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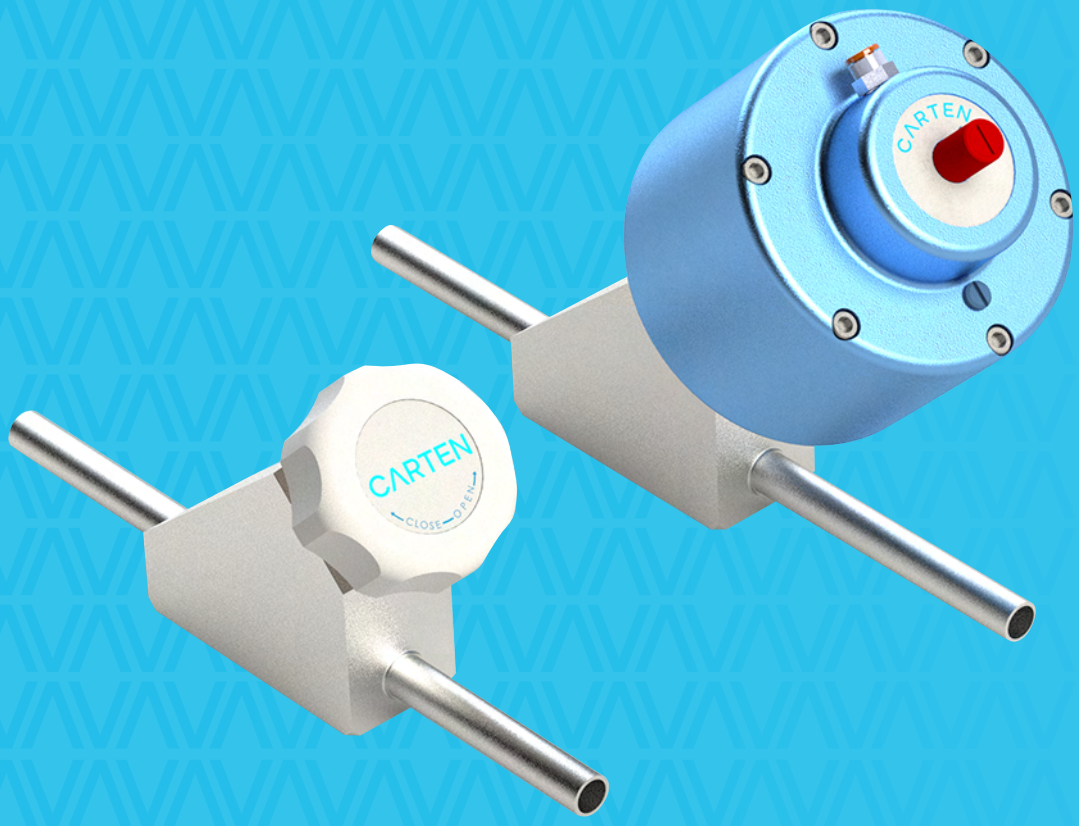
FLOW SOLUTIONS - **WE GO BEYOND**

INTRODUCING CARTEN'S HF SERIES

ULTRA-HIGH PURITY, HIGH FLOW BELLOWS VALVES



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FLOW SOLUTIONS - **WE GO BEYOND**

HF Series

Ultra-High Purity High Flow Bellows Valves

UHP bellows globe valve for semiconductor applications containing all the advantages of our HB standard series, with extended valve stroke to deliver the highest flow rates, with minimum pressure drop, in the semiconductor industry.

Key Features

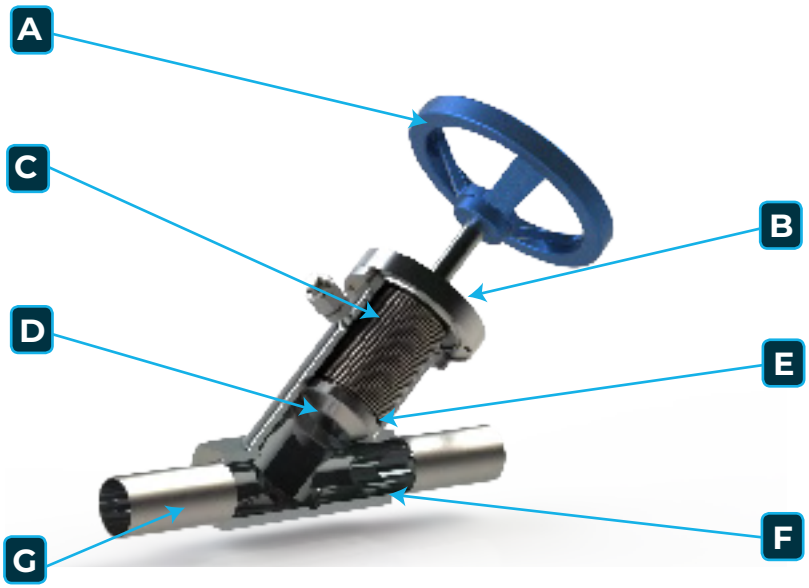
Available in line sizes up to 6”	Metal-to-metal external seals	Highest Cv (flow coefficient) in semiconductor industry	Multi-ply bellow construction for high durability

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 stainless body	Manufactured in ISO Class 4 Cleanroom	<10Ra micro-inch surface roughness	Manual or pneumatic
316Ti bellows up sizes to 1", Inconel 625 for above	Zero particles @0.1µm in static conditions	Manual 375 PSI Max - Pneumatic 250 PSI Max	PI seat high temperature (up to 150°C)
Barstock-only source	<10ppb O2/H20 outgassing	5 - 758 Cv (flow coefficient)	Position Sensing (Pneumatic only)
PCTFE standard seat (minimal volume)	Cleaned using DI water & oven baked	100% leak tested using mass spectrometer to 1x10^-9 scc/s under vacuum and 1x10^-6 scc/s under pressure	Solenoid Actuation (Pneumatic only)

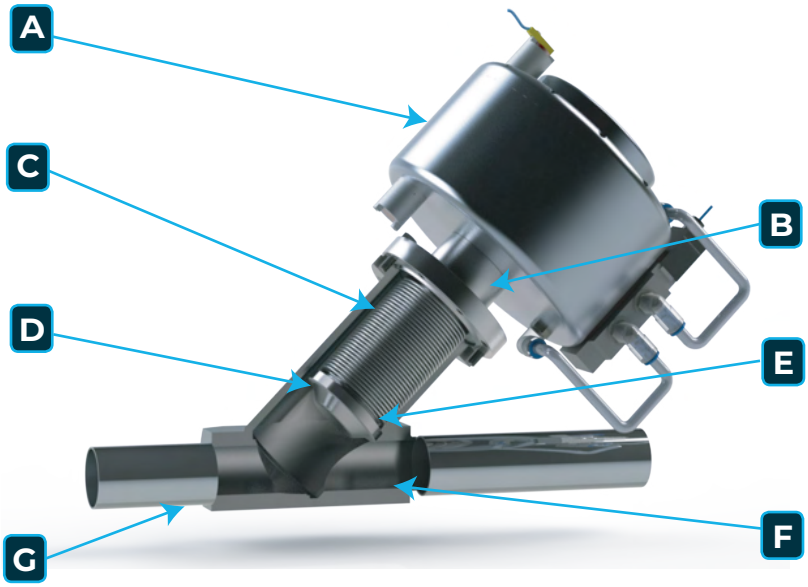


Material of Construction HF

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

® Inconel is a registered trademark of Special Metals Corporation.

*Wetted Area



Material of Construction HFA

Item	Part
A	Actuator (Aluminium Anodized)
B	Bonnet Stainless Steel
C *	Bellows Inconel® 625 or 316Ti
D *	Seat PCTFE
E *	Seat Holder 316L
F *	Body Barstock 316L
G *	Tube Ends 316L

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*Wetted Area

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HF Series Technical Specification

Maximum Operating Pressure	**HF Series**	Vacuum to 375 PSI (25 Bar) up to 4" 250 PSI (17 BAR) for 6"
Maximum Operating Temperature	**PCTFE Seat (Standard)** **Vespel® Seat**	–22°F (-30°C) to 180°F (82°C) 302°F (150°C)
Construction Material	**Wetted Areas**	316L SS, Inconel® 625 or 316Ti, PCTFE, Nickel.
	Non-Wetted Areas	316L/304 SS, Aluminum, ABS, 17-4 PH, Viton.
Description	**Line (Body) size in**	**Cv**
HF 500	.500 (.500)	5
HF 755	.750 (.500)	10
HF 750	.750 (.750)	11.5
HF 1075	1.000 (.750)	20
HF 751	.750 (1.000)	15
HF 1000	1.000 (1.000)	29
HF 1501	1.500 (1.000)	27
HF 1502	1.500 (2.000)	85
HF 2000	2.000 (2.000)	178
HF 3002	3.000 (2.000)	117
HF 3004	3.000 (4.000)	452
HF 4000	4.000 (4.000)	758
HF 6004*	6.000 (4.000)*	758*
Helium Leak Test Performed with 100% Helium	Inboard Across the Seat Outboard Pressure Test	$<1 \times 10^{-9}$ scc/s He $<1 \times 10^{-9}$ scc/s He $<1 \times 10^{-6}$ scc/s He
Cleanliness and Packaging	Assembled and tested in ISO Class 4 Cleanroom. Purged and Final Packaged in ISO Class 4 Cleanroom. Double-bag packaging with Ultra-High Purity N^2 gas environment. Cleaned using DI water & Oven backed.	
Standard Finish	Electropolished to 10 Ra µin Max (0.25 µm) on all wetted surfaces	
Options	Optional surface finishes available. Testing: Particle, moisture, O2 on request. Purge Connections and Purge valve available. Metric tube stubs. Other handwheel colors available. End connections, Face seal, compression available up to 1".	

® Vespel is a registered trademark of DuPont Company.
***Ref HF4000**

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FLOW SOLUTIONS - **WE GO BEYOND**

HFA Series Technical Specification

Maximum Operating Pressure	**HFA Series**	Vacuum to 250 PSI (17.2 BAR) up to 2" Body. 150 PSI (10.3 BAR) for 4" body	
Maximum Operating Temperature	**PCTFE Seat (Standard)** **Vespel® Seat**	–22°F (-30°C) to 180°F (82°C) 302°F (150°C)	
Construction Material	**Wetted Areas**	316L SS, Inconel® 625 or 316Ti, PCTFE, Nickel.	
	Non-Wetted Areas	316L/304 SS, Aluminum, ABS, 17-4 PH, Viton.	

Description	Line (Body) size in	Max Pressure	Control Function	Cv	Cycle Life**	Actuation Pressure
HFA 500	.500 (.500)	250 PSIG (17.2 BAR)	NO, NC, DA	5	20,000	90-100PSIG (4.1-6.9BAR)
HFA 755	.750 (.500)	250 PSIG (17.2 BAR)	NO, NC, DA	10	20,000	90-100PSIG (4.1-6.9BAR)
HFA 750	.750 (.750)	250 PSIG (17.2 BAR)	NO, NC, DA	11.5	30,000	60-100PSIG (4.1-6.9BAR)
HFA 1075	1.000 (.750)	250 PSIG (17.2 BAR)	NO, NC, DA	20	30,000	60-100PSIG (4.1-6.9BAR)
HFA 751	.750 (1.000)	250 PSIG (17.2 BAR)	NO, NC	15	30,000	90-100PSIG (6.2-6.9BAR)
HFA 1000	1.000 (1.000)	250 PSIG (17.2 BAR)	NO, NC	29	30,000	90-100PSIG (6.2-6.9BAR)
HFA 1501	1.500 (1.000)	250 PSIG (17.2 BAR)	NO, NC	27	30,000	90-100PSIG (6.2-6.9BAR)
HFA 1502	1.500 (2.000)	250 PSIG (17.2 BAR)	DA	85	8,000	60-80PSIG (4.1-5.5BAR)
HFA 2000	2.000 (2.000)	250 PSIG (17.2 BAR)	DA	178	8,000	60-80PSIG (4.1-5.5BAR)
HFA 3002	3.000 (2.000)	250 PSIG (17.2 BAR)	DA	117	8,000	60-80PSIG (4.1-5.5BAR)
HFA 3004	3.000 (4.000)	150 PSIG (10.3 BAR)	DA	452	8,000	60-80PSIG (4.1-5.5BAR)
HFA 4000	4.000 (4.000)	150 PSIG (10.3 BAR)	DA	758	8,000	60-80PSIG (4.1-5.5BAR)
HFA 6004	6.000 (4.000)	150 PSIG (10.3 BAR)	DA	758*	8,000	60-80PSIG (4.1-5.5BAR)

Helium Leak Test Performed with 100% Helium	Inboard Across the Seat Outboard Pressure Test	<1 x 10^{-9} scc/s He <1 x 10^{-9} scc/s He <1 x 10^{-6} scc/s He
Cleanliness and Packaging	Assembled and tested in ISO Class 4 Cleanroom. Purged and Final Packaged in ISO Class 4 Cleanroom. Double-bag packaging with Ultra-High Purity N^2 gas environment. Cleaned using DI water & Oven backed.	
Standard Finish	Electropolished to 10 Ra µin Max (0.25 µm) on all wetted surfaces	
Options	Optional surface finishes available. Testing: Particle, moisture, O2 on request. Purge Connections and Purge valve available. Metric tube stubs. End connections, Face seal, compression available up to 1".	

® Vespel is a registered trademark of DuPont Company.
***Ref HF4000**
**** Rating at maximum system pressure**

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Order Information

Sample: HF1000 - 065 - PC2

HF - 1000 - 065 - Blank - PC2 - Green

Manual Multi Turn Version - 1" - 1" TE - 1" TE - 1/4" Upstream & Downstream Purge Connections - Green Handwheel Supplied

Series	Size	Inlet Connection	Outlet Connection[1]	Purge Type[4]	Handle Colour[2]	Actuator Designator[3]	Actuator Accessories[3]
HF – Manual Multi Turn Version	500 (1/2")	½" TE = 049	½" TE = 049	Blank - No Purge	Blank (White Handwheel Supplied up to and including HF750 Black Handwheel Supplied for HF1000 and above)	NO - Normally Open	PS (Proximity Sensor)
HFA – Pneumatic Air Operated Version	755 (3/4")	½" FSM M(S)	½" FSM M(S)	PC1 - 1/4" Downstream Purge Connection	White (White Handwheel Supplied)	NC - Normally Closed	PSEx (Explosion Proof Proximity Sensor)
	750 (3/4")	½" FSM FM	½" FSM FM	PC2 - 1/4" Upstream and Downstream Purge Connection	Red (Red Handwheel Supplied)	DA - Double Acting	
	751 (3/4")	¾" TE = 065	¾" TE = 065	PC3 - 1/4" Upstream Purge Connection	Yellow (Yellow Handwheel Supplied)		
	1075 (1")	1" FSM M(S)	¾" FSM M(S)	PV1 - 1/4" Downstream Purge Valve	Green (Green Handwheel Supplied)		
	1000 (1")	¾" FSM FM	¾" FSM FM	PV2 - 1/4" Upstream and Downstream Purge Valve	Orange (Orange Handwheel Supplied)		
	2000 (2")	1 ½" TE = 065	1" TE = 065	PV3 - 1/4" Upstream Purge Valve	Black (Black Handwheel Supplied)		
	3000 (3")	2" TE = 065	2" TE = 065	PC15 - 1/2" Downstream Purge Connection	Blue (Blue Handwheel Supplied)		
	4000 (4")	3" TE = 065		PC25 - 1/2" Upstream and Downstream Purge Connection	Pink (Pink Handwheel Supplied)		
	6000 (6")	4" TE = 083		PC35 - 1/2" Upstream Purge Connection	Brown (Brown Handwheel Supplied)		
		6" TE = 109		PV15 - 1/2" Downstream Purge Valve	Gold (Gold Handwheel Supplied)		
				PV25 - 1/2" Upstream and Downstream Purge Valve	Grey (Grey Handwheel Supplied)		
				PV35 - 1/2" Upstream Purge Valve	Silver (Silver Handwheel Supplied)		
					Purple (Purple Handwheel Supplied)		

[1] **Only Specify the Oulet connection when different from the Inlet connection**

[2] **Manual Version only**

[3] **Actuated Version only**

[4] **PC = FSM Male Capped**
PV = Diaphragm Valve With FSM Male Capped

100% compatiable with VCR® brand

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