3:1 pilot ratio, standard capacity counterbalance valve

Functional Group:
Products : Cartridges : Counterbalance : 3-Port Non-vented : Standard, 3:1 Pilot Ratio

Capacity:
15 gpm (60 L/min.)

Model:
CBCA-LAN

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.
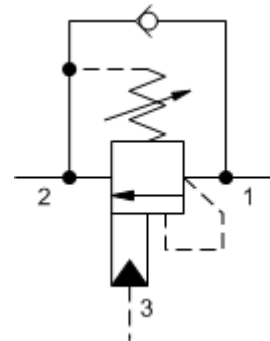
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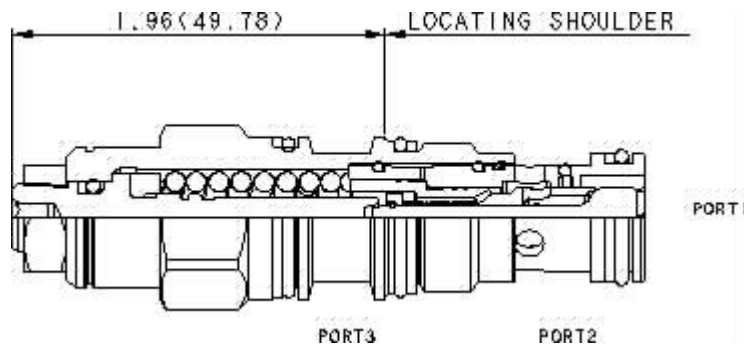
Technical Features

- Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

- Full clockwise setting is less than 200 psi (14 bar).

- Reseat exceeds 85% of set pressure when the valve is standard set. Settings lower than the standard set pressure may result in lower reseat percentages.

- Two check valve cracking pressures are available. Use the 25 psi (1,7 bar) check unless actuator cavitation is a concern.

- 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).

- Turn adjustment clockwise to decrease setting and release load.

- Backpressure at port 2 adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

- Sun counterbalance cartridges can be installed directly into a cavity machined in an actuator housing for added protection and improved stiffness in the circuit.

- This valve does not have positive seals on the pilot section and will pass up to 2 in³/min.@1000 psi (32 cc/min.@70 bar) between port 2 and port 3. This is a consideration in master-slave circuits and in the leak testing of valve-cylinder assemblies.

- Stainless steel cartridge options P or W are intended for use within corrosive environments with all external components manufactured in stainless steel or titanium. Internal working components remain the same as the standard valves.

- 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
Model Weight	0.34 lb.	0.15 kg.
Cavity	T-11A	
Capacity	15 gpm	60 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 in³/min.	30 cc/min.
Maximum Valve Leakage at Reseat	5 drops/min.	0,4 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	45 - 50 Nm
Adjustment Screw Hex Socket Size	5/32 in.	4 mm
Adjustment Nut Hex Size	9/16 in.	15 mm
Adjustment Nut Torque	108 lbf in.	12 Nm
Seal Kits	Buna: 990-011-007	
Seal Kits	Viton: 990-011-006	

Free Flow and Piloted Open Pressure Drop
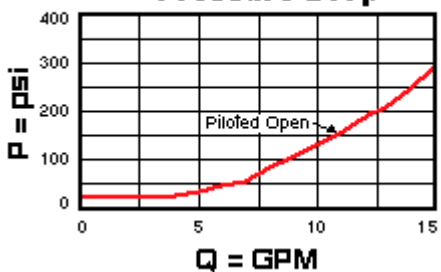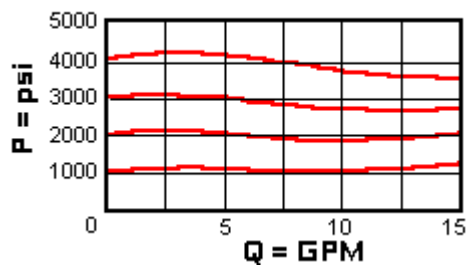
P = psi vs Q = GPM

Piloted Open

Typical Relief Characteristics

P = psi vs Q = GPM

Typical Relief Characteristics

P = bar vs Q = L/min.

Free Flow and Piloted Open Pressure Drop

P = bar vs Q = L/min.
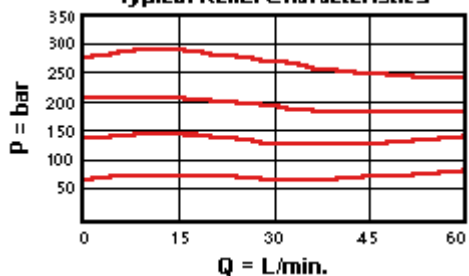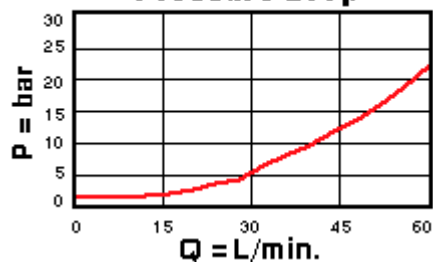
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Control	Functional Setting Range	External Material/Seal Material

L	Standard Screw Adjustment	+0.00	A	1000 - 4000 psi w/4 psi Check (70 - 280 bar w/0,3 bar Check), 3000 psi (210 bar) Standard Setting	+2.00	N Buna-N +0.00

If the material/seal is P, the control must be L or C
If the material/seal is W, the control must be L or C

* Special Setting required, specify at time of order
Customer specified setting stamped on hex $1.10

Related Models
CBCAX

● Explanation of Sun cartridge control options - US units.
● Explanation of Sun cartridge control options - metric units.