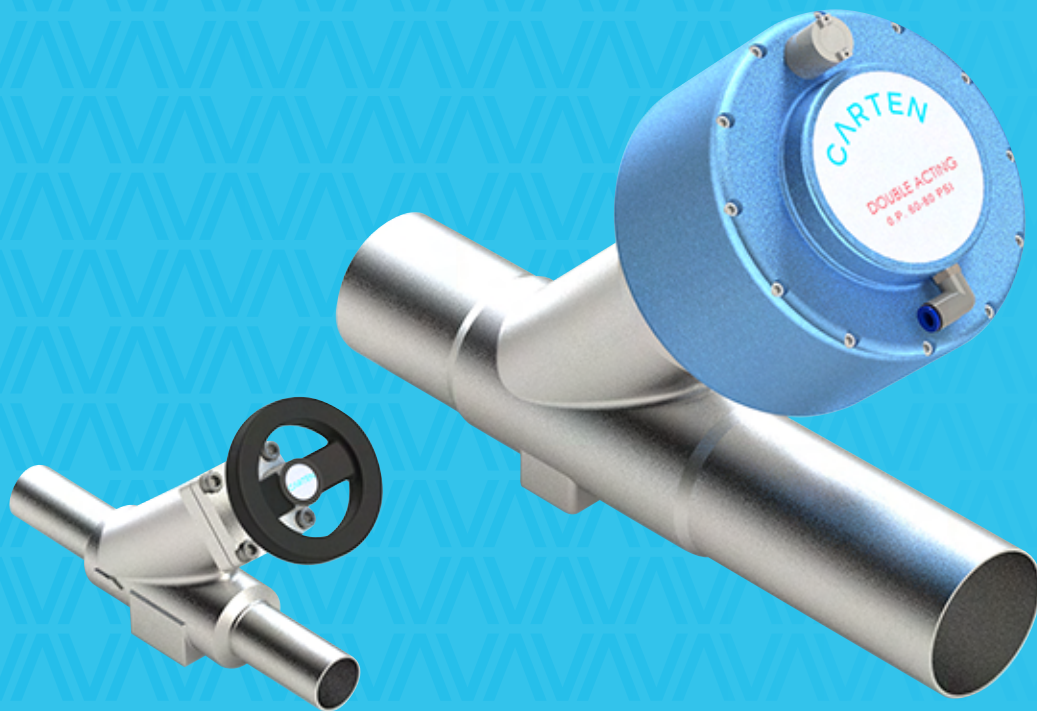


CARTEN

FLOW SOLUTIONS - **WE GO BEYOND**

INTRODUCING CARTEN'S HFC SERIES ULTRA-HIGH PURITY HIGH FLOW BELLOWS VALVES



HFC Series

Ultra-High Purity High Flow Bellows Valves

UHP cast bellows globe valve for semiconductor applications utilising our market-leading HF series bellows, offering a balanced selection based on cost and flow rates

Key Features

Available in line sizes up to 8"

Metal-to-metal external seals

High Cv (flow coefficient)

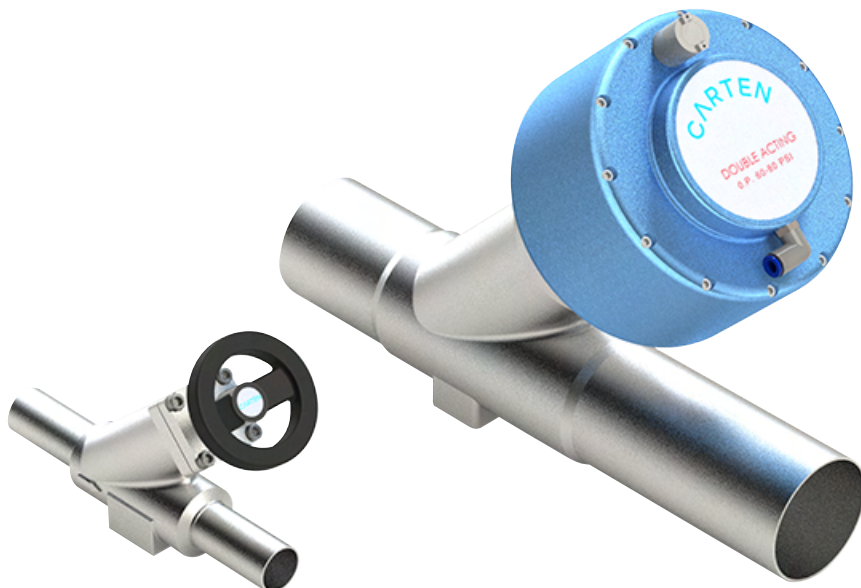
Multi-ply bellow construction for high durability

Typical Applications

High flow bulk gas distribution (BGD), lateral end-of-line (EOL) shut-off, high flow ultra-high-purity gas control for filtration and purification, and critical application containment functionality.

Key Specifications

Materials of Construction	Cleanliness	Specifications	Options
316L Cast stainless body	Manufactured in Class 10	Leak tested using Mass spectrometer <math><1 \times 10^{-9}</math> mbar.l/s	Manual or pneumatic
Bellows Inconel® 625 or 316Ti	Zero particles @0.1µm	<math><10\text{Ra}</math> micro-inch surface roughness	PFA / PI seat high temperature (up to 150C)
Visual Indicators options available	<math><10\text{ppb}</math> O ₂ /H ₂ O outgassing	Vacuum and pressure tested 100% production control	4/20mA switching / signalling automation
PCTFE standard seat (minimal volume)	Cleaned using 18.2MΩ-cm DI water	Manual 375 p.s.i. Pneumatic 250 p.s.i.	5 - 2350 Cv (flow coefficient)

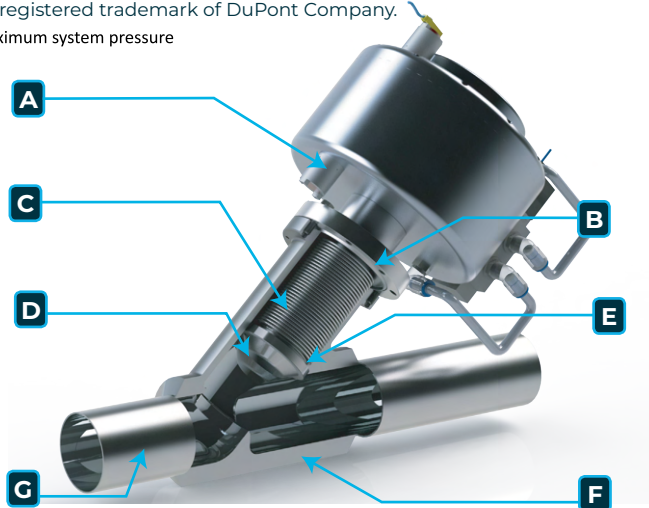


HFCA Series Technical Specifications

Maximum Operating Pressure		HFCA Series		Vacuum-250 psig (0-17.2 bar) See below for pneumatic actuation pressures				
Maximum Operating Temperature		PTFE Seat Vespel® Seat		-22°F (-30°C) to 180°F (82°C) 302°F (150°C)				
Inch Model		JIS Model		Max Pressure	Control Function	Cv	Cycle Life**	Actuation Pressure
Description	Line Size (Body Size)	Description	Line Size (Body Size)					
HFCA 500	.500 (.500)	HFCA 10A	10A (.500)	250 PSIG (17.2 BAR)	NC, NO, DA	5	20,000	90-100PSIG (4.1-6.9BAR)
HFCA 750	.750 (.750)	HFCA 15A	15A (.750)	250 PSIG (17.2 BAR)	NC, NO, DA	14.5	30,000	60-100PSIG (4.1-6.9BAR)
HFCA 1000	1.000 (.750)	HFCA 20A	20A (.750)	250 PSIG (17.2 BAR)	NC, NO, DA	21	30,000	60-100PSIG (4.1-6.9BAR)
		HFCA 25A	25A (.750)	250 PSIG (17.2 BAR)	NC, NO, DA	16	30,000	60-100PSIG (4.1-6.9BAR)
HFCA 1015	1.000(1.500)			250 PSIG (17.2 BAR)	NC, NO, DA	28	30,000	90-100PSIG (6.2-6.9BAR)
HFCA 1500	1.500 (1.500)			250 PSIG (17.2 BAR)	NC, NO, DA	46	30,000	90-100PSIG (6.2-6.9BAR)
		HFCA 32A	32A (1.000)	250 PSIG (17.2 BAR)	NC, NO, DA	50	30,000	90-100PSIG (6.2-6.9BAR)
		HFCA 40A	40A (1.000)	250 PSIG (17.2 BAR)	NC, NO, DA	48	30,000	90-100PSIG (6.2-6.9BAR)
		HFCA 50A	50A (1.000)	250 PSIG (17.2 BAR)	NC, NO, DA	46	30,000	90-100PSIG (6.2-6.9BAR)
HFCA 2000	2.000 (1.500)			250 PSIG (17.2 BAR)	NC, NO, DA	52	30,000	90-100PSIG (6.2-6.9BAR)
HFCA 2003	2.000 (3.000)			250 PSIG (17.2 BAR)	DA	157	8,000	60-80PSIG (4.1-5.5BAR)
HFCA 3000	3.000 (3.000)			250 PSIG (17.2 BAR)	DA	187	8,000	60-80PSIG (4.1-5.5BAR)
		HFCA 65A	65A (2.000)	250 PSIG (17.2 BAR)	DA	210	8,000	60-80PSIG (4.1-5.5BAR)
HFCA 4000	4.000 (3.000)			250 PSIG (17.2 BAR)	DA	151	8,000	60-80PSIG (4.1-5.5BAR)
		HFCA 80A	80A (2.000)	250 PSIG (17.2 BAR)	DA	185	8,000	60-80PSIG (4.1-5.5BAR)
		HFCA 100A	100A (2.000)	250 PSIG (17.2 BAR)	DA	175	8,000	60-80PSIG (4.1-5.5BAR)
Helium Leak Test		Inboard Across the Seat Outboard Pressure Test		$<1 \times 10^{-9}$ scc/s He (1×10^{-10} Pa-M ³ /s) $<1 \times 10^{-9}$ scc/s He (1×10^{-10} Pa-M ³ /s) $<1 \times 10^{-6}$ scc/s He (1×10^{-7} Pa-M ³ /s)				
Cleanliness and Packaging		Assembled and tested in Class 10 Cleanroom. Purged and Final Packaged in Class 10 Cleanroom. Double-bag packaging with Ultra-High Purity N ² gas environment.						
Standard Finish		Electropolished to 10 Ra µin Max (0.25 µm) on all wetted surfaces						
Options		Pneumatic actuator types: NO, NC and DA for 1/2", 1" and 1 1/2" sizes. DA types only for 2", 3", 4" and 6" sizes. Optional surfaces finished available. Purge connections and Purge valves are available as requested. Face seal, twin ferrule compression fittings available up to 1" lines. Higher temperature operation possible up to 150°C (302°F) upon request. Optional instrumentation for actuator signalling, actuator control, etc. Testing available on request.						

© Vespel is a registered trademark of DuPont Company.

** Rating at maximum system pressure



Material of Construction

Item	Part
A	Actuator (Aluminium Anodized)
B	Bonnet Stainless Steel
C	Bellows Inconel® 625 or 316Ti
D	PTFE Seat (Optional Polymide)
E	Seat Holder 316L St. St. EP
F	Body CF3M 316L St. St. EP
G	Tube Ends 316L St. St. EP

® Inconel is a registered trademark of Special Metals Corporation.

HFC Series Technical Specifications

Maximum Operating Pressure		HFC Series		Vacuum-375 psig (0-25.8 bar) HFC 6000 max pressure 250 PSIG (17.2 Bar) *
Maximum Operating Temperature		PCTFE Seat Vespel® Seat		-22°F (-30°C) to 180°F (82°C) 302°F (150°C)
Inch Model		JIS Model		Cv
Description	Line Size (Body Size)	Description	Line Size (Body Size)	
HFC 500	.500 (.500)	HFC 10A	10A (.500)	5
HFC 750	.750 (.750)	HFC 15A	15A (.750)	14.5
HFC 1000	1.000 (.750)	HFC 20A	20A (.750)	21
		HFC 25A	25A (.750)	16
HFC 1015	1.000(1.500)			28
HFC 1500	1.500 (1.500)			46
		HFC 32A	32A (1.000)	50
		HFC 40A	40A (1.000)	48
HFC 2000	2.000 (1.500)			52
		HFC 50A	50A (1.000)	46
HFC 2003	2.000 (3.000)			157
HFC 3000	3.000 (3.000)	HFC 65A	65A (2.000)	210
HFC 4000	4.000 (3.000)	HFC 80A	80A (2.000)	185
		HFC 100A	100A (2.000)	175
HFC 6000*	6.000 (4.000)*			854
		HFC 125A		900

Helium Leak Test	Inboard Across the Seat Outboard Pressure Test	<1 x 10 ⁻⁹ scc/s He (1 x 10 ⁻¹⁰ Pa-M ³ /s) <1 x 10 ⁻⁹ scc/s He (1 x 10 ⁻¹⁰ Pa-M ³ /s) <1 x 10 ⁻⁶ scc/s He (1 x 10 ⁻⁷ Pa-M ³ /s)
Cleanliness and Packaging	Assembled and tested in Class 10 Cleanroom. Purged and Final Packaged in Class 10 Cleanroom. Double-bag packaging with Ultra-High Purity N ₂ gas environment.	
Standard Finish	Electropolished to 10 Ra µin Max (0.25 µm) on all wetted surfaces	
Options	Optional surfaces finished available. Purge connections and Purge valves are available as requested. Face seal, twin ferrule compression fittings available up to 1" lines. Higher temperature operation possible up to 150°C (302°F) upon request.	



Material of Construction

Item	Part
A	Manual Handle (ABS or Aluminium)
B	Bonnet Stainless Steel
C	Bellows Inconel® 625 or 316Ti
D	PCTFE Seat (Optional Polymide)
E	Seat Holder 316L St. St. EP
F	Body CF3M 316L St. St. EP
G	Tube Ends 316L St. St. EP

* Inconel is a registered trademark of Special Metals Corporation.

Order Information

Sample: HFC 500 - 049 - PC1

HFC Series Manual Valve, 1/2" Tube End Connections with 1/4" Downstream Purge Connection

Series	Size	Inlet Connection	Outlet Connection ¹	Purge Type	Handle Colour ²	Actuator Designator ³	Actuator Accessories ³
HFC – Manual Multi Turn Version	500 (1/2")	½" TE = 049	½" TE = 049	Blank - No Purge	Blank (White Handwheel Supplied up to and including HFC750 Black Handwheel Supplied for HFC1000 and above)	NC - Normally Closed	PS (Proximity Sensor)
HFCA – Pneumatic Air Operated Version	750 (¾")	½" FSM M(S)	½" FSM M(S)	PC1 - 1/4" Downstream Purge Connection	White (White Handwheel Supplied)	NO - Normally Open	PSEx (Explosion Proof Proximity Sensor)
	1000 (1")	½" FSM FM	½" FSM FM	PC2 - 1/4" Upstream and Downstream Purge Connection	Red (Red Handwheel Supplied)		
	1500 (1.5")	½" C/LOK	½" C/LOK	PC3 - 1/4" Upstream Purge Connection	Yellow (Yellow Handwheel Supplied)		
	2000 (2")	¾" TE = 065	¾" TE = 065	PV1 - 1/4" Downstream Purge Valve	Green (Green Handwheel Supplied)		
	3000 (3")	¾" FSM M(S)	¾" FSM M(S)	PV2 - 1/4" Upstream and Downstream Purge Valve	Orange (Orange Handwheel Supplied)		
	4000 (4")	¾" FSM FM	¾" FSM FM	PV3 - 1/4" Upstream Purge Valve	Black (Black Handwheel Supplied)		
	6000 (6")	3/4" C/LOK	3/4" C/LOK	PC15 - 1/2" Downstream Purge Connection	Blue (Blue Handwheel Supplied)		
		1" TE = 065	1" TE = 065	PC25 - 1/2" Upstream and Downstream Purge Connection	Pink (Pink Handwheel Supplied)		
		1" C/LOK	1" C/LOK	PC35 - 1/2" Upstream Purge Connection	Brown (Brown Handwheel Supplied)		
		1.5" TE = 065	1.5" TE = 065	PV15 - 1/2" Downstream Purge Valve	Gold (Gold Handwheel Supplied)		
		2" TE = 065	2" TE = 065	PV25 - 1/2" Upstream and Downstream Purge Valve	Grey (Grey Handwheel Supplied)		
		3" TE = 065	3" TE = 065	PV35 - 1/2" Upstream Purge Valve	Silver (Silver Handwheel Supplied)		
		4" TE = 083	4" TE = 083		Purple (Purple Handwheel Supplied)		
6" TE = 109	6" TE = 109						

FSM = Face Seal Metal - VCR® type connections
100% compatible with VCR® brand

¹ Only Specify the Outlet connection when different from the Inlet connection

² Manual Version only

³ Actuated Version only

*Uses white handle as standard

CARTEN

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Carten Controls and Fujikin Deutschland are members of the Fujikin Carp Group (FCG) with Headquarters in Osaka Japan.