

Directional spool valves, direct operated, with solenoid actuation

Type WE



- ▶ Size 6
- ▶ Component series 1X
- ▶ Maximum operating pressure 350 bar
- ▶ Maximum flow (recommended) 80 l/min

Features

- ▶ 4/3, 4/2 or 3/2-way version
- ▶ Standard version
- ▶ Porting pattern according to ISO 4401-03-02-0-05
- ▶ Wet-pin DC solenoids
- ▶ Rotatable solenoid coil
- ▶ The coil can be changed without having to open the pressure-tight chamber
- ▶ Electrical connection as individual connection
- ▶ Concealed manual override

Contents

Features	1
Ordering code	2
Symbols	3
Function, section	4
Technical data	5, 6
Characteristic curves	7
Performance limits	7
Dimensions	8, 9
Accessories	9
Further information	9

Ordering code

01	02	03	04	05	06	07	08	09	10	11	12
	WE	6		1X	/		H	G24	N9	/	*

01	3 main ports	3
	4 main ports	4
02	Directional valve	WE
03	Size 6	6
04	Symbols; possible version see page 3	
05	Component series 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	1X
06	With spring return	no code
07	Standard solenoid, wet-pin	H
08	Direct voltage 24 V	G24
09	With concealed manual override	N9

Electrical connection

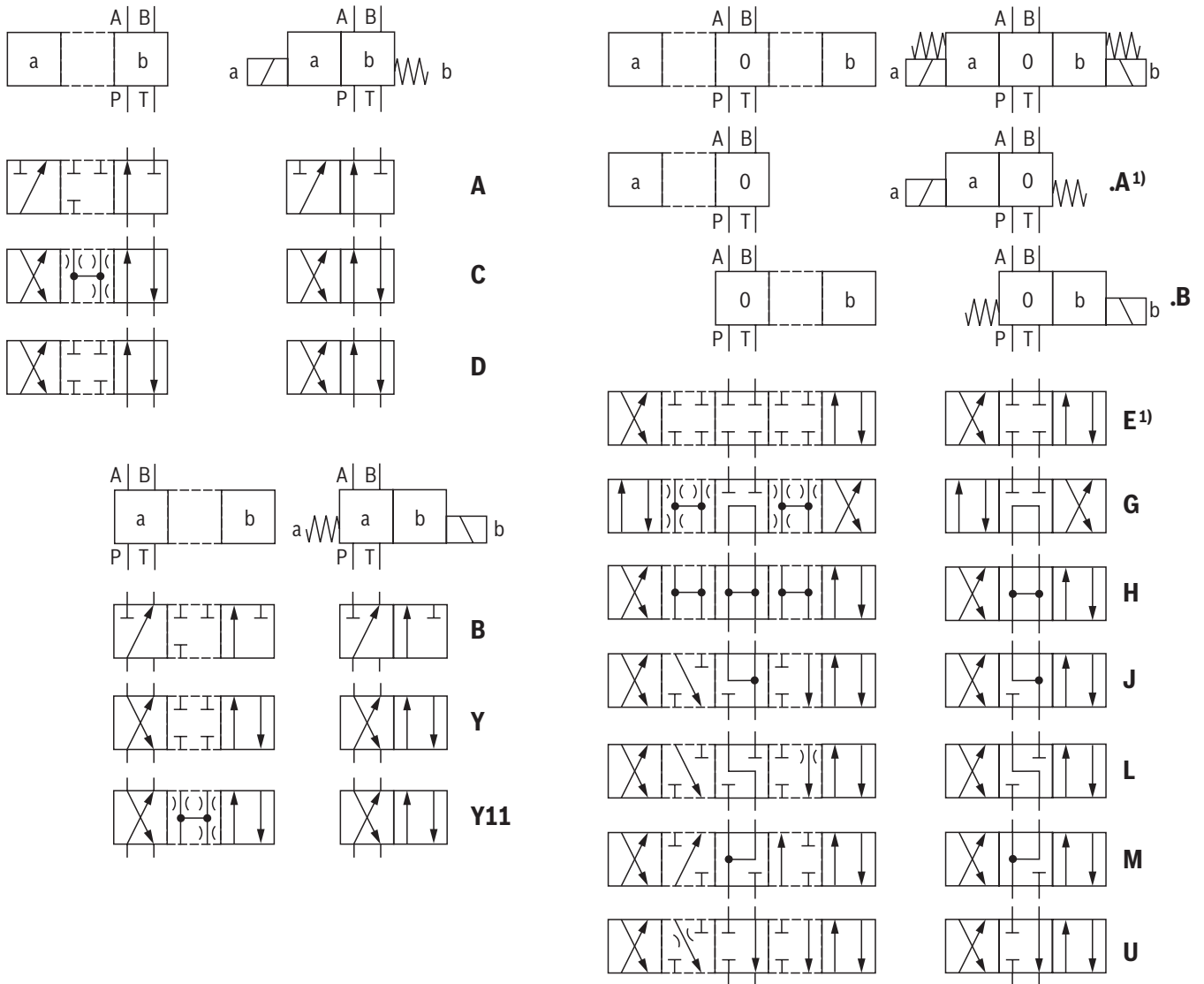
10	Individual connection	
	Connector 3-pole (2 + PE) according to DIN EN 175301-803	K4 ¹⁾

Seal material (observe compatibility of seals with hydraulic fluid used, see page 5)

11	NBR seals	no code
12	Further details in the plain text	

¹⁾ Mating connectors, separate order, see page 9 and data sheet 08006.

Symbols



¹⁾ **Example:**
Symbol E with spool position "a" ordering code ..EA..

Notice:
Representation according to DIN ISO 1219-1.
Hydraulic interim positions are shown by dashes.

Function, section

Directional valves of type WE are solenoid-actuated directional spool valves. They control the start, stop and direction of a flow.

The directional valves basically consist of housing (1), one or two solenoids (2), control spool (3), and one or two return springs (4).

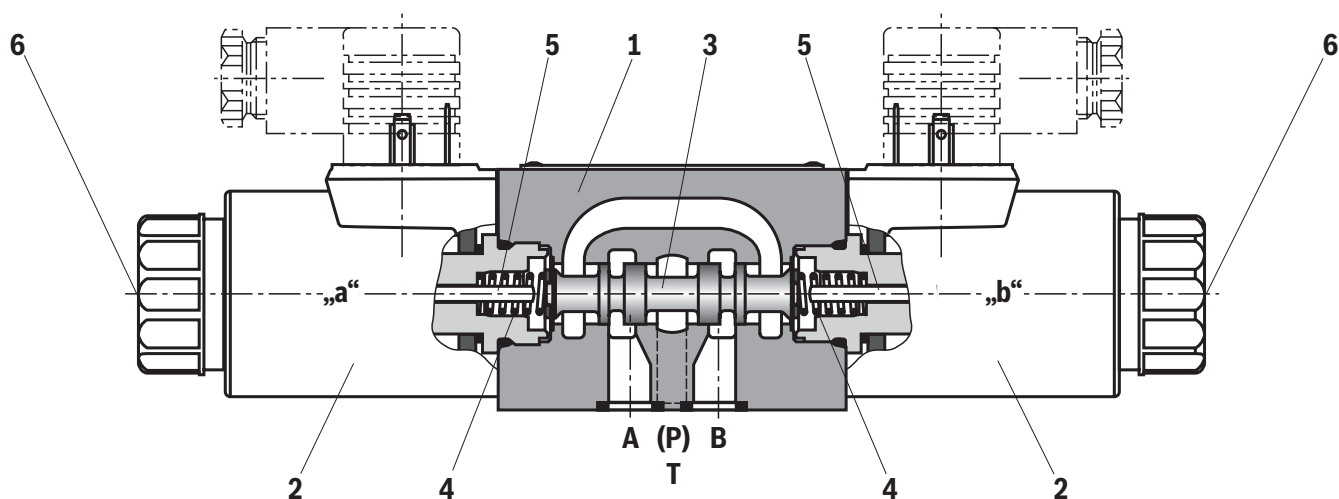
In de-energized condition, the control spool (3) is held in the central position or in the initial position by the return springs (4). The control spool (3) is actuated by wet-pin solenoids (2).

For unobjectionable functioning, the hydraulic system has to be bled properly.

The force of the solenoid (2) acts via the plunger (5) on the control spool (3) and pushes the latter from its rest position to the required end position. In this way, the required direction of flow according to the symbol is released.

After de-excitation of the solenoid (2), the return spring (4) pushes the control spool (3) back to its rest position.

The manual override (6) allows control spool (3) to be moved without solenoid energization.



Type 4WE 6 E1X/H...

Technical data

(For applications outside these values, please consult us!)

General			
Weight	► Valve with one solenoid	kg	1.25
	► Valve with two solenoids	kg	1.6
Installation position			any
Ambient temperature range		°C	−20 ... +50
Protection class according to EN 60529			IP65 (if suitable and correctly mounted mating connectors are used)

Hydraulic			
Maximum operating pressure	► Ports A, B, P	bar	350
	► Port T	bar	210 With symbols A and B, port T must be used as leakage port if the operating pressure exceeds the admissible tank pressure.
Hydraulic fluid			see table below
Hydraulic fluid temperature range (at the valve working ports)		°C	−30 ... +80
Viscosity range		mm ² /s	2.8 ... 500
Maximum admissible degree of contamination of the hydraulic fluid, cleanliness class according to ISO 4406 (c)			Class 20/18/15 ²⁾
Maximum flow ¹⁾	► admissible	l/min	100
	► recommended	l/min	80

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP, HLPD, HVLP, HVLPD	NBR	DIN 51524	90220



Important information on hydraulic fluids:

- For further information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us.
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.).



- The ignition temperature of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.

¹⁾ Recommended 80 l/min (An average flow of more than 80 l/min leads to higher pressure drop, see "Characteristic curves" page 7).

²⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the life cycle of the components.




Notes:

- Only actuate the manual override using a rounded tool (Ø3⁺¹ mm) or special tool (separate order, material no. **R900024943**).
- Actuation of the manual override only up to a tank pressure of approx. 50 bar.
- When the manual override is blocked, the operation of the solenoid must be prevented.
- Simultaneous actuation of the solenoids must be prevented.

Technical data
 (For applications outside these values, please consult us!)

Electric				
Available voltages		V	24	
Voltage tolerance (nominal voltage)		%	±10	
Power consumption		W	28	
Duty cycle			S1 (continuous operation)	
Switching time	ON	ms	20 ... 45	
	OFF	ms	10 ... 25	
Maximum switching frequency		1/h	15000	
Maximum coil temperature ³⁾		°C	150	
Insulation class VDE 0580			F	

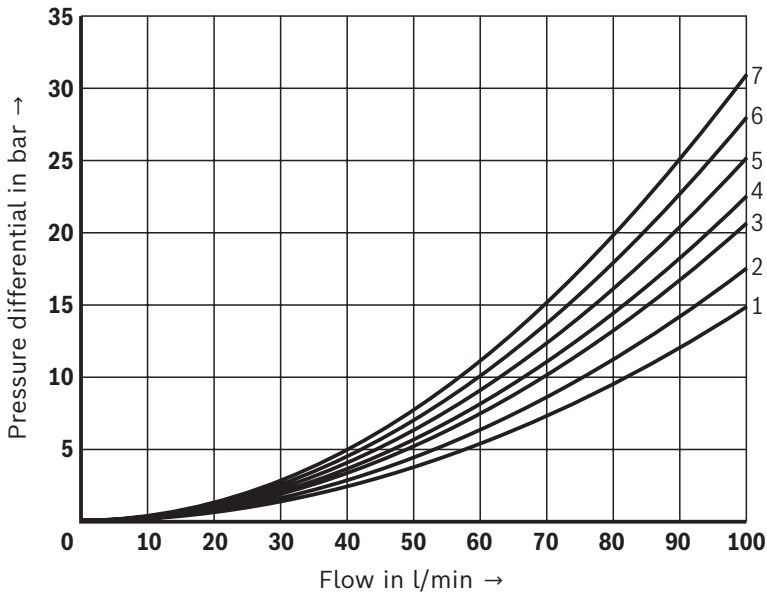
³⁾ Due to the arising surface temperatures of the solenoid coils, the standards ISO 13732-1 and ISO 4413 are to be observed.

When establishing the electrical connection, the protective grounding conductor (PE ) must be connected correctly.

Characteristic curves

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

Δp - q_v characteristic curves



Symbol	Direction of flow			
	P-A	P-B	A-T	B-T
A, B	5	5	-	-
C, Y11	3	3	5	3
D, Y	6	6	5	5
E	5	5	3	3
H	2	1	2	2
J	3	3	2	3
L	5	5	1	4
M	2	1	5	5
U	5	5	4	1
G	7	7	4	4

Performance limits

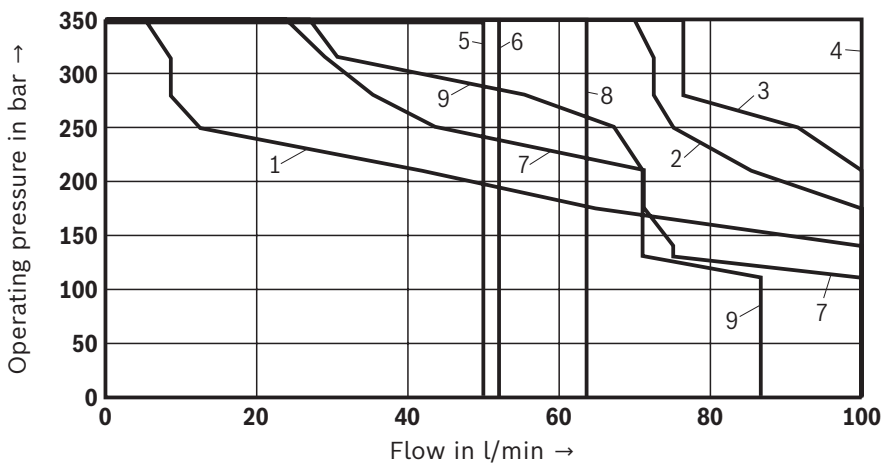
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^{\circ}\text{C}$)

Notice:

The specified performance limits are valid for operation with two directions of flow (e.g. from P to A and simultaneous return flow from B to T). Due to the flow forces acting within the valves, the achievable performance limit may be considerably

lower with only one direction of flow (e.g. from P to A while port B is blocked)!

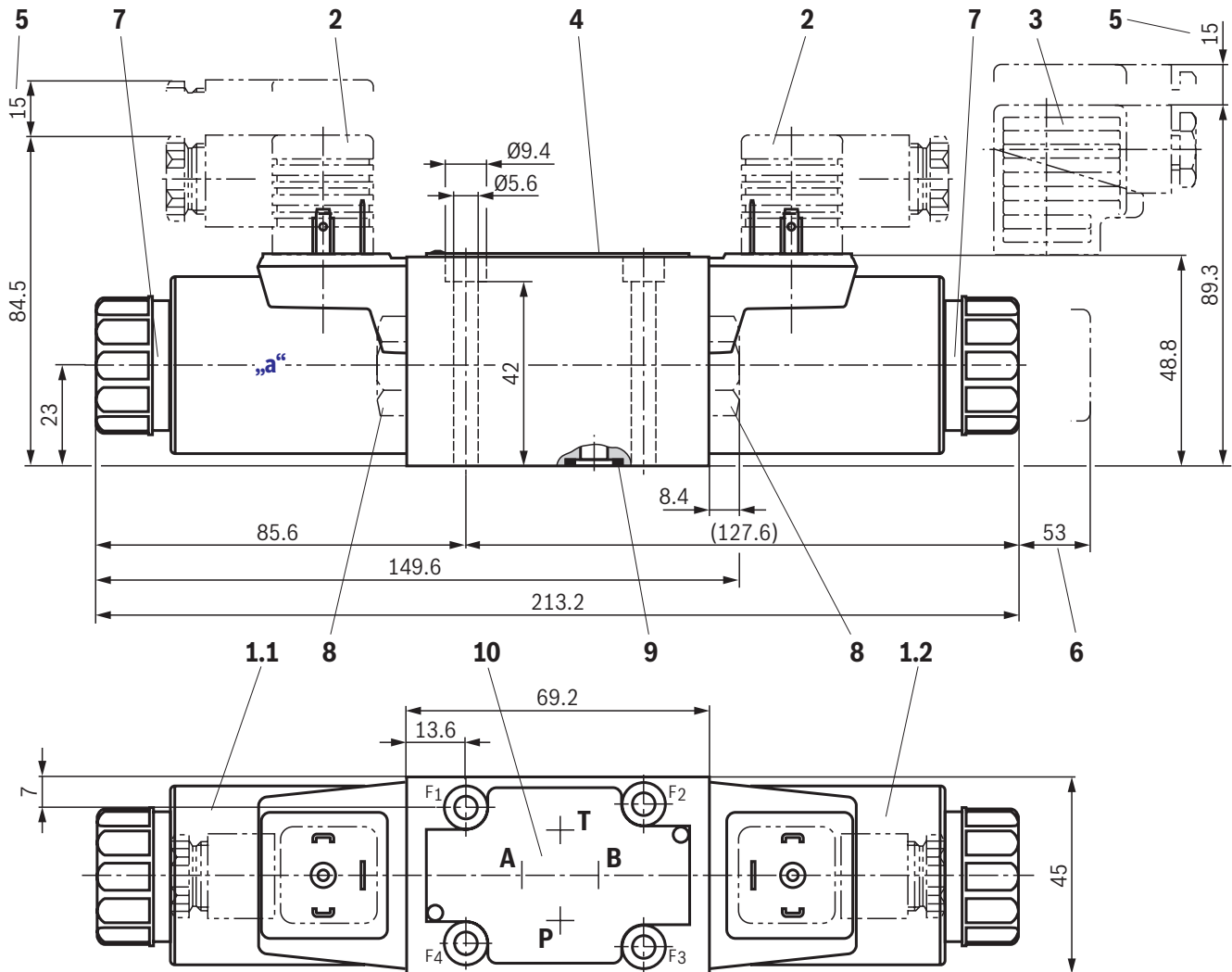
The performance limits were determined when the solenoids were at operating temperature, at 10% undervoltage and without tank preloading.



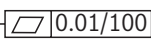
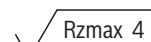
Characteristic curve	Symbol
1	A, B
2	C, Y11
3	D, Y
4	E
5	G
6	H
7	J
8	M
9	L, U

Dimensions

(dimensions in mm)



- 1.1 Solenoid "a"
- 1.2 Solenoid "b"
- 2 Mating connector **without** circuitry for connector "K4"
(separate order, see page 9 and data sheet 08006)
- 3 Mating connector **with** circuitry for connector "K4"
(separate order, see page 9 and data sheet 08006)
- 4 Name plate
- 5 Space required to remove the mating connector
- 6 Space required to remove the coil
- 7 Mounting nut, $M_A = 5^{+1}$ Nm
- 8 Plug screw for valves with one solenoid
- 9 Identical seal rings for ports A, B, P, and T
- 10 Porting pattern according to ISO 4401-03-02-0-05



 Required surface quality of the
valve contact surface



Notice:

The dimensions are nominal dimensions which are subject to tolerances.

For item explanations, valve mounting screws and subplates, see page 9.

Dimensions

Valve mounting screws (separate order)

Size	Quantity	Hexagon socket head cap screws	Material number
6	4	ISO 4762 - M5 x 50 - 10.9--fLZn-240h-L Friction coefficient $\mu_{\text{total}} = 0.09 \dots 0.14$; tightening torque $M_A = 7 \text{ Nm} \pm 10\%$	R913000064
	or		
	4	ISO 4762 - M5 x 50 - 10.9 Friction coefficient $\mu_{\text{total}} = 0.12 \dots 0.17$; tightening torque $M_A = 8.1 \text{ Nm} \pm 10\%$	Not included in the Rexroth delivery range

Subplates (separate order) with porting pattern according to ISO 4401, see data sheet 45100.

Accessories (separate order)

Mating connectors and cable sets

Pos. ¹⁾	Designation	Design	Short designation	Material number	Data sheet
2, 3	Mating connector; for valves with "K4" connector, 2-pole + PE, design A	Without circuitry, M16 x 1.5, 12 ... 240 V, "a"	Z4	R901017010	08006
		Without circuitry, M16 x 1.5, 12 ... 240 V, "b"		R901017011	
		With indicator light, M16 x 1.5, 12 ... 240 V	Z5L	R901017022	
		With rectifier, M16 x 1.5, 80 ... 240 V	RZ5	R901017025	
		With indicator light and Z-diode-suppressor, M16 x 1.5, 24 V	Z5L1	R901017026	

¹⁾ See dimensions page 8.

Further information

- Subplates
- Hydraulic fluids on mineral oil basis
- Mating connectors and cable sets for valves and sensors
- Hydraulic valves for industrial applications
- Information on available spare parts

Data sheet 45100
Data sheet 90220
Data sheet 08006
Operating instructions 07600-B
www.boschrexroth.com/spc

Notes

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It must be remembered that our products are subject to a natural process of wear and aging.

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