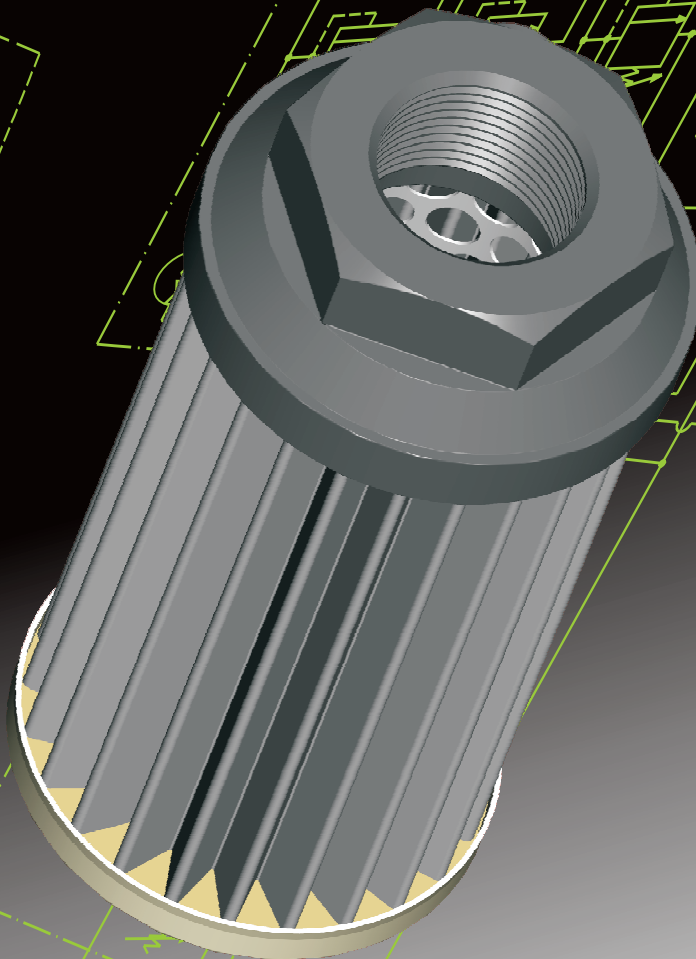
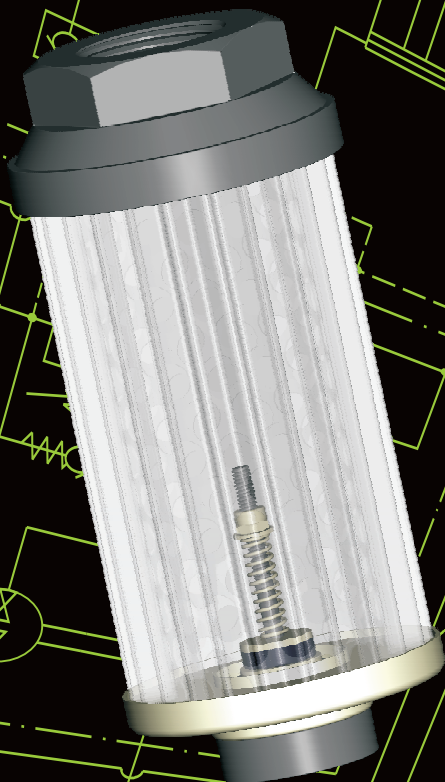


## Suction filters

# HF 410 / HF 412 series



## THE IMPORTANCE OF AN EFFICIENT FILTRATION

The main cause of anomalies in hydraulic systems has to be attributed to the presence of contaminants in the fluid. The nature of the contaminant may be: gaseous, namely air mixed with the fluid; fluid, it depends on water penetrating the fluid; solid, therefore particles of various origins and dimensions.

Customers who operate equipments are always focused on obtaining the best possible performance, lower energy consumptions and greater respect for the environment.

These characteristics can be attained by using top quality components in the hydraulic system for generating and regulating the fluid power, which are also more sensitive to the presence of contaminants in the fluid.

Starting from these requirements, we understand how important and fundamental it is to prevent the presence of air and water from mixing in the fluid tank by using dedicated solutions.

It is also crucial to limit the presence of solid particles in the hydraulic circuit through a suitable filtering system, which is indispensable to maintain the project requirements of the system over time and to keep running costs low.

The correct choice of a filter and its optimum position in the hydraulic system requires the same care and experience needed to choose all the other components.

The use of filters with larger filtering surfaces reduces, at equal flow rates, the superficial contaminant load and therefore the filter's life is extended proportionally.

To maintain the maximum efficiency of the system, the filters must have a clogging indicator showing the differential pressure on the filtering cartridge and to immediately point out when the cartridge needs replacing in order to prevent the by-pass valve from opening.

### **The following factors should be analysed when choosing the ideal filter:**

- The filtration degree required to protect the most sensitive component from contamination
- The points of the circuit in which the filters have to be installed
- The working pressure of the system
- The maximum flow rate and the type of fluid to be filtered
- The duty cycle
- The retention efficiency of the filtering cartridge
- The contaminant accumulation capacity of the filtering cartridge
- The working ambient temperature

Each filter used generates a pressure drop that increases continuously as time goes by. This pressure drop represents an efficiency index of the filter itself.

When the hydraulic system is about to be assembled, all the components must be perfectly clean and the fluid has to be added through a device complete with a filter.

During the test phase, it is advisable to run some work cycles at low pressure in order to create the best possible conditions for all the components.

## TECHNICAL CHARACTERISTICS

The HF 410 and HF 412 suction line filters series are directly connected to the circuit's suction line and protect the system's components against contaminant particles.

The filters can be supplied with by-pass valve set at 2.9 psi (0,2 bar).

In the 10-20-30 dimensions, the HF 412 serie is made with an outside diameter smaller than the relative HF 410 versions.

- Flow up to 80 US gpm (300 l/min)
- By-pass valve
- "FS" version with oversized filtering surface

### MATERIALS

Head	Reinforced nylon
End cap	Zinc plated steel
Inner tube	Zinc plated steel
Filter media	Steel wire mesh
	Stainless steel wire mesh

### FLUID COMPATIBILITY

Conforming to ISO 2943 (Norm ISO 6743/4)	
Oil mineral	HH - HL - HM - HR - HV - HG
Water emulsion	HFAE - HFAS
Water glycol	HFC
Syntetic fluid	HS - HFDR - HFDU - HFDS

### FLOW

Flow max.	80 US gpm (300 l/min)
-----------	-----------------------

### PRESSURE

Element collapse pressure rating (conforming to ISO 2941)	14.50 psi (1 bar)
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### BY-PASS VALVE

By-pass setting	2.90 psi (0,2 bar)
-----------------	--------------------

### OPERATING TEMPERATURE

-22 ÷ 195 °F (-30 ÷ 90 °C)
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### DEGREE OF FILTRATION

Code	Material	Degree of filtration
MI025	Stainless steel wire mesh	25 µm
MI060	Stainless steel wire mesh	60 µm
MS090	Steel wire mesh	90 µm
MI125	Stainless steel wire mesh	125 µm
MI250	Stainless steel wire mesh	250 µm

01/05.2011

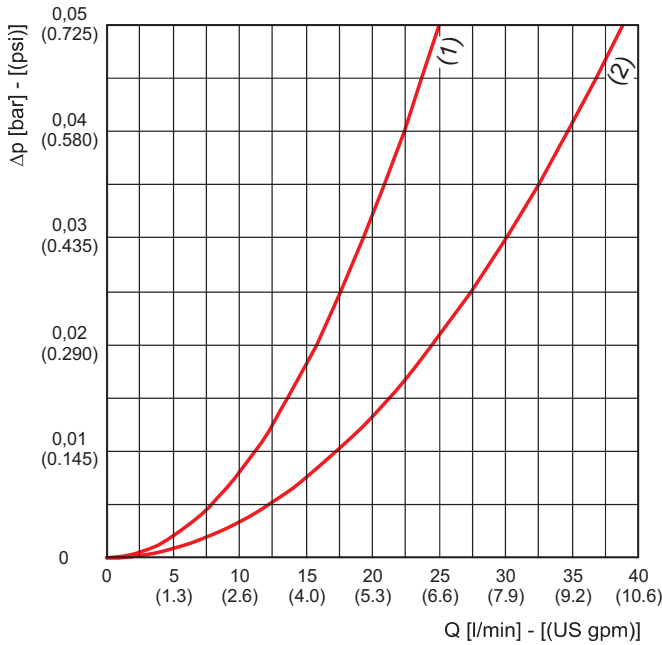
## PRESSURE DROP CURVES IN THE CONNECTION THREADS

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/dm<sup>3</sup>).

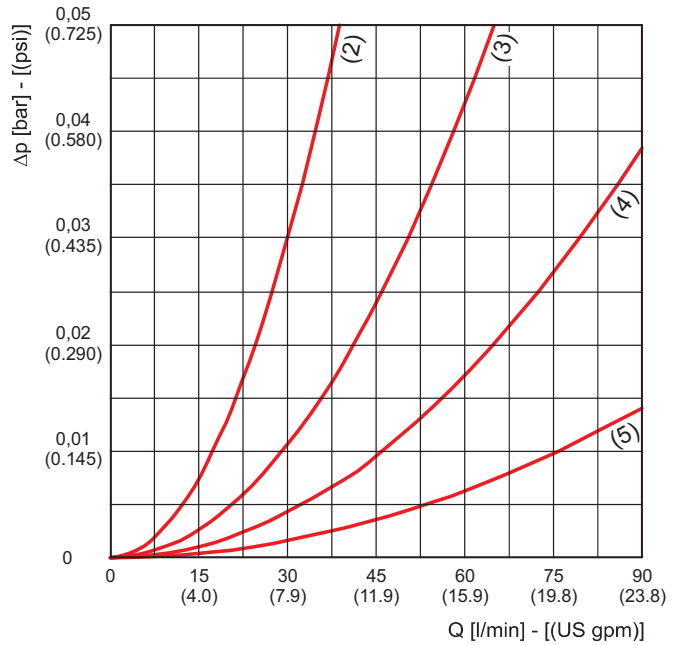
- (1) G 3/8    (4) G 1        (7) G 2
- (2) G 1/2    (5) G 1 1/4    (8) G 2 1/2
- (3) G 3/4    (6) G 1 1/2    (9) G 3

Please refer to nominal flows rates at page 3 and page 4 for a correct dimensional selection of the filters.

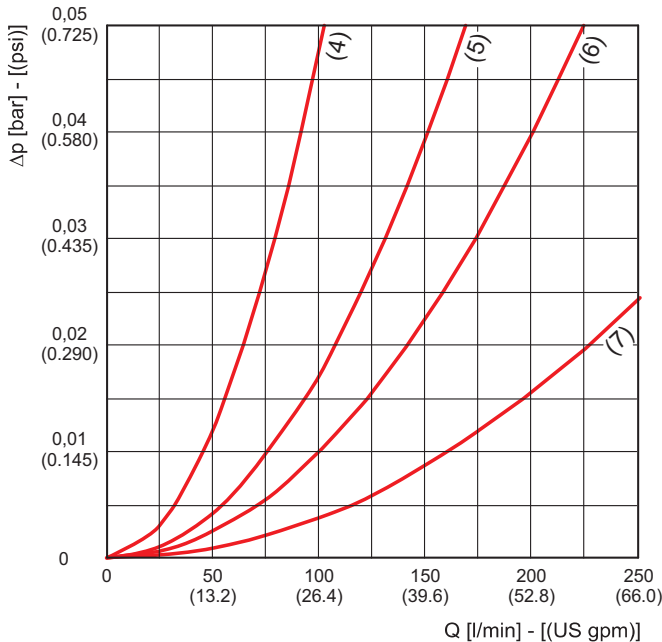
**HF410-10 / HF412-10**



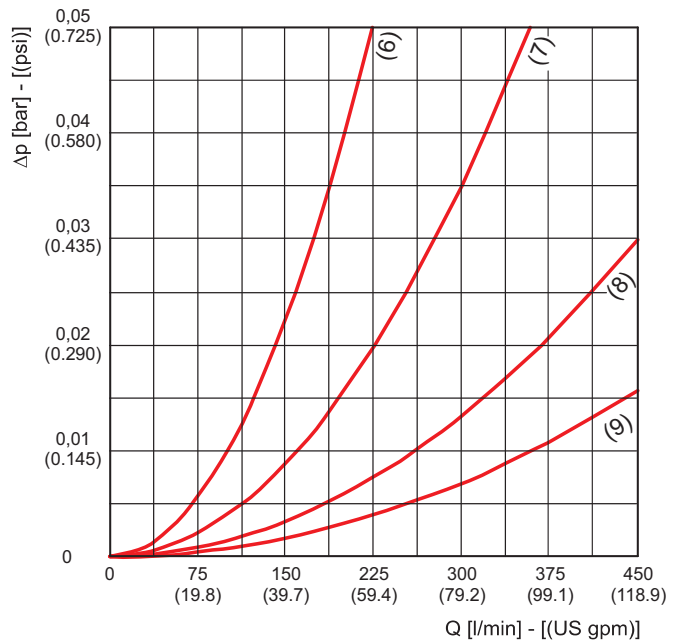
**HF410-20 / HF412-20**



**HF410-30 / HF412-30**



**HF410-40**



01/05.2011

## NOMINAL FLOWS

Filter type	Ports GAS (BSP)	Degree of filtration				
		MI025	MI060	MS090	MI125	MI250
		Nominal Flow ("AS" version values) US gpm (l/min)				
HF 410-10.060	G 3/8	1.3 (5)	2.6 (10)	4.0 (15)	4.0 (15)	4.0 (15)
	G 1/2	4.0 (15)	5.3 (20)	6.6 (25)	6.6 (25)	6.6 (25)
HF 410-20.077	G 1/2	4.0 (15)	5.3 (20)	6.6 (25)	6.6 (25)	6.6 (25)
	G 3/4	5.3 (20)	6.6 (25)	7.9 (30)	7.9 (30)	7.9 (30)
	G 1	6.6 (25)	7.9 (30)	10.6 (40)	10.6 (40)	10.6 (40)
HF 410-20.122	G 1 1/4	7.9 (30)	11.9 (45)	14.5 (55)	14.5 (55)	14.5 (55)
	G 1/2	5.3 (20)	6.6 (25)	7.9 (30)	7.9 (30)	7.9 (30)
	G 3/4	6.6 (25)	7.9 (30)	9.2 (35)	9.2 (35)	9.2 (35)
	G 1	7.9 (30)	9.2 (35)	11.9 (45)	11.9 (45)	11.9 (45)
HF 410-30.077	G 1 1/4	9.2 (35)	13.2 (50)	15.9 (60)	15.9 (60)	15.9 (60)
	G 1	6.6 (25)	7.9 (30)	10.6 (40)	10.6 (40)	10.6 (40)
	G 1 1/2	9.2 (35)	13.2 (50)	15.9 (60)	15.9 (60)	15.9 (60)
HF 410-30.122	G 2	10.6 (40)	14.5 (55)	18.5 (70)	18.5 (70)	18.5 (70)
	G 1	9.2 (35)	13.2 (50)	15.9 (60)	15.9 (60)	15.9 (60)
	G 1 1/4	11.9 (45)	15.9 (60)	19.8 (75)	19.8 (75)	19.8 (75)
	G 1 1/2	13.2 (50)	17.2 (65)	21.1 (80)	21.1 (80)	21.1 (80)
HF 410-30.162	G 2	14.5 (55)	18.5 (70)	23.8 (90)	23.8 (90)	23.8 (90)
	G 1	14.5 (55)	18.5 (70)	23.8 (90)	23.8 (90)	23.8 (90)
	G 1 1/4	15.9 (60)	22.5 (85)	27.7 (105)	27.7 (105)	27.7 (105)
HF 410-30.195	G 1 1/2	17.2 (65)	23.8 (90)	29.0 (110)	29.0 (110)	29.0 (110)
	G 2	18.5 (70)	25.1 (95)	31.7 (120)	31.7 (120)	31.7 (120)
	G 1	17.2 (65)	23.8 (90)	29.0 (110)	29.0 (110)	29.0 (110)
HF 410-40.077	G 1 1/4	19.8 (75)	26.4 (100)	33.0 (125)	33.0 (125)	33.0 (125)
	G 1 1/2	21.1 (80)	27.7 (105)	34.3 (130)	34.3 (130)	34.3 (130)
	G 2	22.5 (85)	29.0 (110)	37.0 (140)	37.0 (140)	37.0 (140)
HF 410-40.122	G 1 1/2	14.5 (55)	18.5 (70)	23.8 (90)	23.8 (90)	23.8 (90)
	G 2	17.2 (65)	23.8 (90)	29.0 (110)	29.0 (110)	29.0 (110)
	G 2 1/2	19.8 (75)	26.4 (100)	33.0 (125)	33.0 (125)	33.0 (125)
HF 410-40.162	G 3	22.5 (85)	29.0 (110)	37.0 (140)	37.0 (140)	37.0 (140)
	G 1 1/2	21.1 (80)	27.7 (105)	34.3 (130)	34.3 (130)	34.3 (130)
	G 2	23.8 (90)	31.7 (120)	39.7 (150)	39.7 (150)	39.7 (150)
	G 2 1/2	26.4 (100)	34.3 (130)	43.8 (165)	43.8 (165)	43.8 (165)
HF 410-40.195	G 3	29.0 (110)	38.3 (145)	47.6 (180)	47.6 (180)	47.6 (180)
	G 1 1/2	26.4 (100)	35.7 (135)	44.9 (170)	44.9 (170)	44.9 (170)
	G 2	30.4 (115)	39.7 (150)	50.2 (190)	50.2 (190)	50.2 (190)
HF 410-40.239	G 2 1/2	33.0 (125)	43.8 (165)	54.2 (205)	54.2 (205)	54.2 (205)
	G 3	34.3 (130)	46.2 (175)	58.1 (220)	58.1 (220)	58.1 (220)
	G 1 1/2	33.0 (125)	44.9 (170)	55.5 (210)	55.5 (210)	55.5 (210)
HF 410-40.239	G 2	37.0 (140)	48.9 (185)	60.8 (230)	60.8 (230)	60.8 (230)
	G 2 1/2	38.3 (145)	51.5 (195)	64.7 (245)	64.7 (245)	64.7 (245)
	G 3	40.9 (155)	55.5 (210)	68.7 (260)	68.7 (260)	68.7 (260)
HF 410-40.239	G 1 1/2	39.7 (150)	52.9 (200)	66.0 (250)	66.0 (250)	66.0 (250)
	G 2	42.3 (160)	56.8 (215)	71.3 (270)	71.3 (270)	71.3 (270)
	G 2 1/2	44.9 (170)	60.8 (230)	75.3 (285)	75.3 (285)	75.3 (285)
	G 3	47.6 (180)	63.4 (240)	79.3 (300)	79.3 (300)	79.3 (300)

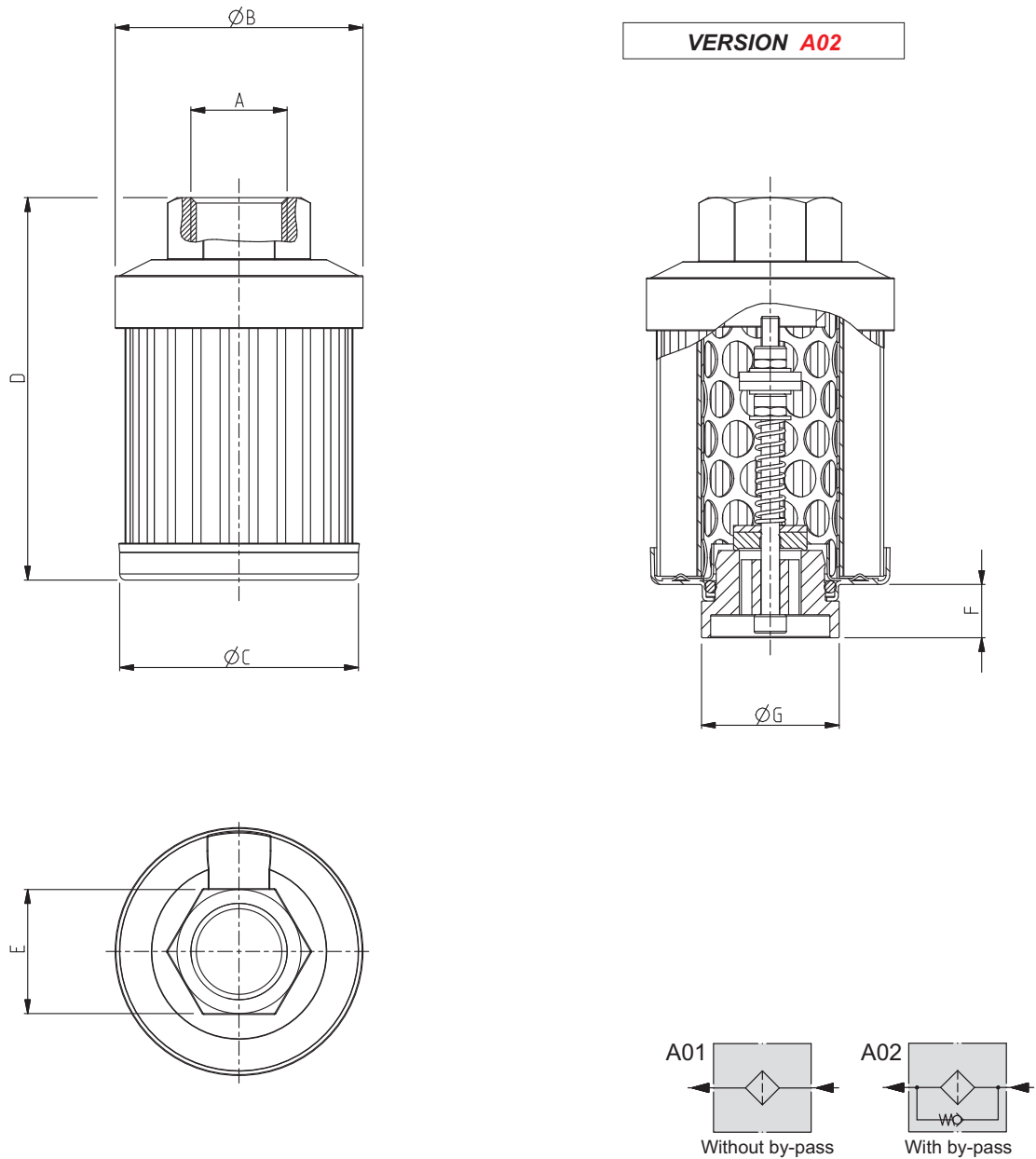
01/05.2011

**NOMINAL FLOWS**

Filter type	Ports GAS (BSPP)	Degree of filtration				
		MI025	MI060	MS090	MI125	MI250
		Nominal Flow ("AS" version values) US gpm (l/min)				
HF 412-10.075	G 3/8	1.3 (5)	2.6 (10)	4.0 (15)	4.0 (15)	4.0 (15)
	G 1/2	2.6 (10)	4.0 (15)	5.3 (20)	5.3 (20)	5.3 (20)
HF 412-10.090	G 3/8	1.3 (5)	4.0 (15)	5.3 (20)	5.3 (20)	5.3 (20)
	G 1/2	4.0 (15)	5.3 (20)	6.6 (25)	6.6 (25)	6.6 (25)
HF 412-20.090	G 3/4	5.3 (20)	6.6 (25)	7.9 (30)	7.9 (30)	7.9 (30)
	G 1	6.6 (25)	7.9 (30)	10.6 (40)	10.6 (40)	10.6 (40)
HF 412-20.120	G 3/4	6.6 (25)	7.9 (30)	9.2 (35)	9.2 (35)	9.2 (35)
	G 1	7.9 (30)	9.2 (35)	11.9 (45)	11.9 (45)	11.9 (45)
HF 412-30.120	G 1	9.2 (35)	13.2 (50)	15.9 (60)	15.9 (60)	15.9 (60)
	G 1 1/4	11.9 (45)	15.9 (60)	19.8 (75)	19.8 (75)	19.8 (75)
	G 1 1/2	13.2 (50)	17.2 (65)	21.1 (80)	21.1 (80)	21.1 (80)
	G 2	14.5 (55)	18.5 (70)	23.8 (90)	23.8 (90)	23.8 (90)
HF 412-30.181	G 1	14.5 (55)	18.5 (70)	23.8 (90)	23.8 (90)	23.8 (90)
	G 1 1/4	15.9 (60)	22.5 (85)	27.7 (105)	27.7 (105)	27.7 (105)
	G 1 1/2	17.2 (65)	23.8 (90)	29.0 (110)	29.0 (110)	29.0 (110)
	G 2	18.5 (70)	25.1 (95)	31.7 (120)	31.7 (120)	31.7 (120)
HF 412-30.241	G 1	17.2 (65)	23.8 (90)	29.0 (110)	29.0 (110)	29.0 (110)
	G 1 1/4	19.8 (75)	26.4 (100)	33.0 (125)	33.0 (125)	33.0 (125)
	G 1 1/2	21.1 (80)	27.7 (105)	34.3 (130)	34.3 (130)	34.3 (130)
	G 2	22.5 (85)	29.0 (110)	37.0 (140)	37.0 (140)	37.0 (140)

01/05.2011

**HF410-10 DIMENSION**



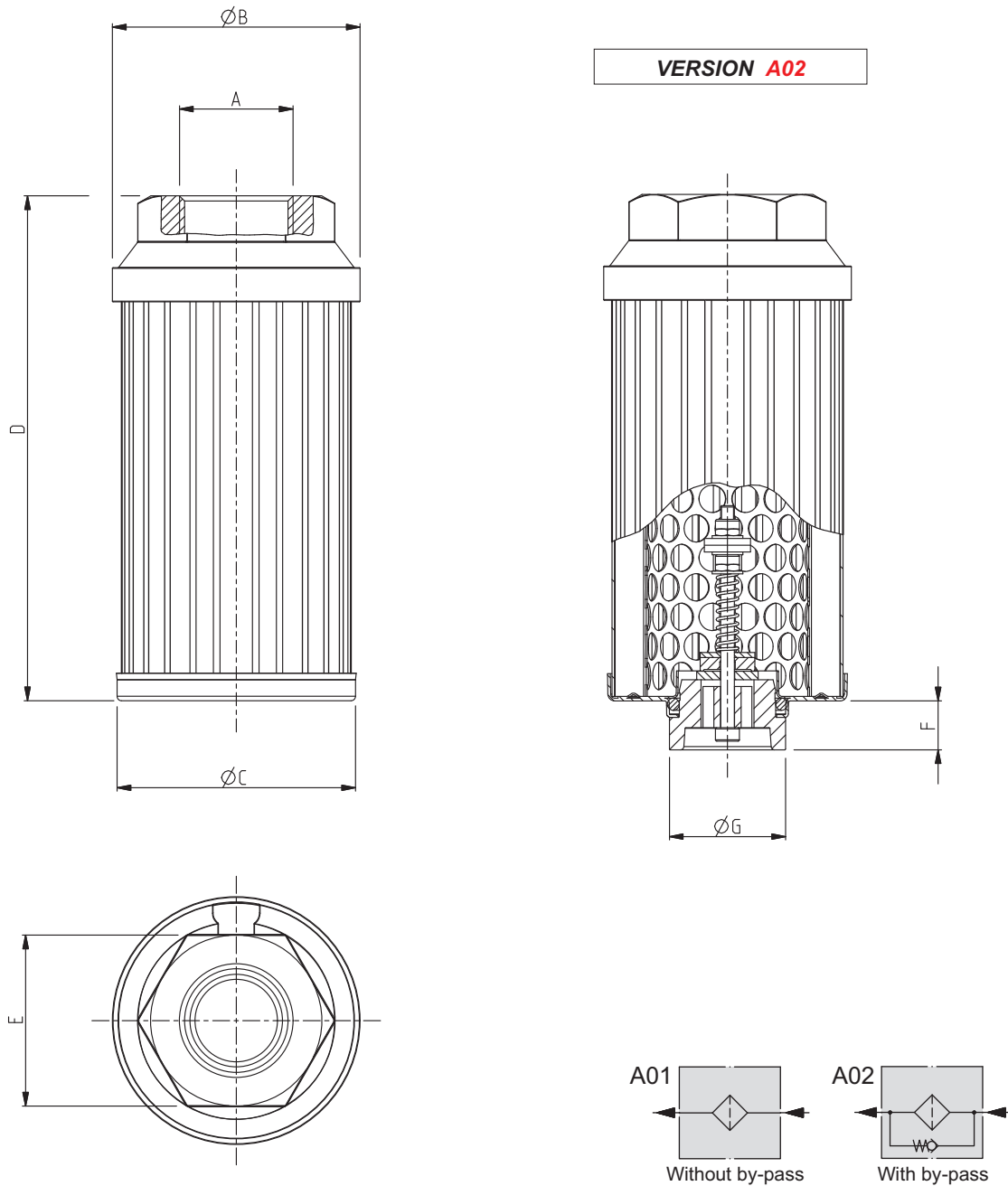
ICAT\_004\_001\_HF410

01/05.2011

Filter type	Weight		A (Thread GAS-BSP)		ØB	ØC	D	E	F	G
	kg (lbs)		Standard	On request						
<b>HF 410-10.060</b>	0,10 (0.22)		G 3/8	G 1/2	54 (2.1259)	52 (2.0472)	84 (3.3070)	27 (1.0629)	12 (0.4724)	30 (1.1810)

NPT threads are available (consult our technical department).

**HF410-20 DIMENSION**



ICAT\_004\_002\_HF410

01/05.2011

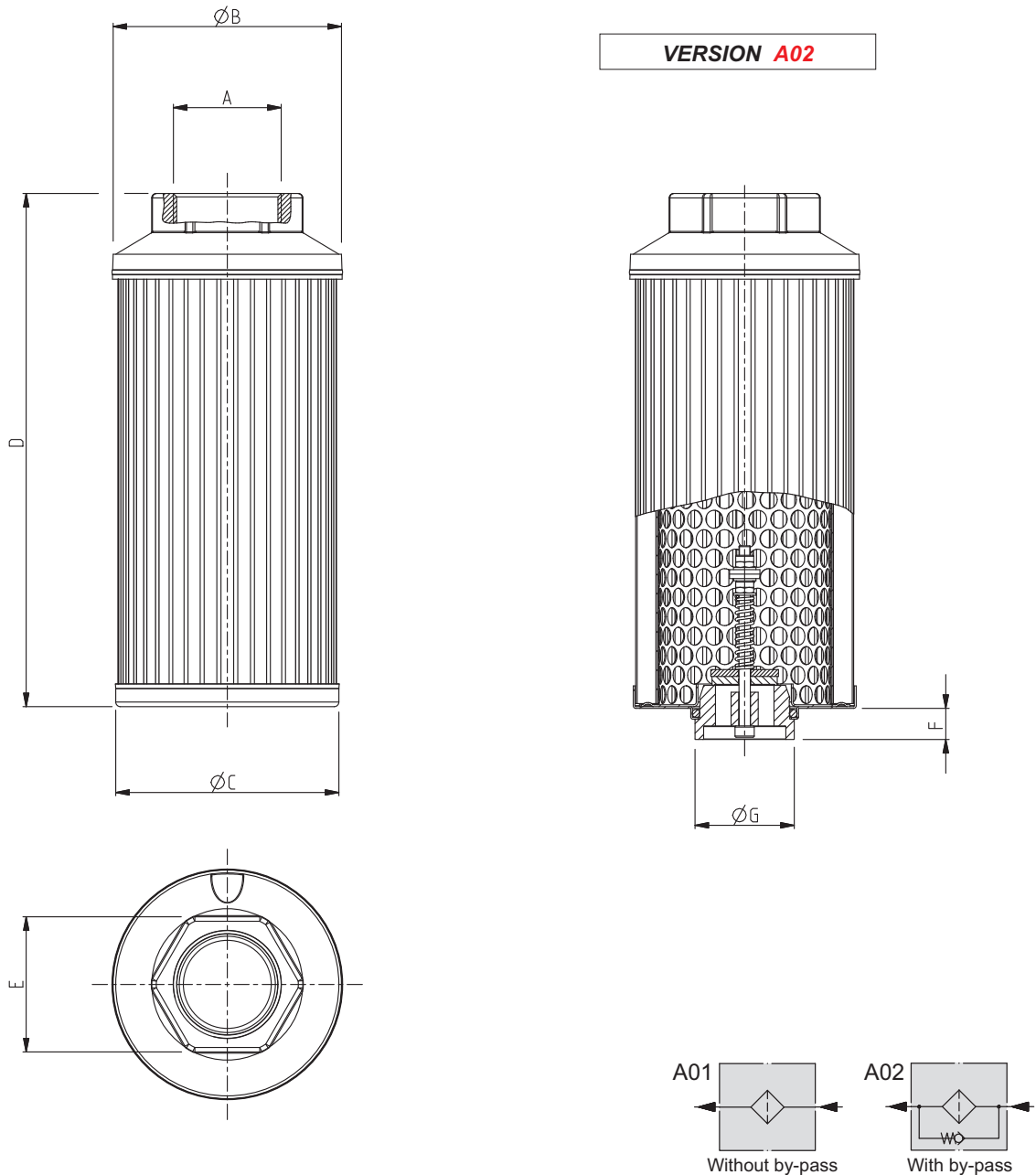
Filter type	Weight	A (Thread GAS-BSP)		ØB	ØC	D	E	F	G
	kg (lbs)	Standard	On request						
<b>HF 410-20.077</b>	0,20 (0.44)	G 1/2	G 3/4 - G 1 - G 1 1/4	72,5 (2.8543)	70 (2.7558)	104 (4.0944)	34 (1.3385)	14 (0.5511)	34 (1.3385)
<b>HF 410-20.122</b>	0,25 (0.55)	G 3/4	G 1/2 - G 1 - G 1 1/4			148 (5.8267)	(50*) (1.9684)		

NPT threads are available (consult our technical department).

(\*) Only version with A= G 1 - G 1 1/4.



**HF410-30 DIMENSION**



ICAT\_004\_003\_HF410

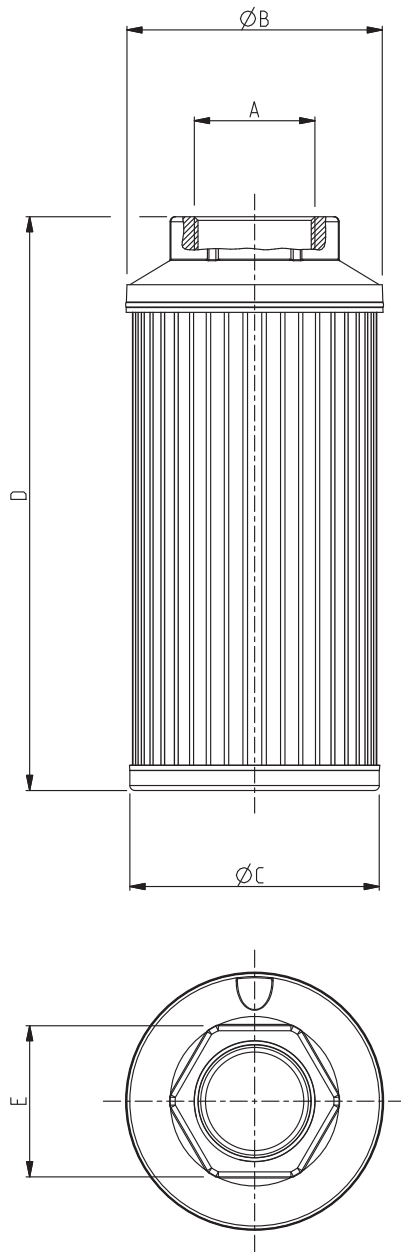
01/05.2011

Filter type	Weight		A (Thread GAS-BSP)		ØB	ØC	D	E	F	G
	kg	(lbs)	Standard	On request						
<b>HF 410-30.077</b>	0,35	(0.77)	G 1	G 1 1/4 - G 1 1/2 - G 2			110			
<b>HF 410-30.122</b>	0,40	(0.88)			102	99	155	60	14	44
							(6.1023)	(2.3621)		
<b>HF 410-30.162</b>	0,45	(0.99)	G 1 1/4	G 1 - G 1 1/2 - G 2			195	(70*)		
							(7.6771)	(2.7558)		
<b>HF 410-30.195</b>	0,50	(1.10)	G 1 1/2	G 1 - G 1 1/4 - G 2			228			
							(8.9763)			

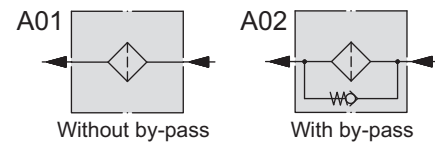
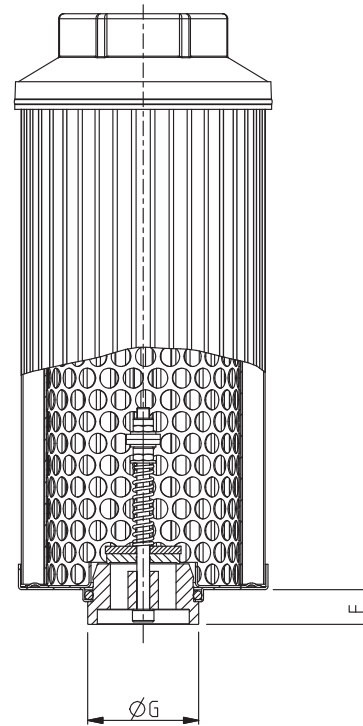
NPT threads are available (consult our technical department).

(\* ) Only version with A= G 2.

**HF 410-40 DIMENSION**



**VERSION A02**



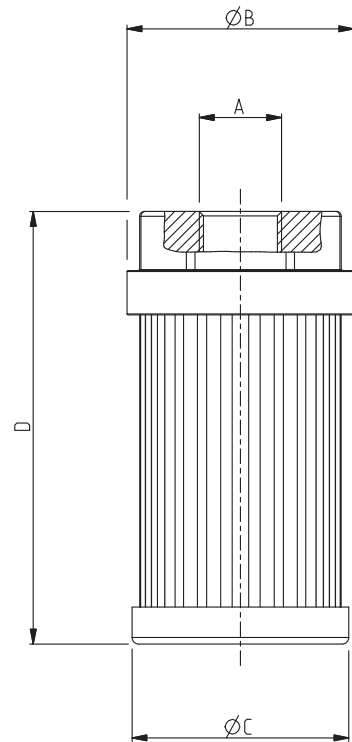
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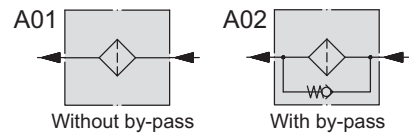
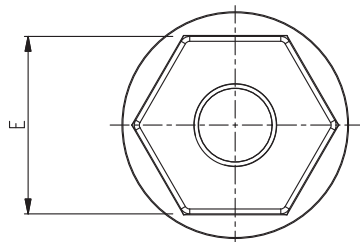
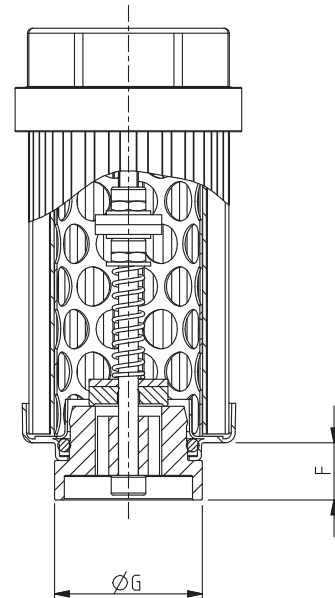
Filter type	Weight		A (Thread GAS-BSPP)		ØB	ØC	D	E	F	G
	kg (lbs)		standard	On request						
<b>HF 410-40.077</b>	0,80 (1.76)						117 (4.6062)			
<b>HF 410-40.122</b>	0,85 (1.87)						162 (6.3779)			
<b>HF 410-40.162</b>	1,00 (2.20)		G 2	G 1 1/2 - G 2 1/2 - G 3	132,5 (5.2165)	130 (5.1180)	202 (7.9527)	100 (3.9369)	14 (0.5511)	73 (2.8740)
<b>HF 410-40.195</b>	1,15 (2.53)						235 (9.2519)			
<b>HF 410-40.239</b>	1,35 (2.97)						278 (10.9448)			

NPT threads are available (consult our technical department).

**HF412-10 DIMENSION**



**VERSION A02**



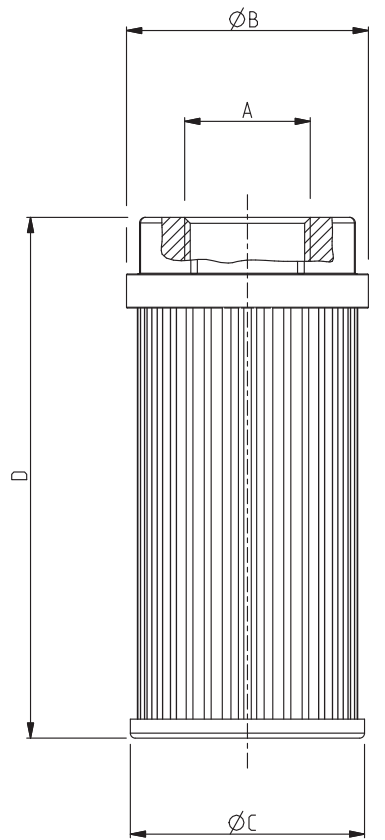
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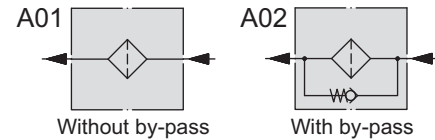
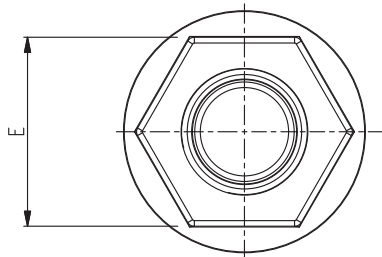
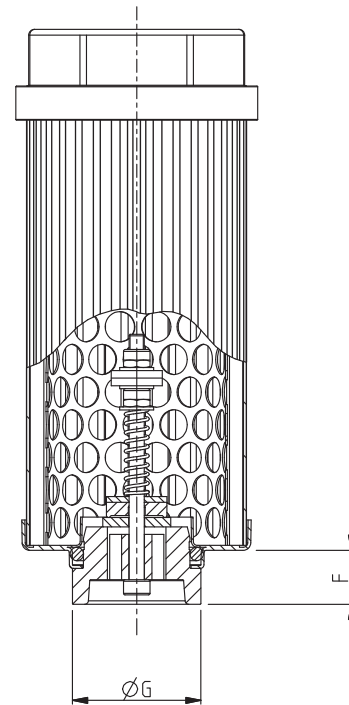
Filter type	Weight	A (Thread GAS-BSP)		ØB	ØC	D	E	F	ØG
	kg (lbs)	Standard	On request						
<b>HF 412-10.075</b>	0,10	G 3/8	G 1/2	46	44	90	36	12	30
	(0.22)								
<b>HF 412-10.090</b>	0,15	G 1/2	G 3/8	46	44	105	36	12	30
	(0.33)								

NPT threads are available (consult our technical department).

**HF412-20 DIMENSION**



**VERSION A02**



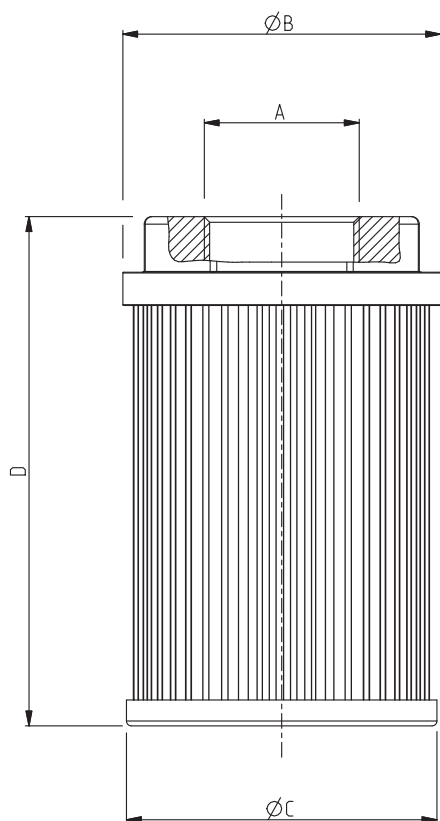
ICAT\_004\_006\_HF410

01/05.2011

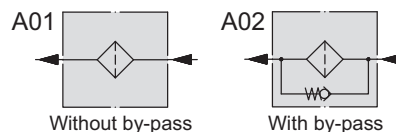
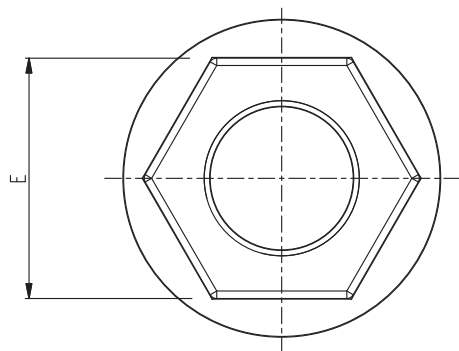
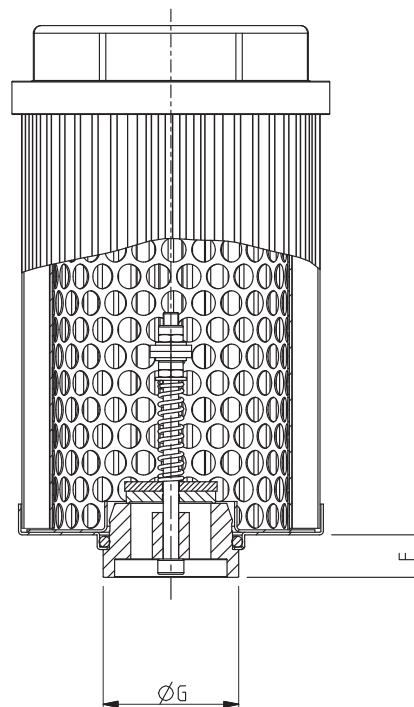
Filter type	Weight	A (Thread GAS-BSP)		ØB	ØC	D	E	F	ØG
	kg (lbs)	Standard	On request						
<b>HF 412-20.090</b>	0,20	G 3/4	G 1			109			
	(0.44)			64	62	(4.2913)	50	14	34
<b>HF 412-20.120</b>	0,25	G 1	G 3/4	(2.5196)	(2.4409)	139	(1.9684)	(0.5511)	(1.3385)
	(0.55)					(5.4724)			

NPT threads are available (consult our technical department).

**HF412-30 DIMENSION**



**VERSION A02**



ICAT\_004\_007\_HF410

01/05.2011

Filter type	Weight kg (lbs)	A (Thread GAS-BSPP)		ØB mm (in)	ØC mm (in)	D mm (in)	E mm (in)	F mm (in)	ØG mm (in)
		Standard	On request						
<b>HF 412-30.120</b>	0,40 (0.88)	G 1	G 1 1/4 - G 1 1/2 - G 2			139 (5.4724)	65 (2.5590)		
<b>HF 412-30.181</b>	0,45 (0.99)	G 1 1/2	G 1 - G 1 1/4 - G 2	86 (3.3858)	84 (3.3070)	200 (7.8739)		14 (0.5511)	44 (1.7322)
<b>HF 412-30.241</b>	0,50 (1.10)	G 2	G 1 - G 1 1/4 - G 1 1/2			260 (10.2361)	75 (2.9527)		

NPT threads are available (consult our technical department).

**FILTERING SURFACES**

Filter type	Standard filtering surface (AS)	Oversize filtering surface (FS)
	cm <sup>2</sup> (in <sup>2</sup> )	cm <sup>2</sup> (in <sup>2</sup> )
<b>HF 410-10.060</b>	290 (44.9500)	370 (57.3501)
<b>HF 410-20.077</b>	370 (57.3501)	490 (75.9501)
<b>HF 410-20.122</b>	585 (90.6751)	780 (120.9002)
<b>HF 410-30.077</b>	525 (81.3751)	680 (105.4002)
<b>HF 410-30.122</b>	830 (128.6503)	1075 (166.6253)
<b>HF 410-30.162</b>	1295 (200.7254)	1425 (220.8754)
<b>HF 410-30.195</b>	1560 (241.8005)	1870 (289.8506)
<b>HF 410-40.077</b>	955 (148.0253)	1260 (195.3004)
<b>HF 410-40.122</b>	1515 (234.8255)	2000 (310.0006)
<b>HF 410-40.162</b>	2010 (311.5506)	2655 (411.5258)
<b>HF 410-40.195</b>	2420 (375.1008)	3200 (496.001)
<b>HF 410-40.239</b>	3970 (615.3512)	5260 (815.3016)
<b>HF 412-10.075</b>	285 (44.1750)	360 (55.8001)
<b>HF 412-10.090</b>	345 (53.4751)	430 (66.6501)
<b>HF 412-20.090</b>	430 (66.6501)	560 (86.8001)
<b>HF 412-20.120</b>	575 (89.1251)	750 (116.2502)
<b>HF 412-30.120</b>	835 (129.4253)	1035 (160.4253)
<b>HF 412-30.181</b>	1260 (195.3004)	1564 (242.4205)
<b>HF 412-30.241</b>	1675 (259.6255)	2080 (322.4006)

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**HF410 CONNECTION THREADS**

Filter type	PORTS TYPE	
	Nominal size	Gas BSPP
<b>HF 410-10</b>	3/8"	GC
	1/2"	GD
<b>HF 410-20</b>	1/2"	GD
	3/4"	GE
	1"	GF
	1" 1/4	GG
<b>HF 410-30</b>	1"	GF
	1" 1/4	GG
	1" 1/2	GH
	2"	GL
<b>HF 410-40</b>	1" 1/2	GH
	2"	GL
	2" 1/2	GM
	3"	GN

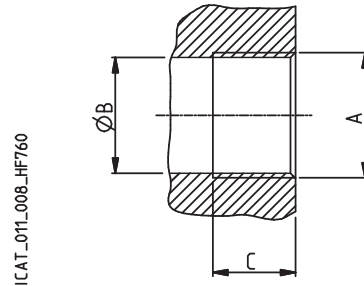
**HF412 CONNECTION THREADS**

Filter type	PORTS TYPE	
	Nominal size	Gas BSPP
<b>HF 412-10</b>	3/8"	GC
	1/2"	GD
<b>HF 412-20</b>	3/4"	GE
	1"	GF
<b>HF 412-30</b>	1"	GF
	1" 1/4	GG
	1" 1/2	GH
	2"	GL

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**GAS THREAD**
**BSPP**

Cylindrical GAS thread (55°) in accordance with UNI - ISO 228



CODE	Nominal dimension	A	Ø B		C
			mm (in)	mm (in)	mm (in)
<b>GC</b>	3/8"	G 3/8	15 (0.5906)	14 (0.5511)	
<b>GD</b>	1/2"	G 1/2	19 (0.7480)	17 (0.6692)	
<b>GE</b>	3/4"	G 3/4	24,5 (0.9646)	20 (0.7873)	
<b>GF</b>	1"	G 1	30,5 (1.2008)	22 (0.8661)	
<b>GG</b>	1"1/4	G 1 1/4	39 (1.5354)	24 (0.9448)	
<b>GH</b>	1"1/2	G 1 1/2	45 (1.7716)	26 (1.0236)	
<b>GL</b>	2"	G 2	57 (2.2440)	32 (1.2598)	
<b>GM</b>	2"1/2	G 2 1/2	72,5 (2.8543)	32 (1.2598)	
<b>GN</b>	3"	G 3	85 (3.3464)	32 (1.2598)	

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## ASSEMBLY AND FILTER SUBSTITUTION INSTRUCTIONS

### ASSEMBLY

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

- A Screw the filter on the male junction until getting the attainment of a reassuring filtering torque, possibly using anti unscrewing devices.
- B Make sure that the liquid's minimum level in the tank totally covers the filters, in both static and dynamic work situations.
- C Make sure that the machine works normally, always verifying the depression level through an eventual indicator put on the suction line.
- D We suggest the filter's horizontal position to considerably reduce the oil's minimum level.

### FILTER SUBSTITUTION

Once the working hour limit indicated in the maintenance instructions of the system has been reached, or when the suction line's clogging indicators reach the maximum depression's limit established, the filter needs to be substituted taking care of the eventual oil leaks due to this operation. So it is advisable to hold containers for the collection. Proceed as follows:

- A Stop the system in "Machine stopped" status.
- B Secure any shut-off valves on the hydraulic circuit.
- C Take the filter off from the tank.
- D Unscrew the filter.
- E Proceed following the assembly instructions.
- F Restart the machine.
- G Make sure that the machine works normally, always verifying the depression level through an eventual indicator put on the suction line.



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## HOW TO ORDER A COMPLETE FILTER

	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>5</b>	
<b>HF410</b>	-	<b>10.060</b>	-	<b>AS</b>	-	<b>MS090</b>	-	<b>GD</b>	-	<b>A01</b>
<b>HF412</b>										

1	Filter type	CODE
	See table from pag. 5 to pag. 8	<b>HF410-</b>
	See table from pag. 9 to pag. 11	<b>HF412-</b>
2	Filtering surface	CODE
	Standard	<b>AS</b>
	Oversized	<b>FS</b>
3	Degree of filtration	CODE
	25 [µm] Stainless steel wire mesh	<b>MI025</b>
	60 [µm] Stainless steel wire mesh	<b>MI060</b>
	90 [µm] Steel wire mesh	<b>MS090</b>
	125[µm] Stainless steel wire mesh	<b>MI125</b>
	250[µm] Stainless steel wire mesh	<b>MI250</b>

4	Inlet port	CODE
	Thread GAS (BSPP)	
	G 3/8	<b>GC</b>
	G 1/2	<b>GD</b>
	G 3/4	<b>GE</b>
	G 1	<b>GF</b>
	G 1 1/4	<b>GG</b>
	G 1 1/2	<b>GH</b>
	G 2	<b>GL</b>
	G 2 1/2	<b>GM</b>
	G 3	<b>GN</b>

\*In case of NPT inlet port, substitute letter **G** in the code to letter **N**.  
(ex. thread 1" NPT = NF).

5	Optionals	CODE
	None (standard)	<b>A01</b>
	With By-pass	<b>A02</b>

Standard  
 On request

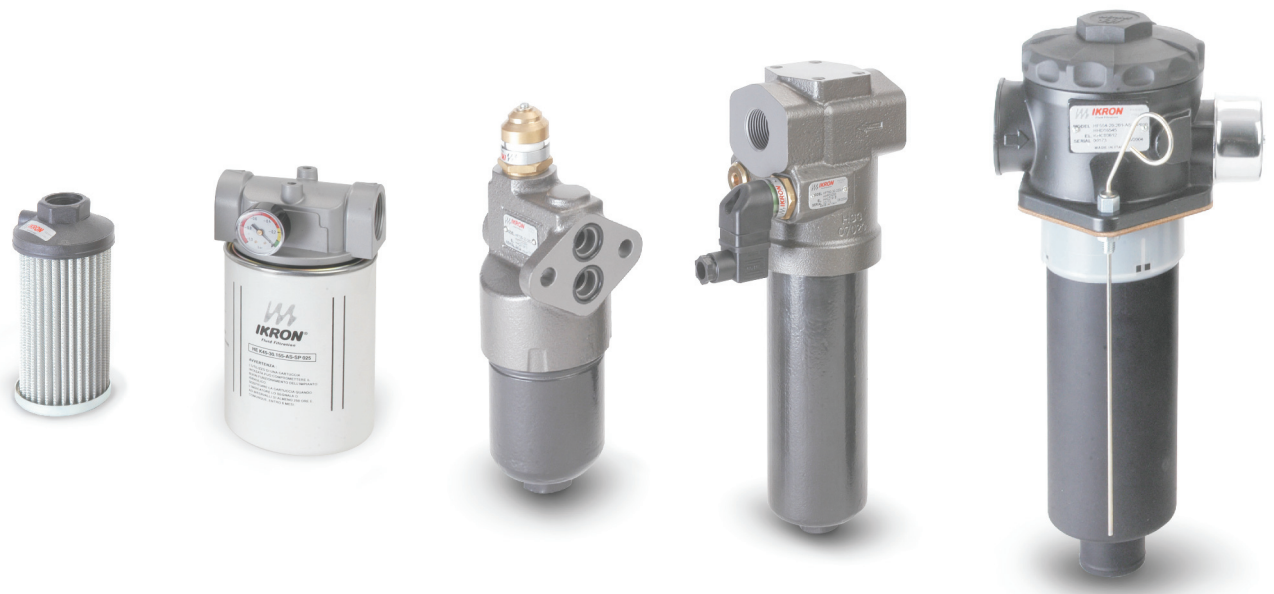
Building & construction

Agriculture

Truck Market

Material Handling

Industrial



Full range of filters  
for all hydraulic circuits

## Suction filters

HF 410  
HF 412  
HF 431  
HF 434  
HF 437

## Tank mounted return line filters

HF 502  
HF 508  
HF 547  
HF 554  
HF 570  
HF 575  
HF 578  
HF 595

## In line filters Spin-On

HF 620  
HF 625  
HF 650

## In line medium and high pressure filters

HF 690  
HF 705  
HF 710  
HF 725  
HF 735  
HF 745  
HF 760  
HF 761

## Accessories

Filler breathers  
Air filters  
Level and temperature gauges  
Pressure gauges  
Pressure/vacuum gauges  
Clogging indicators



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