

HFC SERIES

Ultra-High Purity Investment Cast Stainless Steel
High-Flow Manual Bellows Valves



HFC SERIES

HFC Series Product Applications

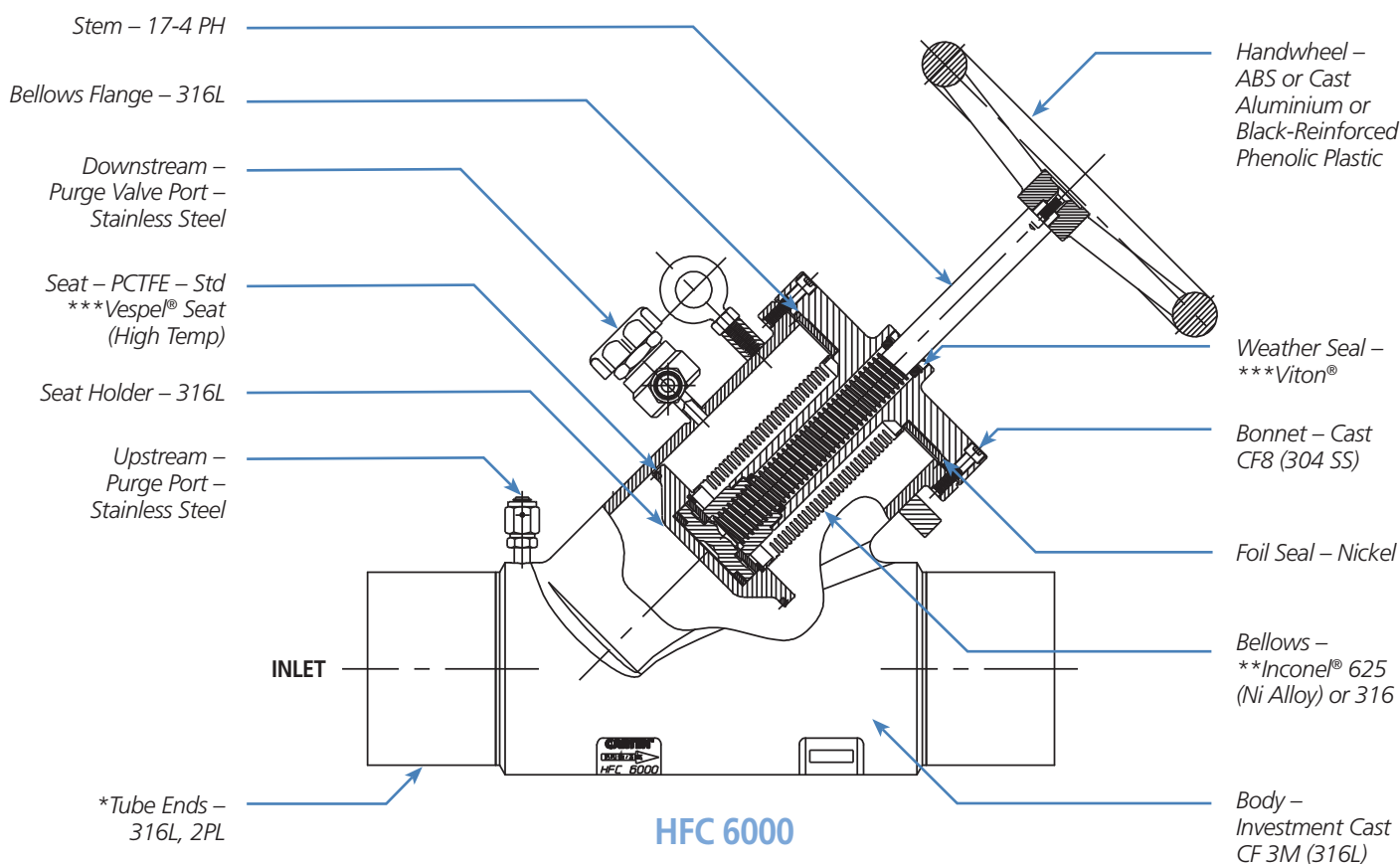
The HFC series is designed for cost-efficient delivery of high-purity gases and distribution systems where high flows are demanded with high containment and safe delivery in critical process systems. The HFC's high Cv capacity provides the best flow value and operational costs, and makes this range an excellent consideration for:

- High-purity process gas distribution systems
- Purifier systems
- Filter skid systems
- High-purity chemical distribution systems

HFC Series Product Features

- Highest Cv Manual Bellows Valve, Compact "Y" Body Design
- Ultra-High Purity Investment Cast Stainless Steel/PCTFE/Vespel® Valve Construction
- **Inconel® 625 (Ni Alloy) or 316 Bellows
- 10 Ra Max – Electropolished Surface Finish – Std (Optional Surface Finishes Available)
- Purge Connections and Purge Valves are Integrated in Valve Body
- Valve Body and Tube Stubs are Serialized for Material Certification

HFC Construction Materials



*See Ordering Code for other available – Valve FSM - M/F Connection Ends – sizes 500/750/1000.

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HFC SERIES

HFC Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	CF3M, 316L, *Inconel® 625/316, PCTFE, Nickel
	Non-Wetted Areas	17-4 PH, CFB (304 SS), **Viton®, Aluminium, ABS, PHENOLIC
MAXIMUM OPERATING PRESSURE	HFC Series	Vacuum-375 psig (25.8 bar)
MAXIMUM OPERATING TEMPERATURE	PCTFE Seat – Std	-22°F (-30°C) to 180°F (82°C)
	**Vespe® Seat (High Temp)	181°F (83°C) to 302°F (150°C)

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**Vespe® and Viton® are registered trademarks of DuPont Company.

VALVE MODELS	BODY DATA	FLOW COEFFICIENT (C _v)	VALVE MODELS	BODY DATA	FLOW COEFFICIENT (C _v)
Series/Size (Inch)	Tube/Body (Seat-Orifice) Sizes		Series/Size (JIS)	Tube/Body (Seat-Orifice) Sizes	
HFC 500	Ø.500 / .500 (Ø.652 in. (Ø16.56mm)-Orifice)	5.0			
HFC 750	Ø.750 / .750 (Ø.900 in. (Ø22.86mm)-Orifice)	14.5	HFC 15A	15A (Ø.850)/15A (Ø.900 in. (Ø22.86mm)-Orifice	14.5
HFC 1000	Ø1.000 / .750 (Ø.900 in. (Ø22.86mm)-Orifice)	21.0	HFC 20A	20A (Ø1.070)/20A (Ø.900 in. (Ø22.86mm)-Orifice	21.0
			HFC 25A	25A (Ø1.340)/25A (Ø.900 in. (Ø22.86mm)-Orifice	16.0
HFC 1015	Ø1.000 / 1.500 (Ø1.326 in. (Ø33.68mm)-Orifice)	28.0			
HFC 1500	Ø1.500 / 1.500 (Ø1.326 in. (Ø33.68mm)-Orifice)	46.0	HFC 32A	32A (Ø1.680)/32A (Ø1.326 in. (Ø33.68mm)-Orifice	50.0
HFC 2000	Ø2.000 / 1.500 (Ø1.326 in. (Ø33.68mm)-Orifice)	52.0	HFC 40A	40A (Ø1.910)/40A (Ø1.326 in. (Ø33.68mm)-Orifice	48.0
			HFC 50A	50A (Ø2.380)/50A (Ø1.326 in. (Ø33.68mm)-Orifice	46.0
HFC 2003	Ø2.000 / 3.000 (Ø2.796 in. (Ø71.02mm)-Orifice)	157.0			
HFC 3000	Ø3.000 / 3.000 (Ø2.796 in. (Ø71.02mm)-Orifice)	210.0	HFC 65A	65A (Ø3.000)/65A (Ø2.796 in. (Ø71.02mm)-Orifice	210.0
HFC 4000	Ø4.000 / 3.000 (Ø2.796 in. (Ø71.02mm)-Orifice)	185.0	HFC 80A	80A (Ø3.508)/80A (Ø2.796 in. (Ø71.02mm)-Orifice	185.0
			HFC 100A	100A (Ø4.508)/100A (Ø2.796 in. (Ø71.02mm)-Orifice	175.0
HFC 4006	Ø4.000 / 6.000 (Ø5.62 in. (Ø142.75mm)-Orifice)	758.0			
HFC 6000	Ø6.000 / 6.000 (Ø5.62 in. (Ø142.75mm)-Orifice)	854.0	HFC 125A	125A (Ø5.504)/125A (Ø5.62 in. (Ø142.75mm)-Orifice	900.0
			HFC 150A	150A (Ø6.504)/150A (Ø5.62 in. (Ø142.75mm)-Orifice	850.0
			HFC 200A	200A (Ø8.516)/200A (Ø5.62 in. (Ø142.75mm)-Orifice	790.0
			HFC 250A	250A (Ø10.530)/250A (Ø5.62 in. (Ø142.75mm)-Orifice	750.0

HELIUM LEAK TEST	Inboard Across the Seat Outboard Pressure Test	≤ 1 x 10 ⁻⁹ std.cc (atm) He / sec ≤ 1 x 10 ⁻⁹ std.cc (atm) He / sec ≤ 1 x 10 ⁻⁶ std.cc (atm) He / sec
CLEANLINESS AND PACKAGING	Assembled and tested in Class 100 Cleanroom. Purged and Final Packaged in Class 1 Cleanroom. Double-bag Packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N ₂ gas environment.	
STANDARD FINISH	10 Ra Max – Electropolished Surface Finish – Std (Optional surface finishes available)	
NOTES AND OPTIONS	Testing: Particle, Moisture, O ₂ , SEM, ESCA, and AES Purge Connections – Valve Type/Location Sizes .250 / .500 Valve Connection End – Inlet/Outlet Sizes .500 / .750 / 1.000 Valve Body Mounting Holes Std. Options: 1) HFC 500 / 750 / 1000 – 10-32UNC 2B 2) HFC 15A / 20A / 25A – M5 x 0.8 3) HFC 1015 / 1500 / 2000 – .250-20UNC-2B 4) HFC 32A / 40A / 50A – M6 x 1 5) HFC 2003 / 3000 / 4000 – .375-16UNC-2B 6) HFC 65A / 80A / 100A – .375-16UNC-2B 7) HFC 4006 / 6000 – .375-16UNC-2B 8) HFC 125A / 150A / 200A / 250A – .375-16UNC-2B Valve Body Flanged Ends – Rotatable Request for 8" Size Valve Information, Consult Sales	

Specifications are subject to change without notice.

HFC SERIES



HFC Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E	WEIGHT	
						LBS	(KG)
HFC 500	Ø .500 (12.7mm)	.049 (1.24mm)	.620 (15.7mm)	3.04 (77.2mm)	9.41 (239.0mm)	2.5	(1.13)
HFC 750	Ø .750 (19.1mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	9.41 (239.0mm)	2.3	(1.04)
HFC 1000	Ø 1.000 (25.0mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	9.41 (239.0mm)	2.3	(1.04)
HFC 1015	Ø 1.000 (25.0mm)	.065 (1.65mm)	1.13 (28.7mm)	5.00 (127.0mm)	15.09 (383.2mm)	8.7	(3.95)
HFC 1500	Ø 1.500 (38.1mm)	.065 (1.65mm)	1.13 (28.7mm)	3.06 (77.7mm)	11.21 (284.7mm)	8.5	(3.86)
HFC 2000	Ø 2.000 (50.8mm)	.065 (1.65mm)	1.13 (28.7mm)	3.98 (101.1mm)	13.21 (335.5mm)	9.0	4.08)
HFC 2003	Ø 2.000 (50.8mm)	.065 (1.65mm)	2.13 (54.1mm)	7.58 (192.5mm)	23.67 (601.0mm)	36.0	16.33)
HFC 3000	Ø 3.000 (76.2mm)	.065 (1.65mm)	2.13 (54.1mm)	4.08 (103.6mm)	16.67 (423.4mm)	34.4	(15.60)
HFC 4000	Ø 4.000 (101.6mm)	.083 (2.11mm)	2.13 (54.1mm)	4.08 (103.6mm)	16.67 (423.4mm)	35.6	(16.15)
HFC 4006	Ø 4.000 (101.6mm)	.083 (2.11mm)	3.30 (83.8mm)	10.11 (256.8mm)	33.38 (847.8mm)	116.5	(52.84)
HFC 6000	Ø 6.000 (152.4mm)	.109 (2.77mm)	3.30 (83.8mm)	4.11 (104.4mm)	21.38 (543.1mm)	112.1	(50.85)

SERIES/SIZE (JIS)	A	B	C	D	E	WEIGHT	
						LBS	(KG)
HFC 15A	Ø .850 (21.6mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	9.41 (239.0mm)	2.4	(1.09)
HFC 20A	Ø 1.070 (27.2mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	9.41 (239.0mm)	2.2	(1.00)
HFC 25A	Ø 1.340 (34.0mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	9.41 (239.0mm)	2.2	(1.00)
HFC 32A	Ø 1.680 (42.7mm)	.065 (1.65mm)	1.13 (28.7mm)	3.06 (77.7mm)	11.21 (211.1mm)	8.6	(3.90)
HFC 40A	Ø 1.910 (48.5mm)	.065 (1.65mm)	1.13 (28.7mm)	4.06 (103.1mm)	13.21 (335.5mm)	8.7	(3.95)
HFC 50A	Ø 2.380 (60.4mm)	.065 (1.65mm)	1.13 (28.7mm)	4.25 (107.9mm)	13.21 (335.5mm)	9.0	(4.08)
HFC 65A	Ø 3.000 (76.2mm)	.083 (2.11mm)	2.13 (54.1mm)	4.08 (103.6mm)	16.67 (423.4mm)	34.4	(15.6)
HFC 80A	Ø 3.508 (89.1mm)	.083 (2.11mm)	2.13 (54.1mm)	4.08 (103.6mm)	16.67 (423.4mm)	35.5	(16.1)
HFC 100A	Ø 4.500 (114.3mm)	.083 (2.11mm)	2.13 (54.1mm)	4.21 (106.9mm)	16.67 (423.4mm)	36.3	(16.5)
HFC 125A	Ø 5.504 (139.8mm)	.110 (2.79mm)	3.30 (83.8mm)	4.11 (104.4mm)	21.38 (543.1mm)	111.2	(50.4)
HFC 150A	Ø 6.504 (165.2mm)	.110 (2.79mm)	3.30 (83.8mm)	4.11 (104.4mm)	21.38 (543.1mm)	111.5	(50.6)
HFC 200A	Ø 8.516 (216.3mm)	.110 (2.79mm)	3.30 (83.8mm)	9.95 (252.7mm)	33.06 (839.7mm)	121.5	(55.1)
HFC 250A	Ø 10.530 (267.5mm)	.130 (3.30mm)	3.30 (83.8mm)	9.95 (252.7mm)	33.06 (839.7mm)	125.6	(57.1)

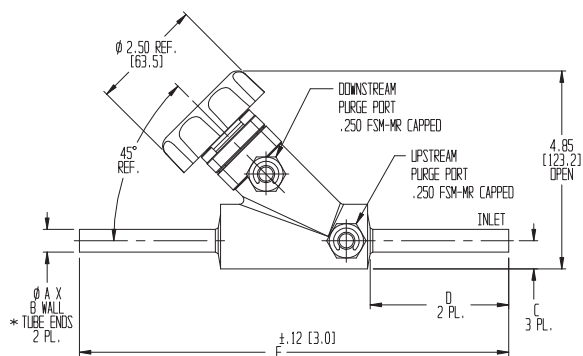
NOTE 1: All tolerances are ± 0.06 in. (± 1.52 mm) unless otherwise stated.

NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

HFC SERIES

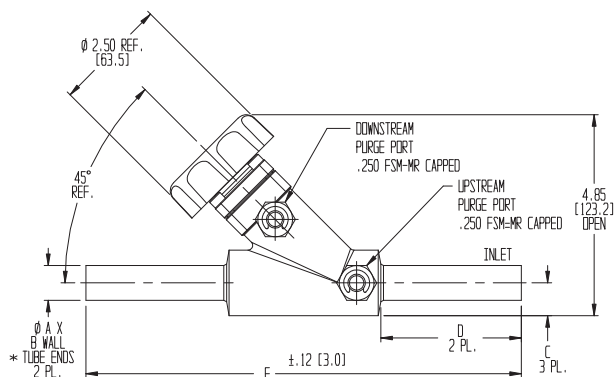
HFC Series Typical Valve Dimensions

HFC 500 BODY 500



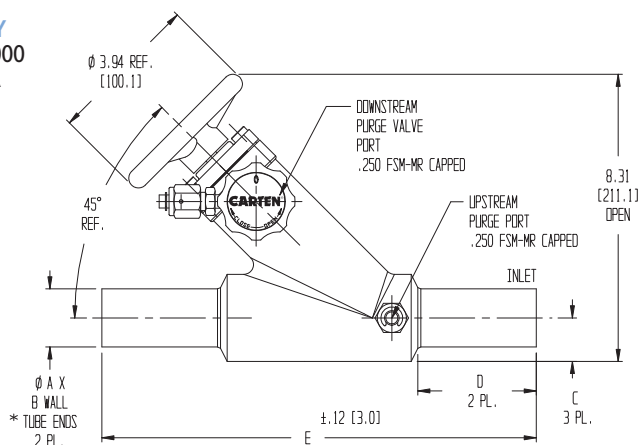
* See Ordering Code for other available Valve FSM - M/F connection ends.

HFC 750 BODY 750 / 1000 15A / 20A / 25A



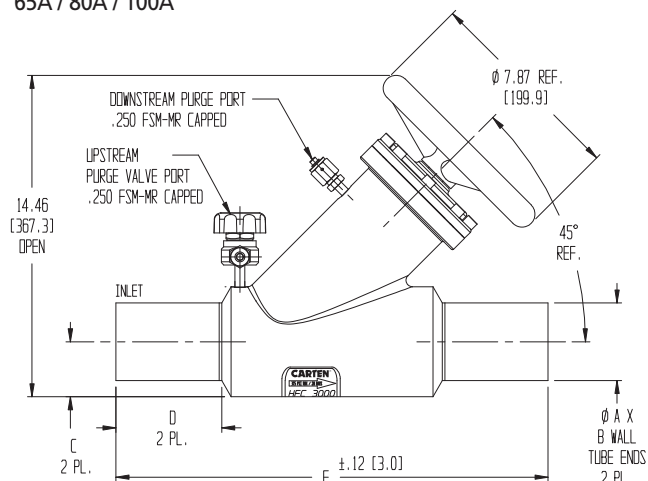
* See Ordering Code for other available Valve FSM - M/F connection ends.

HFC 1500 BODY 1015 / 1500 / 2000 32A / 40A / 50A

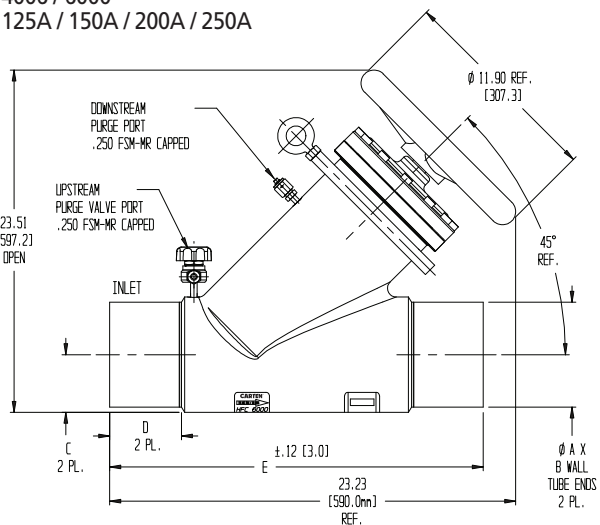


* See Ordering Code for other available Valve FSM - M/F connection ends.

HFC 3000 BODY 2003 / 3000 / 4000 65A / 80A / 100A



HFC 6000 BODY 4006 / 6000 125A / 150A / 200A / 250A



HFC SERIES

HFC Series Ordering Code

HFC		–	2000		–	10		–	PC2		–	FSM-MR		–	BK	
SERIES	TYPE															
HFC	Manual															
VALVE SIZES	TUBE/(BODY) INCH – SIZES – JIS															
500	Ø.500	(.500)														
750	Ø.750	(.750)														
1000	Ø1.000															
1015	Ø1.000															
1500	Ø1.500	(1.500)														
2000	Ø2.000															
2003	Ø2.000															
3000	Ø3.000	(3.000)														
4000	Ø4.000															
4006	Ø4.000															
6004	Ø6.000	(6.000)														
JIS SIZES																
15A	Ø.850	(15A)														
20A	Ø1.070	(20A)														
25A	Ø1.340	(25A)														
32A	Ø1.680	(32A)														
40A	Ø1.910	(40A)														
50A	Ø2.380	(50A)														
65A	Ø3.000	(65A)														
80A	Ø3.508	(80A)														
100A	Ø4.500	(100A)														
125A	Ø5.504	(125A)														
150A	Ø6.504	(150A)														
200A	Ø8.516	(150A)														
250A	Ø10.530	(150A)														

CODE	SURFACE FINISH														
10	10 Ra Max - Std EP														
20	20 Ra Max - EP														

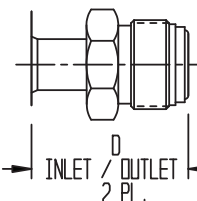
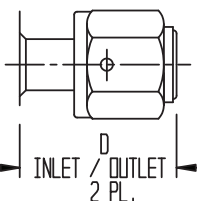
CODE	TYPE														
FSM-MR	Fixed Male-RH														

FSM – Face Seal Metal Purge (Right Hand)

CODE	SIZE/LOCATION	TYPE													
LV	Not Required	None													
PC1	1/4" Downstream	Purge													
PC2	1/4" Up & Downstream	Purge													
PC3	1/4" Upstream	Purge													
PV1	1/4" Downstream	Valve													
PV2	1/4" Up & Downstream	Valve													
PV3	1/4" Upstream	Valve													
PC1525	1/2" Downstream	Purge													
PC2525	1/2" Up & Downstream	Purge													
PC3525	1/2" Upstream	Purge													
PV1525	1/2" Downstream	Valve													
PV2525	1/2" Up & Downstream	Valve													
PV3525	1/2" Upstream	Valve													

1/2" size connection type not available on all sizes. Please contact CARTEN® for availability.

OPTIONAL VALVE FSM - M/F CONNECTION ENDS
Available on HFC .500 and .750 Body Sizes

CONNECTION END SIZES .500 / .750 / 1.000	
	
FSM-M-2X	FSM-F-3X

Connection Size	Dimension "D"	
	FSM-M-2X	FSM-F-3X
.500	1.54 (39.1mm)	1.54 (39.1mm)
.750	2.04 (51.8mm)	2.04 (51.8mm)
1.000	2.36 (59.9mm)	2.36 (59.9mm)

CODE	OPTIONS														
	Handwheel														
BL	Blue														
BK	Black–Standard														
DG	Dark Gold														
BR	Brown														
GL	Gold														
GR	Green														
GY	Grey														
OR	Orange														
PR	Purple														
PK	Pink														
RD	Red														
SL	Silver														
TL	Teal														
WT	White–Standard Sizes 500, 750, 1000														
YL	Yellow														
V	*Vespel® Seat														
LO	Handle Lock-out Clear Clam Shell														
R	Rotatable Flange														

*Vespel® is a registered trademark of DuPont Company.

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatability, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.