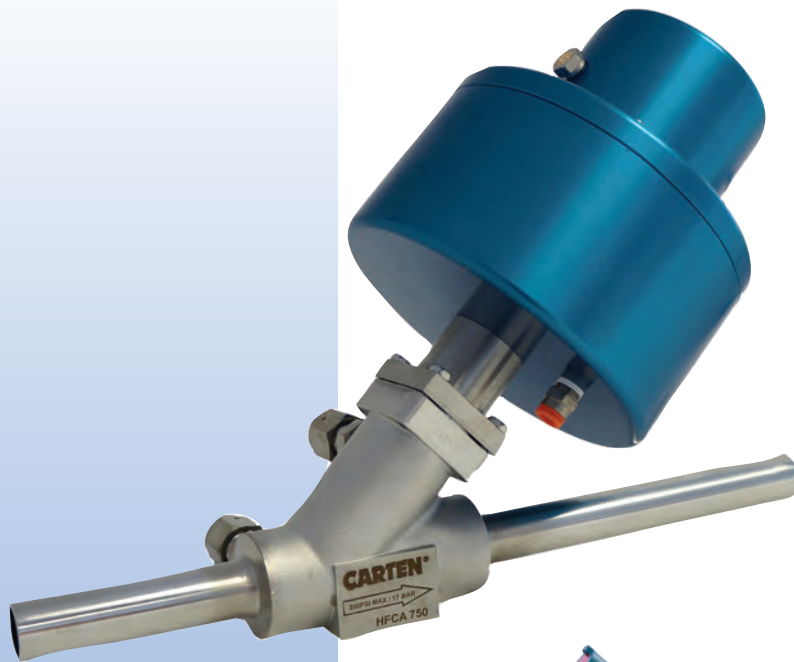


HFCA SERIES

Ultra-High Purity Investment Cast Stainless Steel
High-Flow Air-Actuated Bellows Valves



HFCA SERIES

HFCA Series Product Applications

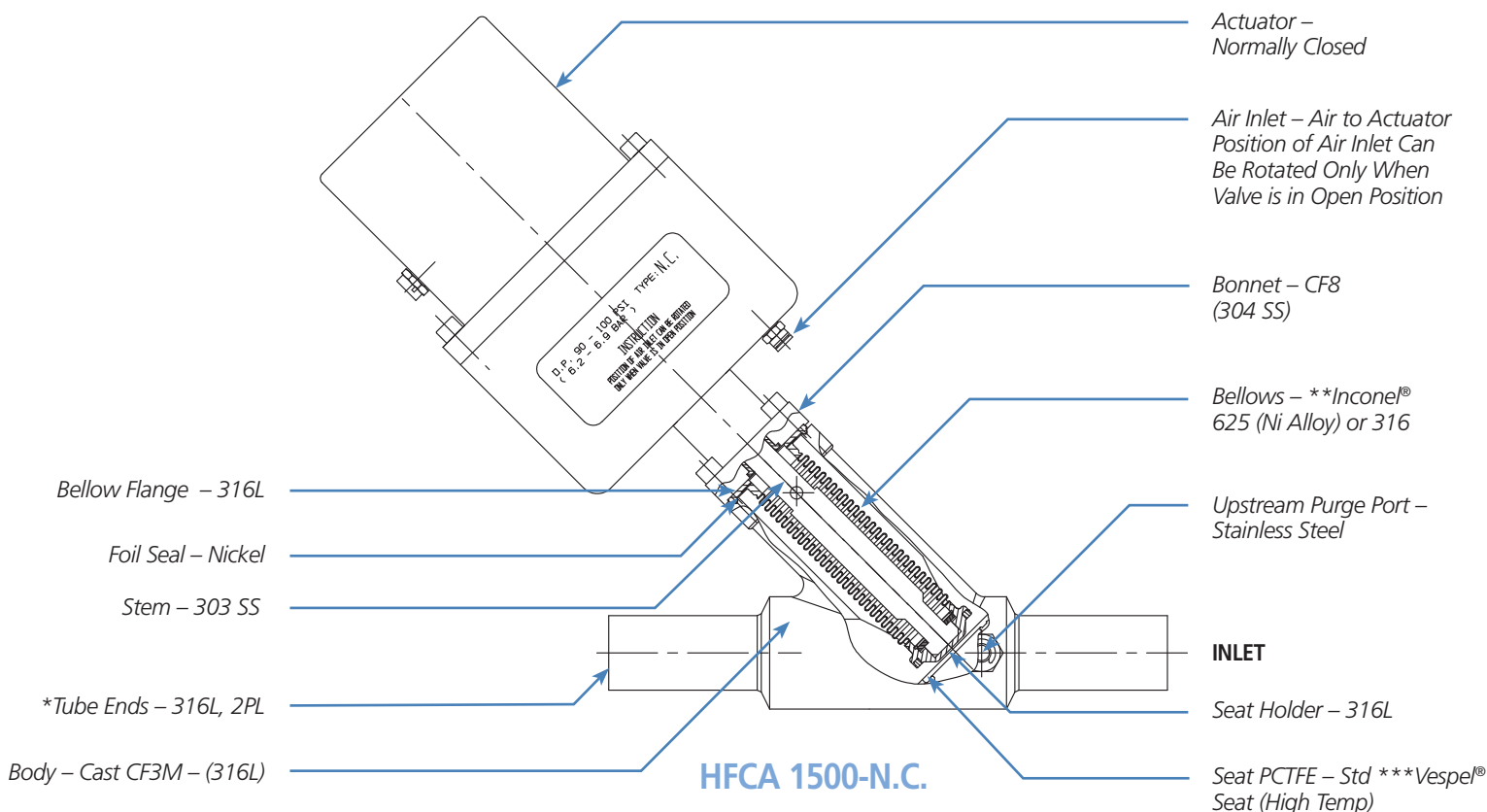
The HFCA series is designed for cost-efficient bulk distribution of high-purity gases and distribution systems where high flows are demanded with minimal pressure drop, high containment and safe delivery in critical process systems. The HFCA's high Cv capacity provides the best flow value and operational 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
- Automated bulk gas distribution systems

HFCA Series Product Features

- Highest Cv Actuated 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

HFCA 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® is a registered trademarks of DuPont Company.

HFCA SERIES

HFCA Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	CF3M, 316L SS, **Inconel® 625/316, PCTFE, Nickel	
	Non-Wetted Areas	CF8 (304 SS), 316L SS	
MAXIMUM OPERATING PRESSURE	HFCA 500	Vacuum to 250 psig (0-17.2 bar)	80-100 psig (5.5 - 6.9 bar) - Actuator-N.C.
	HFCA 750 & 1000		60-100 psig (4.1 - 6.9 bar) - Actuator-N.C.-ID
	HFCA 750 & 1000		60-100 psig (4.1 - 6.9 bar) - Actuator-N.O.-ID
	HFCA 1015 & 1500 & 2000		90-100 psig (6.2 - 6.9 bar) - Actuator-N.C.
	HFCA 1015 & 1500 & 2000		90-100 psig (6.2 - 6.9 bar) - Actuator-N.O.
	HFCA 2003 & 3000 & 4000		60-80 psig (4.1 - 5.5 bar) - Actuator-D.A.
	HFCA 4006 & 6000		60-80 psig (4.1 - 5.5 bar) - Actuator-D.A.
MAXIMUM OPERATING TEMPERATURE	PCTFE Seat – Std *Vespe!® Seat (High Temp)	-22°F (-30°C) to 180°F (82°C) 181°F (83°C) to 302°F (150°C)	

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

**Inconel® is a registered trademark of Special Metals Corporation.

VALVE MODELS	BODY DATA	C _v	VALVE MODELS	BODY DATA	C _v	CYCLE LIFE @250 PSIG
Series/Size-Inch	Tube/Body (Seat-Orifice) Sizes		Series/Size-JIS	Tube/Body (Seat-Orifice) Sizes		
HFCA 500-NC	Ø.500 / .500 (Ø.652 in. (Ø16.56mm)-Orifice)	5.0				10,000
HFCA 750-NC-ID or -NO-ID	Ø.750 / .750 (Ø.900 in. (Ø22.86mm)-Orifice)	14.5	HFCA 15A-NC-ID or -NO-ID	15A (Ø.850) / 15A (Ø.900 in. (Ø22.86mm)-Orifice)	14.5	30,000
HFCA 1000-NC-ID or -NO-ID	Ø1.000 / .750 (Ø.900 in. (Ø22.86mm)-Orifice)	21.0	HFCA 20A-NC-ID or -NO-ID	20A (Ø1.070) / 20A (Ø.900 in. (Ø22.86mm)-Orifice)	21.0	30,000
			HFCA 25A-NC-ID or -NO-ID	25A (Ø1.340) / 25A (Ø.900 in. (Ø22.86mm)-Orifice)	16.0	30,000
HFCA 1015-NC or -NO	Ø1.000 / 1.500 (Ø1.326 in. (Ø33.68mm)-Orifice)	28.0				30,000
HFCA 1500-NC or -NO	Ø1.500 / 1.500 (Ø1.326 in. (Ø33.68mm)-Orifice)	46.0	HFCA 32A-NC or -NO	32A (Ø1.680) / 32A (Ø1.326 in. (Ø33.68mm)-Orifice)	50.0	30,000
HFCA 2000-NC or -NO	Ø2.000 / 1.500 (Ø1.326 in. (Ø33.68mm)-Orifice)	52.0	HFCA 40A-NC or -NO	40A (Ø1.910) / 40A (Ø1.326 in. (Ø33.68mm)-Orifice)	48.0	30,000
			HFCA 50A-NC or -NO	50A (Ø2.380) / 50A (Ø1.326 in. (Ø33.68mm)-Orifice)	46.0	30,000
HFCA 2003-DA	Ø2.000 / 3.000 (Ø2.796 in. (Ø71.02mm)-Orifice)	157.0				8,000
HFCA 3000-DA	Ø3.000 / 3.000 (Ø2.796 in. (Ø71.02mm)-Orifice)	210.0	HFCA 65A-DA	65A (Ø3.000) / 65A (Ø2.796 in. (Ø71.02mm)-Orifice)	210.0	8,000
HFCA 4000-DA	Ø4.000 / 3.000 (Ø2.796 in. (Ø71.02mm)-Orifice)	185.0	HFCA 80A-DA	80A (Ø3.508) / 80A (Ø2.796 in. (Ø71.02mm)-Orifice)	185.0	8,000
			HFCA 100A-DA	100A (Ø4.508) / 100A (Ø2.796 in. (Ø71.02mm)-Orifice)	175.0	8,000
HFCA 4006-DA	Ø4.000 / 6.000 (Ø5.62 in. (Ø142.75mm)-Orifice)	758.0				8,000
HFCA 6000-DA	Ø6.000 / 6.000 (Ø5.62 in. (Ø142.75mm)-Orifice)	854.0	HFCA 125A-DA	125A (Ø5.504) / 125A (Ø5.62 in. (Ø142.75mm)-Orifice)	900.0	8,000
			HFCA 150A-DA	150A (Ø6.504) / 150A (Ø5.62 in. (Ø142.75mm)-Orifice)	850.0	8,000
			HFCA 200A-DA	200A (Ø8.156) / 200A (Ø5.62 in. (Ø142.75mm)-Orifice)	790.0	8,000
			HFCA 250A-DA	250A (Ø10.530) / 250A (Ø5.62 in. (Ø142.75mm)-Orifice)	750.0	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) HFCA 500 / 750 / 1000 – 10-32UNC-2B 2) HFCA 15A / 20A / 25A – M5 x 0.8 3) HFCA 1015 / 1500 / 2000 – .250-20UNC-2B 4) HFCA 32A / 40A / 50A – M6 x 1 5) HFCA 2003 / 3000 / 4000 – .375-16UNC-2B 6) HFCA 65A / 80A / 100A – .375-16UNC-2B 7) HFCA 4006 / 6000 – .375-16UNC-2B 8) HFCA 125A / 150A / 200A / 250A – .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: (HFCA 2003 & 3000 & 4000 & 4006 & 6000 Sizes Only) (HFCA 65A & 80A & 100A & 125A & 150A & 200A & 250A Sizes Only) Request for 8" Size Valve Information, Consult Sales	

Specifications are subject to change without notice.

HFCA SERIES



HFCA Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E	F	G
HFCA 500-NC	Ø .500 (12.7mm)	.049 (1.24mm)	.620 (15.7mm)	3.04 (77.2mm)	9.41 (239.0mm)	7.45 (189.2mm)	10.70 (271.8mm)
HFCA 750-NC-ID	Ø .750 (19.1mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	8.20 (208.3mm)	11.45 (290.8mm)
HFCA 750-NO-ID	Ø .750 (19.1mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	7.37 (187.2mm)	10.61 (269.5mm)
HFCA 1000-NC-ID	Ø 1.000 (25.4mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	8.20 (208.3mm)	11.45 (290.8mm)
HFCA 1000-NO-ID	Ø 1.000 (25.4mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	7.37 (187.2mm)	10.61 (269.5mm)
HFCA 1015-NC	Ø 1.000 (25.4mm)	.065 (1.65mm)	1.13 (28.7mm)	5.00 (127.0mm)	15.09 (383.2mm)	13.86 (352.0mm)	18.96 (481.6mm)
HFCA 1015-NO	Ø 1.000 (25.4mm)	.065 (1.65mm)	1.13 (28.7mm)	5.00 (127.0mm)	15.09 (383.2mm)	11.48 (291.6mm)	16.58 (421.1mm)
HFCA 1500-NC	Ø 1.500 (38.1mm)	.065 (1.65mm)	1.13 (28.7mm)	3.06 (77.7mm)	11.21 (284.7mm)	13.86 (352.0mm)	16.97 (431.0mm)
HFCA 1500-NO	Ø 1.500 (38.1mm)	.065 (1.65mm)	1.13 (28.7mm)	3.06 (77.7mm)	11.21 (284.7mm)	11.48 (291.6mm)	14.58 (370.3mm)
HFCA 2000-NC	Ø 2.000 (50.8mm)	.065 (1.65mm)	1.13 (28.7mm)	3.98 (101.1mm)	13.21 (335.5mm)	13.86 (352.0mm)	16.97 (431.0mm)
HFCA 2000-NO	Ø 2.000 (50.8mm)	.065 (1.65mm)	1.13 (28.7mm)	3.98 (101.1mm)	13.21 (335.5mm)	11.48 (291.6mm)	14.58 (370.3mm)
HFCA 2003-DA	Ø 2.000 (50.8mm)	.065 (1.65mm)	2.13 (54.1mm)	7.58 (192.5mm)	23.66 (601.0mm)	16.10 (408.9mm)	23.99 (609.3mm)
HFCA 3000-DA	Ø 3.000 (76.2mm)	.065 (1.65mm)	2.13 (54.1mm)	4.08 (103.2mm)	19.66 (499.4mm)	16.10 (408.9mm)	20.49 (520.4mm)
HFCA 4000-DA	Ø 4.000 (101.6mm)	.083 (2.11mm)	2.13 (54.1mm)	4.08 (103.2mm)	20.66 (524.8mm)	16.10 (408.9mm)	20.49 (520.4mm)
HFCA 4006-DA	Ø 4.000 (101.6mm)	.083 (2.11mm)	3.30 (83.8mm)	10.11 (256.8mm)	34.38 (873.3mm)	26.49 (672.8mm)	36.16 (918.4mm)
HFCA 6000-DA	Ø 6.000 (152.4mm)	.109 (2.77mm)	3.30 (83.8mm)	4.11 (104.4mm)	29.80 (756.9mm)	26.49 (672.8mm)	30.16 (766.0mm)

SERIES/SIZE (JIS)	A	B	C	D	E	F	G
HFCA 15A-NC-ID	Ø .850 (21.6mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	8.20 (208.3mm)	11.45 (290.8mm)
HFCA 15A-NO-ID	Ø .850 (21.6mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	7.37 (187.2mm)	10.61 (269.5mm)
HFCA 20A-NC-ID	Ø 1.070 (27.2mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	8.20 (208.3mm)	11.45 (290.8mm)
HFCA 20A-NO-ID	Ø 1.070 (27.2mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	7.37 (187.2mm)	10.61 (269.5mm)
HFCA 25A-NC-ID	Ø 1.340 (34.0mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	8.20 (208.3mm)	11.45 (290.8mm)
HFCA 25A-NO-ID	Ø 1.340 (34.0mm)	.065 (1.65mm)	.710 (18.0mm)	3.04 (77.2mm)	12.41 (315.2mm)	7.37 (187.2mm)	10.61 (269.5mm)
HFCA 32A-NC	Ø 1.680 (42.7mm)	.065 (1.65mm)	1.13 (28.7mm)	3.06 (77.7mm)	11.21 (211.1mm)	13.86 (352.0mm)	16.97 (431.0mm)
HFCA 32A-NO	Ø 1.680 (42.7mm)	.065 (1.65mm)	1.13 (28.7mm)	3.06 (77.7mm)	11.21 (211.1mm)	11.48 (291.6mm)	14.58 (370.3mm)
HFCA 40A-NC	Ø 1.910 (48.5mm)	.065 (1.65mm)	1.13 (28.7mm)	4.06 (103.1mm)	13.21 (335.5mm)	13.86 (352.0mm)	16.97 (431.0mm)
HFCA 40A-NO	Ø 1.910 (48.5mm)	.065 (1.65mm)	1.13 (28.7mm)	4.06 (103.1mm)	13.21 (335.5mm)	11.48 (291.6mm)	14.58 (370.3mm)
HFCA 50A-NC	Ø 2.380 (60.4mm)	.065 (1.65mm)	1.13 (28.7mm)	4.25 (107.9mm)	13.21 (335.5mm)	13.86 (352.0mm)	16.97 (431.0mm)
HFCA 50A-NO	Ø 2.380 (60.4mm)	.065 (1.65mm)	1.13 (28.7mm)	4.25 (107.9mm)	13.21 (335.5mm)	11.48 (291.6mm)	14.58 (370.3mm)
HFCA 65A-DA	Ø 3.000 (76.2mm)	.083 (2.11mm)	2.13 (54.1mm)	4.08 (103.6mm)	19.66 (499.4mm)	16.10 (408.9mm)	20.49 (520.4mm)
HFCA 80A-DA	Ø 3.508 (89.1mm)	.083 (2.11mm)	2.13 (54.1mm)	4.08 (103.6mm)	19.66 (499.4mm)	16.10 (408.9mm)	20.49 (520.4mm)
HFCA 100A-DA	Ø 4.500 (114.3mm)	.083 (2.11mm)	2.13 (54.1mm)	4.21 (106.9mm)	20.67 (525.0mm)	16.10 (408.9mm)	20.40 (518.2mm)
HFCA 125A-DA	Ø 5.504 (139.8mm)	.110 (2.79mm)	3.30 (83.8mm)	4.11 (104.4mm)	29.80 (756.9mm)	26.49 (672.8mm)	30.16 (766.0mm)
HFCA 150A-DA	Ø 6.504 (165.2mm)	.110 (2.79mm)	3.30 (83.8mm)	4.11 (104.4mm)	29.80 (756.9mm)	26.49 (672.8mm)	30.16 (766.0mm)
HFCA 200A-DA	Ø 8.516 (216.3mm)	.110 (2.79mm)	3.30 (83.8mm)	9.95 (250.7mm)	36.04 (915.4mm)	26.49 (672.8mm)	36.00 (914.4mm)
HFCA 250A-DA	Ø 10.530 (267.5mm)	.130 (3.30mm)	3.30 (83.8mm)	9.95 (250.7mm)	36.04 (915.4mm)	26.49 (672.8mm)	36.00 (914.4mm)

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

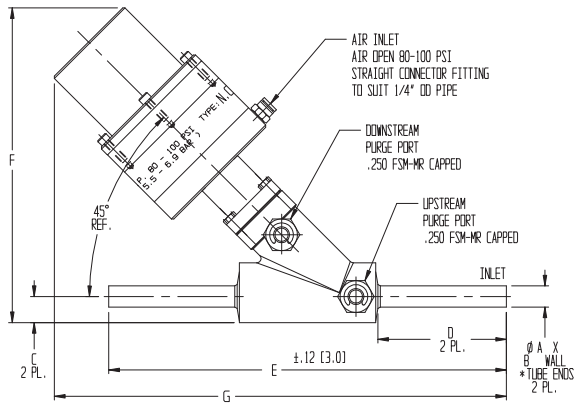
NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

HFCA SERIES

HFCA Series Typical Valve Dimensions

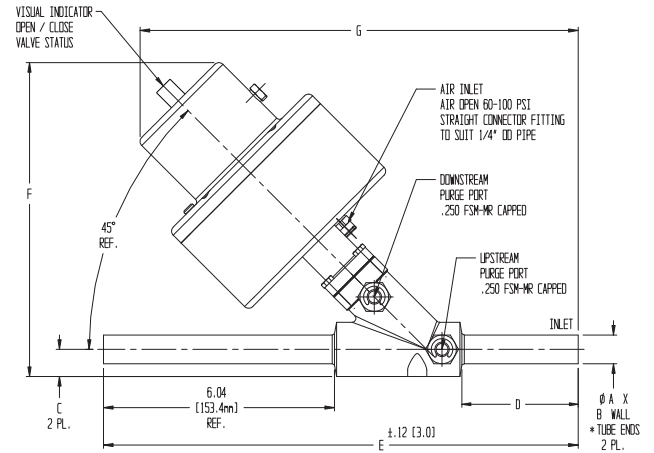
HFCA 500 BODY (N.C. SHOWN)

500 - N.C.



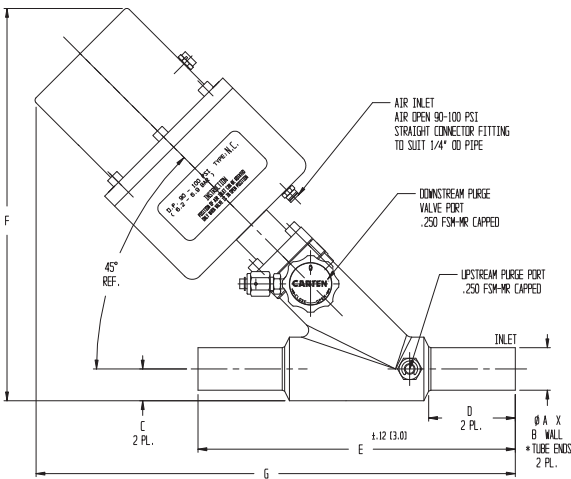
HFCA 750 BODY (N.C.-ID SHOWN)

750 / 1000 / 15A / 20A / 25A N.C.-ID & N.O.-ID



HFCA 1500 BODY (N.C. SHOWN)

1015 / 1500 / 2000 / 32A / 40A / 50A - N.C. & N.O.

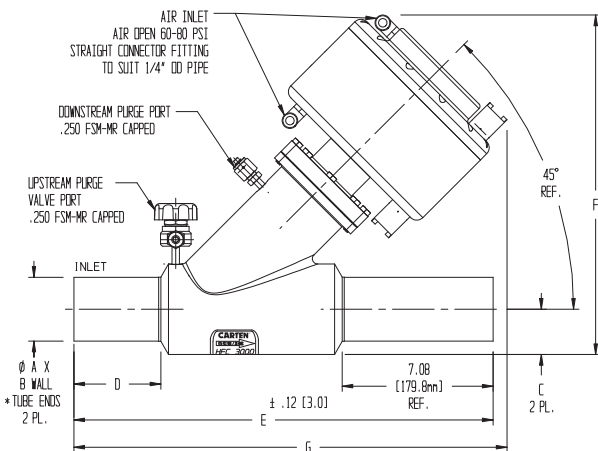


HFCA SERIES 500 / 750 / 1000 SIZES

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

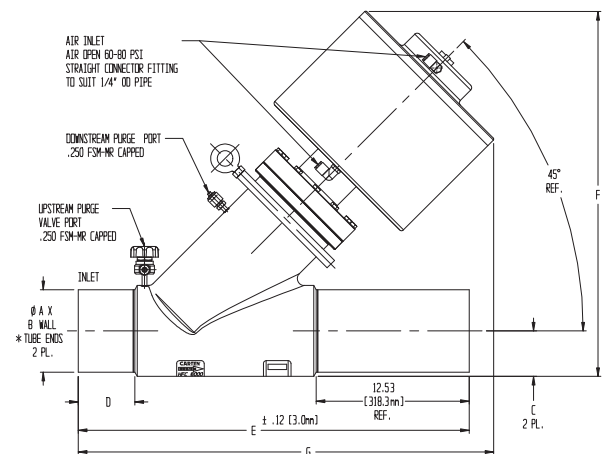
HFCA 3000 BODY (D.A. SHOWN)

2003 / 3000 / 4000 / 65A / 80A / 1000A - D.A.



HFCA 6000 BODY (D.A. SHOWN)

4006 / 6000 / 125A / 150A / 200A / 250A - D.A.



HFCA SERIES

HFCA Series Ordering Code

HFCA	–	2000	–	10	–	PC2	–	FSM-MR	–	NC
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SERIES	TYPE
HFCA	Pneumatic

VALVE SIZES	TUBE/(BODY) INCH – SIZES – JIS
500	Ø .500 (.500)
750	Ø .750 (.750)
1000	Ø 1.000
1015	Ø 1.000
1500	Ø 1.500 (1.500)
2000	Ø 2.000
2003	Ø 2.000
3000	Ø 3.000 (3.000)
4000	Ø 4.000
4006	Ø 4.000
6000	Ø 6.000 (6.000)
JIS SIZES	
15A	Ø .850 (15A)
20A	Ø 1.070 (20A)
25A	Ø 1.340 (25A)
32A	Ø 1.680 (32A)
40A	Ø 1.910 (40A)
50A	Ø 2.380 (50A)
65A	Ø 3.000 (65A)
80A	Ø 3.508 (80A)
100A	Ø 4.500 (100A)
125A	Ø 5.504 (125A)
150A	Ø 6.504 (150A)
200A	Ø 8.516 (150A)
250A	Ø 10.530 (150A)

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

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.

CODE	TYPE
FSM-MR	Fixed Male-RH

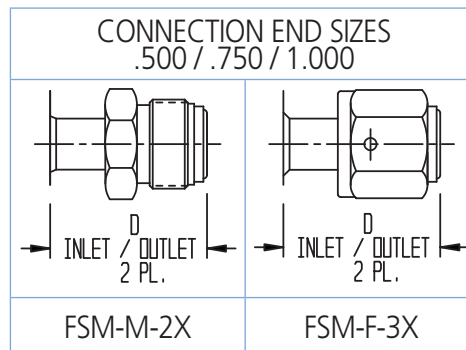
FSM – Face Seal Metal Purge (Right Hand)

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

*Vespel® is a registered trademark of DuPont Company.

OPTIONAL VALVE FSM - M/F CONNECTION ENDS

Available on HFCA .500" and .750" 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	2.36 (59.9mm)	2.36 (59.9mm)

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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REV 4/2019

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