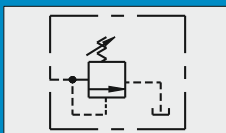
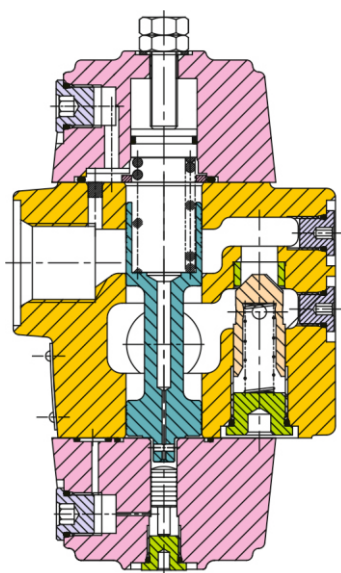


PRESSURE CONTROL VALVES (THREADED CONNECTION) (PCV-03/06/10/12 SEQUENCE, UNLOADING, BACK PRESSURE & COUNTER BALANCE VALVES)



SERIES - PCV6



Basic Characteristics

- Ratings - Rate Pressure (maximum) - 210 bar (3000 psi)
- Rated Capacity (maximum) - **PCV6-03** = 45 L/min
PCV6-06 = 114 L/min
PCV6-10/12 = 284 L/min
- 140 bar (2000 psi) permitted on the full piston area at the button cover ('p' connection). & at the top cover (spring chamber).
- Rated capacities are based on using fluid with a specific gravity of 0.865 and a viscosity of 20 cSt (100 SUS)

Approx. Weights

PCV6-03-T/S = 2.7 kg.	PCV6-03-CT/CS = 2.9 kg.
PCV6-06-T/S = 5.6 kg.	PCV6-06-CT/CS = 5.9 kg.
PCV6-10/12-T/S = 12 kg.	PCV6-10/12-CT/CS = 12.9 kg.

General Description

Microtact "hydrocushion" type pressure control valves are used to control the sequencing, unloading, back pressure, and counterbalancing of oil flow in hydraulic systems. Control is initiated by a pressure rise which can be sensed either internally (directly) or remotely. Models are available with or without integral reverse free flow checks.

Pressure adjustment

Pressure ranges - (see model code) are maximum controllable, and each model selected should be well within the range given to afford fine increments of adjustment. Pressure setting must be at least 17 bar (250 psi) lower than the system relief valve setting.

Pressure can be adjusted by loosening a jam nut and turning an adjustment screw. Turning clockwise increases pressure and turning counterclockwise decreases pressure.

ORDERING INFORMATION

PCV 6 - * - C * - * - P - * - 30

1 2 3 4 5 6 7 8 9

1. Model Code - PCV
2. Model Series - 6
3. Nominal Valve Size - • 03 - 3/8" Pipe or 0.7500"-16UNF-2B • 06 - 3/4" Pipe or 1.0625"-12UN-2B • 10 - 1-1/4" Pipe or 1.6250"-12UN-2B • 12 - 1-1/2" Pipe or 1.8750"-12UN-2B
4. Internal check valve - C = Reverse free flow check (omit if not required)
5. Connection Type - T = NPTF Thread S = SAE Straight Thread

6. Pressure Range - D = 10 - 30 psi YY = 80 - 250 psi U = 30 - 60 psi YC = 125 - 500 psi I = 60 - 125 psi DA = 250 - 1000 psi
7. P = Remote pressure control (not available with 'D', 'U', 'I') (omit if not required)
8. Control Type - RCB = Relief, Counter Balance SDC = Sequence Valve, Direct Control SRC = Sequence Valve, Remote Control URC = Unloading Valve, Remote Control
9. Design No - 30

Typical Model Code :- **PCV6-03-CT-YY-P-RCB-30**

Installation Data Mounting

Because all PCV6-CT and PCV6-CS models have optional pressure inlets connected by a through passage, the valves may be mounted "in-line". The valves may also be teed to a line by using either one of the pressure inlets and plugging the other.

The remote pressure control connection on type SRC and URC valves must be connected to an external pilot pressure source sufficient to operate the valve at the desired pressure setting and flow conditions.

Tank Drain

The discharge outlet of valve types RCB and URC must be piped to tank at atmospheric pressure. The drain connection on types SDC and SRC must be piped directly to tank at atmospheric pressure. Any pressure at the drain port must be added to the pressure setting of the valve.

Auxiliary Remote Pressure Control "P"

All models (those with an "D", "U", or "I" pressure adjustment range in their model code) are available with an auxiliary

remote control connection. Required pressure at the auxiliary connection is 1/8 of the normally required control pressure for the "YY", "YC", and "DA" pressure ranges.

Brake Valve

A brake valve is used in the exhaust line of a hydraulic motor to: 1) prevent overspeeding when an overrunning load is applied to the motor shaft; and 2) prevent excessive pressure buildup when decelerating or stopping a load.

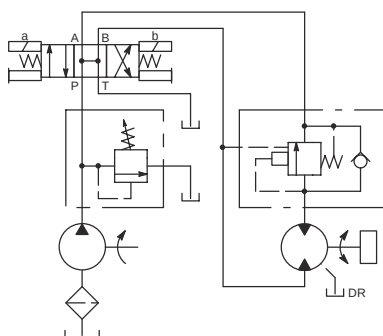
When the "PCV6 * C" valve is used as a brake valve, it has a solid spool (no drain hole through the center), and there is a remote operating pressure connection in the bottom cover directly under the spool. This connection is teed into the supply line to the motor. The internal control connection is also used under the small piston and senses pressure from the primary port of the "PCV6 * C" valve, which is connected to the motor exhaust port.

When the load is being accelerated, pressure is maximum at the motor inlet and under the large area of the brake valve spool, holding it in the full open

position and permitting free flow from the exhaust port of the motor.

When the motor gets up to speed, load pressure still holds the brake valve open unless the load tries to run away. If this happens, the pressure falls off at the motor inlet and in the remote control pressure passage. The spring force tends to close the valve, thus increasing the back pressure on the motor, tending to brake it.

When the directional valve is shifted to neutral, inertia may cause the motor to continue rotating against the brake valve. Until the motor stops turning, it will operate as a pump, drawing fluid from the motor outlet through the directional valve and circulating it back to the motor inlet. Motor leakage oil will be made up by drawing oil into the loop through the tank port of the valve. At this time, pressure at the motor outlet tending to bring it to a stop will be whatever is required under the small piston to overcome the brake valve setting.

Typical Application: Brake Valve**"PCV6" Series Sequence, Unloading, Back Pressure, and Counterbalance Valves**

There are several configurations of this basic valve which can be made by changing cover positions. The following outlines each type of function.

Sequence and Unloading

Microtact "Hydrocushion" type pressure control valves are used for the control of unloading and sequence of oil flow in hydraulic systems, induced by a pressure rise, directly or by remote means. They are available in the following types: sequence valve, Type SDC - directly operated; sequence valve, Type SRC - remotely controlled; unloading valve, Type URC - remotely controlled.

Back Pressure

Back pressure valves are designated as Type RCB internally operated. They are

used to provide back pressure on the hydraulic actuator to prevent overrunning. A remote 'P' version is also available for use in braking circuits.

Counterbalance

Microtact "Hydrocushion" type counterbalance valves are used for the control of unloading and sequence of oil flow in hydraulic systems, induced by pressure rise either directly or by remote means. They are available in the following types: counterbalance valve, Type RCB - internally operated; counterbalance valve, Type URC - remotely controlled. These valves are usually applied in a system to keep a vertical load from falling. All models provide free reverse flow by means of an integral check valve. (Refer to valves without integral check when reverse free flow is not required.)

Pressure Drop

The following table lists approximate pressure drops (ΔP) when passing flow of fluid with a specific gravity of 0.865 and a viscosity of 20 cSt (100 SUS).

Valve	Reverse Free Flow Pressure Drop	
	Flow l/min (USgpm)	ΔP bar (psi)
PCV6/03-C	45 (12)	5,5 (80)
PCV6/06-C	114 (30)	3,4 (50)
PCV6/10-C	189 (50)	2,8 (40)
PCV6/12-C	189 (50)	2,4 (35)

For any other flow rate (Q_1), the approximate pressure drop (ΔP_1) can be calculated using the following formula:
 $\Delta P_1 = \Delta P (Q_1 / Q_2)^2$.

For any other viscosity of fluid, the pressure drop will change according to the following table:

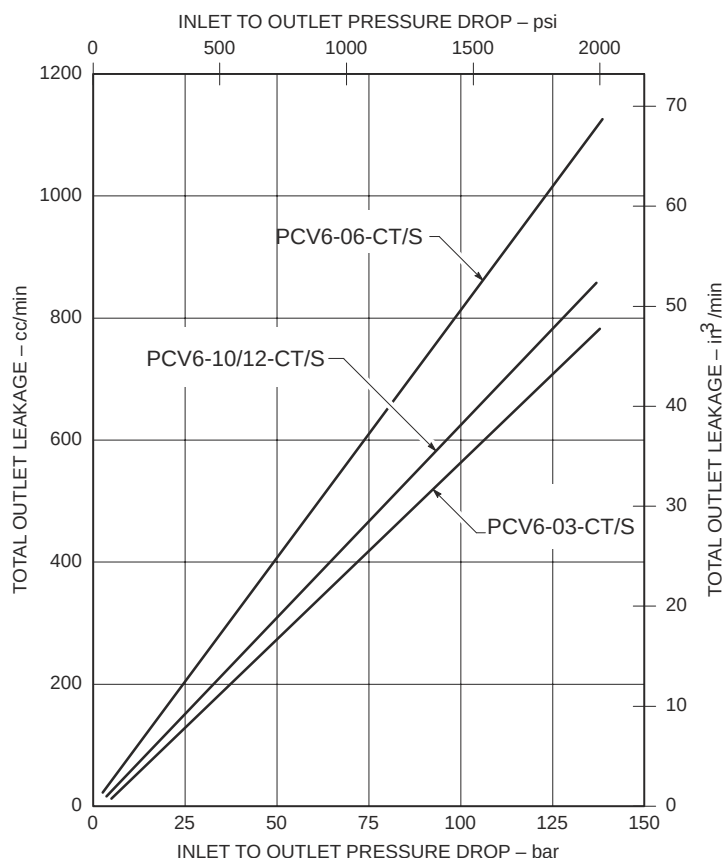
Viscosity cSt (SUS)	Approximate % of ΔP
14 (75)	93
27 (150)	111
38 (200)	119
46 (250)	126
56 (300)	132
64 (350)	137
74 (400)	141

For any other specific gravity (G_1), the approximate pressure drop (ΔP_1) can be calculated using the following formula:
 $\Delta P_1 = \Delta P (G_1 / G)$.

The specific gravity of fluid may be obtained from its producer. The value is higher for fire-resistant fluids than for oil.

Maximum Total Leakage vs. Pressure Drop

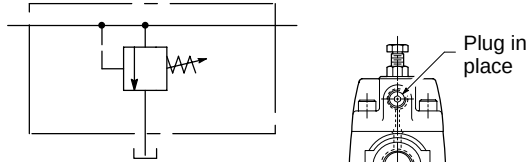
The following graph shows the relationship between maximum total leakage and pressure drop for fluid with a specific gravity of 0.865 and a viscosity of 20 cSt (100 SUS). Leakage is approximately proportional to viscosity in centistokes.



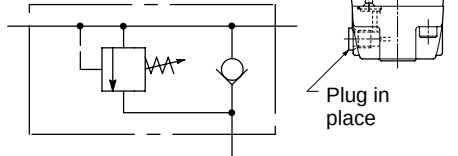
Type RCB = Back Pressure and Counter Balance Valves Internally Operated - Internal Drain

PCV6 Valves

Back Pressure PCV6 - * - S/T



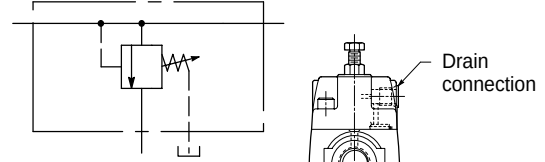
Counterbalance PCV6 - * - C - S/T



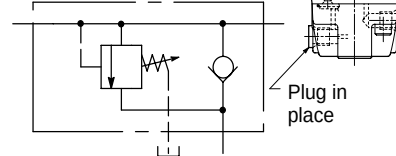
Type SDC Sequence Valve Internally Operated - External Drain

PCV6 Valves

PCV6 - * - S/T



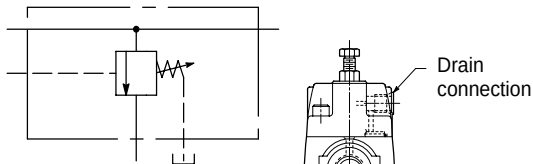
PCV6 - * - C - S/T



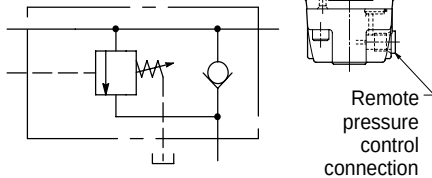
Type SRC = Sequence Valves Remote Control Operated - External Drain

PCV6 Valves

PCV6 - * - S/T



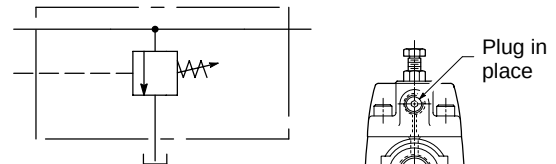
PCV6 - * - C - S/T



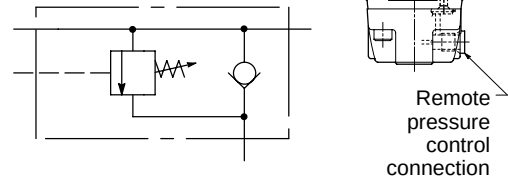
Type URC = Unloading and Counterbalance Valves Remote Control Operated - Internal Drain

PCV6 Valves

Unloading PCV6 - * - S/T



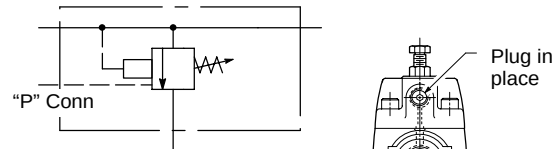
Counterbalance PCV6 - * - C - S/T



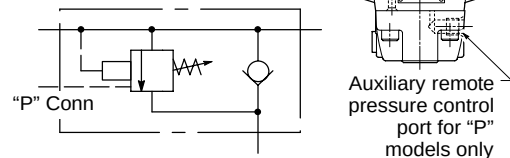
Type P Back Pressure and Counterbalance Valves Auxiliary Remote Control Operated with 'P' Connection Internal Drain (Model "P-RCB" Shown)

PCV6 Valves

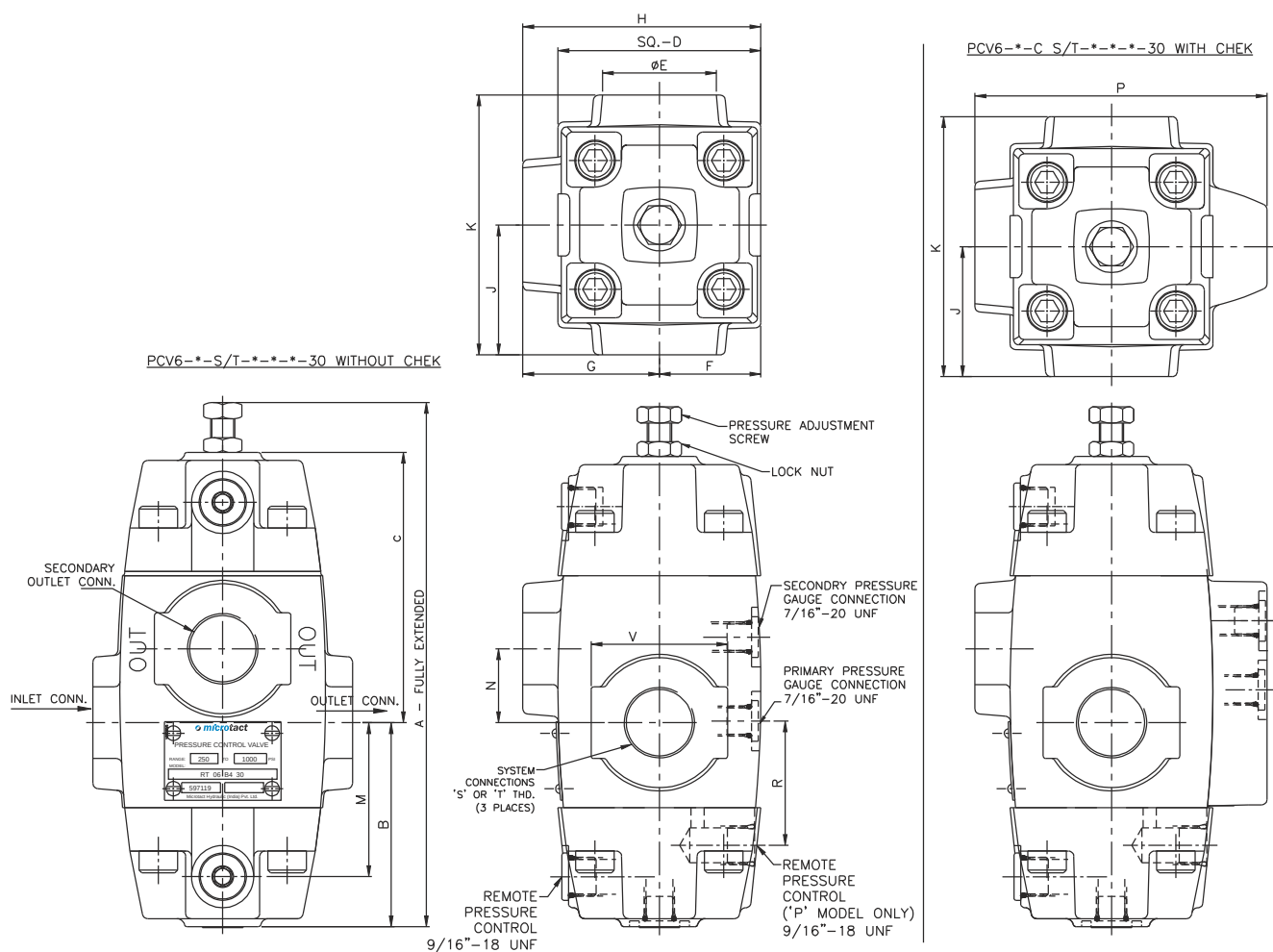
Back Pressure PCV6 - * - S/T



Counterbalance PCV6 - * - C - S/T



PCV6



MODEL CODE	A	B	C	sq-D	ØE	F	G	H	J	K	L	M	N	P	R	S-st. thd. for RS & RCS Model	T-st. thd. for RT & RCT Model	V
PCV6-03-*S/T-*-*-30	178.5	53.3	96.8	59.4	35.1	29.7	39.6	70.9	35.1	69.8	58.7	42.9	23.1	93.7	38.9	0.7500-16UNF-2B	3/8" pipe	35.1
PCV6-06-*S/T-*-*-30	201.4	75.4	97.8	74.7	47.8	37.3	50.8	88.1	47.8	95.2	79.5	57.2	27.2	108	46.7	1.0625-12UN-2B	3/4" pipe	50.8
PCV6-10-*S/T-*-*-30	282.2	84.1	154.2	98.6	82.6	49.3	68.3	117.6	53.8	108	80.3	70.6	28.7	147.6	57.2	1.6250-12UN-2B	1-1/4" pipe	86.4
PCV6-12-*S/T-*-*-30	282.2	84.1	154.2	98.6	82.6	49.3	68.3	117.6	53.8	108	80.3	70.6	28.7	147.6	57.2	1.8750-12UN-2B	1-1/2" pipe	86.4