

RE 23 183/02.03

Replaces: 03.02

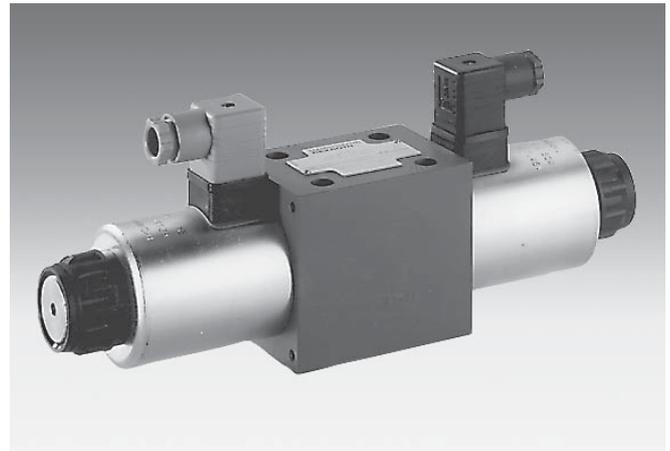
**Soft switching
4/2- and 4/3-way directional valves
with DC solenoids
Type WE...73 -.. /A12..**

Nominal sizes 6 and 10

Series 6X (NS 6) / 3X (NS 10)

Maximum operating pressure 350/315 bar

Maximum flow 60/100 L/min



H/A 4657/95•

Type 4WE 10 E73-3X/CG24N9K4/A12 with plug-in connectors (separate order)

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Features

- Direct operated directional spool valve with solenoid operation
- Soft switching characteristics
- Porting pattern to DIN 24 340 Form A, **without** locating pin hole (standard)
- Porting pattern to ISO 4401 and CETOP–RP 121 H, **with** locating pin hole (**only** NS 6 – ordering detail „.../60“ at the end of the valve type)
Subplates to catalogue sheets RE 45 052 (NS 6), and RE 45 054 (NS 10), separate order
- Wet pin DC solenoids with removable coils
- Solenoid coil can be rotated through 90°
- Coils can be replaced without opening the pressure tight chamber
- Individual electrical connections
- With protected hand override



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Ordering details

	2	3	4	6	7	9	10	11	12	15	18	19	22	23	24	
		WE			- /				N9	K4	A12				*	
3 actuator ports	= 3															Further details in clear text No code = without locating pin hole (NS 6 and 10) /60³⁾ = With locating pin hole (only NS 6) No code = NBR seals V = FKM seals (other seals on request) ⚠ Attention! The compatibility of the seals and pressure fluid has to be taken into account! No code = Without throttle insert B08 = Throttle Ø 0.8 mm B10 = Throttle Ø 1.0 mm B12 = Throttle Ø 1.2 mm Used with flows > performance limit of the valve, effective in the P port A12 = Switching time delay Electrical connection K4¹⁾ = Without plug-in connector, individual connection with component plug DIN EN 175 301-803 N9 = With protected hand override
4 actuator ports	= 4															
Nominal size 6	= 6															
Nominal size 10	= 10															
Symbol e.g. D73, E73, E73A, E73B etc. for possible versions, see page 3																
NS 6 Series 60 to 69 (60 to 69: unchanged installation and connection dimensions)	= 6X															
NS10 Series 30 to 39 (30 to 39: unchanged installation and connection dimensions)	= 3X															
Spring return	= No code															
Without spring return with detent (only available for symbol " D73 ")	= OF															
Nominal size 6	= E															
Nominal size 10	= C															
24 V DC	= G24															
205 V DC	= G205 ²⁾															
For further ordering details of other voltages and frequencies, see page 4.																

AC voltage supply (permissible voltage tolerance ± 10%)	Nominal voltage of DC solenoids when used with an AC supply	Ordering detail
110 V - 50/60 Hz 120 V - 60 Hz	96 V	G96
230 V - 50/60 Hz	205 V	G205

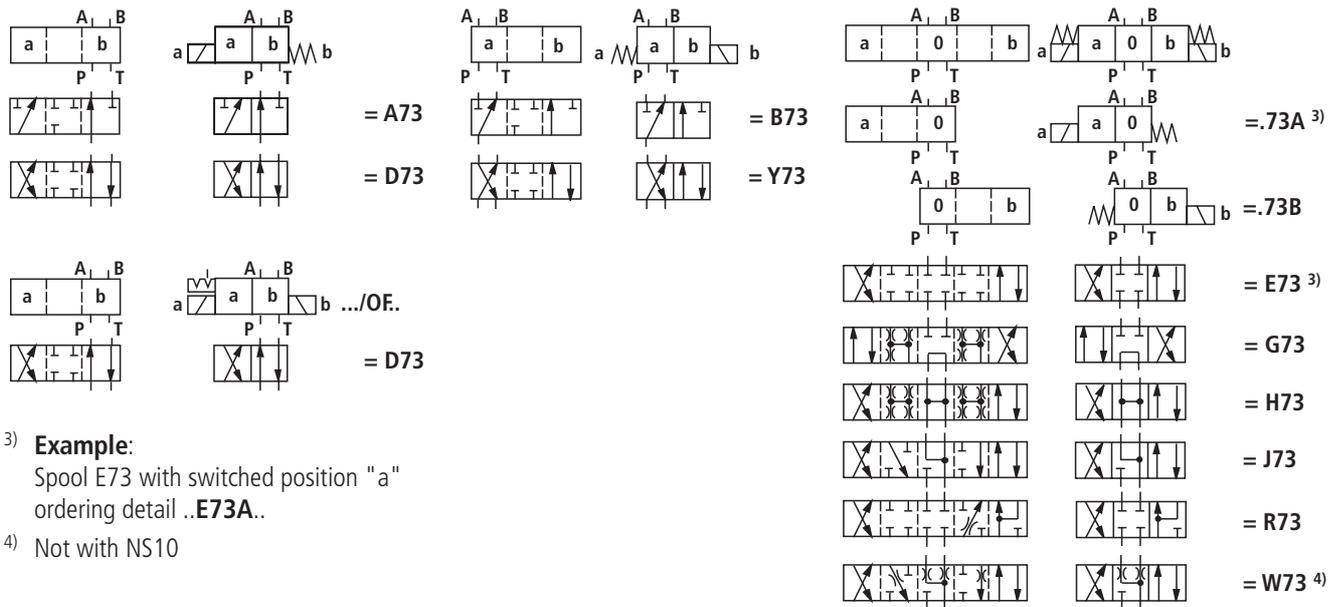
Preferred types, see page 6, are readily available !

- 1) Plug-in connectors must be ordered separately (see below).
- 2) When connecting to an AC supply a DC solenoid **must** be used which is controlled via a rectifier (see table on the left).
For an individual connection, a large plug-in connector with a built-in rectifier may be used (separate order, see below).
- 3) Locating pin 3 x 8 DIN EN ISO 8752
Material No. **R900005694** (separate order)

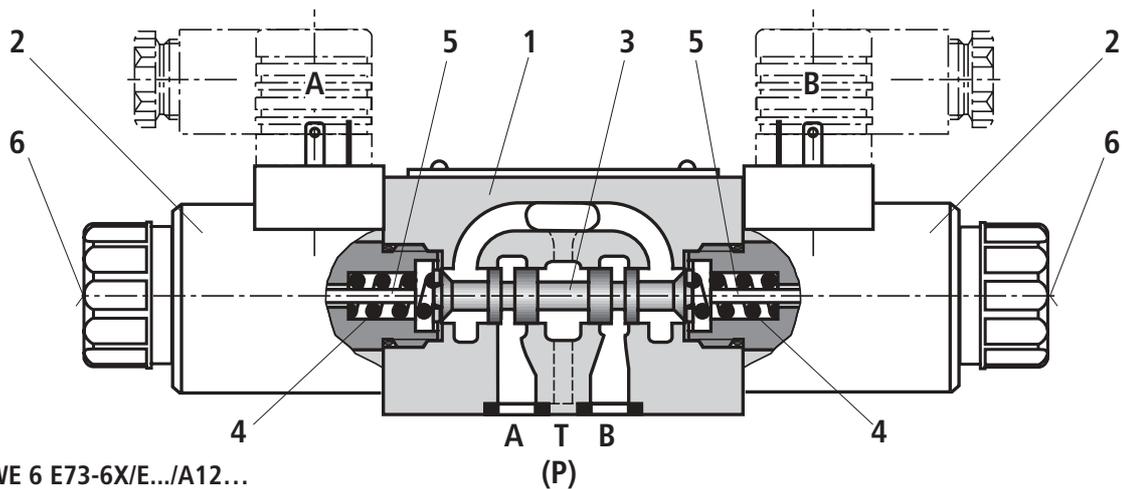
Ordering details: plug-in connectors to DIN EN 175 301-803 and ISO 4400 for component plug "K4"

For further plug-in connectors see RE 08 006		Material No.			
Valve side	Colour	Without circuitry	With indicator light 12 ... 240 V	With rectifier 12 ... 240 V	With indicator light and Z-diode protective circuit 24 V
a	Grey	R900074683	-	-	-
b	Black	R900074684	-	-	-
a/b	Black	-	R900057292	R900313933	R900310995

Symbols



Function, section



Type WE...73.. directional control valves are solenoid operated directional spool valves with soft switching characteristics. They control the start, stop and direction of flow.

Due to the design of the valve spool and solenoid, shocks which occur during switching the valve on or off are greatly reduced.

The switching shocks, measured as an acceleration value "a" in m/s^2 , are reduced by up to approx. 85 %, dependent on the spool type, when compared to a standard valve (see bar chart on page 5).

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

In the de-energised condition the control spool (3) is held in the neutral or initial position by means of return springs (4) (except for impulse spool). The control spool (3) is operated by wet pin solenoids (2).

To guarantee satisfactory operation, care should be taken to ensure that the solenoid pressure chamber is filled with oil.

The force of the solenoid (2) acts via the plunger (5) on the control spool (3) and pushes this from its neutral position into the required end position. Thus, the required flow direction from P to A and B to T or P to B and A to T is achieved.

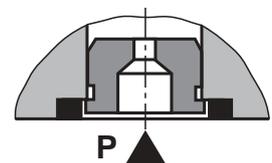
When solenoid (2) is de-energised, control spool (3) is returned to its neutral position by means of the return springs (4).

A hand override (6), allows movement of the control spool (3) without energising the solenoid.

Throttle insert

If, due to particular operating conditions during the switching sequences, flow can occur which are **larger** than the valve performance limits allow, then it is necessary to fit a throttle insert.

This is inserted into the P port of the directional control valve.



Type 4WE...73.../.../B..

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

General

Nominal size	NS	6	10	
Installation		Optional		
Ambient temperature range	°C	– 30 to + 50 (with NBR seals)		
		– 20 to + 50 (with FKM seals)		
Maximum ambient temperature	°C	50		
Weight	– Valve with 1 solenoid	kg	1.45	4.5
	– Valve with 2 solenoids	kg	1.95	6.1

Hydraulic

Maximum operating pressure	Ports A, B, P	bar	350	315
	Port T	bar	210	210
Pressure fluid			Mineral oil (HL, HLP) to DIN 51 524 ¹⁾ ; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) ¹⁾ ; HEPG (polyglycols) ²⁾ ; HEES (synthetic ester) ²⁾ ; Other pressure fluids on request	
Pressure fluid temperature range		°C	– 30 to + 80 (with NBR seals)	
			– 20 to + 80 (with FKM seals)	
Viscosity range		mm ² /s	2.8 to 500	
ISO code cleanliness class			Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 ³⁾	

Electrical

Available voltages ⁴⁾	V	12, 24, 96, 205	12, 24, 96, 205
Voltage tolerance (nominal voltage)	%	±10	±10
Power consumption	W	30	35
Duty		Continuous	Continuous
Switching time t_s to ISO 6403	ON/OFF	Approx. 3 to 4 times longer than a standard valve	
Acceleration "a" in m/s ²	%	See bar chart on page 5	
Switching frequency	1/h	Up to 7200	Up to 7200
Protection to DIN 40 050 ⁵⁾		IP 65	IP 65
Insulation class VDE 0580		F	F
Maximum coil temperature ⁶⁾	°C	150	150

With electrical connections the protective conductor (PE \perp) must be connected according to the relevant regulations.

¹⁾ Suitable for NBR **and** FKM seals

²⁾ **Only** suitable for FKM seals

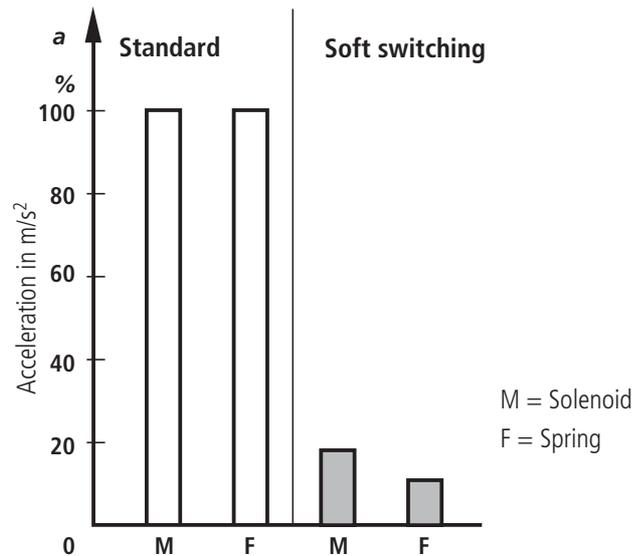
³⁾ The cleanliness class stated for the components must be adhered to in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

⁴⁾ Special voltages on request

⁵⁾ With mounted and fixed plug-in connector

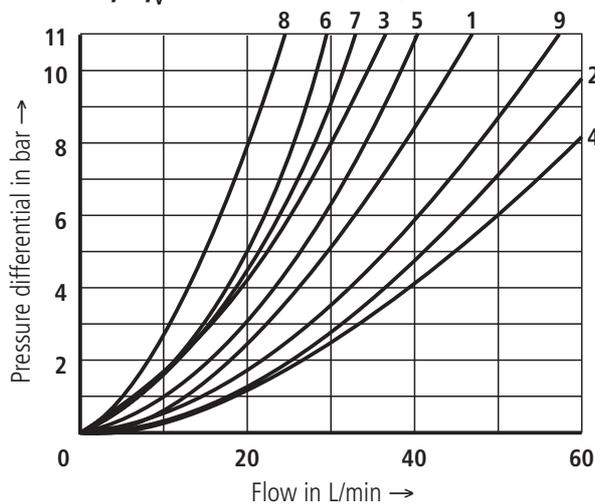
⁶⁾ Due to the occurring surface temperatures of the solenoid coils the European standards EN563 and EN982 must be taken into account!

Acceleration value "a" (measured at the cylinder)



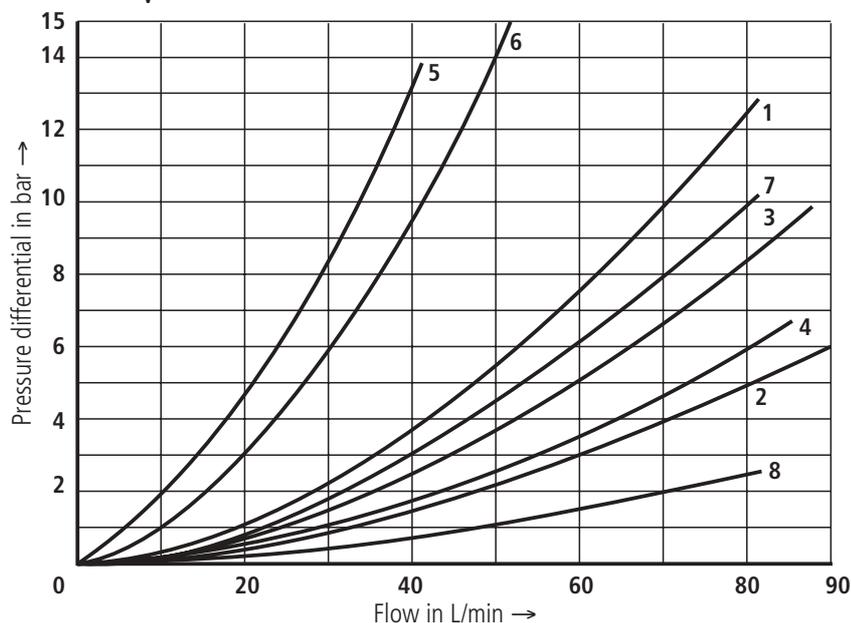
Characteristic curves (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

Δp - q_V -characteristic curves, NS 6



Symbol	Flow direction					
	P-A	P-B	A-T	B-T	P-T	B-A
E73	1	1	1	1		
J73	3	3	2	2		
H73	1	1	1	1	5	
A/B73	6	6	–	–		
D/Y73	7	7	7	7		
G73	8	8	8	8	5	
R73	9	6	9	–	–	6
W73	9	9	9	9		

Δp - q_V -characteristic curves, NS 10



Symbol	Flow direction				
	P-A	P-B	A-T	B-T	P-T
A/B73	2	2	–	–	–
D/Y73	1	1	1	1	–
E73	2	2	2	2	–
G73	2	2	2	2	3
H73	8	8	2	2	2
J73	4	4	2	2	–
R73	7	3	4	–	–

5 Symbol "R73" in switched position B – A (Diff.)
6 Symbol "R73" in switched position P – B (Diff.)

Performance limits (measured with HLP46, $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

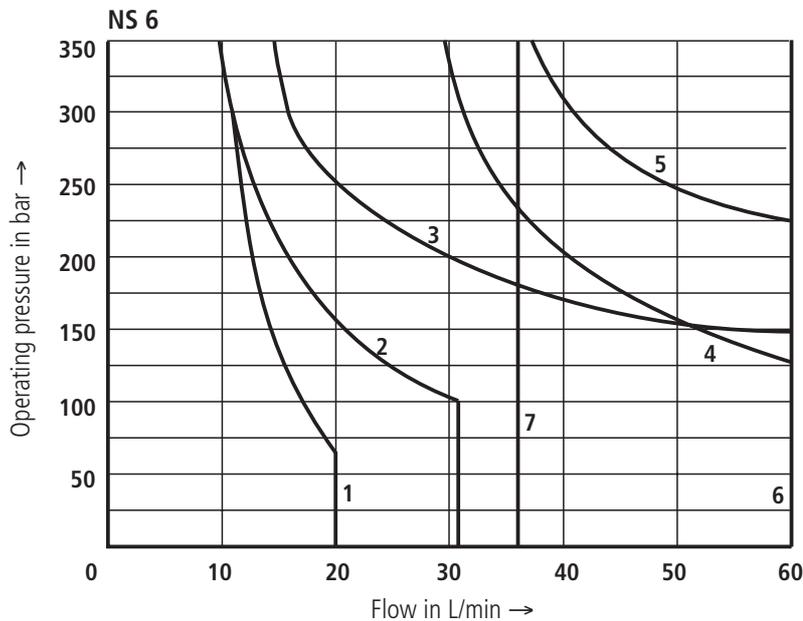
⚠ Attention!

The performance limits shown are valid when the valve is used with two flow directions (e. g. from P to A and simultaneous return flow from B to T).

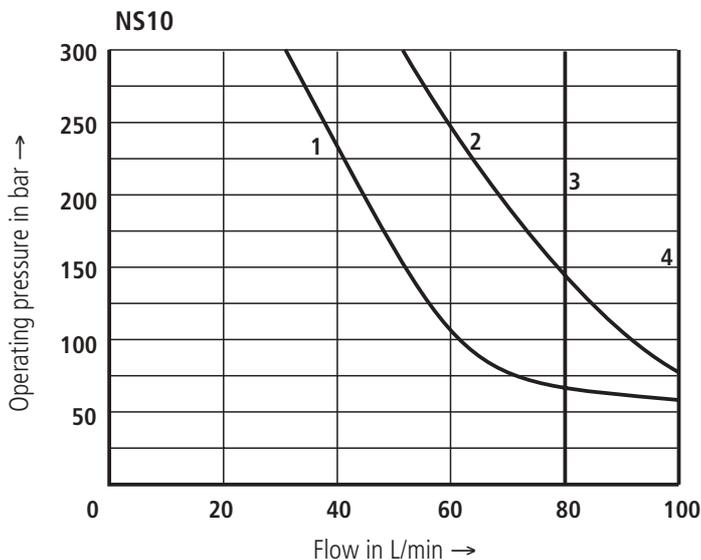
Due to the flow forces occurring within the valves, the permissible switching performance limits can be significantly lower with only one

flow direction (e. g. from P to A and port B blocked)!
(For these applications, please consult us.)

The performance limits were measured with solenoids at operating temperature, 10% under voltage and without tank back pressure.



Char. curve	Symbol
1	A73, B73
2	G73
3	D73, Y73
4	J73
5	R73
6	E73, W73, D73/OF
7	H73



Char. curve	Symbol
1	A73, B73
2	G73
3	H73
4	J73, D73, Y73, E73, R73, D73/OF

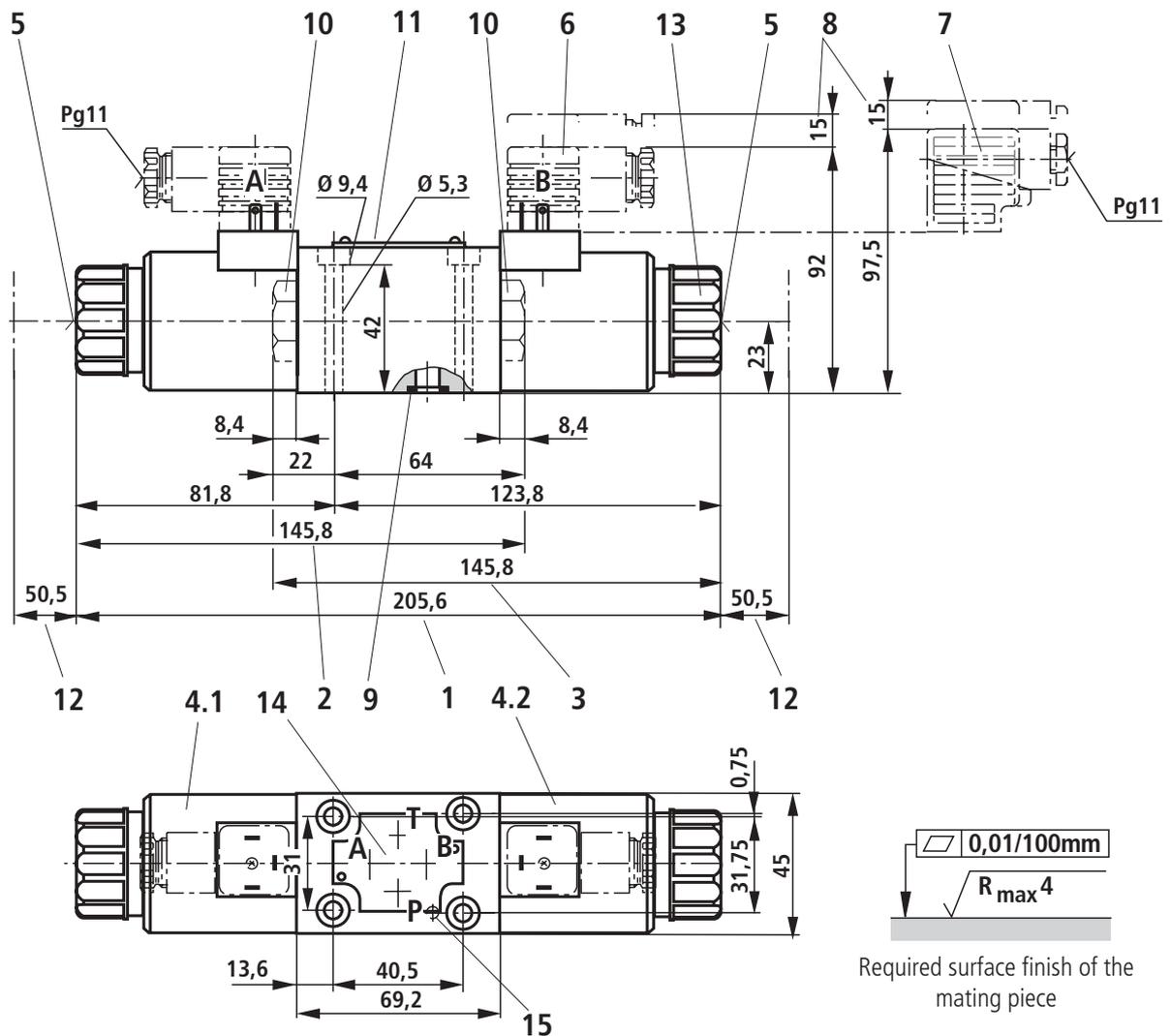
Preferred types (readily available)

Type	Material No.
4WE 6 D73-6X/EG24N9K4/A12	R900546257
4WE 6 D73-6X/OFEG24N9K4/A12	R900567066
4WE 6 E73-6X/EG24N9K4/A12	R900567095
4WE 6 G73-6X/EG24N9K4/A12	R900572783
4WE 6 H73-6X/EG24N9K4/A12	R900906660
4WE 6 J73-6X/EG24N9K4/A12	R900567997
4WE 6 W73-6X/EG24N9K4/A12	R900567269
4WE 6 Y73-6X/EG24N9K4/A12	R900572186

Type	Material No.
4WE 10 D73-3X/CG24N9K4/A12	R900528033
4WE 10 D73-3X/OFEG24N9K4/A12	R900563418
4WE 10 E73-3X/CG24N9K4/A12	R900525717
4WE 10 G73-3X/CG24N9K4/A12	R900560503
4WE 10 H73-3X/CG24N9K4/A12	R900912742
4WE 10 Y73-3X/CG24N9K4/A12	R900929728

Further preferred types and components can be found in the EPS (Standard Price List).

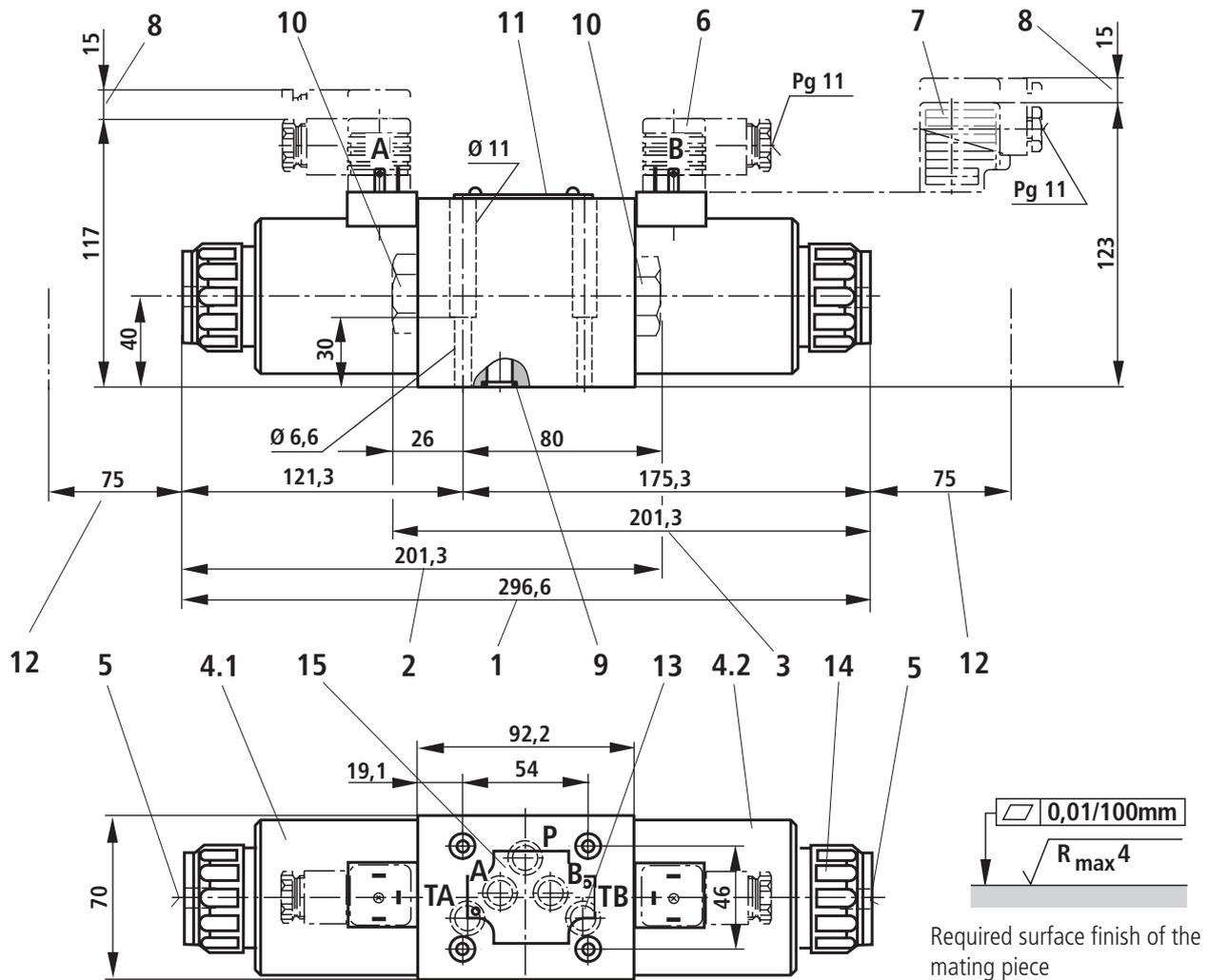
Unit dimensions: NS 6 (dimensions in mm)



- | | | | | | | | | | | | | | | |
|--|---|---|-----------------|------------------|--------------------|------------------|--|------------------|--------------|------------------|--------------------|------------------|--|------------------|
| <p>1 3-position valve (E73..)</p> <p>2 2-position valve with 1 solenoid (A73, D73, E73A...)</p> <p>3 2-position valve with 1 solenoid (Y73, E73B...)</p> <p>4.1 Solenoid "a" (plug-in connector colour grey)</p> <p>4.2 Solenoid "b" (plug-in connector colour black)</p> <p>5 Protected hand override "N9"
The hand override can only be operated up to a tank pressure of approx. 50 bar.
Avoid damage to the hand override pin bore!</p> | <p>6 Plug-in connector without circuitry¹⁾ (can be rotated in 90° increments)</p> <p>7 Plug-in connector with circuitry¹⁾ (can be rotated in 90° increments)</p> <p>8 Space required to remove the plug-in connector</p> <p>9 Identical seal rings for ports A, B, P, T</p> <p>10 Plug for valves with one solenoid</p> <p>11 Name plate</p> <p>12 Space required to remove the coil</p> <p>13 Locknut, tightening torque $M_A = 4 \text{ Nm}$</p> | <p>14 Porting pattern to DIN 24 340 Form A, without locating pin hole (standard)</p> <p>15 Porting pattern to ISO 4401 and CETOP-RP 121 H with locating pin hole $\varnothing 3 \times 5$ deep</p> <p>Subplates</p> <table border="0"> <tr> <td>(Without</td> <td>G 341/01 (G 1/4)</td> </tr> <tr> <td>locating pin hole)</td> <td>G 342/01 (G 3/8)</td> </tr> <tr> <td></td> <td>G 502/01 (G 1/2)</td> </tr> <tr> <td>(With</td> <td>G 341/60 (G 1/4)</td> </tr> <tr> <td>locating pin hole)</td> <td>G 342/60 (G 3/8)</td> </tr> <tr> <td></td> <td>G 502/60 (G 1/2)</td> </tr> </table> <p>to catalogue sheet RE 45 052 and</p> <p>Valve fixing screws
M5 x 50 DIN 912-10.9, $M_A = 8.9 \text{ Nm}$, must be ordered separately.</p> | (Without | G 341/01 (G 1/4) | locating pin hole) | G 342/01 (G 3/8) | | G 502/01 (G 1/2) | (With | G 341/60 (G 1/4) | locating pin hole) | G 342/60 (G 3/8) | | G 502/60 (G 1/2) |
| (Without | G 341/01 (G 1/4) | | | | | | | | | | | | | |
| locating pin hole) | G 342/01 (G 3/8) | | | | | | | | | | | | | |
| | G 502/01 (G 1/2) | | | | | | | | | | | | | |
| (With | G 341/60 (G 1/4) | | | | | | | | | | | | | |
| locating pin hole) | G 342/60 (G 3/8) | | | | | | | | | | | | | |
| | G 502/60 (G 1/2) | | | | | | | | | | | | | |

¹⁾ Must be ordered separately, see page 2.

Unit dimensions: NS 10 (dimensions in mm)



- | | | |
|---|---|---|
| <p>1 3-position valve (E73..)</p> <p>2 2-position valve with 1 solenoid (A73, D73, E73A...)</p> <p>3 2-position valve with 1 solenoid (Y73, E73B...)</p> <p>4.1 Solenoid "a" (plug-in connector colour grey)</p> <p>4.2 Solenoid "b" (plug-in connector black)</p> <p>5 Protected hand override "N9"
The hand override can only be operated up to a tank pressure of approx 50 bar. Avoid damage to the hand override pin bore!</p> <p>6 Plug-in connector without circuitry ¹⁾
(can be rotated in 90° increments)</p> <p>7 Plug-in connector with circuitry ¹⁾
(can be rotated in 90° increments)</p> | <p>8 Space required to remove the plug-in connector</p> <p>9 Identical seal rings for ports A, B, P, T (not for valves with throttle insert in P)</p> <p>10 Plug for valves with one solenoid</p> <p>11 Name plate</p> <p>12 Space required to remove the coil</p> <p>13 Additional T connection (TB) can be optionally used in conjunction with manifold blocks.</p> <p>14 Locknut, tightening torque $M_A = 6^{+2}$ Nm</p> | <p>15 Porting pattern to DIN 24 340 Form A, ISO 4401 and CETOP – RP 121 H</p> <p>Subplates</p> <p>G 66/01 (G 3/8)</p> <p>G 67/01 (G 1/2)</p> <p>G 534/01 (G 3/4)</p> <p>to catalogue sheet RE 45 054 and</p> <p>Valve fixing screws
M6 x 40 DIN 912-10.9, $M_A = 15.5$ Nm must be ordered separately.</p> <p>¹⁾ Must be ordered separately, see page 2.</p> |
|---|---|---|

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