



# Counterbalance Valves Technical Information

## Hydraulic Vent

### CP441-1

### OPERATION

This 3-ported, externally piloted unit is a 12-size cartridge style, low leakage counterbalance valve with hydraulic vent. The check section allows free flow from the directional valve (port 2) to the load (port 1), while normally blocking flow from port 1 to port 2. Reverse flow is blocked until pilot pressure is applied at port 3. When the load pressure at port 1 rises above the pressure setting, the integral relief valve is activated and pressure is relieved from port 1 to port 2.



### APPLICATIONS

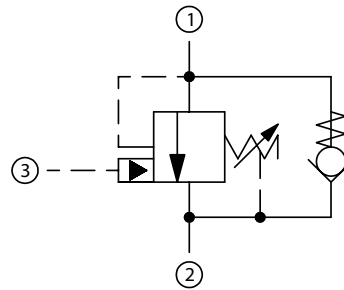
Single counterbalance valves are normally used when the load is unidirectional, such as aerial lifts, cranes, or winches. In load holding applications, they can be used as hose-break valves when installed near or within an actuator. Dual valves can be used for controlling loads bi-directionally in motor applications, or for cylinders going over center.

### SPECIFICATIONS

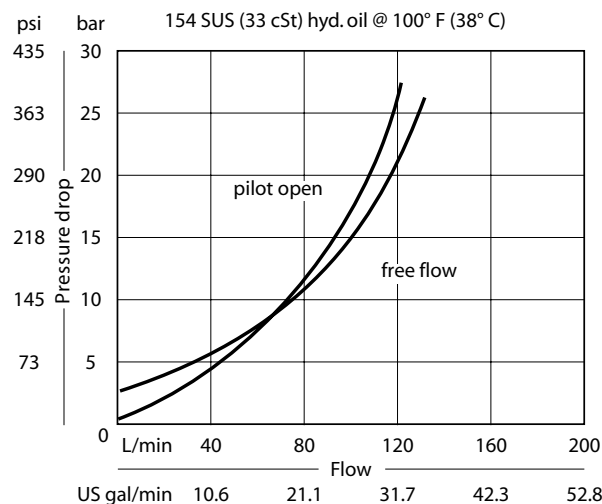
Rated pressure	350 bar [5075 psi]*
Rated flow at 22 bar (319 psi)	115 l/min [30 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.22 kg [0.48 lb]
Pilot ratio	3:1, 4.5:1, 10:1
Cavity	CP12-3S

\* 350 bar with steel housing  
210 bar with aluminum housing

### SCHEMATIC



### PERFORMANCE





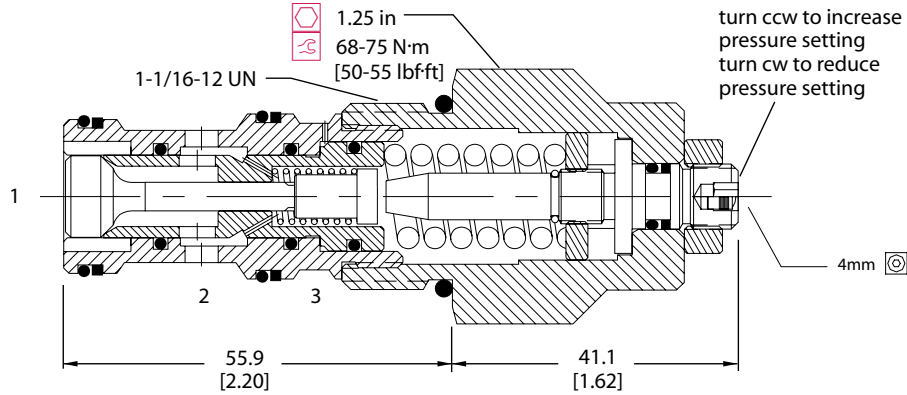
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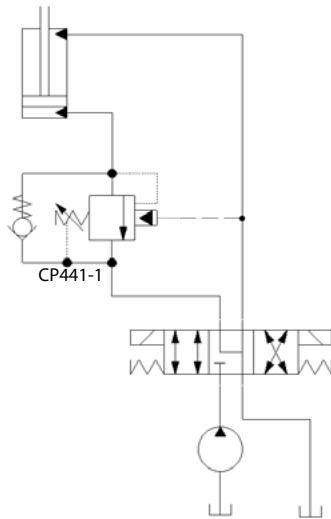
### DIMENSIONS

mm [in]

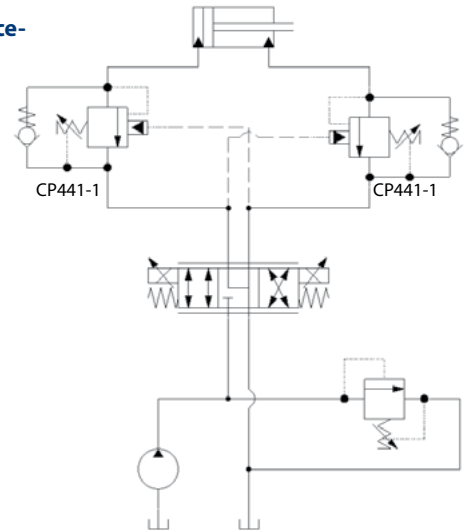


### EXAMPLE CIRCUITS

**Load Holding - Single Actuator**



**Counterbalance - Double Actuator**



### ORDERING INFORMATION

**CP441 - 1 - B - 12S - E - B - XXX - 4.5 - 015**

CP441-1:  
Counterbalance  
valve, 12 size,  
hydraulic vent

Code	Seal Material	Seal Kit
B	Buna-N	120335
V	Viton	120336

E:  
External  
Adjustment

Housing & Ports	Housing P/N
0 Cartridge Only	No Body
4B AL, 1/2 BSP	CP12-3S-4B/2B
6B AL, 3/4 BSP	CP12-3S-6B/2B
S6B Steel, 3/4 BSP	CP12-3-S6B/4S
10S AL, #10 SAE	CP12-3S-10S/4S
12S AL, #12 SAE	CP12-3S-12S/4S
S12S Steel, #12 SAE	CP12-3-S12S/4S

Code	Pilot Ratio
3.0	3.0:1
4.5	4.5:1
10.0	10.0:1

Free flow check  
crack pressure in psi

Code	psi	[bar]
005	5	.34
015	15	1.05

Pressure Setting [in psi]

XXX - Standard setting with no stamping

For customer specified setting,  
code x 10 = total psi  
Example: 150 x 10 = 1500 psi (insert 150 above)

Pressure Range

Code	Pilot Ratio 3.0:1 psi [bar]	Pilot Ratio 4.5:1 psi [bar]	Pilot Ratio 10.0:1 psi [bar]
A	500-1500 [34-103] Std. Setting 1000 [69]	500-2000 [34-138] Std. Setting 1500 [103]	100-5000 [69-345] Std. Setting 2500 [172]
B	1500-3000 [103-207] Std. Setting 2500 [172]	1500-5000 [103-345] Std. Setting 3000 [207]	