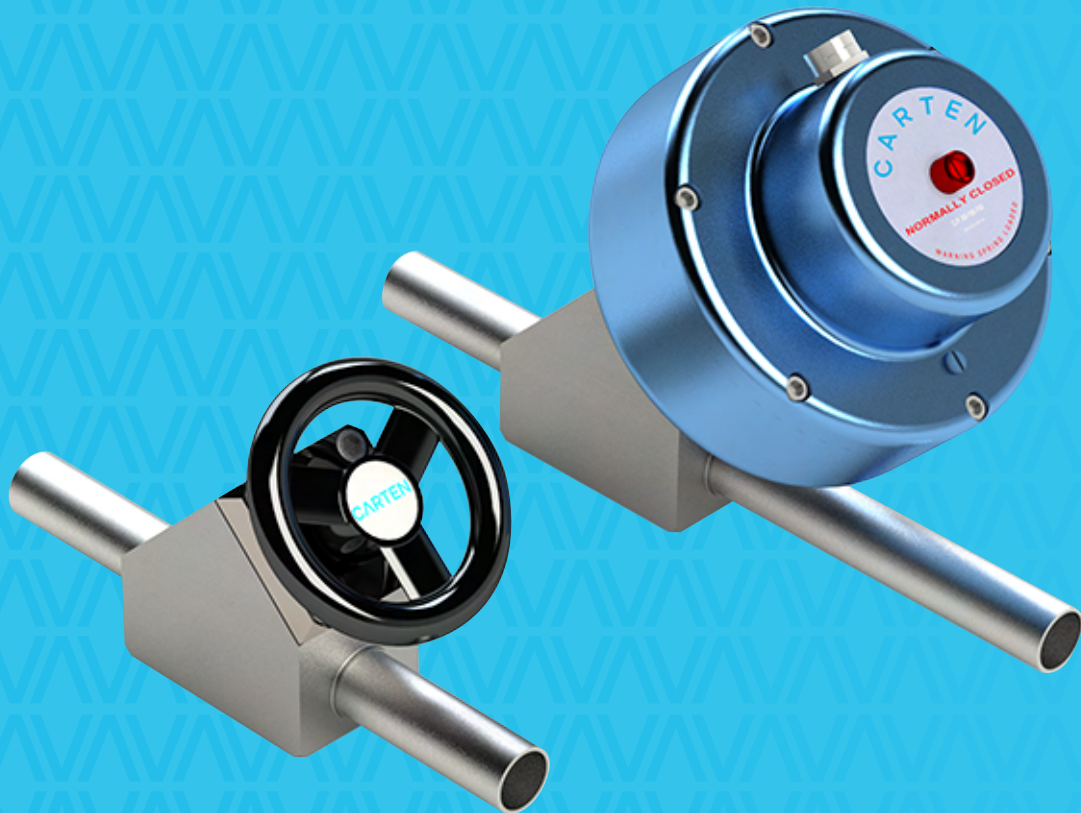


CARTEN

FLOW SOLUTIONS - **WE GO BEYOND**

INTRODUCING CARTEN'S HB SERIES ULTRA-HIGH PURITY BELLOWS VALVES



HB Series

Ultra-High Purity Bellows Valves

The only UHP bellows globe valve for semiconductor applications with metal-to-metal external seals ensuring the high levels of containment, purity, and cleanliness required over a full FAB life cycle.

Key Features

Available in line sizes up to 6"

Metal-to-metal external seals

Pneumatic or manual interchangeability

Multi-ply bellow construction for high durability

Typical Applications

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

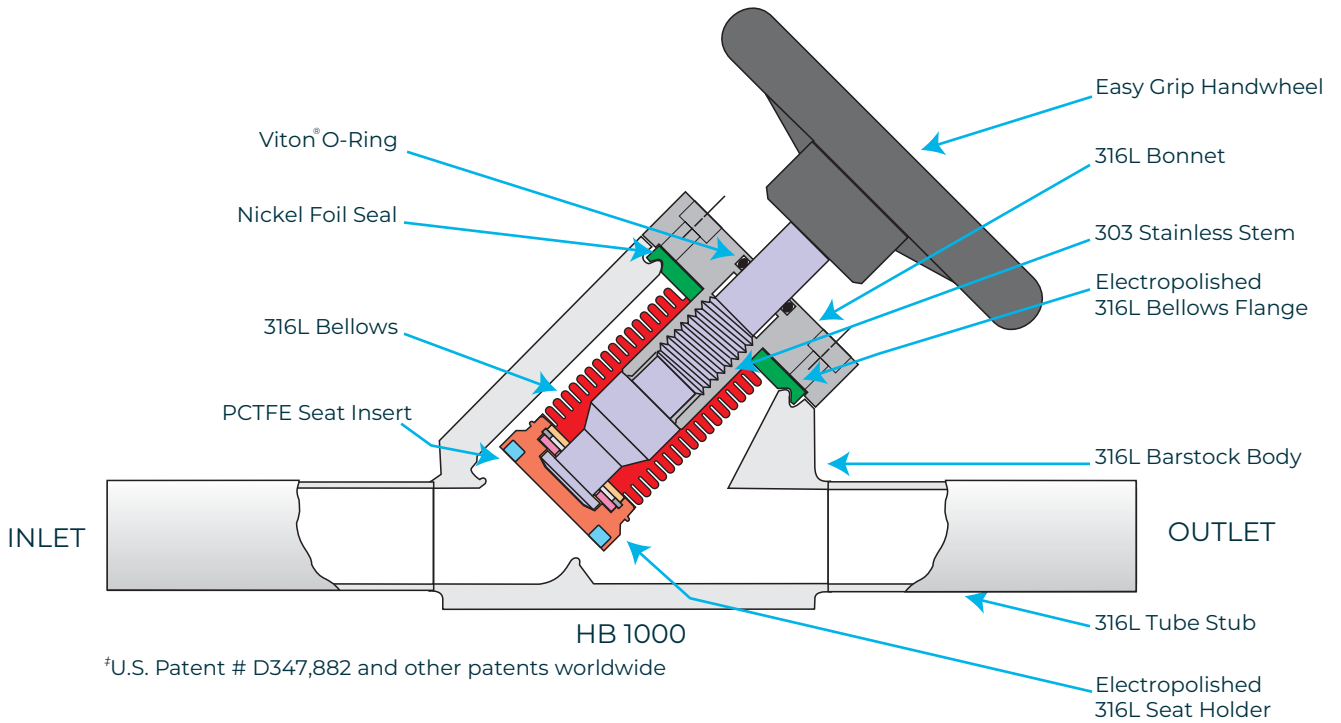
Key Specifications

Materials of Construction	Cleanliness	Specifications	Options
316L stainless body	Manufactured in Class 10 Cleanroom	Leak tested using Mass spectrometer $<1 \times 10^{-9}$ mbar.l/s	Manual or pneumatic
Inconel625 bellows	Zero particles @0.1 μ m	<10 Ra micro-inch surface roughness	PFA / PI seat high temperature (up to 150C)
Barstock-only source	<10 ppb O ₂ /H ₂ O outgassing	Vacuum and pressure tested 100% production control	4/20mA switching / signalling automation (pneumatic only)
PCTFE standard seat (minimal volume)	Cleaned using 18.2M Ω .cm DI water	Manual 375 p.s.i. Pneumatic 250 p.s.i.	1.93 (GB series) - 185 Cv (flow coefficient)

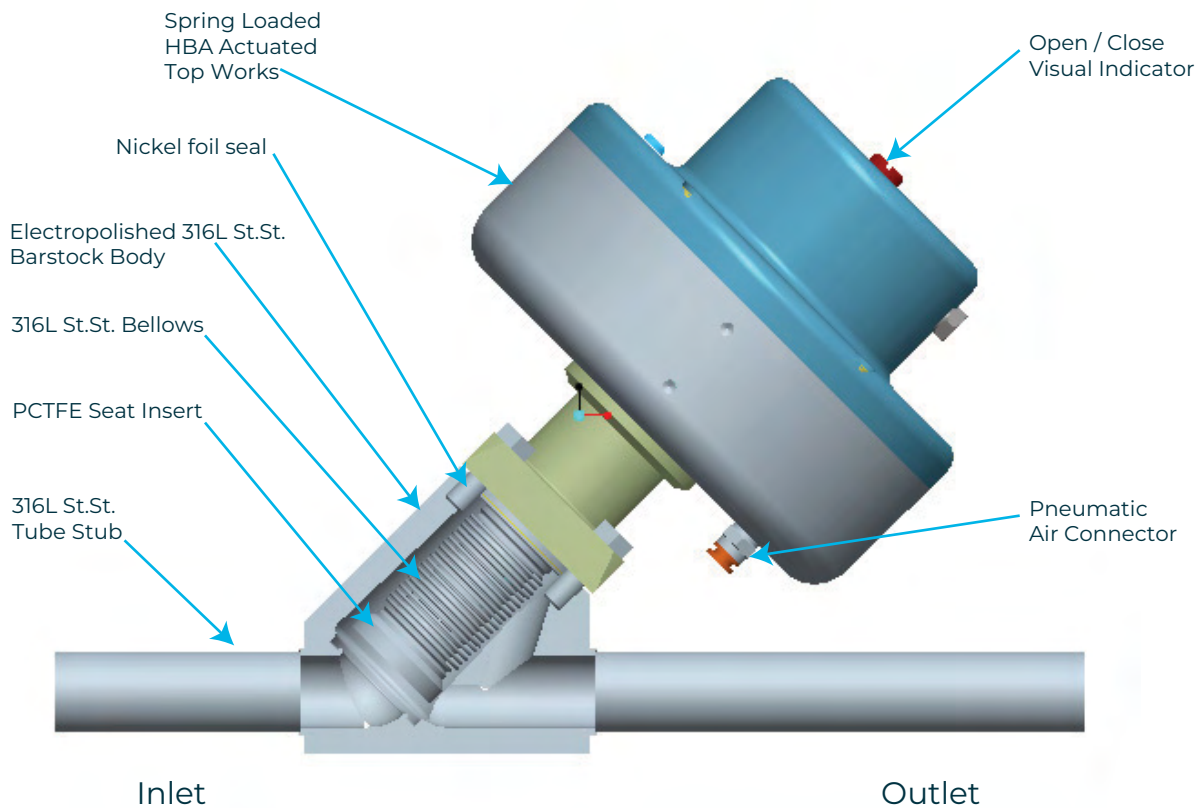


CONSTRUCTION MATERIALS

Manual Bellows Valves



Pneumatically Bellows Valves



HB and GBV SERIES Technical Data

Construction Material	Wetted Areas	316L Stainless Steel, Nickel, CTFE	Helium Leak Test	Inboard/across the seat	1x10 ⁻¹⁰ scc/s He max.	Rated
	Non-Wetted Areas	316L Stainless Steel, Brass (GBV 500 only)			1x10 ⁻⁹ scc/s He max.	Std. Production
Helium leak test performed with 100% Helium						
Maximum Operating Pressure	HB Series	Vacuum to 375psi (25BAR)	Cleanliness and Packaging	Assembled and tested in CLASS10 cleanroom. Purged and final packaged in Class 1 cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with N ₂ gas environment supplied from a liquid source.		
Operating Temperature Range	HB Series	-22°F (-30°C) to 180°F (82°C)		Standard Finish	Electropolished to 10Ra (0.25Ra m) on all wetted surfaces	
FLOWCOEFFICIENT (C _v)	GBV/A 500	1.93	Options	Surface finish -5 Ra, 20 Ra Particle, moisture, THC and O ₂ testing SEM and ESCA testing, Auger analysis Fitting type and location Material: VAR; VIM / VAR, Vespel® seat Handwheel color (Std. Black, GBV White) JIS tube stubs and tube length		
	HB 751	10.2				
	HB 1000	14.3				
	HB 1501	16.6				
	HB 1502	63.3				
	HB 2000	74.1				
	HB 3004	175.0				
	HB 4000	181.0				
HB 6004	185.0					

Specifications are subject to change without notice.
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HBA SERIES Technical Data

Construction Material	Wetted Areas	316L ST.St., Nickel, PCTFE	Cleanliness	Assembled and tested in a Class 10 cleanroom. Purged and packaged in a Class 1 area. Double-bag packaging for containment. Cleaned in 18 Ω DI water for O ₂ service.	
	Non-Wetted Areas	316L St.St., 303 St.St., Aluminum		Standard Finish	Electropolished to 10Ra (0.25µm) EP on all wetted surfaces.
Maximum Operating Pressure	HBA751 HBA2502 HBA1000 HBA3002 HBA1501 HBA3004 HBA1500 HBA4000 HBA1502 HBA6004 HBA2000	Vacuum to 250 PSI (17Bar)	Air Supply	60-100 psi (4.2 - 6.9 bar)	
Orifice	HBA751	0.620" (15.75mm) min	Air Connector	¼" OD quick connector tube	
	HBA1000	0.870" (22.10mm) min	Options	Optional surface finishes High temperature capability Manual operation Fitting of Ex proximity sensors Metric and ISO tube stubs Particle, moisture, THC and O ₂ testing Optional body materials in VIM/VAR st.st.	
	HBA1501	0.870" (22.10mm) min			
	HBA1500	1.370" (34.80mm) min			
	HBA1502	1.370" (34.80mm) min			
	HBA2000	1.870" (47.50mm) min			
	HBA2502	1.870" (47.50mm) min			
	HBA3002	1.870" (47.50mm) min			
	HBA3004	2.870" (72.90mm) min			
	HBA4000	3.500" (88.90mm) min			
HBA6004	3.500" (88.90mm) min				
Maximum Operating Temperature	PCTFE Seat Vespel® Seat	-30°C to +82°C (-22°F to +180°F) -30°C to +150°C (-22°F to +302°F) ***			
Flow Coefficient (C _v)	HBA751 HBA1000 HBA1501 HBA1500 HBA1502 HBA2000 HBA2502 HBA3002 HBA3004 HBA4000 HBA6004	10.20 14.30 16.60 30.50 63.30 74.10 75.00 75.00 175.00 181.00 185.00			
Helium Leak Test	Inboard/across the seat	1x10 ⁻¹⁰ scc/s He max	Rated		
		1x10 ⁻⁹ scc/s He max ***	Standard Production		
Helium leak test performed with 100% Helium					

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*** Helium leak rate for vespel seated valves is rated at 1 x 10⁻⁶ scc/s across the seat for pneumatically operated model

Order Information

Sample: HBA1000 - 065 - PC2 - NC

HBA Pneumatic Valve, 1" Tube End Connection with 1/4" Upstream and Downstream Purge Connection and Black Handwheel - Normally Closed Version

Series	Size	Inlet Connection	Outlet Connection ¹	Purge Type	Handle Colour ²	Actuator Designator ³	Actuator Accessories ³		
GBV ⁴ Manual Multi Turn Version	500 (1/2")	1/2" TE = 049	1/2" TE = 049	No Purge	Blank (Black Handwheel Supplied)	NO - Normally Open	PS (Proximity Sensor)		
HB - Manual Multi Turn Version	751 (3/4")	3/4" TE = 065	3/4" TE = 065	PC1 - 1/4" Downstream Purge Connection	White (White Handwheel Supplied)	NC - Normally Closed	PSEx (Explosion Proof Proximity Sensor)		
HBA - Pneumatic Air Operated Version	1000 (1")	3/4" FSM M(S)	3/4" FSM M(S)	PC2 - 1/4" Upstream and Downstream Purge Connection	Red (Red Handwheel Supplied)				
	1500 (1.5")	3/4" FSM FM	3/4" FSM FM	PC3 - 1/4" Upstream Purge Connection	Yellow (Yellow Handwheel Supplied)				
	2000 (2")	1" TE = 065	1" TE = 065	PV1 - 1/4" Downstream Purge Valve	Green (Green Handwheel Supplied)				
	4000 (4")	1" FSM M(S)	1" FSM M(S)	PV2 - 1/4" Upstream and Downstream Purge Valve	Orange (Orange Handwheel Supplied)				
				1" FSM FM	1" FSM FM			PV3 - 1/4" Upstream Purge Valve	Blue (Blue Handwheel Supplied)
				1.5" TE = 065	1.5" TE = 065			PC15 - 1/2" Downstream Purge Connection	Pink (Pink Handwheel Supplied)
	2" TE = 065	2" TE = 065	PC25 - 1/2" Upstream and Downstream Purge Connection	Brown (Brown Handwheel Supplied)					
	4" TE = 083	4" TE = 083	PC35 - 1/2" Upstream Purge Connection	Gold (Gold Handwheel Supplied)					
	¹ Only Specify the Outlet connection when different from the Inlet connection ² Manual Version only ³ Actuated Version only ⁴ GBV 1/2" Version Only				PV15 - 1/2" Downstream Purge Valve			Grey (Grey Handwheel Supplied)	
PV25 - 1/2" Upstream and Downstream Purge Valve					Silver (Silver Handwheel Supplied)				
PV35 - 1/2" Upstream Purge Valve					Purple (Purple Handwheel Supplied)				

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