

## 4/3, 4/2 and 3/2 directional valves influencing the switching time

### Type 5-.WE (5-chamber version)

**RE 23352**

Edition: 2012-04

Replaces: 23351



- ▶ Size 10
- ▶ Component series 5X
- ▶ Maximum operating pressure 420 bar [6091 psi]
- ▶ Maximum flow 150 l/min [39.6 US gpm]

### Features

- ▶ Direct operated directional spool valve with solenoid actuation in high performance version
- ▶ Porting pattern according to ISO 4401-05-04-0-05 and NFPA T3.5.1 R2-2002 D05
- ▶ Wet-pin DC 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 single connection or as central connection via double valve mating connector
- ▶ Manual override, optional
- ▶ Inductive position switches and proximity sensors (contactless)

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## Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
	5	-	WE	10		-	5X	/		E				/				=	*

01	Standard version (maximum operating pressure 350 bar)	no code
	High-pressure version (maximum operating pressure 420 bar)	H
02	5-chamber version	5
03	3 main ports	3
	4 main ports	4
04	Directional valve	WE
05	Size 10	10
06	Symbols e. g. C, E, EA, EB etc; possible version see page 5 and 6.	
07	Component series 50 to 59 (50 to 59: Unchanged installation and connection dimensions)	5X

### Spool return

08	With spring return	no code
	With reinforced compression spring (for quick switch-off)	D
	Without spring return	O
	Without spring return with detent	OF
09	High-power wet-pin solenoid with detachable coil	E
10	Direct voltage 12 V	G12
	Direct voltage 24 V	G24
	Direct voltage 26 V	G26
	Direct voltage 96 V	G96
	Direct voltage 180 V	G180
	Direct voltage 205 V	G205
	Direct voltage 220 V	G220
	Connection to AC voltage mains via control with rectifier (see table page 3 and 18).	
	Electrical connections and coil-connection combinations see page 11	
11	Without manual override	no code
	With concealed manual override (standard)	N9 <sup>1)</sup>
	With manual override	N <sup>1)</sup>
	With lockable manual override "mushroom button"	N5 <sup>1; 2)</sup>
	With manual override "mushroom button", not lockable	N6 <sup>1)</sup>

### Corrosion resistance (outside)

12	None (valve housing primed)	no code
	Improved corrosion protection (240 h salt spray test according to EN ISO 9227)	J2

### Electrical connection<sup>4)</sup>

13	Single connection	
	Without mating connector, with connector according to DIN EN 175301-803	K4 <sup>3)</sup>
	Without mating connector, with connector according to DIN EN 175301-803 (possible with "J2" version)	K4K <sup>3)</sup>
	Without mating connector, 4-pole with connector M12x1, integrated interference protection circuit, status LED according to IEC 60947-5-2	K72L <sup>3)</sup>
	Without mating connector, with connector AMP Junior-Timer	C4Z <sup>3)</sup>
	More electrical connections and coil-connection combinations see page 11	

## Ordering code

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	
	5	-		WE	10		-	5X	/		E				/				=	*

## Spool position monitoring

14	<b>Without</b> position switch	no code
	<b>- Inductive position switch type QM</b>	
	Monitored spool position "a"	QMAG24
	Monitored spool position "b"	QMBG24
	Monitored spool position "0"	QM0G24
	<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	

## Influencing of the switching time

15	<b>Without</b> influencing of the switching time	no code
	<b>With</b> throttle screw	C
	<b>With</b> orifice $\varnothing$ 0.6 mm [0.024 inch]	A06
	<b>With</b> orifice $\varnothing$ 0.8 mm [0.031 inch]	A08
	<b>With</b> orifice $\varnothing$ 1.0 mm [0.039 inch]	A10

## Throttle insert

16	<b>Without</b> throttle insert	no code		
	<b>With</b> throttle insert <sup>4; 5)</sup> :			
	Connection	Throttle $\varnothing$ 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 <sup>6)</sup>	= X08	= X10	= X12
	Further throttle insert diameters upon request			

- 1) The manual override cannot be allocated a safety function. The manual override units may only be used up to a tank pressure of 50 bar.
- 2) With tank pressures above 50 bar, it cannot be guaranteed that the valve remains in the position switched by the "N5" manual override.
- 3) Mating connectors, separate order, see page 18 and data sheet 08006.
- 4) When the admissible valve performance limits are exceeded, installation of throttle inserts is to be intended (performance limits see page 13).
- 5) Not with low-temperature version "MT".
- 6) When throttle inserts are used in channel T, the pressure in the working ports and in case of connection to the tank chambers must not exceed 210 bar.

AC voltage mains (admissible voltage tolerance $\pm 10$ %)	Nominal voltage of the DC solenoid in case of operation with alternating voltage	Ordering code
100 V - 50/60 Hz	96 V	G96
110 V - 50/60 Hz	96 V	G96
200 V - 50/60 Hz	180 V	G180
230 V - 50/60 Hz	205 V	G205

**Ordering code**

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20		
	<b>5</b>	<b>-</b>		<b>WE</b>	<b>10</b>		<b>-</b>	<b>5X</b>	<b>/</b>		<b>E</b>					<b>/</b>			<b>=</b>		<b>*</b>

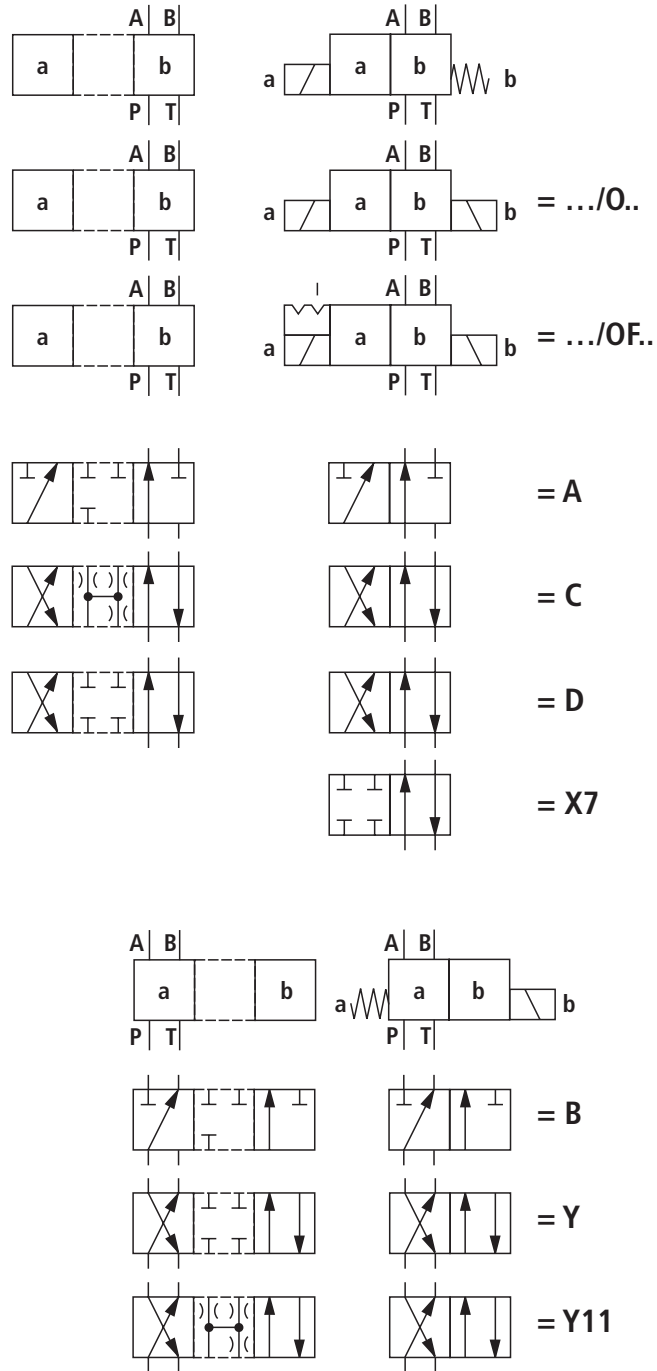
**Seal material**

17	NBR seals	<b>M</b>
	FKM seals	<b>V</b>
	Seals for HFC hydraulic fluids	<b>MH</b>
	Low-temperature version	<b>MT</b>
	Attention: Observe compatibility of seals with hydraulic fluid used!	

**Control spool play**

18	Standard	<b>no code</b>
	Limited (for little leakage)	<b>T06</b>
	Increased (for extended temperature range, higher leakage)	<b>T12</b>
19	Approval according to CSA	<b>CSA</b>
	Porting pattern according to ANSI B93.9 (if solenoid "a" is energized, channel P is connected to A)	<b>ON</b>
20	Further details in the plain text	

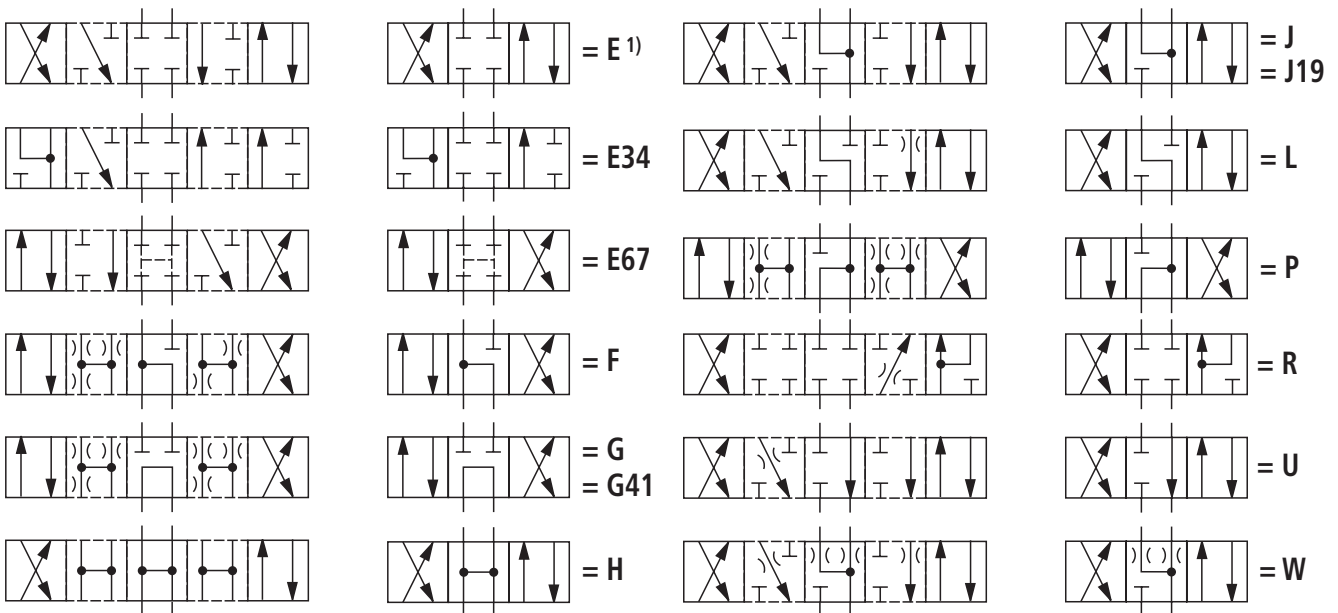
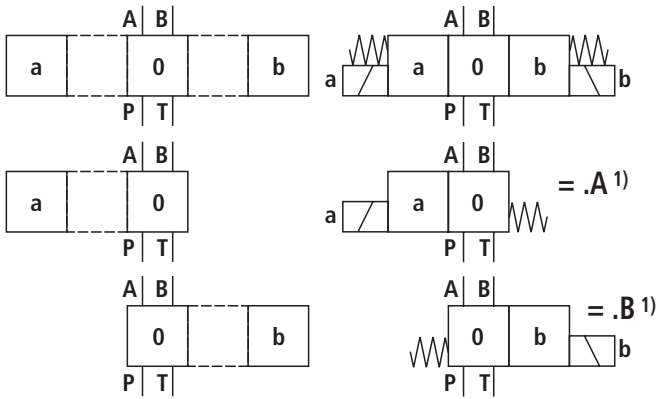
**Symbols:** 2 spool positions



**Notice!**

- ▶ Presentation according to DIN ISO 1219-1.  
Hydraulic interim positions are shown by dashes.
- ▶ Other symbols upon request.

**Symbols: 3 spool positions**



1) **Example:**

- ▶ Spool E with spool position "a" ordering code **..EA..**
- ▶ Spool E with spool position "b" ordering code **..EB..**

**Notice!**

- ▶ Presentation according to DIN ISO 1219-1.  
Hydraulic interim positions are shown by dashes.
- ▶ Other symbols upon request.

## Function, section

The 5-chamber directional valve type 5-WE is a solenoid operated directional spool valve influencing the switching time. It controls the start, stop and direction of a flow. The directional valves basically consist of housing (1), one or two electronic solenoids (2), control spool (3), and the return springs (4).

In the de-energized condition, control piston (3) is held in the central position or in the initial position by the return springs (4) (except for valve without spring "O").

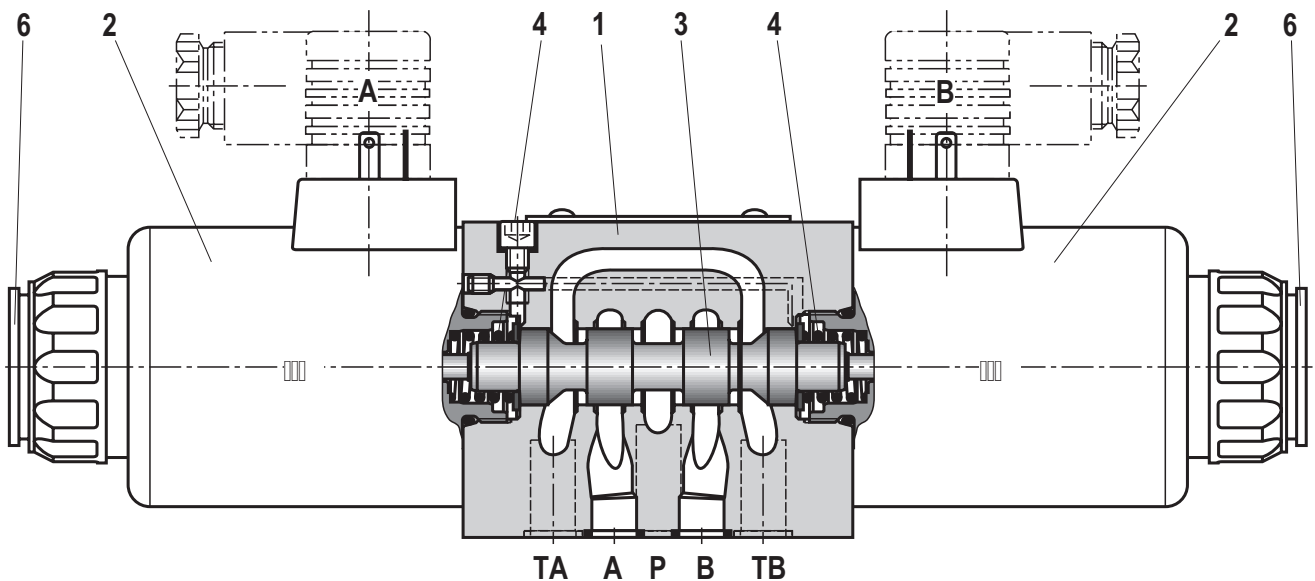
In case of energization of the wet-pin electronic solenoid (2), the control spool (3) moves out of its rest position into the required end position. In this way, the required flow position according to the selected symbol is released. After the electronic solenoid (2) has been switched off, the

control spool (3) is pushed back into the central position or in the initial position (except for valve with "OF" detent and valve without spring type "O").

A manual override (6) allows for the manual switching of the valve without solenoid energization.

**To ensure proper functioning, care must be taken that the pressure chamber of the solenoid is filled with oil.**

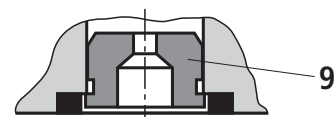
More functions see page 8.



Type 5-4WE 10 ...

### Throttle insert

Using a throttle insert (9) in channels P, A, B or T, the flow resistance at the valve can be increased. Its use is required when due to prevailing operating conditions, flows occur during the switching processes, which exceed the performance limit of the valve.



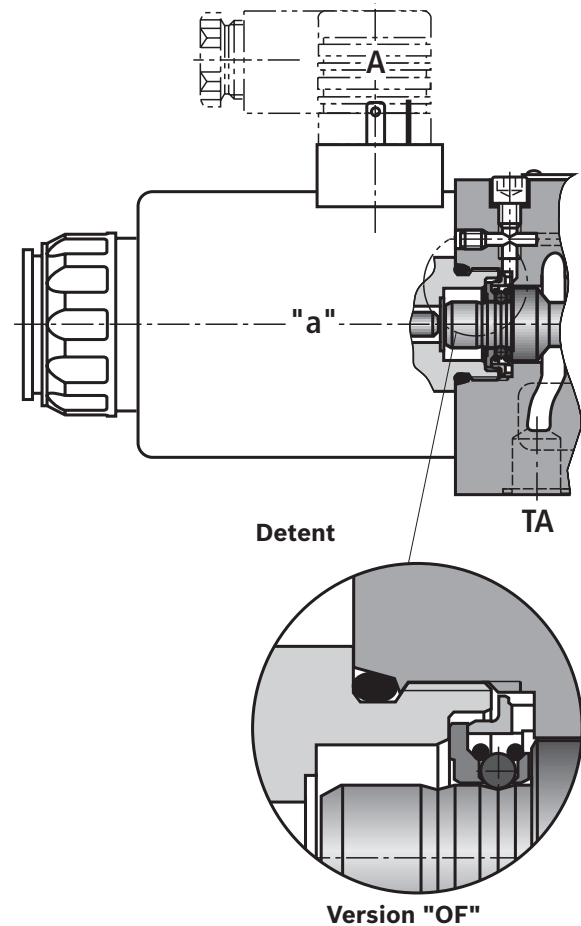
## Function, section

**Without spring return "O"** (only possible with symbols A, C and D)

This version is a directional valve with 2 spool positions and 2 electronic solenoids **without** detent. The valve without spring return at the control spool (3) has no defined basic position in the de-energized condition.

**Without spring return with "OF" detent** (only possible with symbols A, C and D)

This version is a directional valve with 2 spool positions and 2 electronic solenoids **with** detent. The detents are used to fix the control spool (3) in the relevant spool position. During operation, continuous application of current to the electronic solenoid can thus be omitted which contributes to energy-efficient operation.

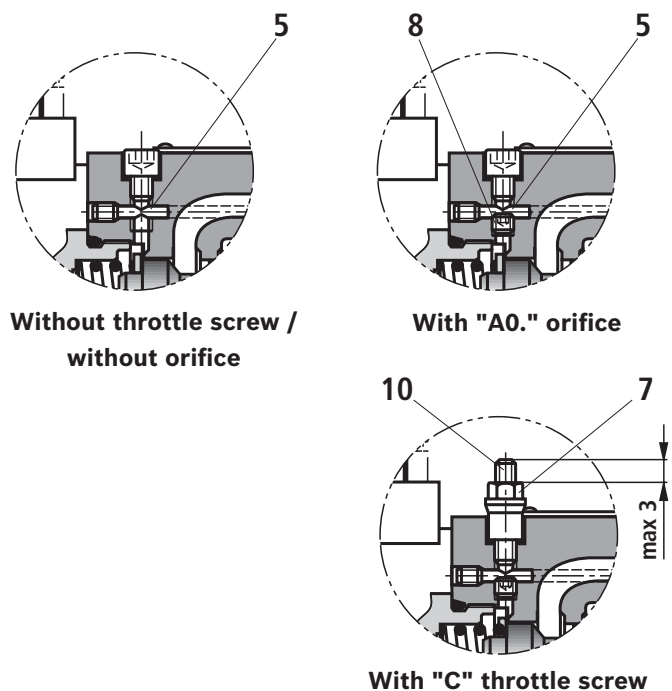


## Influencing of the switching time

With the 5-chamber directional valve type 5-WE, the switching time can be delayed to 100 ms and more by means of a "C" throttle screw (7) or a selected "A0." orifice (8). In this connection, the switching time is pressure-, flow- and viscosity-dependent, specific to the installation.

The switching time is influenced by means of a restriction (throttle or orifice) in the connection channel (5) between the two spring chambers in which the liquid volume is displaced from one spring chamber into the other in case of a switching process.

The T channels are separated from the spring chambers in order to achieve soft switching.



### Notice!

The adjustment spindle (10) may only be screwed out so that it protrudes from the nut by max. 3 mm.




## Technical data

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

general			
Weight	– Valve with one solenoid	kg [lbs]	3.9 [8.6]
	– Valve with two solenoids	kg [lbs]	5.5 [12.1]
Installation position			Any <sup>1)</sup>
Ambient temperature range	– Standard seals	°C [°F]	–20 ... +70 [–4 ... +158] (NBR seals) –15 ... +70 [+5 ... +158] (FKM seals)
	– Seals for HFC hydraulic fluid	°C [°F]	–20 ... +50 [–4 ... +122]
	– Low-temperature version <sup>2)</sup>	°C [°F]	–40 ... +50 [–4 ... +122]
Storage temperature range		°C [°F]	–20 to +50 [–4 ... +122]
MTTF <sub>d</sub> values according to EN ISO 13849		Years	300 (for further details see data sheet 08012)

hydraulic			
Maximum operating pressure ( $p_p > p_A; p_B > p_T$ )	– Port A, B, P	bar [psi]	350 [5076]; 420 [6091]
	– Port T	bar [psi]	210 [3050] Tank pressure (standard) With spool symbols A and B, port T must be used as leakage oil connection if the operating pressure exceeds the maximum admissible tank pressure.
Maximum flow		l/min [US gpm]	150 [39.6]
Hydraulic fluid			See table below
Hydraulic fluid temperature range (at the valve working ports)		°C [°F]	–20 ... +80 [–4 ... +176] (NBR seals) –15 ... +80 [+5 ... +176] (FKM seals) –20 ... +50 [–4 ... +122] (HFC hydraulic fluid) –40 ... +50 [–4 ... +122] (Low-temperature version)
Viscosity range		mm <sup>2</sup> /s [SUS]	2.8 ... 500 [35 ... 2320]
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)			Class 20/18/15 <sup>3)</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	ISO 12922

<p> <b>Important information on hydraulic fluids!</b></p> <ul style="list-style-type: none"> <li>▶ For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us!</li> <li>▶ There may be limitations regarding the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!</li> <li>▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Flame-resistant – containing water:</b> Maximum pressure difference per control edge 50 bar, otherwise, increased cavitation erosion! Pressure pre-loading at the tank port &gt; 1 bar or &gt; 20 % of the pressure differential. The pressure peaks should not exceed the maximum operating pressures!</li> <li>▶ <b>Bio-degradable:</b> When using bio-degradable hydraulic fluids that are simultaneously zinc-solvent, zinc may accumulate in the fluid (per pole tube 700 mg zinc).</li> </ul>
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<sup>1)</sup> With suspended installation, higher sensitivity to contamination. Horizontal installation is recommended.

<sup>2)</sup> In case of use at low temperatures, see project planning information page 18.


<sup>3)</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 service life of the components. 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!)

<b>electric</b>			
Voltage type		Direct voltage	Alternating voltage
Nominal voltage according to VDE 0580 (ordering code see page 2 and 11)		V 12, 24, 26, 96, 180, 205, 220	Only possible with rectifier <sup>4)</sup>
Voltage tolerance (nominal voltage)		% ±10	
Nominal power according to VDE 0580		W 30	
Duty cycle		% 100 (S1 according to VDE 0580)	
Switching time according to ISO 6403 <sup>5)</sup>	– ON	Pressure change 5 %	ms 60 ... 104 <sup>6)</sup>
		Pressure change 95 %	ms 90 ... 165 <sup>6)</sup>
	– OFF	Pressure change 5 %	ms 12 ... 50
		Pressure change 95 %	ms 48 ... 104
Maximum switching frequency		1/h 15000	7200
Protection class according to DIN EN 60529		See page 11	
Protection class according to VDE 0580		See page 11	
Maximum surface temperature of the coil <sup>7)</sup>		°C [°F]	140 [284]
Insulation class VDE 0580		F	
Electrical protection		Every solenoid must be protected individually, using a suitable fuse with tripping characteristic K (inductive loads). The valve must be installed on a surface that is included in the equipotential bonding.	

- 4) ▶ Mating connectors with rectifier see page 18  
▶ Possible voltages see page 3  
▶ Rectifiers must comply with the relevant standards as well as the coil performance data!
- 5) Switching time is measured in horizontal position and without influencing of the switching time.
- 6) Not with symbols A and B.
- 7) Surface temperature > 50 °C possible, provide contact protection!

 **Notice!**

- ▶ The solenoid coils must not be painted.
- ▶ Actuation of the manual override is only possible up to a tank pressure of ca. 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!
- ▶ Use cables that are approved for an operation temperature above 105 °C [221 °F].
- ▶ When solenoid coils are switched off, voltage peaks result which may cause failures or damage in the connected control electronics. The user has to provide for a suitable circuit for limiting the voltage peaks. It must be noted that a diode switched in an anti-parallel form extends the switching off time.
- ▶ Valves with single connection and supply voltage 12 V or 24 V can be operated with twice the voltage for reducing the switching time. For this purpose, the voltage has to be reduced to the nominal valve voltage after 100 ms by means of pulse width modulation. The maximum admissible switching frequency is 5 1/s.

 **Electrical connections** see page 11.

## Technical data

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

### Electrical connections and coil-connection combinations

Ordering code connector	Ordering code (voltage)							Protection class according to DIN EN 60529 <sup>8)</sup>	Protection class according to VDE 0580	
	G12	G24	G26	G96	G180	G205	G220			
Without mating connector, single connection with connector according to DIN EN 175301-803	<b>K4</b>	✓ 9)	✓ 9)	<sup>10)</sup>	✓ 9)	✓	✓ 9)	✓	IP65	I
	<b>K4K</b> <sup>11)</sup>	✓	✓	✓	<sup>10)</sup>	–	<sup>10)</sup>	<sup>10)</sup>	IP67	I
Without mating connector, single connection 4-pole with connector M12x1, integrated interference protection circuit, status LED and quenching diode	<b>K72L</b>	–	✓	–	–	–	–	–	IP65	II <sup>12)</sup>
Without mating connector, with connector AMP Junior-Timer	<b>C4Z</b>	–	–	✓	–	–	–	–	IP66	II <sup>12)</sup>

<sup>8)</sup> Only with correctly mounted valve with a mating connector suitable for type of protection.

<sup>9)</sup> Coil with approval according to UL 429

<sup>10)</sup> Upon request

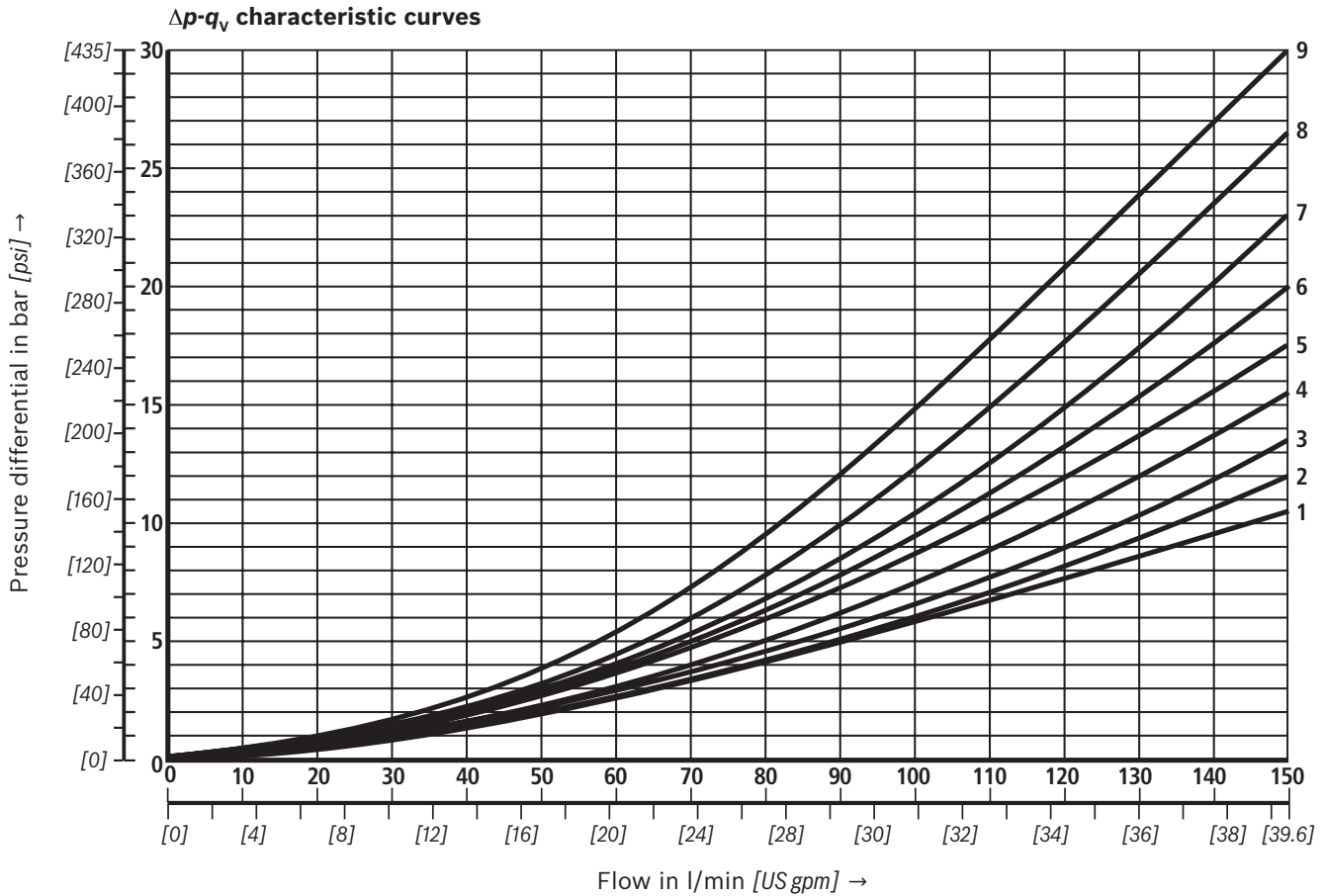
<sup>11)</sup> Possible with version "J2".

<sup>12)</sup> With protection class II, a protective extra-low voltage with isolation transformer (PELV, SELV) is to be provided.

**When establishing the electrical connection, the protective earthing conductor (PE  $\perp$ ) has to be connected properly.**

### Characteristic curves

(measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$  [104 ± 9 °F])



Symbol	Direction of flow			
	P - A	P - B	A - T	B - T
A	4	4	-	-
B	4	5	-	-
C, J, Q, Y	2	3	5	7
D	2	2	5	7
E	3	3	6	7
E - "QS"	3	2	6	7
E34	5	-	5	8
E67	3	4	4	7
H	1	1	6	8
J19	7	-	9	9
L, Y11	3	3	5	7
R	3	4	5	6
U	2	2	5	7
W	2	2	5	6
X7	3	-	-	6

Symbol	Direction of flow				
	P - A	P - B	A - T	B - T	P - T
F	1	3	3	8	4
G	4	5	6	8	7
H	1	1	6	8	7
P	3	1	5	6	5

Characteristic curve for symbol G41 upon request.

**Performance limits: 2 spool positions**  
 (measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$  [104 ± 9 °F])

**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).

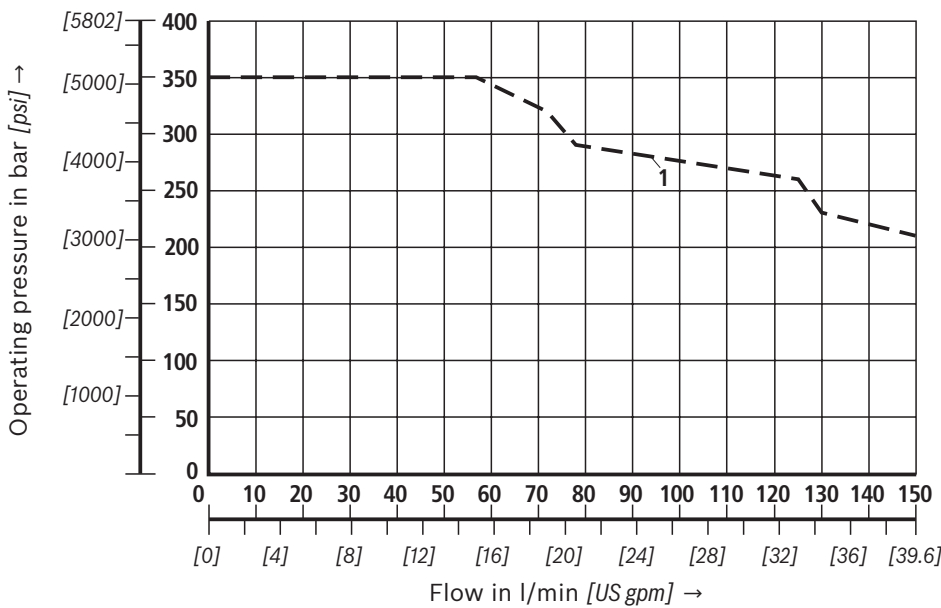
Due to the flow forces acting within the valves, the permissible switching power limit may be consider-

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

In such applications, please consult us!

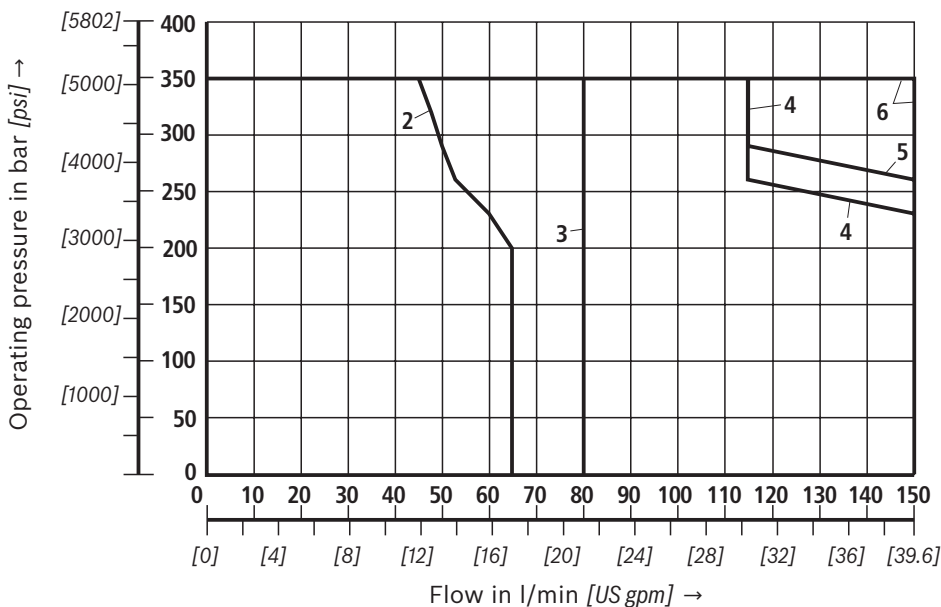
**The switching power limit was established while the solenoids were at operating temperature, at 10 % undervoltage and without tank pre-loading.**

**Spring side**



Characteristic curve	Symbol
1	B

**Solenoid side**



Characteristic curve	Symbol
2	A, B
3	C; Y11
4	D
5	Y
6	X7

**Performance limits: 3 spool positions**

(measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$  [104 ± 9 °F])

**Notice!**

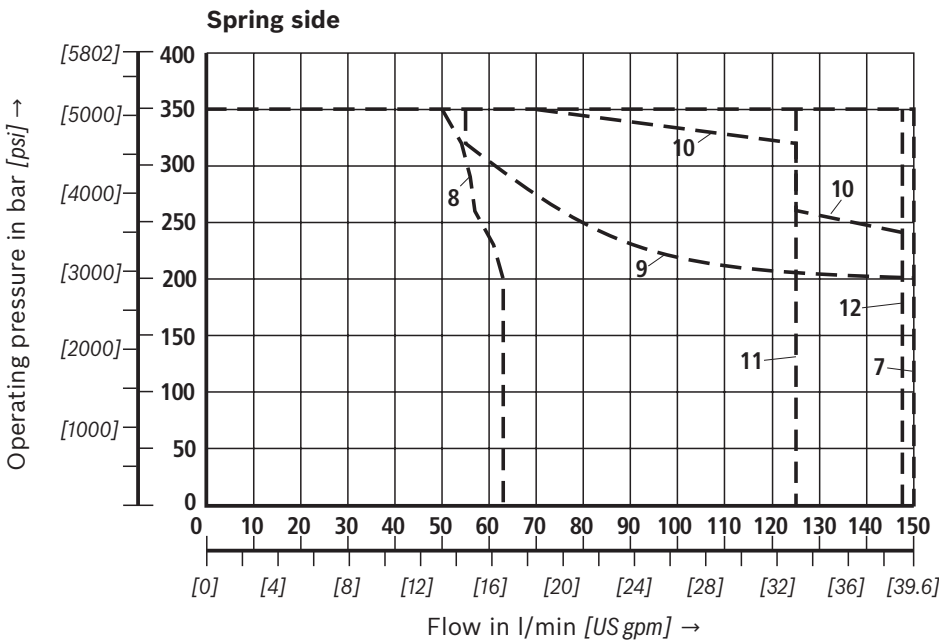
The specified switching power limits are valid for operation with two directions of flow (e. g. from P to A and simultaneous return flow from B to T).

Due to the flow forces acting within the valves, the permissible switching power limit may be consider-

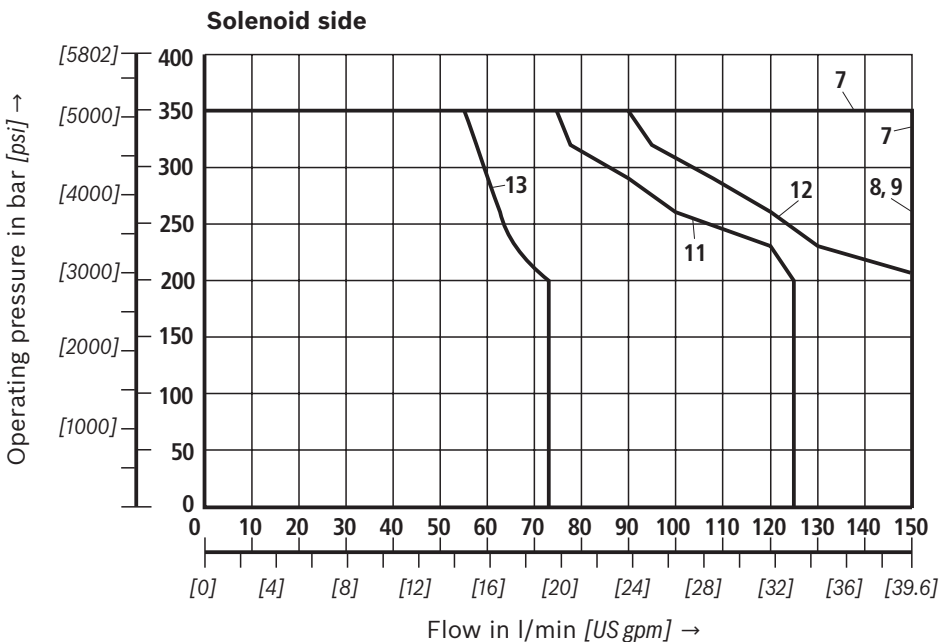
ably lower with only one direction of flow (e. g. from P to A while port B is blocked)!

In such applications, please consult us!

**The switching power limit was established while the solenoids were at operating temperature, at 10 % undervoltage and without tank pre-loading.**



Characteristic curve	Symbol
7	E
8	F
9	G
10	H
11	J; J19
12	L



Characteristic curve	Symbol
7	E
8	F
9	G
11	J, J19
12	L
13	E34

Characteristic curves for symbols G41 and P upon request.

**Performance limits:** 3 spool positions  
 (measured with HLP46,  $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$  [ $104 \pm 9 \text{ }^\circ\text{F}$ ])

**Notice!**

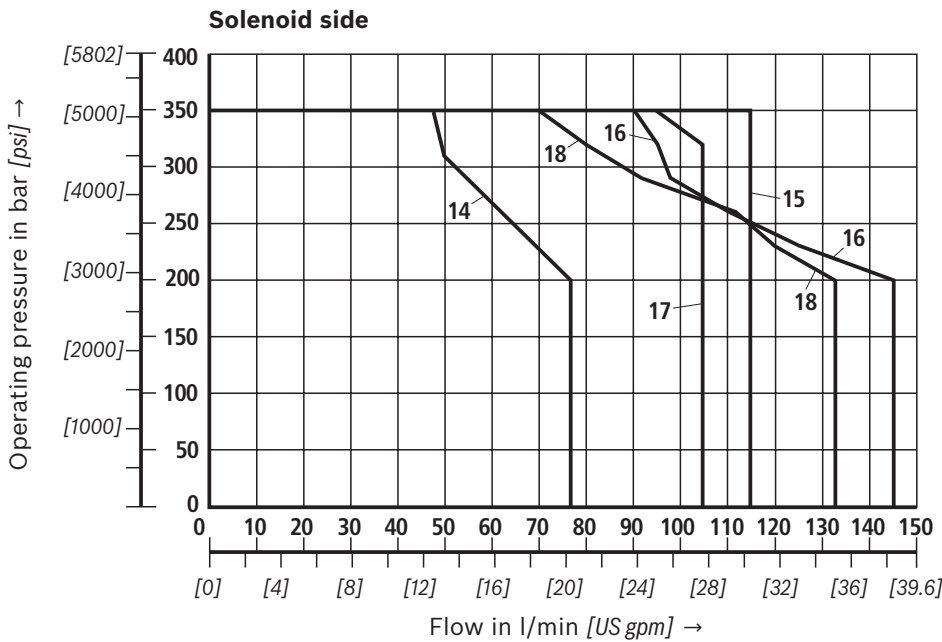
The specified switching power limits are valid for operation with two directions of flow (e. g. from P to A and simultaneous return flow from B to T).

Due to the flow forces acting within the valves, the permissible switching power limit may be consider-

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

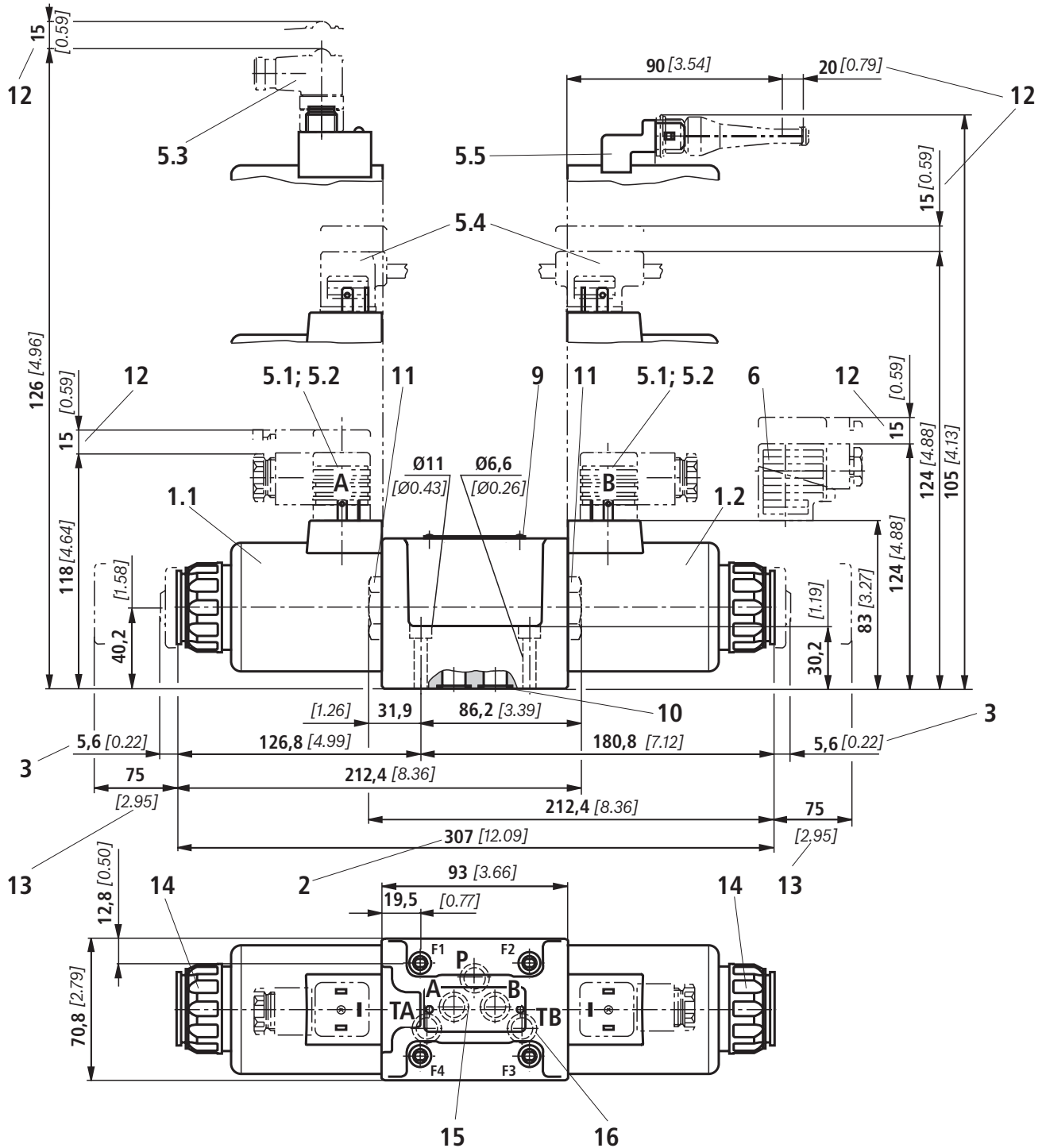
In such applications, please consult us!

**The switching power limit was established while the solenoids were at operating temperature, at 10 % undervoltage and without tank pre-loading.**



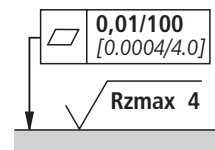
Characteristic curve	Symbol
14	E67
15	E - "QS"
16	U
17	R
18	W

**Unit dimensions**  
(dimensions in mm)



**Notice!**

Deviating from ISO 4401, port T is in this data sheet called TA, port T1 is called TB.



Required surface quality of the valve mounting face

**Item explanations, valve mounting screws and subplates**  
see page 17.



## Unit dimensions

- 1.1 Solenoid "a"
- 1.2 Solenoid "b"
  - 2 Dimension for solenoid **without** and **with concealed** manual override "**N9**" (standard)
  - 3 Dimension for solenoid **with** manual override "**N**"
- 5.1 Mating connector **without** circuitry for connector "K4" (separate order, see page 18 and data sheet 08006)
- 5.2 Mating connector **without** circuitry for connector "K4K" (separate order, see data sheet 08006)
- 5.3 Mating connector angled with M12x1 plug-in connection and status LED for connector "K72L" (separate order, see data sheet 08006)
- 5.4 Double valve mating connector **without/with** circuitry for connector "K4" (separate order, see data sheet 08006)
- 5.5 Mating connector (AMP Junior Timer) for connector "C4Z" (separate order, see data sheet 08006)
  - 6 Mating connector **with** circuitry for connector "K4" (separate order, see page 18 and data sheet 08006)
  - 9 Name plate
  - 10 Identical seal rings for ports A, B, P, TA, TB
  - 11 Plug screw for valves with one solenoid
  - 12 Space required to remove the mating connector/angled socket
  - 13 Space required to remove the coil
  - 14 Lock nut, tightening torque  $M_A = 14.5 \pm 1.5 \text{ Nm}$  [ $10.69 \pm 1.1 \text{ ft-lbs}$ ]
  - 15 Porting pattern according to ISO 4401-05-04-0-05 and NFPA T3.5.1 R2-2002 D05
  - 16 Connection TB can only be used in connection with separately produced bore

**Subplates** according to data sheet 45054 (separate order)

G 66/01 (G3/8)  
 G 67/01 (G1/2)  
 G 534/01 (G3/4)  
 G 66/12 (SAE-6; 9/16-18) <sup>1)</sup>  
 G 67/12 (SAE-8; 3/4-16) <sup>1)</sup>  
 G 534/12 (SAE-12; 1-1/16-12) <sup>1)</sup>  
<sup>1)</sup> Upon request

**Valve mounting screws** (separate order)

**4 hexagon socket head cap screws metric**

**ISO 4762 - M6 x 40 - 10.9-flZn-240h-L**  
 (friction coefficient  $\mu_{\text{total}} = 0.09$  to  $0.14$ );  
 tightening torque  $M_A = 12.5 \text{ Nm}$  [ $9.2 \text{ ft-lbs}$ ]  $\pm 10 \%$ ,  
 material no. **R913000058**

or

**4 hexagon socket head cap screws**

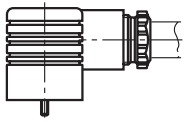
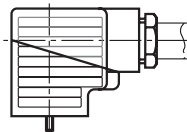
**ISO 4762 - M6 x 40 - 10.9** (self procurement)  
 (friction coefficient  $\mu_{\text{total}} = 0.12$  to  $0.17$ );  
 tightening torque  $M_A = 15.5 \text{ Nm}$  [ $11.4 \text{ ft-lbs}$ ]  $\pm 10 \%$

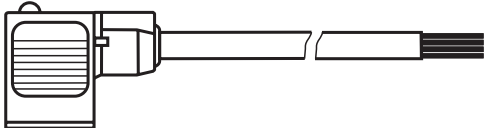
**4 hexagon socket head cap screws UNC**

**1/4-20 UNC x 1-1/2" ASTM-A574**  
 (friction coefficient  $\mu_{\text{total}} = 0.19$  to  $0.24$ );  
 tightening torque  $M_A = 25 \text{ Nm}$  [ $18.4 \text{ ft-lbs}$ ]  $\pm 15 \%$ ,  
 (friction coefficient  $\mu_{\text{total}} = 0.12$  to  $0.17$ );  
 tightening torque  $M_A = 19 \text{ Nm}$  [ $14.0 \text{ ft-lbs}$ ]  $\pm 10 \%$ ,  
 material no. **R978800710**

**With different friction coefficients, the tightening torques are to be adjusted accordingly!**

**Mating connectors** according to DIN EN 175301-803


For details and more mating connectors see data sheet 08006						
Connection	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
M16 x 1.5	a	Gray	<b>R901017010</b>	-	-	-
	a/b	Black	<b>R901017011</b>	<b>R901017022</b>	<b>R901017025</b>	<b>R901017026</b>
1/2" NPT (Pg16)	a	Red/brown	<b>R900004823</b>	-	-	-
	a/b	Black	<b>R900011039</b>	<b>R900057453</b>	<b>R900842566</b>	-

Details upon request						
			Material number			
			Type VT-SSBA1-PWM-1X/V001/5,00 as fast switching amplifier		Type VT-SSBA1-PWM-1X/V002/5,00 for energy reduction	
M16 x 1.5	a/b	black	<b>R901265633</b>		<b>R901290194</b>	

**Project planning information:**

Temperature range and maximum operating pressure in case of use at low temperatures

Connection	Pressure	Temperature range in °C [°F]
- P, A, B, T	Static 100 bar [1450 psi]	-40 ... -35 [-40 ... -31]
- P, A, B	Dynamic from 100 bar [1450 psi] to 350 bar [5076 psi] linearly increasing as temperature function	-35 ... -30 [-31 ... -22]
- T	Dynamic from 100 bar [1450 psi] to 210 bar [3050 psi] linearly increasing as temperature function	-35 ... -30 [-31 ... -22]
- P, A, B, T	Maximum operating pressure	-30 ... +50 [-22 ... 122]

 **Notice!**

With valves for low temperatures, the "T12" control spool play is to be preferably selected.

## More information

- ▶ Subplates
- ▶ Inductive position switches and proximity sensors (contactless)
- ▶ Hydraulic fluids on mineral oil basis
- ▶ Reliability characteristics according to EN ISO 13849
- ▶ General product information on hydraulic products
- ▶ Assembly, commissioning and maintenance of industrial valves
- ▶ Selection of the filters

Data sheet 45054

Data sheet 24830

Data sheet 90220

Data sheet 08012

Data sheet 07008

Data sheet 07003

[www.boschrexroth.com/filter](http://www.boschrexroth.com/filter)

## Notes

Bosch Rexroth AG  
Hydraulics  
Zum Eisengießer 1  
97816 Lohr am Main, Germany  
Phone +49 (0) 93 52/ 18-0  
documentation@boschrexroth.de  
www.boschrexroth.de

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