

# CB SERIES Ultra-High Purity Check Valves



## PRODUCT APPLICATION

This CB stainless steel check valve series is intended for bulk gas distribution service where containment, cleanliness and purity are of utmost importance. Applications for this check valve are:

- High purity gas service for the semiconductor industry
- Prevents undesired reverse flow in high-purity gas systems
- Superior containment and cleanliness for your most critical valve applications
- Suitable for inert and most toxic gases
- Most suitable for isolation applications

### PRODUCT FEATURES

- ▶ Designed for Ultra-High Purity
- ▶ High-Purity Stainless Gas Containment
- ▶ Packless Design
- ▶ No Internal Particle Shedding Components
- ▶ Electropolished Wetted Surfaces to 10 Ra max (Optional surface finishes available)
- ▶ Maximum Leak Rate of  $1 \times 10^{-7}$  scc/s He for Foil Seal and Viton® Seal\*
- ▶ Purge Connections and Purge Valves are Integral in Valve Body
- ▶ Assembled and Tested in CLASS 10 Cleanroom
- ▶ Inboard and Across the Seat Leak Tested with 100% Helium
- ▶ Valve Bodies and Tube Stubs are Serialized for Material Certification
- ▶ Cleaned For High-Purity Gas Service
- ▶ Purged and Final Packaged in CLASS 1 Cleanroom Double-Bag Packaging with N<sub>2</sub> Gas Environment Supplied from a Liquid Source

\*Excluding Permeation of Viton

### CONSTRUCTION MATERIALS

**CB 1000**

- 316L Stainless Bonnet
- 316L Stainless Steel Stem
- Kel-F Piston Guide
- Nickel Gasket
- 316L Stainless Steel Piston
- 302 Stainless Steel Spring
- Electropolished 316L Stainless Steel Tube Stub
- Electropolished 316L Stainless Steel Body
- Viton Seal
- Kel-F Guide

INLET OUTLET

Standard Purge Ports

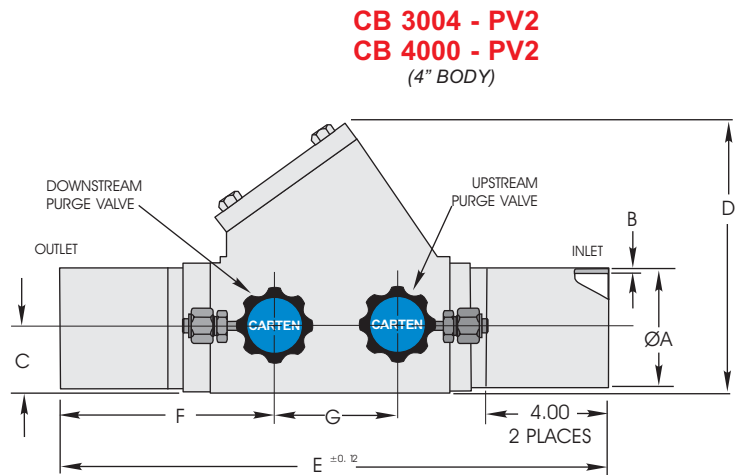
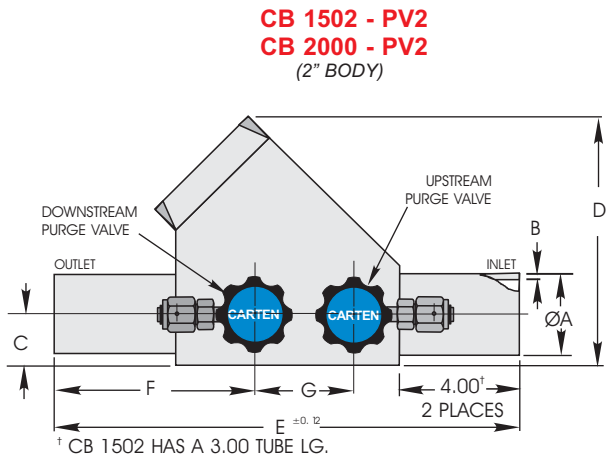
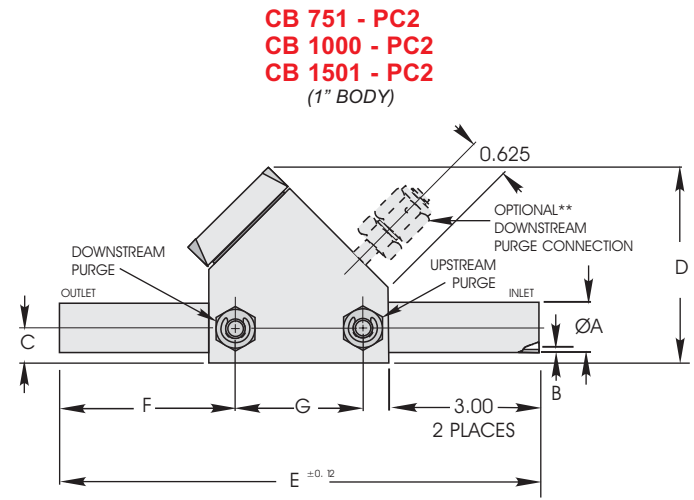
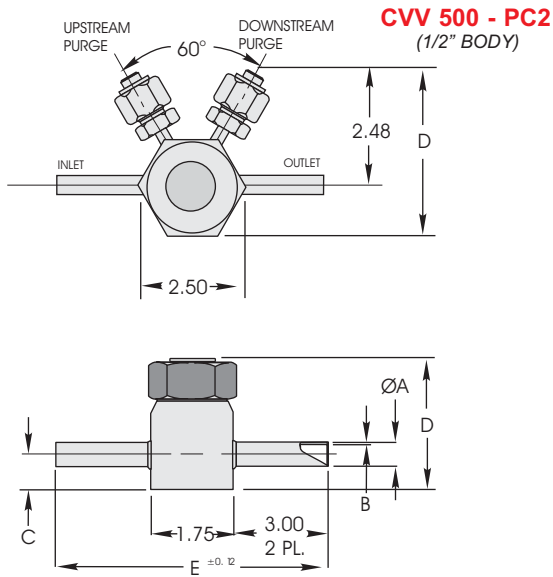
## CW and CB SERIES - Technical Data

|                                     |                           |   |           |          |
|-------------------------------------|---------------------------|---|-----------|----------|
| CONSTRUCTION MATERIAL               | Wetted Areas              | 316L Stainless Steel, Nickel, Viton, CTFE |           |          |
|                                     | Non-Wetted Areas          | 316L, Nickel Plated Brass (CVV500)        |           |          |
| MAXIMUM OPERATING PRESSURE          | CB Series                 | Vacuum to 250 psi (17 BAR)                |           |          |
| MAXIMUM OPERATING TEMPERATURE       | CB Series                 | 250° F (121°C)                            |           |          |
| FLOW COEFFICIENT (C <sub>v</sub> )* | MODEL                     | C <sub>v</sub>                            | CP        | PFO      |
|                                     | CW 500                    | 1.93                                      | 1.65 psig | 4.3 psig |
|                                     | CB 751                    | 10.96                                     | 1.6 psig  | 12 psig  |
|                                     | CB 1000                   | 15.21                                     | 1.6 psig  | 12 psig  |
| CRACKING PRESSURE (CP)              | CB 1501                   | 16.73                                     | 1.6 psig  | 12 psig  |
|                                     | CB 1502                   | 42.43                                     | 0.6 psig  | 6 psig   |
| PRESSURE TO FULL OPEN (PFO)         | CB 2000                   | 51.26                                     | 0.6 psig  | 6 psig   |
|                                     | CB 3004                   | 158.8                                     | 0.1 psig  | 2 psig   |
|                                     | CB 4000                   | 165.5                                     | 0.1 psig  | 2 psig   |
|                                     | *Full open without spring |   |           |          |

|  |   |                                  |                 |
|--|---|----------------------------------|-----------------|
| HELIUM LEAK TEST                       | Inboard/across the seat   | 1x10 <sup>-7</sup> scc/s He max. | Rated           |
|  |   | 1x10 <sup>-6</sup> scc/s He max. | Std. Production |
| Helium test performed with 100% helium |   |                                  |                 |
| CLEANLINESS                            | Assembled and tested in CLASS 10 cleanroom. Purged and Final packaged in CLASS 1 cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with N <sub>2</sub> gas environment supplied from a liquid source. |                                  |                 |
| STANDARD FINISH                        | Electropolished to 10 Ra (0.25 Ra <sub>m</sub> ) on all wetted surfaces   |                                  |                 |
| OPTIONS                                | Surface finish - 5 Ra<br>Particle/Moisture testing<br>SEM and ESCA testing, Auger analysis<br>Single purge valve connection<br>Tube extension length or fittings<br>Material: VAR; VIM / VAR  |                                  |                 |

Specifications are subject to change without notice.  
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# CB and CVV SERIES - Valve Dimensions



Standard purge connections and purge valve sizes are 1/4".

| MODEL NO. | A*    | B*    | C                 | D                 | E                  | F                  | G                 | Body Width        | Approx. Weight       |
|-----------|-------|-------|-------------------|-------------------|--------------------|--------------------|-------------------|-------------------|----------------------|
| CVV 500   | 0.500 | 0.049 | 0.715<br>(18.1mm) | 2.75<br>(69.8mm)  | 7.83<br>(198.9mm)  | N/A                | N/A               | 2.00<br>(50.8mm)  | 2.25 Lb<br>(1.02 Kg) |
| CB 751    | 0.750 | 0.065 | 0.75<br>(19.05mm) | 3.94<br>(100.1mm) | 11.55<br>(293.4mm) | 4.53<br>(115.1mm)  | 2.50<br>(63.5mm)  | 2.25<br>(57.2mm)  | 5.9 Lb<br>(2.7 Kg)   |
| CB 1000   | 1.000 | 0.065 | 0.75<br>(19.05mm) | 3.94<br>(100.1mm) | 9.53<br>(242.1mm)  | 3.52<br>(89.4mm)   | 2.50<br>(63.5mm)  | 2.25<br>(57.2mm)  | 5.9 Lb<br>(2.7 Kg)   |
| CB 1501   | 1.500 | 0.065 | 0.75<br>(19.05mm) | 3.94<br>(100.1mm) | 13.45<br>(341.6mm) | 5.48<br>(139.2mm)  | 2.50<br>(63.5mm)  | 2.25<br>(57.2mm)  | 5.9 Lb<br>(2.7 Kg)   |
| CB 1502   | 1.500 | 0.065 | 1.25<br>(31.75mm) | 6.28<br>(159.5mm) | 15.42<br>(391.7mm) | 5.02<br>(127.5mm)  | 2.50<br>(63.5mm)  | 3.38<br>(85.8mm)  | 19.0 Lb<br>(8.6 Kg)  |
| CB 2000   | 2.000 | 0.065 | 1.25<br>(31.75mm) | 6.28<br>(159.5mm) | 13.50<br>(342.9mm) | 6.02<br>(152.9mm)  | 2.50<br>(63.5mm)  | 3.38<br>(85.8mm)  | 19.0 Lb<br>(8.6 Kg)  |
| CB 3004   | 3.000 | 0.065 | 2.12<br>(53.8mm)  | 8.97<br>(227.8mm) | 25.62<br>(650.7mm) | 10.43<br>(264.9mm) | 4.25<br>(107.9mm) | 5.12<br>(130.0mm) | 46.5 Lb<br>(21.1 Kg) |
| CB 4000   | 4.000 | 0.083 | 2.12<br>(53.8mm)  | 8.97<br>(227.8mm) | 17.90<br>(454.7mm) | 6.57<br>(166.9mm)  | 4.25<br>(107.9mm) | 5.12<br>(130.0mm) | 46.5 Lb<br>(21.1 Kg) |

\* Metric tube sizes and wall thicknesses are available upon request.

Note 1: All tolerances are ±0.06 in. unless otherwise stated.

Note 2: Dimensional drawings shown are for reference only. Please contact the manufacturer for customer drawings showing updated dimensions.

Note 3: Optional downstream purge connection and location available on all CB models.

CARTEN CONTROLS INC.

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