

## 10:1 pilot ratio, standard capacity counterbalance valve

Capacity:  
15 gpm (60  
L/min.)

Functional Group:

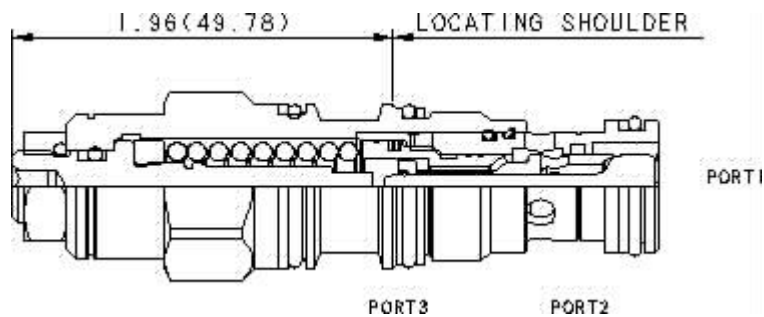
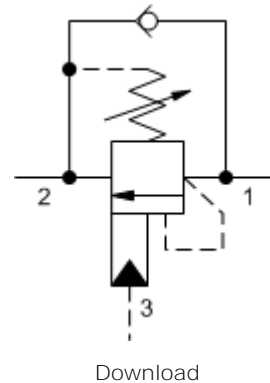
Products : Cartridges : Counterbalance : 3-Port Non-vented : Standard, 10:1  
Pilot Ratio

Model:  
CBCH-LDN

### 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.
- 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 reseal 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 between 2 and 20 in<sup>3</sup>/min./1000 psi (0,03 and 0,3 L/min./70 bar) between port 2 and port 3, depending on load pressure. 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

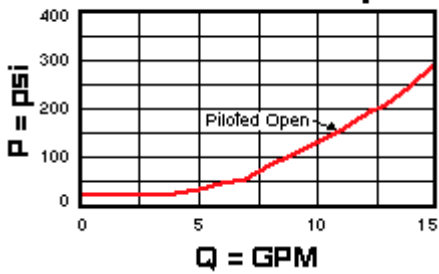
valves.

- 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.

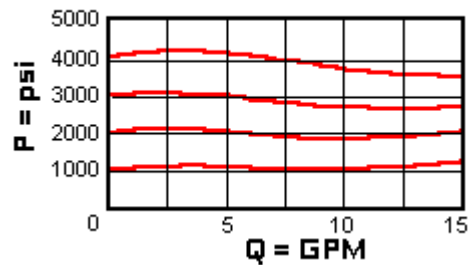
Technical Data

	U.S. Units	Metric Units
Cavity		T-11A
Capacity	15 gpm	60 L/min.
Pilot Ratio		10:1
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 <sup>3</sup> /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
Model Weight	.40 lb	0,20 kg
Seal Kits	Buna: 990-011-007	
Seal Kits	Viton: 990-011-006	

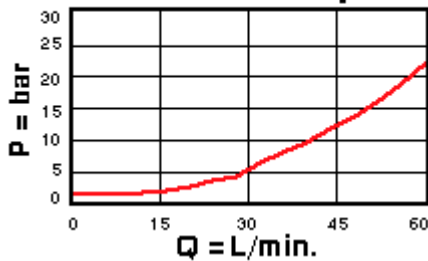
**Free Flow and Piloted Open Pressure Drop**



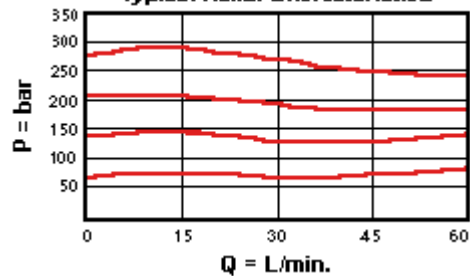
**Typical Relief Characteristics**



**Free Flow and Piloted Open Pressure Drop**



**Typical Relief Characteristics**



Control

Functional Setting Range

External Material/Seal  
Material

L Standard Screw Adjustment	+0.00	1000 - 2500 psi w/4 psi Check (70 - 175 bar w/0,3 bar Check), 2000 psi (140 bar) Standard Setting	+2.00	N Buna-N +0.00
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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  
CBCHX

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

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