The Drive & Control Company

Rexroth
Bosch Group

Directional spool valves, direct operated, with solenoid actuation

Type WE

RE 23164
Edition: 2013-01
Replaces: 07.06

H7380

- Size 6
- Component series 7X
- Maximum operating pressure 315 bar
- Maximum flow 60 l/min

Features

- 4/3-, 4/2- or 3/2-way version
- Standard version
- Porting pattern according to DIN 24340 form A
- 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

Ordering code

01	02	03	04	05		06	07	08	09	10		11	12
	WE	**6**		**7X**	**/**		**H**		**N9**		**/**		*****

01	3 main ports	**3**
	4 main ports	**4**
02	Directional valve	**WE**
03	Size 6	**6**
04	Symbols e.g. D, E etc.; possible design see page 3	
05	Component series 70 ... 79 (70 ... 79: Unchanged installation and connection dimensions)	**7X**
06	**With** spring return	**no code**
	Without spring return with detent	**OF** [1]
07	Standard solenoid, wet-pin	**H**
08	Direct voltage 12 V	**G12**
	Direct voltage 24 V	**G24**
09	**With** concealed manual override	**N9**

Electrical connection

10	**Individual connection**	
	Without mating connector with connector DIN EN 175301-803	**K4** [2]
	Without mating connector with connector AMP Junior-Timer	**C4Z** [2]

Seal material

11	NBR seals	**no code**
	(other seals upon request) Attention! Ensure compatibility of seals with hydraulic fluid used!	
12	Further details in the plain text	

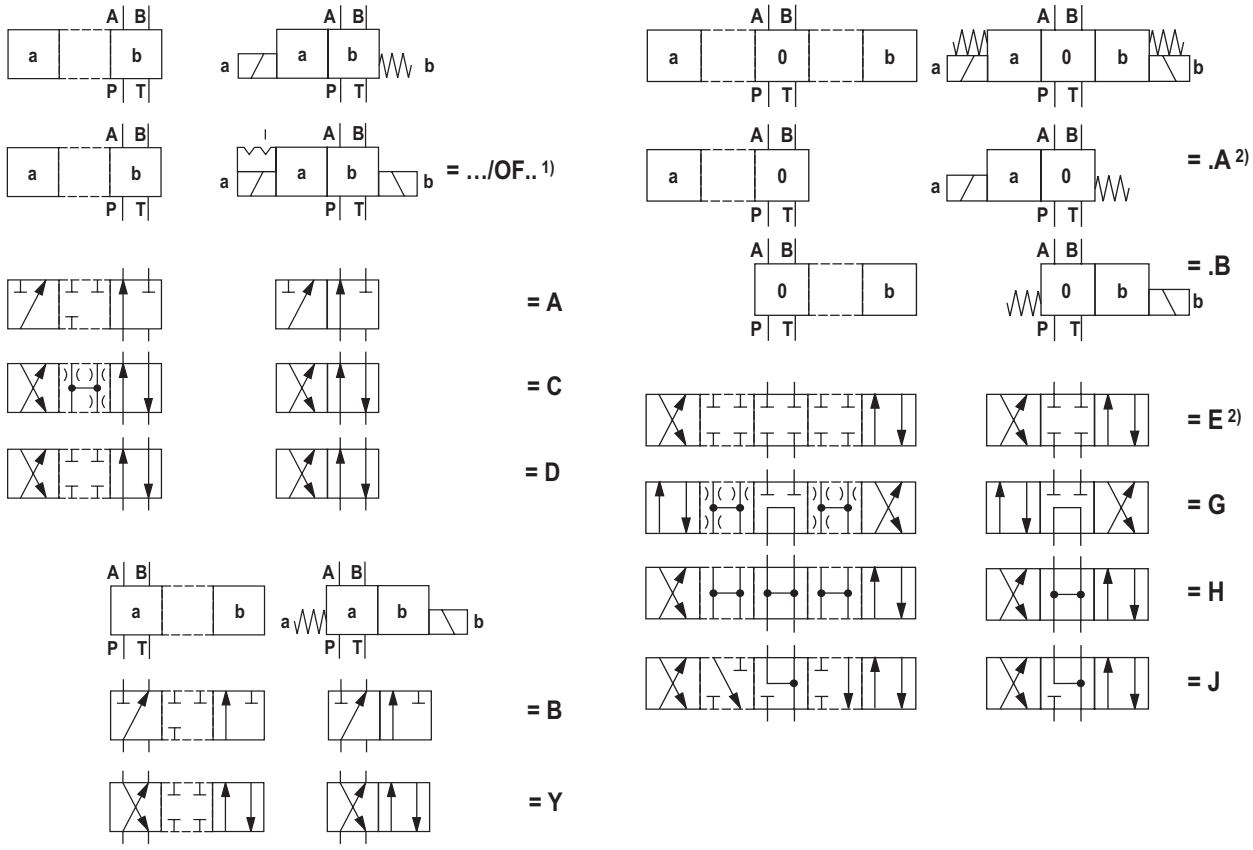
[1] Only symbol D

[2] Mating connectors, separate order, see page 10 and data sheet 08006.

Preferred types and standard units are contained in the EPS (standard price list).

Bosch Rexroth AG, RE 23164, edition: 2013-01

Symbols



1) Only symbol D

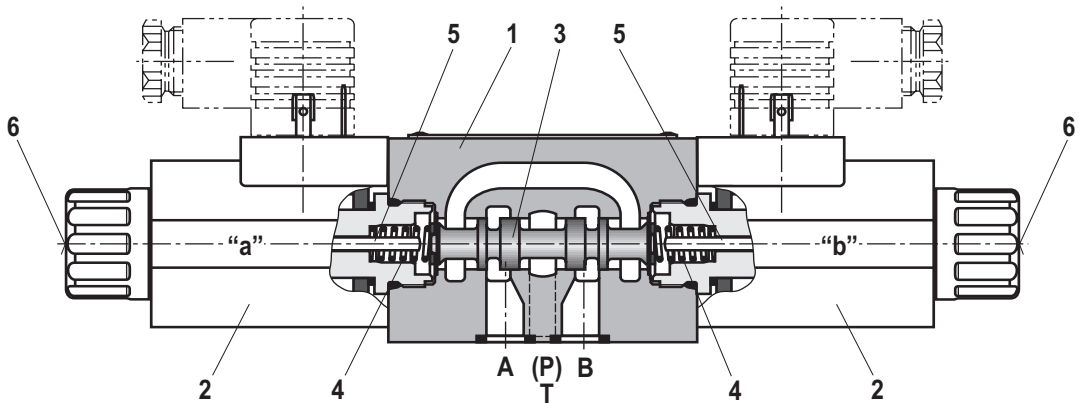
2) **Example:**
Symbol E with switching position "a" ordering code ..**EA**..

Function, section

Directional valves of type WE are solenoid operated 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 the de-energized condition, 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 proper functioning, it must be ensured that the solenoid's pressure chamber is filled with oil!

The force of solenoid (2) acts via plunger (5) on control spool (3) and pushes the latter from its rest position to the required end position. This opens up the required flow direction according to the spool symbol.
After solenoid (2) has been de-excited, return spring (4) pushes control spool (3) back to its rest position again.
The manual override (6) allows control spool (3) to be moved without solenoid energization.



Type 4WE 6 E7X/H...

Technical data

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

general			
Weight	– Valve with 1 solenoid	kg	Approx. 1.25
	– Valve with 2 solenoids	kg	Approx. 1.6
Installation position			Any
Ambient temperature range		°C	–30 ... +50

hydraulic			
Maximum operating pressure	– Port A, B, P	bar	315
	– Port T	bar	160 With symbols A and B, port T must be used as leakage port if the operating pressure exceeds the permissible tank pressure.
Maximum flow		l/min	60
Hydraulic fluid			See table below
Hydraulic fluid temperature range		°C	–30 ... +80
Viscosity range		mm^2/s	2.8 ... 500
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)			Class 20/18/15 [1]

Hydraulic fluid		**Classification**	**Suitable sealing materials**	**Standards**
Mineral oils		HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524
Bio-degradable	– insoluble in water	HETG	NBR, FKM	VDMA 24568
		HEES	FKM	
	– soluble in water	HEPG	FKM	VDMA 24568
Flame-resistant	– water-free	HFDU, HFDR	FKM	ISO 12922
	– containing water	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	NBR	ISO 12922

☞ **Important information on hydraulic fluids!**

- For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!
- There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.
- **Flame-resistant – containing water**:
  - Maximum pressure differential per control edge 50 bar
  - Pressure pre-loading at the tank port > 20 % of the pressure differential, otherwise increased cavitation
  - Life cycle as compared to operation with mineral oil HL, HLP 50 to 100 %
- **Bio-degradable:** When using bio-degradable hydraulic fluids that are simultaneously zinc-solving, zinc may accumulate in the fluid (per pole tube 700 mg zinc).

[1] 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. For the selection of the filters see www.boschrexroth.com/filter.

☞ **Notice!**

- 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!
- The simultaneous operation of the solenoids must be prevented!

Technical data

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

electric			
Voltage type			Direct voltage
Available voltages		V	12; 24
Voltage tolerance (nominal voltage)		%	±10
Power consumption		W	26
Duty cycle			S1 (continuous operation)
Switching time	ON	ms	20 ... 45
	OFF	ms	10 ... 25
Maximum switching frequency		1/h	15000
Maximum coil temperature [2)]		°C	150
Protection class according to EN 60529			IP 65 with mating connector mounted and locked
Insulation class VDE 0580			F

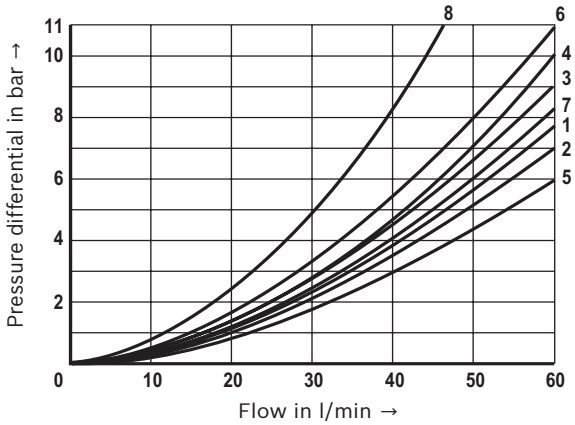
[2)] Due to the high surface temperatures of the solenoid coils > 50 °C the standards ISO 13732-1 and ISO 4413 must be adhered to and the coils must be equipped with contact protection if required.

When establishing the electrical connection, the protective earthing conductor (PE ⏚) has to be connected correctly.

Bosch Rexroth AG, RE 23164, edition: 2013-01

Characteristic curves
(measured with HLP46, ϑ_{oil} = 40 ± 5 °C)

***Δp-q*V characteristic curves**



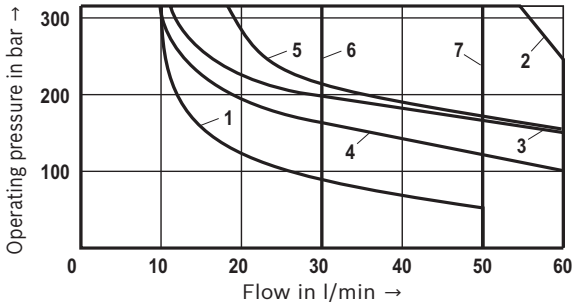
7 Symbol "H" in central position P – T

8 Symbol "G" in central position P – T

Symbol	Direction of flow			
	P–A	P–B	A–T	B–T
A, B	3	3	–	–
C	1	1	3	1
D, Y	4	4	3	3
E	3	3	1	1
J	1	1	2	1
G	6	6	7	7
H	2	5	2	2

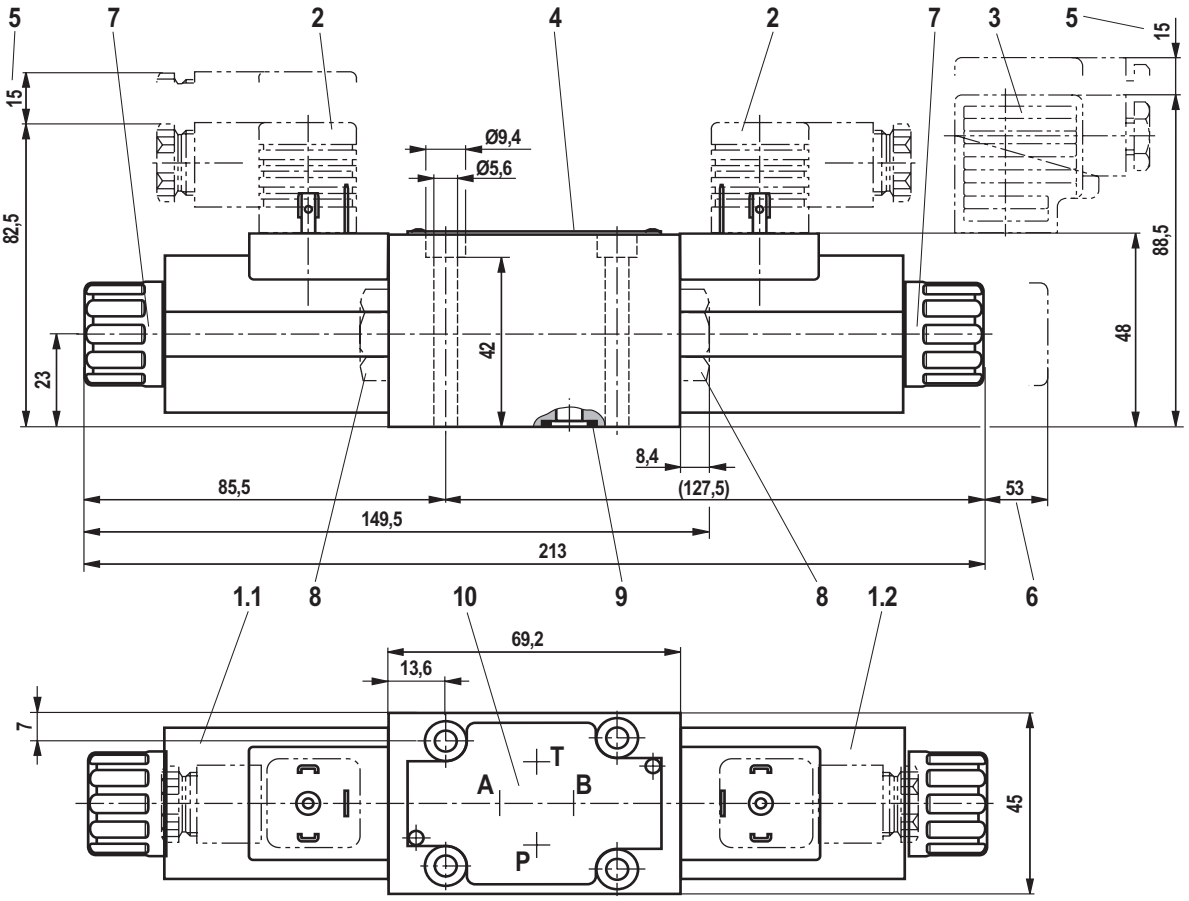
Switching power limits
(measured with HLP46, ϑ_{oil} = 40 ± 5 °C)

☞ **Notice!**
The specified switching power 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 permissible switching power limit may be considerably lower with only one direction of flow (e.g. from P to A while port B is blocked)!
In such cases, please consult us!
The switching power limit was established while the solenoids were at operating temperature, at 10 % undervoltage and without tank preloading.

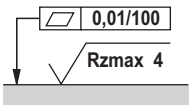


DC solenoid	
Characteristic curve	**Symbol**
1	A, B
2	C, Y
3	E
4	J
5	D
6	G, H
7	D/OF

Unit dimensions: Version "K4"
(dimensions in mm)

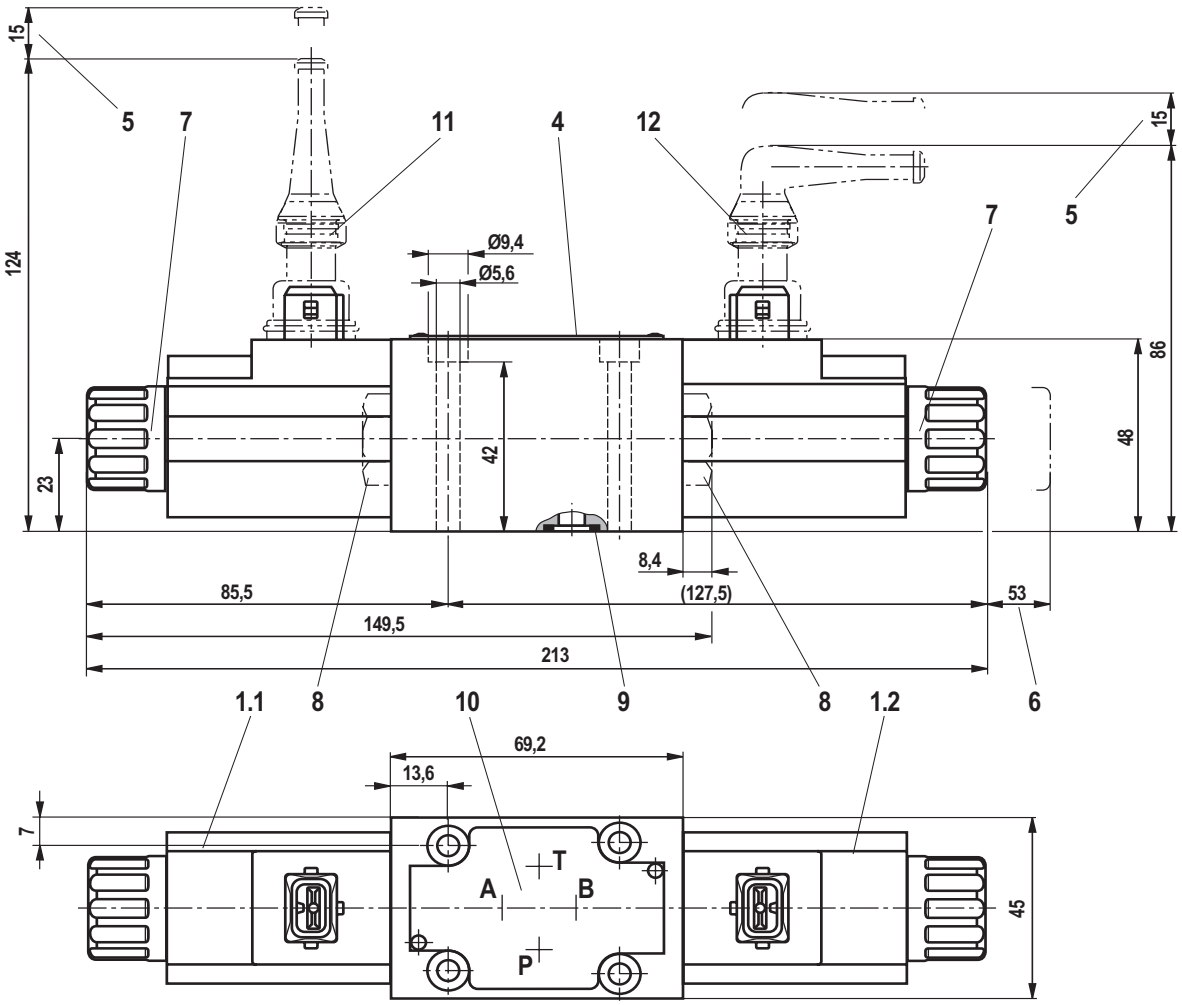


Item explanations, valve mounting screws and **sub-plates** see page 10.

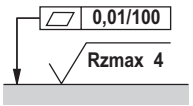


Required surface quality of the valve contact surface

Unit dimensions: Version "C4Z"
(dimensions in mm)



Item explanations, valve mounting screws and **sub-plates** see page 10.



Required surface quality of the valve contact surface

RE 23164, edition: 2013-01, **Bosch Rexroth AG**

Unit dimensions

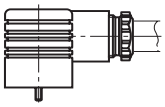
1.1 Solenoid "a"
1.2 Solenoid "b"
2 Mating connector **without** circuitry (separate order, see below)
3 Mating connector **with** circuitry (separate order, see below)
4 Name plate
5 Space required to remove the mating connector
6 Space required to remove the coil
7 Mounting nut, $M_A = 4^{+1}$ Nm
8 Plug screw for valves with one solenoid
9 Identical seal rings for ports A, B, P, and T
10 Porting pattern according to DIN 24340 form A
11 Mating connector "Junior Timer", straight (separate order, see data sheet 08006)
12 Mating connector "Junior Timer", angled (separate order, see data sheet 08006)

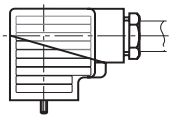
Subplates according to data sheet 45052 (separate order)
G 341/01 (G1/4)
G 342/01 (G3/8)
G 502/01 (G1/2)

Valve mounting screws (separate order)
- **4 hexagon socket head cap screws ISO 4762 - M5 x 50 - 10.9-flZn-240h-L** (friction coefficient μ_{total} = 0.09 to 0.14); tightening torque M_A = 7 Nm ± 10 %, material no. **R913000064**
  or
- **4 hexagon socket head cap screws ISO 4762 - M5 x 50 - 10.9** with friction coefficient μ_{total} = 0.12 to 0.17 a tightening torque M_A = 8.1 Nm ± 10 % results (not included in the Rexroth delivery range)

Mating connectors according to DIN EN 175301-803

For details and more mating connectors see data sheet 08006





Valve side	Color	Material no. Without circuitry	With indicator light 12 ... 240 V	With rectifier 12 ... 240 V	With indicator light and Zener diode suppression circuit 24 V
a	Gray	**R901017010**	–	–	–
b	Black	**R901017011**	–	–	–
a/b	Black	–	**R901017022**	**R901017025**	**R901017026**

More information

▶ Subplates	Data sheet 45052
▶ Hydraulic fluids on mineral oil basis	Data sheet 90220
▶ General product information on hydraulic products	Data sheet 07008
▶ Installation, commissioning and maintenance of industrial valves	Data sheet 07300
▶ Hydraulic valves for industrial applications	
▶ Selection of the filters	

Bosch Rexroth AG, RE 23164, edition: 2013-01