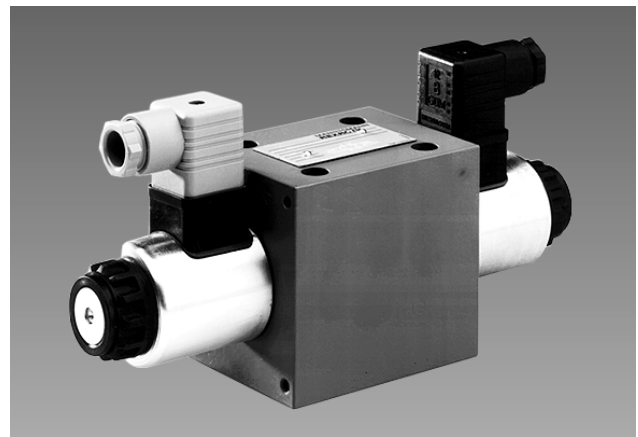


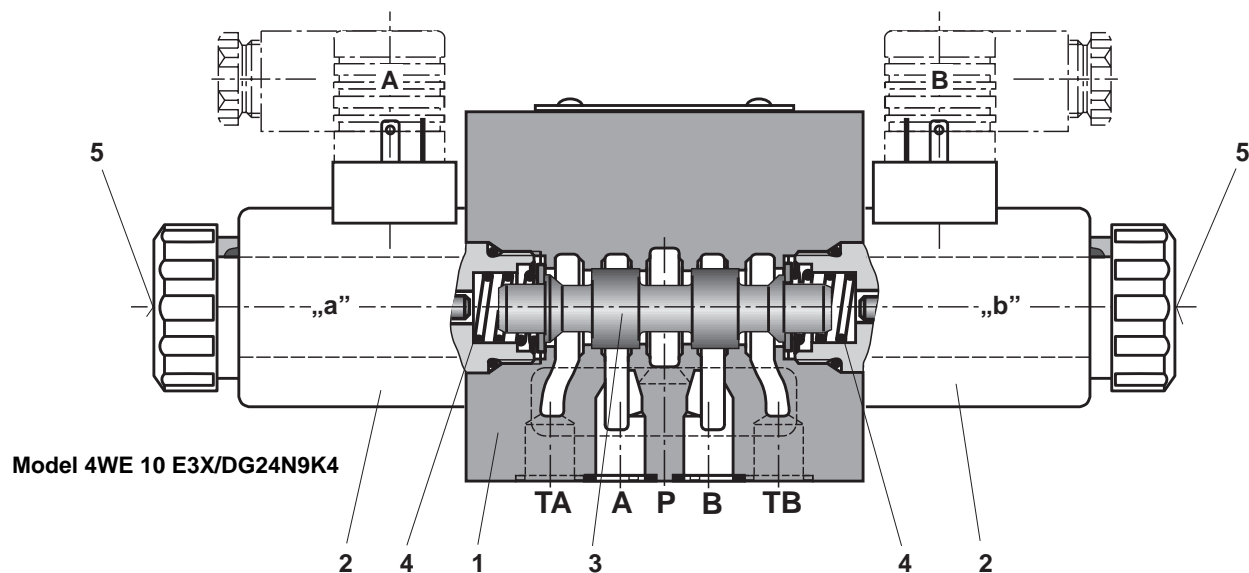
MANNESMANN REXROTH	4/3, 4/2 and 3/2-Way Directional Valves Model .WE 10.../D, Series 3X with Wet Pin DC Solenoids			RA 23 317/06.98 Replaces: 02.96
	Size 10 (D 05)	... 3000 PSI (210 bar)	... 21 GPM (80 L/min)	

Features:

- Direct solenoid operated directional spool valve,
- Mounts on standard ISO 4401-5, NFPA T3.5.M R1 and ANSI B93.7 D 05 interface
- Wet pin DC solenoids,
- Solenoids with central armature and removable coils,
- Coils may be easily replaced without engaging fluid,
- Individual electrical connections, see data sheet RA 08 002,
- Manual override standard.



H/A 4058/94
Model 4 WE 10E3X/ D G24N9Z4

Functional description, section

Model 4WE 10 E3X/DG24N9K4

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

Directional valves consist of housing (1), removable solenoid(s) (2), control spool (3) and return spring(s) (4).

De-energized, spool (3) is held centered, or an offset position by return springs (4). Spool (3) is shifted by wet pin solenoid(s) (2).

In order to ensure correct function, the solenoid armature must be filled with oil. (Cycling the valve will typically permit the armatures to fill).

The force of solenoid (2) acts upon control spool (3) and moves it from an original position to the desired position. Solenoid engagement permits flow from P to A and B to T or P to B and A to T.

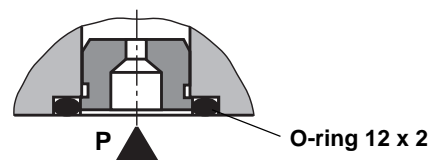
De-energizing solenoid (2), spool (3) returns to the original position by return springs (4).

Manual override (5) permits movement of control spool (3) without electrical power.

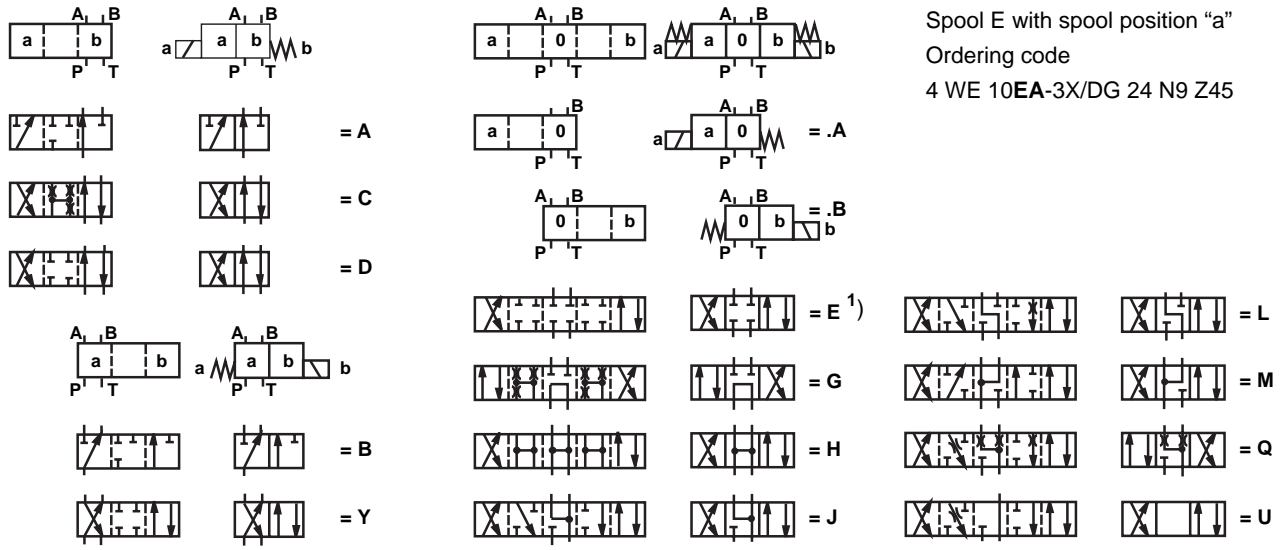
Orifice insert (Model 4WE 10..3X/.../B..)

An orifice insert is required if, flows are higher than the permitted published power limits of the valve.

The orifice is installed in P port.



Symbols



1) Example:
 Spool E with spool position "a"
 Ordering code
 4 WE 10EA-3X/DG 24 N9 Z45

Ordering code

2	3	4	6	7	9	10	11	12	15	19	22	23
	WE	10		3X		D						*

3 service ports = 3
 4 service ports = 4

Size 10 (D 05) = 10

Spool type e.g. C, E, EA, EB etc.
 For possible spool configurations, see above

Series 30 to 39 (30 to 39: externally interchangeable) = 3X

Spring return = no code

Wet pin solenoid with removable coil = D

24 V DC = G24

96/196 V DC solenoid,
 with integrated rectifier in plug connector,
 for 110 V or 220 V AC, independent of frequency
 (only possible with plug Z55) = W 110 R
 = W 220 R

(For further ordering data for other voltages, see page 3)

with protected manual override = N9

Further details in clear text

no code = NBR seals; suitable for use with petroleum oil (HM, HL, HLP)

no code = without cartridge throttle

B08 = throttle, 0.8 mm dia.

B10 = throttle, 1.0 mm dia.

B12 = throttle, 1.2 mm dia.

For use when flows exceed power limits of valve, installation in P port

Electrical connections to data sheet RA 08 002

Individual connection


K4 1) = with protective cap, no connector

Z45 = Plug-in connector to DIN 43 650

Z55 = Large plug-in connector

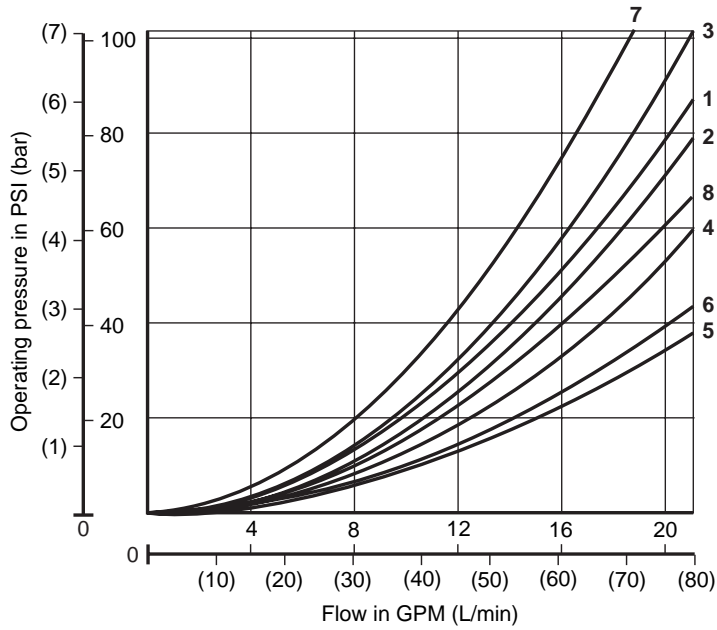
Z55L = Large plug-in connector with lamp

1) Plug-in connectors (Z45, Z55) have to be ordered separately (see RA 08 000)

Technical data (For operation outside these parameters, please consult us!)			
General			
Installation position			Optional
Max. ambient temperature	°F (°C)		122 (50)
Weight	Valve with 1 solenoid	lbs (kg)	8.6 (3.9)
	Valve with 2 solenoids	lbs (kg)	9.7 (4.4)
Hydraulic			
Max. permissible nominal pressure	Port A, B, P	PSI (bar)	3100 (210)
	Port T	PSI (bar)	3100 (210)
Max. flow		GPM (L/min)	21 (80)
Hydraulic fluid			Petroleum oil (HM, HL, HLP)
Fluid temperature range		°F (°C)	- 22 to 176 (- 30 to 80)
Viscosity range		SUS (mm ² /s)	35 to 2310 (2.8 to 500)
Fluid cleanliness			Maximum permissible degree of contamination of fluid to ISO 4406 Class 18/15. We therefore recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.
Electrical			
Voltage type		DC	AC ²⁾
Voltages ¹⁾	V	12, 24, 96, 196	110, 220, 240
Power consumption	W	30	
Duty cycle			continuous
Operating time to ISO 6403	ON	ms	30 to 50
	OFF	ms	10 to 25
Operating frequency		Cycles/hour	15000
Insulation			Exceeds NEMA class B
Coil temperature		°F (°C)	up to 302 (150)
¹⁾ Other voltages on request ²⁾ An AC voltage supply requires a rectifier, example WE10...3X/DW110RN9Z55		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> When making the electrical connection, the ground screw () must be connected to earth ground. </div>	



Δp - q_v Operating curves, measured at $v = 190$ SUS (41 mm²/s) and $t = 122$ °F (50 °C)



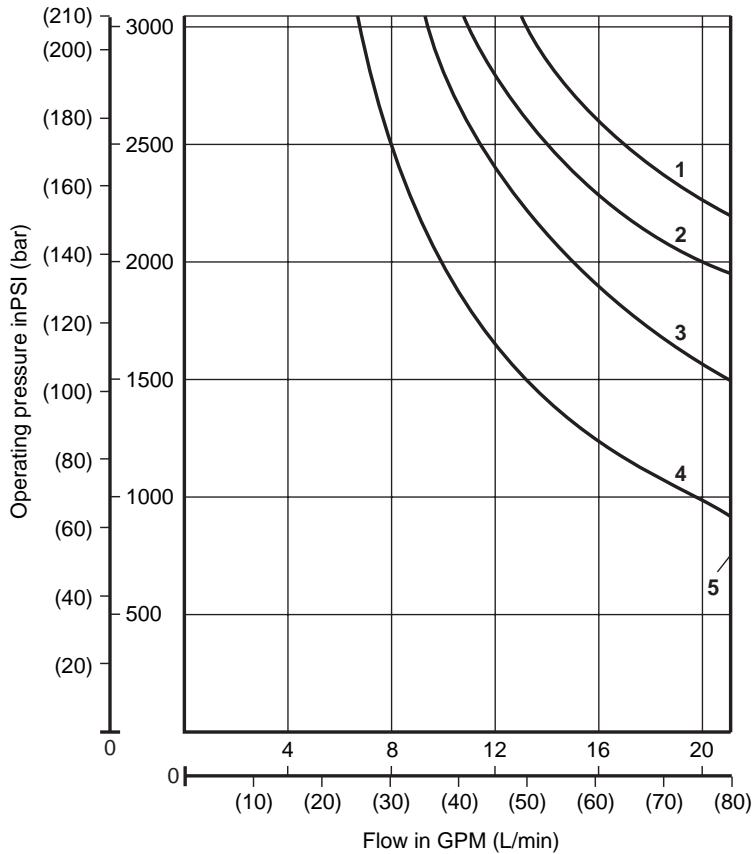
Symbols	Direction of flow				
	P - A	P - B	A - T	B - T	
A, B	1	1	-	-	
C, Q	2	2	2	2	
D, Y	3	3	3	3	
E	4	4	2	2	
G	1	1	1	1	
H	5	5	5	5	
J	2	2	6	6	
M	5	5	1	1	
L	4	8	5	8	
U	8	4	8	5	
Mid pos.	P - A	P - B	B - T	A - T	P - T
G	1	1	1	1	7

Performance limits, measured at $v = 190$ SUS (41 mm²/s) and $t = 122$ °F (50 °C)

Because of silting, the shifting function of the valves is dependent upon filtration. To obtain the maximum flow values shown, full filtration of 25 μ m is recommended. The flow forces acting within the valve also influence performance. In 4-way valves, the data provided is for applications with 2 directions of flow (flow from P to A and an equal, simultaneous return from B to T, see table).

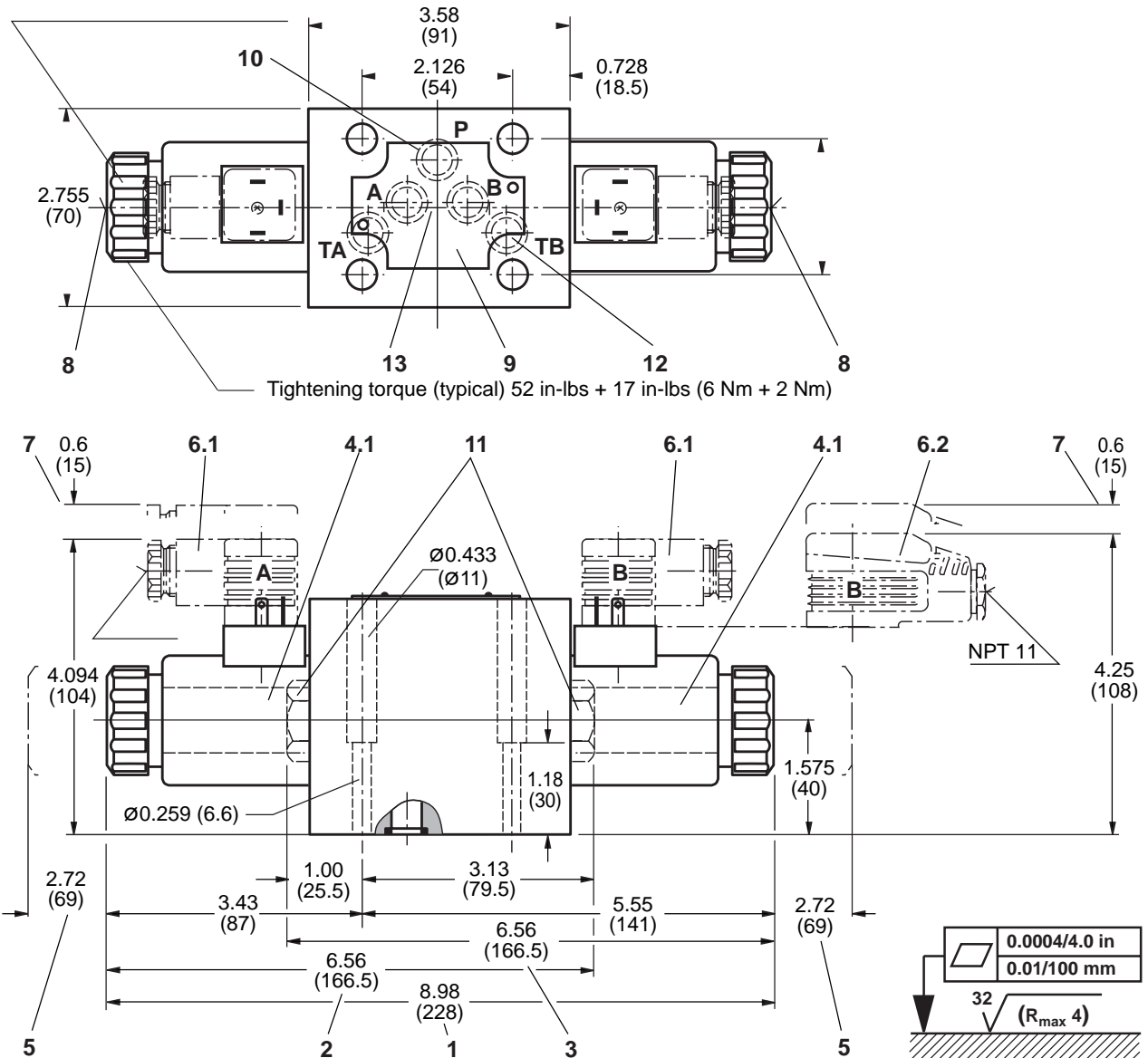
If only one direction of flow is required, for example, when a 4-way valve has one port plugged, or unbalanced flows from large rod cylinders, the permissible flow in critical cases can be considerably lower. The A or B spool (3-way) can be used as an approximation of the limited flow performance.

Performance limits measured with solenoids at operating temperature, 10% undervoltage and without tank port pressure.



Curve	Spool type
1	Q, L, U
2	J
3	G
4	A, B
5	C, D, E, H, M, Y

Unit dimensions: dimensions in inches (millimeters)



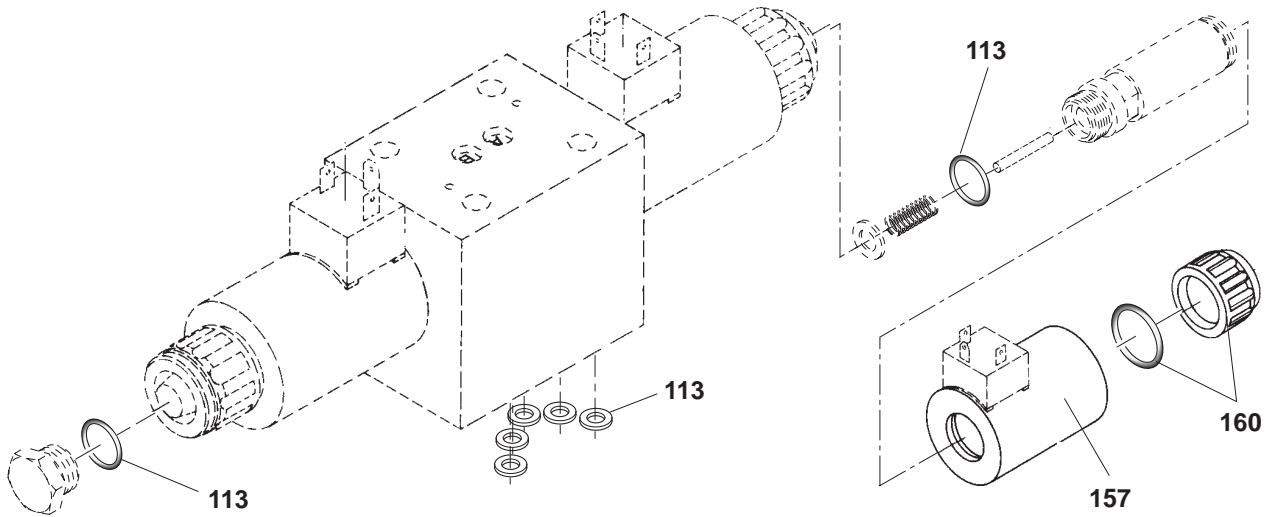
- 1 3-position valve
- 2 2-position valve with 1 solenoid (A, C, D, EA...)
- 3 2-position valve with 1 solenoid (B, Y, EB...)
- 4.1 Solenoid a
- 4.2 Solenoid b
- 5 Space required to remove solenoid
- 6.1 Plug-in connector "Z4" (may be rotated in 90° increments)
- 6.2 Large plug-in connector "Z5" and "Z5L" (may be rotated in 90° increments)
- 7 Space required to remove plug

- 8 Manual override, "N9" (manual operation only possible up to 725 PSI (50 bar) tank pressure), do not damage the manual override bore. Handknob part # RR00 024943 may be used.
- 9 Nameplate
- 10 R ring 13 mm x 1.6 mm x 2 mm (for valve with cartridge throttle: O ring 12 mm x 2 mm)
- 11 Screw plug for valves with single solenoid
- 12 Additional T port (TB) may be used where valve is mounted on suitably drilled manifold.

- 13 Porting pattern to ISO 4401-5, NFPA T3.5.1M R1 and ANSI B 93.7 D 05
Subplates
G 66/05 (3/8" NPT);
G 66/12 (SAE-6; 9/16-18);
G 67/05 (1/2" NPT);
G 646/12 (SAE-10; 7/8 - 14);
G 534/05 (3/4" NPT);
G 534/12 (SAE-12; 1-1/16 - 12)
Valve mounting bolts
1/4-20x2 in (M6 x 40)
[tightening torque = 11.4 ft-lbs (15.5 Nm)], must be ordered separately.

Ordering code, available spare parts and seals

Individual connection



Spare parts – Solenoid

Item	Description	DC Voltage	
		Voltage	Order number
157	Coil for individual connection	12 V	RR00 021388
		24V	RR00 021389
160	Hand nut O-Ring		RR00 029571
			RR00 800263

Seal kit – Valve: Plug connector “Z”

Item	Seal Material	Order number
113	NBR seals	RR00 312582
	FPM seals	RR00 312583



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 Rexroth Hydraulics Div., Mobile, 1700 Old Mansfield Road, Wooster, OH 44691-0394 Tel. (330) 263-3400 Fax: (330) 263-3333