

Proportional valve USEB 10

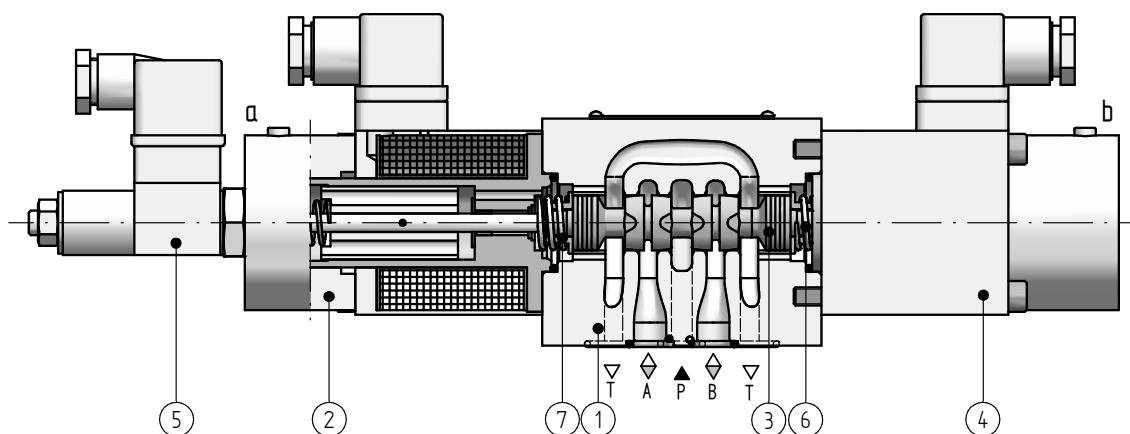
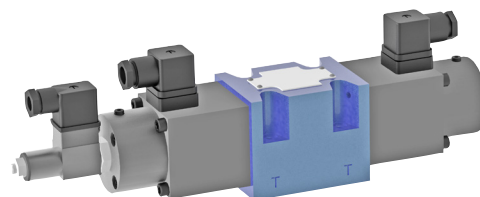
NS 10 | p_{max} 35 MPa | Q_{max} 64 dm³/min | WK 420 560



DATA SHEET - OPERATION MANUAL

APPLICATION

Proportional directional valve type USEB10... is used to control the direction and speed of movement of an actuator. Flow rate of hydraulic oil directed to the actuator is adjusted by change of electric current supplying the solenoid coil.



DESCRIPTION OF OPERATION

The proportional directional valve type USEB 10 consists of the housing **1**, solenoids **2** and **4**, inductive offset detector **3**, spool **5**, springs **6** and **7**. Electric regulator (**30 RE ...**) can be included with the valve. The regulator is applied to control proportional solenoids and receive the signals from offset detector. The proportional solenoid **2** or **4** pushes the spool from its neutral position. The neutral position is held by the springs **6** and **7**. The inductive offset detector has double stroke. Its range allows to measure the offset of the spool from neutral position to the right or left. The offset of the spool

5 is transmitted electrically as initial data. It is held in the signal sent by the electronic regulator in form of current with certain intensity that is changed by the solenoid **2** or **4** into force pushing the spool **5** against spring **6** or **7**. Simultaneously the offset detector **3** determines actual position of the spool and inform of electrical signals sends as feedback to the electronic regulator. The both signals: initial data and actual value are compared in the electronic regulator, which sends a new signal correcting the position of the spool **5** in order to adjust it in conforming with the initial signal.

TECHNICAL DATA

hydraulic fluid required fluid cleanliness class	mineral oil ISO 4406 class 20/18/15
nominal fluid viscosity	37 mm ² /s w temperature 55 °C
viscosity range	2,8 ÷ 380 mm ² /s
fluid temperature range (in the tank)	rec: 40 ÷ 55°C; max.: -20 ÷ 70 °C
ambient temperature range	-20 ÷ 50 °C
max. working pressure	35 MPa (ports P, A, B); 21 MPa (port T)
hysteresis	<1%
repeatability	<1%
sensitivity	≤ 0,5% of nominal signal
hydr. zero shift	0,2%/ °C
working position	any position

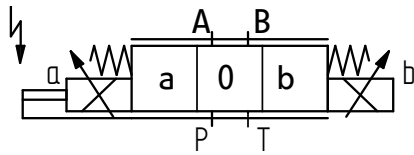
weight	with 2 solenoids	7,65 kg
	with 1 solenoids	5,65 kg
nom. power of the solenoid	22,5 W	
coil resistance	10 Ω (for cold solenoid 20 °C)	
	14 Ω (for max heated solenoid)	
inductive switch stroke	± 4,5 mm linear	
linearity tolerance	1%	
resistance of sensor coil	coil I	56 Ω
	coil II	56 Ω
	coil III	112 Ω
electronic controllers	for valve with 2 solenoids	32RE21 acc. to WK 495774
	for valve with 1 solenoid	32RE11 acc. to WK 495772

assembly and operation requirements at: www.operating-conditions.ponar.pl

HYDRAULIC DIAGRAMS

graphical symbols of 3-position spool valves

versions USEB10



NOTES:

for spools **E1** i **W1** flows are:

$P \rightarrow A: Q_{max}$ $B \rightarrow T: 0,5 Q_{max}$

$P \rightarrow B: 0,5 Q_{max}$ $A \rightarrow T: Q_{max}$

for spools **E2** i **W2** flows are:

$P \rightarrow A: 0,5 Q_{max}$ $B \rightarrow T: Q_{max}$

$P \rightarrow B: Q_{max}$ $A \rightarrow T: 0,5 Q_{max}$

for spools **E3** i **W3** flows are:

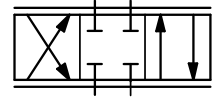
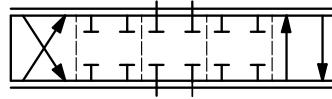
$P \rightarrow A: Q_{max}$ $B \rightarrow T: \text{closed}$

$P \rightarrow B: Q_{max}$ $A \rightarrow T: Q_{max}$

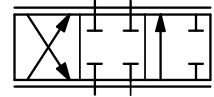
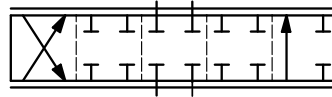
positions: working and interim

working

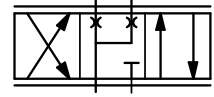
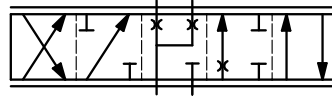
E, E1, E2



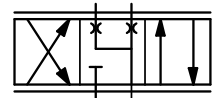
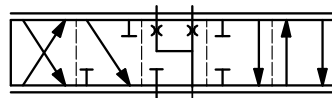
E3



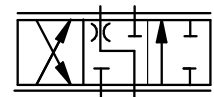
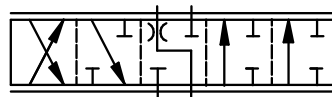
M



W, W1, W2

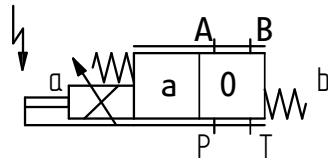


W3



graphical symbols of 2-position spool valves

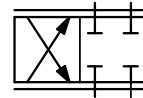
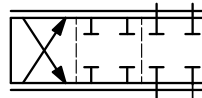
versions USEB10...A...



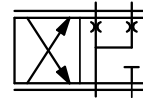
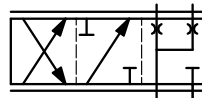
positions: working and interim

working

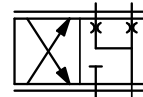
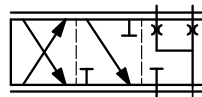
EA



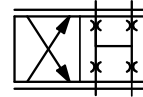
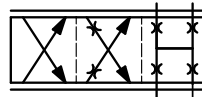
MA



WA

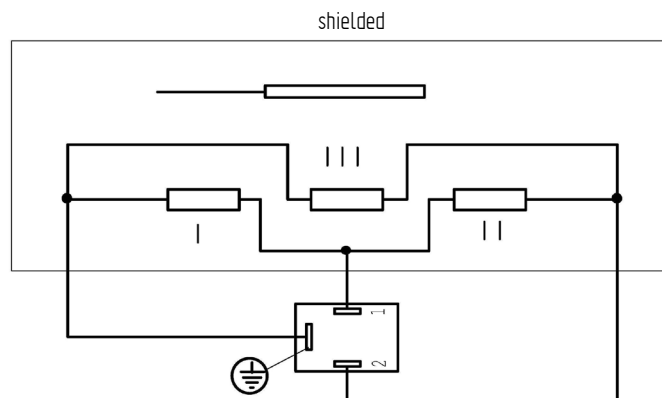


VA

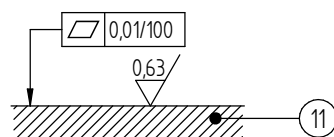
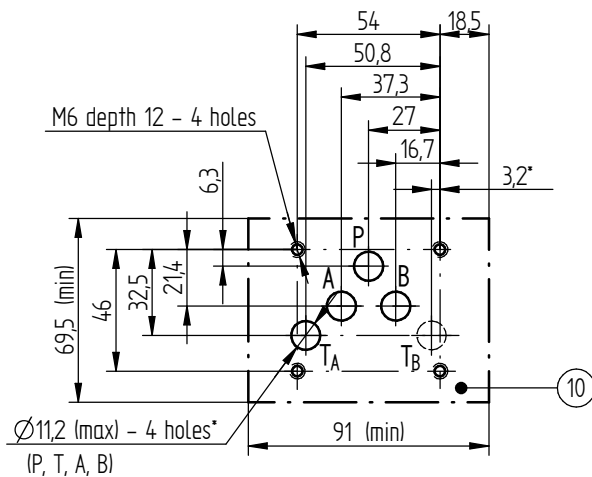
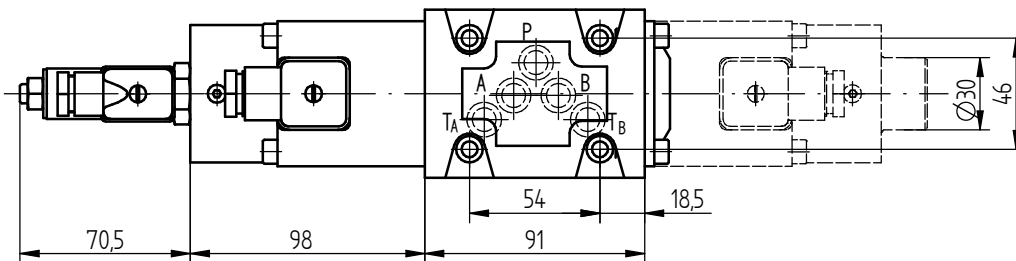
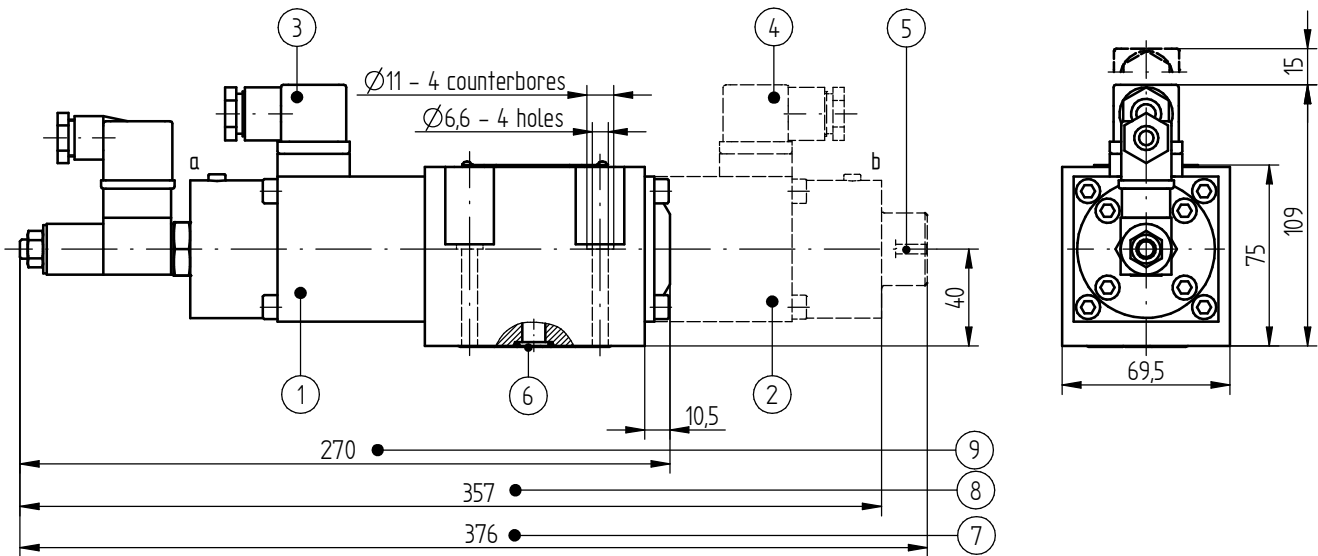


DIAGRAMS

diagram of the sensor coil connections



OVERALL AND CONNECTION DIMENSIONS



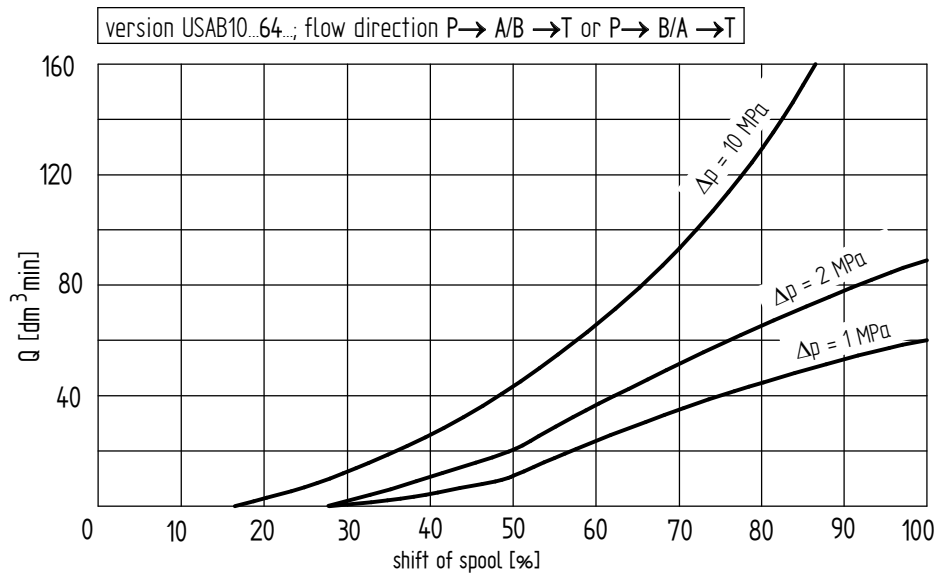
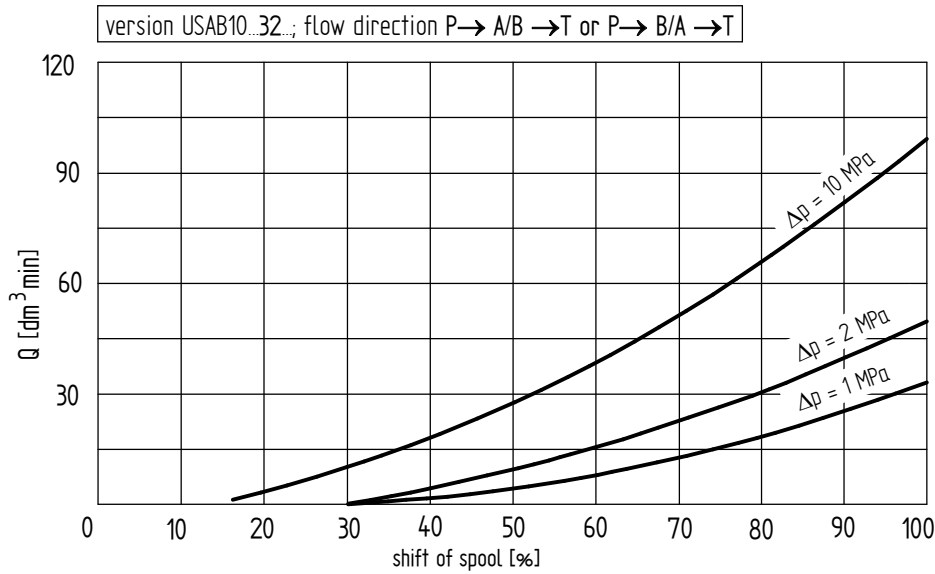
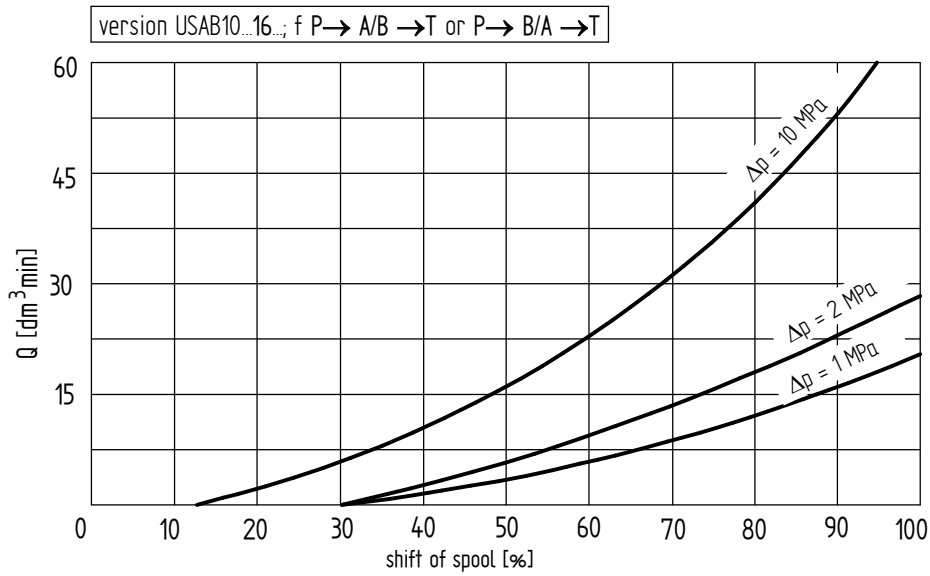
1. solenoid on a side
2. solenoid on b side
3. connector on a side - type ISO 4400 (DIN 43650)
4. connector on b side - type ISO 4400 (DIN 43650)
5. manual override
6. o-ring 12×2 - 5 pcs/set (P,T , A, B)
7. dimension of a **3-position** valve with **2 solenoids** - on sides **a, b** - **with manual override** - only on **b** side(port B) (spools: **E, E1, E2, E3, M, W, W1, W2, W3, V** - see page 2)
8. valve dimension as in 7 - **without manual override**
9. dimension of a **2-position** valve with **z 1 solenoid** on side **a** (spools: **EA, MA, WA, VA** - see page 2)
10. porting pattern of the subplate compliant with **ISO 4401** designation **ISO 4401-05-04-0-94 (CETOP 05)**
11. required surface quality of the valve contact surface

NOTES:

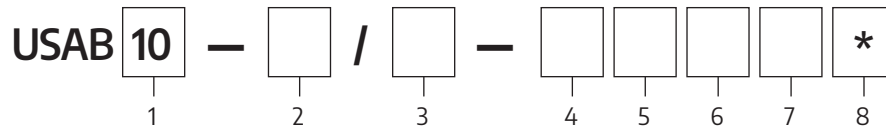
(*) - port T_B - optional

CHARAKTERYSTYKI

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



HOW TO ORDER



1 nominal size (WN)		4 nominal flow (at $\Delta p = 1\text{MPa}$)		7 sealing
NS10 =	10	16 dm ³ /min =	16	NBR (for fluids on mineral oil base) = Ø
2 series number		32 dm ³ /min =	32	FKM (for fluids on phosphate ester base) = V
series 32 =	3X	64 dm ³ /min =	64	
series 30÷39 connection and installation dimensions unchanged		6 manual override		8 further requirements = * (agreed upon with the Manufacturer)
3 spool symbols		without manual override =	Ø	
spool symbols -	see page 2	with manual override =	N	
		* available only in 3-position version for electromagnet from b site (port B)		

Ø indicates that the box should be left blank.
 The **symbols in bold** are the preferred versions available in short delivery time.
 Coding example **USEB10-3X/E-16**

SUBPLATES AND MOUNTING SCREWS

Subplates must be ordered according to data sheet WK 496 480:
G 67/01 - threaded connection G 1/2
 G 534/01 - threaded connection G 3/4

Mounting screws for the directional spool valve:
M6 × 50 - 10,9 acc. to **PN-EN ISO 4762 (PN/M-82302)**
 4 pcs/set delivered on separate order
 tightening torque of the screws **M_d = 15 Nm**.

CONTACT

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