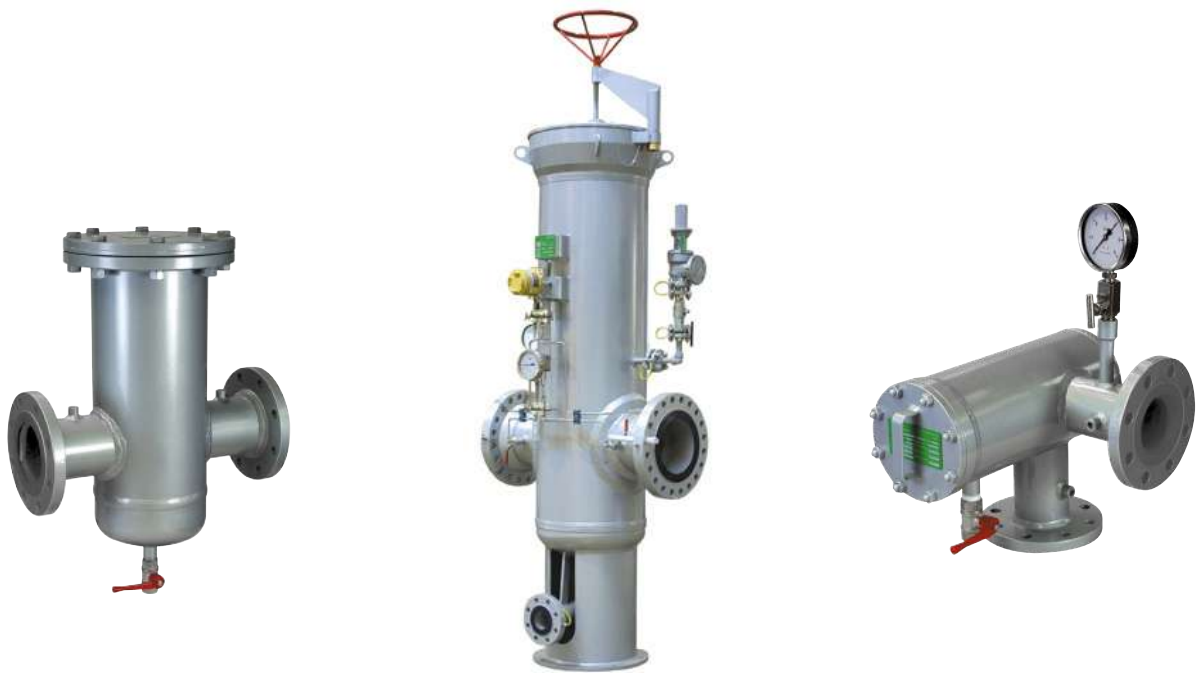


HFA - HFB Filters

High-Medium Pressure Applications



TECHNICAL BROCHURE

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The data are not binding. We reserve the right
to make changes without prior notice.

filters_HPMP_technicalbrochure_ENG_revB

www.f Fiorentini.com

Who we are

We are a global organization that specializes in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission and distribution systems.

We are the ideal partner for operators in the Oil & Gas sector, with a business solutions that span the whole natural gas chain.

We are constantly evolving to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customized technologies and an after-sale service program undertaken with the highest level of professionalism.



Pietro Fiorentini advantages



Localised technical support

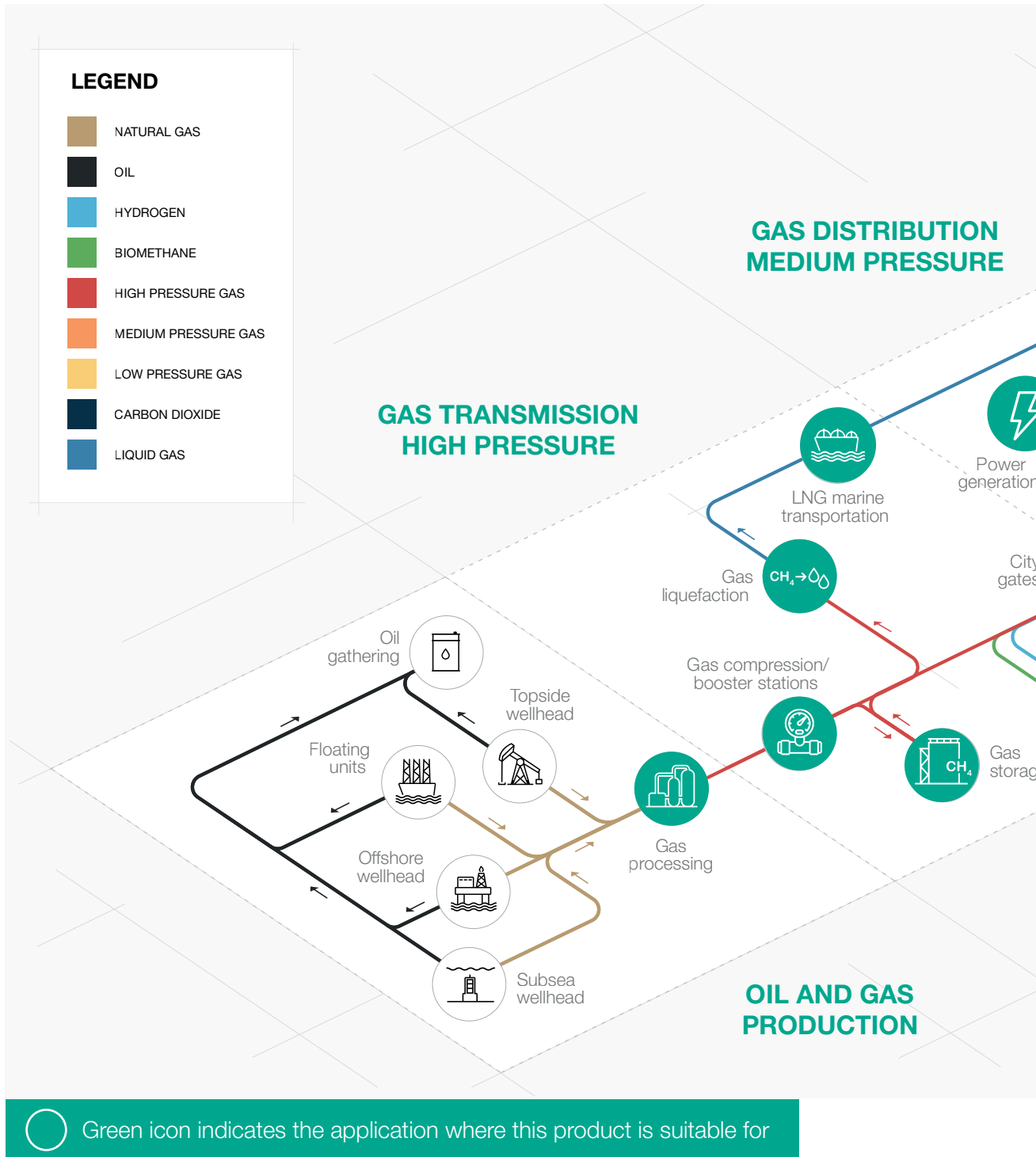


Experience since 1940



Operating in over 100 countries

Area of Application



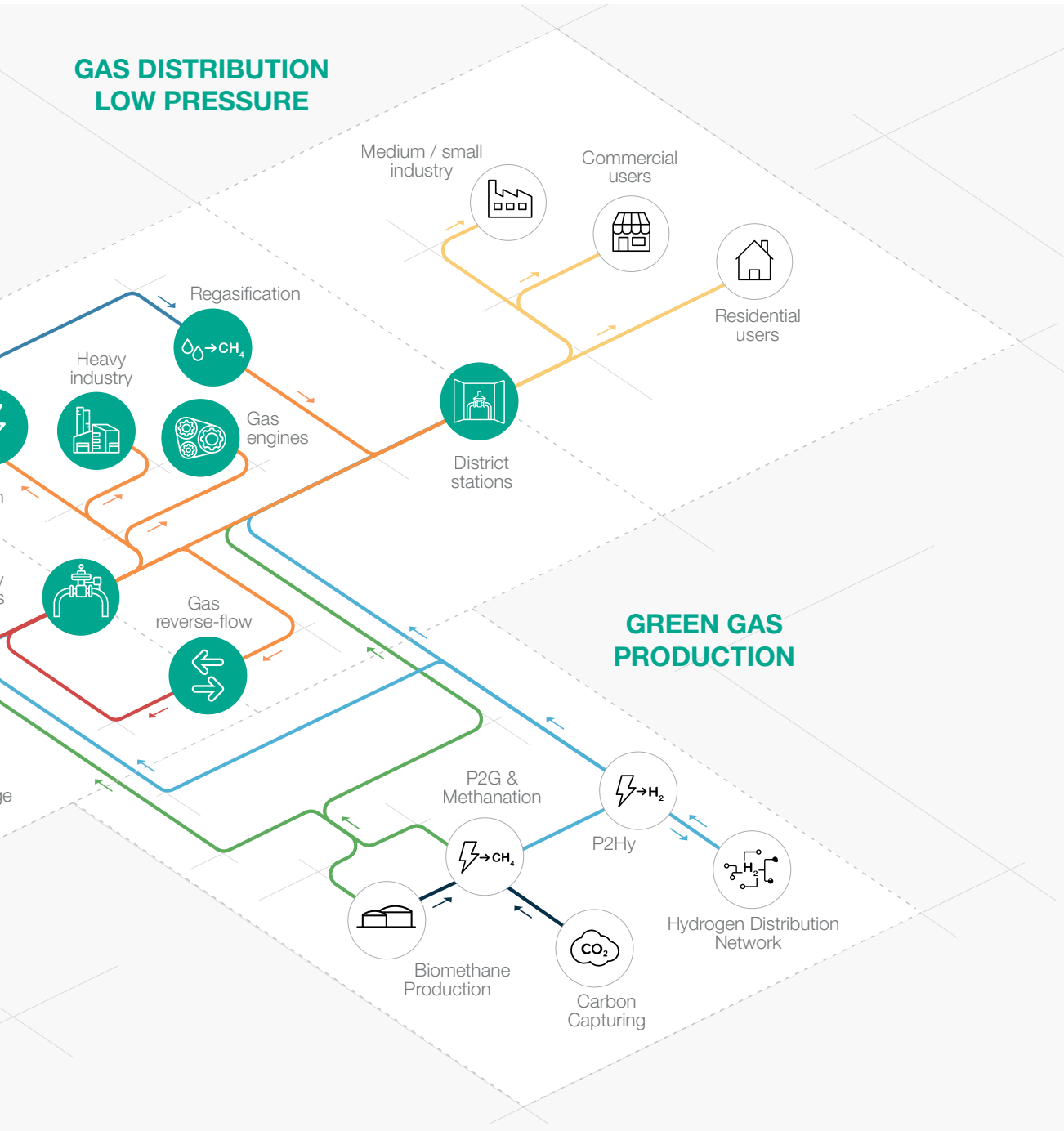


Figure 1 Area of Application Map



Introduction

In gas pressure reduction and metering plants it is good practice to protect pressure regulators, valves, meters and all other components from the solid particles inside the gas, if any.

Pietro Fiorentini filters are designed with this purpose in mind: they are manufactured in different types and sizes in order to meet all the needs. They are equipped with nipples for the assembly of the several accessories. They are designed to be sturdy and may be easily installed and maintained. The filtering element is able to filter the solid particles with filtrations up to 5 μm .

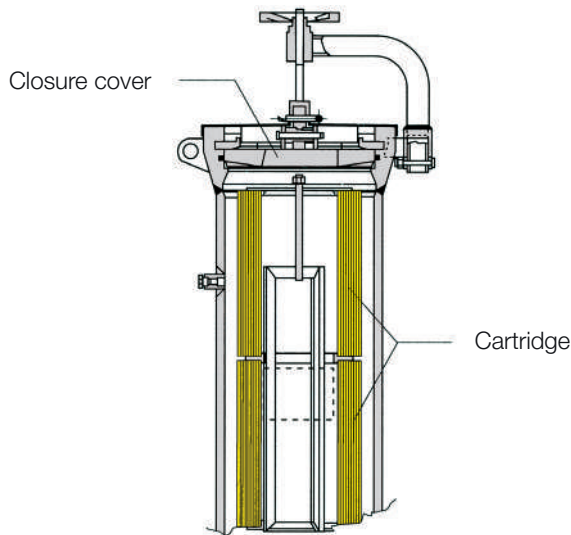


Figure 2 HFA/.. filter section

Filters competitive advantages



Compact design



Easy maintenance



Top entry



Fast response time



High turn down ratio



High accuracy



Low operation cost



Wide range of applications

Construction Standards and Approvals

- EN 13445: line flanges EN1092-1 or ASME B16.5. Follows Directive 2014/68/EU (PED)
- ASME VIII Div. 1: line flanges ASME B16.5. Does not follow Directive 2014/68/EU (PED)

Filtering area calculations

$$A = \frac{Q}{P \times V \times 3600}$$

Where:

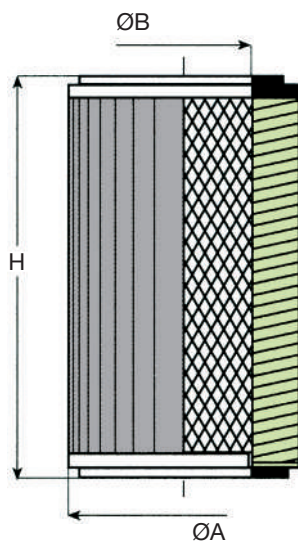
A= filtering area in smq

Q= filtering flow rate Stm³/h

P= Absolute pressure in bar

V= Speed at the filter cartridge in m/sec (0.33 suggested)

Filtering cartridge dimensions



Dimension	G 0.5		G 1		G 1.5	
Unit	[mm]	in	[mm]	in	[mm]	in
H	120	4,7"	165	6,5"	210	8.3"
A	80	3,1"	95	3.7"	120	4.7"
B	35	1,4"	50	2.0"	69	2.7"
Filter area (sqm)	0.06	0,6"	0.125	1.3"	0.23	2.5"

Table 1 Cartridge dimensions

Figure 3 Cartridge dimensions

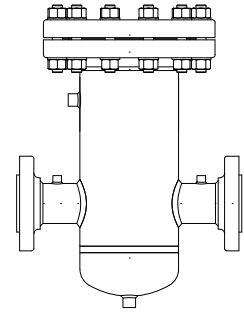
Dimension	G 2		G 2.5		G 3		G 4		G 5		G 6	
Unit	[mm]	in	[mm]	in	[mm]	in	[mm]	in	[mm]	in	[mm]	in
H	270	10.6"	283	11.1"	320	12.6"	415	16.3"	470	18.5"	625	24.6"
A	165	6.5"	200	7.9"	252	9.9"	299	11.8"	390	15.4"	475	18.7"
B	86	3.4"	110	4.3"	138	5.4"	186	7.3"	246	9.7"	320	12.6"
Filter area (sqm)	0.47	5.1"	0,725	7.8"	0.95	10.2"	1.45	15.6"	2.3	24.7"	4.2	45.2"

Table 2 Cartridge dimensions



HFA/.. Filters

Cartridge filter with in-line nozzles. The following numbers are related to the dimensions of cartridges. Filter orientation can be either vertical or horizontal. Access to internals by means of a flanged joint.



Features

Features	Values
Application field	Natural gas, town gas, non corrosive gases
Design pressure	Up to 10 MPa Up to 100 bar
Maximum working temperature	From -10° C to +100° C (possibility of reaching up to -45° C) From +14° F to +212° F (possibility of reaching up to -49° F)
Collecting capacity	Over 12% of total filter capacity with drain on bottom part
Flange connections	PN16, Cl.150, Cl.300 Cl.600
Connections	Inline
Filtering capacity	5 micron (possibility of other grades: 1-3-50 micron)
Filtering efficiency	98%

NOTE: Different functional features and/or extended temperature ranges may be available on request. Stated inlet gas temperature range is the maximum for which the equipment's full performance, including accuracy is guaranteed. Product may have a different pressure or temperature ranges according to the version and/or installed accessories.

Table 3 Features

Materials

Part	Material
Pipe	ASTM A 106 Gr. B
Flanges	ASTM A 105
Cartridge	Felt polyester drilled and reinforced steel plate

NOTE: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.

Table 4 Materials

Design temperature and pressure

Flange	Type of data	Temperature		Allowable pressure	
		°C	°F	MPa	barg
PN16	Design	+50	+122	1.6	16
	Design	+100	+212	1.48	14.8
Cl.150	Design	+50	+122	1.9	19
	Design	+100	+212	1.77	17.7
Cl.300	Design	+50	+122	5	50
	Design	+100	+212	4.66	46.6
Cl.600	Design	+50	+122	10	100
	Design	+100	+212	9.3	93

Table 5 Design temperature and pressure

Available accessories

- Drain ball valve
- Clogging indicator with/without remote switch (reed contact)
- Manifold for clogging indicator
- Pressure gauge with needle valve

Available types

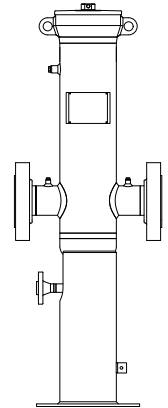
TYPE	DN	Available nozzle											Drain	Cartridge type	Cartridge q.ty	Total vol			
		25	32	40	50	65	80	100	125	150	200	250				300	L	Gal (UK)	
		1	1"1/4	1"1/2	2	2"1/2	3	4	5	6	8	10				12			
	HFA/0.5	X	X	X	X										1/2"	G 0.5	1	3	0.66
	HFA/1			X	X	X									1/2"	G 1	1	6	1.32
	HFA/1.5				X	X	X								1/2"	G 1.5	1	10	2.20
	HFA/2					X	X	X							1/2"	G 2	1	22	4.84
	HFA/2.5						X	X	X						1/2"	G 2.5	1	41	9.02
	HFA/3							X	X	X					1/2"	G 3	1	60	13.20
	HFA/4								X	X	X				1"	G 4	1	125	27.50
	HFA/5										X	X	X		1"	G 5	1	240	52.79
	HFA/6											X	X		1"	G 6	1	400	87.99

Table 6 Cartridge types available



HFA/.. TRC Filters

Cartridge filter with in-line nozzles. The following numbers are related to the dimensions of cartridges. Filter orientation is only vertical. Access to internals by means of a quick-opening closure.



Features

Features	Values
Application field	Natural gas, town gas, non corrosive gases
Design pressure	Up to 10 MPa Up to 100 bar
Maximum working temperature	From -10° C to +100° C (possibility of reaching up to -45° C) From +14° F to +212° F (possibility of reaching up to -49° F)
Collecting capacity	Over 12% of total filter capacity with drain on bottom part
Flange connections	PN16, Cl.150, Cl.300 Cl.600
Connections	Inline
Filtering capacity	5 micron (possibility of other grades: 1-3-50 micron)
Filtering efficiency	98%

NOTE: Different functional features and/or extended temperature ranges may be available on request. Stated inlet gas temperature range is the maximum for which the equipment's full performance, including accuracy is guaranteed. Product may have a different pressure or temperature ranges according to the version and/or installed accessories.

Table 7 Features

Materials

Part	Material
Pipe	ASTM A 106 Gr. B
Flanges	ASTM A 105
Cartridge	Felt polyester drilled and reinforced steel plate

NOTE: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.

Table 8 Materials

Design temperature and pressure

Flange	Type of data	Temperature		Allowable pressure	
		°C	°F	MPa	barg
PN16	Design	+50	+122	1.6	16
	Design	+100	+212	14.8	1.48
Cl.150	Design	+50	+122	1.9	19
	Design	+100	+212	1.77	17.7
Cl.300	Design	+50	+122	5	50
	Design	+100	+212	4.66	46.6
Cl.600	Design	+50	+122	10	100
	Design	+100	+212	9.3	93

Table 9 Design temperature and pressure

Available accessories

- Drain ball valve
- Clogging indicator with/without remote switch (reed contact)
- Manifold for clogging indicator
- Pressure gauge with needle valve

Available types

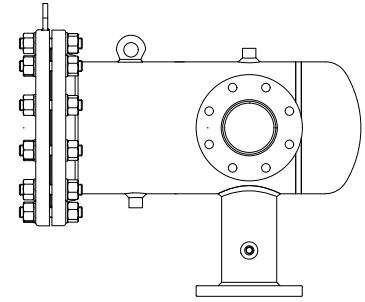
DN	Available nozzle												Drain	Cartridge type	Cartridge q.ty	Total vol		
	25	32	40	50	65	80	100	125	150	200	250	300				L	Gal (UK)	
NPS	1	1"1/4	1"1/2	2	2"1/2	3	4	5	6	8	10	12						
TYPE	HFA/1 TRC			X	X	X								1/2"	G 1	1	6	1.32
	HFA/1.5 TRC				X	X	X							1/2"	G 1.5	1	10	2.20
	HFA/2 TRC					X	X	X						1/2"	G 2	1	22	4.84
	HFA/2.5 TRC						X	X	X					1/2"	G 2.5	1	41	9.02
	HFA/3 TRC							X	X	X				1/2"	G 3	1	60	13.20
	HFA/4 TRC								X	X	X			1"	G4	1	125	27.50
	HFA/5 TRC										X	X	X	1"	G 5	1	240	52.79
	HFA/6 TRC											X	X	1"	G 6	1	400	87.99
	HFA/10 TRC			X	X	X								1/2"	G 1	2	10	2.20
	HFA/15 TRC				X	X	X							1/2"	G 1.5	2	15	3.30
	HFA/20 TRC					X	X	X						1"	G 2	2	30	6.60
	HFA/25 TRC						X	X	X					1"	G 2.5	2	50	11.00
	HFA/30 TRC							X	X	X				1"	G 3	2	85	18.70
	HFA/40 TRC								X	X	X			1"	G 4	2	170	37.39
	HFA/50 TRC									X	X	X		1"1/2	G 5	2	310	68.19
	HFA/60 TRC										X	X	X	1"1/2	G 6	2	570	125.38

Table 10 Cartridge types available



HFB/.. Filters

Cartridge filter with right angles nozzles. The following numbers are related to the dimensions of cartridges. The main body can be either horizontal or vertical. Access to internals by means of a flanged joint.



Features

Features	Values
Application field	Natural gas, town gas, non corrosive gases
Design pressure	Up to 10 MPa Up to 100 bar
Maximum working temperature	From -10° C to +100° C (possibility of reaching up to -45° C) From +14° F to +212° F (possibility of reaching up to -49° F)
Collecting capacity	Over 12% of total filter capacity with drain on bottom part
Flange connections	PN16, Cl.150, Cl.300 Cl.600
Connections	Inline
Filtering capacity	5 micron (possibility of other grades: 1-3-50 micron)
Filtering efficiency	98%

NOTE: Different functional features and/or extended temperature ranges may be available on request. Stated inlet gas temperature range is the maximum for which the equipment's full performance, including accuracy is guaranteed. Product may have a different pressure or temperature ranges according to the version and/or installed accessories.

Table 11 Features

Materials

Part	Material
Pipe	ASTM A 106 Gr. B
Flanges	ASTM A 105
Cartridge	Felt polyester drilled and reinforced steel plate

NOTE: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.

Table 12 Materials

Design temperature and pressure

Flange	Type of data	Temperature		Allowable pressure	
		°C	°F	MPa	barg
PN16	Design	+50	+122	1.6	16
	Design	+100	+212	14.8	1.48
Cl.150	Design	+50	+122	1.9	19
	Design	+100	+212	1.77	17.7
Cl.300	Design	+50	+122	5	50
	Design	+100	+212	4.66	46.6
Cl.600	Design	+50	+122	10	100
	Design	+100	+212	9.3	93

Table 13 Design temperature and pressure

Available accessories

- Drain ball valve
- Clogging indicator with/without remote switch (reed contact)
- Manifold for clogging indicator
- Pressure gauge with needle valve

Available types

TYPE	DN	Available nozzle												Drain	Cartridge type	Cartridge q.ty	Total vol		
		25	32	40	50	65	80	100	125	150	200	250	300				L	Gal (UK)	
		1	1"1/4	1"1/2	2	2"1/2	3	4	5	6	8	10	12						
	HFB/0.5	X	X	X	X										1/2"	G 0.5	1	3	0.66
	HFB/1			X	X	X									1/2"	G 1	1	5	1.10
	HFB/1.5				X	X	X								1/2"	G 1.5	1	10	2.20
	HFB/2					X	X	X							1/2"	G 2	1	20	4.40
	HFB/2.5						X	X	X						1/2"	G 2.5	1	40	8.80
	HFB/3							X	X	X					1/2"	G 3	1	60	13.20
	HFB/4								X	X	X				1"	G 4	1	180	39.59
	HFB/5										X	X	X		1"	G 5	1	215	47.29

Table 14 Cartridge types available



Weights and Dimensions

HFA/..

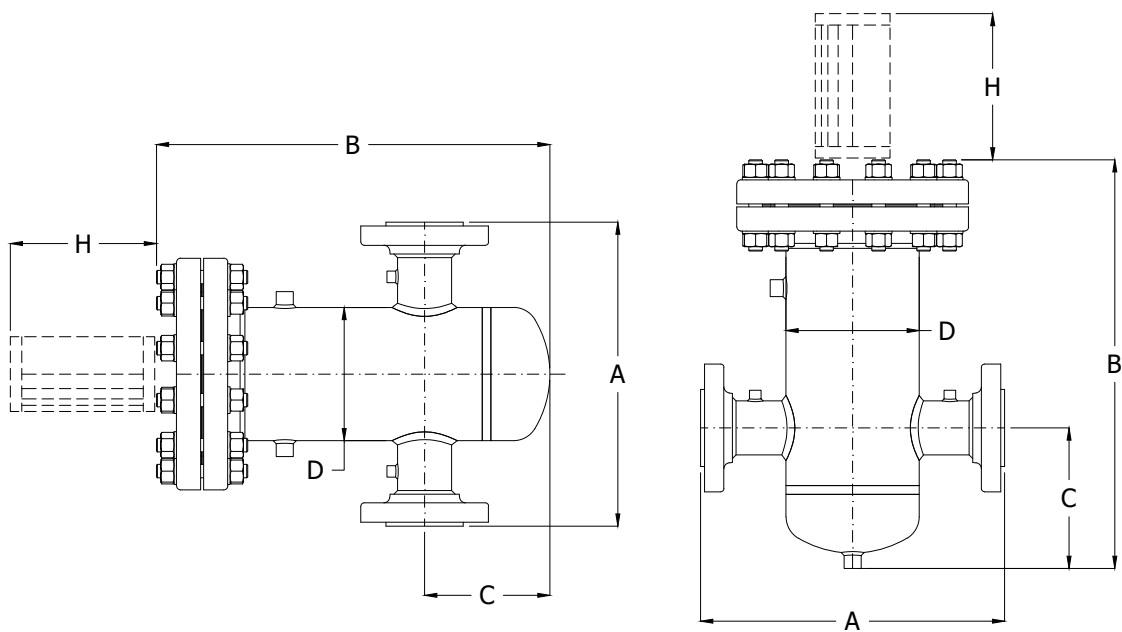


Figure 4 HFA/.. dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)																		
Type	0.5		1		1.5		2		2.5		3		4		5		6	
	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches
A	300	11.8"	400	15.7"	450	17.7"	500	19.7"	600	23.6"	650	25.6"	800	31.5"	900	35.4"	1100	43.3"
B	400	15.7"	460	18.1"	540	21.3"	695	27.4"	795	31.3"	855	33.7"	1085	42.7"	1245	49.0"	2135	84.1"
C	166	6.5"	188	7.4"	220	8.7"	245	9.6"	280	11.0"	310	12.2"	375	14.8"	460	18.1"	800	31.5"
D	114.3	4.5"	141.3	5.6"	168.3	6.6"	219.1	8.6"	273	10.7"	323.8	12.7"	406.4	16.0"	508	20.0"	610	24.0"
H	170	6.7"	215	8.5"	252	9.9"	320	12.6"	333	13.1"	370	14.6"	465	18.3"	520	20.5"	675	26.6"
Weight	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs
	30	66	30	66	42	93	70	154	110	242	130	287	250	551	408	899	750	1653

Table 16 HFA/.. weights and dimensions

HFA/.. TRC

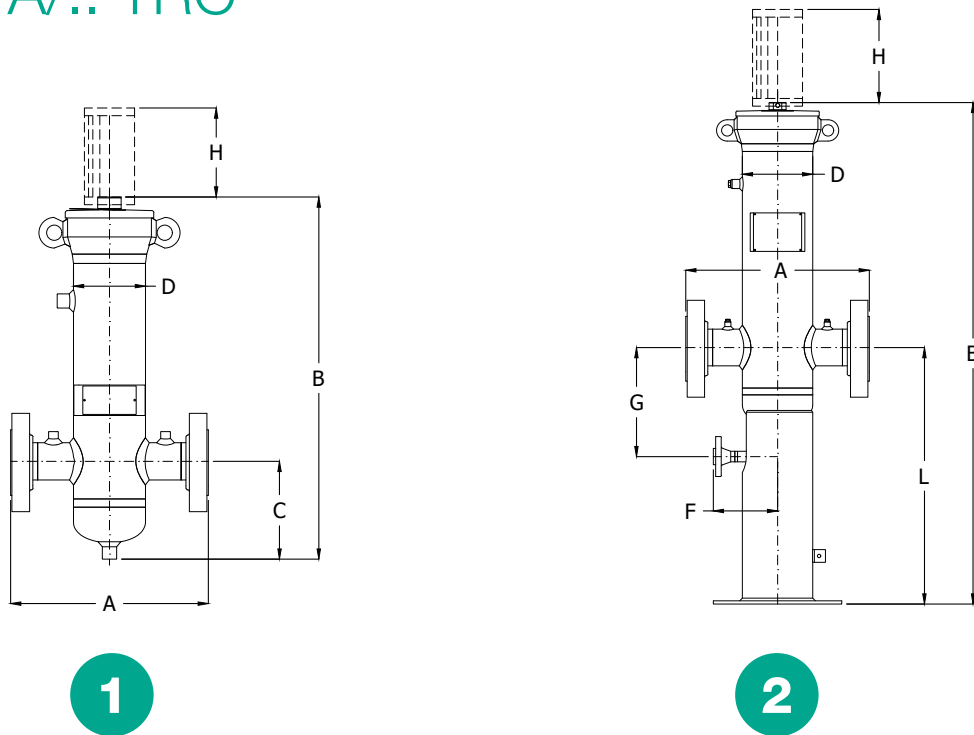


Figure 5 From HFA/.. TRC

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)											
Type	1		1.5		2		10		15		
	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	
A	500	19.7"	550	21.7"	650	25.6"	500	19.7"	550	21.7"	
B	530	20.9"	610	24.0"	750	29.5"	705	27.8"	875	34.4"	
C	190	7.5"	210	8.3"	270	10.6"	190	7.5"	245	9.6"	
D	141.3	5.6"	168.3	6.6"	219.1	8.6"	141.3	5.6"	168.3	6.6"	
H	215	8.5"	252	9.9"	320	12.6"	215	8.5"	252	9.9"	
Weight	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	
	67	148	80	176	120	265	70	154	75	165	

Table 17 From HFA/.. TRC weights and dimensions (refer to drawing **1**)

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)												
Type	20		25		30		40		50		60	
	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches
A	650	25.6"	750	29.5"	800	31.5"	1000	39.4"	1100	43.3"	1200	47.2"
B	1560	61.4"	1620	63.8"	2030	79.9"	2370	93.3"	2695	106.1"	3260	128.3"
D	219.1	8.6"	273.0	10.7"	323.8	12.7"	406.4	16.0"	508.0	20.0"	610.0	24.0"
F	200	7.9"	200	7.9"	250	9.8"	320	12.6"	350	13.8"	400	15.7"
G	300	11.8"	365	14.4"	420	16.5"	550	21.7"	660	26.0"	750	29.5"
H	320	12.6"	333	13.1"	370	14.6"	465	18.3"	520	20.5"	675	26.6"
L	800	31.5"	800	31.5"	800	31.5"	900	35.4"	1000	39.4"	1100	43.3"
Weight	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs
	170	375	320	705	370	816	690	1521	1400	3086	2200	4850

Table 18 From HFA/.. TRC weights and dimensions (refer to drawing **2**)



HFB/..

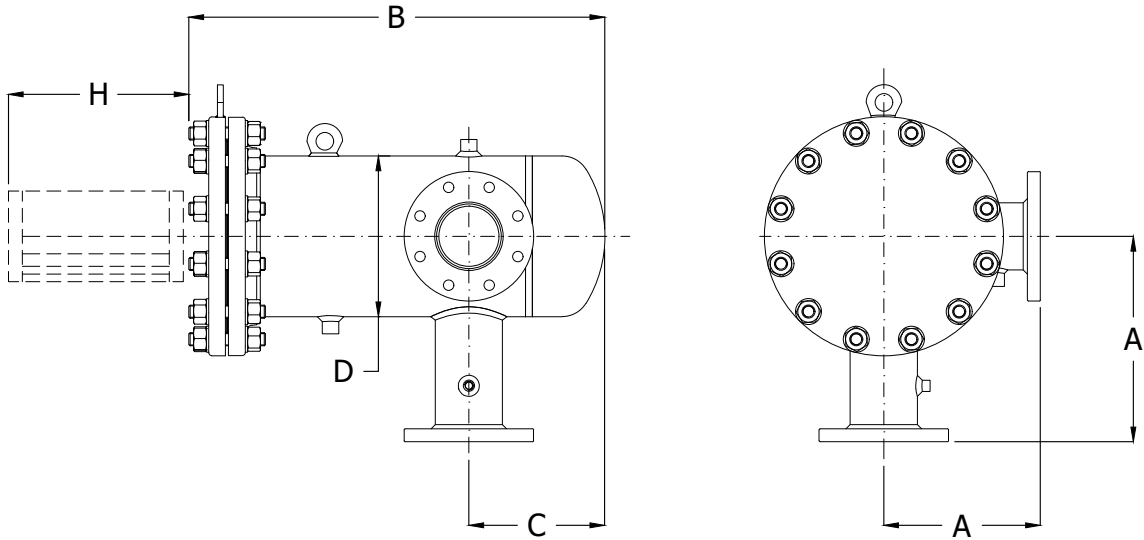


Figure 6 HFB/.. dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)																		
Type	0.5		1		1.5		2		2.5		3		4		5		6	
	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches	[mm]	inches
A	150	5.9"	200	7.9"	230	9.1"	250	9.8"	300	11.8"	350	13.8"	400	15.7"	450	17.7"	600	23.6"
B	370	14.6"	430	16.9"	510	20.1"	625	24.6"	730	28.7"	800	31.5"	1018	40.1"	1185	46.7"	1400	55.1"
C	138	5.4"	160	6.3"	180	7.1"	215	8.5"	255	10.0"	195	7.7"	339	13.3"	425	16.7"	550	21.7"
D	114.3	4.5"	141.3	5.6"	168.3	6.6"	219.1	8.6"	273.0	10.7"	323.8	12.7"	406.4	16.0"	508.0	20.0"	610.0	24.0"
H	170	6.7"	215	8.5"	252	9.9"	320	12.6"	333	13.1"	370	14.6"	465	18.3"	520	20.5"	675	26.6"
Weight	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs	Kg	lbs
	30	66	30	66	42	93	70	154	110	243	130	287	250	551	408	899	750	1653

Table 19 HFB/.. weights and dimensions

Customer Centricity

Customer centricity is a way of running your business — implementing a perfect customer experience at each stage of the pipeline. Pietro Fiorentini is one of the main Italian international company with high focus on product and service quality.

The main strategy is to create a stable, long-term relationship, putting the customer's needs first. Lean management and customer centricity are used to improve and maintain the highest level of customer experience.



Support

Pietro Fiorentini's top priority is to provide support to the client in all phases of project development, during installation, start up and operation. Pietro Fiorentini has developed a highly standardized Intervention-Management-System (IMS), which helps to facilitate the entire process and putting the customer at the forefront of every decision in our process while manufacturing or developing a product to help improve the product and service. With our IMS business model many services are available remotely, avoiding long waiting times, improving service, and avoiding unnecessary expenses.



Training

Pietro Fiorentini offers training services available for both experienced operators and new customers. The training is offered for all levels of our customers which can include one or all of the following: sizing of equipment, application, installation, operation, maintenance and is prepared according to the level of use and the customer's need.



Customer Relation Management (CRM)

The service and care of our customers are one of the main missions and vision of Pietro Fiorentini. For this reason, Pietro Fiorentini has enhanced the customer relation management system. This enables us to track every opportunity and request from our customers into one single information point and allows us to coordinate information allowing us to give the customer improved service.



Sustainability

Here at Pietro Fiorentini, we believe in a world capable of improvement through technology and solutions that can shape a more sustainable future. That is why respect for people, society and the environment form the cornerstones of our strategy.



Our commitment to the world of tomorrow

While in the past we limited ourselves to providing products, systems and services for the oil & gas sector, today we want to broaden our horizons and create technologies and solutions for a digital and sustainable world. We have a particular focus on renewable energy projects to help make the most of our planet's resources and create a future in which the younger generations can grow and prosper.

The time has come to understand how and why we operate now.





**Pietro
Fiorentini**



Pietro Fiorentini

TB0107ENG



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to make changes without prior notice.

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