

# Electrically Operated Pressure-Relief Cartridge, Size 1

$Q_{\max} = 1.5 \text{ l/min (0.4 gpm)}$ ,  $p_{\max} = 420 \text{ bar (6000 psi)}$   
Pilot valve, seated design, direct acting, electrically operated  
Series WUVB-1LO...



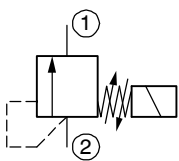
- Can be used as a pilot valve
- Compact construction for cavity type AL – 3/4-16 UNF to Bucher standard
- 2-pressure switching HI / LO
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- All exposed parts with zinc-nickel plating
- Can be fitted in a line-mounting body

## 1 Description

Series WUVB-1LO... valves are size 1 electrically operated pressure relief cartridges with an 3/4-16 UNF mounting thread. They are direct acting seat valves and are preferably used as pilot valves. Using the external pressure adjustment, the higher pressure  $p_1$  (relief setting) and the lower pressure  $p_2$  (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 pressure-relief cartridges can be fitted in the AL cavity according to Bucher standard and also in some 3/4-16 UNF cavities from other valve man-

ufacturers. To prevent any pressure surges, port 1 must be routed to tank with the least possible back-pressure. Any tank pressure acting at port 1 is additive to the pressure setting at the main port 2. 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. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. 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	seated design, direct acting, electrically operated
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	40 Nm $\pm$ 10 % (30 ft-lbs $\pm$ 10 %)
Size	nominal size 1, cavity type AL to Bucher standard
Weight	0.45 kg (1.00 lb)
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C (-13 °F ... +122 °F)

Hydraulic characteristics	Description, value, unit
Maximum operating pressure - main port 2 - port 1	420 bar (6000 psi) 250 bar <sup>1)</sup> (3600 psi)
Pressure adjustment range:	420 bar (6000 psi) 350 bar (5000 psi) 250 bar (3600 psi) 160 bar (2300 psi) 100 bar (1400 psi) 40 bar ( 570 psi)
Maximum flow rate	1.5 l/min (0.40 gpm)
Flow direction	2 → 1, 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 <sup>2</sup> /s (cSt), recommended 15...250 mm <sup>2</sup> /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"



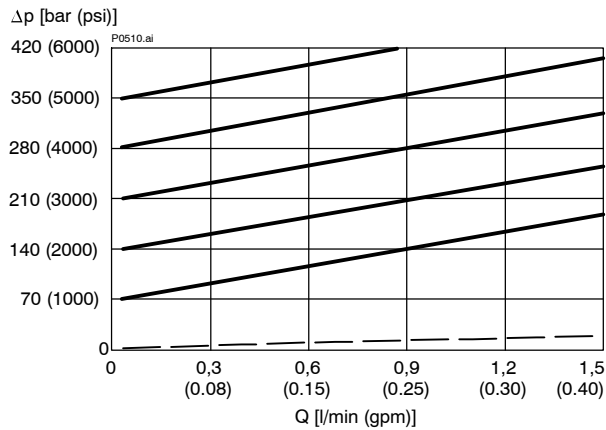
### ATTENTION!

<sup>1)</sup> Any residual- or surge-pressure in port 1 (tank pressure) is additive to the pressure setting in port 2.

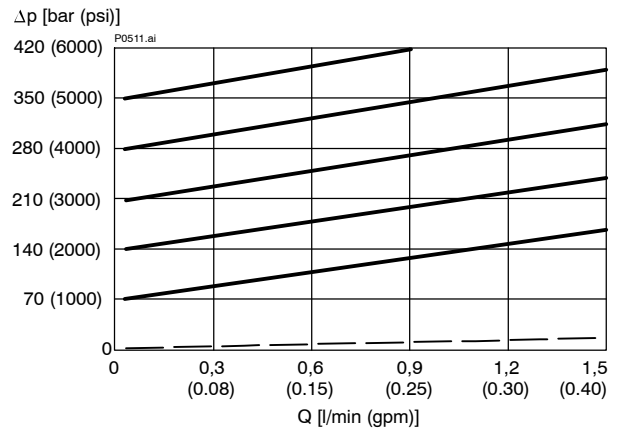
## 4 Performance graphs

measured with oil viscosity 33 mm<sup>2</sup>/s (cSt)

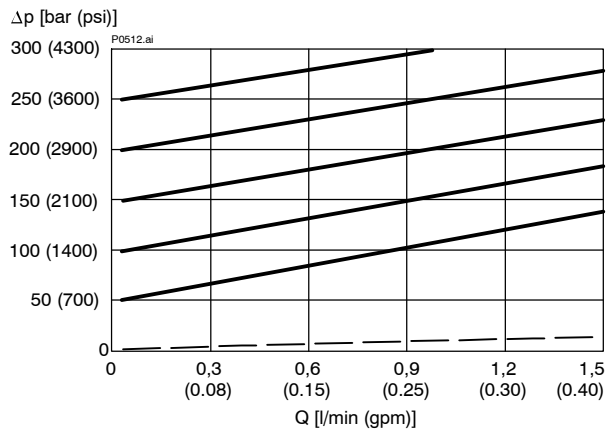
$\Delta p = f(Q)$  Pressure-drop characteristic (420 bar)



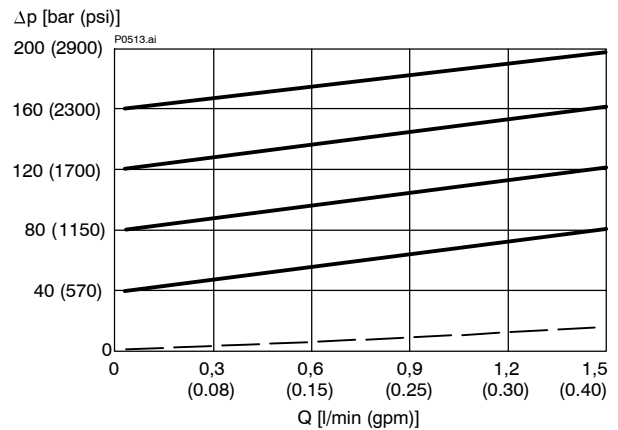
$\Delta p = f(Q)$  Pressure-drop characteristic (350 bar)



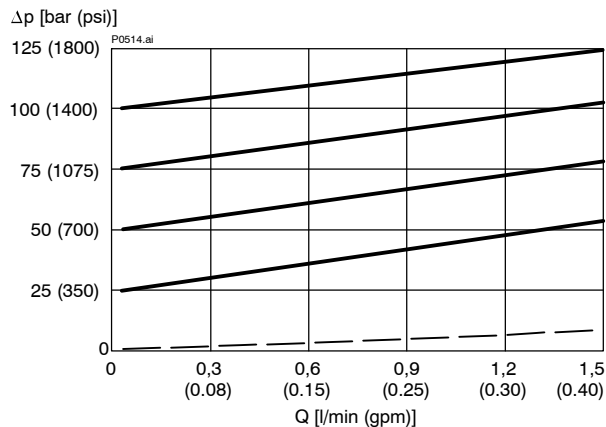
$\Delta p = f(Q)$  Pressure-drop characteristic (250 bar)



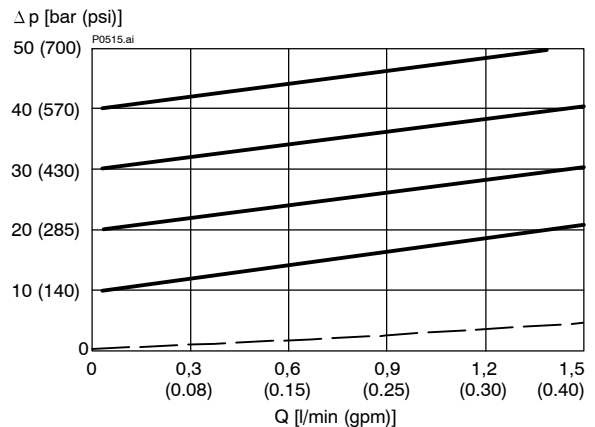
$\Delta p = f(Q)$  Pressure-drop characteristic (160 bar)



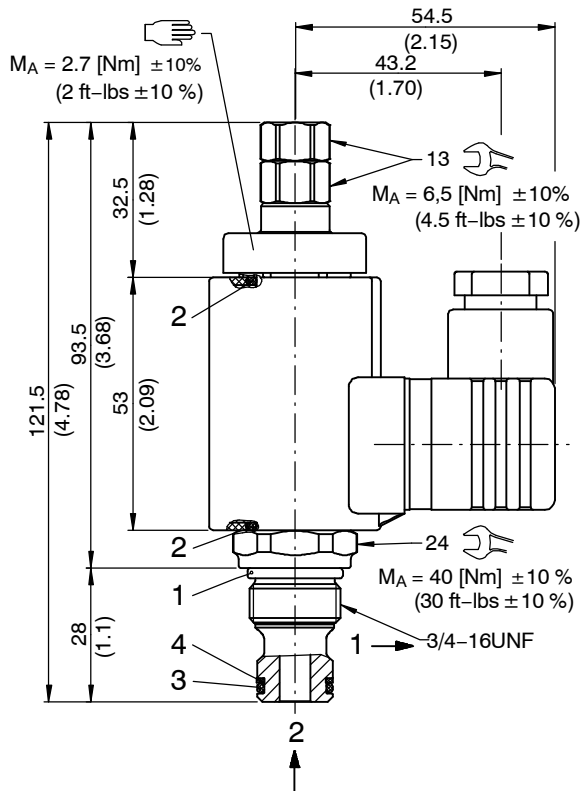
$\Delta p = f(Q)$  Pressure-drop characteristic (100 bar)



$\Delta p = f(Q)$  Pressure-drop characteristic (40 bar)



## 5 Dimensions & sectional view



### Seal kit NBR no. DS-317-N <sup>2)</sup>

Item	Qty.	Description
1	1	O-ring no. 017 $\varnothing 17.17 \times 1.78$ N90
2	2	O-ring $\varnothing 16.00 \times 2.00$ Viton
3	1	O-ring no. 014 $\varnothing 12.42 \times 1.78$ N90
4	1	Backup ring $\varnothing 10.70 \times 1.45 \times 1.00$ FI0751



### IMPORTANT!

<sup>2)</sup> Seal kit with FKM (Viton) seals, no. DS-317-V

## 6 Installation information



### IMPORTANT!

When fitting the cartridges, use the specified tightening torque.



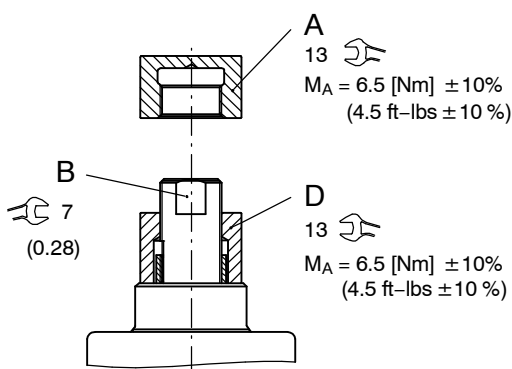
### ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

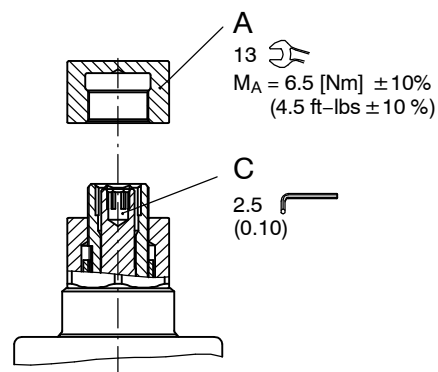
## 7 Pressure adjustment

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

Nr.	Setting the higher pressure p1 on series WUVB... 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 2.
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.

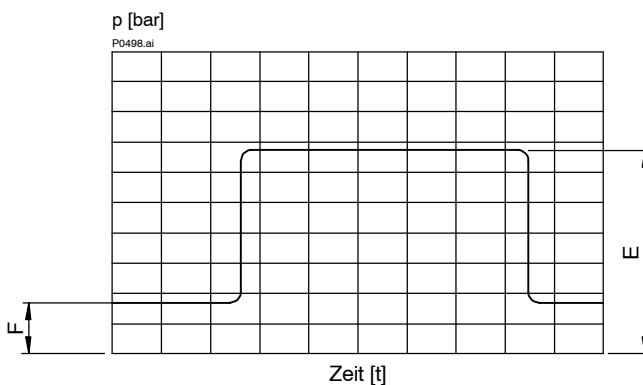


Nr.	Setting the lower pressure p2 (emergency pressure setting) on series WUVB... (a second pressure or alternatively, unload) with solenoid de-energised:
1)	Slacken and remove cap nut item A (13 A/F).
2)	With pump running and with the solenoid de-energised, use the adjusting screw item C (2.5 A/F hex.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

- E = pressure p1; as set with item B, solenoid energised
- F = pressure p2, max. as E, adjustable at item C, solenoid de-energised

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

### 8 Ordering code

Ex. WU V B - 1 L O - 35 - 1 \_ - 1 24 D \_

<p>WU = electr. operated pressure-relief valve</p> <p>V = pilot valve</p> <p>B ... Q = standard model per relevant data sheet</p> <p>Y ... R = special features - please consult BUCHER</p> <p>1 = pressure function 1 (pressure-relief)</p> <p>L = cavity type AL</p> <p>O = normally open</p> <p>42 = pressure range 10 ... 420 bar</p> <p>35 = pressure range 10 ... 350 bar</p> <p>25 = pressure range 10 ... 250 bar</p> <p>16 = pressure range 10 ... 160 bar</p> <p>10 = pressure range 10 ... 100 bar</p> <p>04 = pressure range 10 ... 040 bar</p> <p>1 = nominal size 1</p> <p>(blank) = NBR (Nitrile) seals (standard)</p> <p>V = FKM (Viton) seals (special seals - please contact BUCHER)</p> <p>1 ... 9 = design stage (omit when ordering new units)</p> <p>... = voltage e.g. 24 (24 V)</p> <p>D = current DC</p> <p>A = current AC</p> <p>(blank) = DIN EN 175301-803 connection with mating plug (standard, IP 65)</p> <p>M100 = DIN EN 175301-803 connection without mating plug</p> <p>C = Kostal plug connection (IP 65)</p> <p>JT = Junior Timer radial plug connection (with protection diode, IP65)</p> <p>IT = Junior Timer axial plug connection (with protection diode, IP65)</p> <p>D = Deutsch plug connection DT04-2P (IP 67/69K)</p> <p>DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)</p> <p>S = AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection</p> <p>F = flying leads (500 mm)</p>	<p>} mating plug not supplied</p>
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### 9 Related data sheets

Reference	(Old no.)	Description
400-P-040011		The form-tool hire programme
400-P-040171		Cavity type AL
400-P-120110		Coils for screw-in cartridge valves
400-P-720101		Line- and manifold-mounting body, type GALA (G 3/8")

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