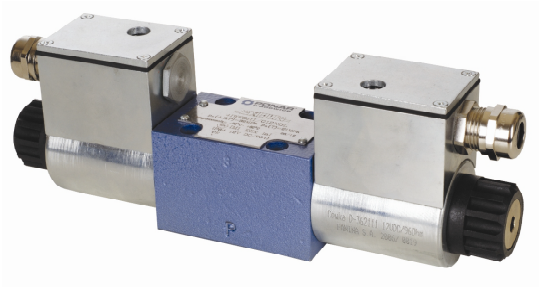
PONAR wadowice	Explosion proof directional control valve type IWE6			WK 499 775
	NS6	32 MPa	20 dm³/min	09.2007

CATALOGUE - SERVICING INSTRUCTION

APPLICATION

The 4-way directional control valves are designed as direct operated components for subplate mounting. These valves are mainly used in hazardous areas especially in mining industry.
It is certified with ⟨Ex⟩ I M1 Ex ia I, and can work with outlet explosion proof circuit "a" or "b" of the power pack permitted for group 1 gas explosion at maximum parameter Ui = 15V, Ii = 1,6A.

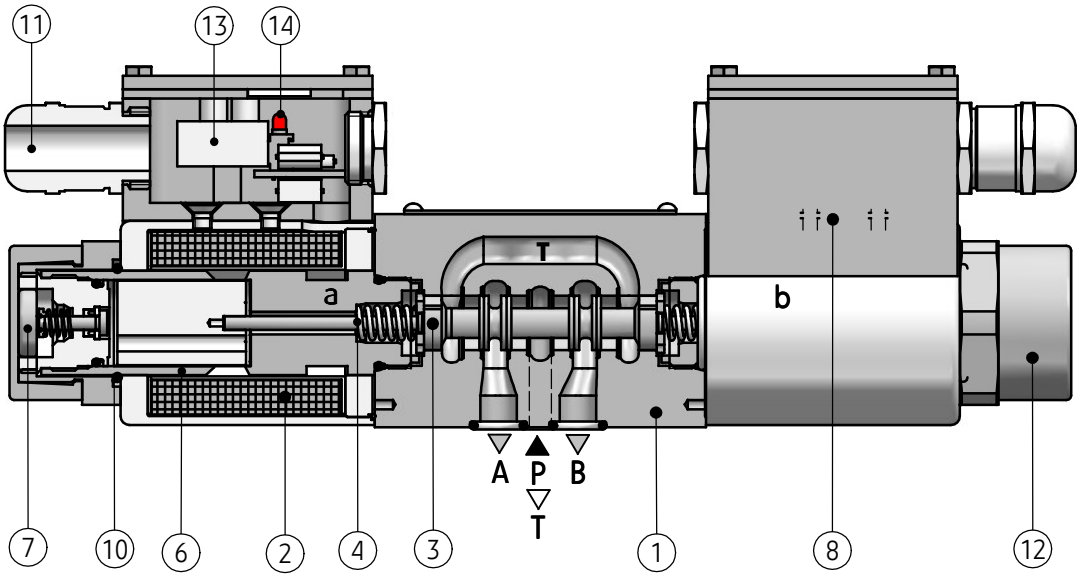


DESCRIPTION OF OPERATION

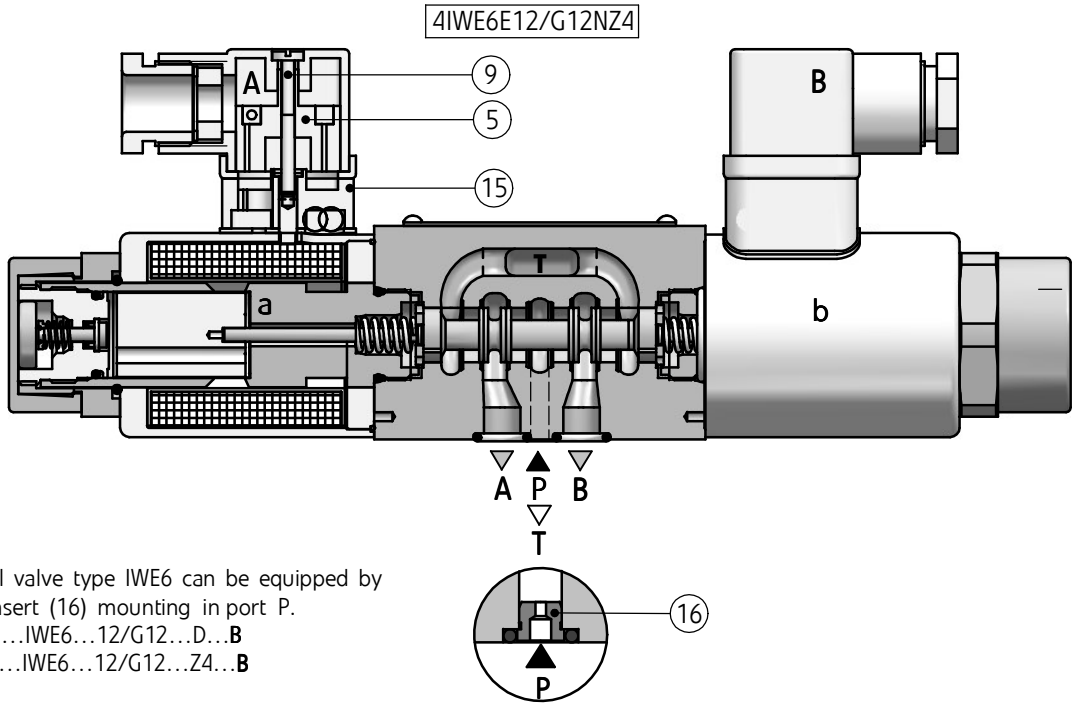
The directional valve is switched by changing position of the spool (3) which moving along its axis separates or connects ports A,B,P,T in the housing (1). The move of the spool is secured by the putting voltage on coil (2) through the plug (5) or terminal strip (13) The return of the spool is realized by the spring (4). An optional emergency button (7) permits movement of the spool without solenoid. The valve is equipped with explosion proof solenoid type EMSGI – 45. Solenoid is assembled with sleeve and emergency button.

There is a coil (2) on the 6). Outside of coil mounted is cable box (8) or electrical socket (15). Inside the plug and cable box are diodes. Electrical connection for type with cable box is realize by using terminal strip (13) and for type with light signaling applied diode LED (14). The Diode is mounted inside cable box or plug. Power lead must be sealed and immobilized in both types using gland (11). Sealing rings (10) protect the coil against external impacts and prevent from turn of coil after tightening up the nut (12).

4IWE6E12/G12NDL



DESCRIPTION OF OPERATION



Directional valve type IWE6 can be equipped by throttle insert (16) mounting in port P.
Versions: …IWE6…12/G12…D…**B**
…IWE6…12/G12…Z4…**B**

TECHNICAL DATA

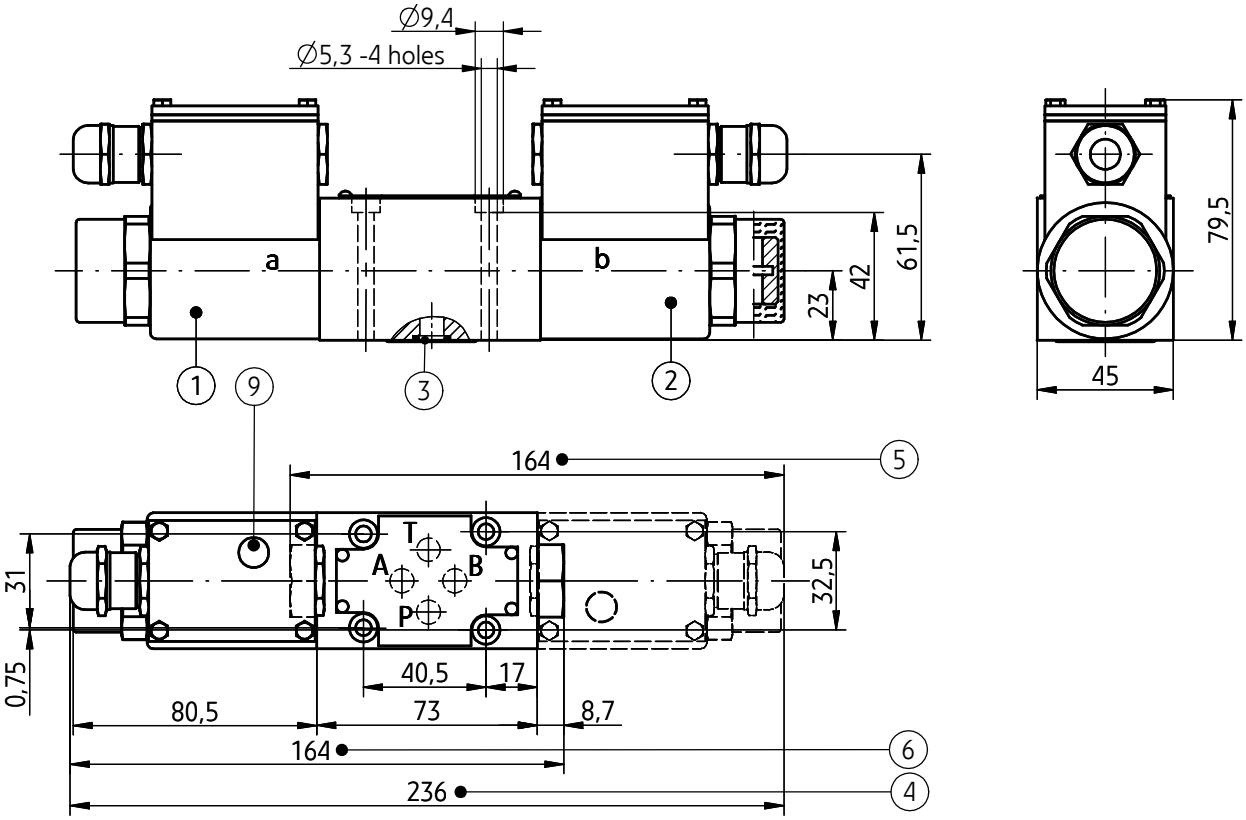
Hydraulic Fluid		Mineral Oil	
Required Filtration		**16 µm**	
Recommended Filtration		10 µm	
Nominal fluid viscosity		37 mm²/s temperature 55°C	
Viscosity range		Form 2,8 to 328 mm²/s	
Optimum working temperature		From 40 to 55°C	
Working temperature range		From -20 to 60°C	
Relative humidity of air		To 95%	
Protective coating	Housing	Epoxy chemically resistant enamel	
	Solenoid	Hot galvanizing	
Maximum operating pressure		**Port P, A, B - 32 MPa**	**Port. T - 21 MPa**
Maximum flow		**20 dm³/min**	
Weight		1,6 kg	
Supply voltage Un		**12 V**	
Supply current		110 mA	
Scope of insulation		**IP 65**	
Characteristic of explosion proof		**⟨Ex⟩ I M 1 Ex ia I**	

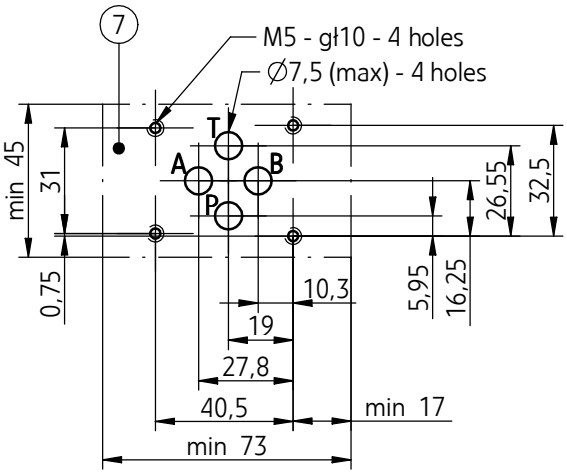
ASSEMBLY AND OPERATION REQUIREMENTS

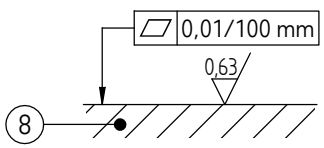
1. Electric connection of the valve must be made according to electric scheme sht 6.
2. Conductors of valve must be meet requirements applied in the mining machinery.
3. Only skilled workers can direct connect valve to a electrical system.
4. The plug must be supported by retains screw.
5. During the period of operation must be kept the fluid viscosity and filtration according to requirements defined in serving instruction.
6. In order to ensure the failure free and safe operation must be checked:
   - Condition of the electrical connection,
   - The verity proper working of the valve,
   - Cleanness of the hydraulics fluid.
7. Repairing of the broken valve must be done by service workshop.
8. A person that operates the valve has to acquaint with Servicing Instruction.

OVERALL AND CONNECTION DIMENSIONS

version ...IWE6...1X/...D...







DESCRIPTION

1 – Solenoid **a**
2 – Solenoid **b**
3 – Sealing ring – **O-ring 9,2 x 1,8** – pc.4
4 – Valve dimension:
- **three – position directional valve with return springs** solenoids **a** and **b**; spools symbol - E, H, J, L, M, U – according to sht 5
- **two – position directional valve without return springs** solenoids **a** and **b** spools symbol - A, C, D – according to sht 5

5 – Valve dimension:
- **two – position directional valve with return spring** solenoid **b**; spools symbol - B, Y, EB, HB, JB, LB, MB, UB – according to sht 5

6 – Valve dimension:
- **two – position directional valve with return spring** solenoid **a**; spools symbol - A, C, D, EA, HA, JA, LA, MA, UA – according to sht 5

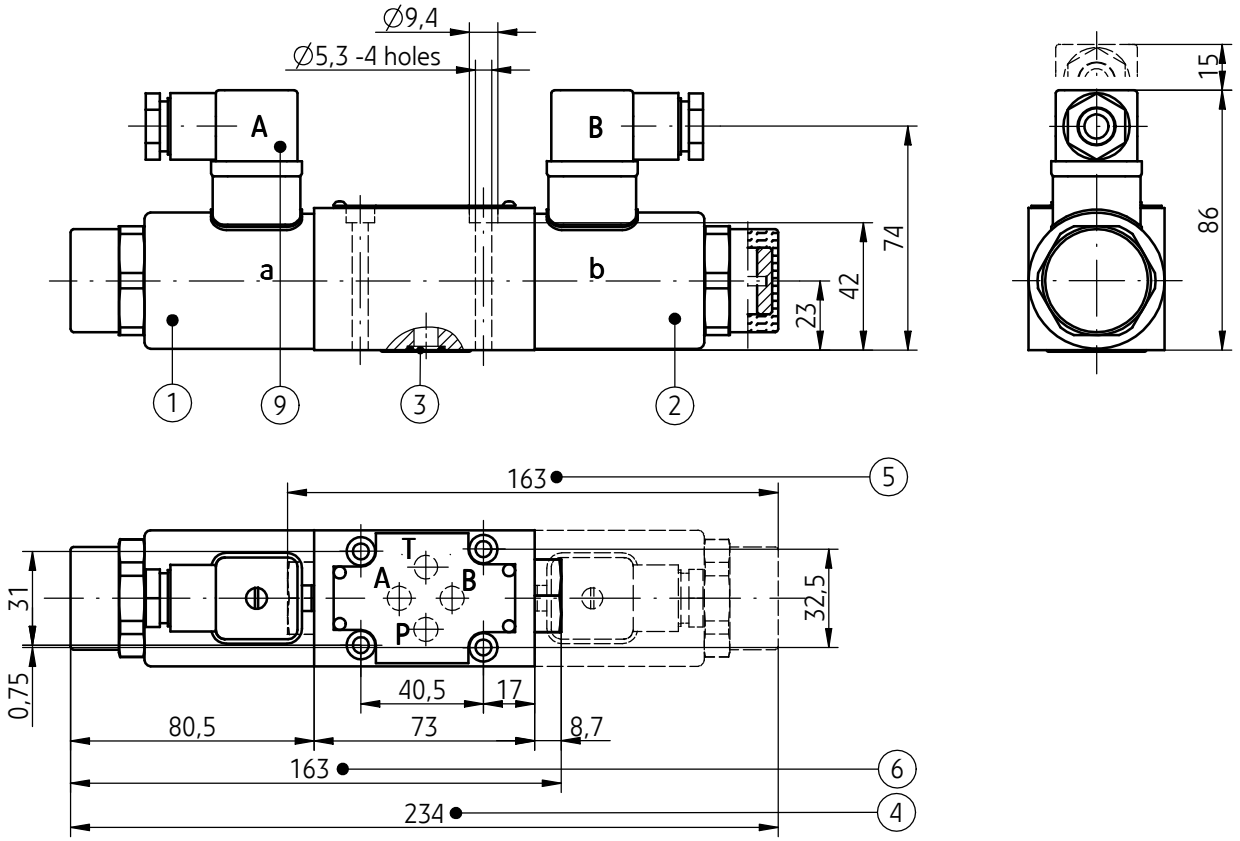
7 – Mounting interface according to:
- **CETOP RP 121H** (CETOP 4.2-4-03-320) – CETOP 03
- **ISO 4401** (ISO 4401-03-02-0-94)

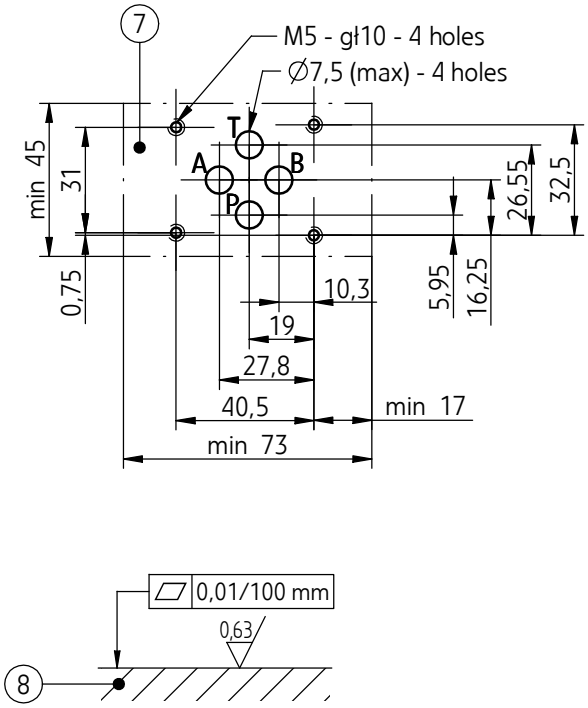
clamping screws M5 x 50 – 10.9 according to require defined in PN-87/M-82302 - pc.4
tightening torque **Md = 9Nm**

8 – Permissive surface roughness and deviation flatness surface of subplate.
9 – Diode LED – light signaling (only version ….IWE6…. 1X/…**DL**…)

OVERALL AND CONNECTION DIMENSIONS

version ...IWE6...1X/...Z4...





DESCRIPTION

1 – Solenoid **a**

2 – Solenoid **b**

3 – Sealing ring – **O-ring 9,2 x 1,8** – pc.4

4 – Valve dimension:

- **three – position directional valve with return springs solenoids a** and **b**; spools symbol - E, H, J, L, M, U – according to sht 5
- **two – position directional valve without return springs** solenoids **a** and **b** spools symbol - A, C, D – according to sht 5

5 – Valve dimension:

- **two – position directional valve with return spring** solenoid **b**; spools symbol - B, Y, EB, HB, JB, LB, MB, UB – according to sht 5

6 – Valve dimension:

- **two – position directional valve with return spring** solenoid **a**; spools symbol - A, C, D, EA, HA, JA, LA, MA, UA – according to sht 5

7 – Mounting interface according to:

- **CETOP RP 121H** (CETOP 4.2-4-03-320) – CETOP 03
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clamping screws M5 x 50 – 10.9 according to require defined in PN-87/M-82302 - pc.4 tightening torque **Md = 9Nm**

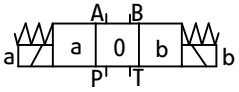
8 – Permissive surface roughness and deviation flatness surface of subplate.

9 – Plug with diode LED and transparent potting (only version ….IWE6…. 1X/…**Z4L**…)

SYMBOLS

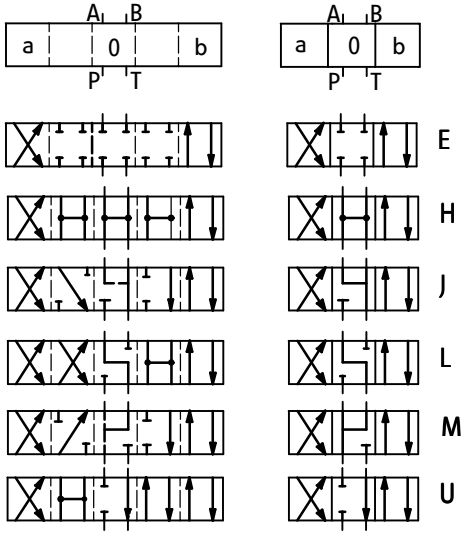
Spools symbols: 3-position valve and spools

...IWE6...1X/...



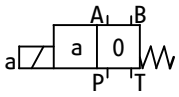
working and overlap position

working position



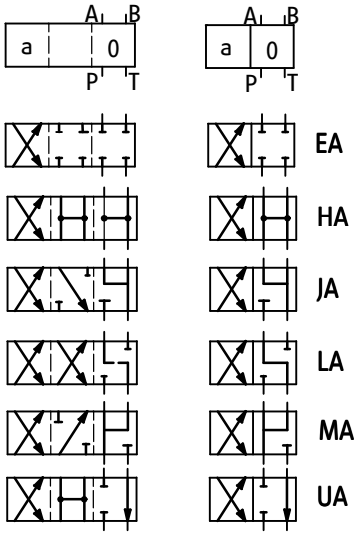
Spools symbols: 3-position valve and spools

...IWE6...1X/...

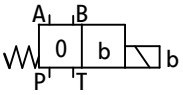


working and overlap position

working position

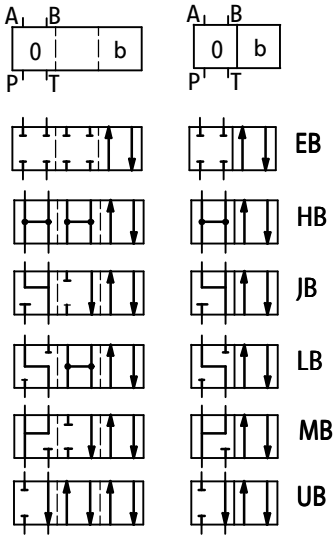


...IWE6...1X/...

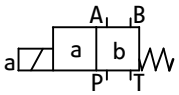


working and overlap position

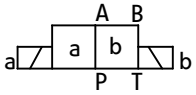
working position



...IWE6...1X/...

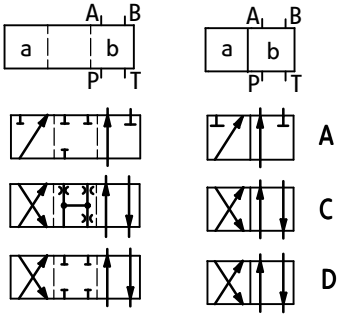


...IWE6..1X/0...

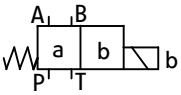


working and overlap position

working position

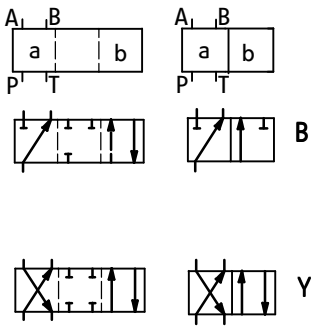


...IWE6...1X/...



working and overlap position

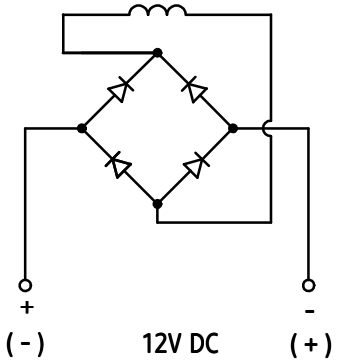
working position



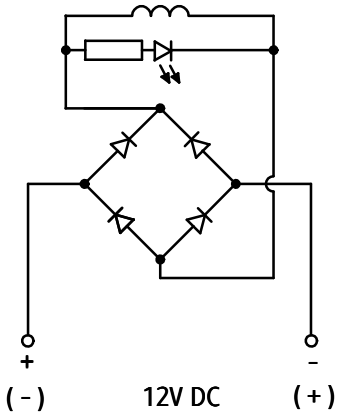
SCHEMES

Electrical scheme of directional control valve

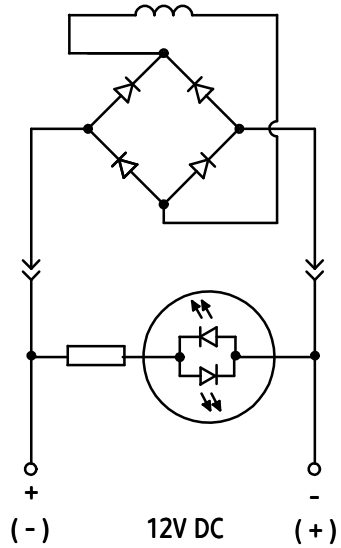
version with cable box without LED -…IWE6…1X/…**D**
version with plug without LED -…IWE6…1X/…**Z4**



version with cable box and light signaling LED
-…IWE6…1X/…**DL**

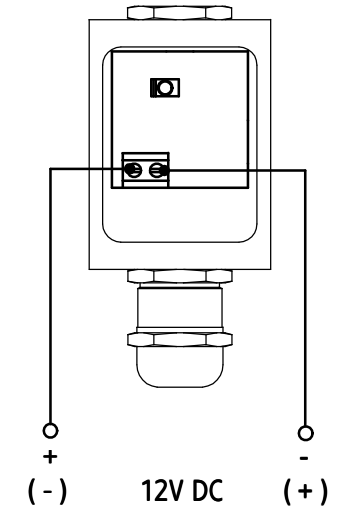


version with light signaling LED and plug -…IWE6…1X/…**Z4L**

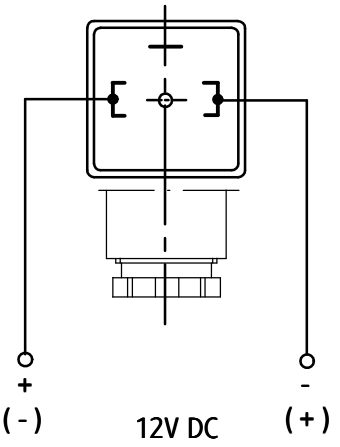


View of electrical connections

versions with cable box
…IWE6…1X/…**D**; …IWE6…1X/…**DL**



versions with plug
…IWE6…1X/…**Z4**; …IWE6…1X/…**Z4L**

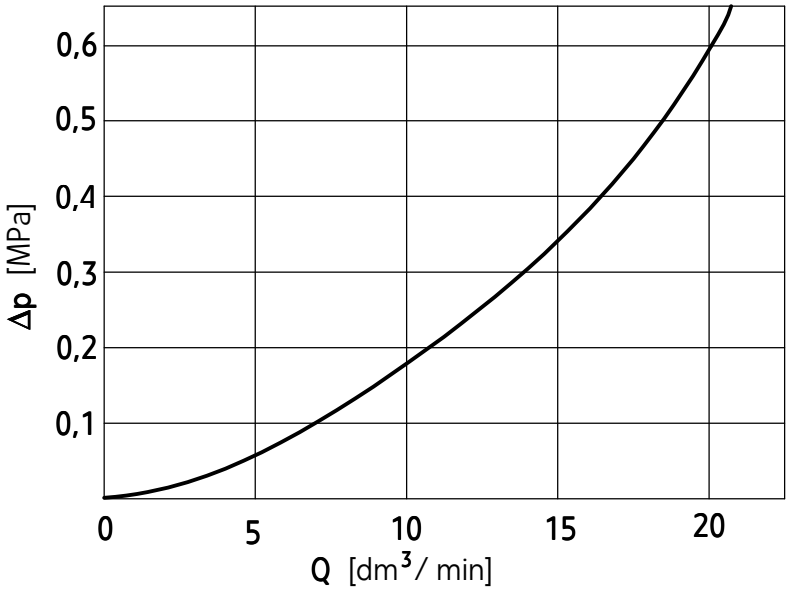


PERFOMANCE CURVES

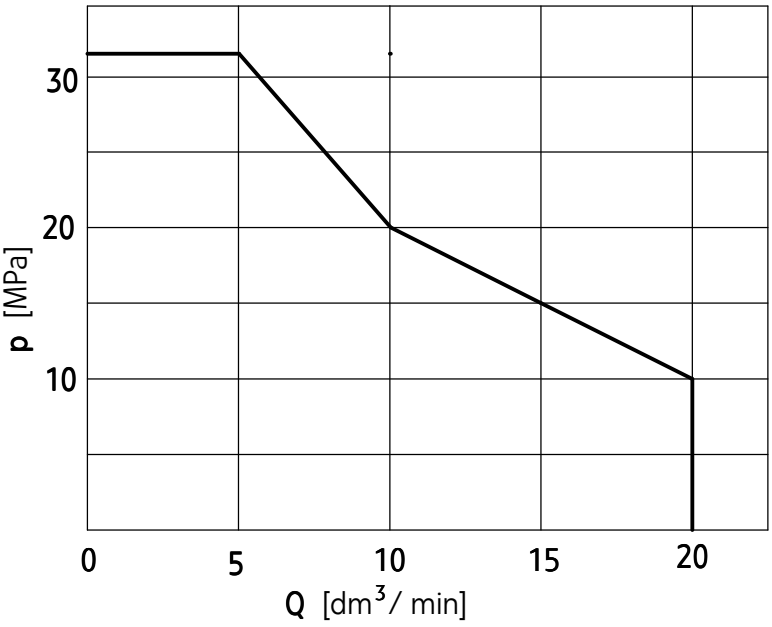
(For fluid viscosity v = 41 mm^2/s and temperature t = 50°C)

Flow resistance

for direction valve type IWE6 using lines P to A; P to B; A to B; A to T.



Flow limits for directional valve type IWE6



Note:

The flow limits refer to typical application of four-way directional control valve i.e. with using two lines e.q. P to A and B to T at the same time. In case of using four-way directional valve with line e.q. P to A (B plugged) or A to T (B plugged) actual flow limits are considerably lower.

HOW TO ORDER

	IWE	6		12 /			N			

Number of service ports
Three-way (for spools A,B) = **3**
Four-way (for the other spools) = **4**

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

Control spool type
spools symbol – according to **sht 6/10**

Series Number = 1X
(10-19) - installation and connection dimensions unchanged = **12**

Control spool positioning
spring centering **= with no designation**
without spring return = O

Voltage for solenoids
DC voltage 12V DC = **G12**

Manual override
solenoids with emergency button = **N**

Electrical connections (schemes according to sht 7/10)
cable box without LED = **D**
cable box with LED = DL
plug without LED = Z4
plug with LED = Z4L

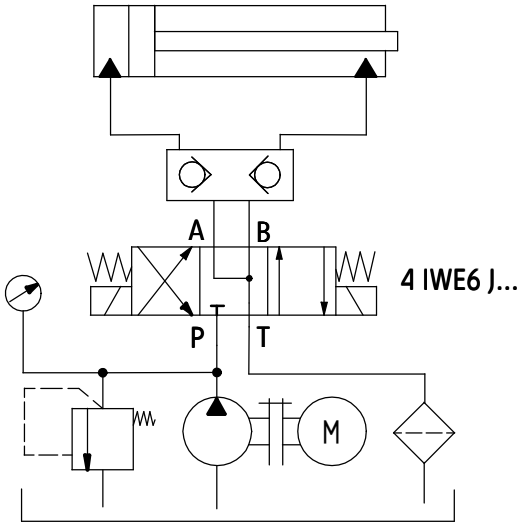
Throttle insert
Without throttle insert = **with no designation**
Throttle insert Ø 0.8 mm = B 08
Throttle insert Ø 1.0 mm = B 10
Throttle insert Ø 1.2 mm = B 12

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

IMPORTANT NOTICE:

Orders coded in the way showed above should be forwarded to the manufacture.
Shorter terms of delivery for valves with parameters in bold are possible.
Coding example: 4IWE6 E 12/G12 N DL

EXAMPLE OF APPLICATION IN HYDRAULIC SYSTEM



SUBPLATES AND BOLTS

Subplates must be order according to catalogue WK 450 780. Symbols of the plates:
G341/01 - thread of manifold G 1/4
G342/01 - thread of manifold G 3/8
G341/02 - thread of manifold M14 x 1,5
G342/02 - thread of manifold M16 x 1,5

Subplates and bolts M5x 50 -10,9 (pc. 4) according to the requirements defined in PN-87/M – 82302 have to be ordered separately .
Tightening torque of bolt **Md = 9 Nm**.

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