PONAR wadowice	Proportional pressure reducing valve type 3WZCDE6			WK 423 210
	NS6	up to 10 MPa	up to 15 dm³/min	02.2017

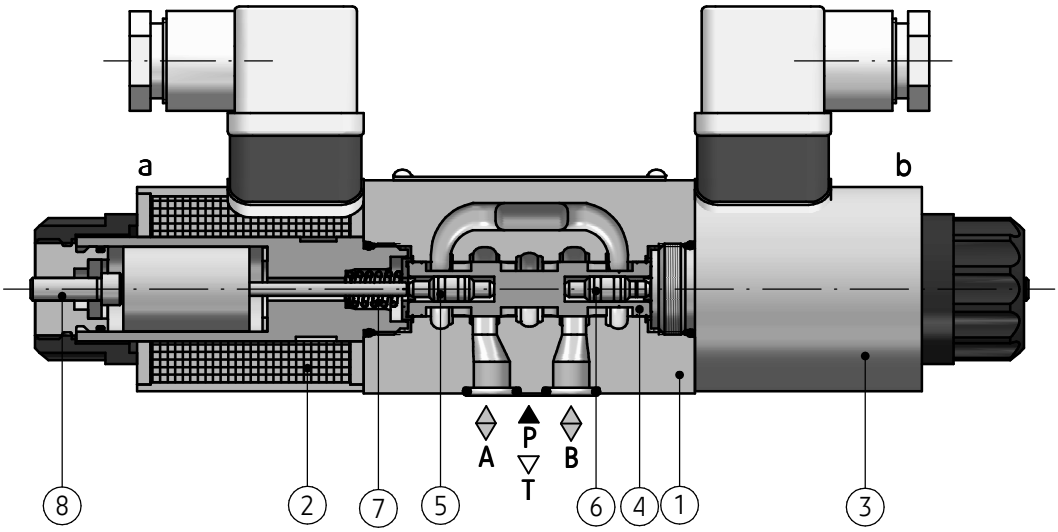
DATA SHEET - OPERATION MANUAL

APPLICATION

3-way electrically controlled, proportional pressure reducing valve type **3WZCDE6**... is used for reducing pressure in a hydraulic system, in a continuous way, as a function of current controlling the coil of an solenoid. The valve makes it possible to control pressure in ports **A** and **B**, independently from value of pressure of supplying stream (channel **P**), channel **T** is connected with the tank. It can be used in control systems of pumps, couplings, brakes. The pressure reducing valve type **3WZCDE6**... is intended for mounting in proportional directional control valves type **USAP16** as an initial valve.

DESCRIPTION OF OPERATION

3WZCDE6 - 02/25 N12 Z4



Proportional pressure reducing valve type **3WZCDE6**... is a 3-way, direct-operated valve. The main components of the valve in **3-position** version are following: valve body (1), proportional solenoids (2) and (3), spool (4) with measuring pistons (5) and (6), centering springs (7). In neutral position (solenoid coil is de-energized), the spool (4) is kept in the middle position by the centering springs (7). Ports **A** and **B** are connected with the tank by channel **T**, port **P** is shut-off. In this position, the reduced pressure in ports **A** and **B** has zero value. After switching on the controlling current, e.g. an solenoid (2) the measuring piston (5) and the spool (4) is shifted in the direction of the solenoid (3). This results in opening the flow between ports **P** to **B** and **A** to **T**. At the same time, the pressure produced in the port **B** through the surface of the measuring piston (6) affects the spool (4) in the opposite direction to the force of the solenoid (2). If the pressure produced in the port **B** exceeds the valve corresponding to the value of the current controlling the solenoid (2) the spool (4) will shift and the flow opens from port **B** to **T** until the moment of achieving balance, corresponding to the set value of current controlling the solenoid (2). In this way, for each value of current of the solenoid (2) coil a state of balance at different values of forces is created, which causes that the value of the reduced pressure in port **B** is proportional to the value of controlling current. In the absence of power supply, the spool (4) can be shifted manually by using the buttons (8). In **2-position** version (with 1 solenoid from side **a** or **b**) the operation of valve is analogical, but the reduction of pressure occurs only in one of the ports **A** or **B**.

TECHNICAL DATA

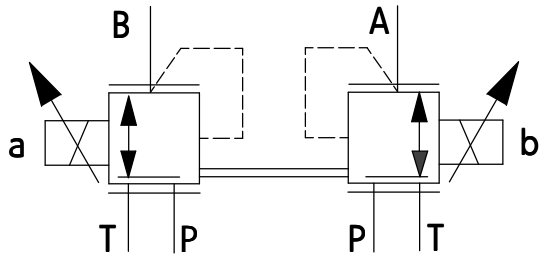
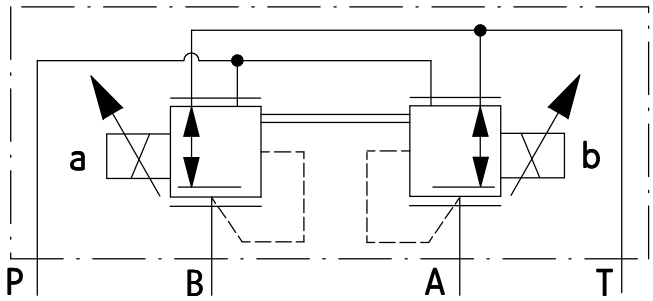
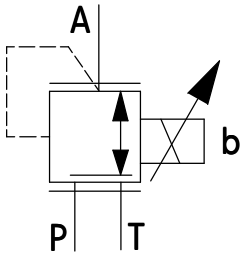
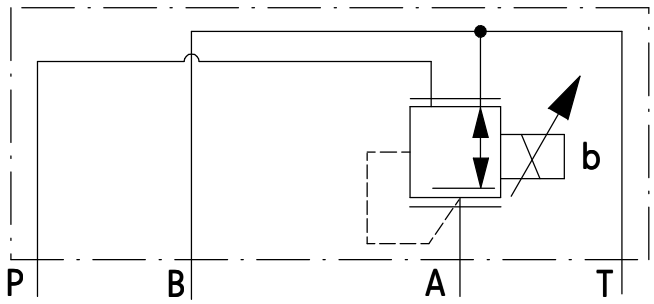
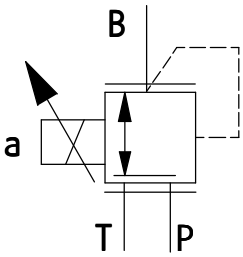
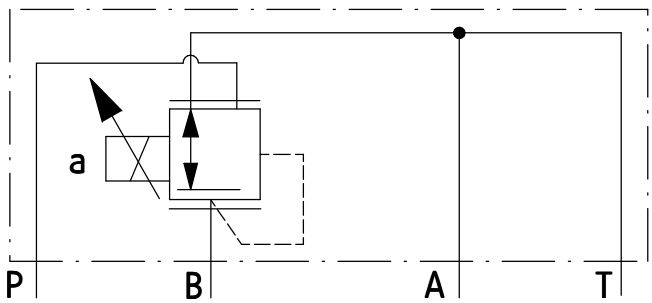
Hydraulic fluid	mineral oil		
Required fluid cleanliness class	**ISO 4406 class 20/18/15**		
Nominal fluid viscosity	37 mm ^{2}/s at temperature 55 ^{o}C		
Viscosity range	2,8 up to 380 mm ^{2}/s		
Fluid temperature range (in a tank)	recommended	40 ^{o}C up to 55 ^{o}C	
	max	-20 ^{o}C up to +70 ^{o}C	
Ambient temperature range	- 20 ^{o}C up to +50 ^{o}C		
Working pressure range	port **P**	**3 up to 10 MPa**	
	port **T**	**0 up to 3 MPa**	
Range of reduced pressure	ports: **A**, **B**	**up to 2,5 MPa**	
Maximum flow rate	**15 dm^3/min** at **Δp = 2 MPa**		
Hysteresis (for PWM 150Hz)	< 6% Q_{max}		
Repeatability of work	< ± 3% Q_{max}		
Working position	optional		
Working cycle	100 %		
Degree of protection	**IP 65**		
Valve weight	version with 1 solenoid - 1,5 kg		
	version with 2 solenoids - 2,1 kg		
Maximum current of the solenoid coil	**1,5 A**		**0,8 A**
Resistance of cold solenoid coil (20 C) ^{o}	5,4 Ω		19,5 Ω
Electronic regulator (delivered on separate order)	**30RE20** acc. to data sheet **WK 495 773** **30RE20D** acc. to data sheet **WK 420 830**		–
	30RC20D acc. to data sheet **WK 430 340** (when supplying stabilized voltage **24V DC** set the maximum value of current **I_{max}**) **MAP2** acc. to data sheet available at **PONAR WADOWICE** website - electronic joystick (when supplying stabilized voltage **24V DC** set the maximum value of current **I_{max}**)		

INSTALLATION AND OPERATION REQUIREMENTS

1. Only fully functional and operational valve can be used.
2. During operation one must keep proper viscosity of the hydraulic fluid recommended in this Data Sheet – Operation Manual.
3. In order to provide failure-free and safe working of the valve, one should systematically check:
   - condition of electrical connection
   - proper working of the valve
   - cleanliness of the hydraulic fluid
4. Due to heating of the solenoid coil and the valve body to high temperature, the valve should be placed in such a way as to eliminate a possibility of accidental contact with the coil or the valve body during operation or one should provide suitable covers compliant with the requirements of European standards: PN - EN ISO 13732 - 1 and PN - EN 4413.
5. In order to provide tightness of the valve connection to the hydraulic system, one should keep the dimensions of the sealing rings, tightening torques and valve operation parameters specified in this Data Sheet - Operation Manual.
6. A person operating the valve must be thoroughly familiar with the content of this Data Sheet - Operation Manual.

DIAGRAMS

Graphical symbols of the proportional pressure reducing valve type **3WZCDE6...**

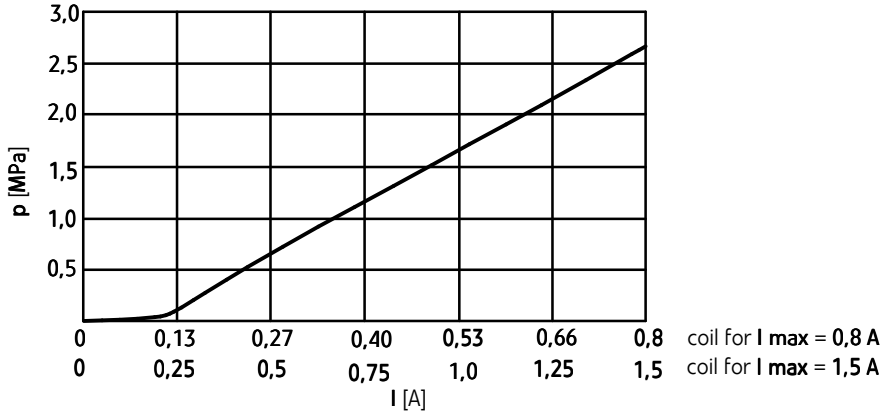
simplified symbol	detailed symbol
version 3WZCDE6.../**...**	
	
version 3WZCDE6.../...**A**...	
	
version 3WZCDE6.../...**B**...	
	

PERFORMANCE CURVES

measured at viscosity ν = 41 mm^2/s and temperature t = 50°C

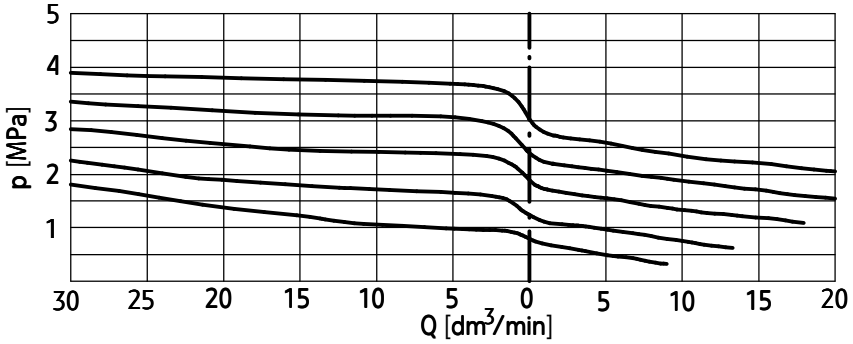
Dependence of pressure from the current of the solenoid coil

characteristic curve of pressure in relation to the current powering the solenoid coil **p (I)**

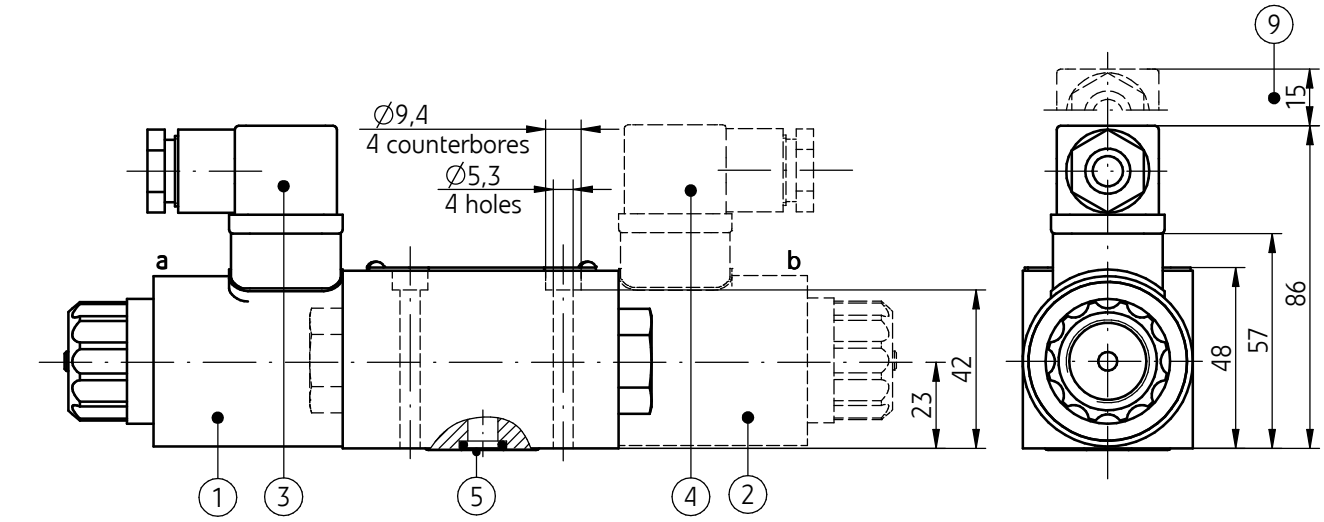


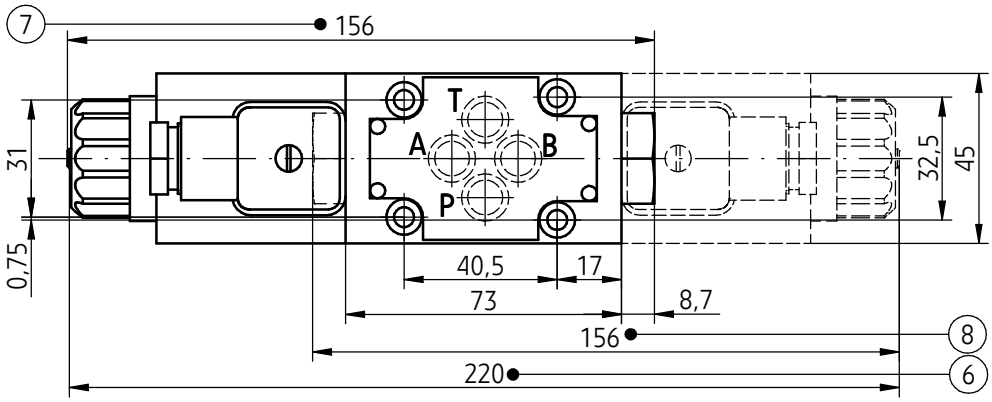
Dependence of pressure from the flow rate

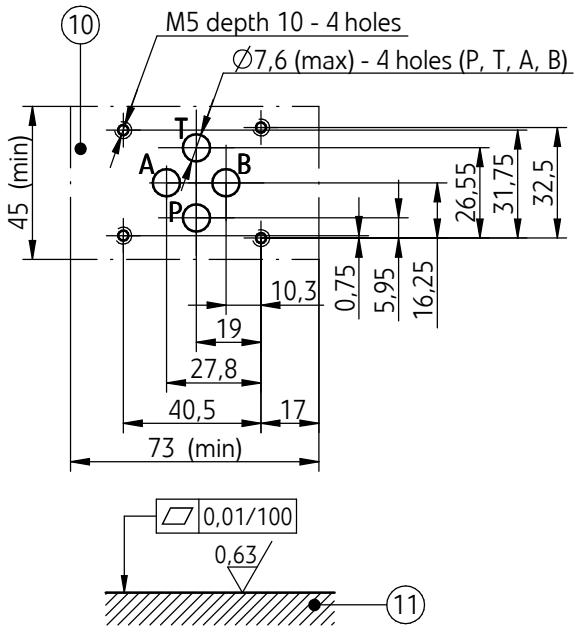
characteristic curves of pressure in relation to flow rate **p (Q)**;
flow direction **A (B) → T | P → A (B)**



OVERALL AND CONNECTION DIMENSIONS







1 - Solenoid from side **a**
2 - Solenoid from side **b**
3 - Plug-in connector on side **a** - type **ISO 4400** (DIN 43650 - A)
4 - Plug-in connector on side **b** - type **ISO 4400** (DIN 43650 - A)
5 - Sealing ring **o-ring 9,2 x 1,8** - pcs 4/set (**P**, **T**, **A**, **B**)
6 - Dimension of valve with **2 solenoids** - on side **a**, **b** (version 3WZCDE6.../**...**)
7 - Dimension of valve with **1 solenoid** - on side **a** (version 3WZCDE6.../...**B**...)
8 - Dimension of valve with **1 solenoid** - on side **b** (version 3WZCDE6.../...**A**...)
9 - Distance for disasembling the plug-in connectors - item 3, 4
10 - Porting pattern of the subplate surface compliant with **ISO 4401** standard designation **ISO 4401-03**-02-0-94 (CETOP 03); fixing screws **M5 x 50 -10.9** acc. to **PN -EN ISO 4762** pcs 4/set; tightening torque **Md = 9 Nm**
11 - Subplate surface required

HOW TO ORDER

3	WZCDE	6	–	/	25		N		Z4		★

Number of flow ways
3-way = **3**

Nominal size (NS)
NS6 = **6**

Series number
(00 - 09) - connection and installation dimensions unchanged = 0X
series 02 = **02**

Reduced pressure range
up to 2,5 MPa = **25**

Hydraulic diagram
pressure reduction in ports A and B = **no designation**
pressure reduction in port A = **A**
pressure reduction in port B = **B**

Manual override
solenoids with manual override = **N**

Solenoid coil
coil for max current I max = 1,5 A = **12**
coil for max current I max = 0,8 A = 24

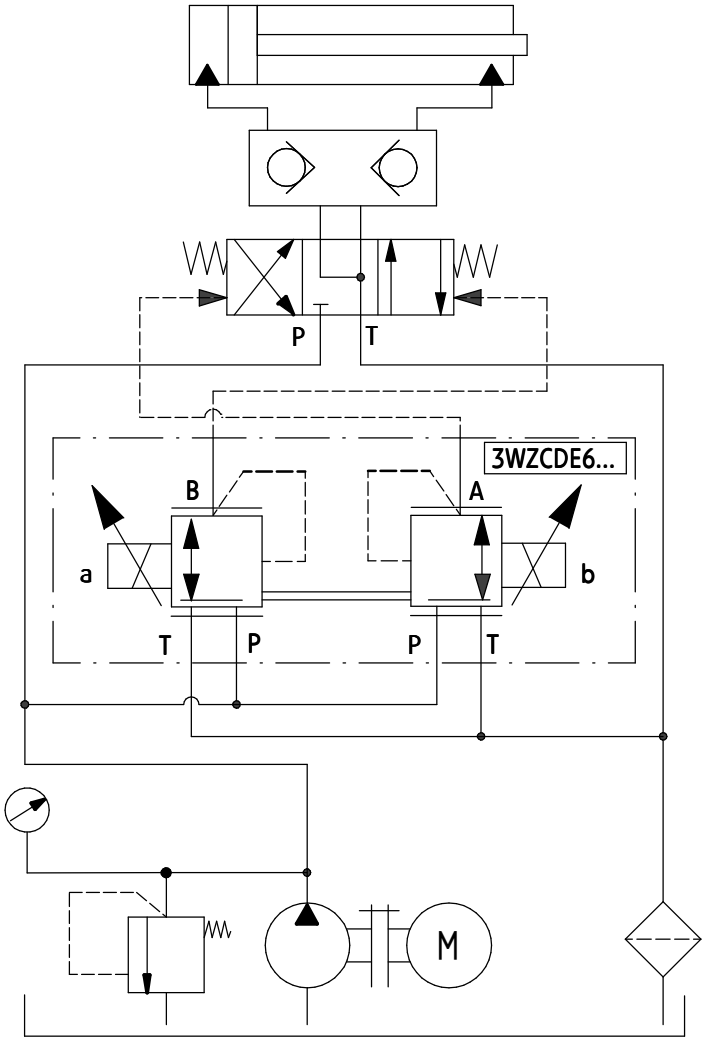
Electrical connection
plug-in connector type ISO 4400 (DIN 43650 - A) **without LED** = **Z4**

Sealing
NBR (for fluids on mineral oil base) = **no designation**
FKM (for fluids on phosphate ester base) = V

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

NOTES:
The valve should be ordered according to the above coding.
The symbols in bold are the preferred versions in short delivery time.
Coding example: 3WZCDE6 - 02/25 N 12 Z4

EXAMPLE OF APPLICATION IN A HYDRAULIC SYSTEM



SUBPLATES AND FIXING SCREWS

Subplates must be ordered according to catalogue sheet **WK 496 480**. Subplate symbols:
G 341/01 - threaded connections G 1/4
G 342/01 - threaded connections **G 3/8**
G 502/01 - threaded connections G 1/2
G 341/02 - threaded connections M14 x 1,5
G 342/02 - threaded connections M16 x 1,5

The subplate symbol in bold is the preferred version available in short delivery time.

Subplates and fixing screws **M5 x 50 - 10,9** according to **PN - EN ISO 4762** - pcs 4/set must be ordered separately.
Tightening torque **Md = 9 Nm**

PONAR Wadowice S.A.
ul. Wojska Polskiego 29
34-100 Wadowice
tel. +48 33 488 21 00
fax.+48 33 488 21 03
www.ponar-wadowice.pl