PONAR wadowice	**Electrically controlled directional control poppet valve type UREZ6**			**WK 423 770**
	NS6	**up to 35 MPa**	**up to 30 dm³/min**	07.2018

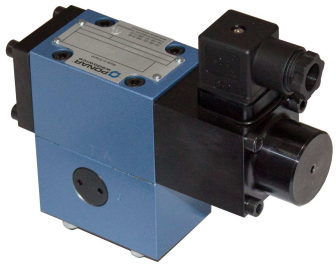
DATA SHEET - OPERATION MANUAL

APPLICATION

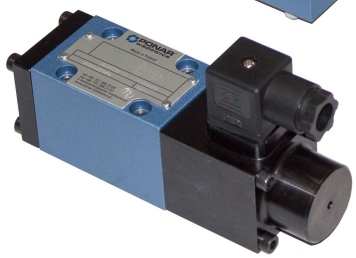
Electrically controlled directional control poppet valve type **UREZ6**… is intended for changing the direction of hydraulic fluid flow in a system, which allows for change of the direction of the receiver
motion - usually a piston rod of a cylinder or a hydraulic motor, as well as performance of modes *start*, *stop*. It is suitable for subplate mounting in any position in hydraulic systems.

The product is compliant with the regulations of directive 2014/35/UE.

version 4UREZ6

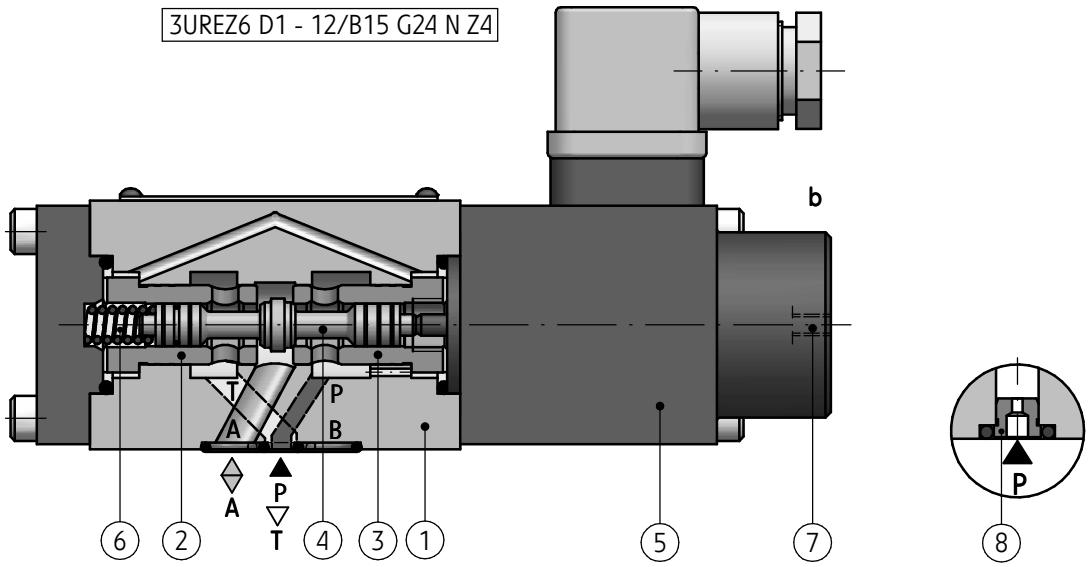


version 3UREZ6



DESCRIPTION OF OPERATION

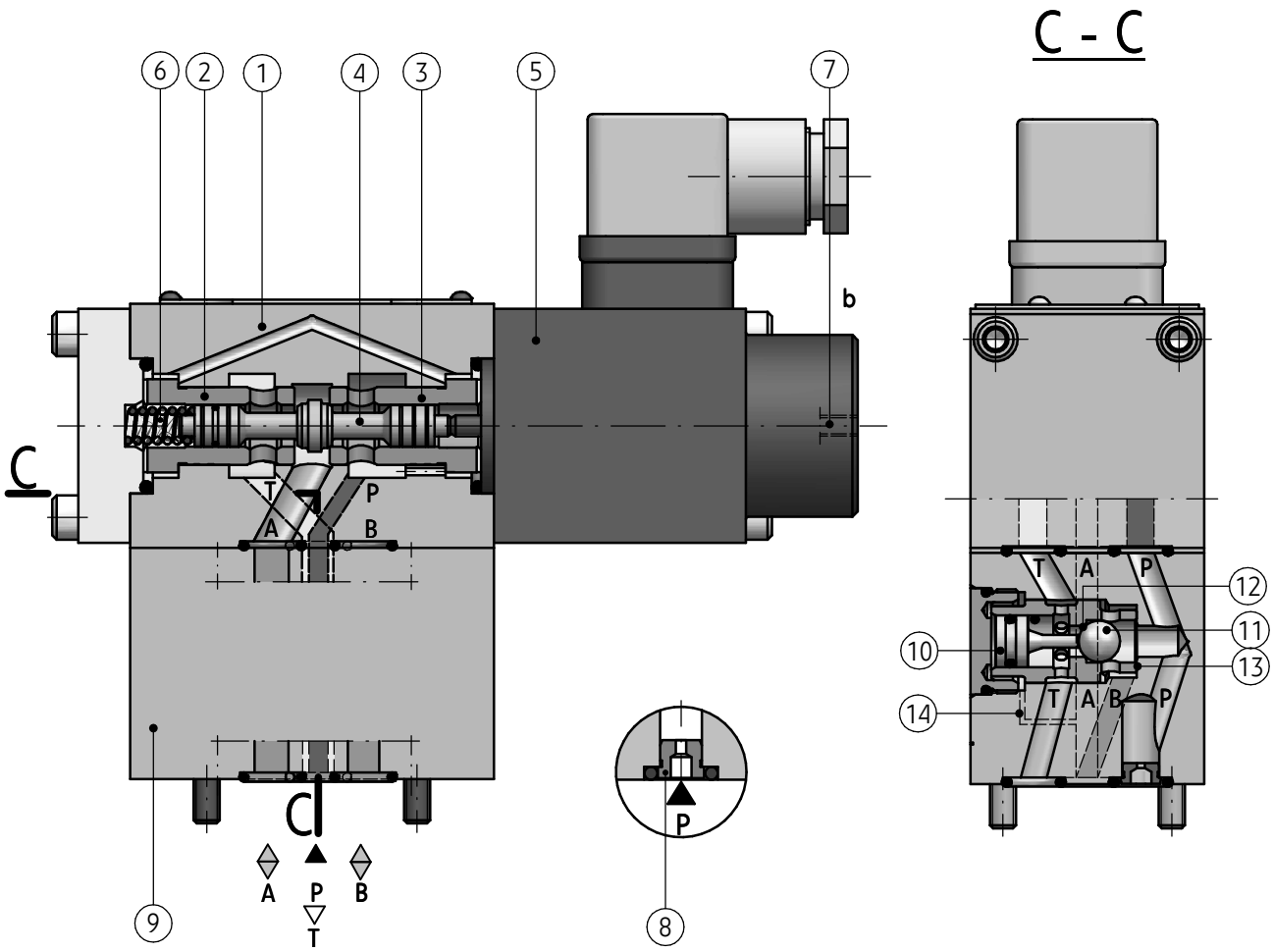
3UREZ6 D1 - 12/B15 G24 N Z4



Main elements of the **UREZ6…** type valve include: body (1) with valve seats (2) and (3), spool with a closing poppet (4), solenoid (5), spring (6) and manual override switch (7). Both chambers from the side of the spring (6) and solenoid (5) are by the design of the body (1) and the spool (4) connected to port **P** and shut off from port **T** in order to balance the forces affecting the spool (4). This allows the flow in specific directions (in accordance to the diagrams on page 4) at the max. working pressure in each of the ports. The **3-way version** of the valve **3UREZ6…** can be manufactured as **closed in neutral (current-free) position** - version 3UREZ6**D1** (shown on the drawing) or **open** - version 3UREZ6**D2**, depending on the body (1) side where the solenoid (5) and spring (6) are installed. In the version shown on the drawing, in neutral position the poppet of the spool (4) is pressed by the spring (6) to the valve seat (2). Port **P** remains shut-off, the flow from **A** to **T** is open. **Override of the valve** is performed by moving the spool (4) by the solenoid (5) to the opposite end position, where the poppet of the spool (4) is pressed to the port (3) **allowing to open the flow** from **P** to **A** and shutting off port **T.** Return to the initial (neutral) position is forced by the spring (6), In case of power outage, it is possible to perform manual override of the valve by the button (7). In the **3-way version**, port **B** of the valve is manufactured as a blind hole, **after shutting of the T connection**, the valve can act as a **2-way valve**. When **connected to an additional sandwich type subplate** (9), **the 3-way** directional valve can be used as a **4-way** - version **4UREZ6…** (description of operation on page 2). Optionally, the valve can be equipped with a reducer (8), installed in port **P**.

DESCRIPTION OF OPERATION

4UREZ6 D3 - 12/B15 G24 N Z4



A **4-way version** of the valve **4UREZ6...** (analogically to the 3-way version) can be manufactured as **closed in neutral (current-free)** position - version 4UREZ6**D3** (shown on the drawing) or **open** - version 4UREZ6**D4**, depending on the body (1) side where the solenoid (5) and spring (6) are installed. In the version shown on the drawing, in neutral position, the poppet of the spool (4) is pressed by the spring (6) to the port (2). Port **P** is shut off, flow from the **A** to **T** direction is open. This allows for a relief of the check valve space from the side of larger surface of the control spool (10) through port **A** (connected to **T**). Pressure in port **P** presses the ball (11) to the valve seat (12). This results in **opening the flow** from **P** to **B** and from **A** to **T** (position shown on the drawing). After overriding the valve ports **P** and **A** are connected. Pressure supplied from port **A** through the canal (14) to the larger surface of the control spool (10) results in the ball (11) being pressed to the seat(13). This results in **opening the flow** from the **B** to **T** and from **P** to **A** directions.

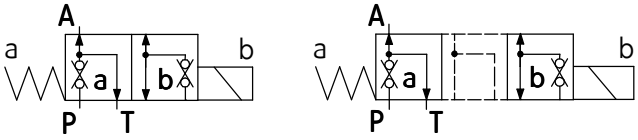
TECHNICAL DATA

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				
Maximum operating pressure	**ports P, A, B, T - 35 MPa**				
Weight	versions 3UREZ6... - 1,9 kg				
	versions 4UREZ6... - 2,9 kg				
Nominal supply voltage for solenoids	**DC**			**AC** (plug-in connector with rectifier)	
	12V	**24V**	**110V**	**110V** - 50Hz	**220V**- 50Hz
Supply voltage tolerance	±10%				
Power consumption (DC)	30 W				
Switching time * (acc. to **ISO 6403**) (*) - applicable only to versions: **3UREZ6D1**...; **3UREZ6D2**...	ON 70 ms				
	OFF 80 ms				
Degree of protection	**IP 65**				
Solenoid coil temperature	max 150 ^{o}C				

INSTALLATION AND OPERATION REQUIREMENTS

1. Only fully functional and operational valve, properly connected to electrical installation must be used. Connecting or disconnecting the valve to an electrical installation must only be carried out by qualified personnel.
2. Ground connection (⏚) must be connected with protective earth wire (PE ⏚) in supply system according to appropriate instructions.
3. Solenoid plug shall precisely adhere to socket and shall be secured with thread bolt screwed in securely in a place. It is forbidden to operate the valve if the tightness and suitable clamp of cable in the plug gland are not ensured.
4. During the period of operation must be kept fluid viscosity acc. to requirements defined in this Data Sheet - Operation Manual
5. In order to ensure failure free and safe operation the following must be checked:
   - condition of the electrical connection
   - proper working of the valve
   - cleanliness of the hydraulic fluid
6. Due to heating of electromagnet solenoid coils to high temp., the valve shall be placed in such way to eliminate the risk of accidental contact with solenoid during operation or to apply suitable covers acc. to PN - EN ISO 13732 - 1 and PN - EN 4413
7. In order to ensure tightness of the directional valve block, one should take care of dimension of sealing rings and valve operation parameters given in this Data Sheet - Operation Manual
8. A person that operates the valve must be thoroughly familiar with this Data Sheet - Operation Manual.

DIAGRAMS

<table>
<tr><td colspan="3">schematic diagrams for 3-way * valves - versions 3UREZ6...</td></tr>
<tr><td>valve
version</td><td colspan="2">working positions
working and
indirect positions</td></tr>
<tr><td>3UREZ6 D1...</td><td colspan="2"> 
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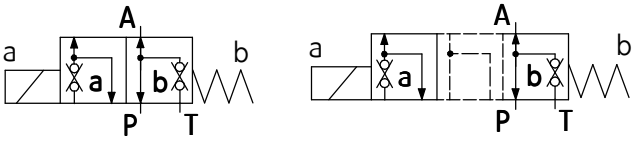
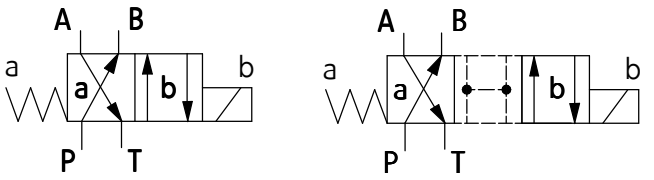
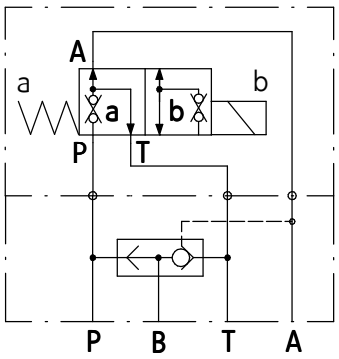
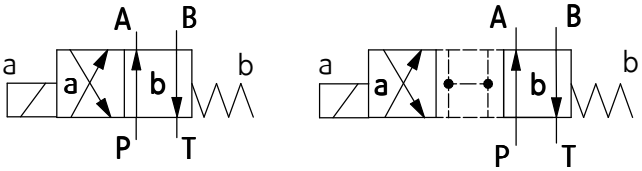
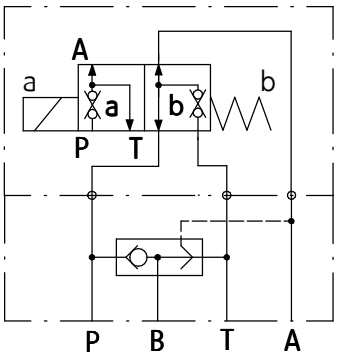
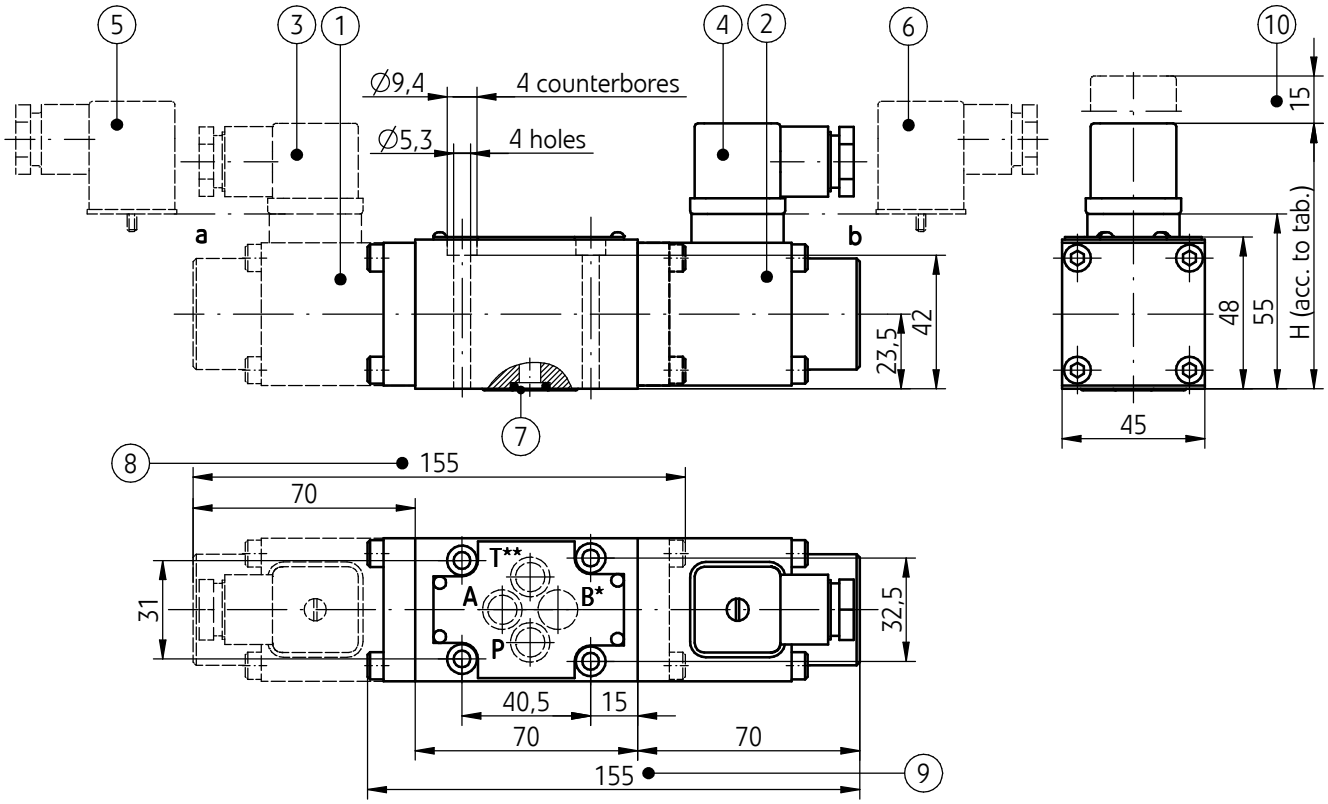
<tr><td>3UREZ6 D2...</td><td colspan="2"> 
</td></tr>
<tr><td colspan="3">hydraulic diagrams for 4-way valves - versions 4UREZ6...</td></tr>
<tr><td>valve
version</td><td colspan="2">simplified
working positions
working and
indirect positions</td><td>detailed</td></tr>
<tr><td>4UREZ6 D3...</td><td colspan="2"> 
</td><td> 
</td></tr>
<tr><td>4UREZ6 D4...</td><td colspan="2"> 
</td><td> 
</td></tr>
</table>

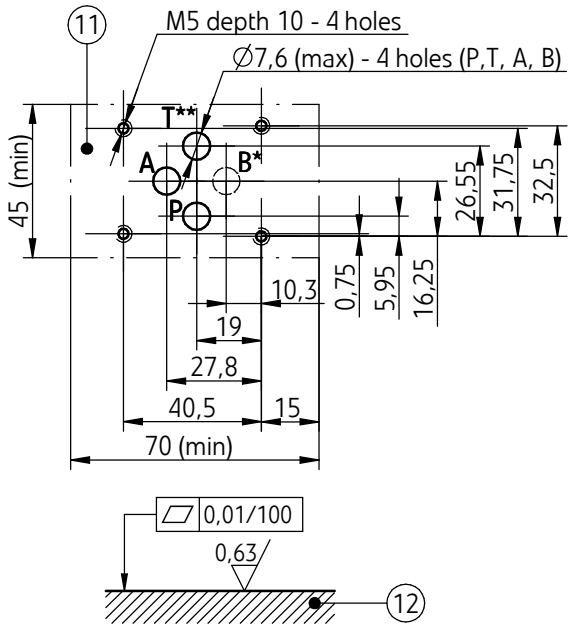
NOTE:
(*) - when using a **3-way** valve as a **2-way** valve on must cut off the **T** port.

OVERALL AND CONNECTION DIMENSIONS

3-way version 3UREZ6...



electrical connection	power supply voltage			dimension **H**
plug-in-connector type **ISO 4400** - item 3, 4	**DC**			83,5
	12V	**24V**	**110V**	
plug-in-connector type **ISO 4400** - item 5, 6 with rectifier	**AC**			90,5
	110V -50Hz		**220V** -50Hz	

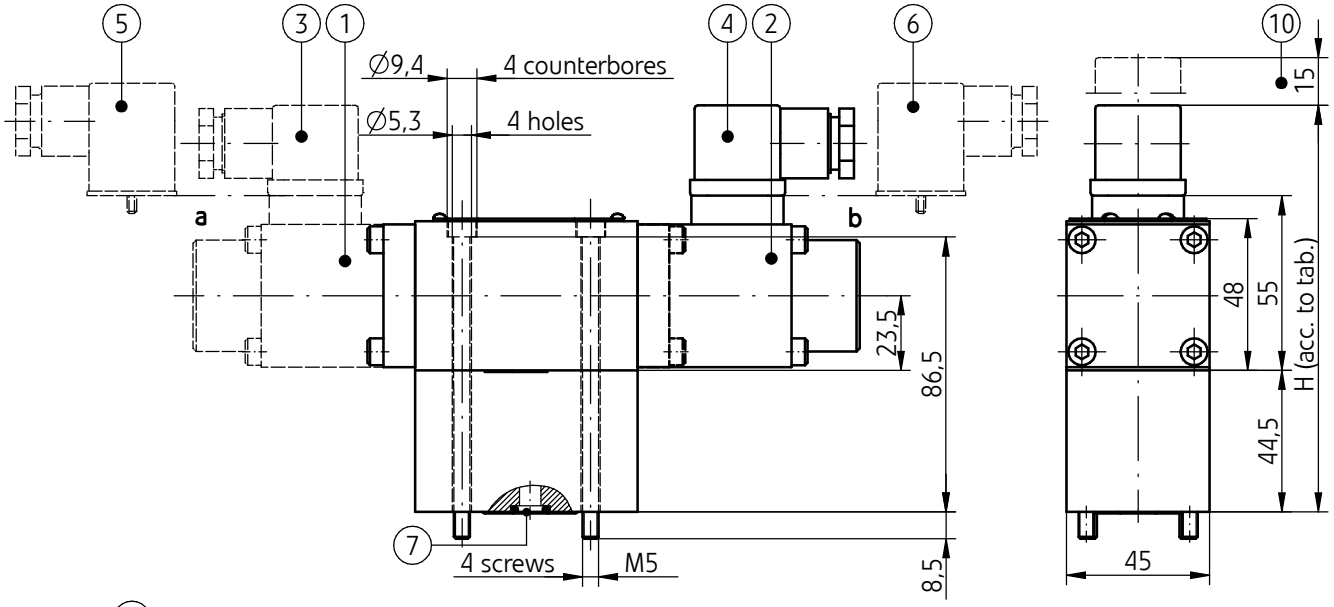


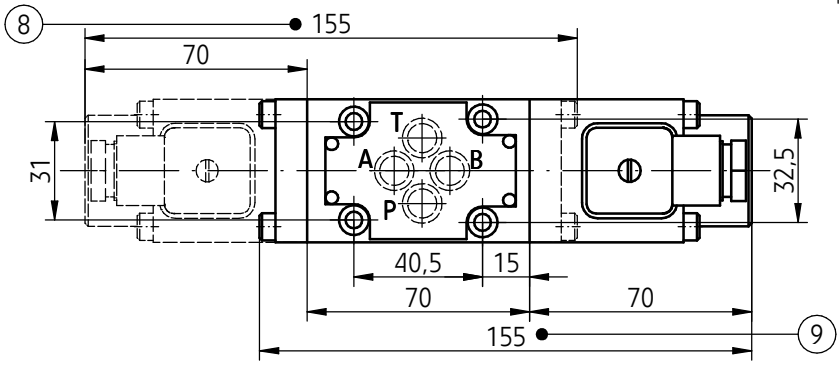
1 - Solenoid on side **a**
2 - Solenoid on side **b**
3 - Plug-in connector on side **a** - type **ISO 4400** (DIN 43650 - A)
4 - Plug-in connector on side **b** - type **ISO 4400** (DIN 43650 - A)
5 - Plug-in connector on side **a** - type **ISO 4400** (DIN 43650 - A) with rectifier
6 - Plug-in connector on side **b** - type **ISO 4400** (DIN 43650 - A) with rectifier
7 - Sealing **o-ring 9,25 x 1,78 -** pcs 4/set (**P**, **T****, **A**, **B***)
8 - Overall dimension of the **3-way** valve with solenoid on side **a** - version 3UREZ6**D2**...
9 - Overall dimension of the **3-way** valve with solenoid on side **b** - version 3UREZ6**D1**...
10 - Additional distance for dismantling the plugs (item 3 to 6)
11 - 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** in accordance with **PN - EN ISO 4762** - pcs 4/set - must be ordered separately; tightening torque **Md = 9 Nm**
12 - Subplate surface required

NOTES:
(*) - port **B in the 3-way valves** (versions 3UREZ6...) is manufactured **as a deepening with a sealing ring** (blind hole)
(**) - when using the above version of the valve as a **2-way valve, additionally the T port should be cut off**

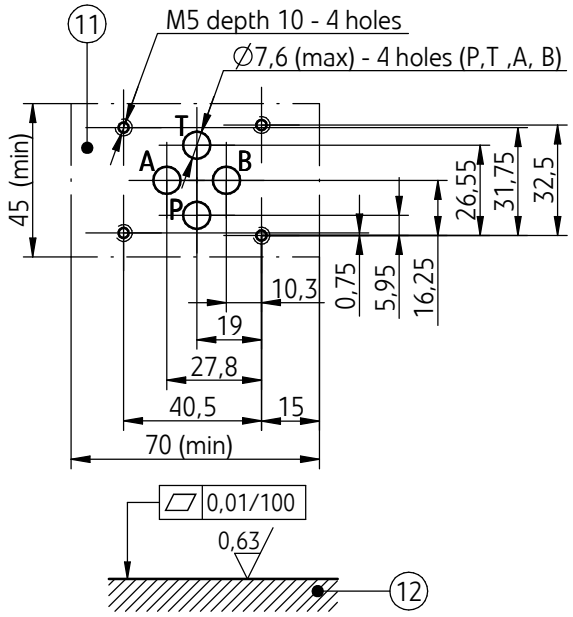
OVERALL AND CONNECTION DIMENSIONS

4-way version 4UREZ6...





electrical connection	power supply voltage			dimension **H**
plug-in-connector type **ISO 4400** - item 3, 4	**DC**			128
	12V	**24V**	**110V**	
plug-in-connector type **ISO 4400** - item 5, 6 with rectifier	**AC**			135
	110V -50Hz		**220V** -50Hz	



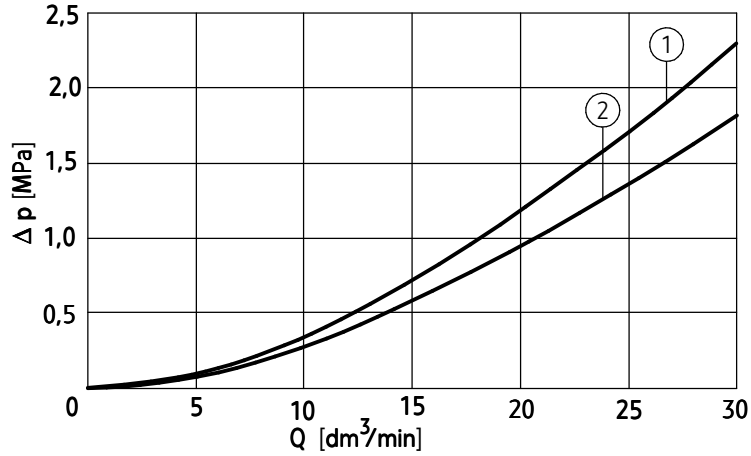
1 - Solenoid on side **a**
2 - Solenoid on side **b**
3 - Plug-in connector on side **a** - type **ISO 4400** (DIN 43650 - A)
4 - Plug-in connector on side **b** - type **ISO 4400** (DIN 43650 - A)
5 - Plug-in connector on side **a** - type **ISO 4400** (DIN 43650 - A) with rectifier
6 - Plug-in connector on side **b** - type **ISO 4400** (DIN 43650 - A) with rectifier
7 - Sealing **o-ring 9,25 x 1,78 -** pcs 4/set (**P**, **T****, **A**, **B***)
8 - Overall dimension of the **4-way** valve with solenoid on side **a** - version 3UREZ6**D4**...
9 - Overall dimension of the **4-way** valve with solenoid on side **b** - version 3UREZ6**D3**...
10 - Additional distance for dismantling the plugs (item 3 to 6)
11 - Porting pattern of the subplate surface compliant with **ISO 4401** standard;
designation **ISO 4401-03**-02-0-94 (CETOP 03);
fixing screws **M5 x 95 - 10.9** in accordance with **PN - EN ISO 4762** - pcs 4/set - included in the scope of delivery; tightening torque **Md = 9 Nm**
12 - Subplate surface required

PERFORMANCE CURVES

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

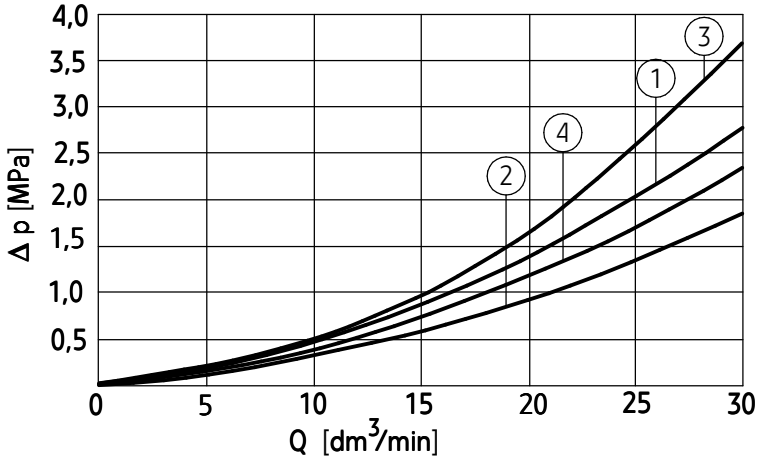
Flow resistance curves

characterisic curves Δ**p** (**Q**) of the **3-way** directional poppet valve - version **3UREZ6...** for various flow directions



performance diagram no.	flow direction
1	P → A
2	A → T

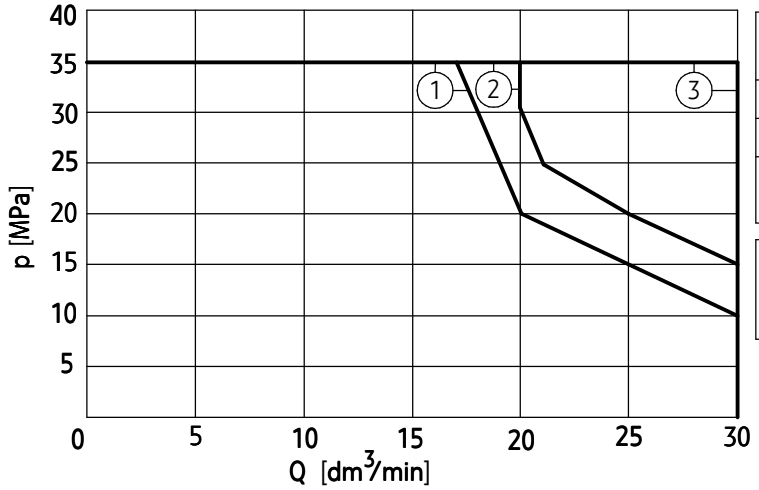
characterisic curves Δ**p** (**Q**) of the **4-way** directional poppet valve - version **4UREZ6...** for various flow directions



performance diagram no.	flow direction
1	P → A
2	P → B
3	A → T
4	B → T

Operating limits curves

characterisic curves **p - Q** of the directional poppet valve type **UREZ6**...; 3 and **4-way** versions for various flow directions



performance diagram no.	valve version	flow direction
1	...UREZ6**D2**...; ...**D4**...	P → A
2	...UREZ6**D1**...; ...**D3**...	P → A
3	...UREZ6...	A → T (B→T)*

NOTE:
(*) - flow direction B → T refers only to 4-way versions 4UREZ6...

SPOSÓB ZAMAWIANIA

	UREZ	6	+	/					★

Number of service ports
3-way = **3**
4-way = **4**

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

Hydraulic diagram (acc. to page 4)
diagram D1 (for 3-way version 3UREZ6...) = **D1**
diagram D2 (for 3-way version 3UREZ6...) = **D2**
diagram D3 (for 4-way version 4UREZ6...) = **D3**
diagram D4 (for 4-way version 4UREZ6...) = **D4**

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

Throttle orifice (in port P)
without orifice = **no designation**
orifice ϕ 0,8 = B 08
orifice ϕ 1,0 = B 10
orifice ϕ 1,2 = B 12
orifice ϕ 1,2 = B 12

Supply voltage for solenoid
12V DC = G12
24V DC = **G24**
110V DC = G110
110V AC 50Hz (plug-in connector with rectifier) = W110R
220V AC 50Hz (plug-in connector with rectifier) = W220R

Manual override
solenoid with manual override = **N**

Electrical connection
plug-in-connector type ISO 4400 (DIN 43650 - A) **without LED** = **Z4**
plug-in-connector type ISO 4400 with LED = Z4L

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

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

NOTES:
The directional poppet valve should be ordered according to the above coding.
The symbols in bold are preferred versions in short delivery time.
Coding example: 3UREZ6 D1 - 12/G24 N Z4

SUBPLATES AND FIXING SCREWS

Subplates must be ordered according to Data 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

Subplates must be ordered separately.

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

Fxing screws for the valve versions:

- version 3UREZ6... - **M5 x 50 - 10,9** acc. to **PN - EN ISO 4762** pcs 4/set must be ordered separately.
- version 4UREZ6... - **M5 x 95 - 10,9** acc. to **PN - EN ISO 4762** pcs 4/set are delivered with the valve.

Tightening torque **Md = 9 Nm**
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