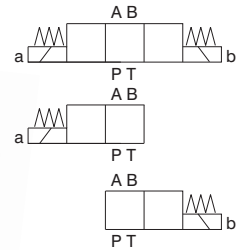


- 4/3-, 4/2 way directional control valves with solenoid control
- Solenoids can be turned around their axis to any position
- Push button manual override
- Possibility of vertical and horizontal assembly, see data sheet HA 4057



Functional Description

Distributors of the RPEK1-03 type are the basic elements for building blocks through horizontal and vertical assembly. This catalogue describes the preparation of the main unit, made up of two to eight distributors, by horizontal assembly. The distributors controlling the direction of the working fluid's flow to the individual appliances share common channels P and T. During the circuit design it is always necessary to check if the flow through the common channels covers the consumption of all appliances in all phases of the hydraulic equipment working cycle. Channels A, B outputs at the upper surface of the body are provided with threads G1/4 (type G), or SAE 9/16-18 (type S), or are prepared for vertical assembly (type O) – i.e. brought out onto a ground surface. Channels P, T, A, B outlets on the side surfaces of the body are prepared for horizontal assembly – i.e. brought out onto a ground surfaces or provided with a sealing ring recess.

The individual distributor bodies are connected into a compact block using three bolts. Fastening angles serve to mount the block to the base with four screws.

An assembled block feed is provided by a plate with connecting threads G3/8 in channels P, T. It is also possible to use plate with a built-in pressure relief valve to regulate the maximum pressure in the circuit.

Use data sheet No. HA 5027 to create more complex assemblies with the use of the horizontal and vertical

assembly, while also using additional building elements.

The RPEK1-03 directional control valves consist of cast iron housing (1), control spool (5) with two centering springs (4) and operating solenoids (2, 3).

The three-position directional valves are fitted with two solenoids, two-position directional valves have either one solenoid.

*The operating solenoids are DC solenoids supplied through connectors A, B (6, 7). For AC supply the solenoids are provided with rectifiers, which are integrated directly into the connectors A, B (6, 7). The connectors can be turned by 90° around. By loosening the nut (8), the solenoid can be turned around its axis up to 360°.

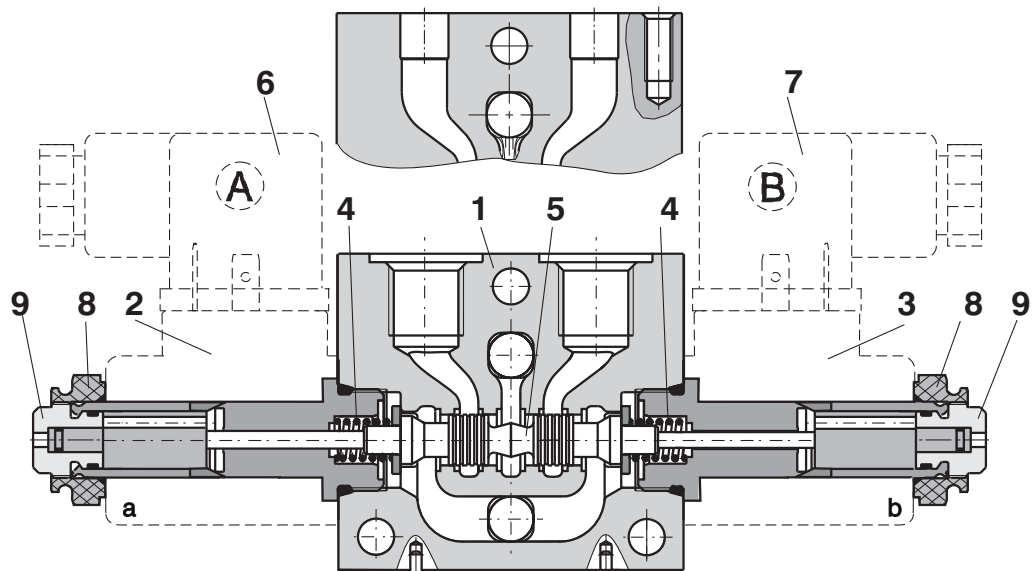
In the case of solenoid malfunction or power failure, the spool of the valve can be repositioned by manual override (9), provided the pressure in the T-port does not exceed 25 bar. The standard design of the emergency control may be additionally fitted with a pushbutton with a rubber cover.

The basic surface treatment of the valve housing (1) is phosphate coated and the solenoids (2, 3) are zinc coated.

*Magnet coils are not included in the valve supply. The coil types selected by the customer must be ordered separately.

Type of connection
"O"

Type of connection
"G", "S"



Ordering Code

RPEK1-03 /

**Solenoid Operated
Directional Control Valve**

Nominal size

Type of connection

G1/4

SAE 9/16-18

without thread

**G
S
O**

Number of valve positions

two positions

three positions

**2
3**

Functional symbols

see the table functional symbols

no designation

V

Seals

NBR

FPM (Viton)

Design form

standard

no designation

P1 through channels P, T; inlets A, B with sealing rings

Z1 one side inlets of channels P, T with sealing rings

Z3 one side inlets of channels P, T, A, B with sealing rings

Manual override *

standard

no designation

*The standard design of the manual override may be additionally fitted with a pushbutton with a rubber cover (N2).

Note: solenoid coil, electrical connector and manual override (N2) **is not supplied as mounted on**, must be ordered separately (see ordering number on page 6; 7 and 10)

Technical Data

Nominal size		03
Maximum flow	L/min (GPM)	see p-Q characteristics
Maximum operating pressure at ports P, A, B	bar (PSI)	250 (3625)
Maximum operating pressure at port T	bar (PSI)	210 (3045)
Pressure drop	bar (PSI)	see Δp -Q characteristics
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51 524
Fluid temperature range NBR	°C (°F)	-30 ... +80 (-22 ... +176)
Fluid temperature range FPM (Viton)	°C (°F)	-20 ... +80 (-4 ... +176)
Ambient temperature, max.	°C (°F)	up to +50 (+122)
Viscosity range	mm ² /s (SUS)	20 ... 400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406
Maximum allowable voltage variation	%	AC: ± 10 DC: ± 10
Maximum switching frequency	1/h	15 000
Switching time, ON; at $v = 32 \text{ mm}^2/\text{s}$	ms	30 ... 50
Switching time, OFF; at $v = 32 \text{ mm}^2/\text{s}$	ms	AC: 70 ... 100 DC: 30 ... 50
Duty cycle	%	100
Service life	cycles	10^7
Enclosure type to EN 60 529		see page 7
Weight		
- valve with 1 solenoid	kg (lb)	0.90 (1.98)
- valve with 2 solenoid		1,05 (2.32)
Mounting position		unrestricted

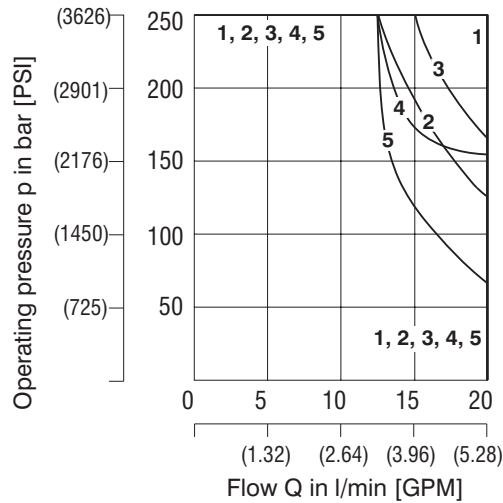
Functional Symbols

Designation	Symbol	Interposition	Designation	Symbol	Interposition
Z11			R21		
C11			Y51		
H11			C51		
Y11			Z51		
R11			H11		

p-Q Characteristic

Measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits for maximum hydraulic power transferred by the directional valve.

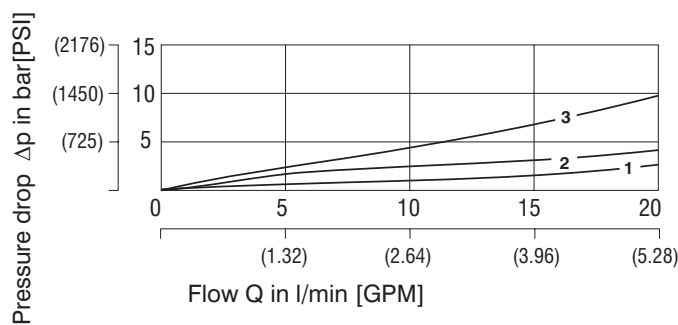


Z11	Z51	R11	R21	C11	C51	H11	Y11	Y51
1	1	1	5	2	2	3	4	4

Δp -Q Characteristic

Measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop Δp related to flow rate.



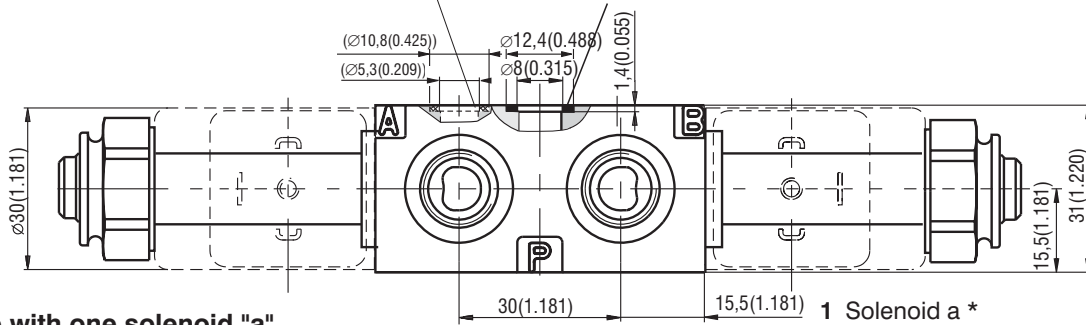
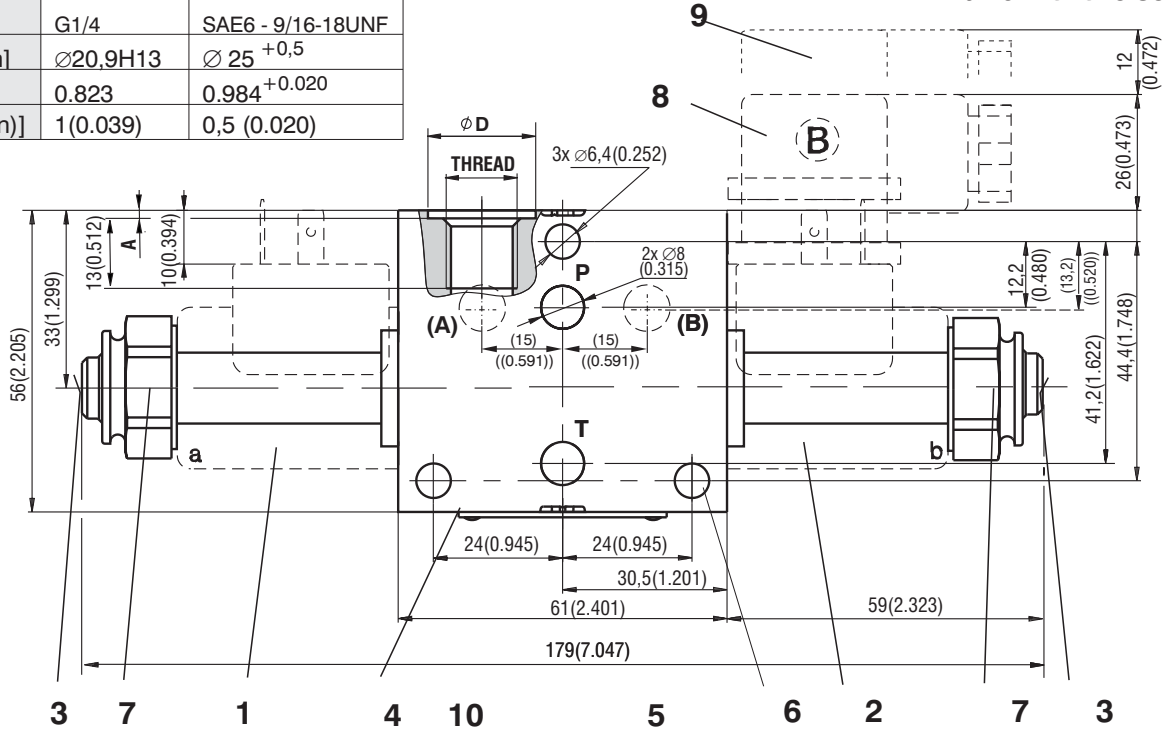
	Z11	C11	H11	Y11	R11	R21	Y51	C51	Z51
P-A	1	3	1	1	2	2		3	
P-B	1	3	1	1	2	2	1		1
A-T	1	3	1	1	2	2	1		1
B-T	1	3	1	1	2	2		3	
P-T		2	2					2	

Valve Dimensions Standard body version "G", "S"

Dimensions in millimeters (inches)

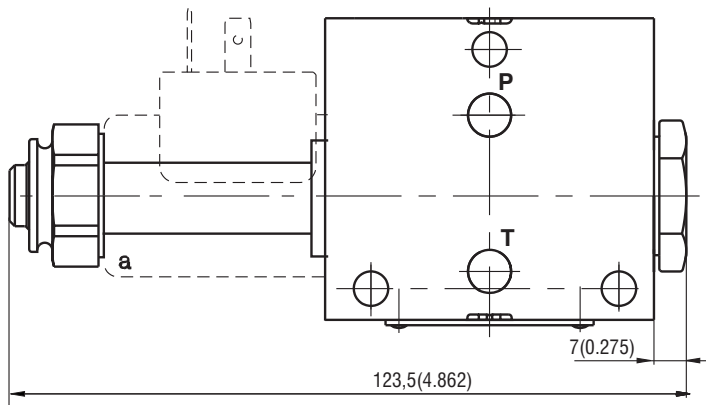
	G	S
THREAD	G1/4	SAE6 - 9/16-18UNF
ØD [mm]	Ø20,9H13	Ø 25 +0,5
ØD [in]	0.823	0.984 ^{+0.020}
A [mm (in)]	1(0.039)	0,5 (0.020)

Valve with two solenoids



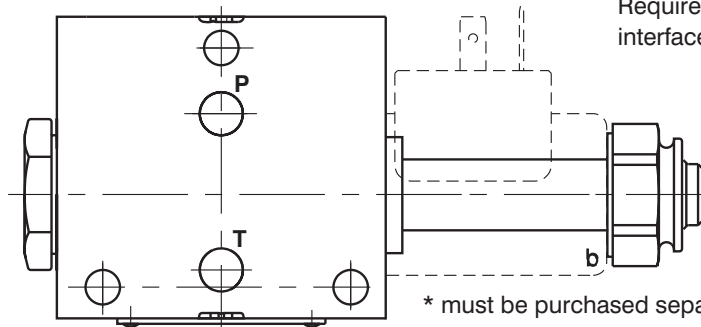
Valve with one solenoid "a"

Functional symbols R11, R21, Y51, C51, Z51

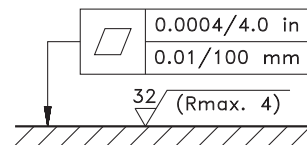


Valve with one solenoid "b"

Functional symbols H11



- 1 Solenoid a *
- 2 Solenoid b *
- 3 Manual override
- 4 Name plate
- 5 Square ring 9,25 x 1,68 (2 pcs) supplied with valve
- 6 3 mounting holes
- 7 Retaining nut of the solenoid
- 8 Electrical connector, EN 1745301-803
- 9 Space required to remove connector
- 10 Outlets A/B are only at the versions P1, Z1; Z3, Seal 7,65x1,68



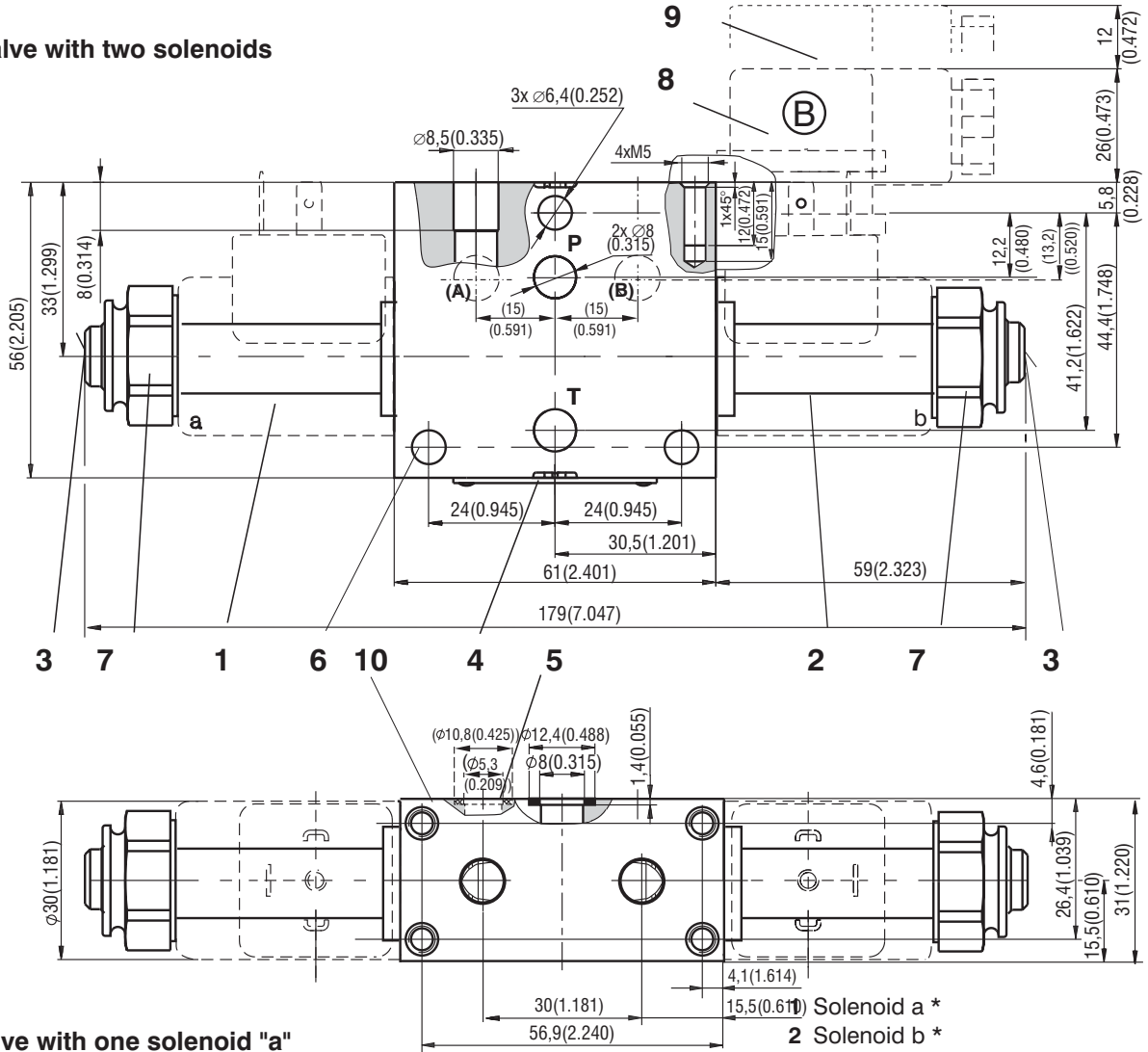
Required surface finish of interface

* must be purchased separately (see page 7)

Valve Dimensions Standard body version "O"

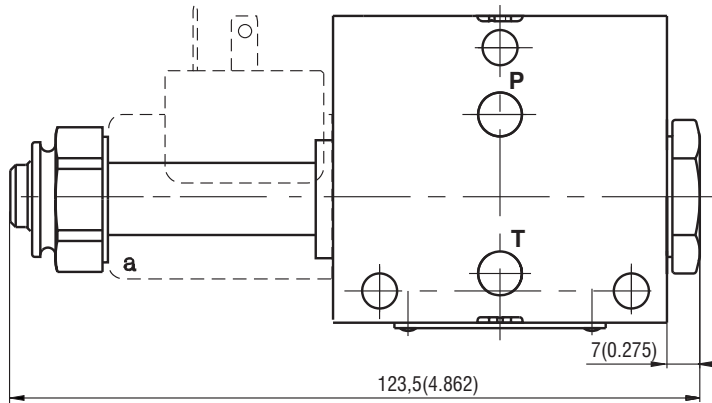
Dimensions in millimeters (inches)

Valve with two solenoids



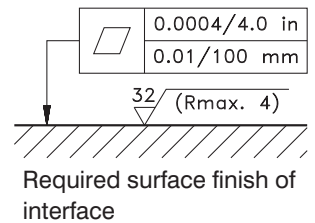
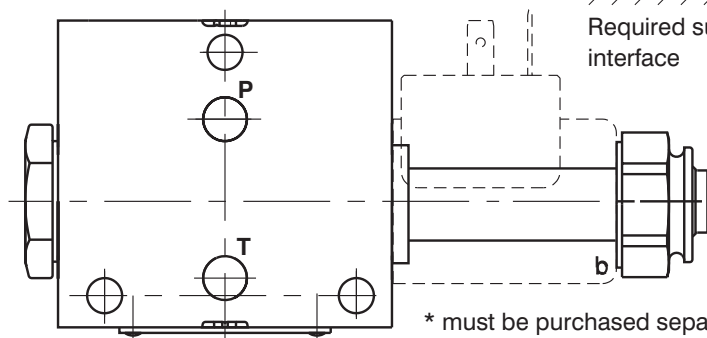
Valve with one solenoid "a"

Functional symbols R11, R21, Y51, C51, Z51



Valve with one solenoid "b"

Functional symbols H11

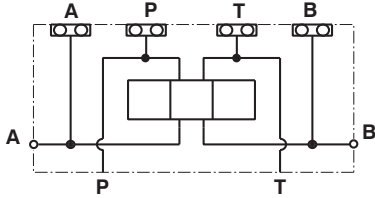
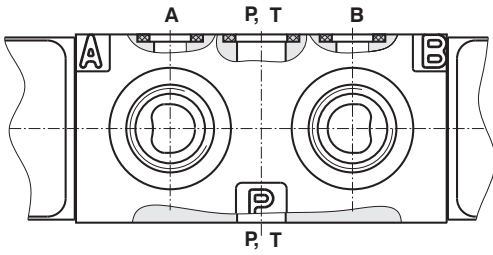


* must be purchased separately (see page 7)

Design form "G" ("S"), "O"

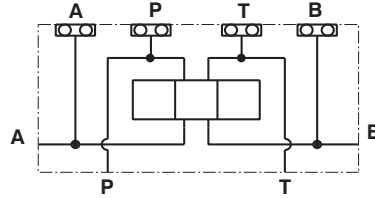
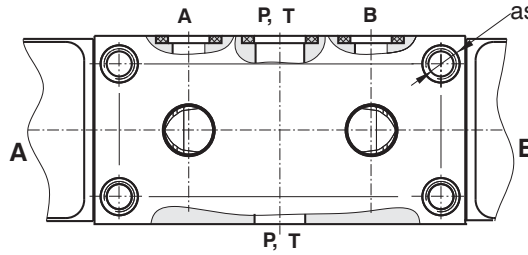
P1 - "G" ("S")

through channels P, T; outlets A, B with sealing rings



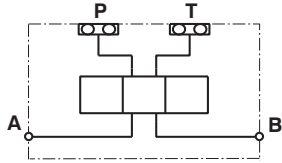
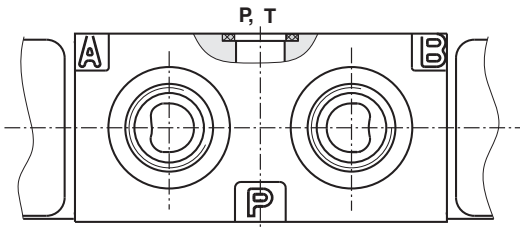
P1 - "O"

4xM5
for vertical
assembly

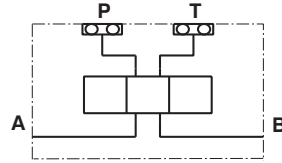
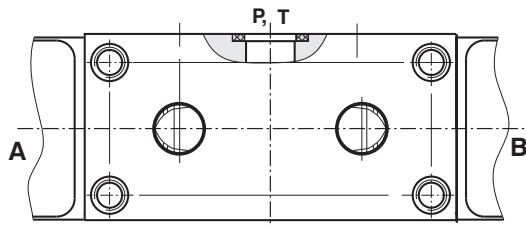


Z1 - "G" ("S")

one side inlets of channels P, T with sealing rings (outlets A, B only on the upper surface)



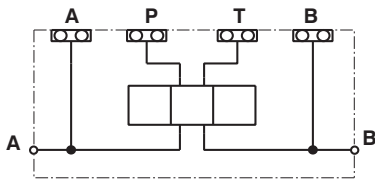
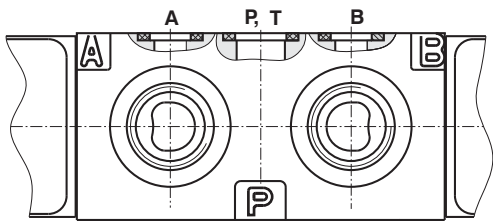
Z1 - "O"



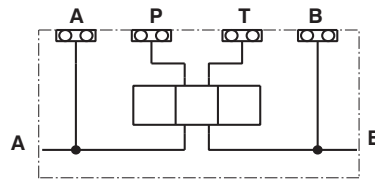
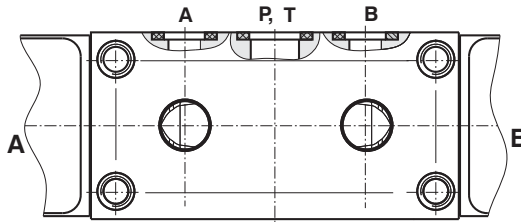
Z3 - "G" ("S")

combination of options Z1 a P1

one side inlets of channels P, T, A, B with sealing rings



Z3 - "O"

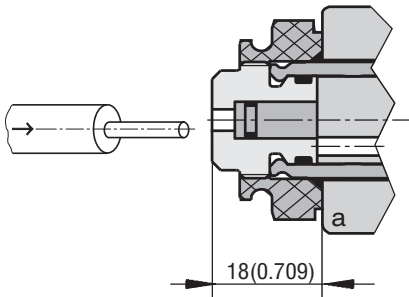
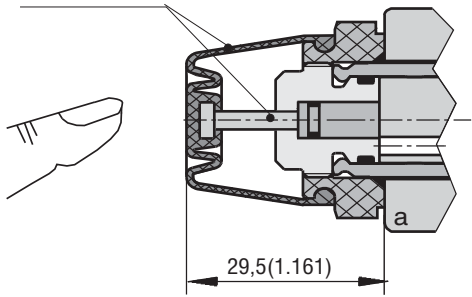


Spare Seal kit

Type	Dimensions, number			Ordering nr. Z1
	Sealing - ring	O-ring		
Standard	9,25 x 1,68 NBR 70 (2 pcs.)	16 x 2 NBR 90 (2 pcs.)		15691300
Viton	9,25 x 1,78 (2 pcs.)	16 x 2 (2 pcs.)		15691400
Type	Dimensions, number			Ordering nr. P1, Z3
	Sealing - ring	O-ring	Sealing - ring	
Standard	9,25 x 1,68 NBR 70 (2 pcs.)	16 x 2 NBR 90 (2 pcs.)	7,65 x 1,68 (2 pcs.)	28839800
Viton	9,25 x 1,78 (2 pcs.)	16 x 2 (2 pcs.)	7,65 x 1,78 (2 pcs.)	28840100

Manual Override

Dimensions in millimeters (inches)

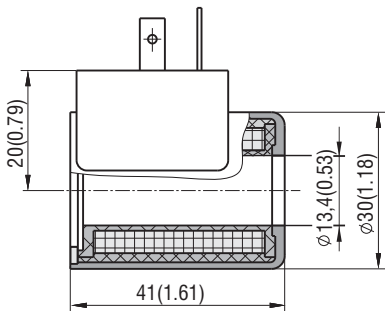
STANDARD		RUBBER BOOT	
NO DESIGNATION		N2	Ordering number / Kit 29269100
 <p>Standard model of the manual override. Standard retaining nut of the solenoid.</p>		 <p>Manual override protected by rubber boot. - Kit must be purchased separately</p>	

Dimensions of Coils C14

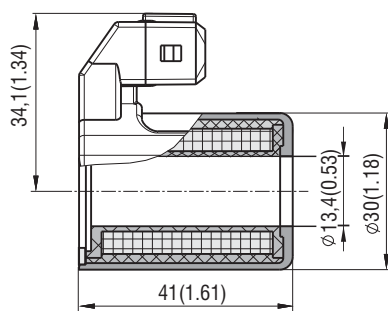
Dimensions in millimeters (inches)

Design version - B

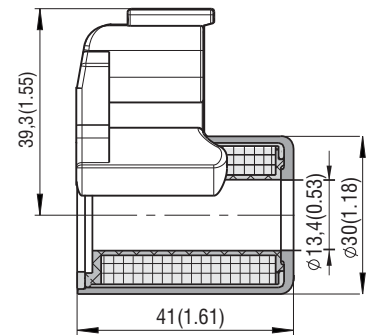
Connector design
E1, E2
EN 175301-803-A



E3A, E4A
AMP Junior Timer



E12, E13
Deutsch DT04-2P



Coils C14B

Standard

Voltage [V]	Current [A]	Type	Connector	RPEK1-03	
				Type	Ordering number
12 VDC	1,83	IP 65	E1 - EN 175301-803-A	C14B-01200E1-6,55NA	16210300
24 VDC	0,92		E1 - EN 175301-803-A	C14B-02400E1-26,2NA	16210400
205 V DC*	0,08		E1 - EN 175301-803-A	C14B-20500E1-2476NA	16210500
12 VDC	1,83	IP 65	E2 - E1 with quenching diode	C14B-01200E2-6,55NA	24101600
24 VDC	0,92		E2 - E1 with quenching diode	C14B-02400E2-26,2NA	24101800
12 VDC	1,83		E3A - AMP Junior Timer (2 pins; male)	C14B-01200E3A-6,55NA	28822500
24 VDC	0,92		E3A - AMP Junior Timer (2 pins; male)	C14B-02400E3A-26,2NA	28686400
12 VDC	1,83	IP 65	E4A - E3A with quenching diode	C14B-01200E4A-6,55NA	28822600
24 VDC	0,92		E4A - E3A with quenching diode	C14B-02400E4A-26,2NA	28822400
12 VDC	1,83	IP 67	E12 - Axial connector Deutsch DT04-2P	C14B-01200E12-6,55NA	29268200
24 VDC	0,92		E12 - Axial connector Deutsch DT04-2P	C14B-02400E12-26,2NA	29268900
12 VDC	1,83	IP 69	E13 - E12 with quenching diode	C14B-01200E13-6,55NA	29268800
24 VDC	0,92		E13 - E12 with quenching diode	C14B-02400E13-26,2NA	29269000

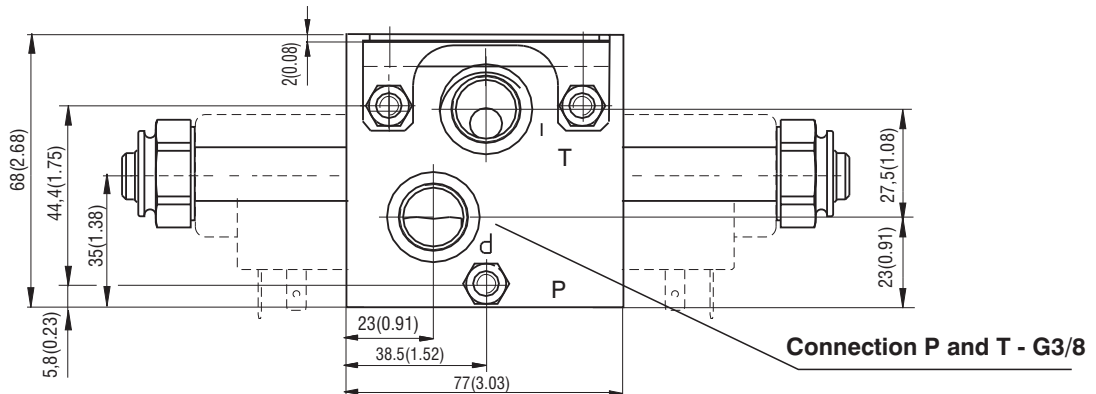
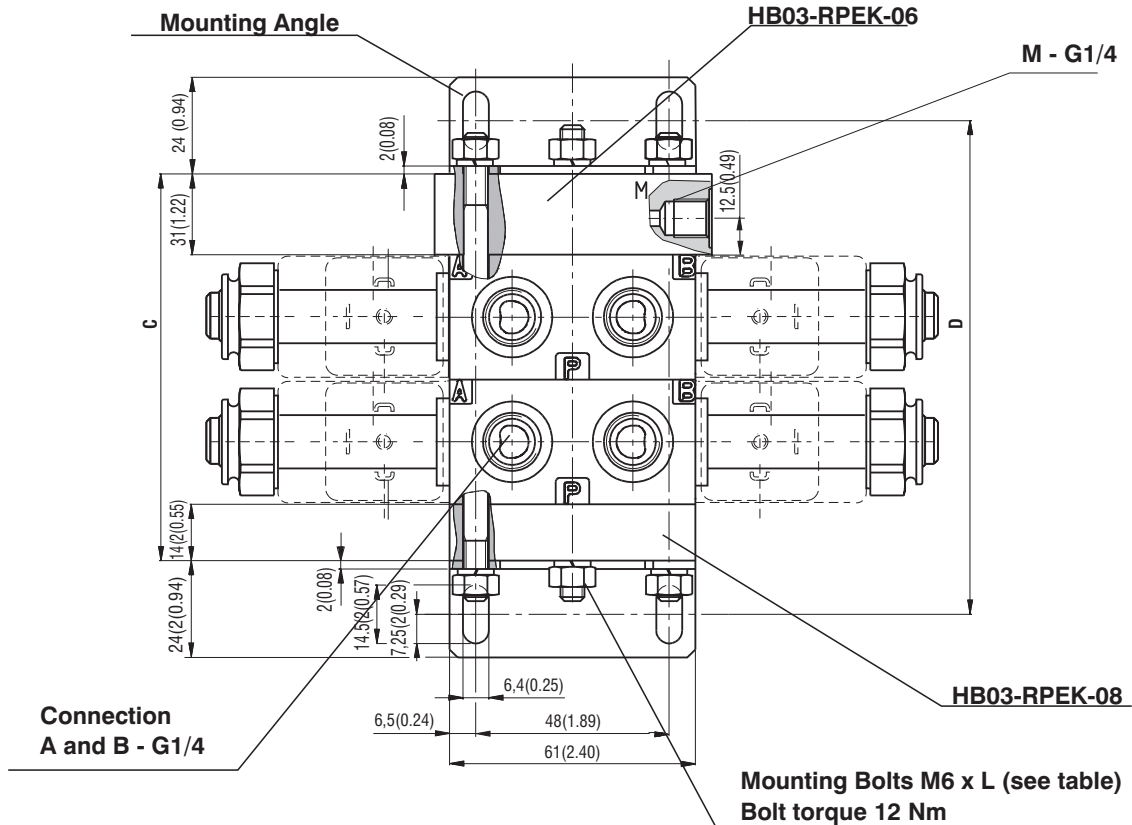
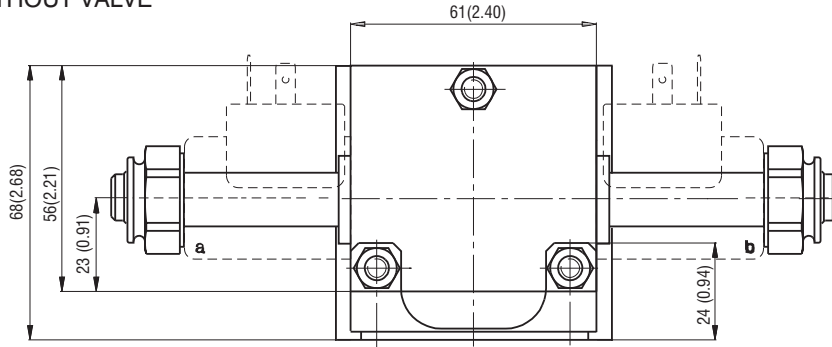
Note:

* Coil version 205 are suitable for the rectified voltage of 230V /50Hz, Rectifier in coil included
Other designs available at request.

Block Assembly

Dimensions in millimeters

VERSION 1 - WITHOUT VALVE



Nota:

Example of simple block assembly with two to eight distributors, feeding plate and the end plate.

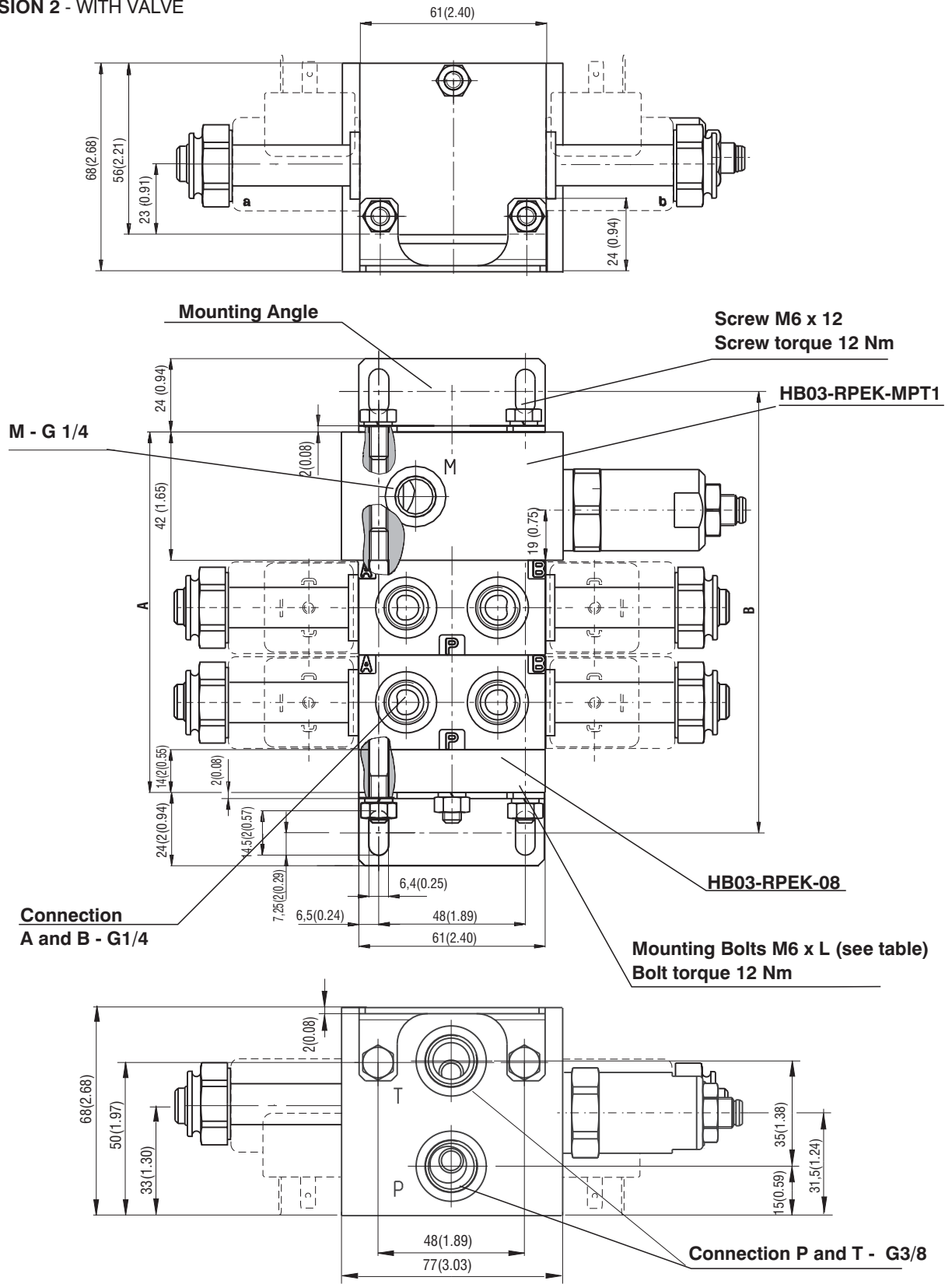
Dimensions

Number of section	1	2	3	4	5	6	7	8
Dimension A [mm]	76(2.992)	107(4.212)	138(5.433)	169(6.653)	200(7.874)	231(9.094)	262(10.315)	293(11.535)
Dimension B [mm]	103(4.055)	134(5.275)	165(6.496)	196(7.716)	227(8.937)	258(10.157)	289(11.378)	320(12.598)
Dimension L [mm]	100(3.937)	133(5.236)	163(6.417)	194(7.638)	224(8.819)	256(10.079)	287(11.299)	320(12.598)

Block Assembly

Dimensions in millimeters

VERSION 2 - WITH VALVE



Nota:

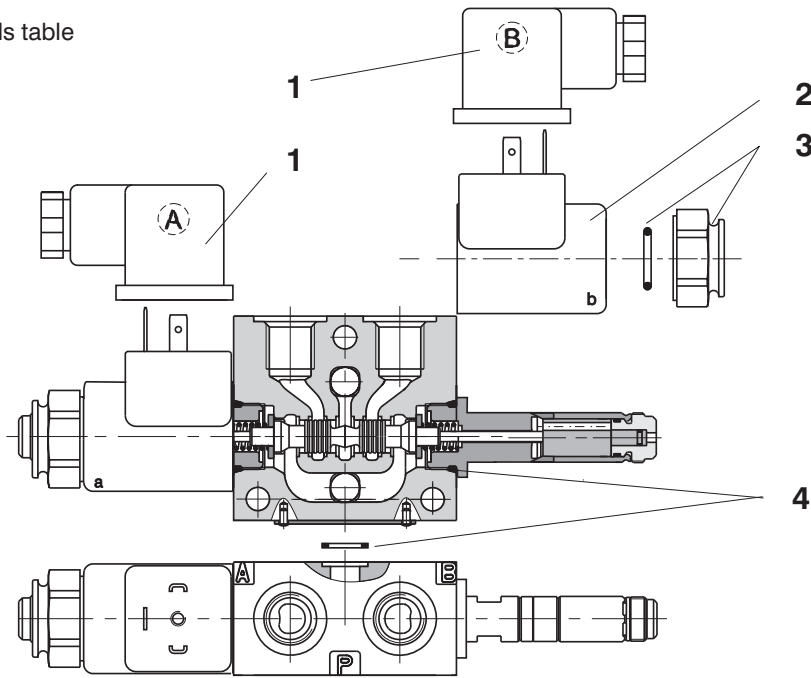
Example of simple block assembly with two to eight distributors, feeding block with a pressure relief valve and the end plate.

Dimensions

Number of section	1	2	3	4	5	6	7	8
Dimension A [mm]	87(3.425)	118(4.646)	149(5.866)	180(7.089)	211(8.307)	242(9.527)	273(10.748)	304(11.968)
Dimension B [mm]	114(4.488)	145(5.709)	176(6.929)	207(8.150)	238(9.370)	269(10.590)	300(11.811)	331(13.031)
Dimension L [mm]	60(2.362)	100(3.937)	133(5.236)	163(6.417)	194(7.638)	224(8.819)	256(10.079)	287(11.299)

Spare Parts

- 1 Electrical connector
- 2 Solenoid coil - see coils table
- 3 Nut with seal
- 4 Seal kit



Solenoid retaining nut with seal (Kit)

Type of the nut - Mu 3 Nm(2.21lbs-ft)	Seal ring	Ordering number
Standard nut	13 x 2	15691500
Manual Override N2		29269100

Electrical connector, EN 1745301-803

Type designation	Model	Max. input voltage	Connector A grey	Connector B black
			Ordering number	
K1	without rectifier - M16x1,5 bushing bore \varnothing 6-8 mm (0.236 - 0.315 in)	230 V AC/DC	16202200	16202100
K2	without rectifier with LED and quenching diode M16x1,5 bushing bore \varnothing 6-8 mm (0.236 - 0.315 in)	12...24 V DC	16202800	16202700
K3	with rectifier - M16x1,5 bushing bore \varnothing 6-8 mm (0.236 - 0.315 in)	230 V AC	16202400	16202300
K4	with rectifier with LED and quenching diode - M16x1,5 bushing bore \varnothing 6-8 mm (0.236 - 0.315 in)	230 V AC	16203000	16202900
K5	without rectifier - M16x1,5 bushing bore \varnothing 4-6 mm (0.158 - 0.236 in)	230 V AC/DC	16202600	16202500

Mounting Angle		Tightening torque	Ordering number
Kit	Mounting Angle (1 pc.)	12 Nm (8.85lbf-ft)	28799600
	Bold M6 x 12 (2 pcs.)		
	Washer 6 (2 pcs.)		

Spare Seal kit

see side 6

Coils table C14B

see side 7

Caution

- When the distributor contains two electromagnets any of the two electromagnets can be switched on only after the other one switches off.
- Distributors with other interconnections than those shown in the catalogue can be supplied on request.
- The packaging foil can be recycled
- The transport base plate can be returned to the manufacturer.
- The mentioned data only serve to describe the product and in no case are to be understood in terms of law as guaranteed characteristics.

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