

HB/GBV SERIES

Ultra-High Purity Bar Stock Stainless Steel
Low-Flow Manual Bellows Valves



HB SERIES

HB Series Product Applications

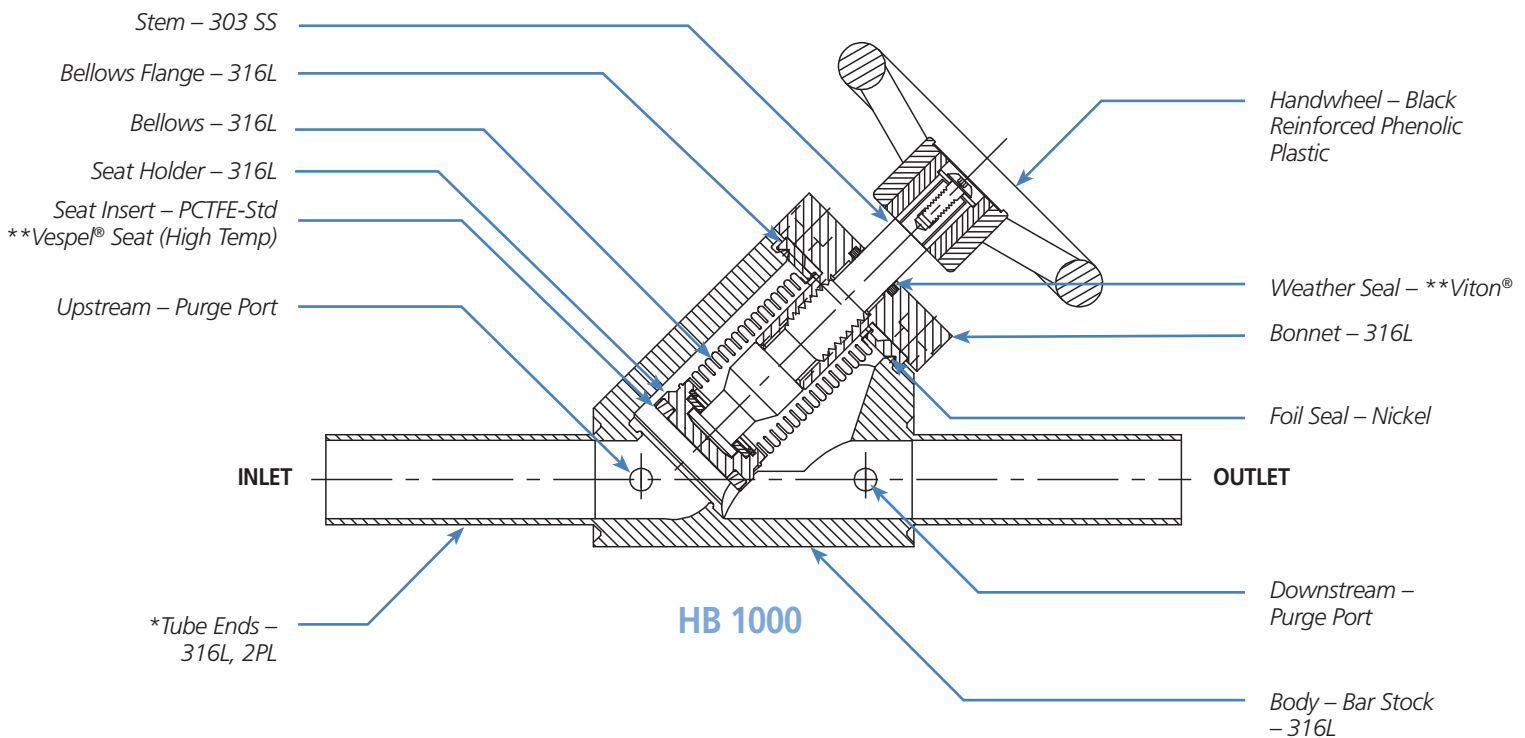
The HB valve series is intended for bulk gas distribution service where containment, cleanliness and purity are of the utmost importance, and makes this range an excellent consideration for:

- High-purity gas distribution system control
- High-purity gas valves for point-of-use service
- Superior containment and cleanliness for your most critical valve applications
- Use with inert and most toxic gases

HB Series Product Features

- Manual Bellows Valve, Compact Design, and Long Cycle Life
- Ultra-High Purity Bar Stock Stainless Steel/PCTFE/Vespel® Valve Construction
- 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

HB Construction Materials



*See Ordering Code for other available – Valve FSM - M/F Connection Ends – sizes 500/750/1000.

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HB and GBV Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	316L Stainless Steel, PCTFE, Nickel
	Non-Wetted Areas	316L Stainless Steel, *Viton®, 303 SS, Phenolic
MAXIMUM OPERATING PRESSURE	HB Series	Vacuum-375 psig (25.8 bar)
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 (C _v)	WEIGHT	
			LBS	(KG)
Valve Sizes	Tube/Body (Seat-Orifice) Sizes			
GBV 500	Ø.500 / .500 (Ø.437 in. (Ø11.1mm)-Orifice)	1.93	2.1	(0.95)
HB 751	Ø.750 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	10.2	5.8	(2.63)
HB 1000	Ø1.000 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	14.3	5.8	(2.63)
HB 1501	Ø1.500 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	16.6	6.2	(2.81)
HB 1502	Ø1.500 / 2.000 (Ø2.12 in. (Ø53.8mm)-Orifice)	63.3	18.8	(8.52)
HB 2000	Ø2.000 / 2.000 (Ø2.12 in. (Ø53.8mm)-Orifice)	74.1	18.6	(8.43)
HB 3002	Ø3.000 / 2.000 (Ø2.12 in. (Ø53.8mm)-Orifice)	78.0	20.4	(9.24)
HB 3004	Ø3.000 / 4.000 (Ø3.50 in. (Ø88.9mm)-Orifice)	175.0	46.9	(21.25)
HB 4000	Ø4.000 / 4.000 (Ø3.50 in. (Ø88.9mm)-Orifice)	181.0	45.3	(20.52)
HB 6004	Ø6.000 / 4.000 (Ø3.50 in. (Ø88.9mm)-Orifice)	185.0	54.2	(24.55)

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) GBV 500 – 10-32 UNF-2B 2) HB 1000 – .250-20 UNC-2B 3) HB 2000 – .375-16 UNC-2B 4) HB 4000 – .375-16 UNC-2B Valve Body Flanged Ends – Rotatable	

Specifications are subject to change without notice.

HB SERIES



HB and GBV Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E
GBV 500	Ø.500 (12.7mm)	0.049 (1.24mm)	0.72 (18.1mm)	3.04 (77.2mm)	7.87 (199.9mm)
HB 751	Ø.750 (19.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	4.06 (103.3mm)	11.61 (294.9mm)
HB 1000	Ø1.000 (25.4mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.04 (77.2mm)	9.61 (244.1mm)
HB 1501	Ø1.500 (38.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	5.01 (127.3mm)	13.51 (343.2mm)
HB 1502	Ø1.500 (38.1mm)	0.065 (1.65mm)	1.25 (31.7mm)	5.01 (127.3mm)	15.48 (393.2mm)
HB 2000	Ø2.000 (50.8mm)	0.065 (1.65mm)	1.25 (31.7mm)	4.06 (103.1mm)	13.58 (344.9mm)
HB 3002	Ø3.000 (76.2mm)	0.065 (1.65mm)	1.25 (31.7mm)	7.91 (200.9mm)	21.28 (540.5mm)
HB 3004	Ø3.000 (76.2mm)	0.065 (1.65mm)	2.13 (54.1mm)	8.04 (204.2mm)	23.47 (596.1mm)
HB 4000	Ø4.000 (101.6mm)	0.083 (2.11mm)	2.13 (54.1mm)	4.20 (106.7mm)	15.79 (401.1mm)
HB 6004	Ø6.000 (152.4mm)	0.109 (2.77mm)	2.13 (54.1mm)	11.78 (299.2mm)	30.95 (786.1mm)

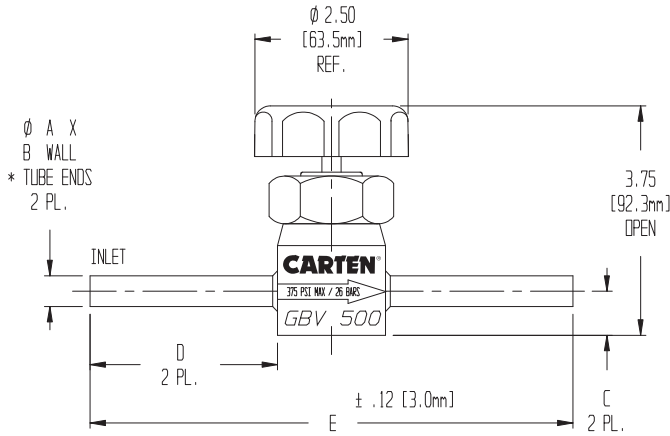
NOTE 1: All tolerances are ± 0.06 in. (± 1.52 mm) unless otherwise stated.

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

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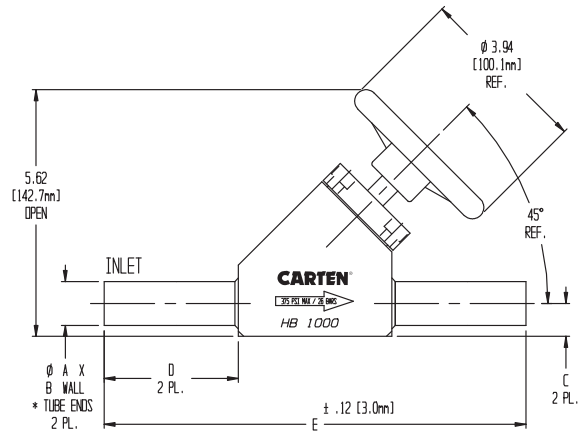
HB and GBV Series Typical Valve Dimensions (1/2" to 6")

GBV 500 BODY 500



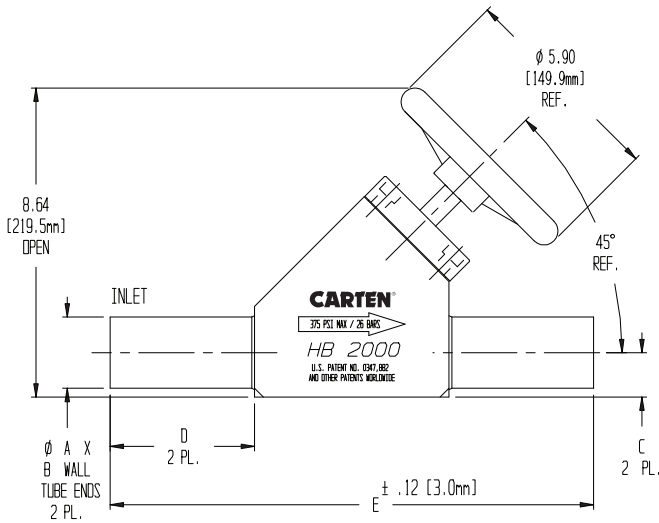
* See Ordering Code for other available FSM - MF connection ends.

HB 1000 BODY 751 / 1000 / 1501

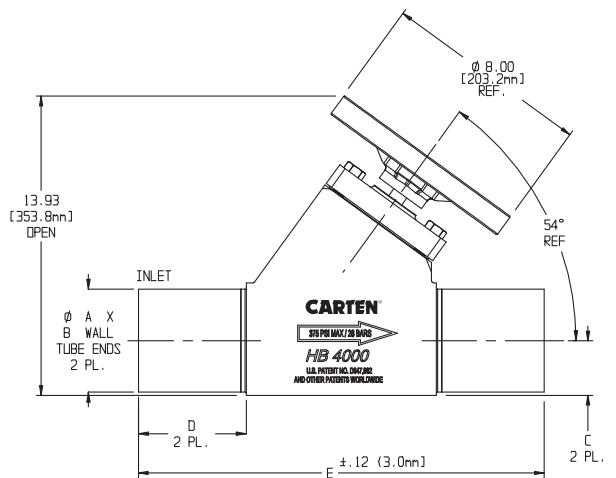


* See Ordering Code for other available FSM - MF connection ends.

HB 2000 BODY 1502 / 2000 / 3002



HB 4000 BODY 3004 / 4000 / 6004



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HB and GBV Series Ordering Code

HB – **1000** – **10** – **PC2** – **FSM-MR** – **BK**

SERIES	TYPE
HB	Manual
GBV	Manual

CODE	SURFACE FINISH
10	10 Ra Max - Std 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
GBV 500	Ø.500 (.500)
HB 751	Ø.750
HB 1000	Ø1.000 (1.000)
HB 1501	Ø1.500
HB 1502	Ø1.500
HB 2000	Ø2.000 (2.000)
HB 3002	Ø3.000
HB 3004	Ø3.000
HB 4000	Ø4.000 (4.000)
HB 6004	Ø6.000

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

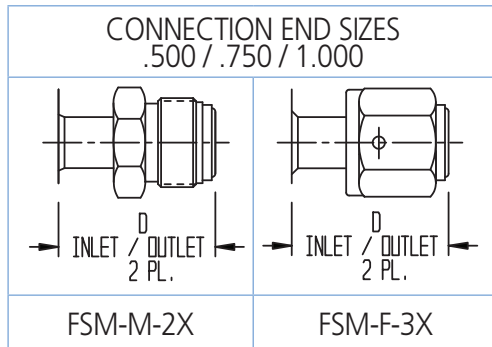
1/2" size connection type not available on all sizes.
Please contact CARTEN® for availability.

CODE	OPTIONS
	Handwheel
BL	Blue
BK	Black-Standard
DG	Dark Gold
BR	Brown
GL	Gold
GR	Green
GY	Grey
OR	Orange
PR	Purple
PK	Pink
RD	Red
SL	Silver
TL	Teal
WT	White-Standard GBV Only
YL	Yellow
V	*Vespel® Seat
LO	Handle Lock-out Clear Clam Shell
R	Rotatable Flange

*Vespel® is a registered trademark of DuPont Company.

OPTIONAL VALVE FSM - M/F CONNECTION ENDS

Available on HB/GBV Series .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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