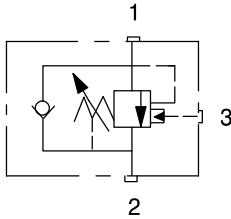


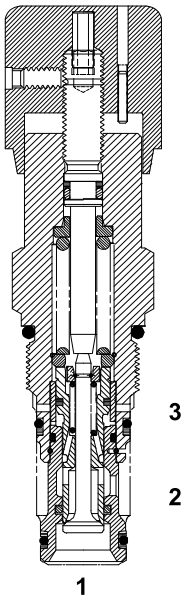
CBV1/2-10

Counterbalance valve

Functional Symbol



Sectional View



Description

The CBV*-10 is a 3-ported, externally piloted, screw-in cartridge type counterbalance valve.

Operation

The CBV counterbalance valve allows free flow from port 2 (inlet) to port 1 (load). Flow from port 1 to port 2 is blocked until either the predetermined pressure setting has been reached or sufficient pilot pressure has been applied to port 3 (pilot).

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports) 350 bar (5000 psi)*

Cartridge fatigue pressure (infinite life) 350 bar (5000 psi)

Rated flow 60 l/min (15 USgpm)

Cracking pressure @1 l/min (0.25 USgpm) **30 – 62–210 bar (900–3000 psi)**
50 – 186–350 bar (2700–5000 psi)

Internal leakage 5 drops / min. max. Port 1 to Port 2 @77% of crack pressure

Temperature range –40 to 120°C (–40° to 248°F)

Cavity C-10-3S (See page 29)

Pilot ratio 4:1, 10:1

Fluids All general purpose hydraulic fluids such as:
MIL-H-5606, SAE 10, SAE 20, etc.

Filtration Cleanliness code 18/16/13

Standard housing materials Aluminum or steel

Weight cartridge only 0,23 kg (0.50 lb.)

Seal kit 02-173019 Buna-N
02-173020 Viton®



* Caution: Adjustments exceeding 350 bar (5000 psi) may damage the body.
Warning: For pressure over 210 bar (3000 psi) use steel housing.

Viton is a registered trademark of E.I.DuPont

Pressure Drop Curves

Cartridge only

For 4:1 Ratio

Pilot pressure, nominal at port 3 =

$$\frac{\text{Cracking pressure} + (5 \times \text{Port 2 pressure}) - \text{Port 1 pressure}}{4}$$

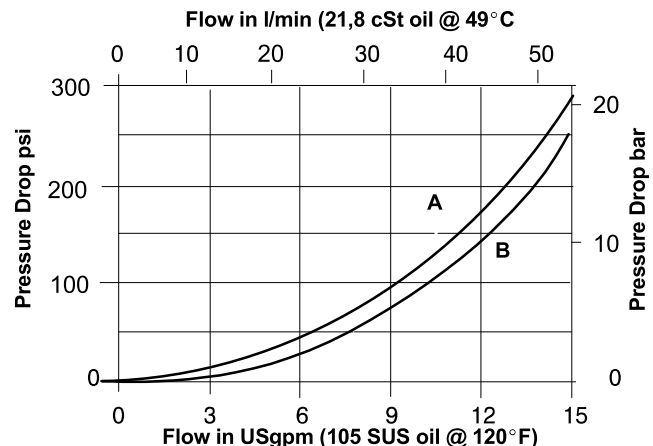
For 10:1 Ratio

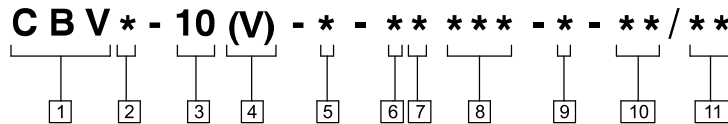
Pilot pressure, nominal at port 3 =

$$\frac{\text{Cracking pressure} + (11 \times \text{Port 2 pressure}) - \text{Port 1 pressure}}{10}$$

A – Piloted open port 1 to port 2

B – Free flow port 2 to port 1





1 Valve function

CBV – Counterbalance valve

2 Pilot ratio

- 1 – 4:1
- 2 – 10:1

3 Valve size

10 – Size 10

4 Seals

Blank–Buna-N
V – Viton

5 Adjustment options

- S** – Screw with locknut
- C** – Cap over screw
- K** – Hand knob

6 Cartridge/valve housing

- O** – Cartridge only
- I** – Inline body
- N** – Close coupled – nipple mounting
- G** – Gasket mounted – single
- D** – Dual counterbalance – line mtd
- M** – Dual counterbalance – line mtd with integral shuttle valve
- P** – Dual counterbalance – gasket mtd



Aluminum housings can be used for pressures up to 210 bar (3000 psi)

Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi)

7 Valve housing material

- A** – Aluminum
- S** – Steel

8 Housing port sizes

I – Inline Body

Aluminum, Light duty	Aluminum, fatigue rated	Steel Port size
6T	6H	6T .. SAE6
N/A	8H	8T .. SAE8
N/A	N/A	10T .. SAE10
N/A	2G	N/A .. 1/4"BSPP
3B	3G	3G .. 3/8"BSPP
N/A	N/A	4G .. 1/2"BSPP

N – Nipple Mounting

Aluminum, fatigue rated	Steel Port size
6H	6T .. SAE6
3G	3G .. 3/8"BSPP

G – Gasket Mounted (Single)

Aluminum, fatigue rated	Steel Port size
6H	6T .. SAE6
3G	3G .. 3/8"BSPP

D – Dual Line Mounted

Aluminum, fatigue rated	Steel Port size
6H	6T .. SAE6
8H	8T .. SAE8
10H	10T .. SAE10
2G	2G .. 1/4"BSPP
3G	3G .. 3/8"BSPP
4G	4G .. 1/2"BSPP

8 Housing port sizes (cont'd)

M–Dual Line Mounted w/ integral shuttle

Aluminum, fatigue rated	Steel Port size
6H	6T .. SAE 6
8H	8T .. SAE8
10H	10T .. SAE10
2G	2G .. 1/4"BSPP
3G	3G .. 3/8"BSPP
4G	4G .. 1/2"BSPP

P–Dual Gasket Mounted

Aluminum, Fatigue rated	Steel Port size
6H	6T .. SAE6
3G	3G .. 3/8"BSPP

See pages 32–35 for housing dim.

9 Free flow crack pressure

- A** – 1,4 bar (20 psi) (standard)
- B** – 0,28 bar (4 psi) (anti-cavitation)

10 Pressure range

- 30** – 62–210 bar (900–3000 psi)
- 50** – 186–350 bar (2700–5000 psi)

11 Pressure setting (optional)

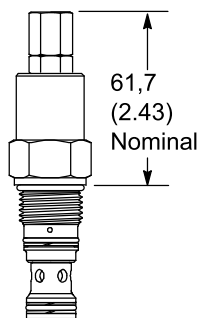
- (Specified by customer in 100 psi increments) for example:
- 20** – 140 bar (2000 psi)
- 35** – 240 bar (3500 psi)

See pages 32–35 for housing dim.
See page 44 for housing part numbers

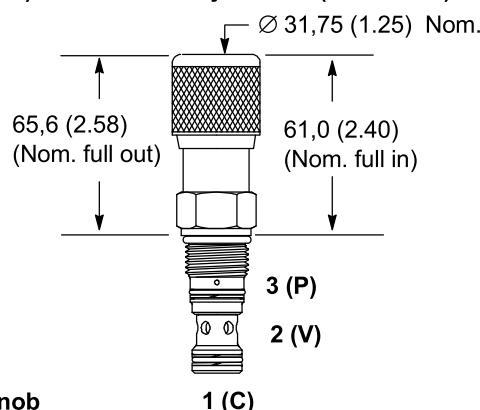
Installation Dimensions

mm (inch)

“C” Adjustment (Cap over screw)



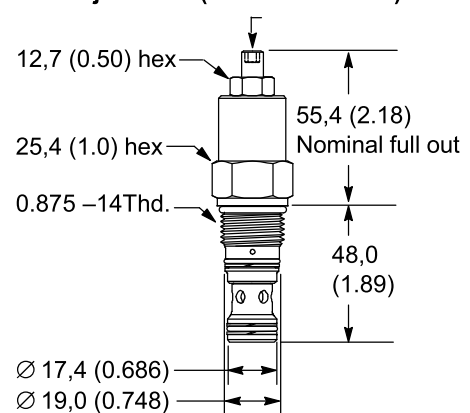
“K” Adjustment (Handknob)



Torque cartridge in housing

- A** – 47–54 Nm (35–40 lbf ft)
- S** – 68–75 Nm (50–55 lbf ft)

“S” Adjustment (Screw w/locknut)



NOTE: Turn screw or knob clockwise to reduce pressure setting and release load.