



4.5:1 pilot ratio, semi-restrictive counterbalance valve

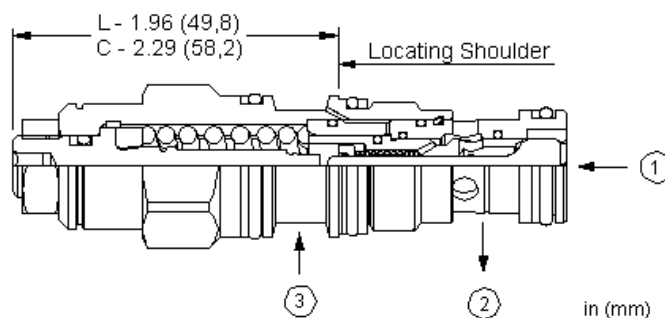
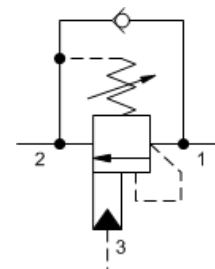
Capacity:
10 gpm (40 L/min.)

Model:
CBBD

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.

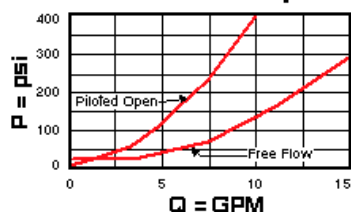
Special Notes

- A fixed setting version is available for this model. To view this product page, use Sun's search box and type in CBBDX and click on the resulting link.

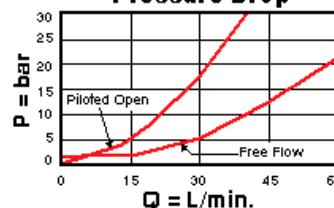
Technical Data

	U.S. Units	Metric Units
Cavity		T-11A
Capacity	10 gpm	40 L/min.
Pilot Ratio	4.5:1	
Maximum Recommended Load Pressure at Maximum Setting	3850 psi	270 bar
Maximum Setting	5000 psi	350 bar
Adjustment - Number of Counterclockwise Turns to Increase Setting	3.75	
Factory Pressure Settings Established at	2 in ³ /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.

Free Flow and Piloted Open Pressure Drop



Free Flow and Piloted Open Pressure Drop



CBBD-LJN

Control	Functional Setting Range	Seal Material	Material/Coating Modifier
Standard Options	Standard Options	Standard Options	Preferred Options
C* Tamper Resistant - Factory Set	C 2000 - 5000 psi w/4 psi Check (140 - 350 bar w/0,3 bar Check), 3000 psi (210 bar) Standard Setting	N Buna-N	No modifier (standard material with no special coating)
L Standard Screw Adjustment	D 1000 - 2500 psi w/4 psi Check (70 - 175 bar w/0,3 bar Check), 2000 psi (140 bar) Standard Setting	V Viton	Special Options
	J 2000 - 5000 psi w/25 psi Check (140 - 350 bar w/1,7 bar Check), 3000 psi (210 bar) Standard Setting		/ AP Stainless Steel, Passivated
	K 1000 - 2500 psi w/25 psi Check (70 - 175 bar w/1,7 bar Check), 2000 psi (140 bar) Standard Setting		Control:C
			Control:L
			<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 control is X, the range must be M
 When the range is M, the control must be X
 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.