MANNESMANN REXROTH

Proportional Directional Valve with Spool Position Feedback Model 4 WRK . . and 4 WRKE . ., (Series 2X)

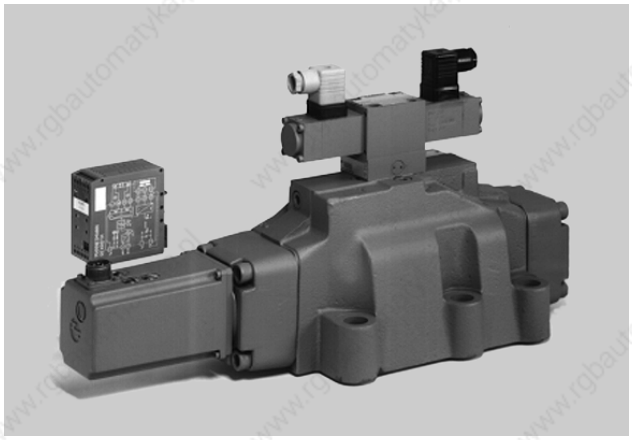
Sizes 10 to 35	... 5100 PSI (350 bar)	792 GPM (3000 L/min)

RA 29 074/06.98

Replaces: 02.96

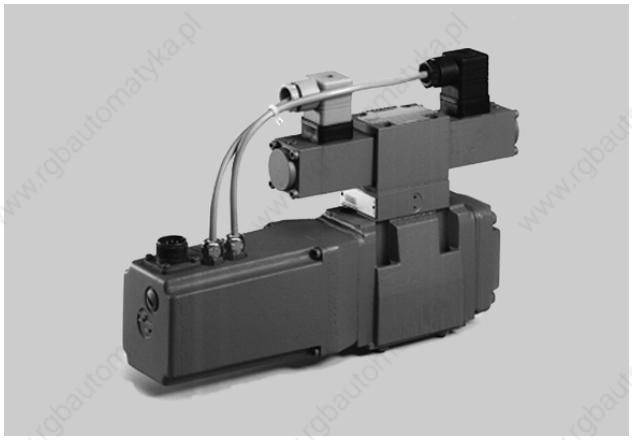
- Pilot-operated, two stage proportional directional valve
- Spring centering of the main spool
- Closed loop control of value and direction of an oil flow with only one valve
- Positional feedback of the main valve
- Integral electronic control (4 WRKE)
- Valve and electronic amplifier from one source
- For subplates see RA 45 062
- Mounts on standard ISO 4401-5, 7, 8 or 10, NFPA T3.5.1M R1 and ANSI B93.7 **D 05**, **D 07**, **D 08** or **D 10** interfaces

K 4467/14



Model 4 WRK 32 . . -2X/ . . . with appropriate external electronics

K 4466/5



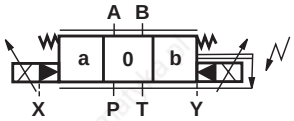
Model 4 WRKE 10 . . 2X/ . . . with integral electronics

Table of contents

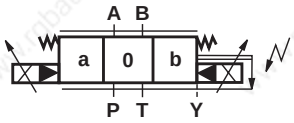
Symbol

Simplified

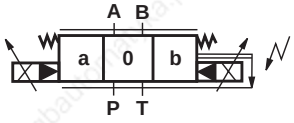
Model WRK (E) . . –2X . . . .



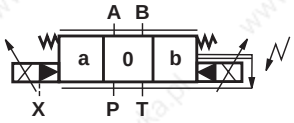
Model WRK (E) . . –2X . . E .



Model WRK (E) . . –2X . . ET .

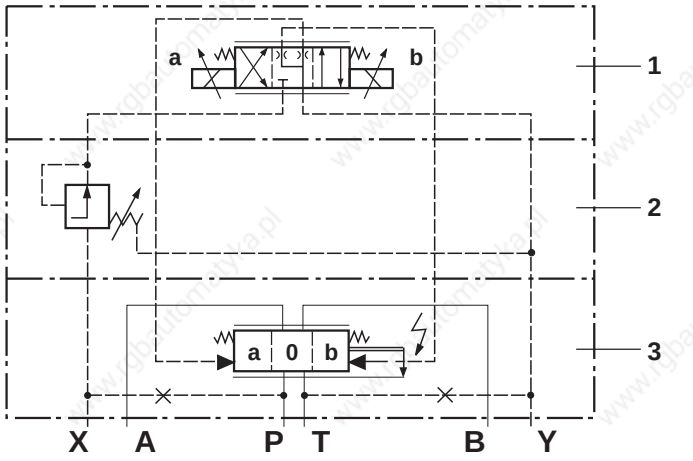


Model WRK (E) . . –2X . . T .



Detailed

Example: Model 4 WRK (E) . . .
1 Pilot control valve, Model 4 WRAP 6 . .
2 Main valve
3 Pressure reducing valve, Model ZDR 6 DP 0 – 4X/40 YM - W80



Pilot fluid supply, external
Pilot fluid drain, external

Functional description

Pilot control valve, Model 4 WRAP 6 W7 .2X/24..
(1st stage)

The pilot valve is a direct operated directional valve. The geometry of the control lands has been optimized for the application of this valve as a pilot valve for Model 4 WRK and 4 WRKE proportional directional valves.

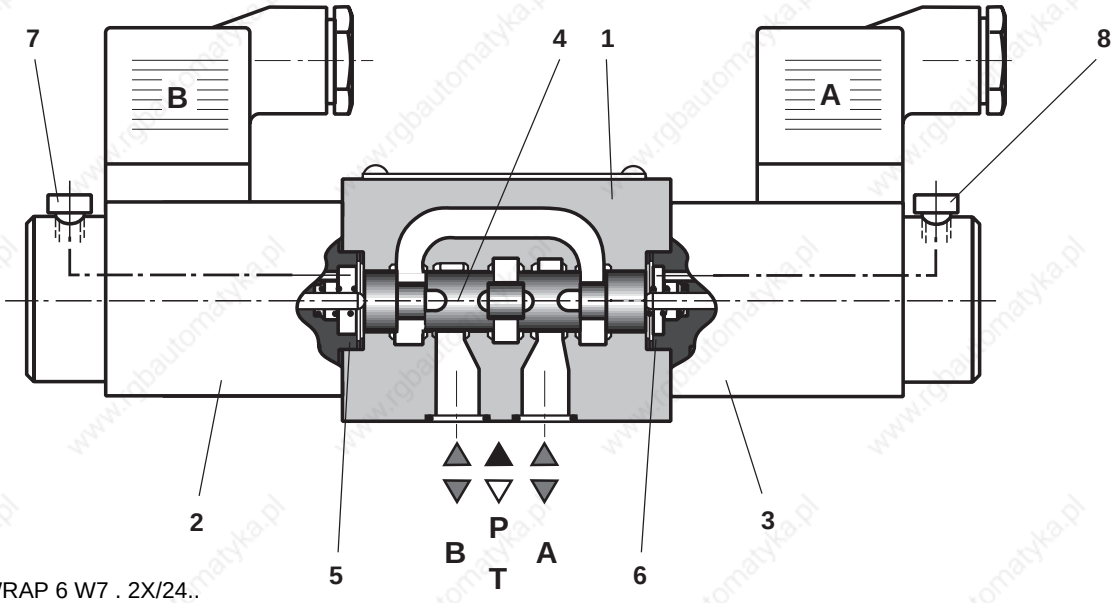
The proportional solenoids are pressure tight, wet-pin DC solenoids. They are used to convert an electrical current into a proportional mechanical force. An increase in current intensity gives a corresponding increase in solenoid force. The solenoid force set remains constant throughout the entire control stroke.

The pilot valve consists basically of the housing (1), proportional solenoids (2; 3), valve spool (4) and springs (5; 6).

In the unoperated condition both service ports are connected to tank. When one of the two solenoids (2) or (3) is energized it pushes the valve spool (4) against spring (6) or (5).

As soon as the overlap range is exceeded one of the two service ports is blocked from the tank connection and connected to pilot pressure supply. Oil then flows from P to the pilot chamber of the main stage

Note on bleeding the valve (bleed screws items 7 and 8), see page 3.



Pilot valve
Model 4 WRAP 6 W7 . 2X/24..

Functional description

Model 4 WRK and **4 WRKE** valves are 2-stage proportional directional valves. They are used to control the direction and magnitude of a flow of oil.

The main stage is under closed loop positional control so that, even at high flow, the spool position is maintained independently of the high flow forces which occur.

These valves consist basically of the pilot valve (1), the housing (9), the main spool (10), the covers (11;12), the centering springs (13; 14), the inductive positional transducer (15) and the pressure reducing valve (16).

When no input signal is applied to the valve the main spool (10) is held in the center position by springs (13; 14). The control chambers in the covers (11; 12) are connected to the tank.

The main spool (10) is connected to a suitable electronic control by means of the inductive positional transducer (15). Any change in the spool position 10) or in the command value at the summing point of the amplifier will generate a voltage difference.

When actual and command values are compared any difference is evaluated as a control variation and an electrical current is fed to the 1st stage of the valve (1).

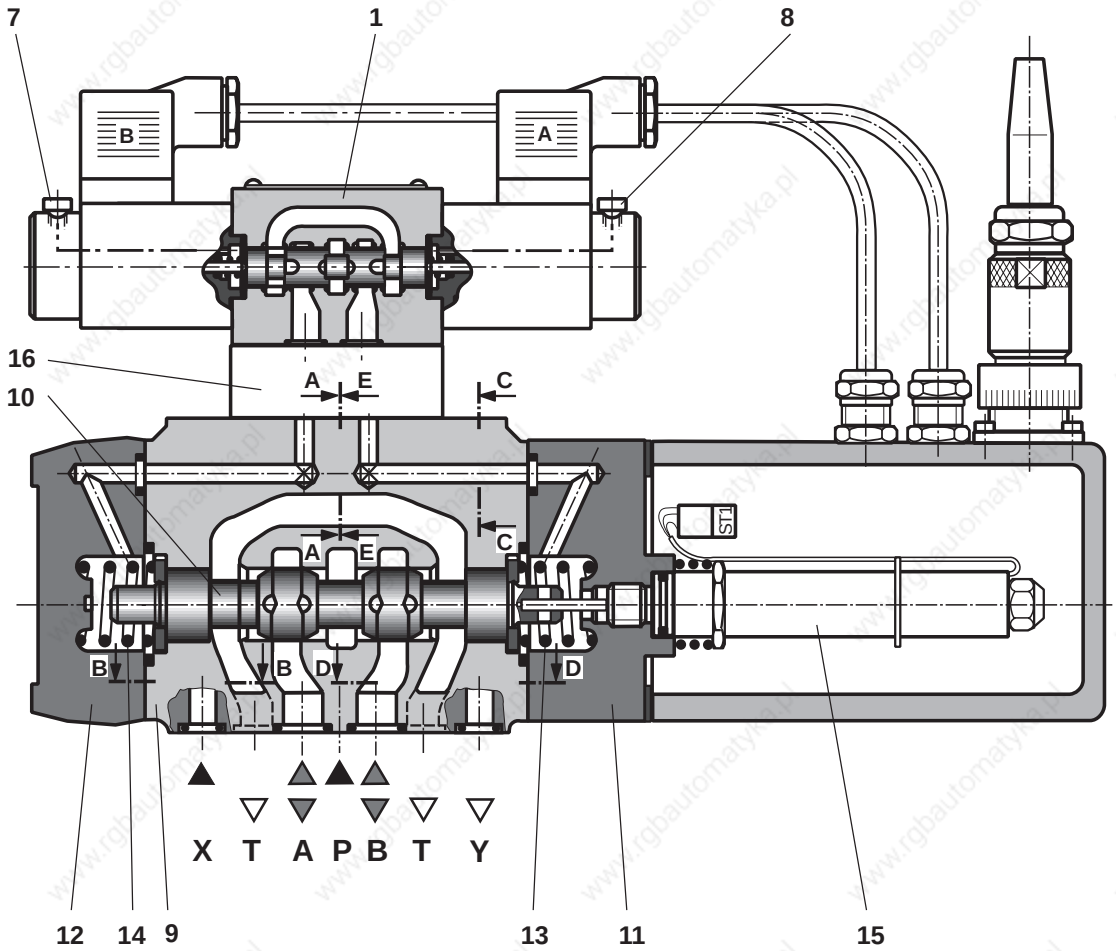
This flow moves the pilot spool allowing a corresponding flow of fluid into the pilot chamber.

The main spool (10), together with the core of the inductive positional transducer(15) moves until the the actual value agrees with the command value. In the controlled state the main spool (10) is force-balanced and is held in this controlled position..

The spool stroke and the control orifice change in proportion to the command value.

In **Model 4 WRKE** valves the electronic control is integrated in the valve.Careful matching of the valve to the electronic control ensures that any variation between valves is kept to a minimum.

Important: To achieve optimum operation of the valve, the air must be bled from the proportional solenoids on the initial start-up. This may be done two ways: 1) pressurize the valve, remove the two bleed screws (7 & 8) until no more air bubbles appear, then reinstall bleed screws; or 2) remove both bleed screws (7 & 8) insert standard oil can nozzle and pump fluid in one side until it flows, without air bubbles, out the other side, then reinstall screws. In both cases the tank line must be prevented from emptying if there is no inherent back pressure in the tank port of the circuit. This may be achieved by installing a check valve in the tank line. The valve's cracking pressure should be in the range of 22 ... 45 PSI (1.5 ... 3 bar). The valve must be at rest while removing air from the solenoids (interlock or power off).



Model 4 WRK E 10 .. –2X ..

See page 18 for section information

Ordering codes

4 WRK | | | | –2X | /6A | 24 | | /D3 | | | *

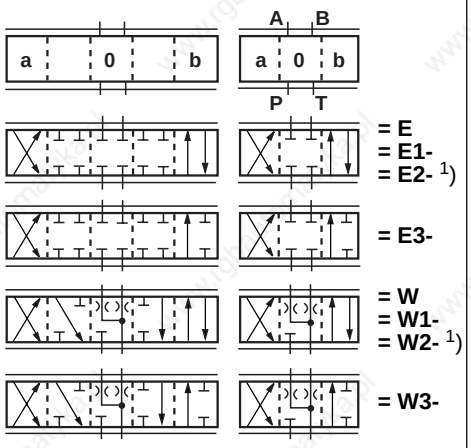
4-way
Electrically operated
2-stage proportional
directional valve

For external electronic control **= no code**

With integral electronic control **= E**

Size 10 (D 05) **= 10**
Size 16 (D 07) **= 16**
Size 25 (D 08) **= 25**
Size 32 (D 10) **= 32**
Size 35 **= 35**

Symbols



= E
= E1-
= E2- [1])
= E3-
= W
= W1-
= W2- [1])
= W3-

Symbols E1– and W1–:
P → A: Q B → T: $\frac{Q}{2}$
P → B: $\frac{Q}{2}$ A → T: Q

Symbols E2– and W2–:
P → A: $\frac{Q}{2}$ B → T: Q
P → B: Q A → T: $\frac{Q}{2}$

Symbols E3– and W3–:
P → A: Q B → T: blocked
P → B: $\frac{Q}{2}$ A → T: Q

Note: Spools “W”, “W1–”, “W2–”, “W3–” in the center position “0” provide 3 % opening of the nominal flow area from “A” to “T” and “B” to “T”

Further details to be written in clear text

No Code = O-ring
R = R-ring

M = NBR seals, suitable for petroleum oils (HM, HL, HLP)
V = FPM seals, suitable for phosphate esterfluids (HFD-R)

D3 = with pressure reducing valve ZDR6DP0-4X/40YM-W80 (fixed setting)

Electrical connections
Socket on valve – type 14S
Z9 = with mating plug
K9 = without mating plug

Pilot fluid supply and drain
No code = Externally piloted, externally drained
E = Internally piloted, externally drained
ET = Internally piloted, internally drained
T = Externally piloted, internally drained

24 = 24 Volt DC

6A = Pilot valve with wet pin DC solenoid

No Code = Standard
H = High Flow-design
only with size 25 and with nominal flow of 132 GPM (500 L/min)

2X = Series 20 to 29 (20 to 29: externally interchangeable)

Nominal flow in GPM (L/min) at 145 PSI (10 bar) pressure drop across valve

50 =	13.2 GPM (50 L/min)	[1] **100 =**	26.5 GPM (100 L/min)	Size 10
125 =	33.0 GPM (125 L/min)	[1] **200 =**	52.8 GPM (200 L/min)	Size 16
350 =	92.4 GPM (350 L/min)	[2] **500 =**	132 GPM (500 L/min)	Size 25
		600 =	158.5 GPM (600 L/min)	Size 32
		1000 =	264.2 GPM (1000 L/min)	Size 35

[1] E2–, W2– possible only at maximum nominal flow Q_{max}

[2] High Flow Version (500 .. H/)

Technical data: measured at v = 190 SUS (41 mm²/s) and t = 122 °F (50 °C)

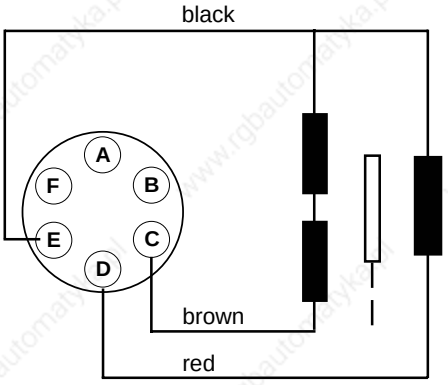
			Size 10	Size 16	Size 25	*Size 25 HF* [1]	Size 32	Size 35
General								
Installation position			Optional, preferably horizontal					
Ambient temperature		°F (°C)	– 4 ... 158 (– 20 ... 70) (4 WRK); 32 ... 140 (0 ... 60) (4 WRKE)					
Weight	4WRK ..	lbs (kg)	18.7 (8.5)	24.2 (11)	36.5 (16.6)	36.9 (16.8)	68.8 (31.3)	72.1 (32.8)
	4WRKE ..	lbs (kg)	18.9 (8.6)	24.4 (11.1)	36.7 (16.7)	37.1 (16.9)	69.0 (31.4)	72.3 (32.9)
Hydraulic								
Operating pressure		PSI (bar)	Size 10	Size 16	Size 25	Size 25 HF	Size 32	Size 35
pilot valve supply (min max)			435 ... 4600 (30 ... 315)					
main valve	external pilot supply	PSI (bar)	4600 (315)	5100 (350)	5100 (350)	3045 (210)	5100 (350)	5100 (350)
P, A, B (max)	internal pilot supply	PSI (bar)	4600 (315)	4600 (315)	4600 (315)	3045 (210)	4600 (315)	3045 (210)
main valve	external pilot drain	PSI (bar)	4600 (315)	3600 (250)	3600 (250)	3045 (210)	3600 (250)	3600 (250)
T (max)	internal pilot drain	PSI (bar)	145 (10)					
Y port (max)		PSI (bar)	145 (10)					
Pilot oil flow for operation → 100 %		in³ (cm³)	0.67 (1.1)	0.177 (2.9)	0.415 (6.8)	0.425 (6.8)	1.08 (17.7)	2.07 (34)
Pilot oil flow at port X / Y with stepped input signal 0 ' 100 % (150 bar)		GPM (L/min)	0.44 (1.7)	1.34 (5.1)	1.45 (5.5)	1.45 (5.5)	2.56 (9.7)	3.69 (14)
Max. permissible main valve flow		GPM (L/min)	45 (170)	122 (460)	230 (870)	264 (1000)	422 (1600)	792 (3000)
			Maximum allowable fluid cleanliness level – Class 16/13 to 18/15 according to ISO 4406. Therefore, we recommend a filter with a minimum retention rate of $ß_5$ = 75 (pilot) $ß_{15}$ = 75 (main).					
Hydraulic fluid			Petroleum oils (HM, HL, HLP) Phosphate ester fluids (HFD-R)					
Fluid temperature range		°F (°C)	– 4 ... 158 (– 20 to + 70)					
Viscosity range			SUS (mm²/s)97 ... 1760 (20 to 380)					
Hysteresis		%	≤ 1					
Repeatability		%	≤ 0.5					
Electrical – 1st stage								
Supply power		DC	24					
Nominal current per proportional solenoid		mA	1550					
Coil resistance	Value cold at 20 °C	Ω	5					
	max. warm value	Ω	7.5					
Duty			Continuous					
Electrical connection			Plug connection to DIN 43 650/2-pin + SL/Pg11					
Insulation (DIN 40 050)			Exceeds Nema class B (IP 65)					
Associated amplifier to data sheet RA 29 758			VT11076	VT11077	VT11078	VT11078	VT11079	VT11079
Pilot current	mA	≤ 20						
Electrical 2nd. stage								
Electrical measuring system			Differential transformer					
Controlled stroke		in (mm)	± 0.138 (± 3.5)	± 0.197 (± 5)	± 0.236 (± 6)	± 0.236 (± 6)	± 0.354 (± 9)	± 0.472 (± 12)
Tolerance on linearity		%	≤ 1					
Feed voltage		V_{eff}	2 to 5					
Carrier frequency		kHz	2 to 10					
Temperature error		%/10K	0.4	0.3	0.3	0.3	0.4	0.3
Plug connection			Size 14S–6 to MIL-C-5015					

[1] Model 4WRK . 25 . 500–2XH/6A 24 . . /D3

Electrical connections

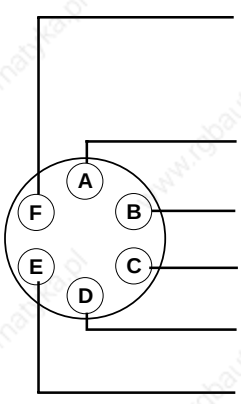
Model 4 WRK

Plug connections for inductive positional transducer



Model 4 WRKE

Plug connections for valve with integral electronics



Actual value = 9 V ± 6 V
Actual value / fault signal
< 1 V = Fault
referred to L0

+ 24 V

Supply voltage
I_{max} = 2 A

0V = L0

Interlock + 24 V (20 V – 30 V)

Command Value ± 10 V

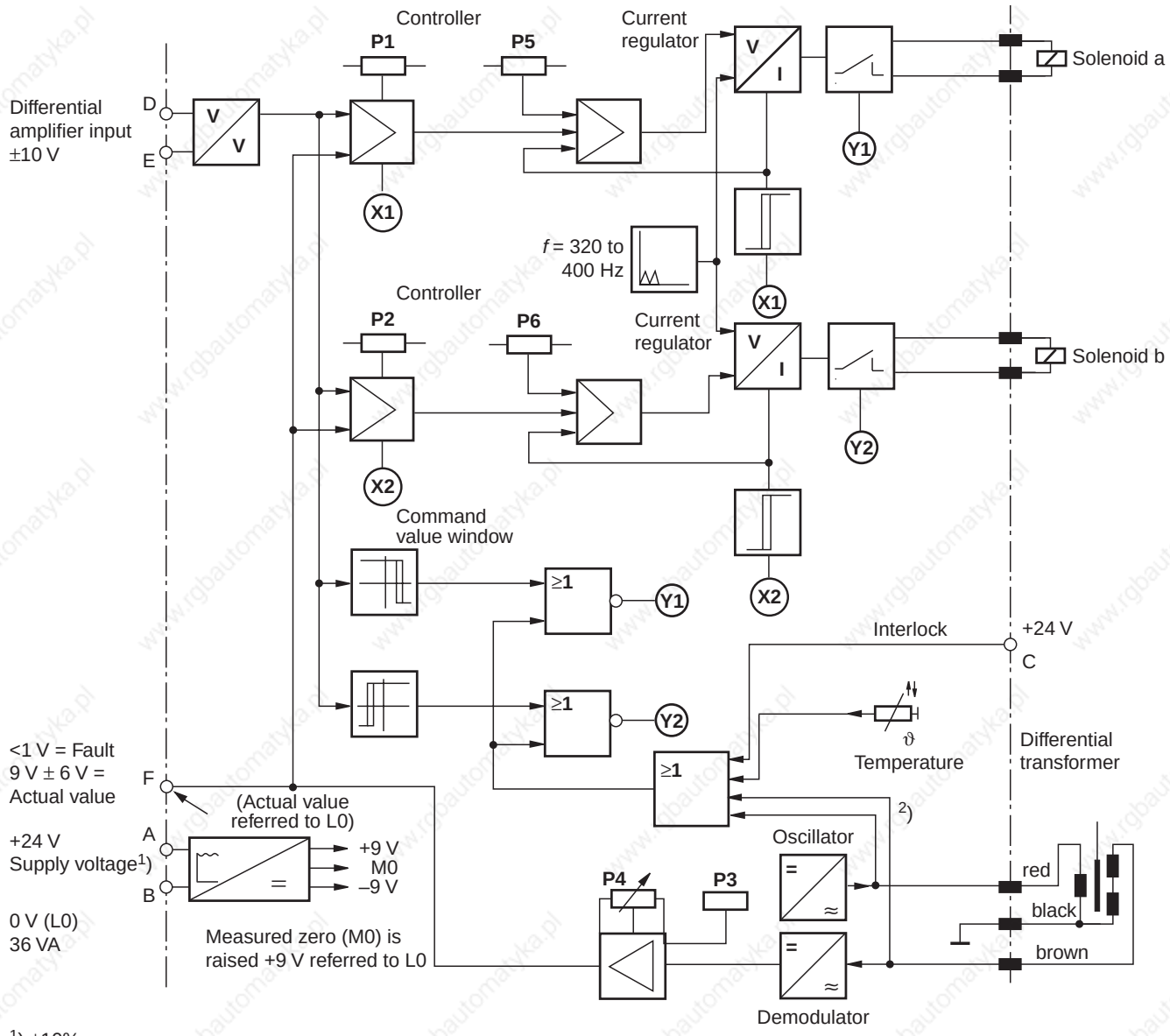
Command Value 0 V

Reference potential at E and positive command value at D gives flow P → A through the main valve

Connections and block circuit diagram for electronic control Model 4 WRKE

A positive signal at D
generates a flow from P → A

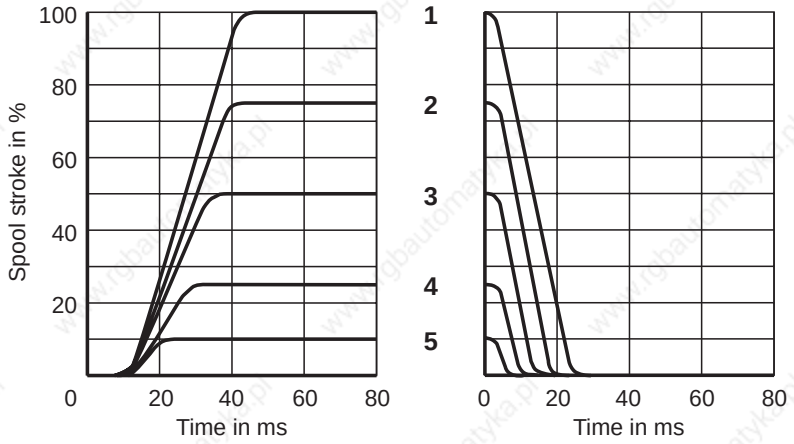
P1/P2 Offset
P3 Neutral point - actual value
P4 Sensitivity
P5/P6 Pilot current



1) ±10%

2) Cable break (all three lines are monitored)

Transfer function for stepped electrical input signals for Model 4 WRK(E) 10



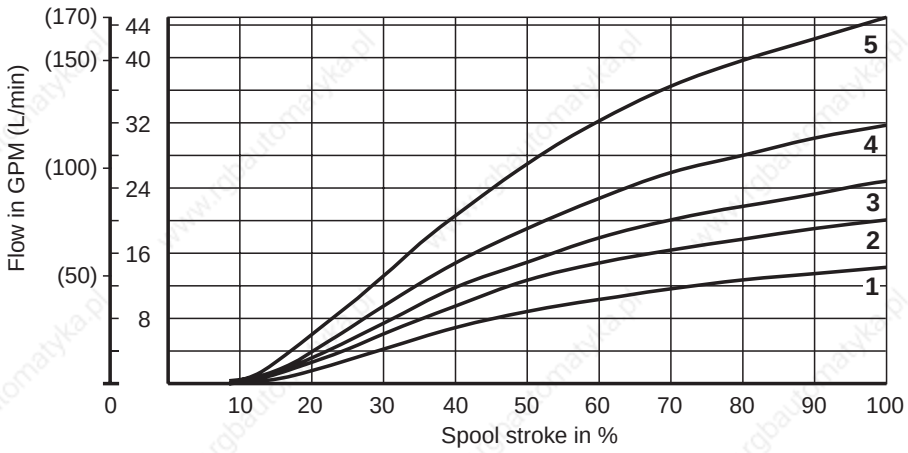
Change in signal

1 0 to 100 %
2 0 to 75 %
3 0 to 50 %
4 0 to 25 %
5 0 to 10 %

Pilot pressure
p = 1450 PSI (100 bar)

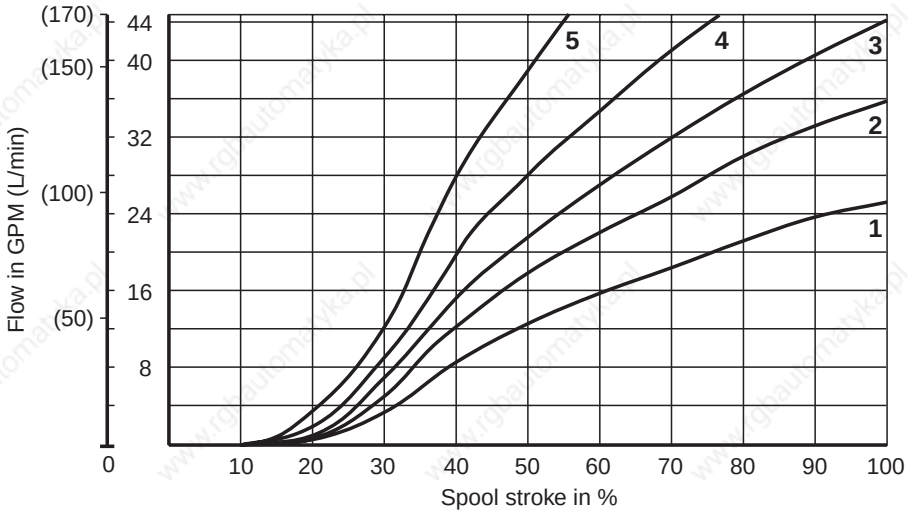
Operating curves: measured at v = 190 SUS (41 mm²/s) and t = 122 °F (50 °C)

Model 4 WRK(E) 10



13.2 GPM (50 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

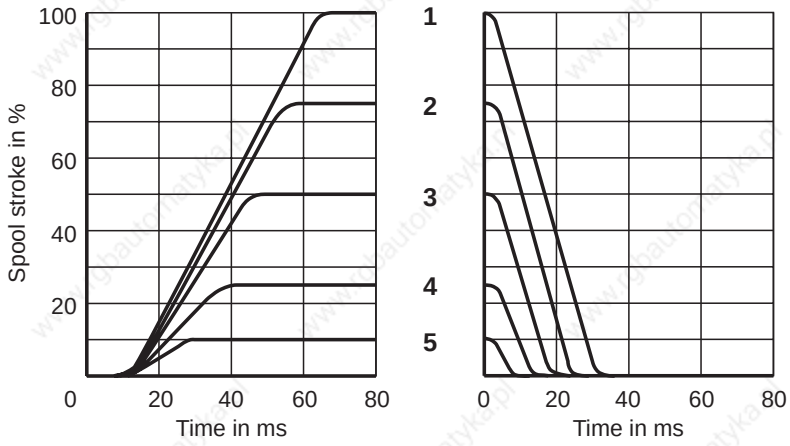


26.4 GPM (100 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

p_v = Valve pressure drop
to VDMA 24311
(Inlet pressure, less return line pressure and less load pressure)

Transfer function for stepped electrical input signals for Model 4 WRK(E) 16



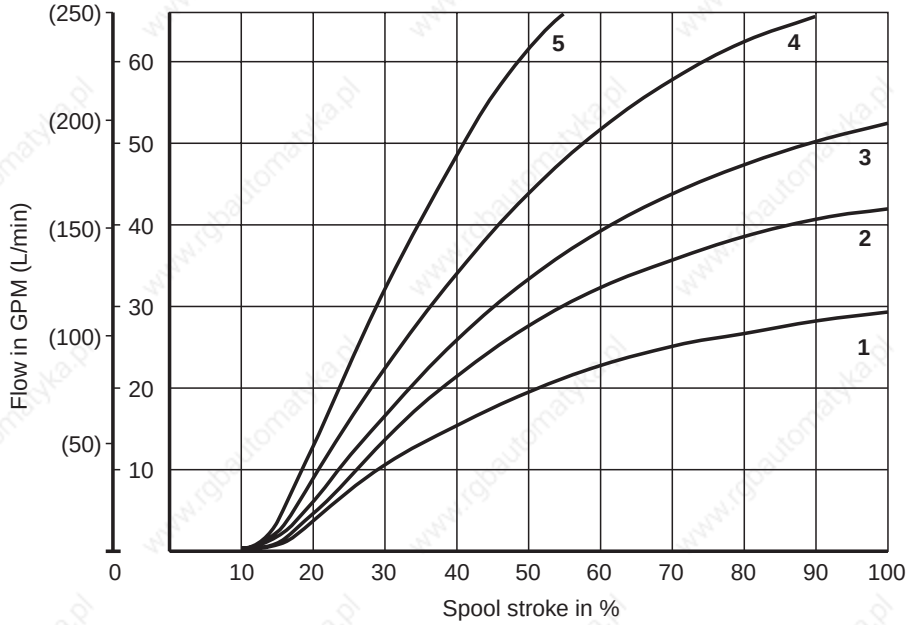
Change in signal

1 0 to 100 %
2 0 to 75 %
3 0 to 50 %
4 0 to 25 %
5 0 to 10 %

Pilot pressure
p = 1450 PSI (100 bar)

Operating Curves: measured at v = 190 SUS (41 mm²/s) and t = 122 °F (50 °C)

Model 4 WRK(E) 16



33 GPM (125 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

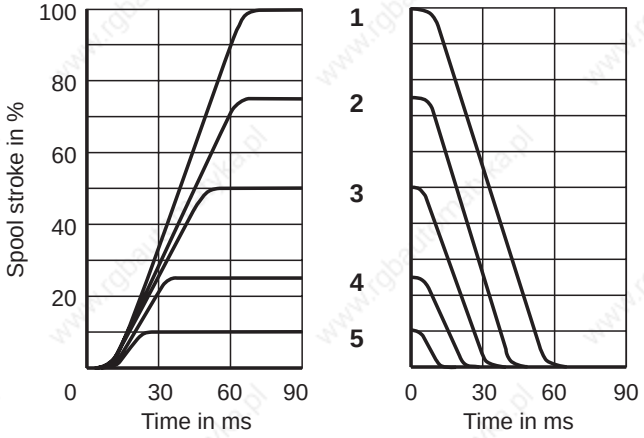
1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

52 GPM (200 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

p_v = Valve pressure drop
to VDMA 24311
(Inlet pressure, less return line pressure and less load pressure)

Transfer function for stepped electrical input signals for Model 4 WRK(E) 25

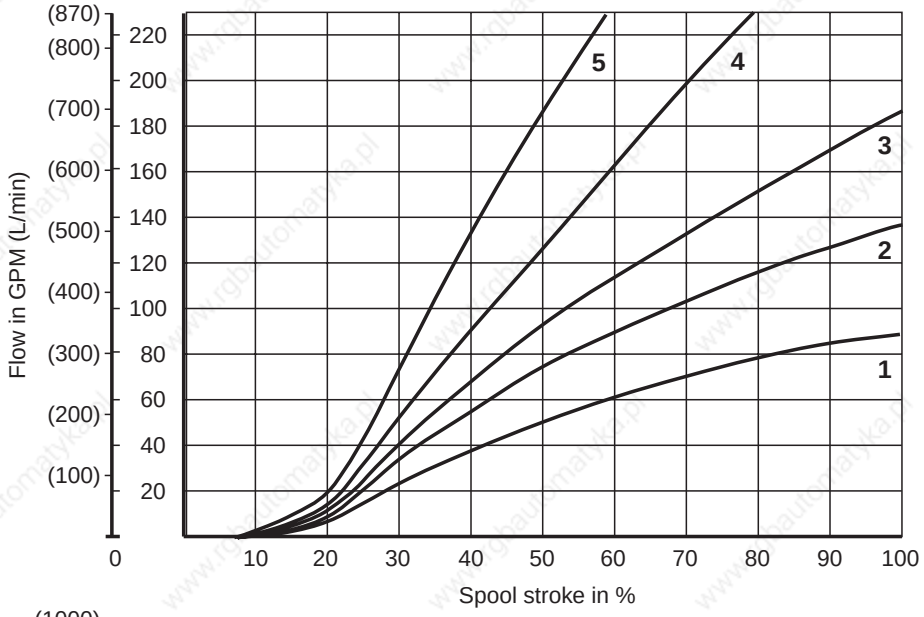


Change in signal

1 0 to 100 %
2 0 to 75 %
3 0 to 50 %
4 0 to 25 %
5 0 to 10 %

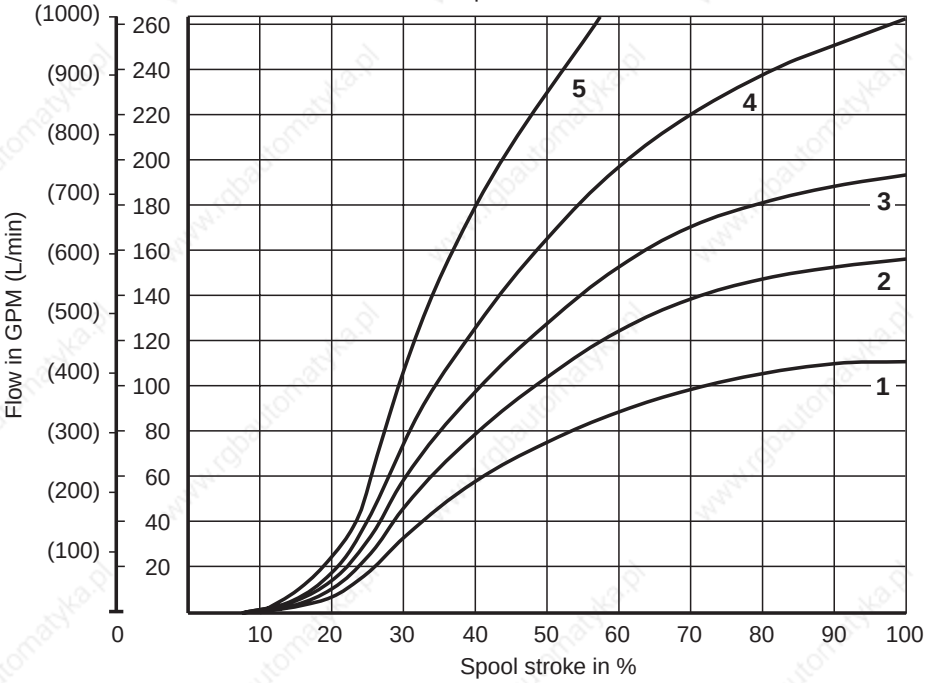
Pilot pressure
p = 1450 PSI (100 bar)

Operating curves: measured at v = 190 SUS (41 mm²/s) and t = 122 °F (50 °C) Model 4 WRK(E) 25



92.4 GPM (350 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

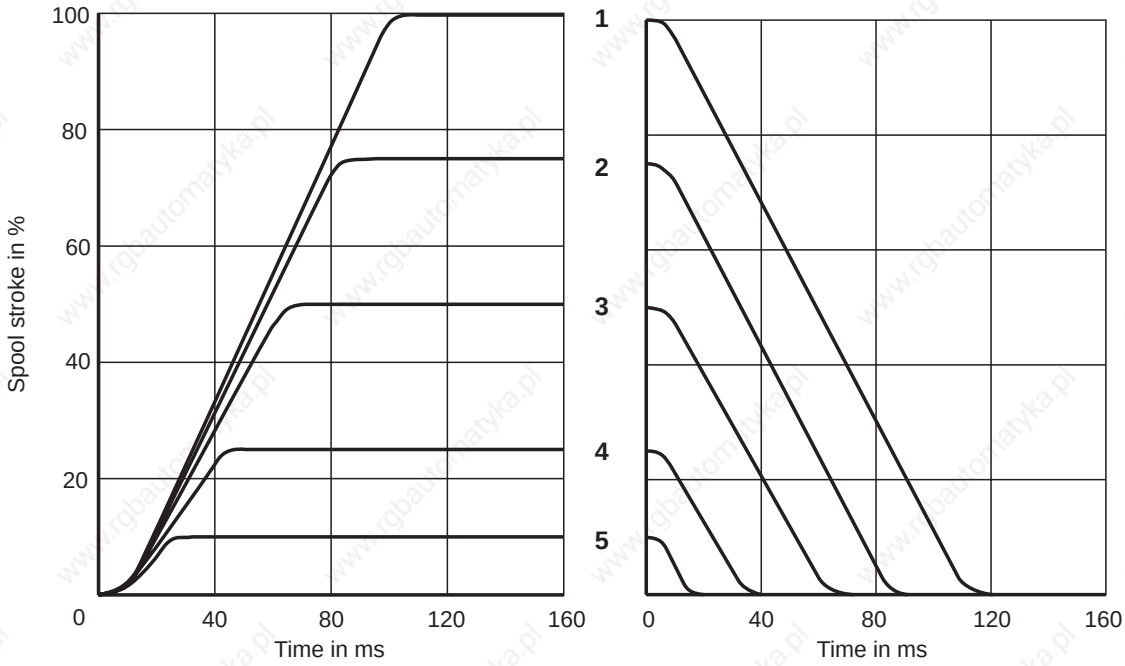


132 GPM (500 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

p_v = Valve pressure drop
to VDMA 24311
(Inlet pressure, less return line pressure and less load pressure)

Transfer function for stepped electrical input signals for Model 4 WRK(E) 32



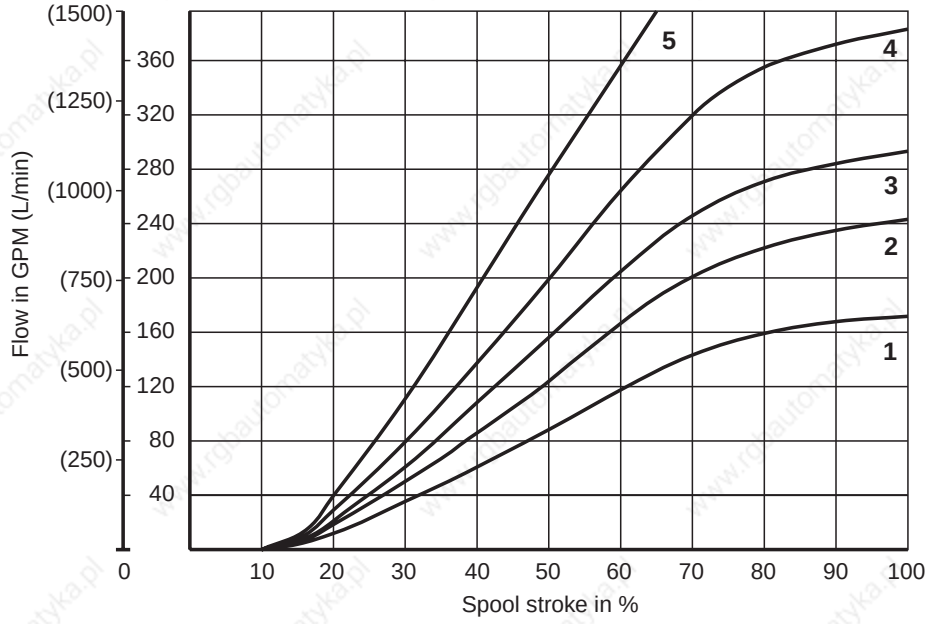
Change in signal

1 0 to 100 %
2 0 to 75 %
3 0 to 50 %
4 0 to 25 %
5 0 to 10 %

Pilot pressure p = 1450 PSI (100 bar)

Operating Curves: measured at v = 190 SUS (41 mm²/s) and t = 122 °F (50 °C)

Model 4 WRK(E) 32

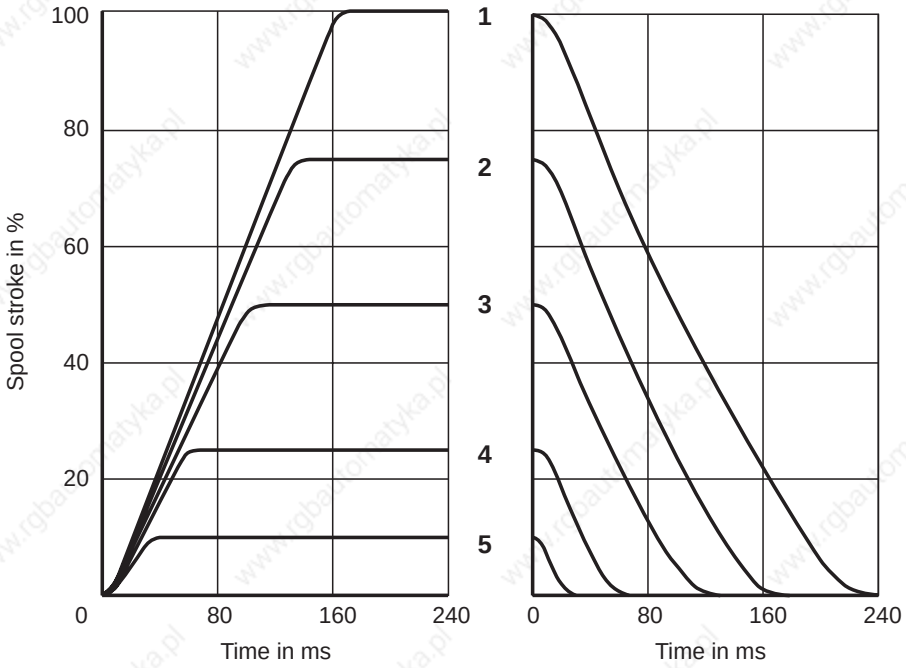


52 GPM (200 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

p_v = Valve pressure drop to VDMA 24311
(Inlet pressure, less return line pressure and less load pressure)

Transfer function for stepped electrical input signals for Model 4 WRK(E) 35



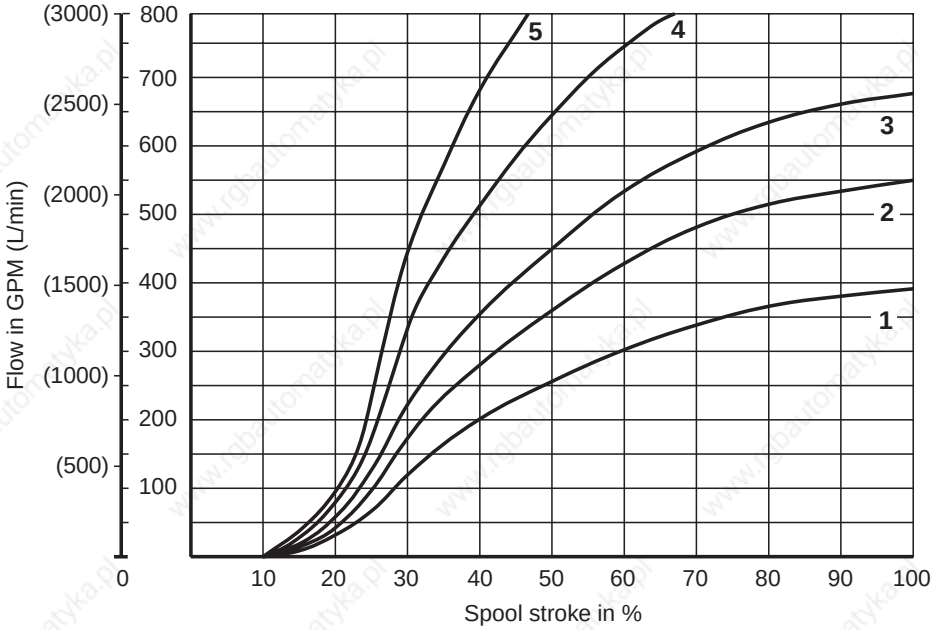
Change in signal

1 0 to 100 %
2 0 to 75 %
3 0 to 50 %
4 0 to 25 %
5 0 to 10 %

Pilot pressure p = 1450 PSI (100 bar)

Operating Curves: measured at ν = 190 SUS (41 mm²/s) and t = 122 °F (50 °C)

Model 4 WRK(E) 35

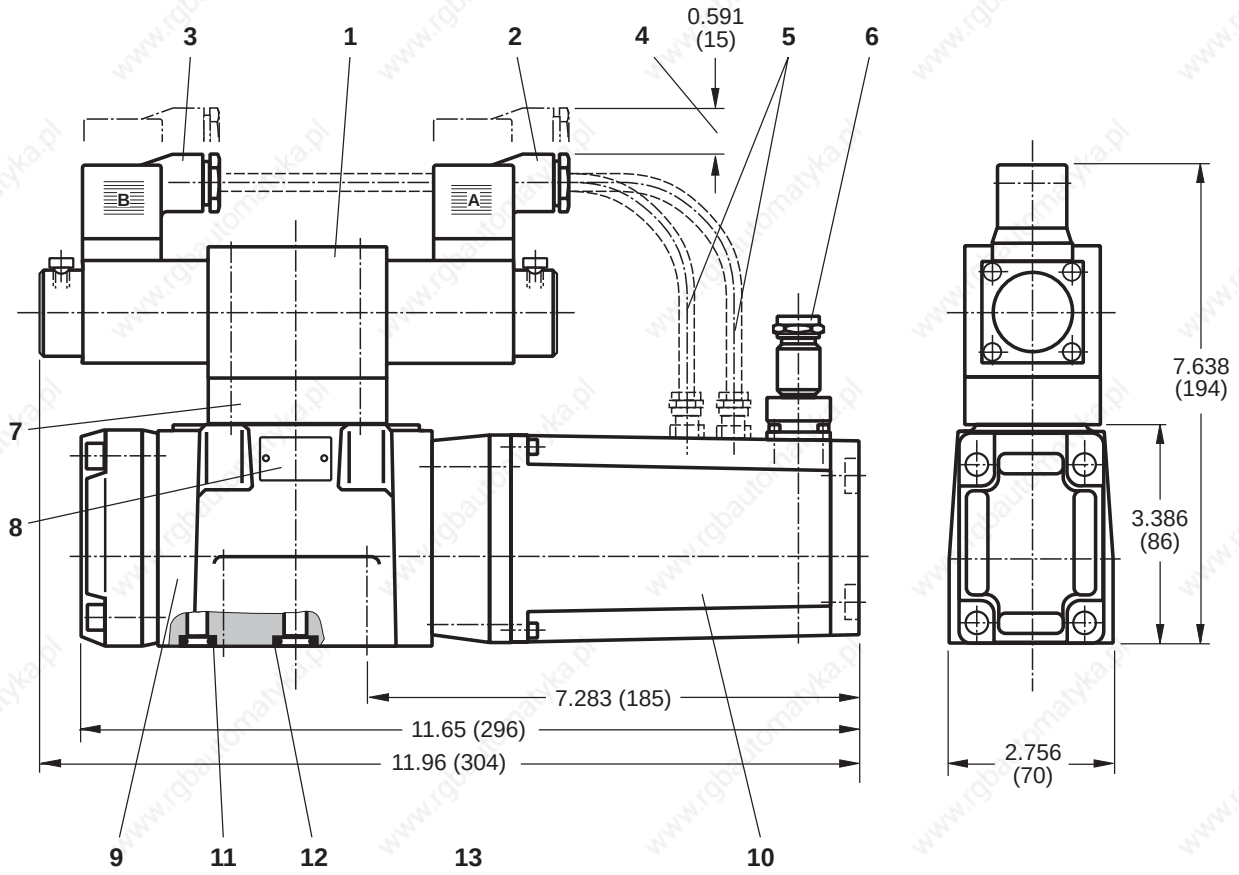


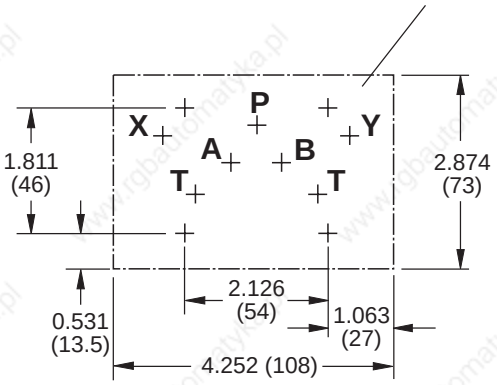
52 GPM (200 L/min) nominal flow at 145 PSI (10 bar) valve pressure drop

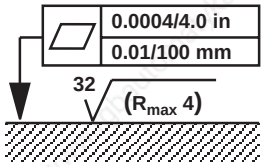
1 $p_{v\ constant}$ = 145 PSI (10 bar)
2 $p_{v\ constant}$ = 290 PSI (20 bar)
3 $p_{v\ constant}$ = 435 PSI (30 bar)
4 $p_{v\ constant}$ = 725 PSI (50 bar)
5 $p_{v\ constant}$ = 1450 PSI (100 bar)

p_v = Valve pressure drop to VDMA 24311
(Inlet pressure, less return line pressure and less load pressure)

Unit dimensions, Size 10: dimensions in inches (millimeters)







Required surface finish of interface when mounting the valve without our subplate

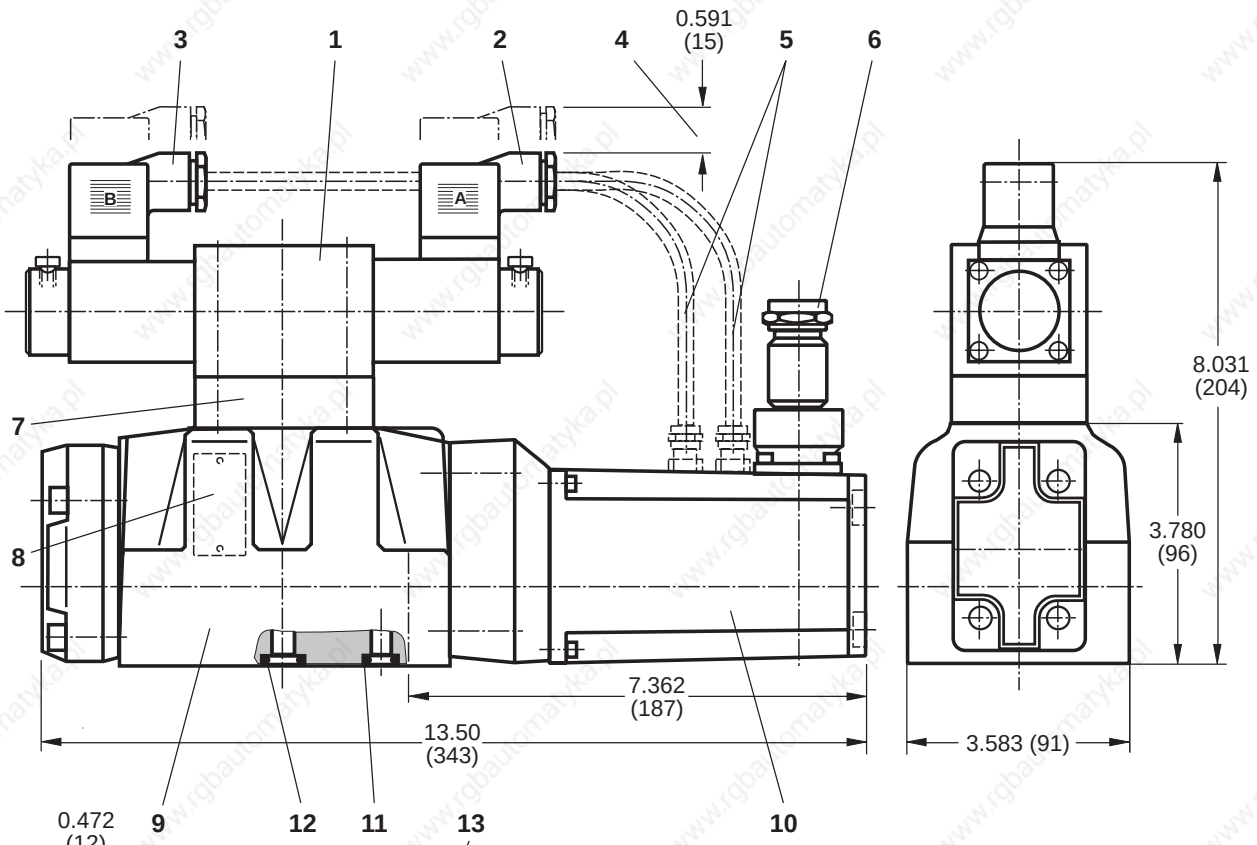
Valve mounting interface to ISO 4401-5, NFPA T3.5.1 M R1 and ANSI B93.7 D 05

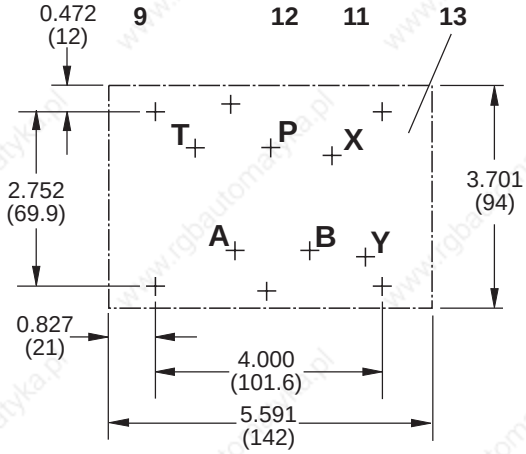
Subplates
G 534/05 (3/4" NPT)
G 534/12 (SAE-12; 1-1/16-12)
G 535/05 (3/4" NPT) with ports X and Y
G 535/12 (SAE-12; 1-1/16-12) with ports X and Y
G 536/05 (1" NPT) with ports X and Y
G 536/12 (SAE-16; 1-5/16-12) with ports X and Y

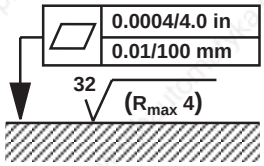
Valve mounting bolts
4) 1/4-20 UNC x 1-3/4" (M6 x 45)
(UNC bolt kit part no. US00 833 367)
Socket head cap screws, SAE grade 8 or better
Tightening torque 11.6 lb-ft (15.5 Nm)
Subplate and valve mounting bolts must be ordered separately, see RA 45 054

1 Pilot valve
2 Plug "A", color grey
3 Plug "B", color black
4 Space required to remove plug
5 Cable, only for WRKE
6 Plug MS 3106 E14S-6S
7 Pressure reducing valve
8 Nameplate
9 Main valve
10 Inductive positional transducer (4 WRK) with integral electronic control (4 WRKE)
11 O-Ring 10.82 mm x 1.78 mm (X and Y)
R-ring 11.18 mm x 1.6 mm x 1.78 mm
12 O-Ring 12 mm x 2 mm (A, B, P and T)
R-ring 13.0 mm x 1.6 mm x 2.0 mm
13 Machined mounting face with position of ports

Unit dimensions, Size 16: dimensions in inches (millimeters)







Required surface finish of interface when mounting the valve without our subplate

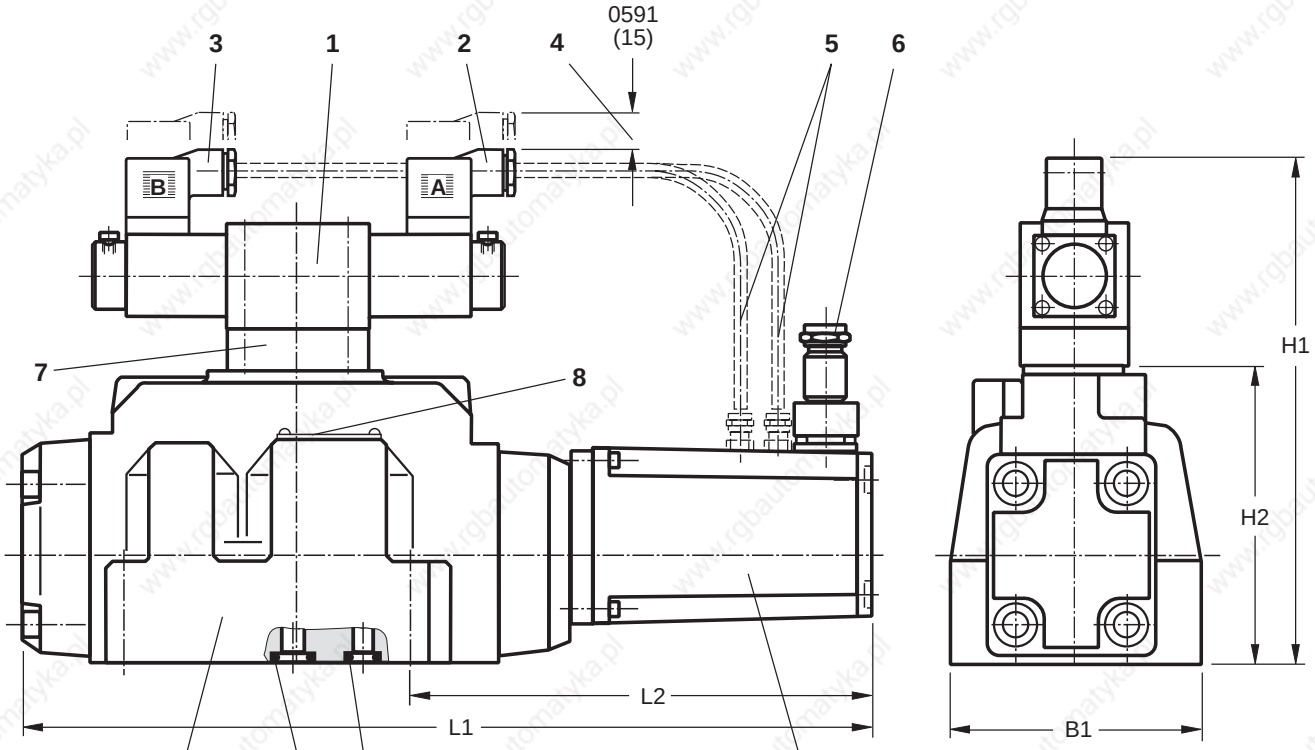
Valve mounting interface to ISO 4401-7, NFPA T3.5.1 M R1 and ANSI B93.7 D 07

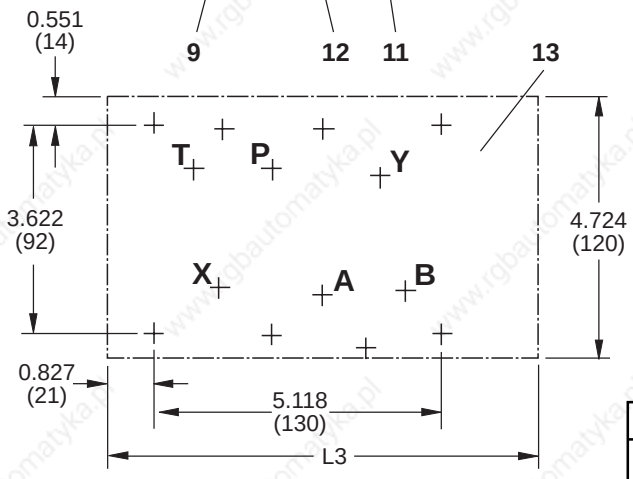
Subplates
G 172/05 (3/4" NPT)
G 172/12 (SAE-12; 1-1/16-12)
G 174/05 (1" NPT)
G 174/12 (SAE-16; 1-5/16-12)
G 174/08 (3/4" ISO flanged ports)

Valve mounting bolts
2) 1/4-20 UNC x 2-1/4" (M6 x 60 mm)
4) 3/8-16 UNC x 2-1/4" (M10 x 60 mm)
(UNC bolt kit part no. US00 833 395)
Socket head cap screws, SAE grade 8 or better
Tightening torque 1/4" 11.5 lb-ft (15.5 Nm)
3/8" 55 lb-ft (75 Nm)
Subplate and valve mounting bolts must be ordered separately, see RA 45 0564

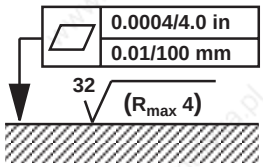
1 Pilot valve
2 Plug "A", color grey
3 Plug "B", color black
4 Space required to remove plug
5 Cable, only for WRKE
6 Plug MS 3106 E14S-6S
7 Pressure reducing valve
8 Nameplate
9 Main valve
10 Inductive positional transducer (4 WRK) with integral electronic control (4 WRKE)
11 O-Ring 10 mm x 2 mm (X and Y)
R-ring 10.0 mm x 2.0 mm x 2.0 mm
12 O-Ring 22 mm x 2.5 mm (A, B, P and T)
R-ring 22.53 mm x 2.3 mm x 2.62 mm
13 Machined mounting face with position of ports

Unit dimensions, Size 25: dimensions in inches (millimeters)





Valve mounting interface to ISO 4401-8, NFPA T3.5.1 M R1 and ANSI B 93.7 D 08



Required surface finish of interface when mounting the valve without our subplate

4 WRK . 25 . 500 –2X/ . . .
Special drilling of ports P, T, A and B 32 mm dia.

Model	B1	H1	H2	L1	L2	L3
4 WRK . 25 . 350 – 2X/.	4.606 (117)	8.465 (215)	4.961 (126)	15.35 (390)	8.268 (210)	7.677 (195)
4 WRK . 25 . 500 – 2X/.	4.724 (120)	9.016 (229)	5.512 (140)	15.63 (397)	8.484 (215.5)	7.874 (200)

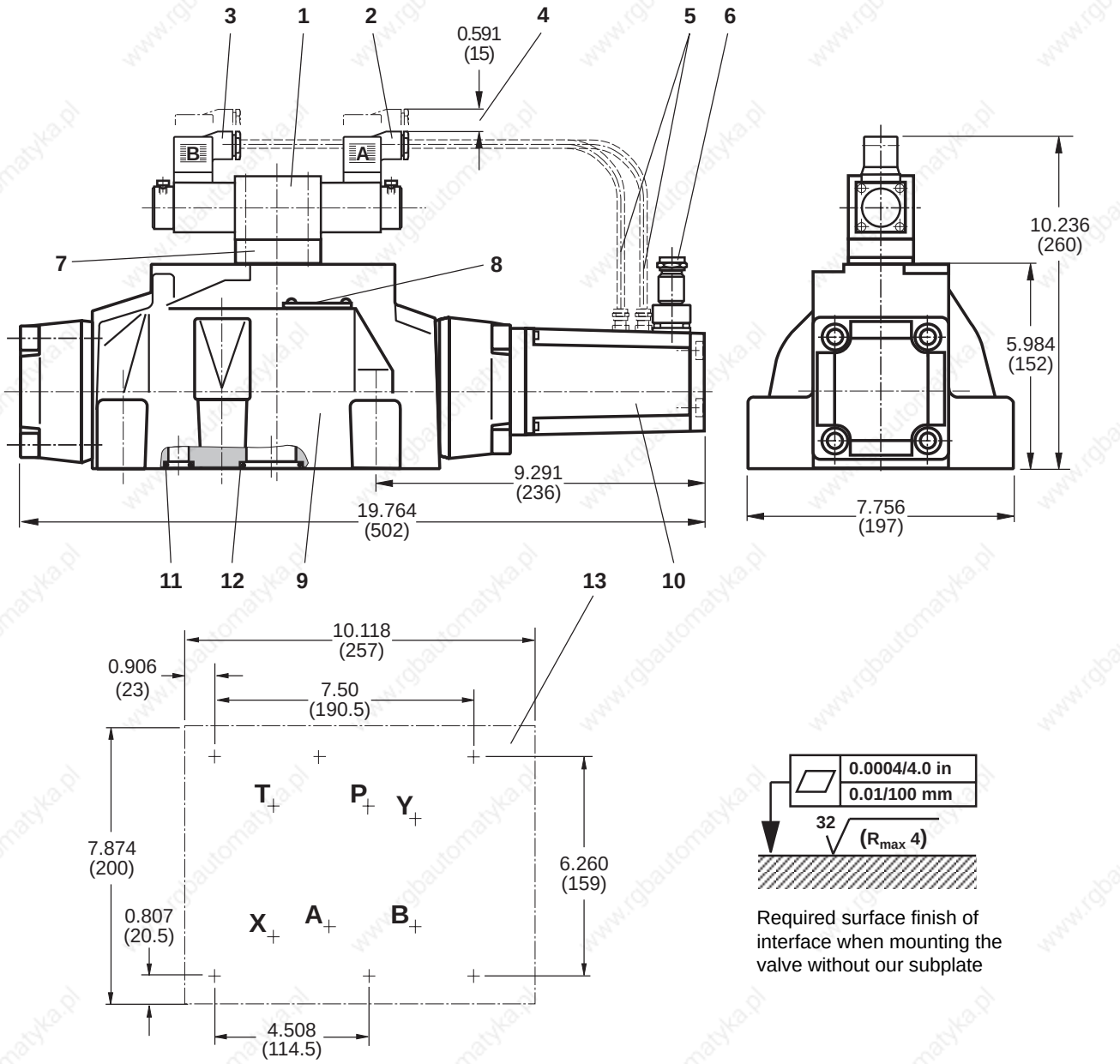
Subplates
G 153/05 (1" NPT)
G 153/12 (SAE-16; 1-5/16-12)
G 154/05 (1-1/4" NPT)
G 154/12 (SAE-20; 1-5/8-20)
G 156/08 (1-1/2" NPT)
G 156/12 (SAE-24; 1-7/8-20)

Valve mounting bolts
6) 1/2-13 UNC x 2-1/2" (MM12 x 60)
(UNC bolt kit part no. US00 833 387)
Socket head cap screws, SAE grade 8 or better

Tightening torque 96 lb-ft (130 Nm)
Subplate and valve mounting bolts must be ordered separately, see RA 45 058

1 Pilot valve
2 Plug "A", color grey
3 Plug "B", color black
4 Space required to remove plug
5 Cable, only for WRKE
6 Plug MS 3106 E14S-6S
7 Pressure reducing valve
8 Nameplate
9 Main valve
10 Inductive positional transducer (4 WRK) with integral electronic control (4 WRKE)
11 O-Ring 19 mm x 3 mm (X and Y)
R-ring 19.0 mm x 3.0 mm x 3.0 mm
12 O-ring 27 mm x 3 mm (A, B, P and T)
R-ring 27.8 mm x 2.6 mm x 3.0 mm,
for High Flow Version:
O-ring 35 mm x 3 mm
R-ring 34.52 mm x 3.53 mm x 3.53 mm
13 Machined mounting face with position of ports

Unit dimensions, Size 32: dimensions in inches (millimeters)



Required surface finish of interface when mounting the valve without our subplate

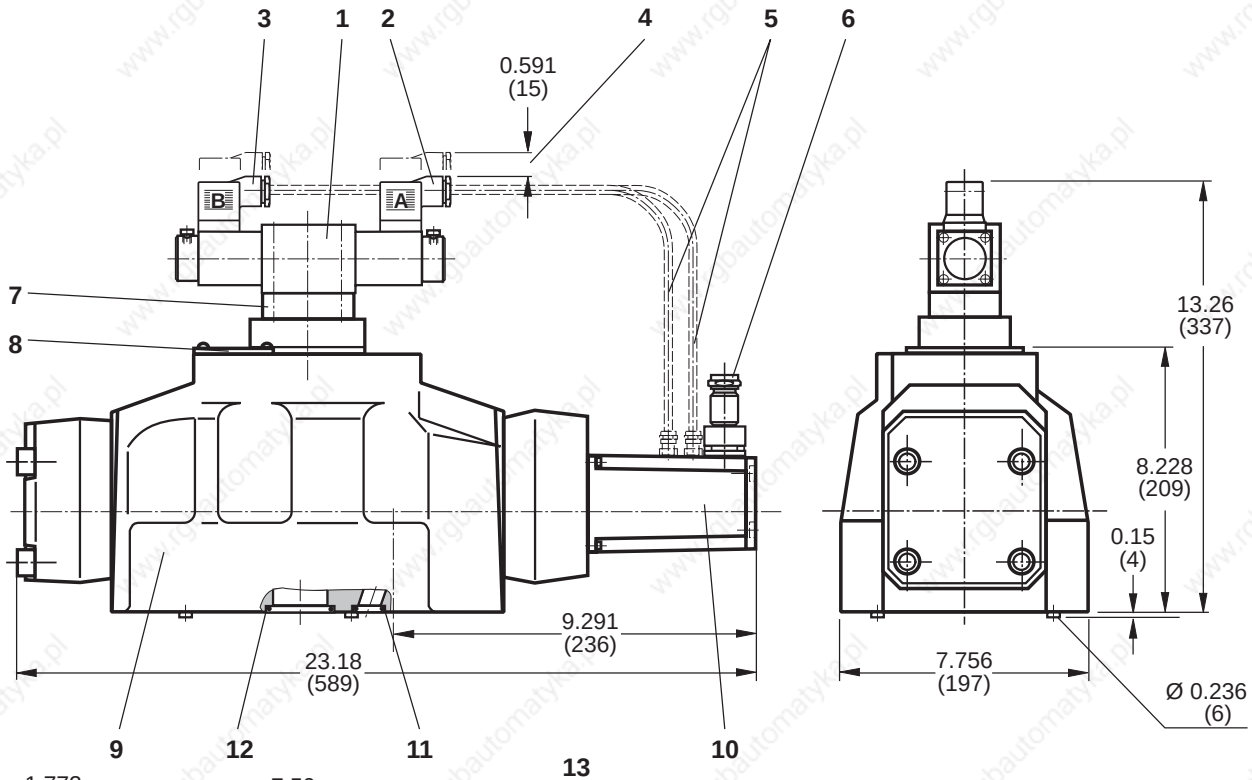
Porting pattern to ISO 4401-10 NFPA T3.5.1 M R1 and ANSI B 93.7 **D 10**

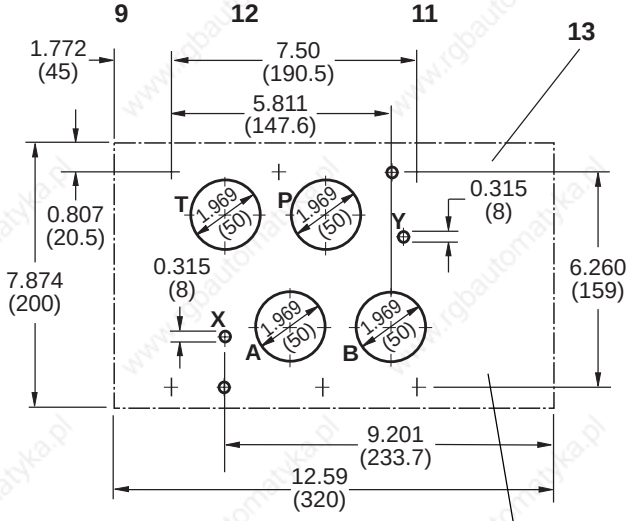
Subplates see data sheet RA 45 060
G 157/05 (1 1/2" NPT)
G 157/12 (SAE-24; 1 7/8-12)
G 158/34 (1 1/2" ISO flanged ports)

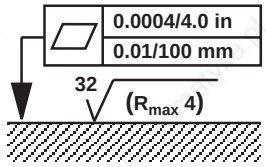
Valve mounting bolts
6) 3/4-10 UNC x 3 1/4" (M20 x 80)
(UNC bolt kit part no. US00 833 394)
Socket head cap screws, SAE grade 8 or better
Tightening torque 295/320 lb-ft (400/430 Nm)
Subplate and valve mounting bolts must be ordered separately.

1 Pilot valve
2 Plug "A", color grey
3 Plug "B", color black
4 Space required to remove plug
5 Cable, only for WRKE
6 Plug MS 3106 E14S-6S
7 Pressure reducing valve
8 Nameplate
9 Main valve
10 Inductive positional transducer (4 WRK) with integral electronic control (4 WRKE)
11 O-Ring 19 mm x 3 mm (X and Y)
R-ring 19.0 mm x 3.0 mm x 3.0 mm
12 O-Ring 42 mm x 3 mm (A, B, P and T)
R-ring 42.5 mm x 3.0 mm x 3.0 mm
13 Machined mounting face with position of ports

Unit dimensions, Size 35: dimensions in inches (millimeters)







Required surface finish of interface when mounting the valve without our subplate

Mounting pattern to DIN 24 340-A32 but with non standard port diameters for all connections

Valve mounting bolts
6) 3/4-10 UNC x 3 1/4" (M20 x 80)
(UNC bolt kit part no. US00 833 394)
Socket head cap screws, SAE grade 8 or better
Tightening torque 295/320 lb-ft (400/430 Nm)
Subplate and valve mounting bolts must be ordered separately.

1 Pilot valve
2 Plug "A", color grey
3 Plug "B", color black
4 Space required to remove plug
5 Cable, only for WRKE
6 Plug MS 3106 E14S-6S
7 Pressure reducing valve
8 Nameplate
9 Main valve
10 Inductive positional transducer (4 WRK) with integral electronic control (4 WRKE)
11 O-Ring 12.37 mm x 2.62 mm (X and Y)
R-Ring 12.81 mm x 2.4 mm x 2.62 mm
12 O-Ring 53.57 mm x 3.53 mm (A, B, P and T)
R-ring 54.5 mm x 3.53 mm x 3.53 mm
13 Machined mounting face with position of ports
14 Locating pin

Valve piloting

Model 4 WRK (E)...–2X/6A... External pilot supply
External drain

This model is externally piloted via port “X” and externally drained via port “Y”. All internal plugs are installed.

Model 4 WRK (E)...–2X/6A.E. Internal pilot supply
External drain

Pilot fluid is supplied internally from port “P” while the pilot valve is externally drained through port “Y”. Port “X” in the subplate must be plugged.

Model 4 WRK (E)...–2X/6A.ET. Internal pilot supply
Internal drain

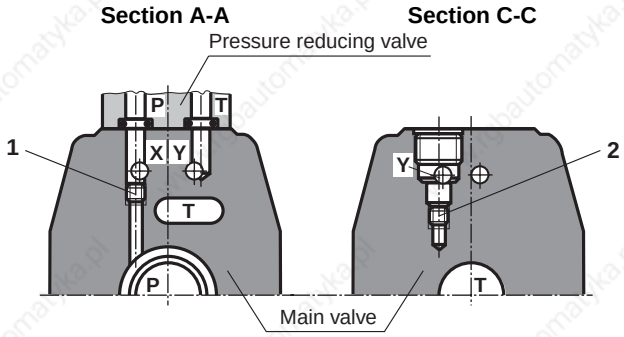
On this model, the pilot supply is internal from port “P” and the drain is internal to port “T”. Both ports, “X” and “Y” in the subplate must be plugged.

Model 4 WRK (E)...–2X/6A.T. External pilot supply
Internal drain

This Model is externally piloted through port “X” and internally drained to port “T”. Port “Y” in the subplate must be plugged.

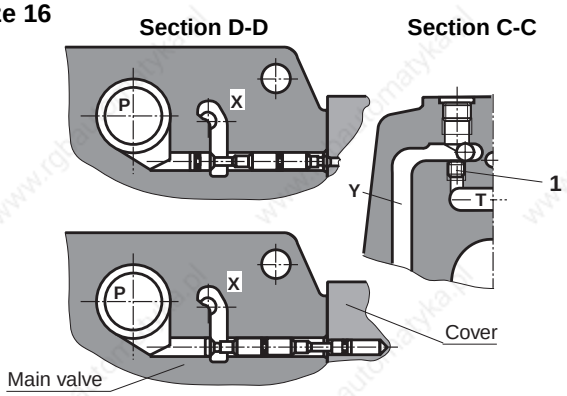
Note: Plugs items 1 and 2 have M6 threads and require a 3 mm Allen wrench.

Size 10



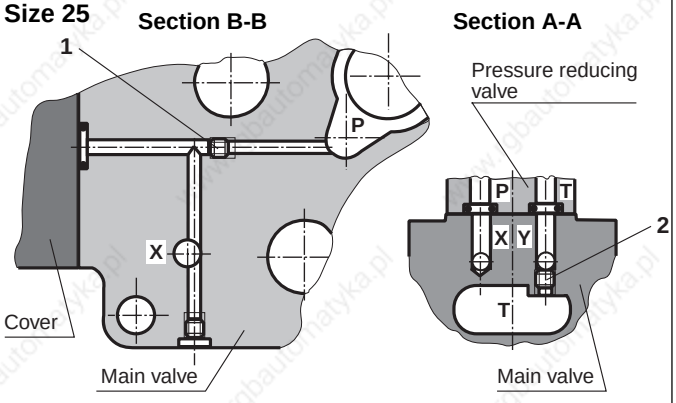
Pilot fluid supply	**external:**	**1**	plugged
	internal:	**1**	open
Pilot fluid drain	**external:**	**2**	plugged
	internal:	**2**	open

Size 16



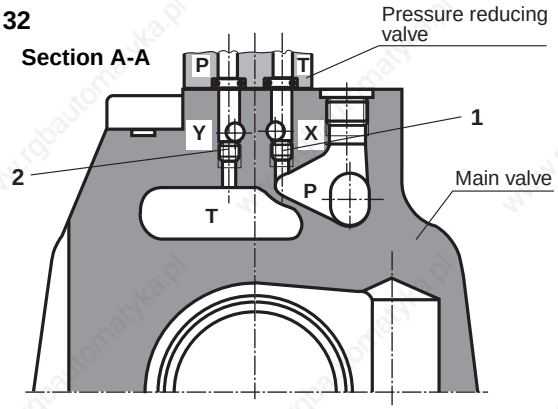
Pilot fluid supply	**external:**	**2**	plugged
	internal:	**2**	open
Pilot fluid drain	**external:**	**1**	plugged
	internal:	**1**	open

Size 25



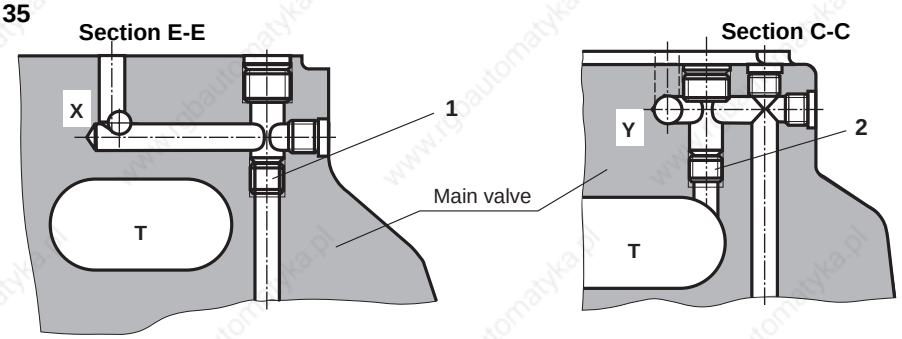
Pilot fluid supply	**external:**	**1**	plugged
	internal:	**1**	open
Pilot fluid drain	**external:**	**2**	plugged
	internal:	**2**	open

Size 32



Pilot fluid supply	**external:**	**1**	plugged
	internal:	**1**	open
Pilot fluid drain	**external:**	**2**	plugged
	internal:	**2**	open

Size 35



Pilot fluid supply

external:	**1**	plugged
internal:	**1**	open

Pilot fluid drain

external:	**2**	plugged
internal:	**2**	open

Electronic control: Electrical amplifier module Model VT 11076 to VT 11079, Series 2X

Technical data

Operating voltage V_{DC} : 24 V DC
– Upper limit $v_{DC}(t)_{max}$: 35 V DC [1])
– Lower limit $v_{DC}(t)_{min}$: 21 V DC [1])
[1]) only very briefly

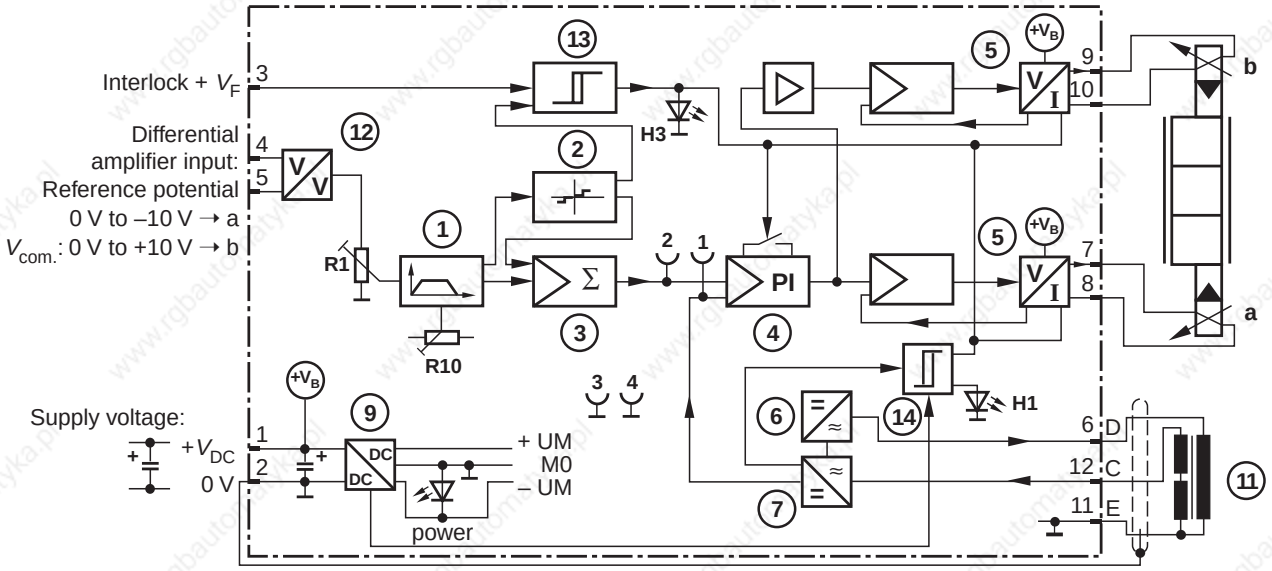
Max. output current I_{max} : ~ 1,55 A
Oscillator frequency f : ~ 5 kHz
U_{SS}= 10 V (5 V at VT 11079)

For applications outside these parameters please consult us

Note:
Whether taking its supply from a full bridge rectifier or from a 3-phase rectifier each individual module must be equipped with its own smoothing capacitor of 2200 µF.
(See capacitor module VT 11073, RA 29 750)

Detailed information: Data sheet RA 29 758

Terminal connections



1 Ramp generator
2 Step function generator
3 Summator
4 PI-Regulator
5 Output stage
6 Oscillator
7 Demodulator
9 Power input section
11 Positional transducer
12 Differential amplifier
13 Interlock switch
14 Fault monitor

Actual value 0 to ± 5 V
Command value 0 to ± 5 V
Measured zero
Measured zero

Ordering code

Amplifier Module for proportional directional valve	
Model 4 WRK 10 ...*)	**= VT 11076**
Model 4 WRK 16 ...*)	**= VT 11077**
Model 4 WRK 25 ...*)	**= VT 11078**
Model 4 WRK 32 ...*), 4 WRK 35 ...*)	**= VT 11079**

–2X/ *
= 2X
Further details to be written in clear text
Series 20 to 29
(20 to 29, externally interchangeable)

*) from Series 2X upwards

Notes

Mannesmann Rexroth Corporation
***Rexroth Hydraulics Div., Industrial,* 2315 City Line Road, Bethlehem, PA 18017-2131 Tel. (610) 694-8300 Fax: (610) 694-8467**
***Rexroth Hydraulics Div., Mobile,* 1700 Old Mansfield Road, Wooster, OH 44691-0394 Tel. (330) 263-3400 Fax: (330) 263-3333**