

DATA SHEET - SERVICE MANUAL

APPLICATION

Pressure sequence valve type **UZK...** is designated for sequence switching of parts of a hydraulic system (connecting circuits when set pressure is reached). Version **UZK...W...** of the valve is mainly used as counterbalance valve. In version **UZK...Y...** is used as sequence valve (line B does not affect the setting). Versions **UZK...Z...** and **UZK...X...** can be supplied with control pressure from other circuit. Because of this these versions can be used for unloading function.

The valve is complied with the regulations of directive 2006/95/WE for the following voltages:

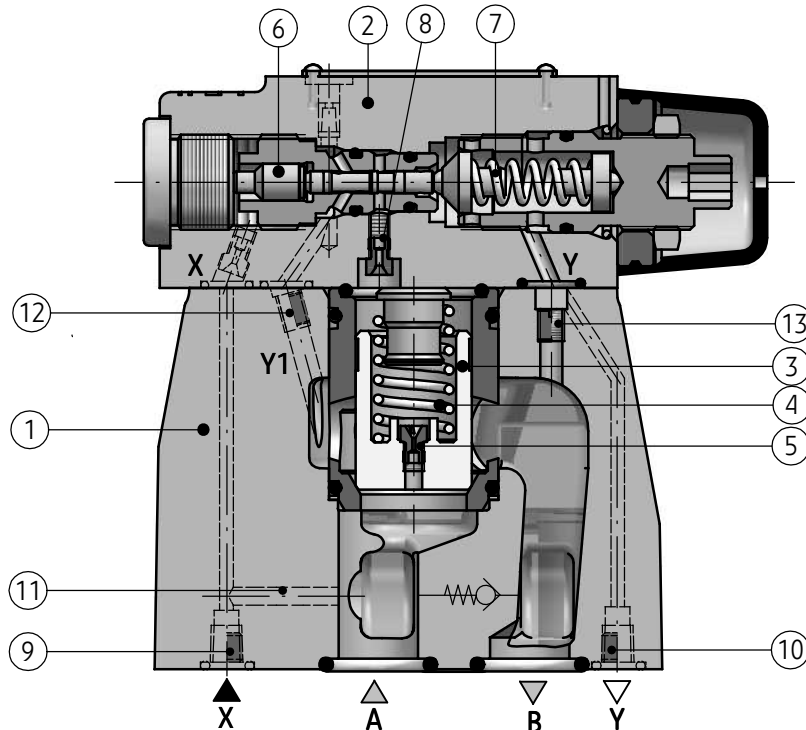
- 50 – 250 V for AC
- 75 – 250 V for DC



DESCRIPTION OF OPERATION

versions: UZK.../...W...; UZK.../...X...; UZK.../...Y...

UZKP10 - 52/...W... UZKP10 - 52/...X... UZKP10 - 52/...Y...



Pilot operated pressure sequence valve type **UZK...** comprises of the main valve (1) and the pilot valve (2). Pressure in line **A** acts both sides of the main spool (3) and the jet (5). The

spring (4) holds the main spool and closes flow from line **A** to **B**. Simultaneously pressure via line **X** affects the pilot spool (6), the spring (7) tensioned according to pressure setting holds the pilot spool in closed position.

DESCRIPTION OF OPERATION

versions: UZK.../...W...; UZK.../...X...; UZK.../...Y...

When set pressure is exceeded, the pilot spool (6) moves towards the pressure adjustment. When using the valve as pilot or sequence valve it allows fluid to drain from spring chamber of the main spool (3) via jet and control line (8), line Y1 to line B. Fluid flow via the jet (5) causes pressure difference between the lower and the upper side of the main spool (3). The main spool (3) moves upward. Connection from A to B is open and system pressure remains unchanged. The function of the valve in a system depends on the way of connection of control pressure.

In version UZK.../...W... with internal pilot supply and internal pilot drain lines (11), (12), (13) are open;

lines (9), (10) are plugged – the valve has function of counterbalance valve in a system because pressure in line B affects the adjustment and the other side of pilot spool.

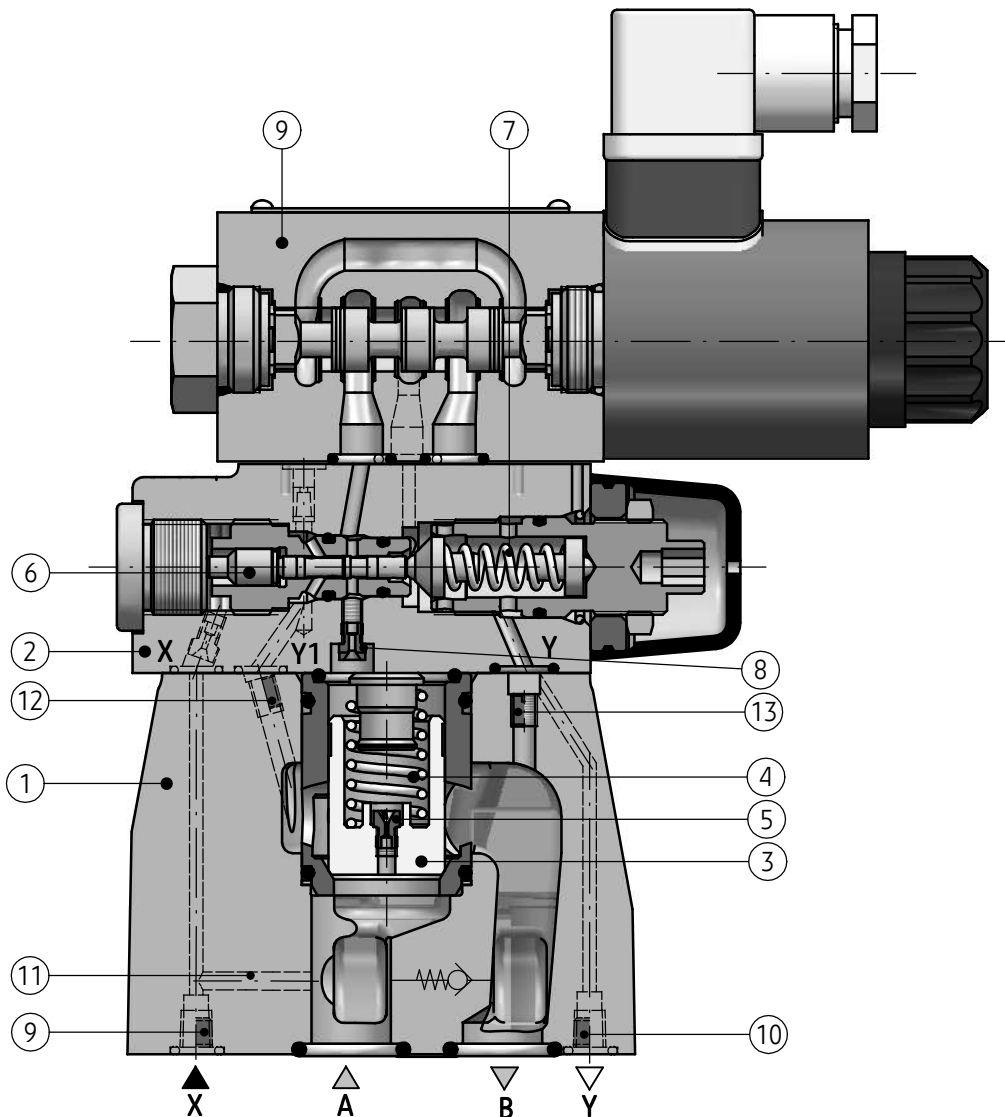
In version UZK.../...X... with external pilot supply and internal pilot drain to line B lines (9), (11), (12), (13) are open; line (10) is plugged.

In version UZK.../...Y... pilot valve is supplied internally, leakage is drained without pressure via separated line Y, supply oil is drained via line (12) to line B. Lines (10), (11), (12), (13) are open; line (9) is plugged – valve has function of sequence valve in a system.

DESCRIPTION OF OPERATION

versions: UZK.../...W...E... UZK.../...X...E... UZK.../...Y...E...

UZKP10 - 52/...W...E... UZKP10 - 52/...X...E... UZKP10 - 52/...Y...E...

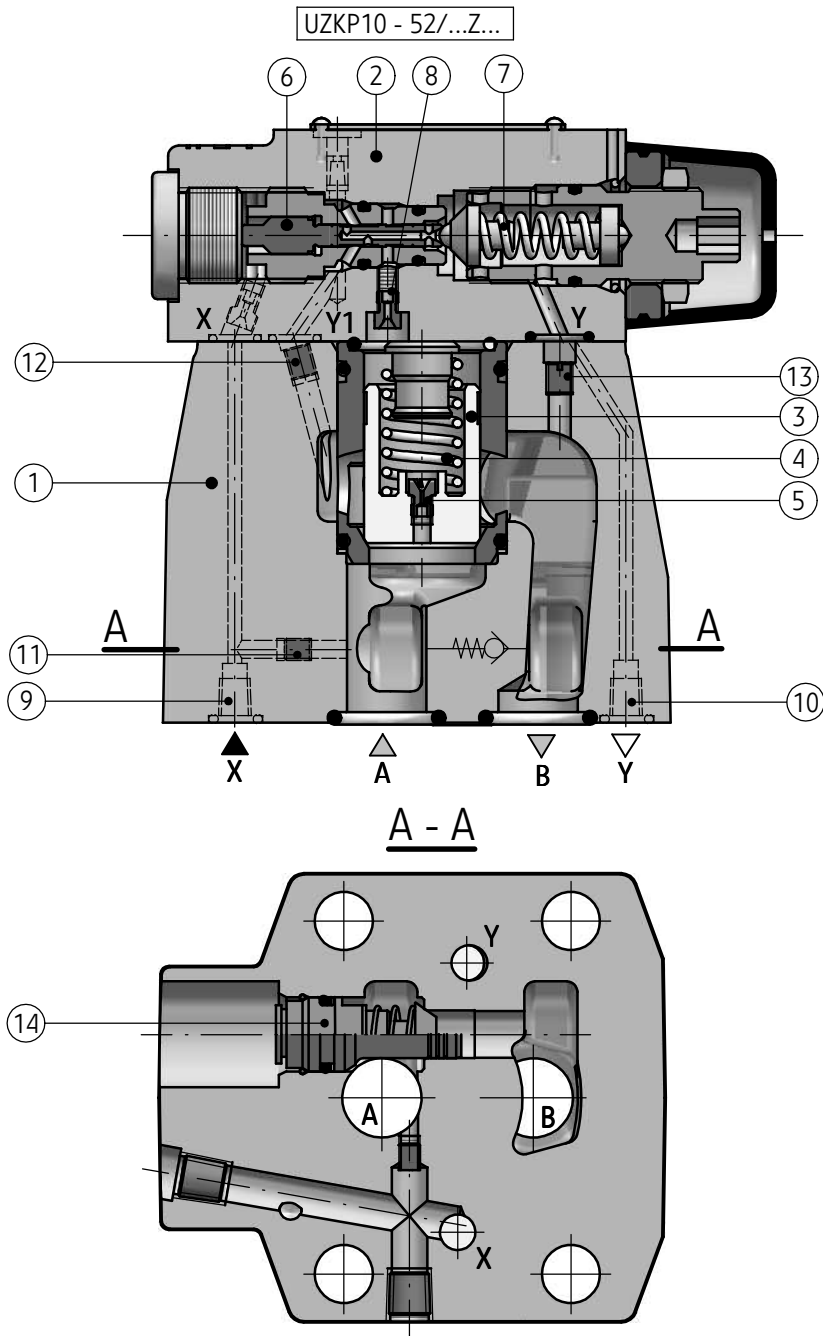


The pressure sequence valve type UZK... is also available in version with electrical pressure unloading. Directional valve (9) in neutral position shuts off the drain line before the pilot spool. The valve functions as described before. After switching directional valve (9) the chamber of the

spring of the main spool (3) is connected with a tank. The main spool (3) unloaded from the top side moves opening connection from line A to B. The valve is available in two versions: opened and closed in de-energized position.

DESCRIPTION OF OPERATION

version UZK.../...Z...



In version UZK.../...Z... the pilot valve is supplied via separated line **X**, leakage is drained without pressure via separated line **Y** - lines (9), (10) are open; lines (11), (12), (13) are plugged. Control pressure is supplied to chamber of the pilot spool (6) via separated line **X** (9). Simultaneously pressure in line **A** acts via the jet (5) on the side of the main spool (3) loaded by spring (4). When pressure set by adjustment of the pilot valve (2) is exceeded in line **X** (9), the pilot spool (6) moves rightward against the spring (7). As a result of this oil flows from the side of the main spool (3) loaded by

spring (4), via the jet (8) and a hole in the pilot spool (6) to the chamber of the spring (7) in the pilot valve (2). Fluid flow via the jet (5) causes pressure difference between the lower and the upper side of the main spool (3). The main spool (3) moves upward. Connection from **A** to **B** is open. This allows flow of the main stream from line **A** to **B** with minimum pressure difference. Control pressure is drained without pressure to the tank via separated line **Y** (10). The valve has function of unloading valve in a system. To allow free flow from line **B** to **A** the check valve (14) can be installed optionally.

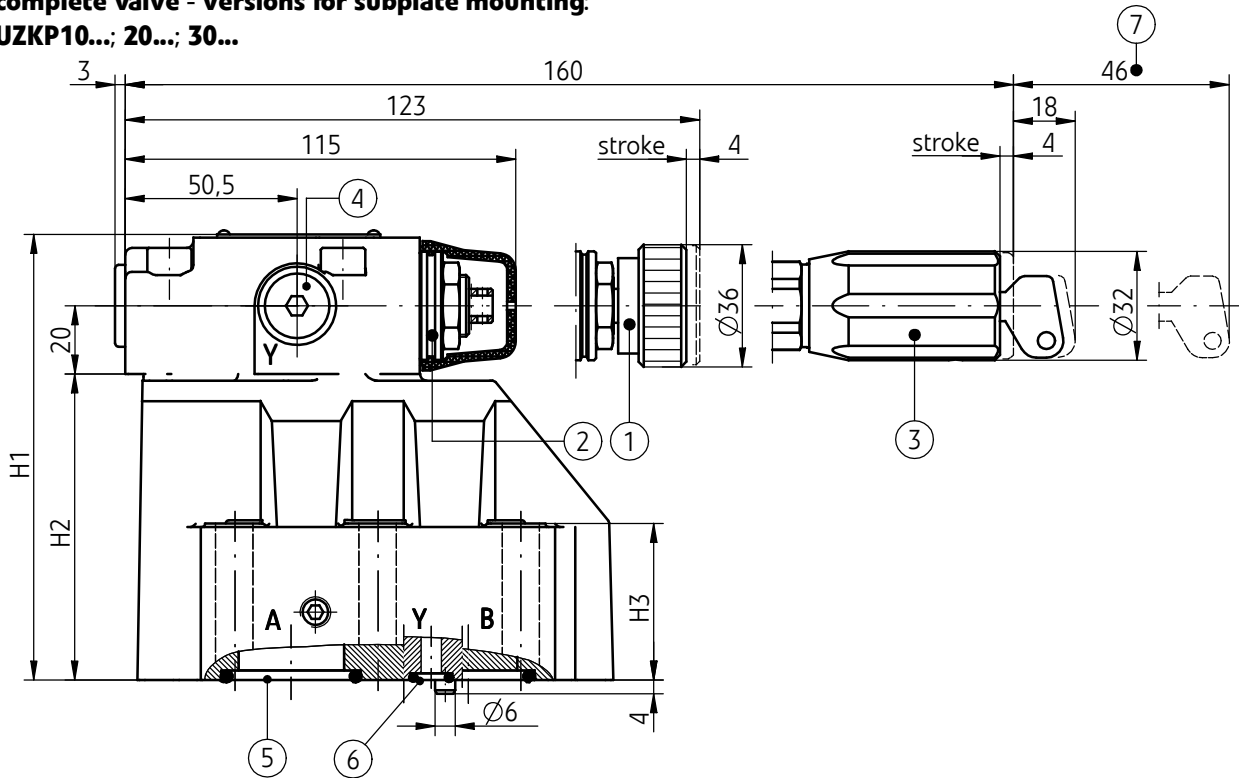
TECHNICAL DATA

Hydraulic fluid	mineral oil						
Required filtration	up to 16 µm						
Recommended filtration	up to 10 µm						
Nominal fluid viscosity	37 mm ² /s at temperature 55 °C						
Viscosity range	2,8 up to 380 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	version UZK...	-20°C up to +70°C					
	version UZK...E...	-20°C up to +50°C					
Maximum operating pressure	31,5 MPa						
Maximum inlet pressure (lines: A, X)	31,5 MPa						
Maximum outlet pressure (line B)	version UZK...	31,5 MPa					
	version UZK...E...	21,5 MPa					
Maximum backpressure (line Y)	version UZK...	31,5 MPa					
	version UZK...E...	21,5 MPa					
Maximum flow rate	nominal size	NS10	150 dm³/ min				
		NS20	300 dm³/ min				
		NS30	450 dm³/ min				
Weight	nominal size	version					
		UZKP...	UZKP...E	UZKS...	UZKS...E	UZKB...	UZKB...E
	WN10	3,8 kg	5,3 kg			1,6 kg	3,1 kg
	WN20	5,7 kg	7,2 kg				
WN30	8,4 kg	9,9 kg	1,6 kg	3,1 kg			
Type of a directional valve (only for version UZK...E...)	WE6... according to data sheet WK 499 502						
Nominal supply voltage for solenoid	DC			AC (plug-in connector with rectifier)			
	12V	24V	110V	230V - 50Hz	110V - 50Hz		
Supply voltage tolerance	±10%						
Power requirement (DC)	30 W						
Insulation	IP 65						
Temperature of solenoid coil	max 150 °C						

ASSEMBLY AND APPLICATION REQUIREMENTS

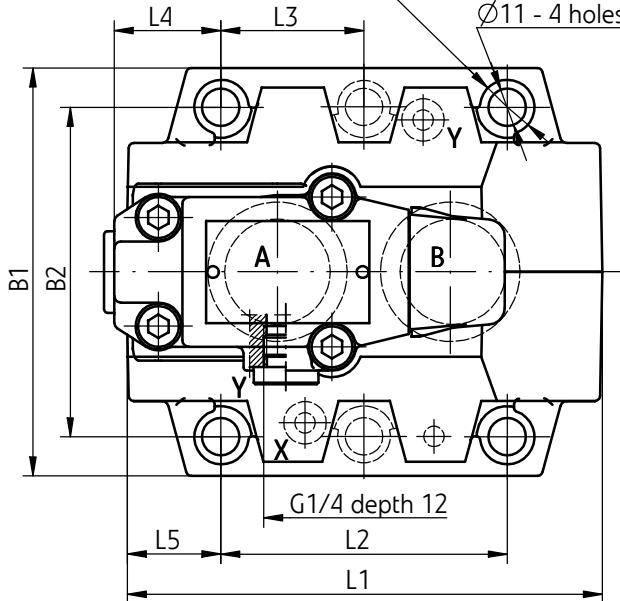
- | | |
|--|--|
| <p>1. Only valve working properly and suitably installed may be connected to an electric system. Only skilled workers are allowed to connect and disconnect electric system.</p> <p>2. Ground connection (⏏) must be connected with protective earth wire (⏏ PE) in supply system according to appropriate instructions.</p> <p>3. It is forbidden to apply the valve if the supply cable in the gland of plug-in connector is not properly tightened.</p> | <p>4. It is forbidden to apply the valve if the plug-in connector is not properly tightened to the solenoid socket and is not secured by screwing bolt tightly.</p> <p>5. Due to heating solenoid coil, the 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).</p> |
|--|--|

OVERALL AND CONNECTION DIMENSIONS
complete valve - versions for subplate mounting:
UZKP10...; 20...; 30...



Ø18 - 4 spotfaces for UZKP10, 20/6 spotfaces for UZKP30

Ø11 - 4 holes for UZKP 10, 20/6 holes for UZKP30



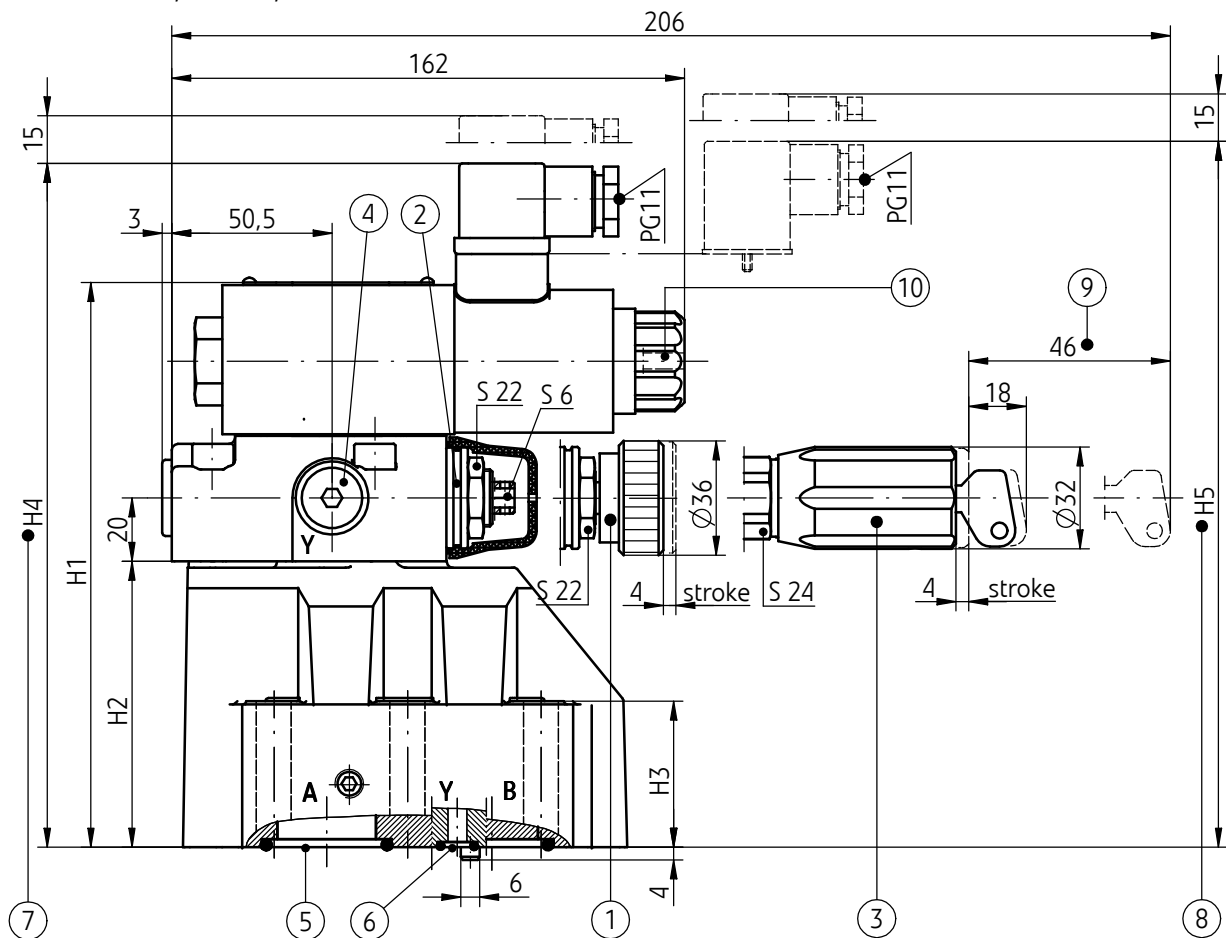
- 1 - Adjustment **1** (handknob)
- 2 - Adjustment **2** (set screw with hexagon socket)
- 3 - Adjustment **3** (lockable handknob)
- 4 - Additional external port **Y** (G1/4 plug)
- 5 - Sealing ring **o-ring** -2 pcs/kit (**A, B**) - according to table
- 6 - Sealing ring **o-ring** -2 pcs/kit (**X, Y**) - according to table
- 7 - Space required to remove the key from the lock of the adjustment item 3

version	o-ring item 5	o-ring item 6	B1	B2	H1	H2	H3	L1	L2	L3	L4	L5
UZKP10...	17,1 x 2,6	9,2 x 1,8	85	66,7	113	72	28	96	42,9	-	34,6	35,6
UZKP20...	28,2 x 3,5		102	79,4	123	82	38	112	60,3	-	36,9	33,5
UZKP30...	34,5 x 3,5		120	96,8	131	90	46	140	84,2	42,1	31,3	28

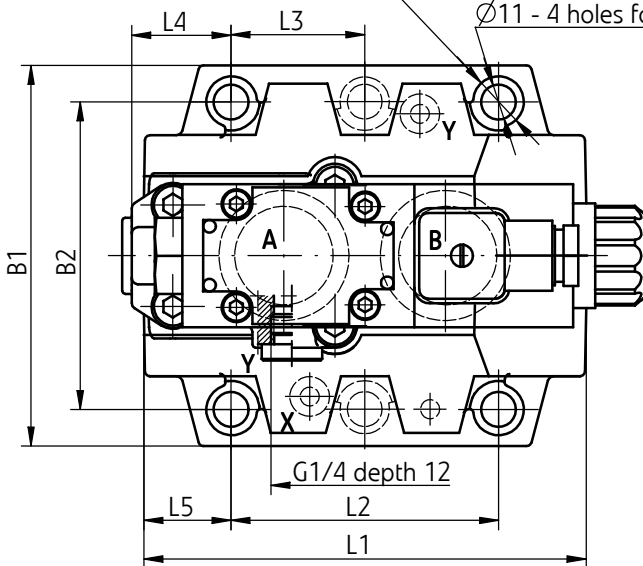
OVERALL AND CONNECTION DIMENSIONS

complete valve - versions for subplate mounting:

UZKP10...E...; 20...E...; 30...E...



Ø18 - 4 spotfaces for UZKP10...E, 20...E/6 spotfaces for UZKP30...E
 Ø11 - 4 holes for UZKP10...E, 20...E/6 holes for UZKP30...E



- 1 - Adjustment 1 (handknob)
- 2 - Adjustment 2 (set screw with hexagon socket)
- 3 - Adjustment 3 (lockable handknob)
- 4 - Additional external port Y (G1/4 plug)
- 5 - Sealing ring o-ring - 2 pcs/kit (A, B) - according to table
- 6 - Sealing ring o-ring - 2 pcs/kit (X, Y) - according to table
- 7 - Dimension for the valve with electrical connection of a directional valve 12V, 24V, 110V DC (plug-in connector type DIN 43650/ISO 4400)
- 8 - Dimension for the valve with electrical connection of a directional valve 110V, 230V AC (plug-in connector type DIN 43650/ISO 4400 with rectifier)
- 9 - Space required to remove the key from the lock of the adjustment item 3
- 10 - Manual override

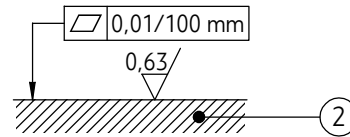
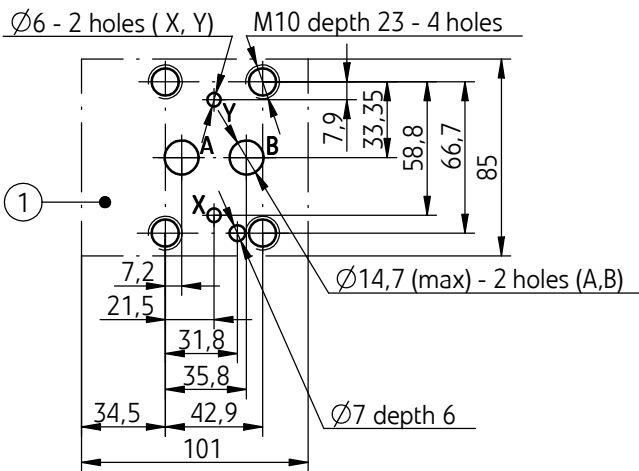
version	o-ring item 5	o-ring item 6	B1	B2	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5
UZKP10...E...	17,1 x 2,6	9,2 x 1,8	85	66,7	160	72	28	198	205	96	42,9	-	34,6	35,6
UZKP20...E...	28,2 x 3,5		102	79,4	170	82	38	208	215	112	60,3	-	36,9	33,5
UZKP30...E...	34,5 x 3,5		120	96,8	178	90	46	216	223	140	84,2	42,1	31,3	28

OVERALL AND CONNECTION DIMENSIONS

versions for subplate mounting: UZKP10...; 20...; 30...

porting pattern on subplate

version UZKP10...

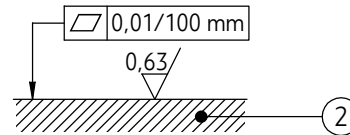
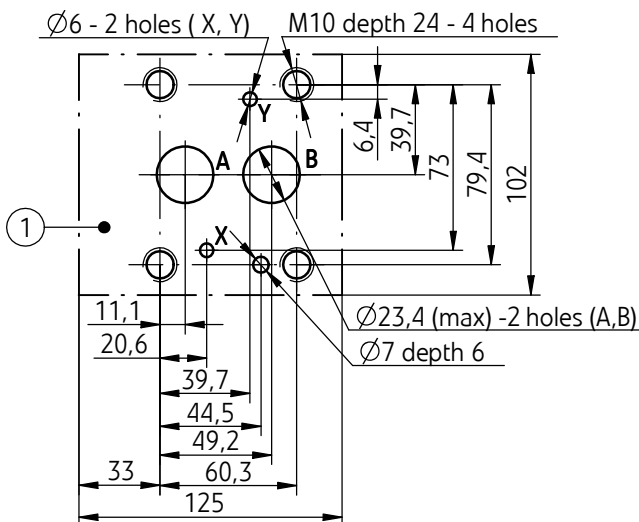


1 -Porting pattern on subplate according to:

- CETOP- RP 121H
identified by CETOP - 4.4.5-2-06
nominal size CETOP 06
- PN - ISO 5781
mounting bolts M10 x 50 - 10.9 - 4 pcs/kit
in accordance with PN - EN ISO 4762
tightening torque **Md = 73 Nm**

2 - Subplate surface required

version UZKP20...

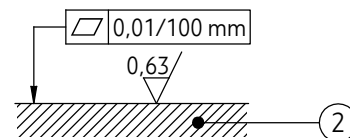
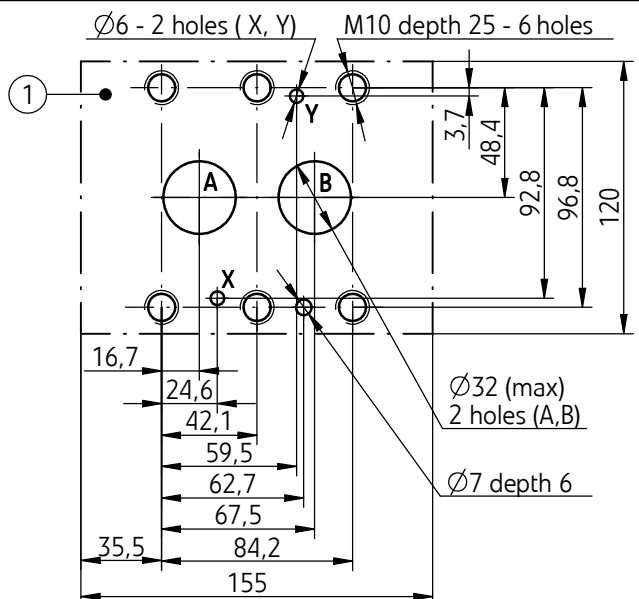


1 -Porting pattern on subplate according to:

- CETOP- RP 121H
identified by CETOP - 4.4.5-2-08
nominal size CETOP 08
- PN - ISO 5781
mounting bolts M10 x 60 - 10.9 - 4 pcs/kit
in accordance with PN - EN ISO 4762
tightening torque **Md = 73 Nm**

2 - Subplate surface required

version UZKP30...



1 -Porting pattern on subplate according to:

- CETOP- RP 121H
- PN - ISO 5781
mounting bolts M10 x 70 - 10.9 -6 pcs/kit
in accordance with PN - EN ISO 4762
tightening torque **Md = 73 Nm**

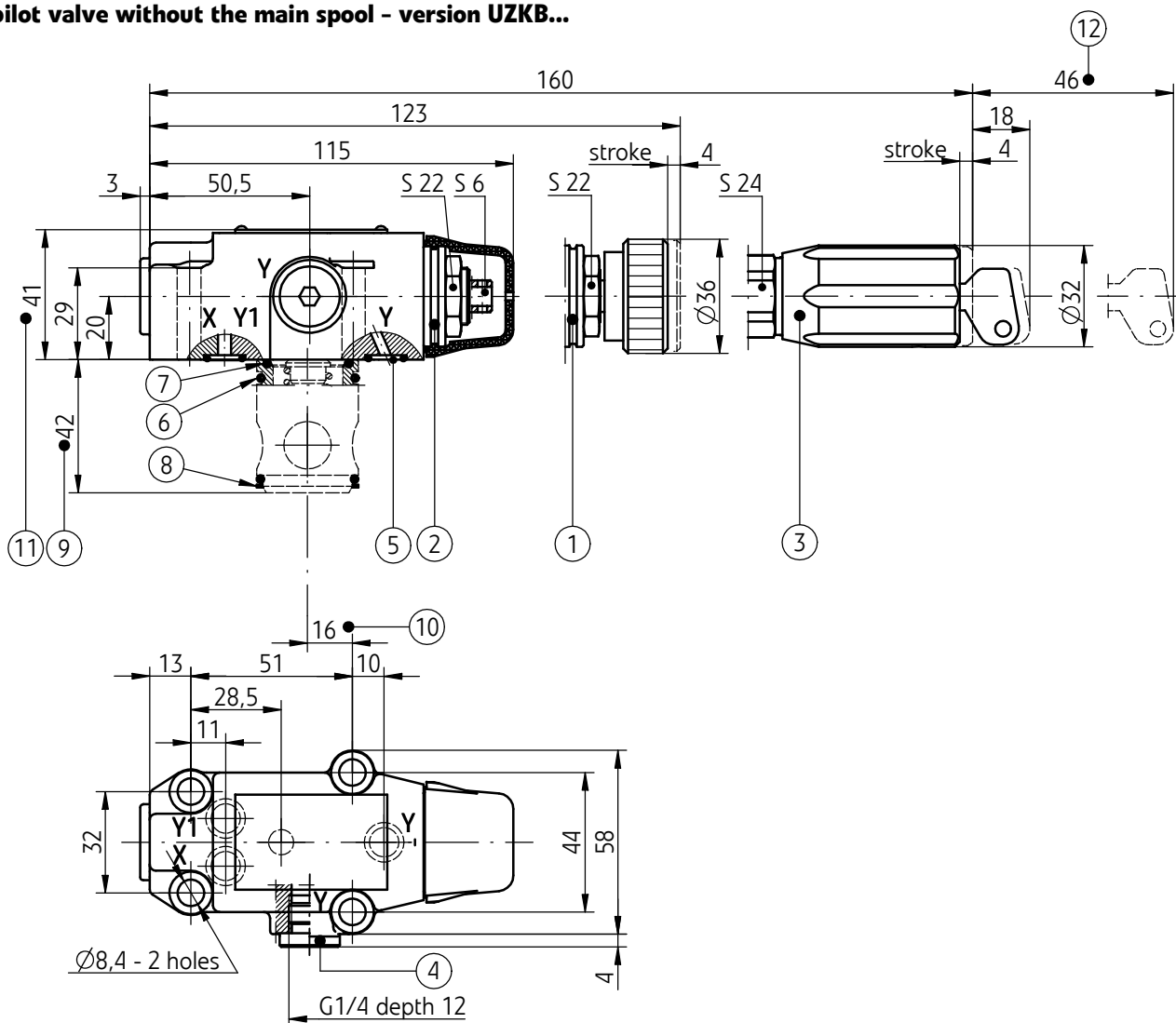
2 - Subplate surface required

OVERALL AND CONNECTION DIMENSIONS

pilot valve with the main spool - version UZKS30...

for manifold block mounting

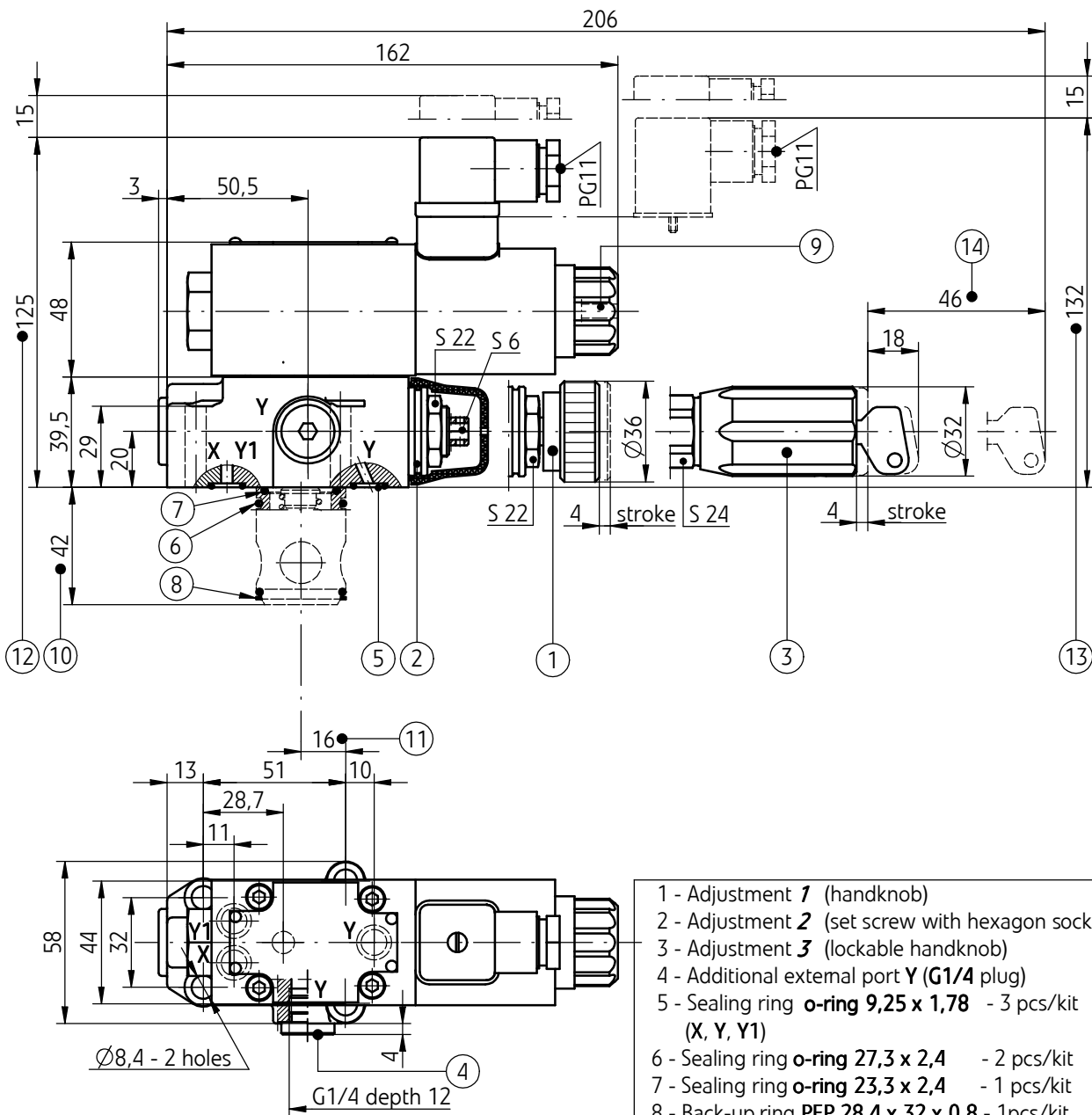
pilot valve without the main spool - version UZKB...



- 1 - Adjustment **1** (handknob)
- 2 - Adjustment **2** (set screw with hexagon socket)
- 3 - Adjustment **3** (lockable handknob)
- 4 - Additional external port **Y** (G1/4 plug)
- 5 - Sealing ring **o-ring 9,25 x 1,78** - 3 pcs/kit (X, Y, Y1)
- 6 - Sealing ring **o-ring 27,3 x 2,4** - 2 pcs/kit
- 7 - Sealing ring **o-ring 23,3 x 2,4** - 1 pcs/kit
- 8 - Back-up ring **PEP 28,4 x 32 x 0,8** - 1 pcs/kit
- 9 - Overall dimension - only for version **UZKS30...** (complete valve - only nominal size NS30 available)
- 10 - Position of socket of the main spool - only for version **UZKS30...**
- 11 - Overall dimension for version **UZKB...** (pilot valve without the main spool - do not state nominal size)
- 12 - Space required to remove the key from the lock of the adjustment item 3

OVERALL AND CONNECTION DIMENSIONS

pilot valve with the main spool - version UZKS30...E...
for manifold block mounting
pilot valve without the main spool - version UZKB...E...

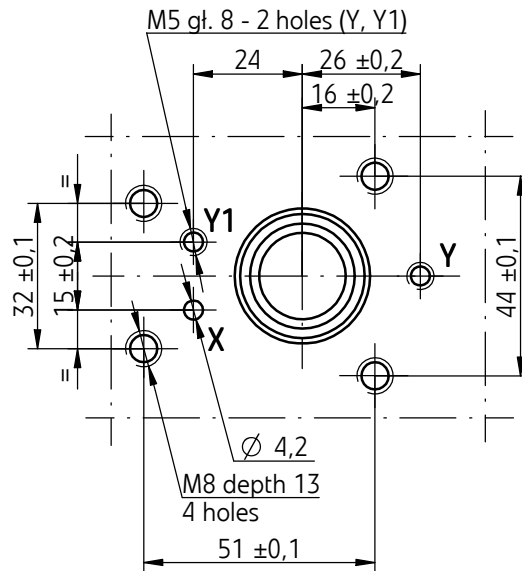
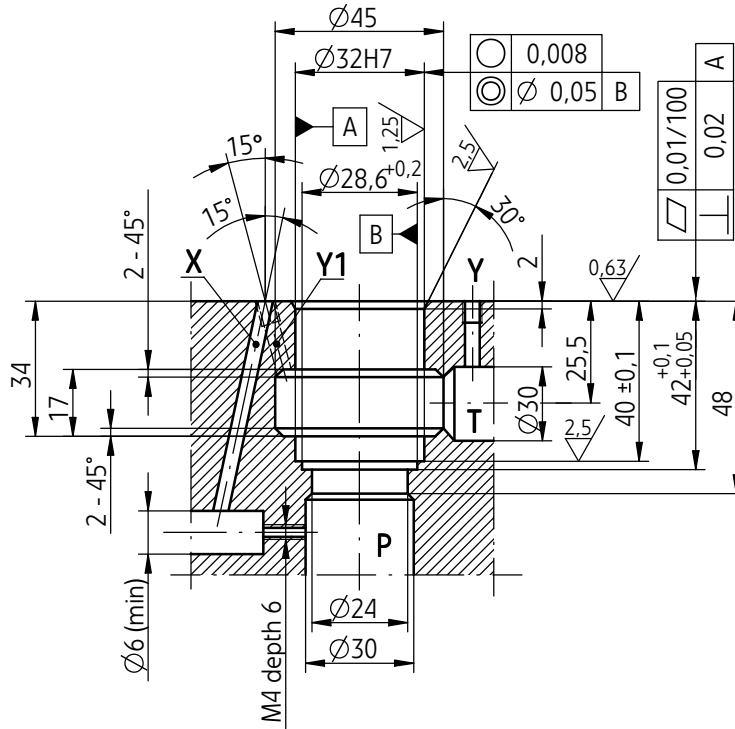


- 1 - Adjustment **1** (handknob)
- 2 - Adjustment **2** (set screw with hexagon socket)
- 3 - Adjustment **3** (lockable handknob)
- 4 - Additional external port **Y** (G1/4 plug)
- 5 - Sealing ring **o-ring** 9,25 x 1,78 - 3 pcs/kit (X, Y, Y1)
- 6 - Sealing ring **o-ring** 27,3 x 2,4 - 2 pcs/kit
- 7 - Sealing ring **o-ring** 23,3 x 2,4 - 1 pcs/kit
- 8 - Back-up ring PEP 28,4 x 32 x 0,8 - 1pcs/kit
- 9 - Manual override
- 10 - Overall dimension - only for version **UZKS30...E...** (complete valve - only nominal size NS30 available)
- 11 - Position of socket of the main spool - only for version **UZKS30...E...**
- 12 - Dimension for the valve in versions **UZKB...E...**; **UZKS30...E...** with electrical connection 12V, 24V, 110V DC (plug-in connector type DIN 43650/ISO 4400)
- 13 - Dimension for the valve in versions **UZKB...E...**; **UZKS30...E...** with electrical connection 110V, 230V AC (plug-in connector type DIN 43650/ISO 4400 with rectifier)
- 14 - Space required to remove the key from the lock of the adjustment item 3

OVERALL AND CONNECTION DIMENSIONS

pilot valve with the main spool - versions for manifold
 block mounting: UZKS30... ; UZKS30...E...

valve cavity

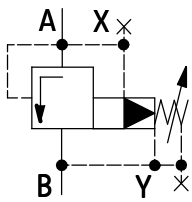
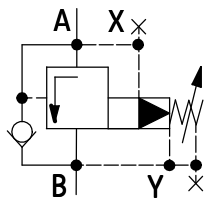
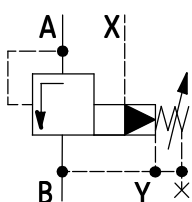
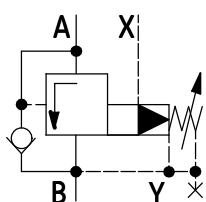
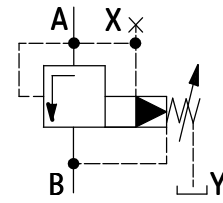
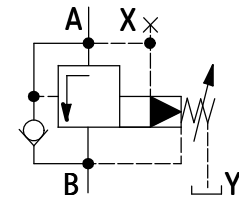
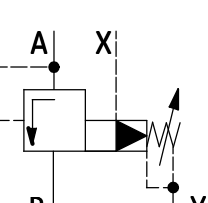
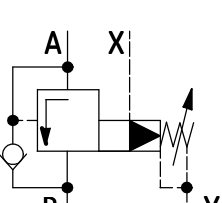


NOTE:

mounting bolts **M8 x 40 -10.9** - 4 pcs/kit
 in accordance with **PN - EN ISO 4762** - must be ordered
 separately; tightening torque **Md = 37 Nm**

SCHEMES

Graphic symbols of valves - versions UZK...

version UZK...W...		version UZK...X...	
UZK...W...	UZK...W...Z...	UZK...X...	UZK...X...Z...
			
version UZK...Y...		version UZK...Z...	
UZK...Y...	UZK...Y...Z...	UZK...Z...	UZK...Z...Z...
			

SCHEMES

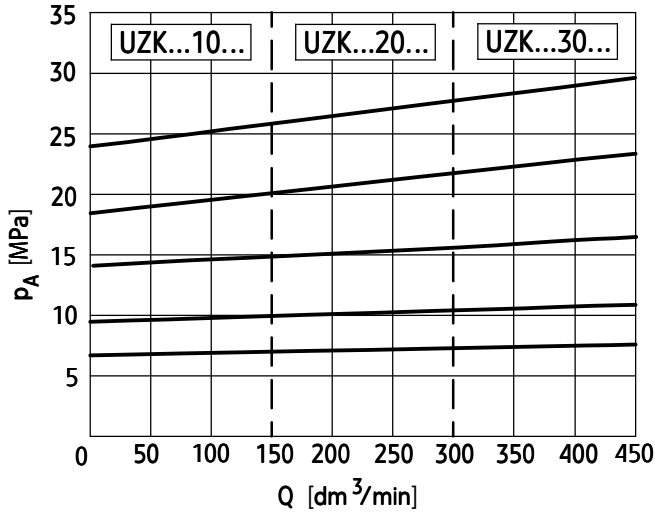
Graphic symbols of valves - versions **UZK...E...**

version UZK...W...E...		
UZK...W...E...	UZK...W...Z...E...	UZK...W...AE... (normally closed)
		UZK...W...BE... (normally opened)
version UZK...X...E...		
UZK...X...E...	UZK...X...Z...E...	UZK...X...AE... (normally closed)
		UZK...X...BE... (normally opened)
version UZK...Y...E...		
UZK...Y...E...	UZK...Y...Z...E...	UZK...Y...AE... (normally closed)
		UZK...Y...BE... (normally opened)
version UZK...Z...E...		
UZK...Z...E...	UZK...Z...Z...E...	UZK...Z...AE... (normally closed)
		UZK...Z...BE... (normally opened)

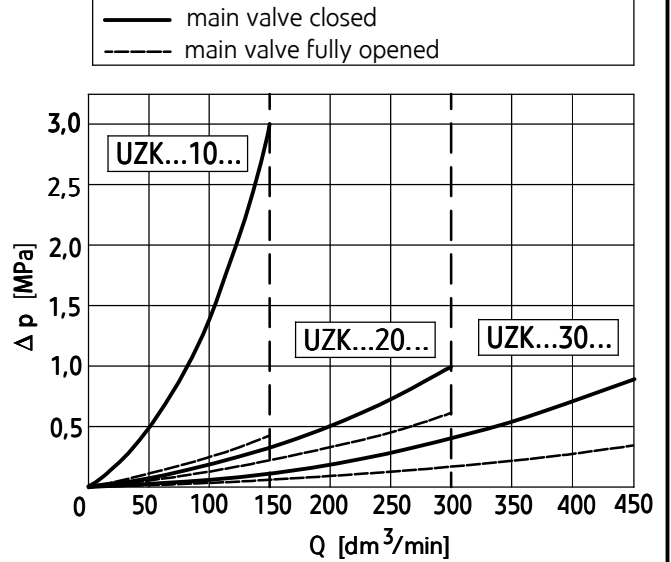
PERFORMANCE CURVES

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

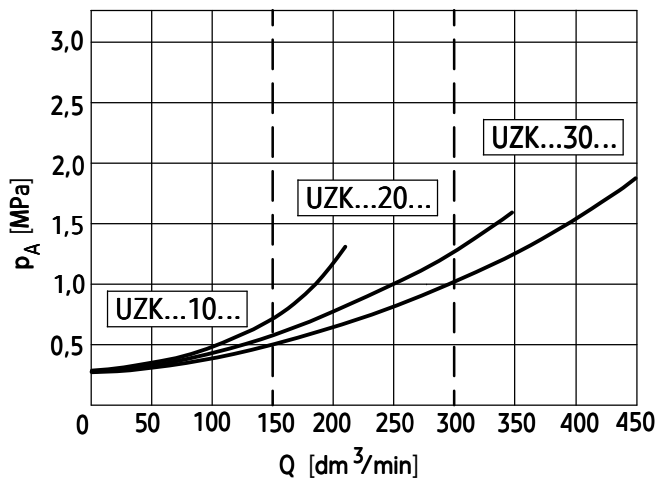
Inlet pressure p_A in relation to the flow Q
flow direction $A \rightarrow B$



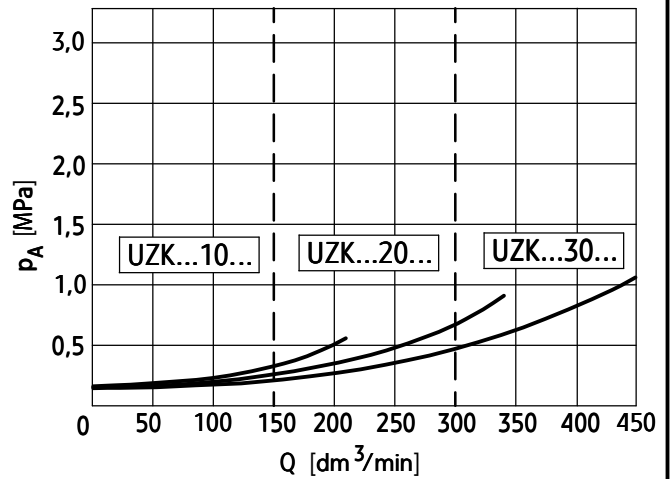
Pressure resistance $\Delta p(Q)$ across the check valve
flow direction $B \rightarrow A$



Minimum settable pressure p_A in relation to the
flow Q for versions: UZK...W...; UZK...X...; UZK...Y...
flow direction $A \rightarrow B$, outlet pressure $p_B = 0$



Minimum settable pressure p_A in relation to the
flow Q for versions: UZK...Z...
flow direction $A \rightarrow B$, outlet pressure $p_B = 0$



HOW TO ORDER

UZK		+	/				
------------	--	---	---	--	--	--	--

Design version

complete valve = **P**

pilot valve with the main spool = **S**
state nominal size NS30

pilot valve without the main spool = **B**
do not state nominal size in the next step

Nominal size (NS)

NS10 = **10**

NS20 = **20**

NS30 = **30**

Series number

(50-59) - connection and installation dimensions unchanged = **5X**

series 52 = **52**

Settable pressure range

up to 10 MPa = **100**

up to 20 MPa = **200**

up to 31,5 MPa = **315**

Pilot oil supply and pilot oil drain

pilot oil supply from line A ;pilot oil and leakage drained together to line B = **W**

pilot oil supply from separatedline X; pilot oil and leakage drained together to line B = **X**

pilot oil supply from line A; pilot oil and leakage drained to line B,
leakage drained to separated line Y = **Y**

pilot oil supply from separated line X pilot oil and leakage drained together to line Y = **Z**

Type of adjustment element

handknob = **1**

set screw with hexagon socket = **2**

lockable handknob = **3**

Check valve

without check valve = **no designation**

with check valve = **Z**

HOW TO ORDER

					★
--	--	--	--	--	---

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

Sealing

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

Electrical connection (only for version UZK...E...)

Plug-in connector DIN 43650-A/ISO4400 without LED = **Z4**
Plug-in connector DIN 43650-A/ISO4400 with LED = Z4L

Manual override for solenoid (only for version UZK...E...)

solenoid without manual override = no designation
solenoid with manual override = **N**

Supply voltage for solenoid (only for version UZK...E...)

12V DC = G12
24V DC = **G24**
110V DC = G110
110V AC 50Hz (plug-in connector with rectifier) = W110R
230V AC 50Hz (plug-in connector with rectifier) = **W230R**

Unloading method

directional valve in de-energized position closed = **AE**
directional valve in de-energized position open = **BE**

NOTES:

The valve should be ordered according to the above coding.

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

Coding example: UZKP10 – 52/200 W 2

SUBPLATES AND MOUNTING BOLTS

Subplates for valve version for subplate mounting **UZKP...** should be ordered according to subplate type, taking into the account the size of thread connections given in the table below.

Subplates and mounting bolts must be ordered separately.

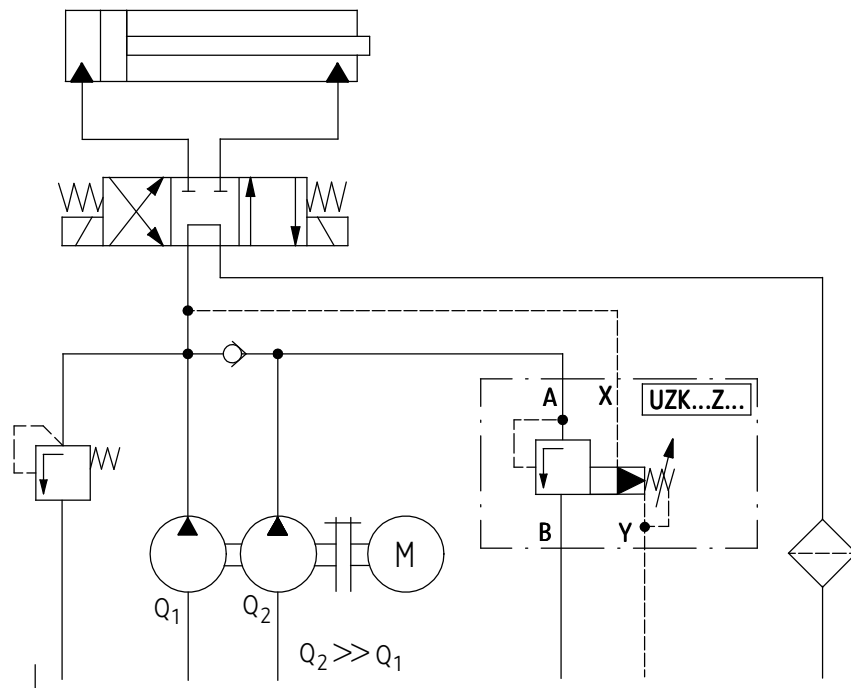
NOTE:

Subplate symbols in bold are preferred versions in short delivery time.

Valve type	Subplate type	Thread connections of the subplate	Mounting bolts
UZKP10...	G460/01	A, B - G 3/8 X, Y - G 1/4	M10 x 50 - 10.9 - 4 pcs/kit in accordance with PN - EN ISO 4762 tightening torque Md = 73 Nm.
	G461/01	A, B - G 1/2 X, Y - G 1/4	
UZKP20..	G412/01	A, B - G 3/4 X, Y - G 1/4	M10 x 60 - 10.9 - 4 pcs/kit in accordance with PN - EN ISO 4762 tightening torque Md = 73 Nm.
	G413/01	A, B - G 1 X, Y - G 1/4	
UZKP30...	G414/01	A, B - G 1 1/4 X, Y - G 1/4	M10 x 70 - 10.9 - 6 pcs/kit in accordance with PN - EN ISO 4762 tightening torque Md = 73 Nm.
	G415/01	A, B - G 1 1/2 X, Y - G 1/4	

EXAMPLE OF APPLICATION IN HYDRAULIC SYSTEM

Example of application of the valve in version UZK...Z... for unloading of two-stage pump



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

PONAR
wadowice