

**RE 23 327/07.02**

Replaces: 05.98

**4/3-, 4/2- and 3/2- way directional valves  
with wet pin DC or AC solenoids,  
Type .WE 10 ../C**

Nominal size 10

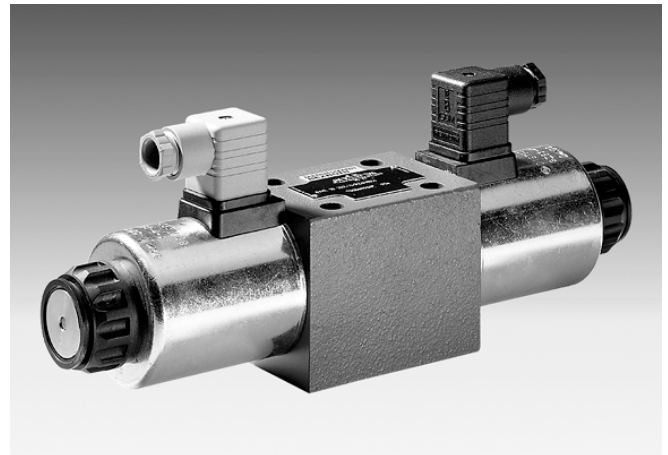
Series 3X (individual connections)

Series 4X (central connections)

Maximum operating pressure 315 bar

Maximum flow 120 L/min

HAD5958/98



Type 4WE 10 E3X/CG24N9K4 with plug-in connector

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**Features**

- Direct solenoid operated directional spool valve, standard version
- Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP–RP 121 H, subplates to catalogue sheet RE 45 054 (separate order)
- Wet pin AC or DC solenoids with removable coil
- Solenoid coil can be rotated through 90°
- Coils may be replaced without opening the pressure tight chamber
- Electrical connections available as either individual connections or as a central connection
- Hand override, optional
- For soft switching version, see RE 23 183
- For inductive limit switch (contact and proximity), see RE 24 830



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	<b>WE</b>	<b>10</b>		/	<b>C</b>				/		*
3 actuator ports	= 3										
4 actuator ports	= 4										
Nominal size 10		= 10									
Symbol e.g. C, E, EA, EB etc. – for possible versions see page 3											
Series 30 to 39 – individual connection (30 to 39: unchanged installation and connection dimensions)					= 3X						
Series 40 to 49 – central connection (40 to 49: unchanged installation and connection dimensions)					= 4X						
<b>With</b> spring return					= No code						
<b>Without</b> spring return, with detent					= OF						
<b>Without</b> spring return					= 0						
Wet pin solenoid (oil immersed) with removable coil					= C						
24 V DC					= G24						
230 V AC 50/60 Hz					= W230						
205 V DC					= G205 <sup>1)</sup>						
Ordering details for other voltages and frequencies see page 5.											
<b>With</b> protected hand override ( <b>standard</b> )					= N9						
<b>Without</b> hand override					= No code						
Hand override with protective cap					= N						
<b>Types of electrical connections</b>											
Individual connection; with component plug					= K4 <sup>2)</sup>						
DIN 43 650-AM2, without plug-in connector											
Central connection; cable entry in cover with indicator lamp					= DL						
Central connection; central connection in cover with indicator light (without angled plug-in connector)					= DKL <sup>3)</sup>						
<b>Accessories</b>											
<b>With</b> inductive limit switch (for ordering details see catalogue sheet RE 24 830)											
<b>Without</b> limit switch					= No code						
<b>Without</b> cartridge throttle					= No code						
Throttle Ø 0.8 mm										= B08	
Throttle Ø 1.0 mm										= B10	
Throttle Ø 1.2 mm										= B12	
NBR seals										= No code	
FKM seals										= V	
(other seals on request)											
<b>⚠ Attention!</b>											
The compatibility of the seals and pressure fluid has to be taken into account!											
Further details in clear text											

AC supply (permissible voltage tolerance ± 10%)	Nominal voltage of the DC solenoid when used with an AC supply	Order detail
110 V - 50/60 Hz	96 V	G96
120 V - 60 Hz	110 V	G110
230 V - 50/60 Hz	205 V	G205

Preferred types and standard components are highlighted in the RPS (Standard Price List).

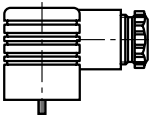
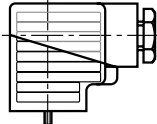
<sup>1)</sup> When connecting to an AC supply a DC solenoid **must** be used which is controlled via a rectifier (see table on the left).

With an individual connection a large plug-in connector with built-in rectifier can be used (separate order, see page 3).

<sup>2)</sup> Plug-in connectors must be ordered separately (see page 3).

<sup>3)</sup> Plug-in connector (Material No. 00005538) must be ordered separately.

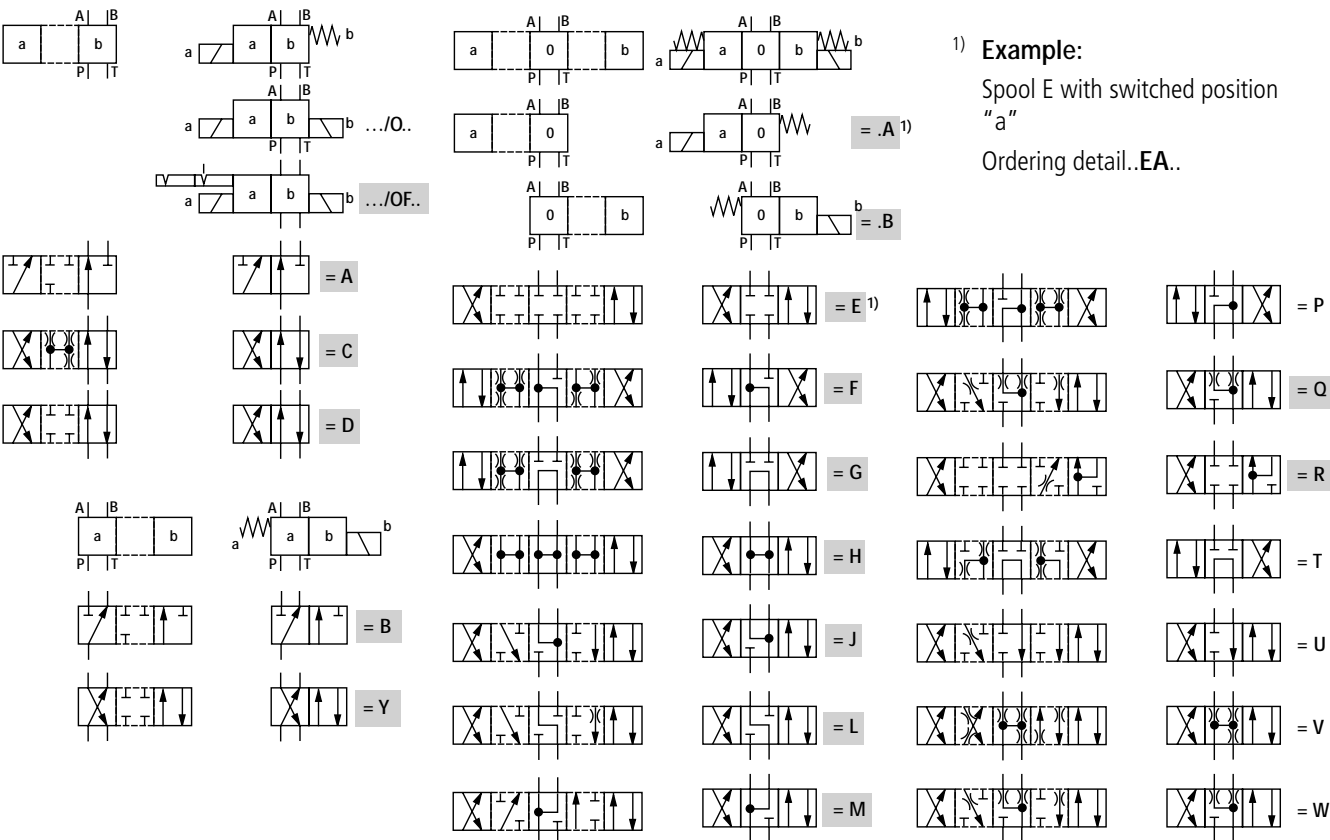
**Ordering details:** plug-in connectors to DIN 43 650 A and ISO 4400 for component plug "K4"

Further plug-in connectors see RE 08 006					
		Material No.			
		Without circuitry	With indicator lamp 12 ... 240 V	With rectifier 12 ... 240 V	With indicator lamp and Z-diode protective circuit 24 V
Valve side	Colour				
a	grey	00074683	–	–	–
b	black	00074684	–	–	–
a/b	black	–	00057292	00313933	00310995

**Preferred types (readily available)**

Type	Material No.	Type	Material No.
3WE 10 A3X/CG24N9K4	00592014	4WE 10 G3X/CW230N9K4	00912497
4WE 10 C3X/CG24N9K4	00593277	4WE 10 H3X/CG24N9K4	00597986
4WE 10 C3X/CW230N9K4	00915651	4WE 10 H3X/CW230K4	00912498
4WE 10 D3X/CG24N9K4	00589933	4WE 10 J3X/CG24N9K4	00589988
4WE 10 D3X/CW110N9K4	00598925	4WE 10 J3X/CW110N9K4	00592338
4WE 10 D3X/CW230N9K4	00912496	4WE 10 J3X/CW230N9K4	00911868
4WE 10 E3X/CG24N9K4	00588201	4WE 10 Q3X/CG24N9K4	00591325
4WE 10 E3X/CW110N9K4	00597186	4WE 10 R3X/CG24N9K4	00598583
4WE 10 E3X/CW230N9K4	00911869	4WE 10 W3X/CG24N9K4	00588200
4WE 10 G3X/CG24N9K4	00594277	4WE 10 Y3X/CG24N9K4	00595531

**Symbols**



## Function, section

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

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

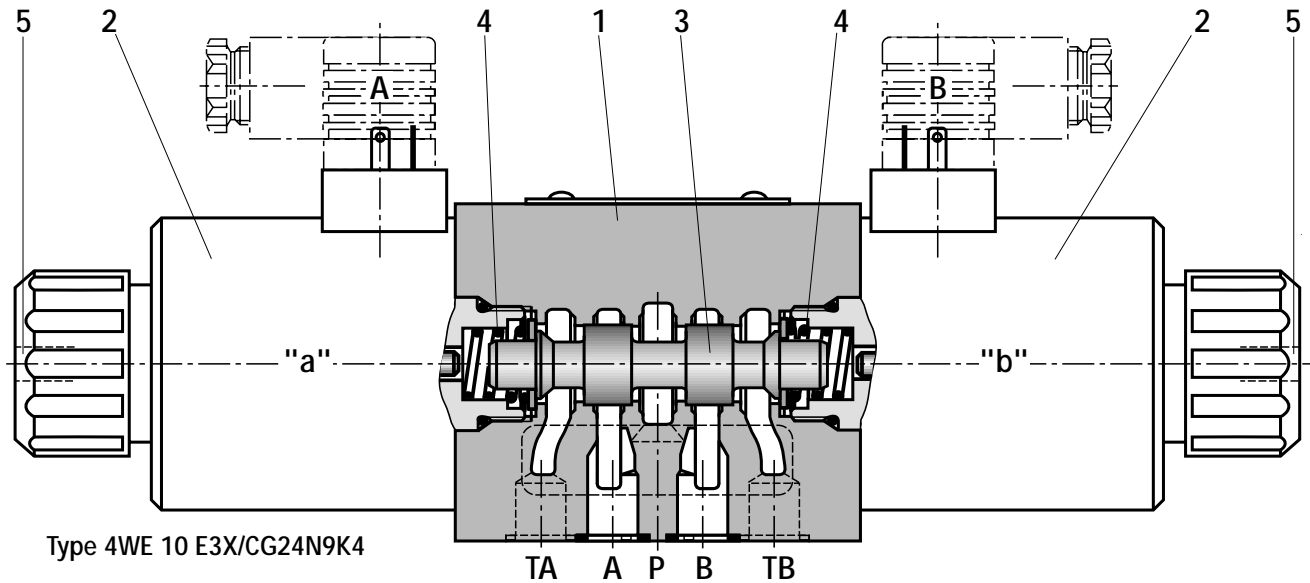
In the de-energised condition the control spool (3) is held in its central or initial position by means of the return springs (4) (with the exception of impulse spools). The control spool (3) is operated by the wet pin solenoids (2).

**In order to ensure correct function care must be taken that the solenoid pressure chamber is filled with oil.**

The force of solenoid (2) acts on the control spool (3) and moves it from its initial position to the desired end position. This permits free flow from P to A and B to T or P to B and A to T.

On de-energising the solenoid (2) the control spool (3) is returned to its initial position by the return spring (4).

The optional hand override (5) permits the control spool (3) to be moved without the solenoids being energised.



### Type .WE 10.3X/OC....

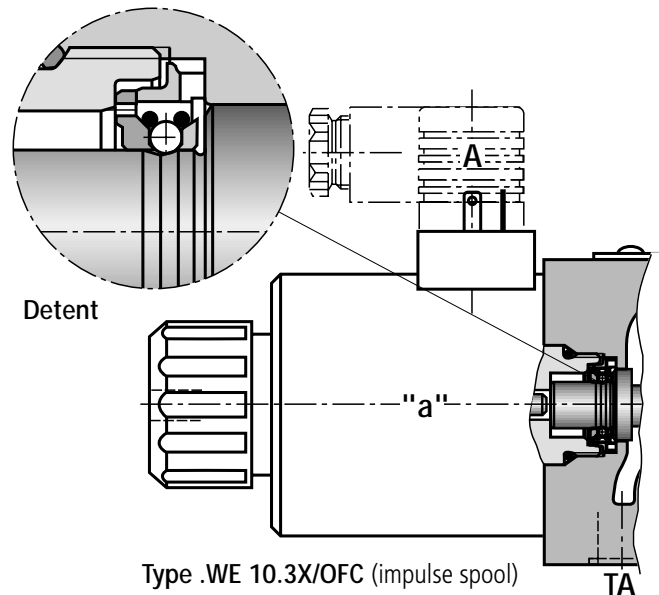
(only possible with symbols A, C and D)

This model is a 2-position directional valve with 2 solenoids without detents. The spool position, when the solenoids are de-energised, is **not** defined.

### Type .WE 10.3X/OFC... (impulse spool), with detent

(only possible with symbols A, C and D)

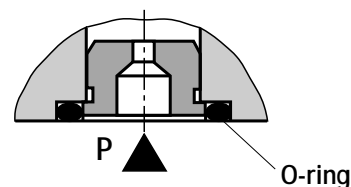
This model is a 2-position directional valve with 2 solenoids and detents. Hence, when the solenoids are de-energised, the spool is held in the detented position and thus the solenoids do not need to be continuously energised.



### Cartridge throttle (type 4WE 10.../.../B..)

A cartridge throttle is required when, if due to the operating conditions, flows can occur during the switching procedure which are higher than the permitted performance limits of the valve.

The throttle is inserted into the P port of the directional valve.



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

### General

Installation	Optional		
Max. ambient temperature	°C	-30 to +50 (NBR seals)	
		-20 to +50 (FKM seals)	
Weight			Central connection
			Individual connection
	Valve with 1 solenoid	kg	4.4 (=); 3.6 (~)
	Valve with 2 solenoids	kg	6.0 (=); 4.4 (~)

### Hydraulic

Max. operating pressure	Ports A, B, P	bar	315	For symbols A and B port T must be used as a drain line, if the operating pressure is higher than the permissible tank pressure.
	Port T	bar	210 (=) ; 160 (~)	
Max. flow		L/min	120	
Flow cross-section (switched position 0)	For symbol V	mm <sup>2</sup>	11 (A/B → T); 10.3 (P → A/B)	
	For symbol W	mm <sup>2</sup>	2.5 (A/B → T)	
	For symbol Q	mm <sup>2</sup>	5.5 (A/B → T)	
Pressure fluid	Mineral oil (HL, HLP) to DIN 51 524 <sup>1)</sup> ; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) <sup>1)</sup> ; HEPG (polyglycols) <sup>2)</sup> ; HEES (synthetic ester) <sup>2)</sup> ; 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 <sup>2</sup> /s	2.8 to 500	
Degree of contamination	Maximum permissible degree of contamination of the pressure fluid is to NAS 1638 class 9. We therefore recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$ .			

### Electrical

Voltage type	DC		AC
Available voltages <sup>3)</sup> (ordering details for AC solenoids see below)	V	12, 24, 42, 60, 96, 110, 180, 205, 220	42, 110, 230 50/60 Hz
Voltage tolerance (nominal voltage)	%	±10	
Power consumption	W	35	—
Holding power	VA	—	90
Switching power	VA	—	550
Duty	Continuous		
Switching time to ISO 6403	ON	ms	45 to 60
	OFF	ms	20 to 30
Switching frequency		cycles/h	Up to 15000
Protection to DIN 40 050 <sup>4)</sup>	IP 65		
Insulation class VDE 0580	F		H
Max. coil temperature <sup>5)</sup>	°C	150	180

<sup>1)</sup> Suitable for NBR **and** FKM seals

<sup>2)</sup> **Only** suitable for FKM seals

<sup>3)</sup> Special voltages on request

<sup>4)</sup> With assembled and locked plug-in connector

<sup>5)</sup> Due to the surface temperatures which occur on the solenoid coil, the European standards EN563 and EN982 have to be taken into account!

#### Note:

**AC solenoids** may be used for 2 or 3 types of supply;  
E.g. solenoid type **W110** for:

110 V, 50 Hz

110 V, 60 Hz

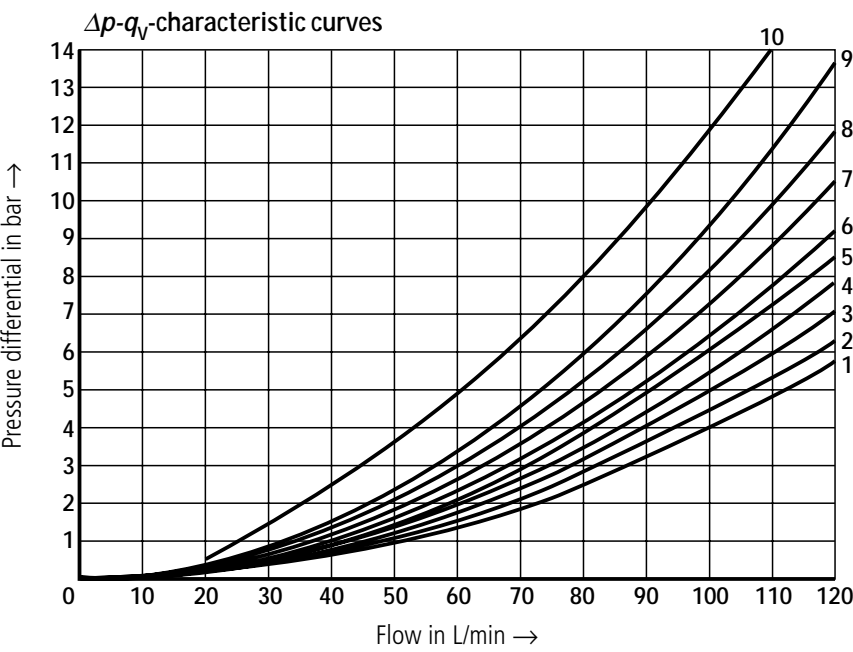
120 V, 60 Hz

#### Ordering details

<b>W42</b>	42 V, 50 Hz
	42 V, 60 Hz
<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

**With electrical connections the protective conductor (PE ≡) must be corrected according to the relevant regulations.**

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



Symbols	Direction of flow			
	P – A	P – B	A – T	B – T
A, B	3	3	–	–
C	3	3	4	5
D, Y	5	5	6	6
E	1	1	4	4
F	2	3	7	4
G	3	3	6	7
H	1	1	6	7
J	1	1	3	3
L	2	2	3	5
M	1	1	4	5
P	4	2	5	7
Q	1	2	1	3
R	3	6	4	–
T	3	3	6	7
U, V	2	2	3	3
W	2	2	4	5
Op. pos.	P – A	B – A	A – T	P – T
R	–	9	–	–

Centre pos.	P – A	P – B	B – T	A – T	P – T
F	4	–	–	9	9
P	–	5	8	–	10
G, T			–	–	9
H			–	–	3

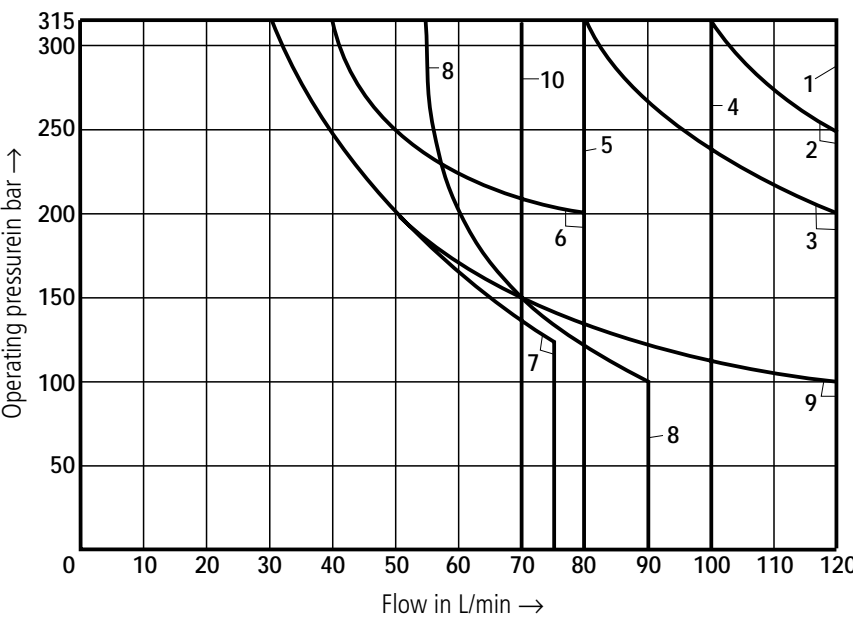
Performance limits: DC (measured with HLP46,  $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$ )

The performance limits shown are valid when the valve is used with two directions of flow (e.g. from P to A with 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

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

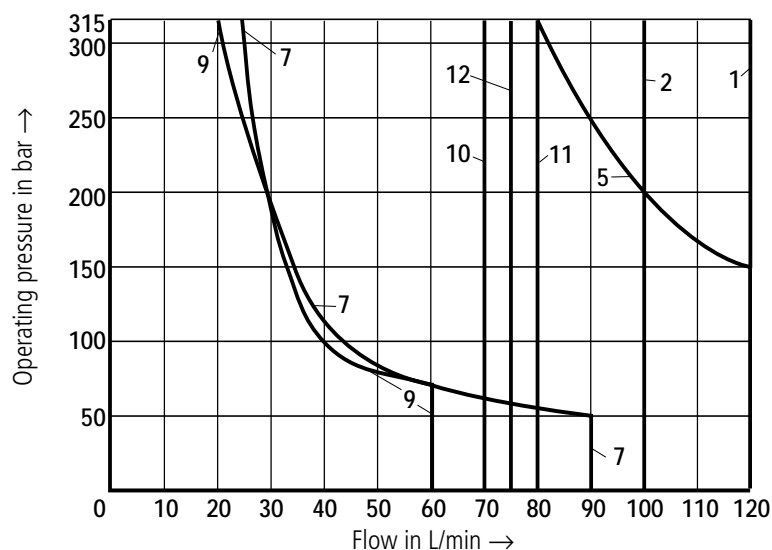
**The performance limit was determined with the solenoids at their operating temperature, 10 % under voltage and with no pre-loading of the tank.**



Char. curve	Symbols
1	C, C/O, C/OF D, D/O, D/OF Y, M
2	E
3	A/O, A/OF L, U, J, Q, W
4	H
5 <sup>1)</sup>	R, L <sup>2)</sup> , U <sup>2)</sup>
6	G
7	T
8	F, P
9	A, B
10	V

<sup>1)</sup> Return flow (independent of the area ratio)

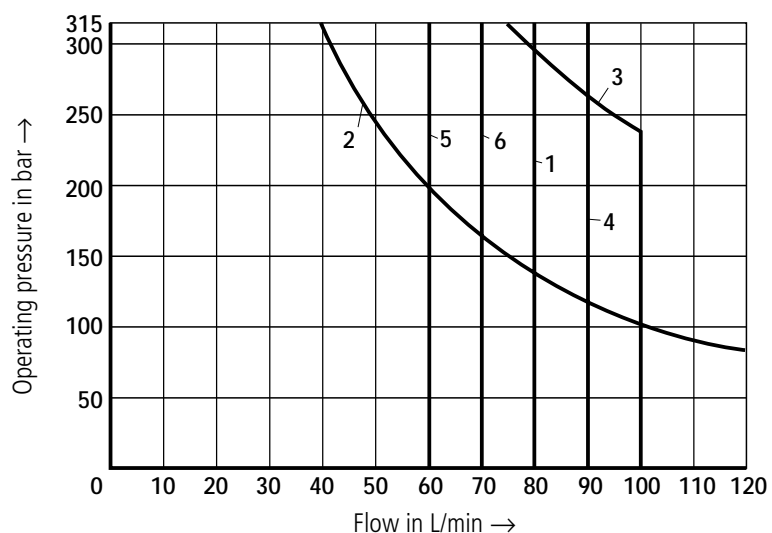
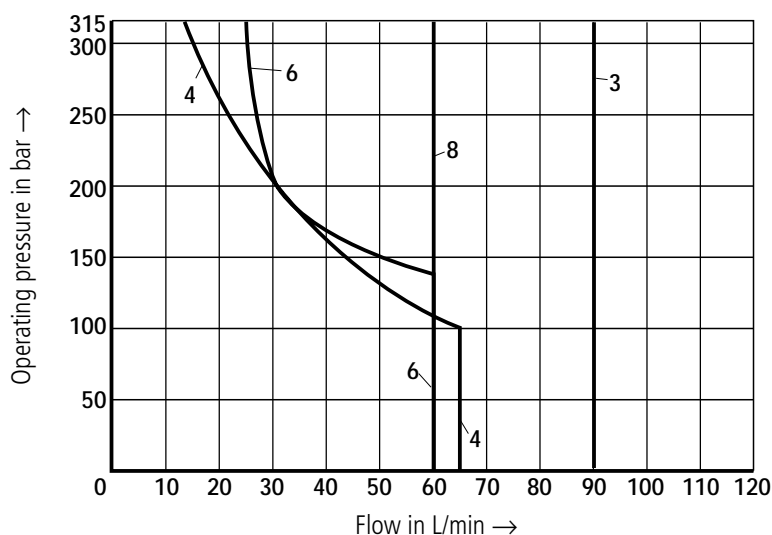
<sup>2)</sup> Only the centre position



Char. curve	Symbols
1	C, C/O, C/OF D, D/O, D/OF Y
2	E, L, U, Q, W
3	M
4	A, B
5	A/O, A/OF, J
6	G
7	F, P
8	V
9	T
10	H
11	R
12 <sup>1)</sup>	L, U

<sup>1)</sup> Only the centre position

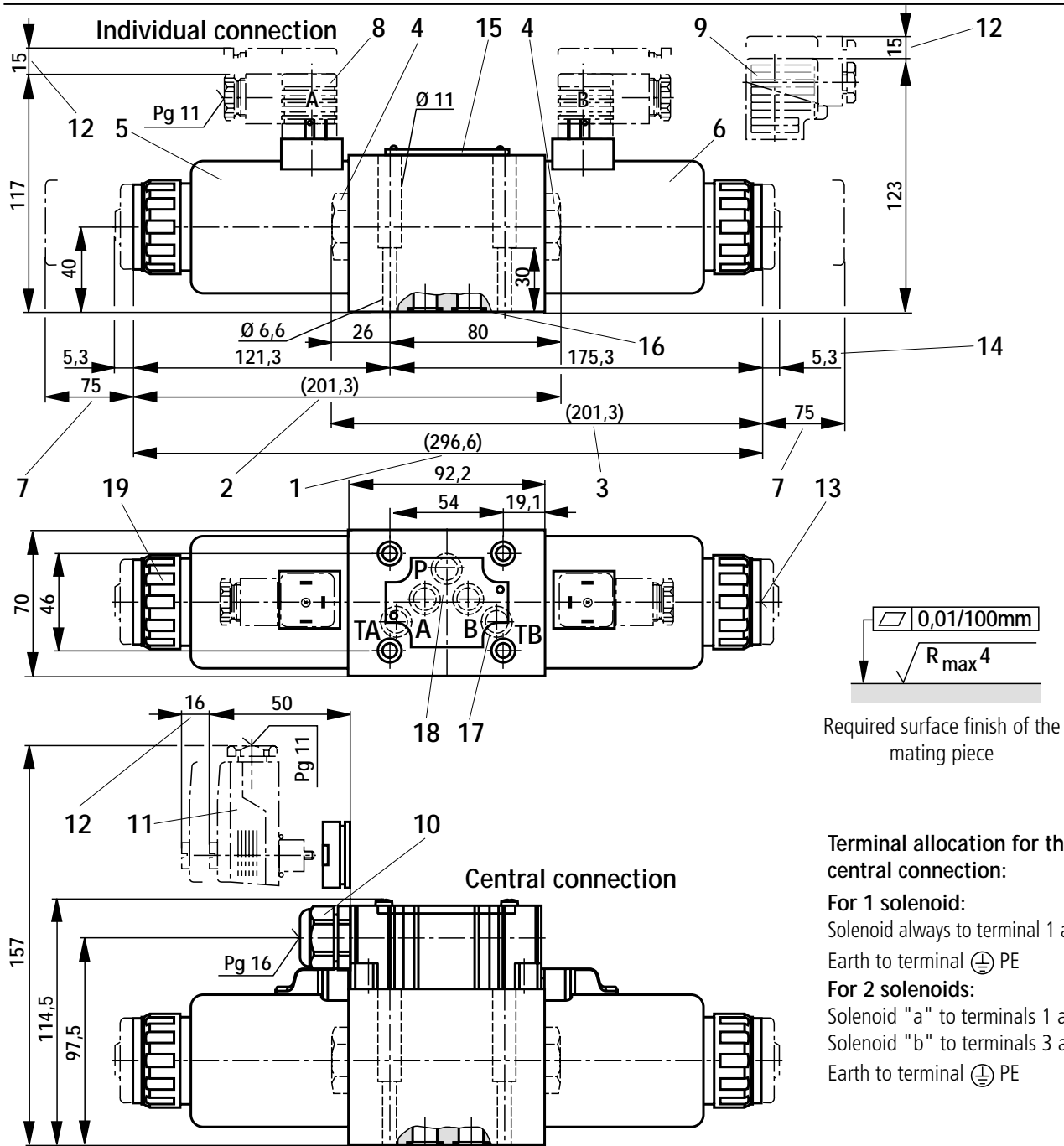
42 V, 50 Hz; 110 V, 50 Hz; 120 V, 60 Hz;  
127 V, 50 Hz; 220 V, 50 Hz; 240 V, 60 Hz



Char. curve	Symbols
1	C, C/O, C/OF D, D/O, D/OF Y
2	A/O, A/OF
3	E
4	M
5	V
6	H

42 V, 60 Hz; 110 V, 60 Hz;  
127 V, 60 Hz; 220 V, 60 Hz

Performance limits for other spools on request!



Required surface finish of the mating piece

#### Terminal allocation for the central connection:

##### For 1 solenoid:

Solenoid always to terminal 1 and 2  
Earth to terminal  $\oplus$  PE

##### For 2 solenoids:

Solenoid "a" to terminals 1 and 2  
Solenoid "b" to terminals 3 and 4  
Earth to terminal  $\oplus$  PE

- 1 3-position valve <sup>1)</sup>
- 2 2-position valve with 1 solenoid (A, C, D, EA...) <sup>1)</sup>
- 3 2-position valve with 1 solenoid (B, Y, EB...) <sup>1)</sup>
- 4 Cover for valve with 1 solenoid
- 5 Solenoid "a" (plug-in connector colour grey)
- 6 Solenoid "b" (plug-in connector colour black)
- 7 Space required to remove the coil
- 8 Plug-in connector **without** circuitry to DIN 43 650 <sup>2)</sup>
- 9 Plug-in connector **with** circuitry to DIN 43 650 <sup>2)</sup>

- 10 Cable gland Pg 16 "DL"
- 11 Plug-in connector (plug-in connector colour red, must be ordered separately, Material No. 00005538)
- 12 Space required to remove the plug-in connector
- 13 Hand override "N9" (standard) – the hand override can only be operated up to a max. tank pressure of 50 bar – avoid damage to the hand override pin bore!
- 14 Dimension for hand override "N"
- 15 Name plate
- 16 Identical seal rings for ports A, B, P, TA, TB (for valves with cartridge throttle: O-ring in the P port)

- 17 Additional T connection (TB) can be used with manifolds where this connection is required.
- 18 Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H.

**Subplates** G 66/01 (G 3/8),  
G 67/01 (G 1/2),  
G 534/01 (G 3/4)

to catalogue sheet RE 45 054 and

#### Valve fixing screws

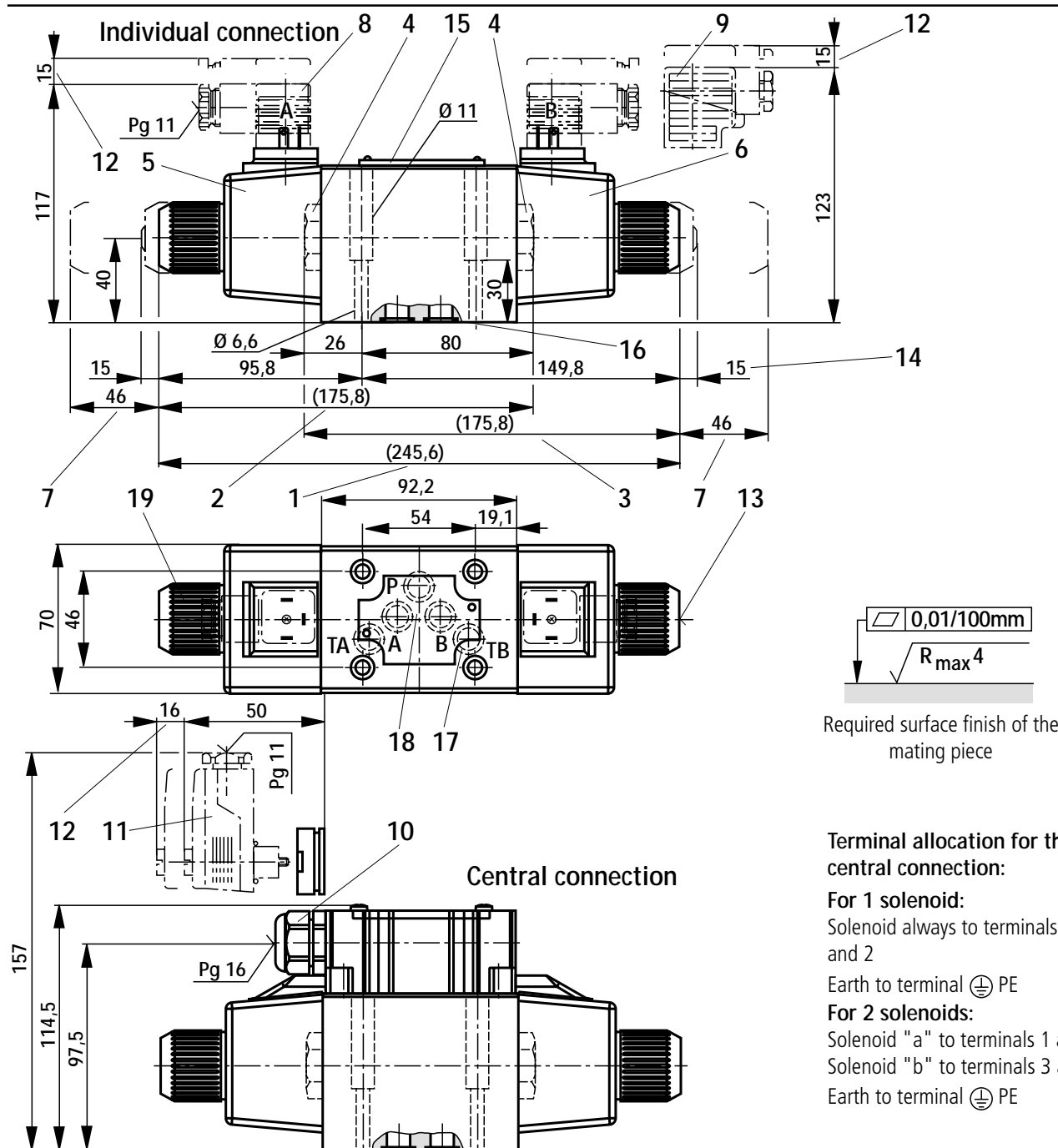
M6 x 40 DIN 912-10.9,  $M_A = 15.5$  Nm, must be ordered separately.

19 Tightening torque  $M_A = 6 + 2$  Nm

<sup>1)</sup> Dim. without hand override and with protected hand override "N9"

<sup>2)</sup> Must be ordered separately, see page 3.





Required surface finish of the mating piece

#### Terminal allocation for the central connection:

##### For 1 solenoid:

Solenoid always to terminals 1 and 2

Earth to terminal  $\oplus$  PE

##### For 2 solenoids:

Solenoid "a" to terminals 1 and 2

Solenoid "b" to terminals 3 and 4

Earth to terminal  $\oplus$  PE

- 1 3-position valve <sup>1)</sup>
- 2 2-position valve with 1 solenoid (A, C, D, EA...) <sup>1)</sup>
- 3 2-position valve with 1 solenoid (B, Y, EB...) <sup>1)</sup>
- 4 Cover for valve with 1 solenoid
- 5 Solenoid "a" (plug-in connector colour grey)
- 6 Solenoid "b" (plug-in connector colour black)
- 7 Space required to remove the coil
- 8 Plug-in connector **without** circuitry to DIN 43 650 <sup>2)</sup>
- 9 Plug-in connector **with** circuitry to DIN 43 650 <sup>2)</sup>

- 10 Cable gland Pg 16 "DL"
- 11 Plug-in connector (plug-in connector colour red, must be ordered separately, Material No. 00005538)
- 12 Space required to remove the plug-in connector
- 13 Hand override "N9" (standard) – the hand override can only be operated up to a max. tank pressure of 50 bar – avoid damage to the hand override pin bore!
- 14 Dimension for hand override "N"
- 15 Name plate
- 16 Identical seal rings for ports A, B, P, TA, TB (for valves with cartridge throttle: O-ring in P port)

- 17 Additional T connection (TB) can be used with manifolds where this connection is required.

- 18 Porting pattern to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H.

**Subplates** G 66/01 (G 3/8),  
G 67/01 (G 1/2),  
G 534/01 (G 3/4)

to catalogue sheet RE 45 054 and

#### Valve fixing screws

M6 x 40 DIN 912-10.9,  $M_A = 15.5$  Nm, must be ordered separately.

- 19 Tightening torque  $M_A = 6 + 2$  Nm

<sup>1)</sup> Dim. without hand override and with protected hand override "N9"

<sup>2)</sup> Must be ordered separately, see page 3.

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