.7283)	350 ⁺²⁰ (3098 ÷ 3275)

SAE STRAIGHT THREAD PORTS J514
ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1



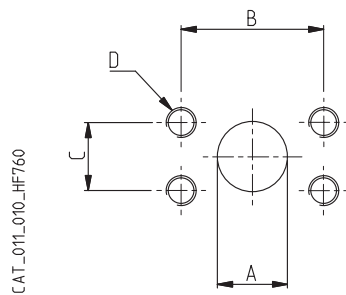
CODE	Nominal size	A	Ø B	C	Nm (lbf in)
			mm (in)	mm (in)	
OB	1/2"	3/4" - 16 UNF - 2B	17,3 (0.6811)	15,0 (0.5906)	45 ^{+2,5} (398 ÷ 420)
OD	3/4"	1 1/16" - 12 UN - 2B	24,7 (0.9724)	20,0 (0.7874)	120 ⁺¹⁰ (1062 ÷ 1151)
OF	1"	1 5/16" - 12 UN - 2B	31,0 (1.2205)	20,0 (0.7874)	170 ⁺¹⁰ (1505 ÷ 1593)
OG	1" 1/4	1 5/8" - 12 UN - 2B	39,0 (1.5354)	20,0 (0.7874)	200 ⁺¹⁰ (1770 ÷ 1859)
OH	1" 1/2	1 7/8" - 12 UN - 2B	45,3 (1.7835)	20,0 (0.7874)	270 ⁺¹⁵ (2390 ÷ 2522)

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PORTS IN/OUT

SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI
SSM

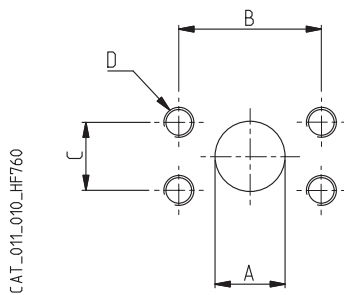
Metric thread ISO 60° conforms to ISO/R 262



CODE	Nominal size	Ø A	B	C	D	Nm (lbf in)
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	
MB	3/4	19,1 (0.7520)	47,6 (1.8740)	22,2 (0.8740)	M 10 15,0 (0.5906)	30 ^{+2,5} (266 ÷ 288)
MC	1	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	M 10 15,0 (0.5906)	40 ^{+2,5} (354 ÷ 376)
MD	1 1/4	31,8 (1.2520)	58,7 (2.3110)	30,2 (1.1890)	M 10 15,0 (0.5906)	50 ^{+2,5} (443 ÷ 465)
ME	1 1/2	38,1 (1.5000)	69,8 (2.7480)	35,7 (1.4055)	M 12 18,0 (0.7087)	65 ⁺⁵ (575 ÷ 620)

SAE FLANGED PORTS J518 - Standard pressure series 6000 PSI
SSM

Metric thread ISO 60° conforms to ISO/R 262



CODE	Nominal size	Ø A	B	C	D	Nm (lbf in)
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	
QB	3/4	19,1 (0.7520)	50,8 (2.0000)	23,8 (0.9370)	M 10 15,0 (0.5906)	40 ^{+2,5} (354 ÷ 376)
QC	1	25,4 (1.0000)	57,2 (2.2520)	27,8 (1.0945)	M 12 16,0 (0.6299)	60 ⁺⁵ (531 ÷ 575)
QD	1 1/4	31,8 (1.2520)	66,7 (2.6260)	31,7 (1.2480)	M 14 18,0 (0.7087)	90 ⁺⁵ (797 ÷ 841)
QE	1 1/2	38,1 (1.5000)	79,4 (3.1260)	36,5 (1.4370)	M 16 22,0 (0.8661)	160 ⁺¹⁰ (1416 ÷ 1505)

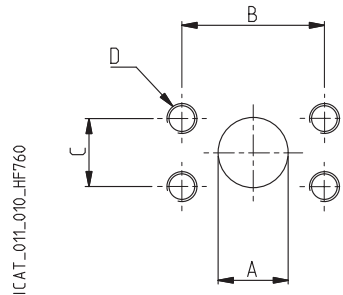
05/03.2016

PORTS IN/OUT

SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI

SSS

American straight threads UNC-UNF 60° conforms to ANSI B 1.1

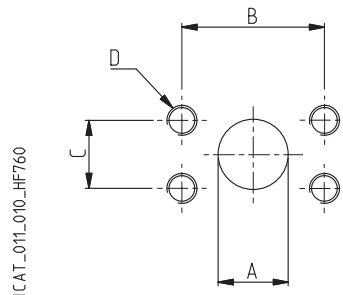


CODE	Nominal size	∅ A	B	C	D	Nm (lbf in)
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	
SB	3/4	19,1 (0.7520)	47,6 (1.8740)	22,2 (0.8740)	3/8-16 UNC-2B 15,0 (0.5906)	30 ^{+2,5} (266 ÷ 288)
SC	1	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	3/8-16 UNC-2B 15,0 (0.5906)	40 ^{+2,5} (354 ÷ 376)
SD	1 1/4	31,8 (1.2520)	58,7 (2.3110)	30,2 (1.1890)	7/16-14 UNC-2B 15,0 (0.5906)	50 ^{+2,5} (443 ÷ 465)
SE	1 1/2	38,1 (1.5000)	69,8 (2.7480)	35,7 (1.4055)	1/2-13 UNC-2B 18,0 (0.7087)	65 ⁺⁵ (575 ÷ 620)

SAE FLANGED PORTS J518 - Standard pressure series 6000 PSI

SSS

American straight threads UNC-UNF 60° conforms to ANSI B 1.1



CODE	Nominal size	∅ A	B	C	D	Nm (lbf in)
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	
VB	3/4	19,1 (0.7520)	50,8 (2.0000)	23,8 (0.9370)	3/8-16 UNC-2B 15,0 (0.5906)	40 ^{+2,5} (354 ÷ 376)
VC	1	25,4 (1.0000)	57,2 (2.2520)	27,8 (1.0945)	7/16-14 UNC-2B 16,0 (0.6299)	60 ⁺⁵ (531 ÷ 575)
VD	1 1/4	31,8 (1.2520)	66,7 (2.6260)	31,7 (1.2480)	1/2-13 UNC-2B 18,0 (0.7087)	90 ⁺⁵ (797 ÷ 841)
VE	1 1/2	38,1 (1.5000)	79,4 (3.1260)	36,5 (1.4370)	5/8-11 UNC-2B 22,0 (0.8661)	160 ⁺¹⁰ (1416 ÷ 1505)

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ASSEMBLY AND REPLACING ELEMENT INSTRUCTIONS

ASSEMBLY

Once you have checked the integrity of the filter inside its package, proceed as follows:

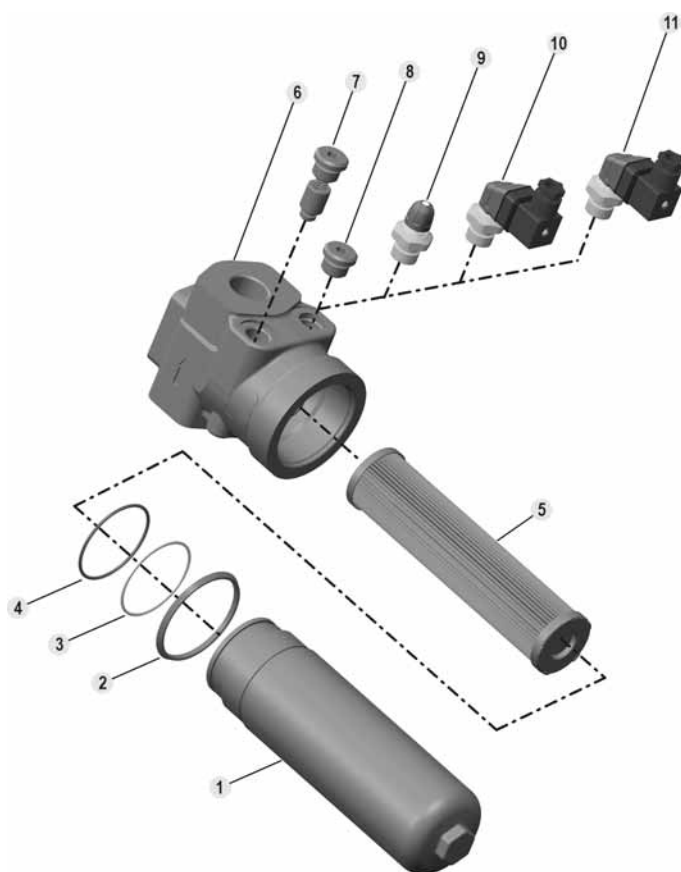
- A Secure the filter to the attachment device via the threaded holes in the head (pos.6).
- B Take the protection caps off the oil inlet and outlet.
- C Connect the circuit pipes to the filter, checking the flow direction, which is pointed out by the arrow on the head (pos.6).
- D If the clogging indicator (pos.9 - 10 - 11) is immediately mounted in the filter, take the protection cap off and screw the indicator in the dedicated seat and tighten to a tightening torque of 531 lbf in (60 Nm). If the indicator is electric, complete the required connections.
- E Start the circuit for a few minutes.
- F Make sure there are no leaks.

REPLACING ELEMENT

Once the working hours limit indicated in the maintenance instructions of the system is reached, or when the clogging indicators point out the limit pressure drop created inside the filter, the cartridge must be replaced, remembering that this procedure involves the drainage of hydraulic oil and therefore you need to prepare suitable containers to collect the oil.

Proceed as follows:

- A Stop the system in "Machine stopped" status.
- B Secure any shut-off valves on the hydraulic circuit.
- C Unscrew the filter container (pos.1).
- D Remove the clogged filtering cartridge (pos.5), making sure no residual particles have settled on the bowl bottom (pos.1).
- E Make sure the O-ring (pos.4), seal (pos.2) and the anti-extrusion ring (pos.3) are not damaged, otherwise replace them and consequently position the new ones correctly.
- F Insert the new filtering cartridge, lubricating the sealing O-ring beforehand.
- G Screw the container tight (pos.1) making sure the threading is screwed correctly. Tighten to a tightening torque as indicated on pages 9,10,11.
- H Start the machine for a few minutes.
- I Make sure there are no leaks.



Pos.	Description
1	Filter bowl
2	Seal
3	Anti-extrusion ring
4	Sealing O-Ring
5	Filtering element
6	Filter head
7	By-pass valve
8	Sealing cap
9	Visual differential indicator
10	Visual electrical differential indicator
11	Visual electrical differential indicator with thermostat

When ordering spare parts, always specify the reference number, the filter code and quantity.

Example: Spare part pos. 4 - HHP02050 - Qty 2

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HOW TO ORDER A COMPLETE FILTER

1

2

3

4

5

6

7

8

9

HF760
HF761

- 20.080 - AS - FG010 - LC - B60 - GD - B - DD - G

1	Filter type	CODE
	See table from pag. 9 to pag. 11	HF76...
2	Filtering surface	CODE
	Standard	AS
	Multilayer	MS
3	Degree of filtration	CODE
	3 [µm] Micro-fibre glass	FG003
	6 [µm] Micro-fibre glass	FG006
	10 [µm] Micro-fibre glass	FG010
	25 [µm] Micro-fibre glass	FG025
4	Δp collapse pressure	CODE
	290 [psi] (20 [bar])	LC
	3046 [psi] (210 [bar])	HC
5	Valves	CODE
	By-pass Setting 87 [psi] (6 [bar])	B60
	By-pass Setting 87 [psi] (6 [bar]) and no return valve	B6N
	By-pass setting 87 [psi] (6 [bar]) and reverse flow valve	B6R
	Without	B00
	Without by-pass, with no return valve	B0N
	Without by-pass, with reverse flow	B0R
6	Ports IN/OUT	CODE
	Threads GAS (BSPP)	
	G 1/2	GD
	G 3/4	GE
	G 1	GF
	G 1 1/4	GG
	G 1 1/2	GH
	Threads NPT	
	1/2	ND
	3/4	NE
	1	NF
	1 1/4	NG
	1 1/2	NH
	Threads SAE ODT	
	1/2	OB
	3/4	OD
	1	OF
	1 1/4	OG
	1 1/2	OH

6	Ports IN/OUT	CODE
	Flanged SAE (SSM) - 3000 PSI	
	3/4"	MB
	1"	MC
	1" 1/4	MD
	1" 1/2	ME
	Flanged SAE (SSM) - 6000 PSI	
	3/4"	QB
	1"	QC
	1" 1/4	QD
	1" 1/2	QE
	Flanged SAE (SSS) - 3000 PSI	
	3/4"	SB
	1"	SC
	1" 1/4	SD
	1" 1/2	SE
	Flanged SAE (SSS) - 6000 PSI	
	3/4"	VB
	1"	VC
	1" 1/4	VD
	1" 1/2	VE
7	Seals	CODE
	Buna	B
	Viton	V
8	Indicator ports	CODE
	Arranged	XA
	Arranged with plug	DD
9	Indicators	CODE
	Without	G
	Visual differential indicator	H
	Visual electrical differential indicator	U
	Visual electrical differential indicator with thermostat	W

Standard
 On request

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HOW TO ORDER A REPLACEMENT ELEMENT

	1	2	3	4	5					
HEK85	-	20.080	-	AS	-	FG010	-	LC	-	B
HEK86										

1	Element type	CODE
	See table pag. 12	HEK85-..
	See table pag. 13	HEK86-..

4	Δp collapse pressure	CODE
	290 [psi] (20 [bar])	LC
	3046 [psi] (210 [bar])	HC

2	Filtering surface	CODE
	Standard	AS
	Multilayer	MS

5	Seals	CODE
	Buna	B
	Viton	V

3	Degree of filtration	CODE
	3 [μm] Micro-fibre glass	FG003
	6 [μm] Micro-fibre glass	FG006
	10 [μm] Micro-fibre glass	FG010
	25 [μm] Micro-fibre glass	FG025

- Standard
- On request