

## RE 23 327/05.98

Replaces: 23 316



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

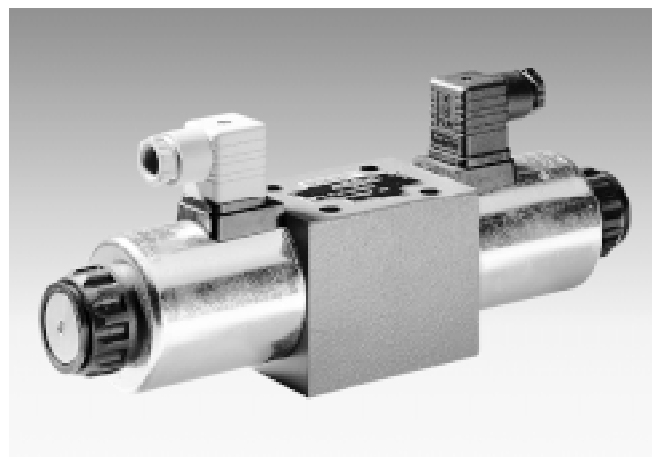
Nominal size 10

Series 3X (individual connections)

Series 4X (central connections)

Maximum operating pressure 315 bar

Maximum flow 120 L/min



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

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### Features

- Direct solenoid actuated directional spool valve in the 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
- For further information regarding
  - Subplates see RE 45 054
  - Inductive limit switches see RE 24 830

**Ordering details**

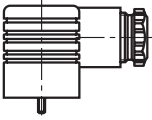
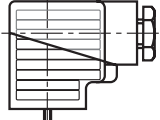
	2	3	4	6	7	9	10	11	12	15	16	19	22	23
		<b>WE</b>	<b>10</b>		/		<b>C</b>				/			*
3 actuator ports	= 3													
4 actuator ports	= 4													
Nominal size 10			= 10											
Symbol e.g. C, E, EA, EB ect. – for possible designs see page 3														
Series 30 to 39 – individual connection (30 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							= O							
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 connection</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>Accessory</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														Used where the flow > than the performance limit of the valves effective in P port = B08
Throttle Ø 1.0 mm														= B10
Throttle Ø 1.2 mm														= B12
NBR seals														= No code
FKM seals (other seals on request)														= V
<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	<b>G96</b>
120 V - 60 Hz	110 V	<b>G110</b>
230 V - 50/60 Hz	205 V	<b>G205</b>

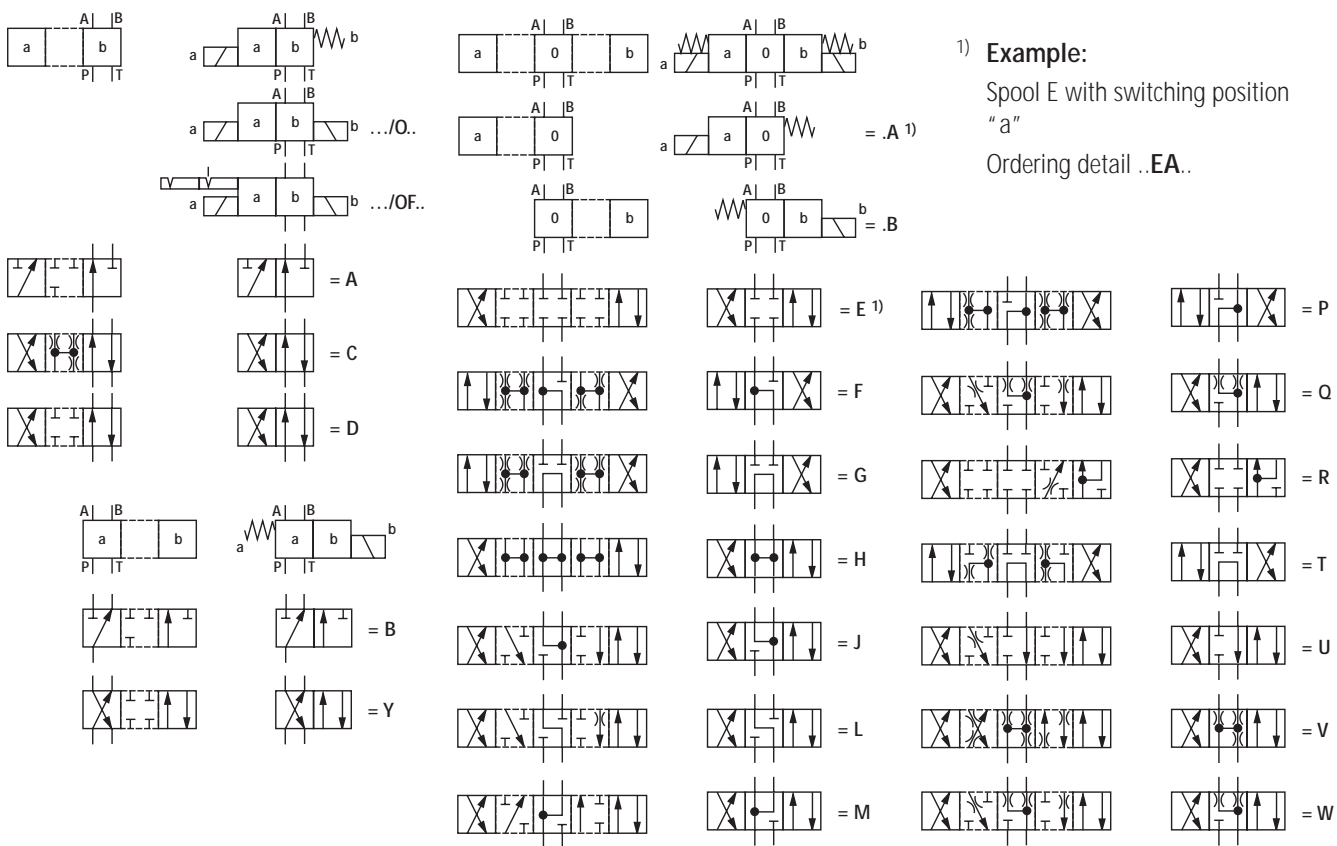
**Preferred types and standard components are highlighted in the RPS (Rexroth Price list Standard).**

- 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).
- Plug-in connectors must be ordered separately (see page 3).
- Plug-in connector (material no. 00005538) must be ordered separately.

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

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

**Symbols**



**Function, section**

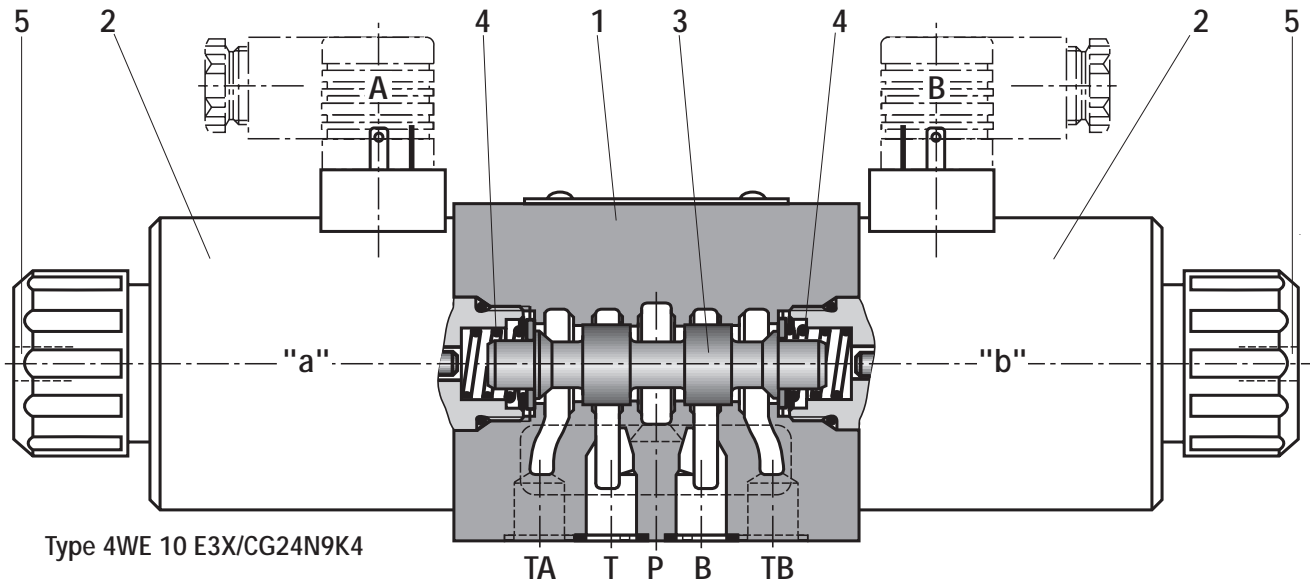
Directional valve type WE are solenoid actuated directional spool valves. They are used to control the start, stop and direction of a flow. The directional valves basically comprise of the housing (1), one or two solenoids (2), control spool (3), and one or two return springs (4). In the de-energised condition, control spool (3) is held in its central or initial position by means of return springs (4) (except in the case of impulse spools). Control spool (3) is actuated by the wet pin solenoids (2).

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

The force of solenoid (2) acts on 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 solenoid (2) control spool (3) is returned to its initial position by return spring (4).

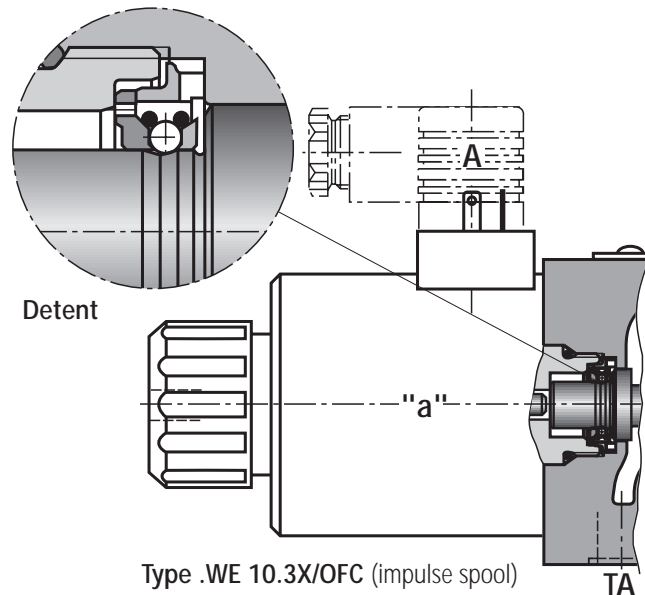
The optional hand override (5) permits control spool (3) to be moved without the solenoids being energised.



**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**

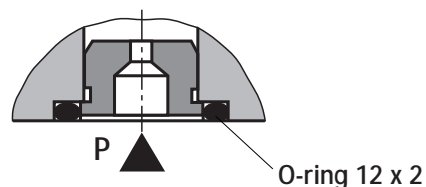
(only possible with symbols A, C and D)

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, if due to the operating conditions, flows can occur, which are higher than the permitted performance limits of the valve during operation.

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	50		
Weight		Central connection	Individual connection	
	Valve with 1 solenoid	kg	4.4 (=); 3.6 (-)	4.3 (=); 3.5 (-)
	Valve with 2 solenoids	kg	6.0 (=); 4.4 (-)	5.9 (=); 4.3 (-)

**Hydraulic data**

Max. operating pressure	Ports A, B, P	bar	315
	Port T	bar	210 (=) ; 160 (-) 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.
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 data**

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	15000
Protection to DIN 40 050	IP 65		
Insulation class VDE 0580	F		H
Max. coil temperature <sup>4)</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> Due to the surface temperatures which occur on the solenoid coil, the European standards EN563 and EN982 have to be taken into account!

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

**Note:**

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

110 V, 50 Hz

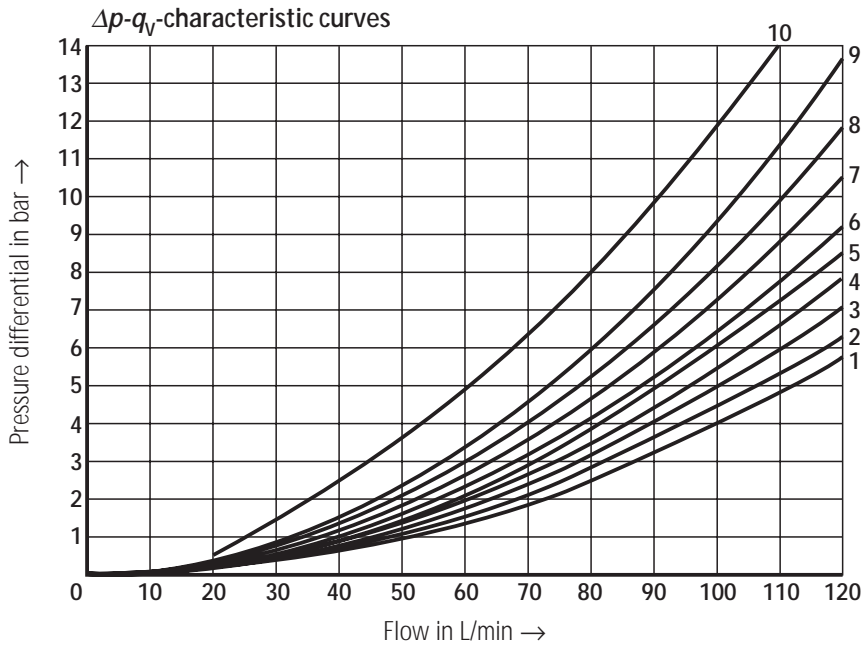
110 V, 60 Hz

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

**Characteristic curves** (measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $\vartheta = 50 \text{ }^\circ\text{C}$ )



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	-	-

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

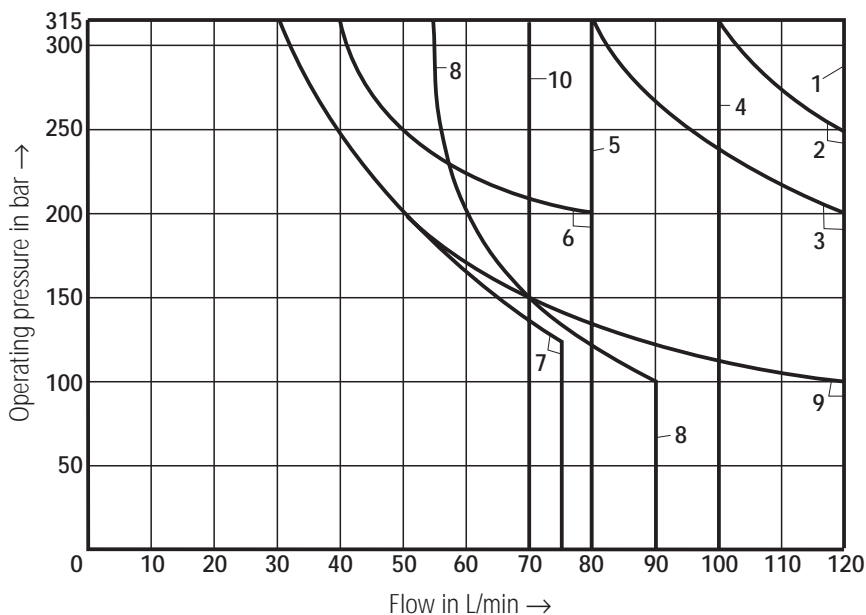
**Performance limits: DC** (measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $\vartheta = 50 \text{ }^\circ\text{C}$ )

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.)

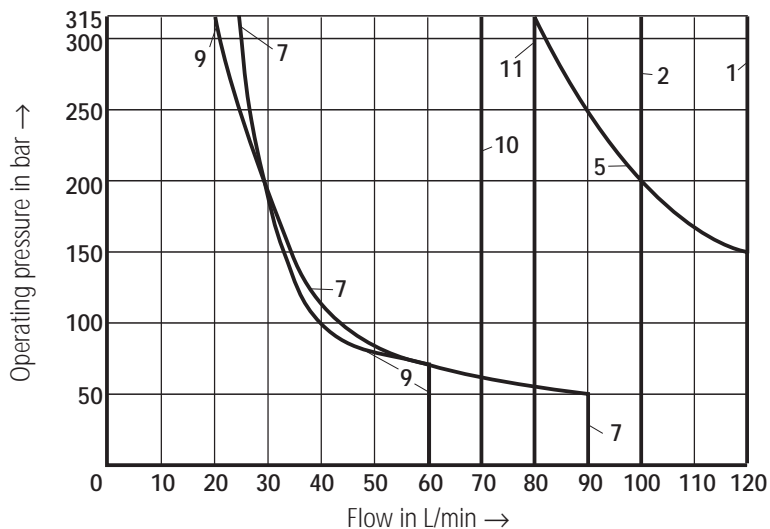
**The performance limit was determined with the solenoids at their operating temperature, 10 % under voltage and with no pre-loading of the tank.**



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
6	G
7	T
8	F, P
9	A, B
10	V

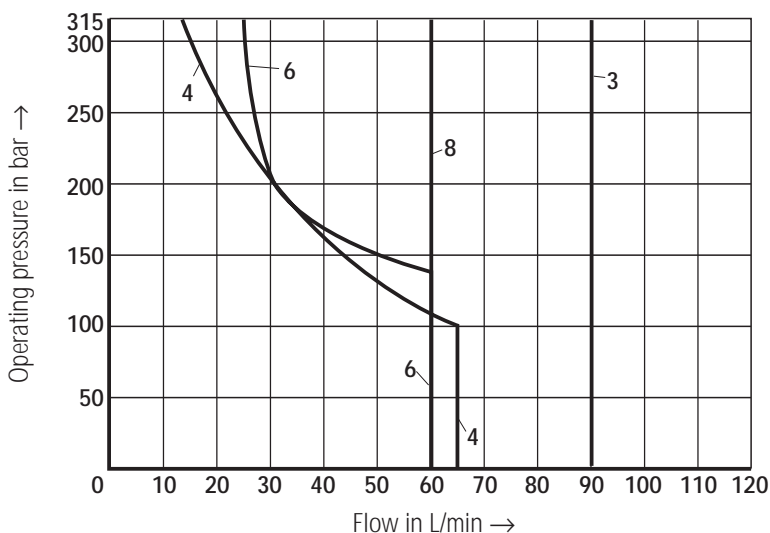
<sup>1)</sup> Return flow (independent of area ratio)

**Performance limits: AC** (measured at  $v = 41 \text{ mm}^2/\text{s}$  and  $\vartheta = 50 \text{ }^\circ\text{C}$ )



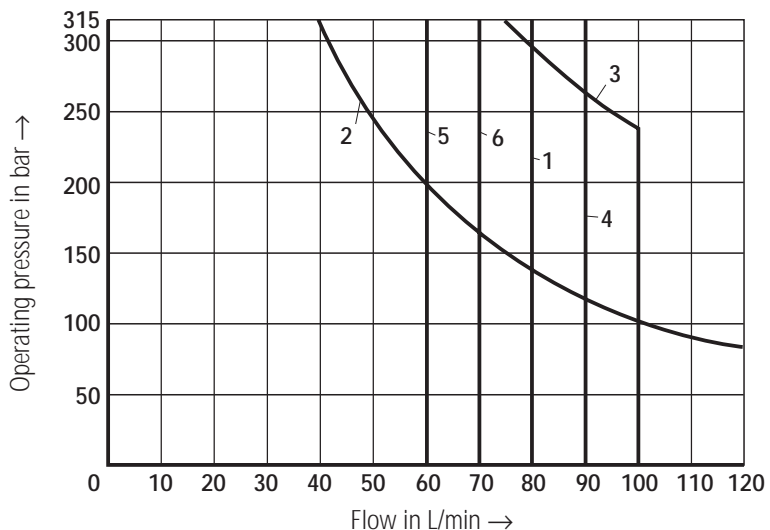
Char. curve	Symbols
1	C, C/O, C/OF D, D/O, D/OF Y
2	E, L, U, Q, W
3	M
4	A, B
5	A/O, A/OF, J
6	G
7	F, P
8	V
9	T
10	H
11	R

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



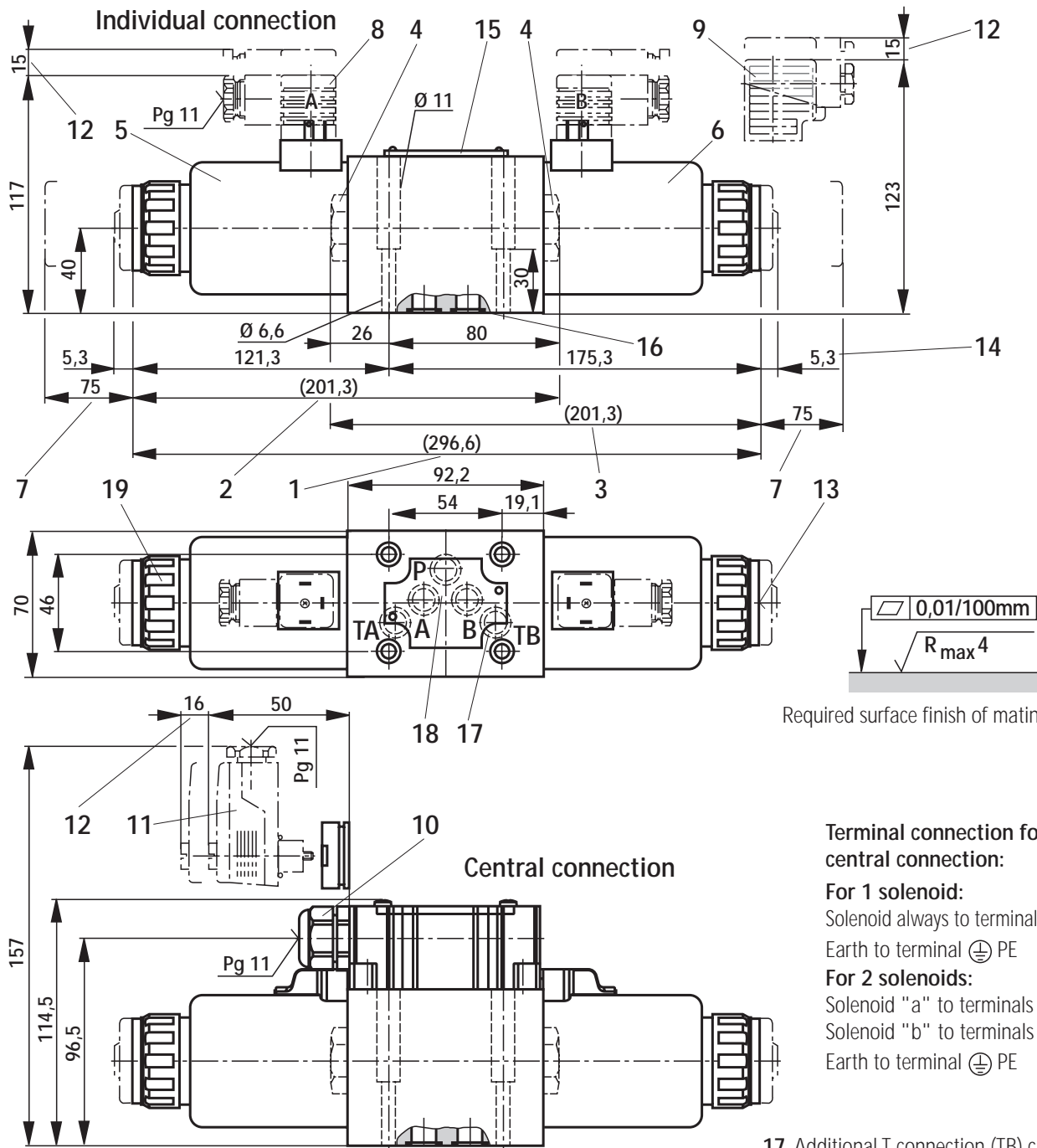
Char. curve	Symbols
1	C, C/O, C/OF D, D/O, D/OF Y
2	A/O, A/OF
3	E
4	M
5	V
6	H

42 V, 60 Hz; 110 V, 60 Hz;  
127 V, 60 Hz; 220 V, 60 Hz  
Performance limits for other spools on request!



Unit dimensions: DC

(Dimensions in mm)



Required surface finish of mating piece

**Terminal connection for central connection:**

**For 1 solenoid:**

Solenoid always to terminals 1 and 2  
Earth to terminal  $\ominus$  PE

**For 2 solenoids:**

Solenoid "a" to terminals 1 and 2  
Solenoid "b" to terminals 3 and 4  
Earth to terminal  $\ominus$  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 solenoid
- 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 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 R-ring 13 x 1.6 x 2 (for valves with cartridge throttle: O-ring 12 x 2)

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

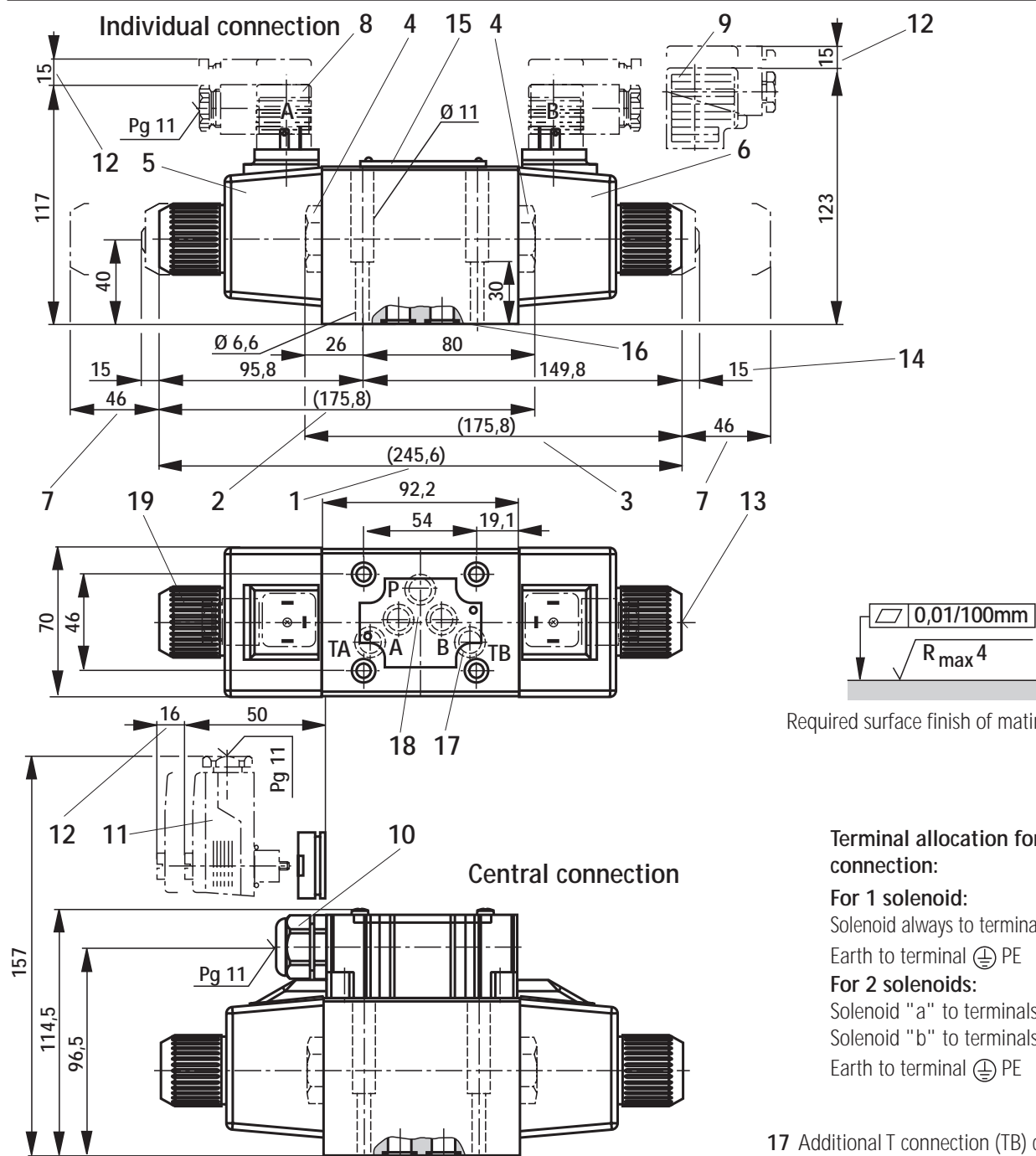
<sup>1)</sup> Dim. without hand override and with protected hand override "N9"

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



## Unit dimensions: AC

(Dimensions in mm)



Required surface finish of mating piece

**Terminal allocation for central connection:****For 1 solenoid:**Solenoid always to terminals 1 and 2  
Earth to terminal  $\ominus$  PE**For 2 solenoids:**Solenoid "a" to terminals 1 and 2  
Solenoid "b" to terminals 3 and 4  
Earth to terminal  $\ominus$  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 solenoid
- 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 red, must be ordered separately, material no. 00005538)
- 12 Space required to remove 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 R-ring 13 x 1.6 x 2 (for valves with cartridge throttle: O-ring 12 x 2)

- 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.

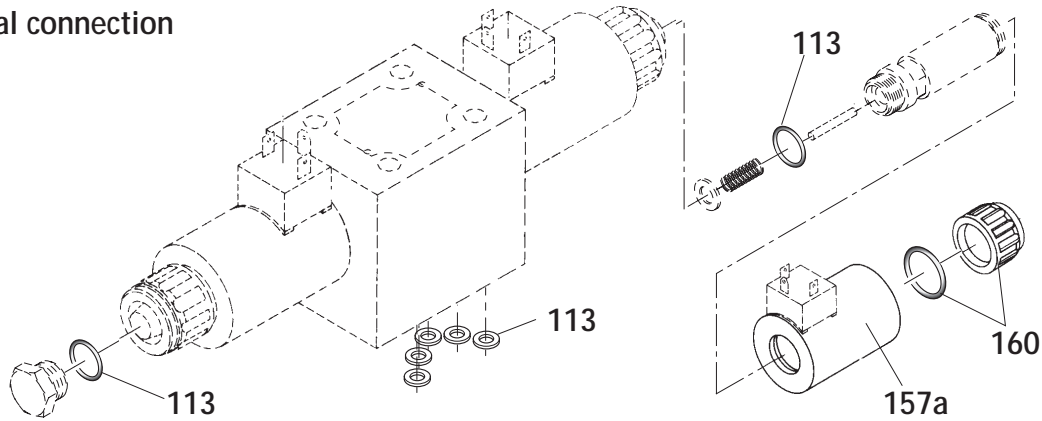
- 19 Tightening torque  $M_A = 6 + 2$  Nm

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

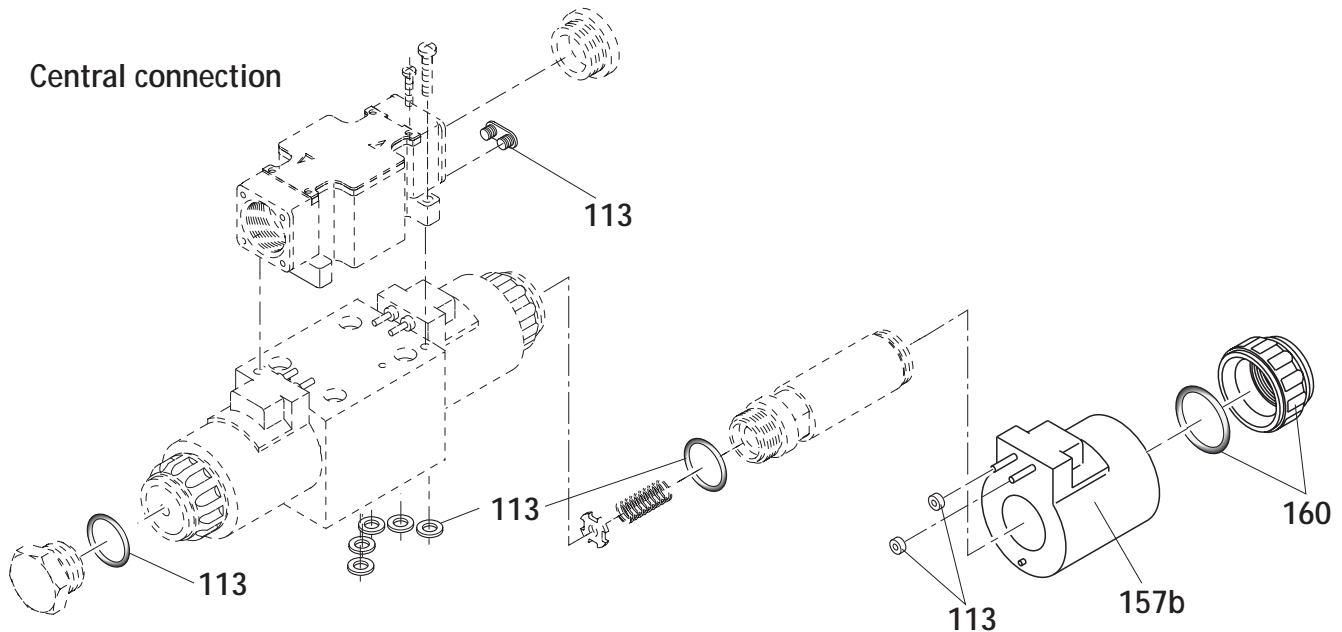
<sup>2)</sup> must be ordered separately, see page 3.

**Ordering details:** available spare parts and seals

**Individual connection**



**Central connection**



**Seal kit – valve: individual connection**

Item	Seal material	Material no.
113	NBR seals	00312582
	FKM seals	00312583

**Seal kit – valve: central connection**

Item	Seal material	Material no.
113	NBR seals	00873561
	FKM seals	00873562

**Spare parts – solenoid**

Item	Description	DC voltage		AC voltage	
		Voltage	Material no.	Voltage	Material no.
157a	Coil for individual connections	12 V	00019792	110 V, 50/60 Hz	00019816
		24 V	00019793	230 V, 50/60 Hz	00071037
157b	Coil for central connections	12 V	00207929	110 V, 50/60 Hz	00219602
		24 V	00217812	230 V, 50/60 Hz	00219603
160	Seal kit – nut for pressure tube without hand override and pole tube with protected hand override		00835976		00835967
	Seal kit – nut for pressure tube with hand override		00835964		00835978

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