

Electrically Operated Pressure-Relief Cartridge, Size 10

Q_{max} = 140 l/min (37 gpm), p_{max} = 350 bar (5000 psi)
seated pilot stage, spool-type design, with external pilot-oil drain Z
Series WUVPOC-3..., WUVPLC-3...



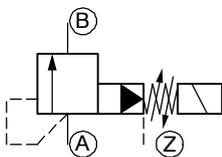
- Compact construction for cavity type DD – M24x1.5 to Bucher standard
- Bypass circuit ON / OFF
- 2-pressure switching HI / LO
- Damped opening (on request)
- With external pilot-oil drain Z
- Low unloaded bypass pressure with “OC” model to 100 l/min
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- All exposed parts with zinc-nickel plating
- Can be fitted in a line-mounting body

1 Description

Series WUVPOC-3... / WUVPLC-3... and WUVPUC-3... valves are size 10 electrically operated pressure relief cartridges with an M24x1.5 mounting thread. They have a seated pilot stage and a spool-type main stage. Using the external pressure adjustment, the higher pressure p₁ (relief setting) and the lower pressure p₂ (a secondary pressure, or the unloaded pressure) can be varied smoothly and independently of one another without opening the hydraulic envelope, and either pressure can be selected. The “OC” model is mainly used for bypass circuits that can be unloaded with low Δp values (ON / OFF). The lower Δp values result in less heating of the oil and thus lower energy costs for the user. The “LC” model is mainly used for 2-pressure

circuits (HI / LO). The “UC” model (available on request) is fitted with a damping spool that, by ensuring a damped opening, prevents undesirable pressure spikes. When the pilot stage is active (pressure relief function), pilot oil is drained externally to port Z. Port B can therefore be pressurised without that pressure being additive to the valve pressure setting. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section “Related data sheets”.

2 Symbol



3 Technical data

General characteristics	Description, value, unit
Designation	pressure-relief cartridge valve
Design	spool-type design, seated pilot, with external pilot-oil drain Z, electrically operated
Mounting method	screw-in cartridge M24 x 1.5
Size	nominal size 10, cavity type DD to Bucher standard
Weight	0.52 kg (1.15 lb)

General characteristics	Description, value, unit	
Mounting attitude	unrestricted	
Ambient temperature range	-25 °C ... +50 °C	(-13 °F ... +122 °F)

Hydraulic characteristics	Description, value, unit	
Maximum operating pressure in port A and B	350 bar	(5000 psi)
Maximum allowable pressure in port Z (tank)	250 bar	(3600 psi)
Pressure adjustment range:	350 bar 250 bar 160 bar 100 bar 40 bar	(5000 psi) (3600 psi) (2300 psi) (1400 psi) (570 psi)
Maximum flow rate	140 l/min	(37 gpm)
	(at > 100 l/min, "LC" model recommended by the manufacturer)	
Flow direction	A → B, see symbols	
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER	
Hydraulic fluid temperature range	-25 °C ... +80 °C	(-13 °F ... +176 °F)
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)	
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15	

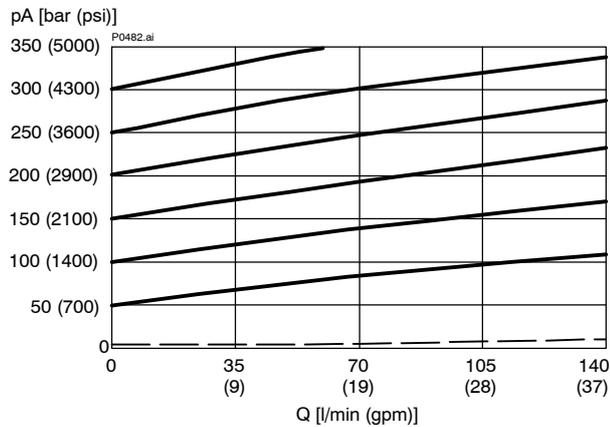
Electrical characteristics	Description, value, unit	
Supply voltage	12 V DC, 24 V DC / 115 V AC, 230 V AC (50 ... 60 Hz)	
Supply voltage tolerance	± 10 %	
Nominal power consumption	V DC = 27 W V AC = 25 W	
Relative duty cycle	100 %	
Protection class to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)	
Electrical connection	DIN EN 175301-803, 3-pin 2 P+E (standard) for other connectors, see "Ordering code"	

4 Performance graphs

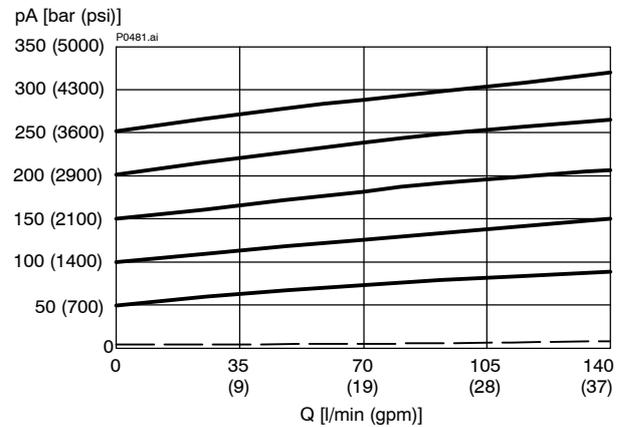
measured with oil viscosity 33 mm²/s (cSt)

bypass circuit (ON/OFF) – WUVPOC-...

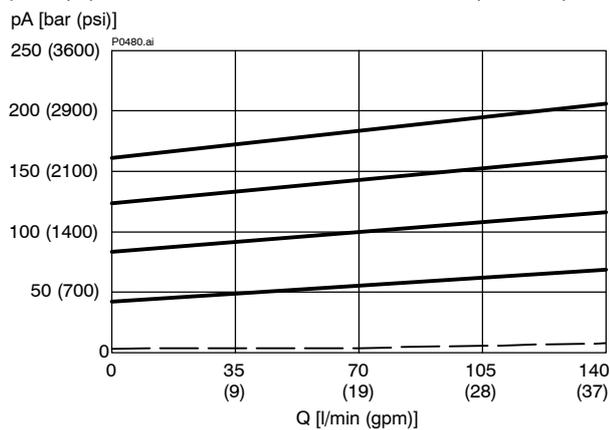
$p = f(Q)$ Pressure - Flow rate characteristic (350 bar)



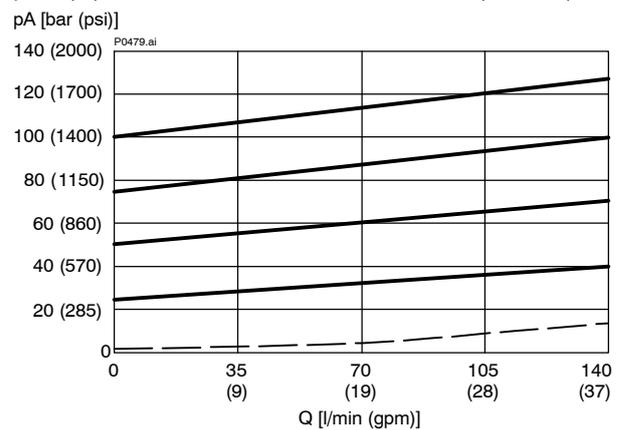
$p = f(Q)$ Pressure - Flow rate characteristic (250 bar)



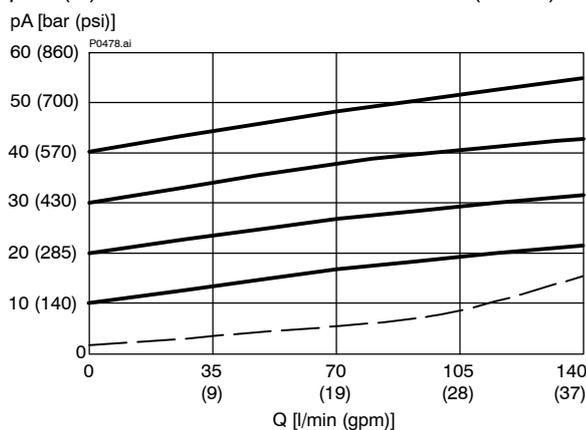
$p = f(Q)$ Pressure - Flow rate characteristic (160 bar)



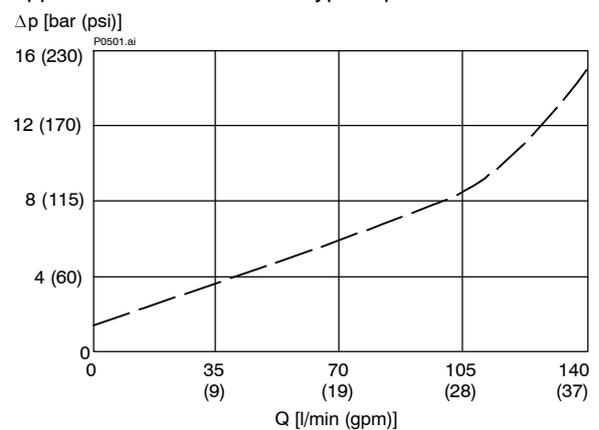
$p = f(Q)$ Pressure - Flow rate characteristic (100 bar)



$p = f(Q)$ Pressure - Flow rate characteristic (40 bar)



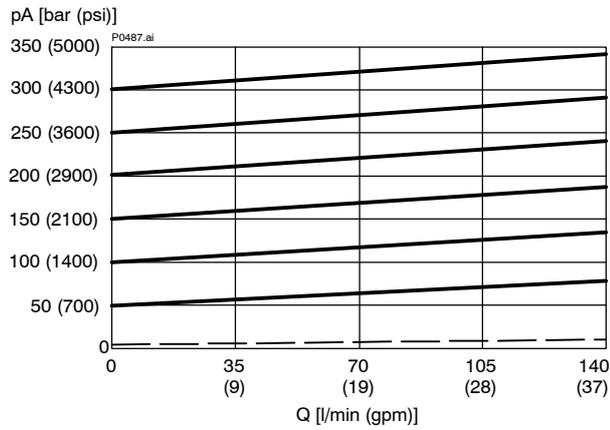
application limit / minimum bypass pressure



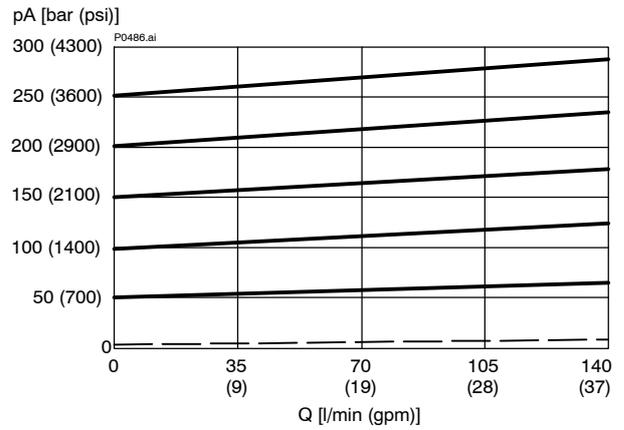
----- p2 min. = application limit / minimum bypass pressure

2-pressure switching (HI/LO) – WUVPLC-...

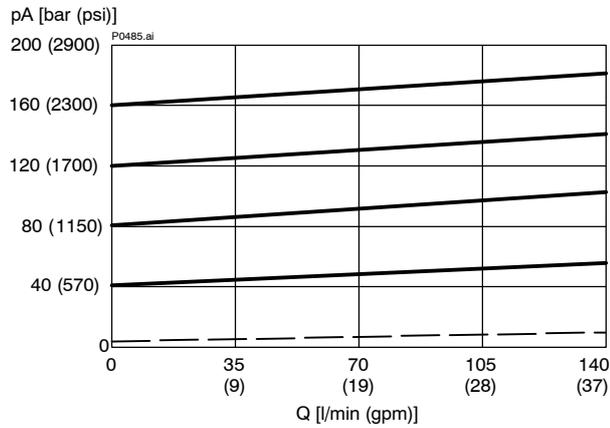
$p = f(Q)$ Pressure - Flow rate characteristic (350 bar)



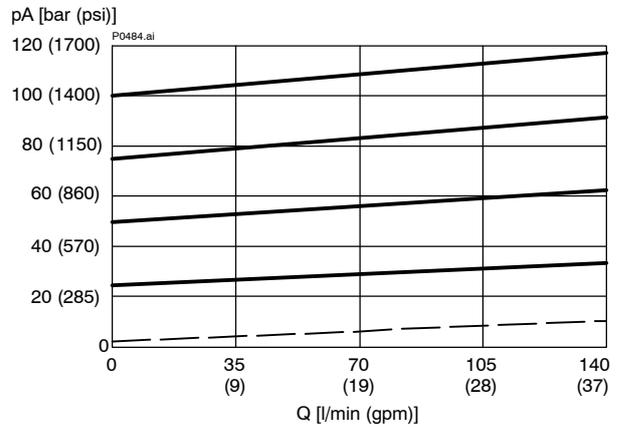
$p = f(Q)$ Pressure - Flow rate characteristic (250 bar)



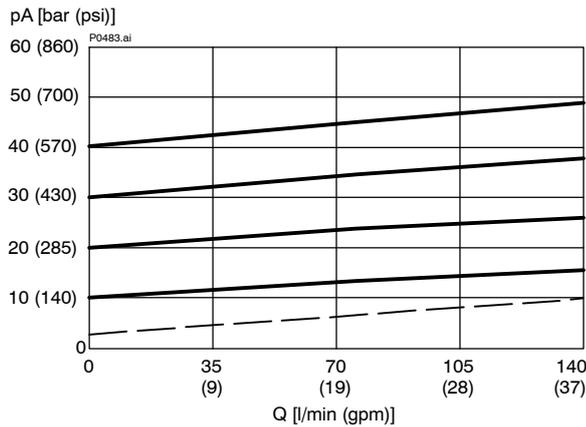
$p = f(Q)$ Pressure - Flow rate characteristic (160 bar)



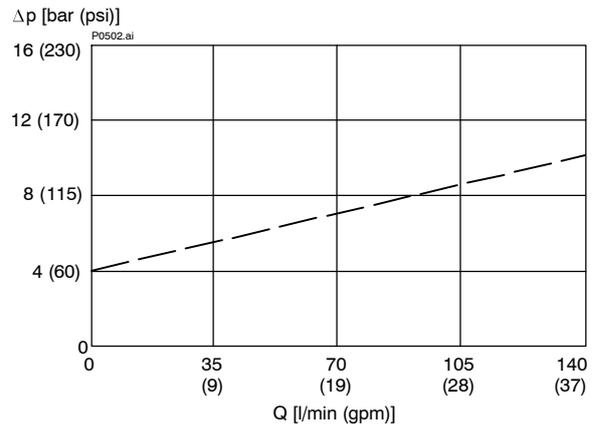
$p = f(Q)$ Pressure - Flow rate characteristic (100 bar)



$p = f(Q)$ Pressure - Flow rate characteristic (40 bar)



application limit / minimum bypass pressure



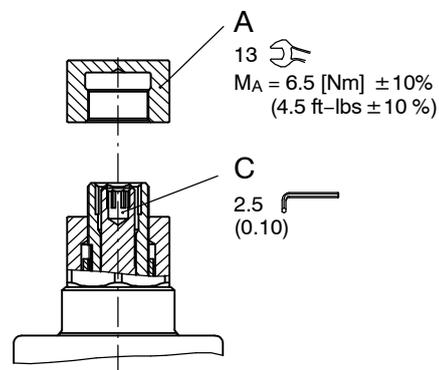
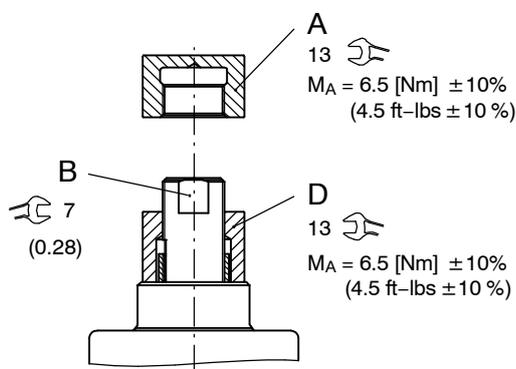
----- p2 min. = application limit / minimum bypass pressure

7 Pressure adjustment

(pressure p1 must be set first, followed by pressure p2)

Nr.	Setting the higher pressure p1 on series WUVPOC... / WUVPLC... as the higher working pressure with solenoid energised:
1)	Slacken and remove cap nut item A (13 A/F).
2)	Slacken lock nut item D (13 A/F) approx. ½ turn.
3)	With pump running and with the solenoid energised, use the two flats (7 A/F) to turn adjusting screw item B until the required pressure is set in port A.
4)	Hold the adjusting screw item B using the 7 A/F flats while tightening the lock nut item D (13 A/F).
5)	Refit and tighten the cap nut item A.

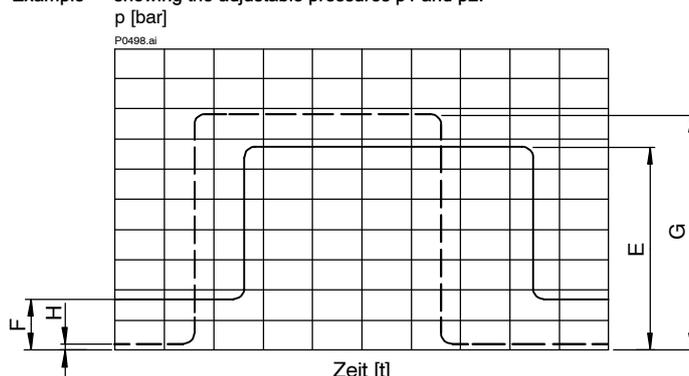
Nr.	Setting the lower pressure p2 (emergency pressure setting) on series WUVPOC... / WUVPLC... (a second pressure or alternatively, unload) with solenoid de-energised:
1)	Slacken and remove cap nut item A (13 A/F).
2)	With pump running and with the solenoid de-energised, use the adjusting screw item B (2.5 A/F hex. socket) to set the pressure p2 in port A.
3)	Refit and tighten the cap nut item A. (p2 min.: 2 ... 15 bar for WUVPOC, dependent on flow). (p2 min.: 4 ... 10 bar for WUVPLC, dependent on flow).



ATTENTION!

When setting pressure p1, adjusting screw item B must not be overtightened as this can damage the shoulder which limits the maximum pressure setting. As soon as a definite end-stop can be felt, do not turn any further.

Example – showing the adjustable pressures p1 and p2:



- H = when item C is unscrewed until flush
- E, G = pressure p1; as set with item B, solenoid energised
- F = pressure p2, min. as H, max. as E and G, adjustable at item C, solenoid de-energised

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Type WUVPLC...

The relief pressure p1 is set as the higher working pressure (E) (solenoid energised)
p2 as the lower working pressure (F) (solenoid de-energised)

- - - - -
Type WUVPOC... / (WUVPUC... available on request)

The relief pressure p1 is set as the higher working pressure (G) (solenoid energised)
p2 as the lowest unloaded bypass pressure (H) = item C flush (solenoid de-energised)

8 Ordering code

Ex. WU V P O C - 3 D O - 35 - 10 _ - 1 24 D _

- WU = electr. operated pressure-relief valve
- V = seated two-stage
- P = cartridge design
- O = for unloading duty (ON/OFF)
- L = for two-pressure duty (HI/LO)
- U = for unloading duty, damped opening (on request)
- C ... Q = standard model per relevant data sheet
- Y ... R = special features - please consult BUCHER
- 3 = pressure function 3 (with external pilot-oil drain Z)
- D = cavity type DD
- O = normally open
- 35 = pressure range 10 ... 350 bar
- 25 = pressure range 10 ... 250 bar
- 16 = pressure range 10 ... 160 bar
- 10 = pressure range 10 ... 100 bar
- 04 = pressure range 10 ... 040 bar
- 10 = nominal size 10
- (blank) = NBR (Nitrile) seals (standard)
- V = FKM (Viton) seals
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering new units)
- ... = voltage e.g. 24 (24 V)
- D = current DC
- A = current AC
- (blank) = DIN EN 175301-803 connection with mating plug (standard, IP 65)
- M100 = DIN EN 175301-803 connection without mating plug
- C = Kostal plug connection (IP 65)
- JT = Junior Timer radial plug connection (with protection diode, IP65)
- IT = Junior Timer axial plug connection (with protection diode, IP65)
- D = Deutsch plug connection DT04-2P (IP 67/69K)
- DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)
- S = AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection
- F = flying leads (500 mm)

} mating plug not supplied

9 Related data sheets

Reference	(Old no.)	Description
400-P-040011		The form-tool hire programme
400-P-060121		Cavity type DD
400-P-120110		Coils for screw-in cartridge valves
400-P-740111		Line- and manifold-mounting body, type DDY-12 (G 1/2")

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