Electrically Operated Pressure-Reducing Cartridge, Size 10

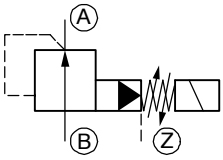
Q_{max} = 140 l/min (37 gpm), p_{max} = 350 bar (5000 psi)
seated pilot stage, spool-type design, with external pilot-oil drain Z
Series WDRVPC-5…

- Compact construction for cavity type DD – M24x1.5 to Bucher standard
- 2-pressure switching HI / LO
- With external pilot-oil drain Z
- 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

Serie WDRVPC-5… valves are size 10 electrically operated pressure-reducing 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 reducing pressure p1 and the lower reducing pressure p2 can be varied smoothly and independently of one another without opening the hydraulic envelope, and either pressure can be selected. When the pilot stage is active (pressure-reducing-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-reducing 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	0.53 kg	(1.17 lb)
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)

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Hydraulic characteristics	Description, value, unit
Pressure adjustment range:	350 bar (5000 psi) 250 bar (3600 psi) 160 bar (2300 psi) 100 bar (1400 psi) 40 bar (570 psi)
Maximum flow rate	140 l/min (37 gpm)
Flow direction	B → A, 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

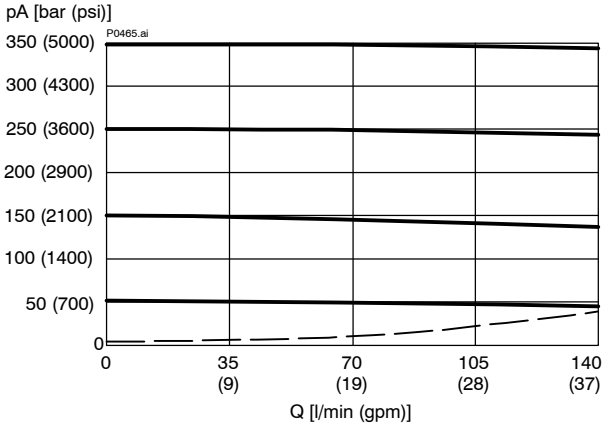
Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC / 115 V AC, 230 V AC (50 … 60 Hz)
Supply voltage tolerance	± 10 %
Nominal power consumption	V DC = 27 W V AC = 25 W
Relative duty cycle	100 %
Protection class to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see “Ordering 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

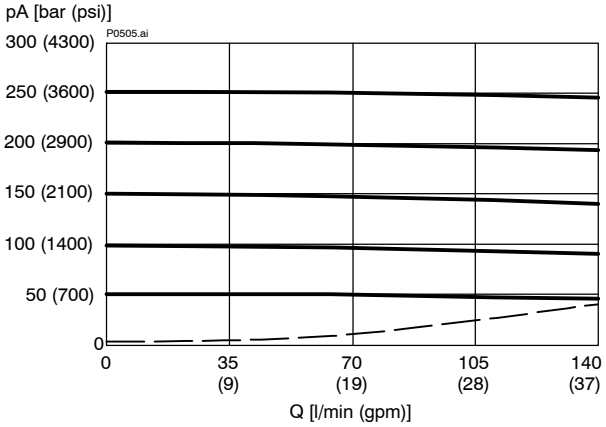
measured with oil viscosity 33 mm²/s (cSt)

2-pressure switching (HI/LO) – WDRVPC-…

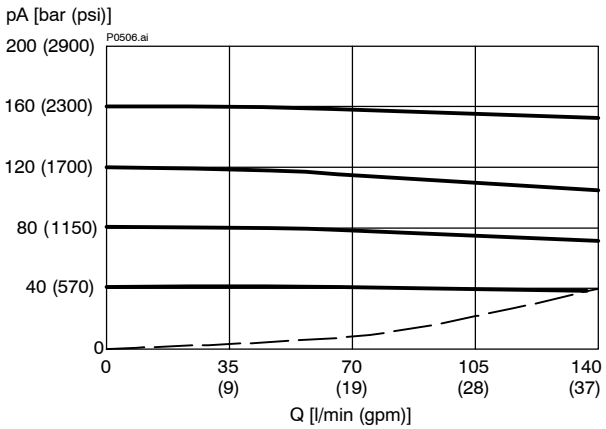
p = f (Q) Pressure-drop characteristic (350 bar)



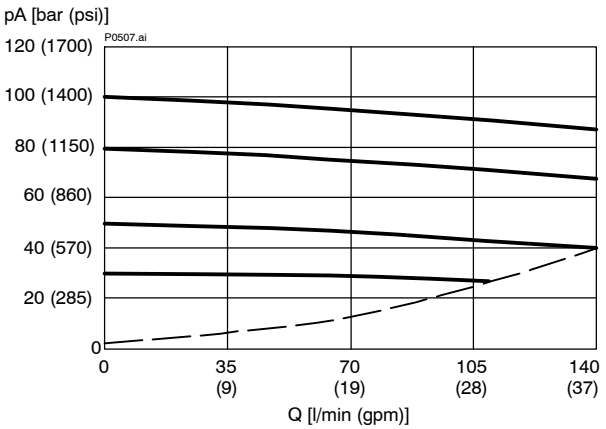
p = f (Q) Pressure-drop characteristic (250 bar)



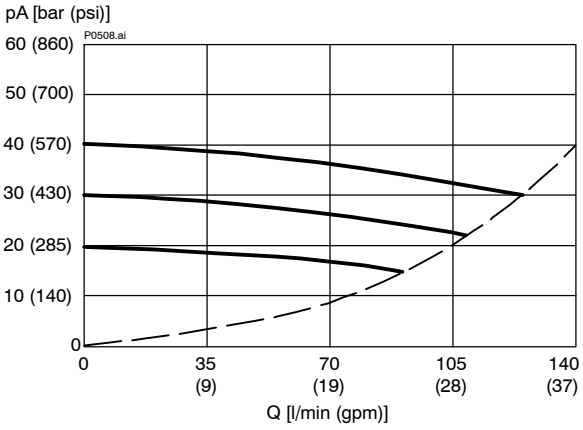
p = f (Q) Pressure-drop characteristic (160 bar)



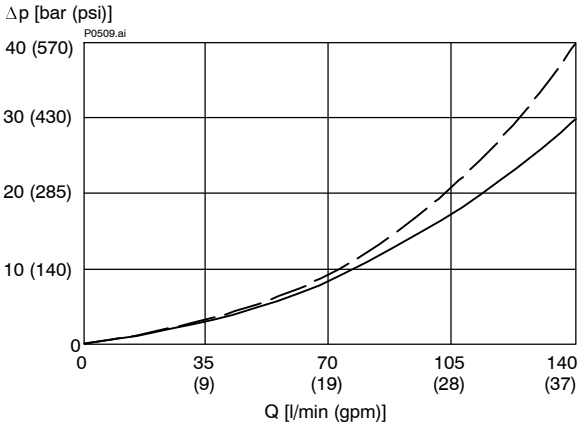
p = f (Q) Pressure-drop characteristic (100 bar)



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



application limit / minimum bypass pressure



– – – – Δp B → A / energised

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

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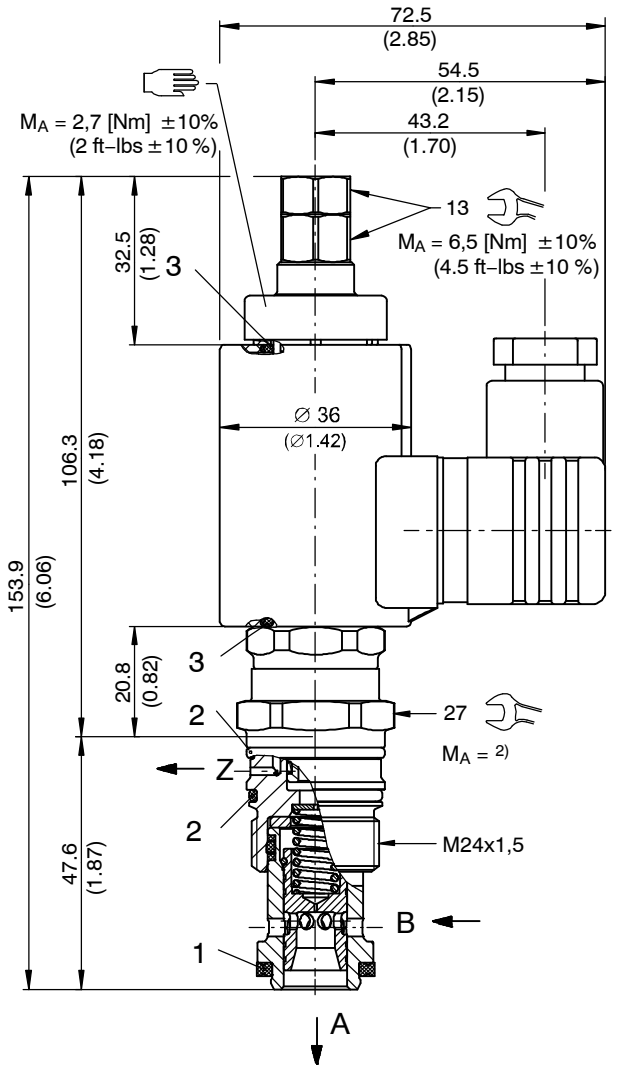
5 Dimensions & sectional view



Seal kit NBR no. DS-261-N 3)

Item	Qty.	Description
1	1	Seal ring ∅ 22,10 / 16,50 x 2,50
2	2	O-ring no. 020 ∅ 21,95 x 1,78 N90
3	2	O-ring 16,00 x 2,00 V83

IMPORTANT!

3) Seal kit with FKM (Viton) seals, no. DS-261-V

Tightening torque M_A 2) ± 10 %

Cavity type	DD
When fitted in steel	65 [Nm] (50 [ft-lbs])
When fitted in aluminium	50 [Nm] (35 [ft-lbs])

6 Installation information

IMPORTANT!
When fitting the cartridges, use the specified tightening torque.

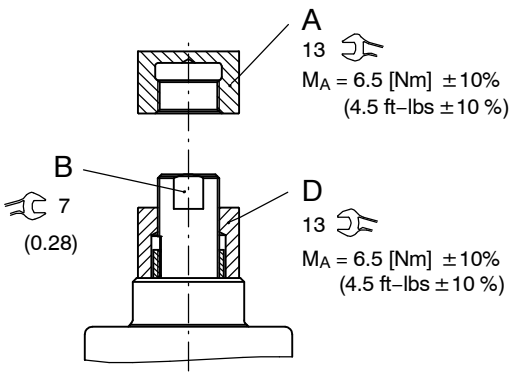
ATTENTION!
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

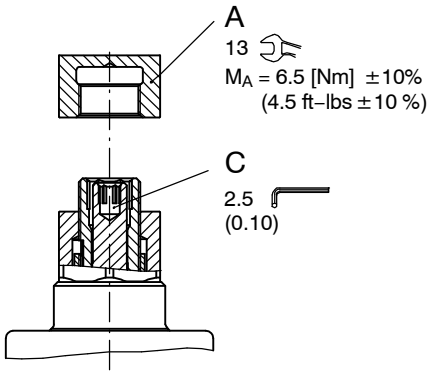
7 Pressure adjustment

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

Nr.	Setting the higher pressure p1 on series WDRVPC… 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 on series WDRVPC… (a second pressure or alternatively, unload) with solenoid deenergised:
1)	Slacken and remove cap nut item A (13 A/F).
2)	With pump running and with the solenoid deenergised, use the adjusting screw item C (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.: 0 … 30 bar for WDRVPC, 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.

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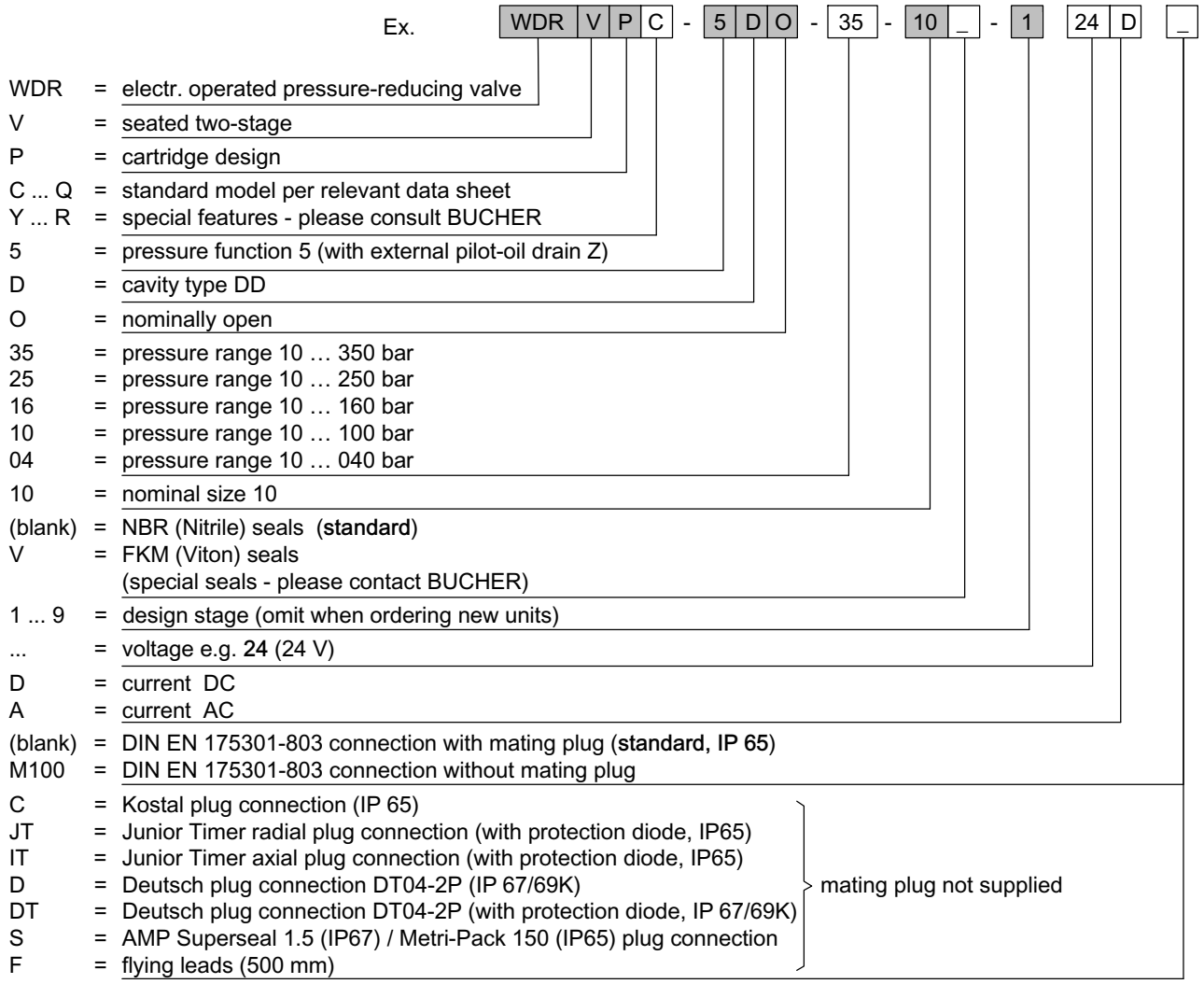
8 Ordering code



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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Classification: 430.305.300.305.320.300