

HFA SERIES

Ultra-High Purity Bar Stock Stainless Steel
High-Flow Air-Actuated Bellows Valves



HFA SERIES

HFA Series Product Applications

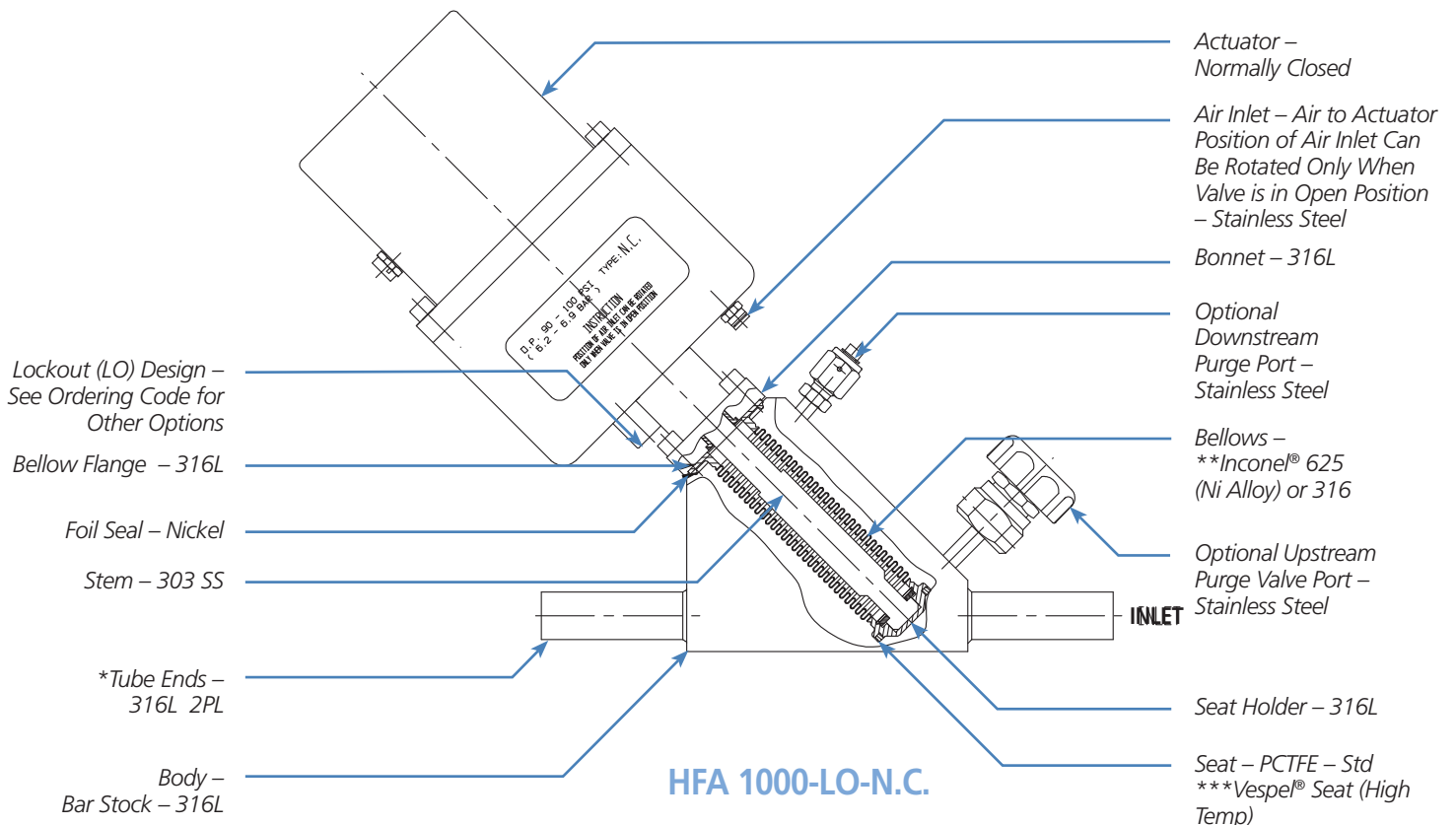
The HFA series is designed for bulk distribution of high-purity gases and solvent distribution systems where high flows are demanded with minimal pressure drop, high containment and safe delivery in critical process systems. The HFA's high Cv capacity provides the best flow value and operational costs, 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
- Automated bulk gas distribution systems
- Suitable for inert, specialty gases and most toxic gases

HFA Series Product Features

- Highest Cv Actuated 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 Ends are Serialized for Material Certification

HFA Construction Materials



*See Ordering Code for other available – Valve FSM - M/F Connection Ends – sizes 500/750/1000.
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 ***Vespel® is a registered trademark of DuPont Company.

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HFA Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	316L SS, *Inconel® 625/316, PCTFE, Nickel	
	Non-Wetted Areas	303 SS, 316 SS	
MAXIMUM OPERATING PRESSURE	HFA 500 & 755	Vacuum to 250 psig (0-17.2 bar)	80-100 psig (5.5 - 6.9 bar) - Actuator-N.C.
	HFA 750 & 1075		60-100 psig (4.1 - 6.9 bar) - Actuator-N.C.-ID
	HFA 750 & 1075		60-100 psig (4.1 - 6.9 bar) - Actuator-N.O.-ID
	HFA 751 & 1000 & 1501		90-100 psig (6.2 - 6.9 bar) - Actuator-N.C.
	HFA 751 & 1000 & 1501		90-100 psig (6.2 - 6.9 bar) - Actuator-N.O.
	HFA 1502 & 2000 & 3002		60-80 psig (4.1 - 5.5 bar) - Actuator-D.A.
	HFA 3004 & 4000 & 6004		60-80 psig (4.1 - 5.5 bar) - Actuator-D.A.
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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VALVE MODELS	BODY DATA	FLOW COEFFICIENT	CYCLE LIFE
Valve Sizes	Tube/Body (Seat-Orifice) Sizes	(C _v)	@ 250 PSIG
HFA 500-NC	Ø.500 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	5.0	10,000
HFA 755-NC	Ø.750 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	10.0	10,000
HFA 750-NC-ID & NO-ID	Ø.750 / .750 (Ø.750 in. (Ø19.1mm)-Orifice)	11.5	30,000
HFA 1075-NC-ID & NO-ID	Ø1.000 / .750 (Ø.750 in. (Ø19.1mm)-Orifice)	20.0	30,000
HFA 751-NC & NO	Ø.750 / 1.000 (Ø1.06 in. (Ø27.1mm)-Orifice)	15.0	30,000
HFA 1000-NC & NO	Ø1.000 / 1.000 (Ø1.06 in. (Ø27.1mm)-Orifice)	29.0	30,000
HFA 1501-NC & NO	Ø1.500 / 1.000 (Ø1.06 in. (Ø27.1mm)-Orifice)	27.0	30,000
HFA 1502-DA	Ø1.500 / 2.000 (Ø2.65 in. (Ø67.3mm)-Orifice)	85.0	8,000
HFA 2000-DA	Ø2.000 / 2.000 (Ø2.65 in. (Ø67.3mm)-Orifice)	178.0	8,000
HFA 3002-DA	Ø3.000 / 2.000 (Ø2.65 in. (Ø67.3mm)-Orifice)	117.0	8,000
HFA 3004-DA	Ø3.000 / 4.000 (Ø5.42 in. (Ø137.7mm)-Orifice)	452.0	8,000
HFA 4000-DA	Ø4.000 / 4.000 (Ø5.42 in. (Ø137.7mm)-Orifice)	758.0	8,000
HFA 6004-DA	Ø6.000 / 4.000 (Ø5.42 in. (Ø137.7mm)-Orifice)	526.0	8,000

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 Ends – Inlet/Outlet Sizes .500 / .750 / 1.000 Valve Body Mounting Holes Std. Options: 1) HFA 500 / 750 – M5 x 0.8 or 10-32UNC-2B 2) HFA 1000 – .250-20UNC-2B or M6 x 1 3) HFA 2000 / 4000 – .375-16UNC-2B Valve Body Flanged Ends – Rotatable Pneumatic Type Actuators (5) Types Available: NC – Normally Closed – Requires Air to Open and Spring to Close NC-ID – Normally Closed With Indicator to Show Actuation Position NO – Normally Open – Requires Air to Close and Spring to Open NO-ID – Normally Open With Indicator to Show Actuation Position DA – Double Acting – Requires Air to Open and Close: (HFA 1502 & 2000 & 3002 Sizes Only) (HFA 3004 & 4000 & 6004 Sizes Only)	

Specifications are subject to change without notice.

HFA SERIES



HFA Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E	F	G
HFA 500-NC	Ø.500 (12.7mm)	0.049 (1.24mm)	0.500 (12.7mm)	3.04 (77.2mm)	9.54 (242.3mm)	7.34 (186.4mm)	10.83 (275.1mm)
HFA 755-NC	Ø.750 (19.1mm)	0.065 (1.65mm)	0.500 (12.7mm)	3.04 (77.2mm)	9.54 (242.3mm)	7.34 (186.4mm)	10.83 (275.1mm)
HFA 750-NC-ID	Ø.750 (19.1mm)	0.065 (1.65mm)	0.600 (15.2mm)	3.04 (77.2mm)	12.31 (312.7mm)	8.08 (205.2mm)	11.33 (287.8mm)
HFA 750-NO-ID	Ø.750 (19.1mm)	0.065 (1.65mm)	0.600 (15.2mm)	3.04 (77.2mm)	12.31 (312.7mm)	7.14 (181.4mm)	10.51 (267.0mm)
HFA 1075-NC-ID	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.600 (15.2mm)	3.04 (77.2mm)	12.31 (312.7mm)	8.08 (205.2mm)	11.33 (287.8mm)
HFA 1075-NO-ID	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.600 (15.2mm)	3.04 (77.2mm)	12.31 (312.7mm)	7.14 (181.4mm)	10.51 (267.0mm)
HFA 751-NC	Ø.750 (19.1mm)	0.065 (1.65mm)	0.750 (19.1mm)	4.06 (103.1mm)	14.04 (356.6mm)	13.48 (342.4mm)	18.13 (460.5mm)
HFA 751-NO	Ø.750 (19.1mm)	0.065 (1.65mm)	0.750 (19.1mm)	4.06 (103.1mm)	14.04 (356.6mm)	11.10 (281.9mm)	15.74 (399.8mm)
HFA 1000-NC	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.750 (19.1mm)	3.06 (77.7mm)	12.04 (305.8mm)	13.48 (342.4mm)	17.13 (435.1mm)
HFA 1000-NO	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.750 (19.1mm)	3.06 (77.7mm)	12.04 (305.8mm)	11.10 (281.9mm)	14.74 (374.4mm)
HFA 1501-NC	Ø1.500 (38.1mm)	0.065 (1.65mm)	0.750 (19.1mm)	5.01 (127.3mm)	15.94 (404.9mm)	13.48 (342.4mm)	19.08 (484.6mm)
HFA 1501-NO	Ø1.500 (38.1mm)	0.065 (1.65mm)	0.750 (19.1mm)	5.01 (127.3mm)	15.94 (404.9mm)	11.10 (281.9mm)	16.69 (423.9mm)
HFA 1502-DA	Ø1.500 (38.1mm)	0.065 (1.65mm)	1.310 (33.3mm)	5.12 (130.0mm)	20.47 (520.0mm)	14.70 (373.4mm)	21.41 (543.8mm)
HFA 2000-DA	Ø2.000 (50.8mm)	0.065 (1.65mm)	1.310 (33.3mm)	4.18 (106.2mm)	19.84 (503.4mm)	14.70 (373.4mm)	20.47 (519.9mm)
HFA 3002-DA	Ø3.000 (76.2mm)	0.065 (1.65mm)	1.310 (33.3mm)	8.02 (203.7mm)	23.62 (599.9mm)	14.70 (373.4mm)	24.31 (617.5mm)
HFA 3004-DA	Ø3.000 (76.2mm)	0.065 (1.65mm)	2.370 (60.2mm)	8.01 (203.5mm)	31.72 (805.7mm)	24.88 (632.0mm)	33.39 (848.1mm)
HFA 4000-DA	Ø4.000 (101.6mm)	0.083 (2.11mm)	2.370 (60.2mm)	4.17 (105.9mm)	28.04 (712.2mm)	24.88 (632.0mm)	29.56 (750.8mm)
HFA 6004-DA	Ø6.000 (152.4mm)	0.109 (2.77mm)	2.370 (60.2mm)	11.75 (298.5mm)	36.20 (919.5mm)	24.88 (632.0mm)	37.13 (943.1mm)

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

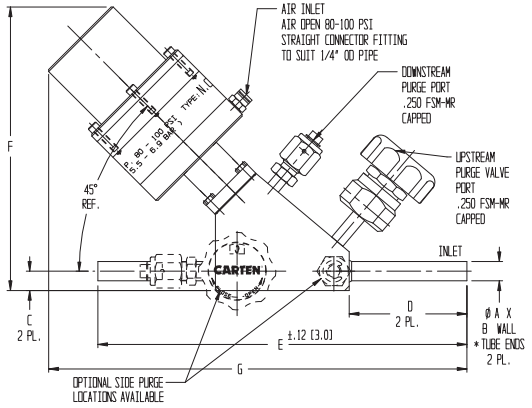
NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

HFA SERIES

HFA Series Typical Valve Dimensions

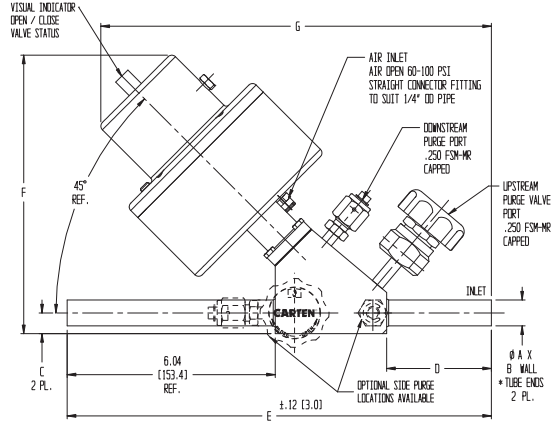
HFA 500 BODY (N.C. SHOWN)

500 / 755 - N.C.



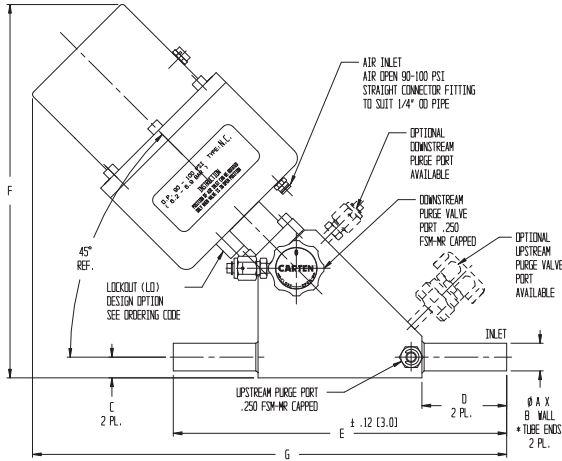
HFA 750 BODY (N.C.-ID SHOWN)

750 / 1075 - N.C.-ID & N.O.-ID



HFA 1000 BODY (N.C. SHOWN)

751 / 1000 / 1501 - N.C & N.O.

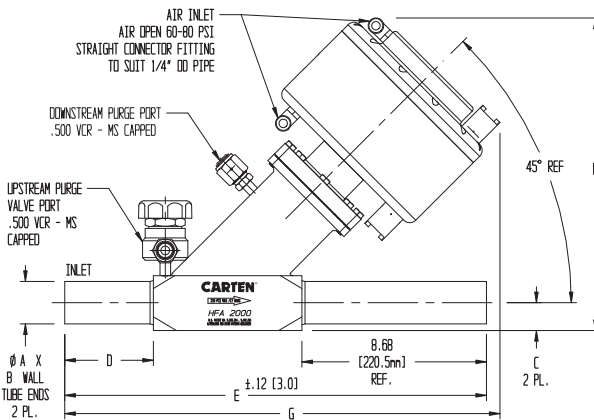


HFA SERIES
500 / 750 / 1000 SIZES

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

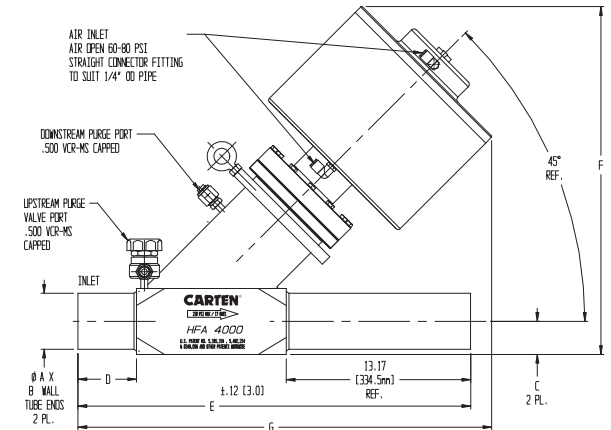
HFA 2000 BODY (D.A. SHOWN)

1502 / 2000 / 3002 - D.A.



HFA 4000 BODY (D.A. SHOWN)

3004 / 4000 / 6004 - D.A.



HFA SERIES

HFA Series Ordering Code

HFA – **1000** – **10** – **PC2** – **FSM-MR** – **NC**

SERIES	TYPE
HFA	Pneumatic

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

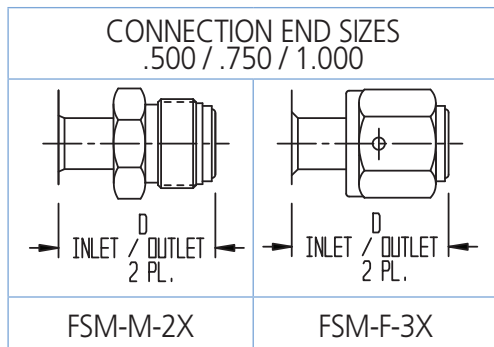
CODE	OPTIONS
Pneumatics	
NC	Normally Closed
NC-ID	NC w/ ID
NO	Normally Open
NO-ID	NO w/ ID
DA	Double Acting
LO-NC	Lock-out Body Size 1000 only
V	*Vespel® Seat
R	Rotatable Flange

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

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OPTIONAL VALVE FSM - M/F CONNECTION ENDS

Available on HFA .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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Carten Controls is a member of Fujikin Corp Group (FCG) with Headquarters in Osaka, Japan.