



### 3:1 pilot ratio, semi-restrictive counterbalance valve

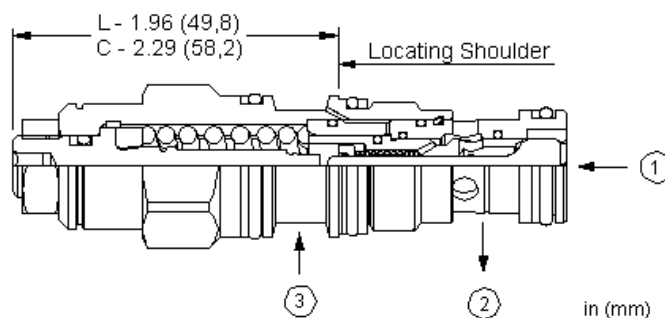
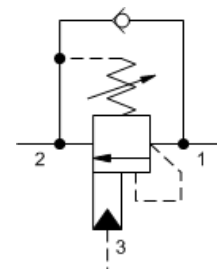
Capacity:  
10 gpm (40 L/min.)

Model:  
CBBC

#### Product Description

Counterbalance valves with pilot assist are meant to control an overrunning load. The check valve allows free flow from the directional valve (port 2) to the load (port 1) while a direct-acting, pilot-assisted relief valve controls flow from port 1 to port 2. Pilot assist at port 3 lowers the effective setting of the relief valve at a rate determined by the pilot ratio.

Other names for this valve include motion control valve and over center valve.

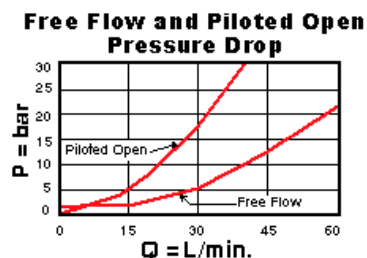
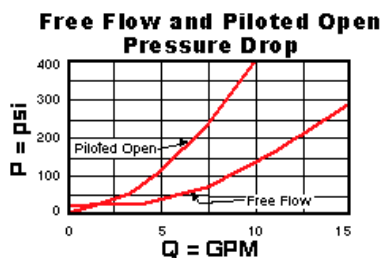


#### Technical Features

- Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.
- Turn adjustment clockwise to decrease setting and release load.
- Full clockwise setting is less than 200 psi (14 bar).
- Backpressure at port 2 adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.
- Reseat exceeds 85% of set pressure when the valve is standard set. Settings lower than the standard set pressure may result in lower reseal percentages.
- Sun counterbalance cartridges can be installed directly into a cavity machined in an actuator housing for added protection and improved stiffness in the circuit.
- Two check valve cracking pressures are available. Use the 25 psi (1,7 bar) check unless actuator cavitation is a concern.
- This valve has positive seals between all ports.
- All 3-port counterbalance, load control, and pilot-to-open check cartridges are physically interchangeable (i.e. same flow path, same cavity for a given frame size).
- Corrosion resistant cartridge valves are intended for use in corrosive environments and are identified by the model code suffix /AP (see Option Selection below). External parts are made from stainless steel with titanium or brass components, where applicable. Internal parts are made from carbon steel leaded alloy, the same as standard valves. For further details, please see the Materials of Construction page.
- Incorporates the Sun floating style construction to minimize the possibility of internal parts binding due to excessive installation torque and/or cavity/cartridge machining variations.

## Technical Data

|                                                                   | U.S. Units              | Metric Units |
|-------------------------------------------------------------------|-------------------------|--------------|
| Cavity                                                            | T-11A                   |              |
| Capacity                                                          | 10 gpm                  | 40 L/min.    |
| Pilot Ratio                                                       | 3:1                     |              |
| Maximum Recommended Load Pressure at Maximum Setting              | 3075 psi                | 215 bar      |
| Maximum Setting                                                   | 4000 psi                | 280 bar      |
| Adjustment - Number of Counterclockwise Turns to Increase Setting | 3.75                    |              |
| Factory Pressure Settings Established at                          | 2 in <sup>3</sup> /min. | 30 cc/min.   |
| Maximum Valve Leakage at Reseat                                   | 5 drops/min.            | 0,3 cc/min.  |
| Series (from Cavity)                                              | Series 1                |              |
| Reseat                                                            | >85% of Set Pressure    |              |
| Valve Hex Size                                                    | 7/8 in.                 | 22,2 mm      |
| Valve Installation Torque                                         | 30 - 35 lbf ft          | 40 - 50 Nm   |
| Adjustment Screw Internal Hex Size                                | 5/32 in.                | 4 mm         |
| Adjustment Locknut/Cap Hex Size                                   | 9/16 in.                | 15 mm        |
| Adjustment Nut Torque                                             | 80 - 90 lbf in.         | 9 - 10 Nm    |
| Seal Kits - Cartridge                                             | Buna: 990-011-007       |              |
| Seal Kits - Cartridge                                             | Viton: 990-011-006      |              |
| Model Weight                                                      | 0.34 lb.                | 0.15 kg.     |



## CBBC-LHN

| Control                           | Functional Setting Range                                                                                                                                                                                                                                                                                        | Seal Material       | Material/Coating Modifier                                                                                                                       |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard Options                  | Standard Options                                                                                                                                                                                                                                                                                                | Standard Options    | Preferred Options                                                                                                                               |
| C* Tamper Resistant - Factory Set | A 1000 - 4000 psi w/4 psi Check (70 - 280 bar w/0,3 bar Check), 3000 psi (210 bar) Standard Setting                                                                                                                                                                                                             | N Buna-N<br>V Viton | No modifier (standard material with no special coating)                                                                                         |
| L Standard Screw Adjustment       | B 400 - 1500 psi w/4 psi Check (28 - 105 bar w/0,3 bar Check), 1000 psi (70 bar) Standard Setting<br>H 1000 - 4000 psi w/25 psi Check (70 - 280 bar w/1,7 bar Check), 3000 psi (210 bar) Standard Setting<br>I 400 - 1500 psi w/25 psi Check (28 - 105 bar w/1,7 bar Check), 1000 psi (70 bar) Standard Setting |                     | Special Options<br><br>/AP Stainless Steel, Passivated<br><br>Control:L<br>Control:C                                                            |
|                                   |                                                                                                                                                                                                                                                                                                                 |                     | <i>Our stainless product line is growing! If you are interested in a stainless option for this model which is not shown please contact Sun.</i> |

## Additional Options

| Control                       | Functional Setting Range | Seal Material |
|-------------------------------|--------------------------|---------------|
| R* Lockwired Screw Adjustment |                          |               |

When the modifier is /AP, the control must be C or L

\* Special Setting required, specify at time of order  
Customer specified setting stamped on hex.