

DATA SHEET - SERVICE MANUAL

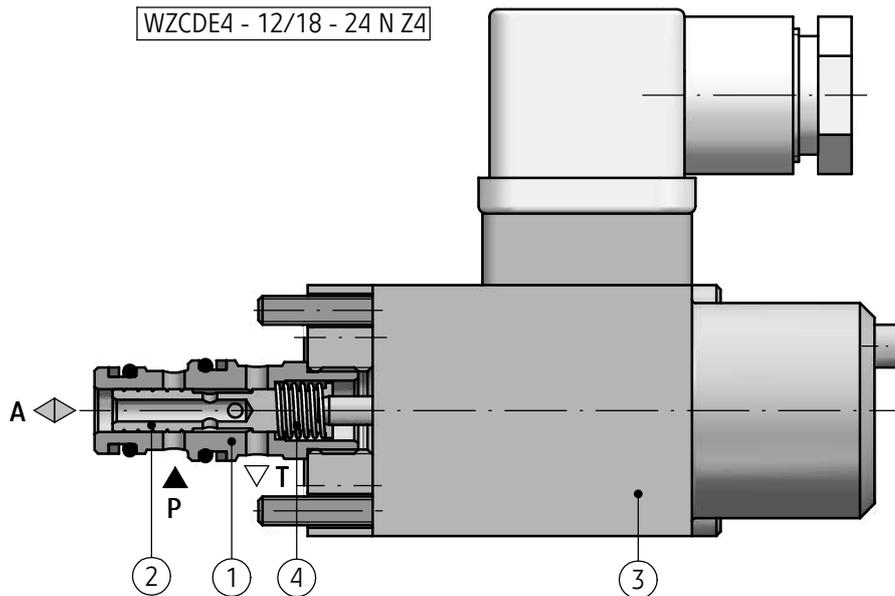
APPLICATION

Proportional pressure reducing valve, electrically operated type **WZCDE4...** is used to reduce the pressure in hydraulic system constantly as the function of current controlling the coil. The valve allows to control the pressure in port **A**, regardless of the fluid pressure supplied (port **P**), port **T** is connected behind the tank. The valve can be used in the systems of pump control, couplings and brakes. It can also be used as a pilot valve in mobile systems. The pressure reducing valve type **WZCDE4...** can be inserted into connections in hydraulic blocks in any working position.



DESCRIPTION OF OPERATION

WZCDE4 - 12/18 - 24 N Z4



Proportional pressure reducing valve type **WZCDE4...** is 3-way direct operated valve controlled by a proportional solenoid (3). The valve basically consist of the sleeve (1), spool (2), proportional solenoid (3) and spring (4). In neutral position of the valve (solenoid coil is de-energized) port **A** is connected to the tank through the port **T**, port **P** is blocked. This position means that the pressure being reduced in port **A** is at zero level. When the control current is increased, the force of the solenoid (3) exceeding spring preload (4) moves the spool (2) in the sleeve (1). As a result, the flow surface between ports **A** and **T** is gradually reduced and simultaneously the flow between ports **P** and **A** is open.

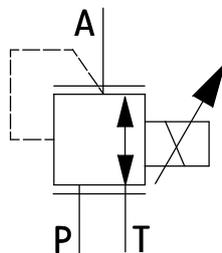
Finally, it affects the pressure increase in port **A**. When the pressure being reduced in port **A** is increased, the greater force supporting the force of solenoid (3) is reached. It allows to exceed hydrodynamic forces affecting the spool (2) until the balance is reached. For any voltage rating on the solenoid coil (3) the balance is reached at different forces. It causes that the pressure being reduced in port **A** is strictly specified by the control current according to the performance curves on page 3. In the case of pressure increase in line **A** above the preset one, the way **A - T** will open and the valve will operate as a pressure relief valve.

TECHNICAL DATA

Hydraulic fluid	mineral oil	
Required filtration	up to 16 µm	
Recommended filtration	up to 10 µm	
Nominal viscosity	37 mm ² /s at temperature 55 °C	
Viscosity range	2,8 up to 328 mm ² /s	
Fluid temperature range (in a tank)	recommended	40 °C up to 55 °C
	max	-20 °C up to +70 °C
Ambient temperature range	- 20 °C up to +50 °C	
Maximum pressure in port P	21 MPa	
Maximum set pressure in port A	1,8 MPa	
Flow range	up to 6 dm³/min	
Insulation	IP 65	
Maximum current per solenoid	0,68 A	
Coil resistance	24,2 Ω at temperature 20 °C	
Electronic regulator - amplifier card (recommended)	type 30RE20 D according to data sheet WK 420 830	
Weight	0,75 kg	

SCHEMES

Graphical symbol of the proportional pressure reducing valve type **WZCDE4...**



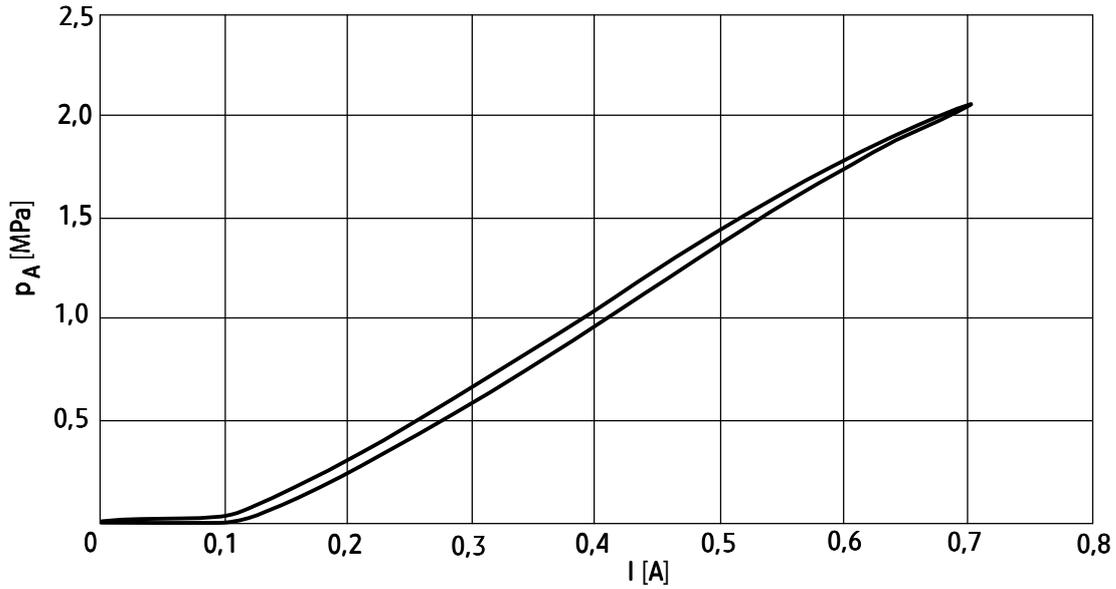
ASSEMBLY AND APPLICATION REQUIREMENTS

1. Due to heating solenoid coils, directional spool valves should be placed in order to eliminate the possibility of incidental touch while using, or, they should be equipped with the coil covers (in accordance with the European standards PN - EN ISO 13732-1 and PN - EN 982).
2. It is forbidden to apply directional spool valve if the plug-in-connector is not properly tightened to the solenoid socket and is not secured by screwing bolt tightly.
3. To ensure the leak-proof connection of the valve into the system, torque value of the bolts while tightening should be 2 Nm. Please, observe the dimensions of the cavity, o-rings and valve working parameters given in this data sheet.

PERFORMANCE CURVES

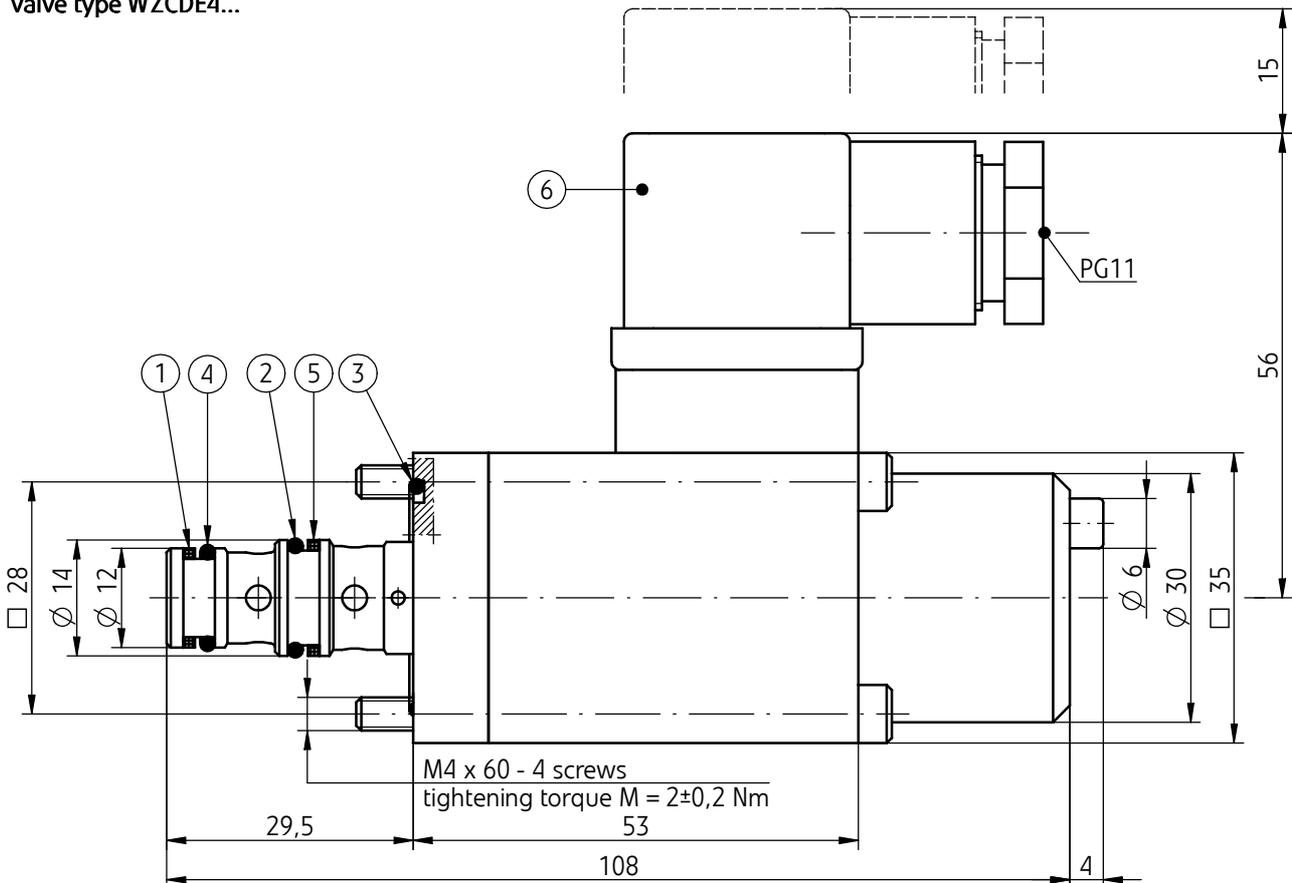
measured at viscosity $\nu = 41 \text{ mm}^2/\text{s}$ and temperature $t = 50^\circ\text{C}$

Performance curves $p_A (I)$



OVERALL AND CONNECTION DIMENSIONS

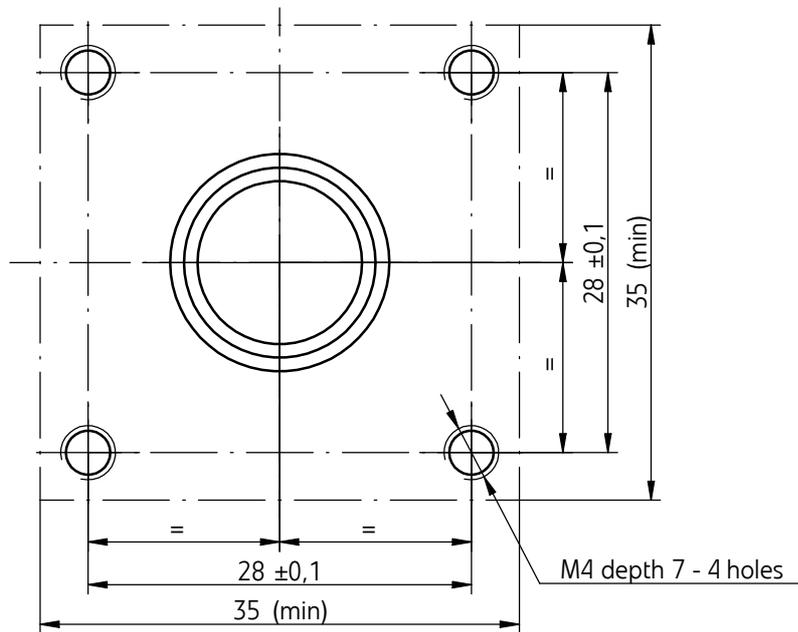
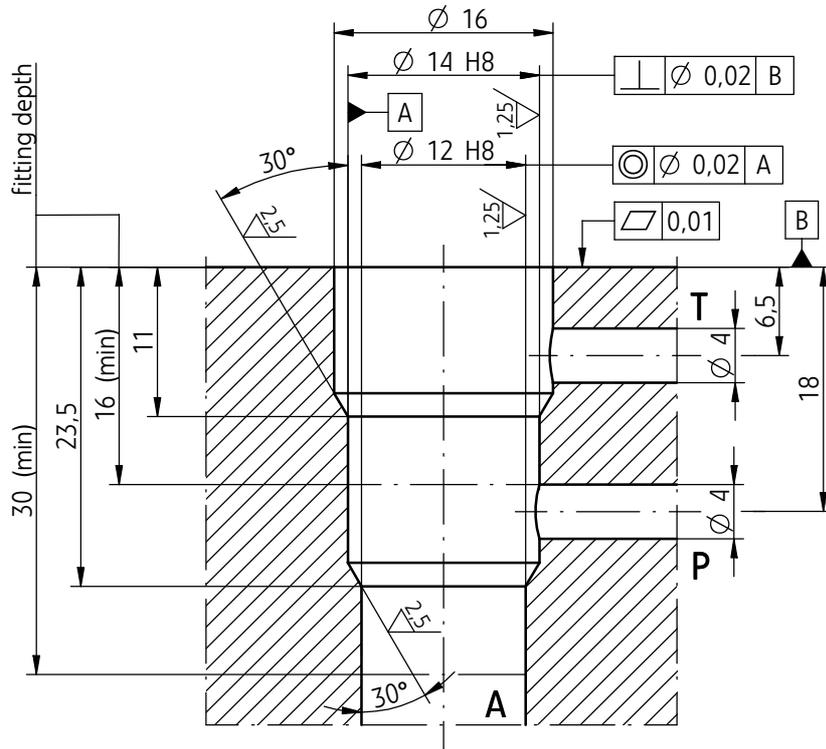
valve type WZCDE4...



- 1 - Seal o-ring o-ring 9,25 x 1,78
- 2 - Seal o-ring o-ring 10,82 x 1,78
- 3 - Seal o-ring o-ring 25,12 x 1,78
- 4 - Back-up ring 12 x 1,3 x 1,4
- 5 - Back-up ring 14 x 1,3 x 1,4
- 6 - Plug-in-connector type ISO 4400 (DIN 43650 -A)

OVERALL AND CONNECTION DIMENSIONS

dimensions of cavity



HOW TO ORDER

WZCDE	4	-	/	18	-	24	N	Z4		★
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Nominal size (NS)

NS4 = **4**

Series number

(12-19) - connection and installation dimensions unchanged = 1X
series 12 = **12**

Maximum pressure setting in port A

1,8 MPa = **18**

Solenoid coil

solenoid coil for supply voltage U = 24V DC, current I_{max} = 0,68 A = **24**

Manual override

solenoid with manual override = **N**

Electrical connection

plug-in-connector ISO 4400 (DIN 43650 - A) = **Z4**

Sealing

NBR (dla cieczy na bazie olejów mineralnych) = **no designation**

FKM (dla cieczy na bazie estrów fosforanowych) = **V**

Further requirements in clear text (to be agreed with the manufacturer)

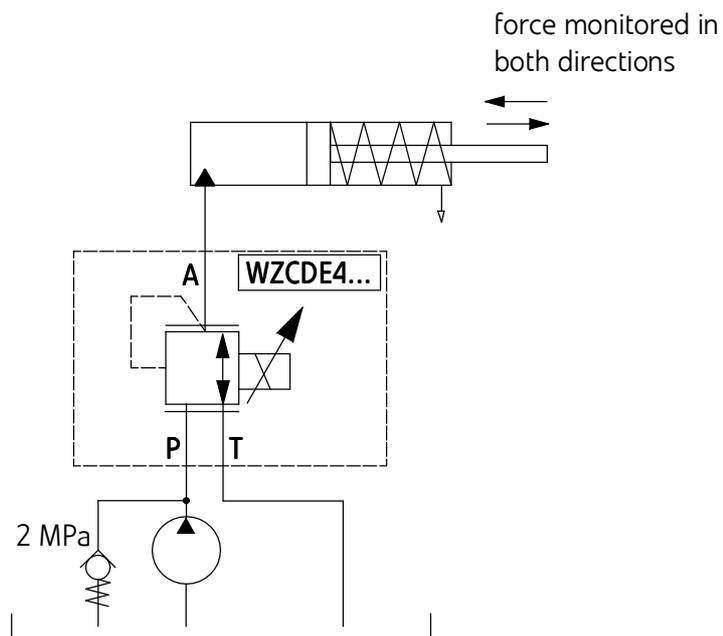
NOTES:

The valve should be ordered according to the above coding.

The symbols in bold are preferred versions available in short delivery time.

Example coding: WZCDE4 -12/18 - 24 N Z4

EXAMPLE OF APPLICATION IN HYDRAULIC SYSTEM



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