

# HF SERIES

Ultra-High Purity Bar Stock Stainless Steel  
High-Flow Manual Bellows Valves



# HF SERIES

## HF Series Product Applications

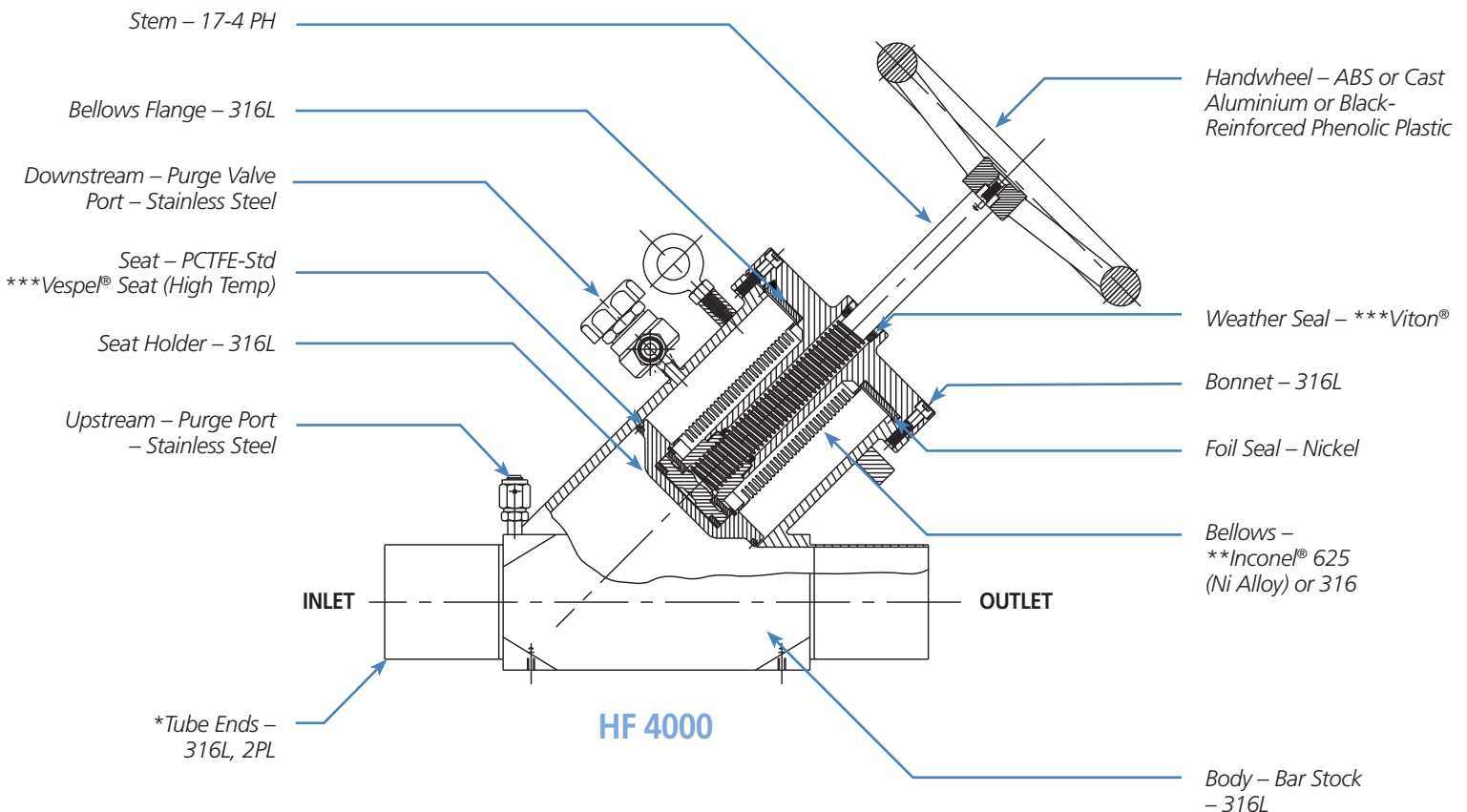
The HF series is designed for bulk distribution of high-purity gases and solvent distribution systems where high flows are demanded with high containment and safe delivery in critical process systems. The HF's high Cv capacity provides the best flow value and operational costs, and makes this range an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

- High-purity process gas distribution systems
- Purifier systems
- Filter skid systems
- High-purity solvent systems
- High-purity chemical distribution systems
- Suitable for inert, specialty gases and most toxic gases
- Maximum-flow, minimum-pressure drop systems

## HF Series Product Features

- Highest Cv Manual Bellows Valve, Compact "Y" Body Design
- Ultra-High Purity Bar Stock 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

## HF Construction Materials



\*See Ordering Code for other available – Valve FSM - M/F Connection Ends – sizes 500/750/1000.  
\*\*Inconel® is a registered trademark of Special Metals Corporation.  
\*\*\*Vespel® Viton® are registered trademarks of DuPont Company.

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## HF Series Technical Data

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

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\*\*Vespel® and Viton® are registered trademarks of DuPont Company.

VALVE MODELS	TUBE/BODY DATA	FLOW COEFFICIENT (C <sub>v</sub> )	WEIGHT	
			LBS	(KG)
Valve Sizes	Tube/Body (Seat-Orifice) Sizes			
HF 500	Ø.500 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	5.0	3.2	(1.45)
HF 755	Ø.750 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	10.0	3.0	(1.36)
HF 750	Ø.750 / .750 (Ø.750 in. (Ø19.1mm)-Orifice)	11.5	3.0	(1.36)
HF 1075	Ø1.000 / .750 (Ø.750 in. (Ø19.1mm)-Orifice)	20.0	2.8	(1.27)
HF 751	Ø.750 / 1.000 (Ø1.06 in. (Ø27.1mm)-Orifice)	15.0	13.8	(6.26)
HF 1000	Ø1.000 / 1.000 (Ø1.06 in. (Ø27.1mm)-Orifice)	29.0	13.8	(6.26)
HF 1501	Ø1.500 / 1.000 (Ø1.06 in. (Ø27.1mm)-Orifice)	27.0	15.4	(6.98)
HF 1502	Ø1.500 / 2.000 (Ø2.65 in. (Ø67.3mm)-Orifice)	85.0	27.5	(12.47)
HF 2000	Ø2.000 / 2.000 (Ø2.65 in. (Ø67.3mm)-Orifice)	178.0	27.6	(12.59)
HF 3002	Ø3.000 / 2.000 (Ø2.65 in. (Ø67.3mm)-Orifice)	117.0	29.2	(13.25)
HF 3004	Ø3.000 / 4.000 (Ø5.42 in. (Ø137.7mm)-Orifice)	452.0	106.7	(48.40)
HF 4000	Ø4.000 / 4.000 (Ø5.42 in. (Ø137.7mm)-Orifice)	758.0	106.8	(48.44)
HF 6004	Ø6.000 / 4.000 (Ø5.42 in. (Ø137.7mm)-Orifice)	526.0	114.3	(51.85)

HELIUM LEAK TEST	Inboard Across the Seat Outboard Pressure Test	≤ 1 x 10 <sup>-9</sup> std.cc (atm) He / sec ≤ 1 x 10 <sup>-9</sup> std.cc (atm) He / sec ≤ 1 x 10 <sup>-6</sup> 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 <sub>2</sub> gas environment.	
STANDARD FINISH	10 Ra Max – Electropolished Surface Finish – Std (Optional surface finishes available)	
NOTES AND OPTIONS	Testing: Particle, Moisture, O <sub>2</sub> , SEM, ESCA, and AES Purge Connections – Valve Type/Location – Sizes .250 / .500 Valve Connection Ends – Inlet/Outlet Sizes .500/.750/1.000 Valve Body Mounting Holes Std. Options: 1) HF 500 / 750 – M5 x 0.8 or 10-32UNC 2B 2) HF 1000 – .250-20UNC-2B or M6 x 1 3) HF 2000 / 4000 – .375-16UNC-2B Valve Body Flanged Ends – Rotatable	

Specifications are subject to change without notice.

# HF SERIES



## HF Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E
HF 500	Ø.500 (12.7mm)	0.049 (1.24mm)	0.500 (12.7mm)	3.04 (77.2mm)	9.54 (242.3mm)
HF 755	Ø.750 (19.1mm)	0.065 (1.65mm)	0.500 (12.7mm)	3.04 (77.2mm)	9.54 (242.3mm)
HF 750	Ø.750 (19.1mm)	0.065 (1.65mm)	0.600 (15.2mm)	3.04 (77.2mm)	9.31 (236.5mm)
HF 1075	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.600 (15.2mm)	3.04 (77.2mm)	9.31 (236.5mm)
HF 751	Ø.750 (19.1mm)	0.065 (1.65mm)	0.750 (19.1mm)	4.06 (103.1mm)	14.04 (356.6mm)
HF 1000	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.750 (19.1mm)	3.06 (77.7mm)	12.04 (305.8mm)
HF 1501	Ø1.500 (38.1mm)	0.065 (1.65mm)	0.750 (19.1mm)	5.01 (127.3mm)	15.94 (404.9mm)
HF 1502	Ø1.500 (38.1mm)	0.065 (1.65mm)	1.310 (33.3mm)	5.12 (130mm)	17.22 (437.4mm)
HF 2000	Ø2.000 (50.8mm)	0.065 (1.65mm)	1.310 (33.3mm)	4.18 (106.2mm)	15.34 (389.6mm)
HF 3002	Ø3.000 (76.2mm)	0.065 (1.65mm)	1.310 (33.3mm)	8.02 (203.7mm)	23.02 (584.7mm)
HF 3004	Ø3.000 (76.2mm)	0.065 (1.65mm)	2.370 (60.2mm)	8.01 (203.5mm)	26.72 (678.7mm)
HF 4000	Ø4.000 (101.6mm)	0.083 (2.11mm)	2.370 (60.2mm)	4.17 (105.9mm)	19.04 (483.6mm)
HF 6004	Ø6.000 (152.4mm)	0.109 (2.77mm)	2.370 (60.2mm)	11.75 (298.5mm)	34.20 (868.7mm)

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

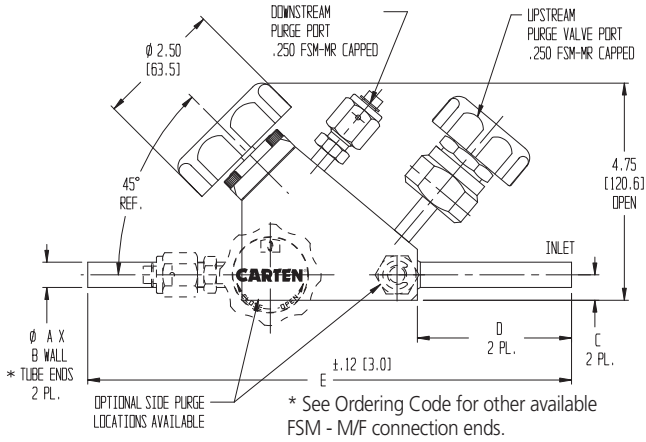
NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.



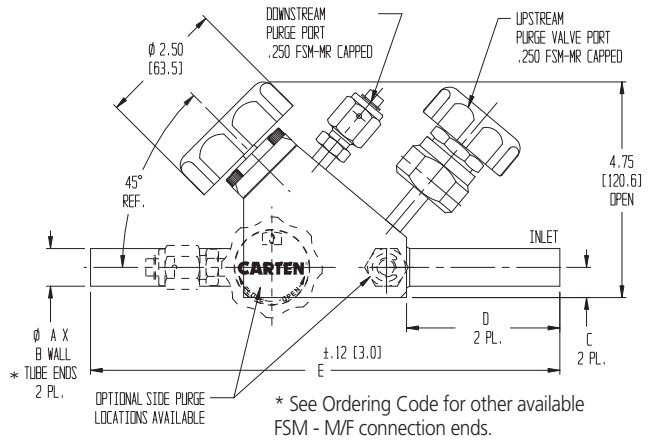
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## HF Series Typical Valve Dimensions

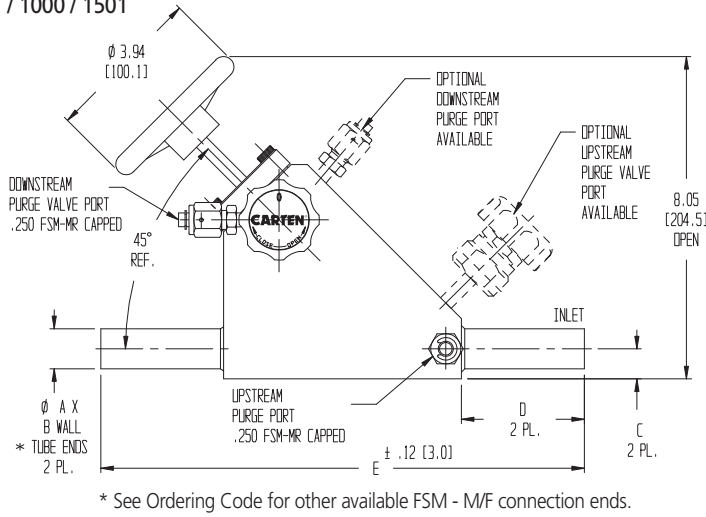
**HF 500 BODY**  
500 / 755



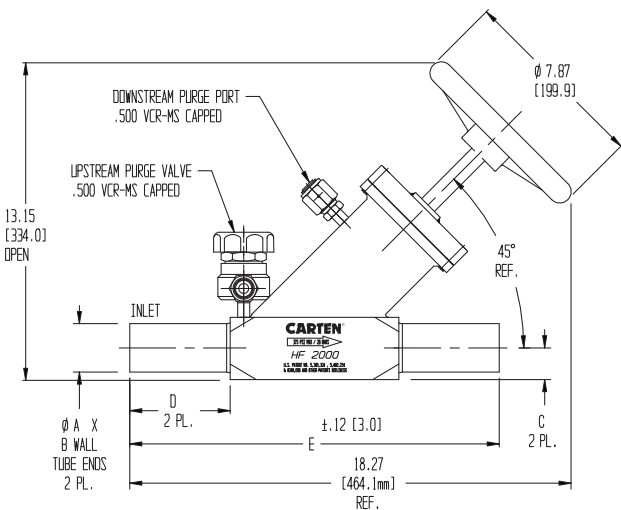
**HF 750 BODY**  
750 / 1075



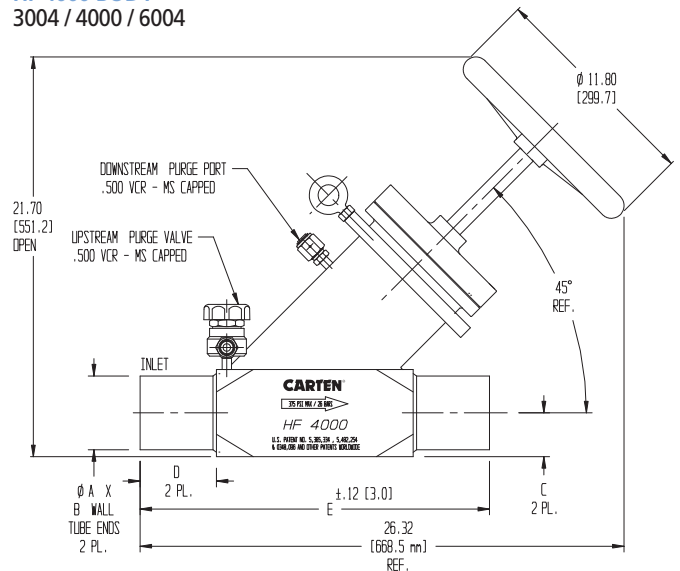
**HF 1000 BODY**  
751 / 1000 / 1501



**HF 2000 BODY**  
1502 / 2000 / 3002



**HF 4000 BODY**  
3004 / 4000 / 6004



# HF SERIES

## HF Series Ordering Code

**HF** – **1000** – **10** – **PC2** – **FSM-MR** – **BK**

SERIES	TYPE
HF	Manual

CODE	SURFACE FINISH
10	10 Ra Max - Std EP
5	5 Ra Max - EP
20	20 Ra Max - EP

CODE	TYPE
FSM-MR	Fixed Male-RH

FSM – Face Seal Metal Purge  
(Right Hand)

VALVE SIZES	TUBE/(BODY) INCH – SIZES
500	Ø.500 (.500)
755	Ø.750 (.750)
750	Ø.750 (.750)
1075	Ø1.000 (1.000)
751	Ø.750 (1.000)
1000	Ø1.000 (1.000)
1501	Ø1.500 (2.000)
1502	Ø1.500 (2.000)
2000	Ø2.000 (2.000)
3002	Ø3.000 (4.000)
3004	Ø3.000 (4.000)
4000	Ø4.000 (4.000)
6004	Ø6.000 (4.000)

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
PC15	1/2" Downstream	Purge
PC25	1/2" Up & Downstream	Purge
PC35	1/2" Upstream	Purge
PV15	1/2" Downstream	Valve
PV25	1/2" Up & Downstream	Valve
PV35	1/2" Upstream	Valve

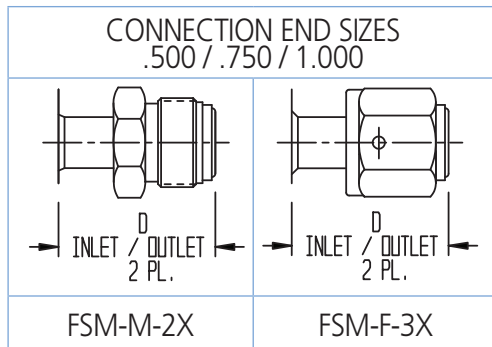
1/2" size connection type not available on all sizes.  
Please contact CARTEN® for availability.

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, 755, 750, 1075
YL	Yellow
V	*Vespe® Seat
LO	Handle Lock-out Clear Clam Shell
R	Rotatable Flange

\*Vespe® is a registered trademark of DuPont Company.

### OPTIONAL VALVE FSM - M/F CONNECTION ENDS

Available on HF .500" - 1" Body Sizes



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	2.38 (60.5mm)	2.38 (60.5mm)

### Safe Product Selection

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

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