

RA 29 061/06.98

Replaces: 05.97



4/2 and 4/3 proportional directional valves, directly controlled, with electrical position feedback Models 4WRE and 4WREE

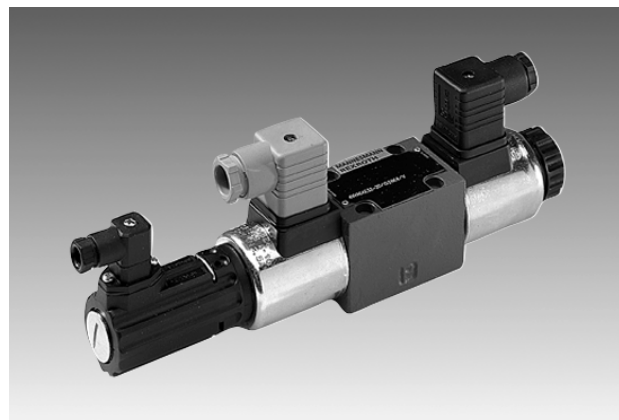
Nominal sizes 6 and 10

Series 2X

Maximum operating pressure 4600 PSI (315 bar)

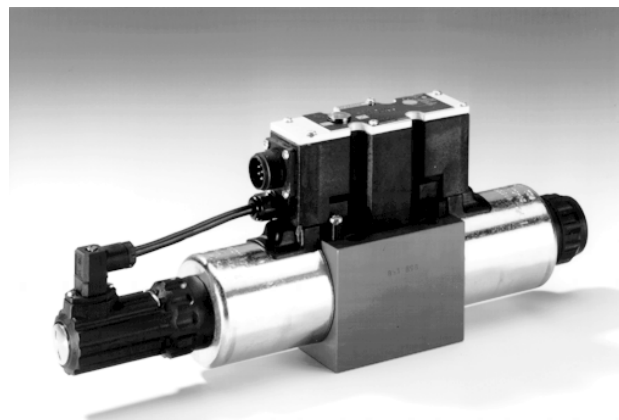
Maximum flow 63.4 GPM (240 L/min)

H/A/D 5881/97



Model 4WRE 6 ...-2X/G24K4/V with plug-in connectors and associated control electronics (separate order)

H/A/D 5732/97



Model 4WREE 10 ...-2X/G24K31/..V with integrated control electronics

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Features

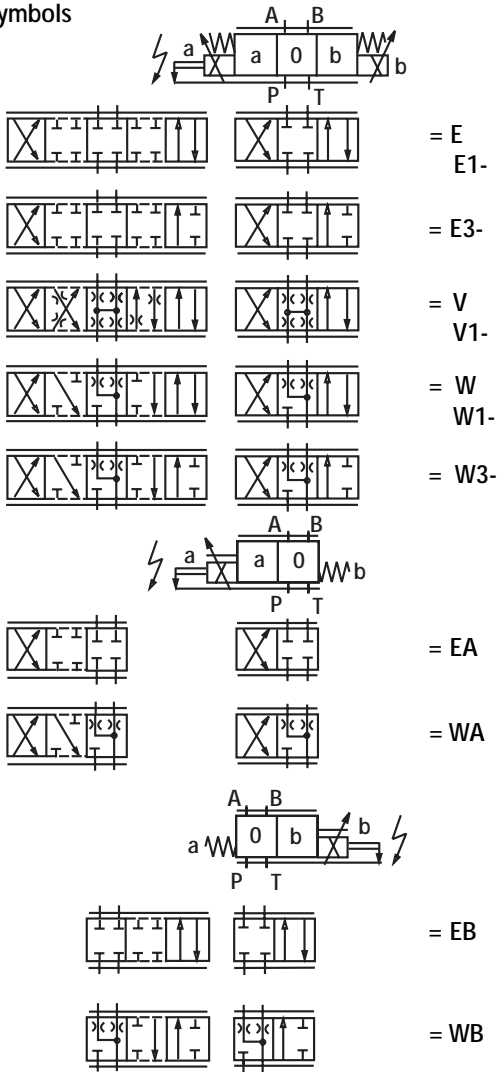
- Directly controlled proportional valve for the control of direction and magnitude of a flow
- Actuation is by proportional solenoids with central thread and removable coil
- Electrical position feed-back
- For subplates:
 - porting pattern to DIN 24 340 form A, ISO 4401, CETOP-RP 121 H, NFPA T3.5.1M R1, and ANSI B93.7 **D 03, D 05**
 - Subplates to catalog sheets RA 45 052 and RA 45 054 (separate order), see pages 15 and 16
- Spring centered control spool
- Model 4WREE, integrated valve electronics with interface A1 and F1
- Control electronics for model 4WRE: electronic amplifier VT-VRPA2-1-1X in Eurocard format (separate order)

Ordering details

4WRE				- 2X / G24	/	V	*
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Without integrated control electronics = No code
 With integrated control electronics (standard electronics) = E
 Nominal size 6 = 6
 Nominal size 10 = 10

Symbols



With symbols E1-, V1- and W1-:

P → A: $q_{V \max}$ B → T: $q_{V/2}$
 P → B: $q_{V/2}$ A → T: $q_{V \max}$

With symbols E3- and W3-:

P → A: $q_{V \max}$ B → T: closed
 P → B: $q_{V/2}$ A → T: $q_{V \max}$

Note:

For spools W, WA and WB there is in the neutral position a connection between A and T and B to T with approx. 3 % of the relevant nominal cross-section.

Further details in clear text
 V = FPM rectangular rings, suitable for mineral oil (HL, HLP) to DIN 51 524

For WREE:
 A1 = command value input ± 10 VDC
 F1 = command value input 4 to 20 mA

K4 = Electrical connection for WRE with component plug DIN 43 650-AM2 **without** plug-in connector (solenoid, position transducer) plug-in connector – separate order see page 5

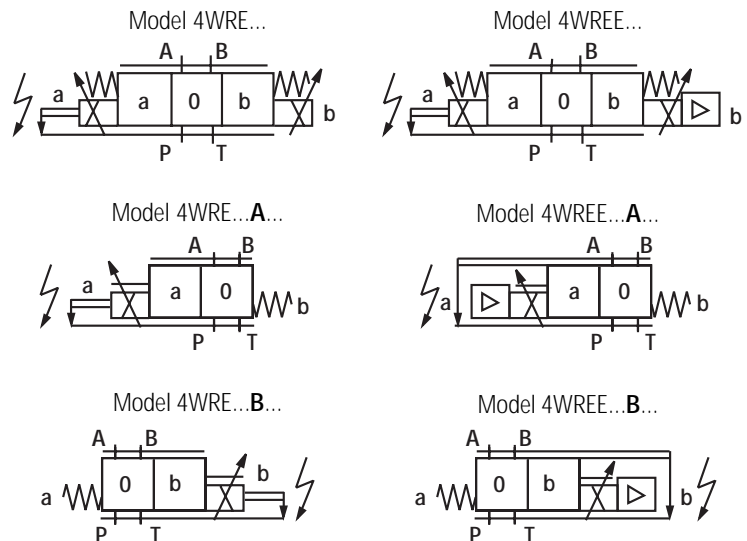
K31 = Electrical connection for WREE with component plug to E DIN 43 563-AM6-3 **without** plug-in connector plug-in connector – separate order see page 6

G24 = Power supply voltage 24 VDC

2X = Series 20 to 29 (20 to 29: unchanged installation and connection dimensions)

Nominal flows at a valve pressure differential $Dp = 145 \text{ PSI (10 bar)}$

	Size 6
08 =	2.11 GPM (8 L/min)
16 =	4.23 GPM (16 L/min)
32 =	8.45 GPM (32 L/min)
	Size 10
25 =	6.6 GPM (25 L/min)
50 =	13.21 GPM (50 L/min)
75 =	19.81 GPM (75 L/min)



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

General			Size 6	Size 10
Installation			optional, preferably horizontal	
Ambient temperature range	4WRE	°F (°C)	– 4 to + 158 (– 20 to + 70)	
	4WREE	°F (°C)	– 4 to + 122 (– 20 to + 50)	
Storage temperature range		°F (°C)	– 4 to + 176 (– 20 to + 80)	
Weight	4WRE	lbs (kg)	4.85 (2.2)	13.89 (6.3)
	4WREE	lbs (kg)	5.29 (2.4)	14.33 (6.5)

Hydraulic measured at $v = 208 \text{ SUS}$ ($46 \text{ mm}^2/\text{s}$) and $t = 104 \text{ °F}$ (40 °C)

Operating pressure	Ports A, B, P	PSI (bar)	up to 4600 (315)	
	Ports T	PSI (bar)	up to 3046 (210)	
Nominal flow $q_{V_{nom}}$ at $\Delta p = 145 \text{ PSI}$ (10 bar)		GPM (L/min)	2.11 (8)	6.6 (25)
			4.23 (16)	13.2 (50)
			8.45 (32)	19.8 (75)
Flow, max. permissible		GPM (L/min)	21.1 (80)	47.5 (180)
Pressure fluid	Mineral oil (HL, HLP) to DIN 51 524, further fluids on request			
Degree of contamination	Maximum permissible degree of contamination of the fluid to NAS 1638 – class 9. We, therefore, recommend a filter with a minimum retention rate of $\beta_x \geq 75$, $x = 10$.			
Fluid temperature range		°F (°C)	– 4 to + 176 (– 20 to + 80), preferably + 104 to + 122 (+ 40 to + 50)	
Viscosity range		SUS (mm^2/s)	97 to 1760 (20 to 380), preferably 141 to 208 (30 to 46)	
Hysteresis		%	≤ 0.1	
Reversal error		%	≤ 0.05	
Response sensitivity		%	≤ 0.05	

Electrical (solenoid)

Insulation to DIN 40 050	exceeds NEMA class B (IP 65)			
Voltage model	DC			
Signal model	analog			
Command value signal	Voltage input "A1"	V	± 10	
	Current input "F1"	mA	4 to 20	
Max. current per solenoid		A	2.5	
Solenoid coil resistance	Cold value at 20 °C	Ω	2	
	Max. warm value	Ω	3	
Duty		%	100	
Coil temperature		°F (°C)	up to 302 (150)	

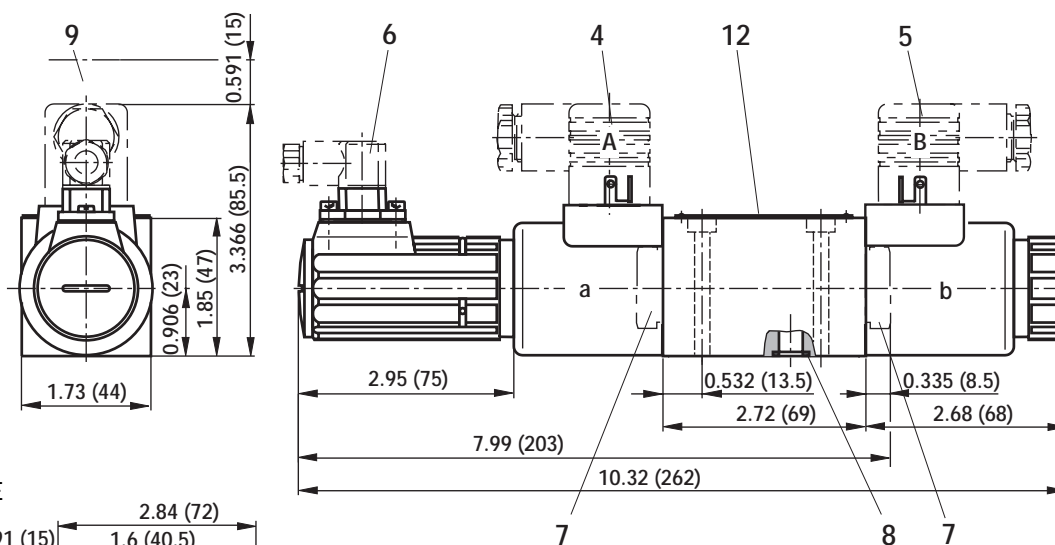
Electrical (inductive position transducer)

Electrical measuring system	inductive			
Electrical connection	plug-in connector 4-pin + Pg7-G4W1F			
Protection to DIN 40 050	IP 65			

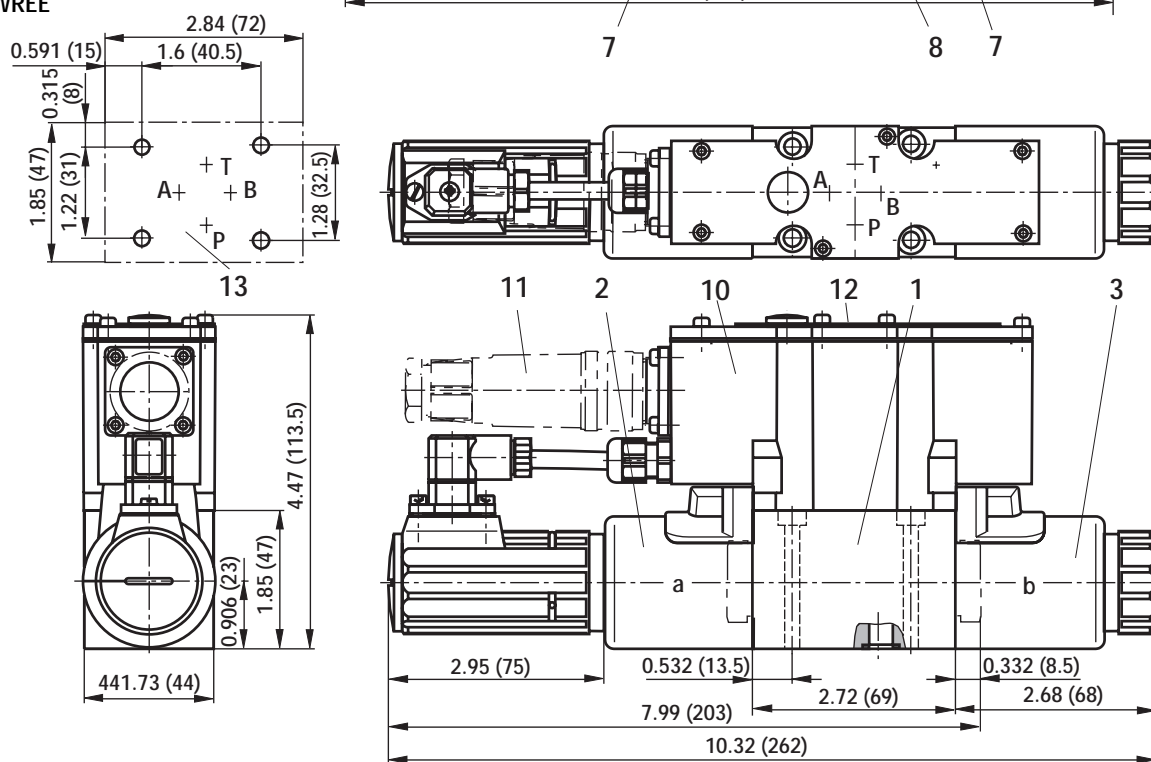
Unit dimensions: dimensions in inches (millimeters)

Size 6

Model 4WRE



Model 4WREE



Subplates and valve mounting bolts must be ordered separately, see RA 45 052

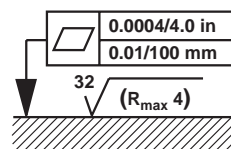
Sub-plates: G341/05 (1/4" NPT) G341/12 (SAE 4; 7/16-20)
G342/05 (3/8" NPT) G341/12 (SAE 4; 7/16-20)
G502/05 (1/2" NPT) G341/12 (SAE 4; 7/16-20)

Valve mounting bolts:

4) 10-24 UNC x 2" (M5 x 50), SAE grade 8 or better; DIN 912-10.9;
Torque $M_A = 6.56$ lb-ft (8.9 Nm)

- 1 Valve housing
- 2 Proportional solenoid "a" with inductive position transducer
- 3 Proportional solenoid "b"
- 4 Plug-in connector "A", color grey; separate order, see pages 2 and 5
- 5 Plug-in connector "B", color black; separate order, see pages 2 and 5
- 6 Plug-in connector for position transducer; separate order, see pages 2 and 5

- 7 Plug for valves with one solenoid (2-switching positions), versions **EA, WA, EB** or **WB**
- 8 R-ring 9.81 mm x 1.5 mm x 1.78 mm (Ports A, B, P, T)
- 9 Space required to remove plug-in connector
- 10 Integrated electronics
- 11 Plug-in connector to E DIN 43 563-BF6-3/Pg11 (separate order, see pages 2 and 6)
- 12 Name plate
- 13 Machined valve mounting surface, and location of the connections to DIN 24 340 form A, ISO 4401, CETOP-RP121H, NFPA/ANSI **D 03**



Required surface finish of mating piece