

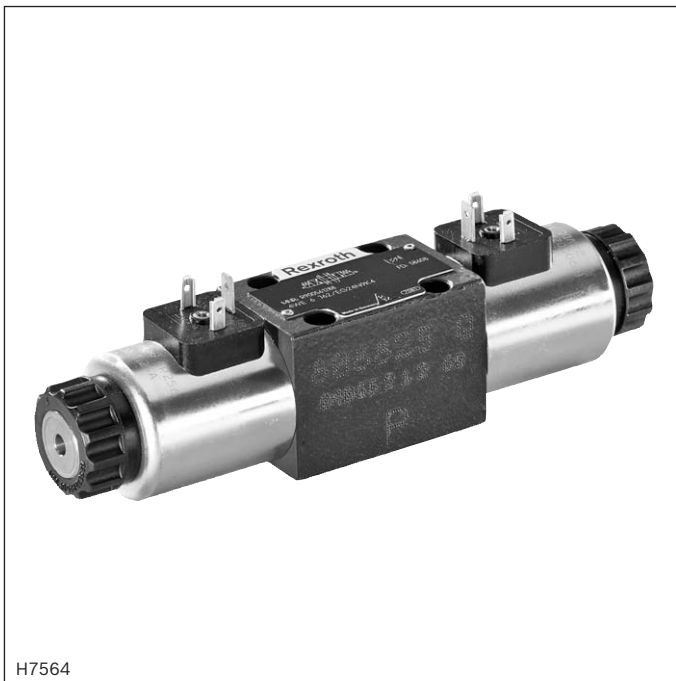
# Directional spool valves, direct operated, with solenoid actuation

## Type WE

**RE 23178**

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H7564

- ▶ Size 6
- ▶ Component series 6X
- ▶ Maximum operating pressure 350 bar [5076 psi]
- ▶ Maximum flow: 80 l/min [21 US gpm] – DC  
60 l/min [15.8 US gpm] – AC



## Features

- ▶ 4/3, 4/2 or 3/2 directional design
- ▶ High-power solenoid
- ▶ Porting pattern according to DIN 24340 form A
- ▶ Porting pattern according to ISO 4401-03-02-0-05 and NFPA T3.5.1 R2-2002 D03
- ▶ Wet-pin DC or AC solenoids with detachable coil
- ▶ Solenoid coil can be rotated by 90°
- ▶ The coil can be changed without having to open the pressure-tight chamber
- ▶ Electrical connection as individual or central connection
- ▶ Manual override, optional
- ▶ Spool position monitoring, optional

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## Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	<b>WE</b>	<b>6</b>		<b>6X</b>	<b>/</b>		<b>E</b>				<b>/</b>				<b>*</b>

01	3 main ports	<b>3</b>
	4 main ports	<b>4</b>
02	Directional valve	<b>WE</b>
03	Size 6	<b>6</b>
04	Symbols e.g. C, E, EA, EB, etc; for the possible version, see page 5	
05	Component series 60 to 69 (60 to 69: Unchanged installation and connection dimensions)	<b>6X</b>
06	<b>With</b> spring return	<b>no code</b>
	<b>Without</b> spring return	<b>O</b>
	<b>Without</b> spring return with detent	<b>OF</b>
07	High-power wet-pin solenoid with detachable coil	<b>E</b>
08	Direct voltage 24 V	<b>G24</b>
	AC voltage 230 V 50/60 Hz	<b>W230</b>
	AC voltage 120 V or 110 V 50/60 Hz	<b>W110</b> <b>W + voltage</b>
	Direct voltage 205 V	<b>G205</b>
	DC solenoid with rectifier for AC voltage (not frequency-related; only available with plug-in connection with cover, see page 17)	<b>W110R</b>
	Connection to AC voltage mains via control with rectifier (see table below and page 4) <sup>1)</sup> For further ordering codes for other voltages and frequencies, see page 8	
09	<b>Without</b> manual override	<b>no code</b>
	<b>With</b> concealed manual override (standard)	<b>N9</b> <sup>2)</sup>
	<b>With</b> manual override	<b>N</b> <sup>2)</sup>
	<b>With</b> lockable manual override "mushroom button" (small)	<b>N4</b> <sup>2)</sup>
	<b>With</b> lockable manual override "mushroom button" (big)	<b>N5</b> <sup>2; 3)</sup>
	<b>With</b> manual override "mushroom button" (big), not lockable	<b>N6</b> <sup>2)</sup>
	<b>With</b> lockable manual override "nut"	<b>N7</b> <sup>2)</sup>

## Electrical connection

10	<b>Individual connection</b>	
	<b>Without</b> mating connector, with connector according to DIN EN 175301-803	<b>K4</b> <sup>4)</sup>
	<b>Without</b> mating connector, with connector AMP Junior-Timer	<b>C4</b> <sup>4)</sup>
	<b>Without</b> mating connector, with connector DT 04-2PA (Deutsch plug)	<b>K40</b> <sup>4; 7)</sup>
	<b>Without</b> mating connector, 4-pole with connector M12x1 according to IEC 60947-5-2, integrated interference protection circuit and status LED	<b>K72L</b> <sup>5)</sup>
	<b>Without</b> mating connector, 4-pole with connector M12x1 according to IEC 60947-5-2, integrated interference protection circuit and status LED (no connection pin 1 to pin 2)	<b>K73L</b> <sup>5)</sup>
	<b>Central connection</b>	
	Cable entry at the cover, with indicator light	<b>DL</b>
	Central plug-in connection at the cover, with indicator light (without mating connector); connector according to DIN EN 175201-804	<b>DK6L</b> <sup>6)</sup>
	For further electrical connections, see data sheet 08010	

AC voltage mains (admissible voltage tolerance ±10%)	Nominal voltage of the DC solenoid in case of operation with alternating voltage	Ordering code
110 V - 50/60 Hz	96 V	<b>G96</b>
230 V - 50/60 Hz	205 V	<b>G205</b>

## Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
	WE	6		6X	/		E				/				*

### Spool position monitoring

11	<b>Without</b> position switch	<b>no code</b>
	<b>– Inductive position switch type QM</b>	
	Monitored spool position "a"	QMAG24
	Monitored spool position "b"	QMBG24
	Monitored rest position	QM0G24
	<b>– Inductive position switch type QR</b>	
	Monitored rest position	QR0G24S
	Monitored spool position "a" and "b"	QRABG24E
	<b>– Inductive position switch type QL</b>	
	Monitored spool position "a"	QLAG24
	Monitored spool position "b"	QLBG24
	<b>– Inductive proximity sensor type QS</b>	
	Monitored spool position "a"	QSAG24W
	Monitored spool position "b"	QSBG24W
	Monitored spool position "0"	QS0G24W
	Monitored spool position "0" and "a"	QS0AG24W
	Monitored spool position "0" and "b"	QS0BG24W
	Monitored spool position "a" and "b"	QSABG24W
	For more information, see data sheet 24830	

12	<b>Without</b> throttle insert	<b>no code</b>
	<b>With</b> throttle insert see table:	
	Port	Throttle Ø in mm [inch]
		0.8 [0.031]      1.0 [0.039]      1.2 [0.047]
	P	= B08      = B10      = B12
	A	= H08      = H10      = H12
	B	= R08      = R10      = R12
	A and B	= N08      = N10      = N12
	T	= X08      = X10      = X12
	Use with flows which exceed the performance limit of the valve (see page 6).	

### Clamping length

13	42 mm [1.65 inch] (standard)	<b>no code</b>
	22 mm [0.87 inch]	<b>Z</b>

### Seal material

14	NBR seals	<b>no code</b>
	FKM seals	<b>V</b>
	Attention: Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	
15	<b>Without</b> locating hole	<b>no code</b>
	<b>With</b> locating hole	/60 <sup>8)</sup>
	<b>With</b> locating hole and locking pin ISO 8752-3x8-St	/62
16	Further details in the plain text	

Explanation of the footnotes see page 4.

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

## Technical data

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

general			
Weight	– Valve with one solenoid	kg [lbs]	1.45 [3.2]
	– Valve with two solenoids	kg [lbs]	1.95 [4.3]
Installation position		Any	
Ambient temperature range		°C [°F]	–30 ... +50 [–22 ... +122] (NBR seals) –20 ... +50 [–4 ... +122] (FKM seals)
MTTF <sub>d</sub> values according to EN ISO 13849		Years	150 (for further details see data sheet 08012)

hydraulic			
Maximum operating pressure	– Ports A, B, P	bar [psi]	350 [5076]
	– Port T	bar [psi]	210 [3050] (DC); 160 [2320] (AC) With symbols A and B, port T must be used as leakage oil connection.
Maximum flow		l/min [US gpm]	80 [21] (DC); 60 [15.8] (AC)
Flow cross-section (spool position 0)	– Symbol Q	mm <sup>2</sup>	Approx. 6% of nominal cross-section
	– Symbol W	mm <sup>2</sup>	Approx. 3% of nominal cross-section
Hydraulic fluid		See table below	
Hydraulic fluid temperature range		°C [°F]	–30 ... +80 [–22 ... +176] (NBR seals) –15 ... +80 [–4 ... +176] (FKM seals)
Viscosity range		mm <sup>2</sup> /s [cSt]	2.8 ... 500 [35 ... 2320]
Maximum admissible degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)		Class 20/18/15 <sup>1)</sup>	

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oils	HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524
Bio-degradable	– insoluble in water	HETG	VDMA 24568
		HEES	
	– soluble in water	HEPG	VDMA 24568
Flame-resistant	– water-free	HFDU, HFDR	ISO 12922
	– containing water	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	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 difference 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-solvent, zinc may accumulate in the fluid (per pole tube 700 mg zinc).

<sup>1)</sup> 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 maintenance requirements of the hydraulic fluid and contamination limit values, see data sheet 07300. For the selection of the filters, see [www.boschrexroth.com/filter](http://www.boschrexroth.com/filter).

## Technical data

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

electric			
Voltage type		Direct voltage	Alternating voltage 50/60 Hz
Available voltages <sup>2)</sup> (For ordering codes for AC voltage solenoids, see below)	V	12, 24, 96, 205	110, 230
Voltage tolerance (nominal voltage)	%	±10	
Power consumption	W	30	–
Holding power	VA	–	50
Switch-on power	VA	–	220
Duty cycle	%	100	
Switching time according to ISO 6403 <sup>3)</sup>	– ON	ms	25 ... 45
	– OFF	ms	10 ... 25
Maximum switching frequency	1/h	15000	7200
Maximum surface temperature of the coil <sup>4)</sup>	°C [°F]	120 [248]	180 [356]
Protection class according to DIN EN 60529	– With connector "K4", "K72L", "K73L"	IP 65 (with mating connector mounted and locked)	
	– With connector "C4"	IP 66A (with mating connector mounted and locked)	
	– With connector "K40"	IP 69K (with mating connector mounted and locked)	

<sup>2)</sup> Special voltages available upon request

<sup>3)</sup> The switching times were determined at a hydraulic fluid temperature of 40 °C [104 °F] and a viscosity of 46 cSt. Deviating hydraulic fluid temperatures can result in different switching times! Switching times change depending on operating time and application conditions.

<sup>4)</sup> Due to the temperatures occurring at the surfaces of the solenoid coils, the standards ISO13732-1 and ISO 4413 need to be adhered to!

The specified surface temperature in AC solenoids is valid for the faultless operation. In case of error (e.g. blocking of the control spool), the surface temperature may rise to above 180 °C [356 °F]. Thus, the system must be checked for possible dangers considering the flash point (see page 7).

As fuse protection, circuit breakers (see table on page 19) must be used, unless the creation of an ignitable atmosphere can be excluded in a different way. Thus, the surface temperature can – in case of error – be limited to maximally 220 °C [428 °F]. The tripping current must lie within a time interval of 0.6 s with 8 to 10 times the nominal power supply. (tripping characteristics "K").

The necessary non-tripping current of the fuse must not fall below the value  $I_1$  (see table on page 19). The maximum tripping current of the fuse must not exceed the value  $I_2$  (see table on page 19).

The temperature dependence of the tripping behavior of the circuit breakers has to be considered according to the manufacturer's specifications.



### Notices!

- The actuation of the manual override is only possible up to a tank pressure of approx. 50 bar [725 psi]. Avoid damage to the bore of the manual override! (Special tool for the operation, separate order, material no. **R900024943**). When the manual override is blocked, actuation of the opposite solenoid must be ruled out!
- The simultaneous actuation of 2 solenoids of one valve must be ruled out!



### Notice!

**AC solenoids** can be used for 2 or 3 mains; e.g. solenoid type **W110** for:  
110 V, 50 Hz; 110 V, 60 Hz; 120 V, 60 Hz

Ordering code	Mains
<b>W110</b>	110 V, 50 Hz
	110 V, 60 Hz
	120 V, 60 Hz
<b>W230</b>	230 V, 50 Hz
	230 V, 60 Hz

**When establishing the electrical connection, the protective earthing conductor (PE  $\frac{1}{2}$ ) has to be connected correctly.**