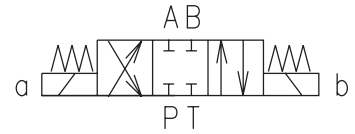


- 4/3-, 4/2- way directional control valves with solenoid control



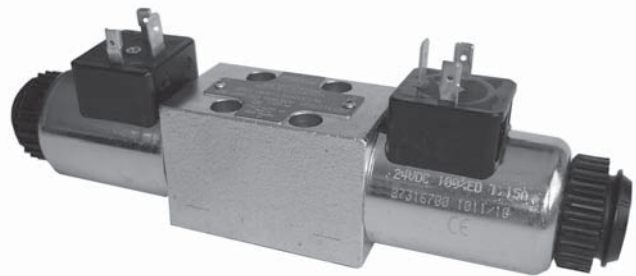
- Solenoids can be turned around their axis to any position

- Push button manual override

- Installation dimensions according to DIN 24 340 / ISO 4401 / CETOP RP121-H

- Subplates see data sheet HA 0002

- CSA Upon request ©



## Functional Description

The RPE3-04 directional control valves consist of cast iron housing (1), control spool (5) with two centering springs (4) and operating solenoids (2, 3).

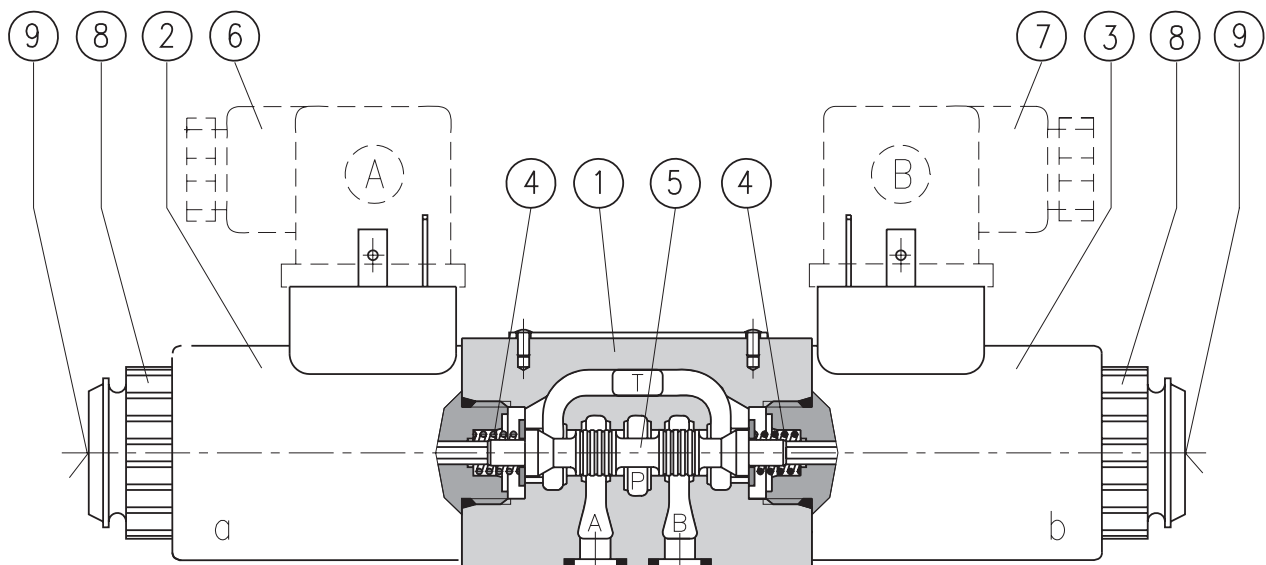
The three-position directional valves are fitted with two solenoids and two springs. Two-position directional valves have either one solenoid and one return spring or two solenoids and a detent assembly.

The operating solenoids are DC solenoids supplied through connectors A, B (6, 7). For AC supply the solenoids are provided with a rectifiers which are

integrated in the DIN connector socket as part of the solenoid. 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 363 PSI (25 bar).

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



# Ordering Code

**RPE3-04**   /

**Solenoid Operated  
Directional Control Valve**

**no designation**  
**V**

**Seals**  
NBR  
FPM (Viton)

**Nominal size**

**no designation**  
**D1**  
**D2**  
**D3**  
**D4**  
**D5**

**Orifice in P-Port**  
without orifice  
Ø0.8 mm (0.031 in)  
Ø1.0 mm (0.039 in)  
Ø1.2 mm (0.047 in)  
Ø1.5 mm (0.059 in)  
Ø0.7 mm (0.027 in)

**Number of valve positions**

two positions **2**  
three positions **3**

**Manual override**

**no designation**  
**N2**





standard  
covered with rubber protective boot

**Functional symbols**

see the table functional symbols

**Rated supply voltage of solenoids**

(at the coil terminals)

- 12 V DC / 2.41 A  **01200**
- 14 V DC / 1.66 A 01400
- 21 V DC / 1.14 A 02100
- 24 V DC / 1.16 A  **02400**
- 42 V DC / 0.59 A 04200
- 48 V DC / 0.56 A 04800
- 60 V DC / 0.41 A 06000
- 102 V DC / 0.24 A 10200
- 205 V DC / 0.12 A 20500
- 24 V AC / 1.44 A / 50 (60) Hz 02450
- 115V AC / 0.26 A / 50 (60) Hz  **11550**
- 230 V AC / 0.14 A / 50 (60) Hz  **23050**

The AC coils correspond with E5 type.

CSA Upon request 

**\*Electrical connector, EN 1745301-803**

**no designation** without connector  
**K1** connector without rectifier  
**K2** connector without rectifier with LED and quenching diode  
**K3** connector with rectifier  
**K4** connector with rectifier with LED and quenching diode  
**K5** connector without rectifier

**Type of solenoid coil**

**E1** with terminal for the connector, EN 1745301-803  
**E2** with terminal for the connector, EN 1745301-803 and quenching diode  
**E3** with AMP-Junior-Timer-connector  
**E4** with AMP-Junior-Timer-connector and quenching diode  
**E5** with integrated rectifier and with terminal for the connector, EN 1745301-803

Other coils on demand see catalog HA 8007

**Note:** Electrical connectors have to be ordered separately. See see pages 6 and 8.

Recommended solenoid coils used with electrical connector with rectifiers - type designation K3, K4

Rated supply source voltage (permissible rated voltage variation ± 10 %)	Type designation of the solenoid voltage
24 V AC / 1.44 A / 50 (60) Hz	02100
115 V AC / 0.26 A / 50 (60) Hz	10200
230 V AC / 0.14 A / 50 (60) Hz	20500

**FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE, FUNCTIONAL SYMBOLS AND TABLE OF PREFERRED TYPES ON PAGE 8**

Technical Data		
Valve size	mm (US)	D 04 (02)
Maximum flow	L/min (GPM)	see p-Q characteristics
Maximum operating pressure at ports P, A, B	bar (PSI)	320 (4600)
Maximum operating pressure at port T	bar (PSI)	210 (3045)
Pressure drop	bar (PSI)	see Δp-Q characteristics
Hydraulic fluid		Petroleum oils (HM, HL, HLP) Phosphate ester fluids (HFD-R)
Fluid temperature range (NBR / Viton)	°C (°F)	-30 ... +80 (-22 ... +176) / -20 ... +80 (-4 ... +176)
Ambient temperature, max.	°C (°F)	+50 (122)
Viscosity range	mm <sup>2</sup> /s (SUS)	20 ... 400 (98 ... 1840)
Maximum degree of fluid contamination		Class 21/18/15 to ISO 4406 (2006).
Maximum allowable voltage variation	%	AC: ±10                      DC: ±10
Maximum switching frequency	h <sup>-1</sup>	15 000
Switching time, ON; at v = 156 SUS (32 mm <sup>2</sup> /s)	ms	30 ... 50
Switching time, OFF; at v = 156 SUS (32 mm <sup>2</sup> /s)	ms	AC: 70 ... 100                      DC: 30 ... 50
Duty cycle	%	100
Service life	cycles	10 <sup>7</sup>
Enclosure type to EN 60 529		IP 65
Weight - valve with 1 solenoid - valve with 2 solenoid	kg (lbs)	0.9 (1.978) 1.25 (2.747)
Mounting position		any

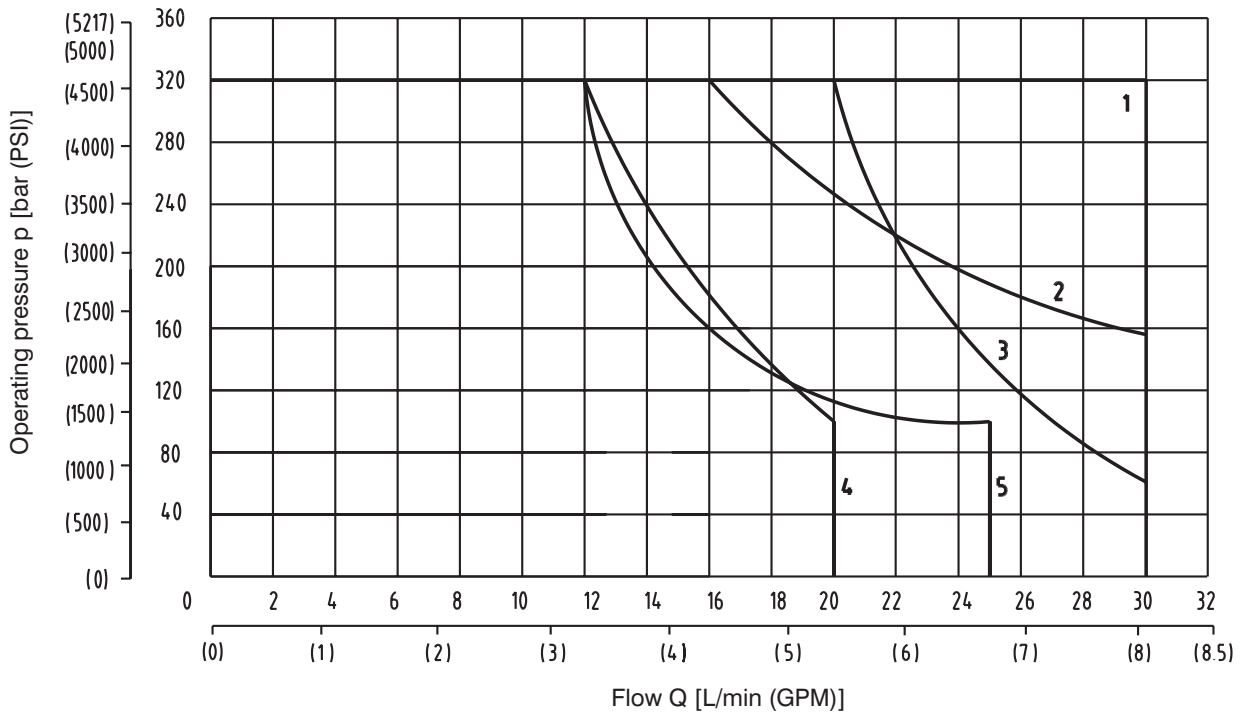
### Spool Symbols

Type	Symbol	Crossover	Type	Symbol	Crossover
Z11			P51		
C11			Y51		
H11			C51		
P11			Z51		
Y11			Z11		
L21			X11		
B11			C11		
Y71			H11		
R11			J15		
R21			J75		
A51					

# 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. For respective spool type - see spool symbols.

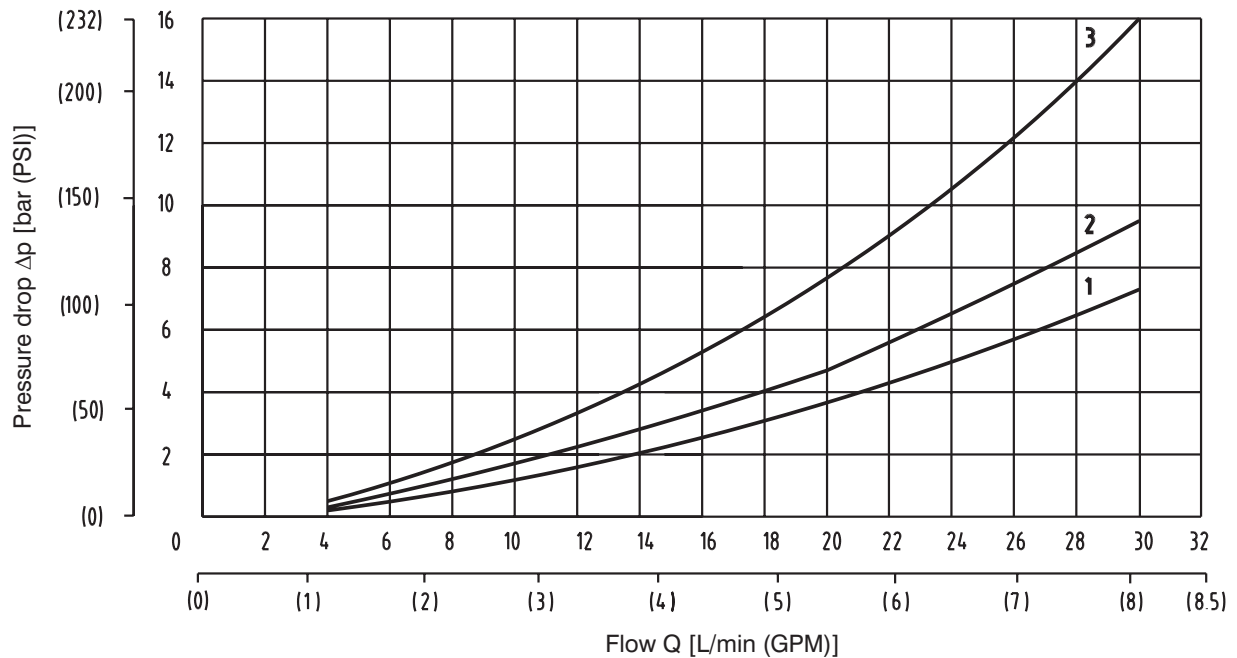


Z11	C11	H11	P11	Y11	L21	B11	Y71	R11	R21	A51	P51	Y51	C51	Z51	X11	J15	J75
1	2	1	1	1	4	1	5	1	3	4	1	1	2	1	1	1	4

# Δp-Q Characteristic

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

Pressure drop  $\Delta p$  related to flow rate.

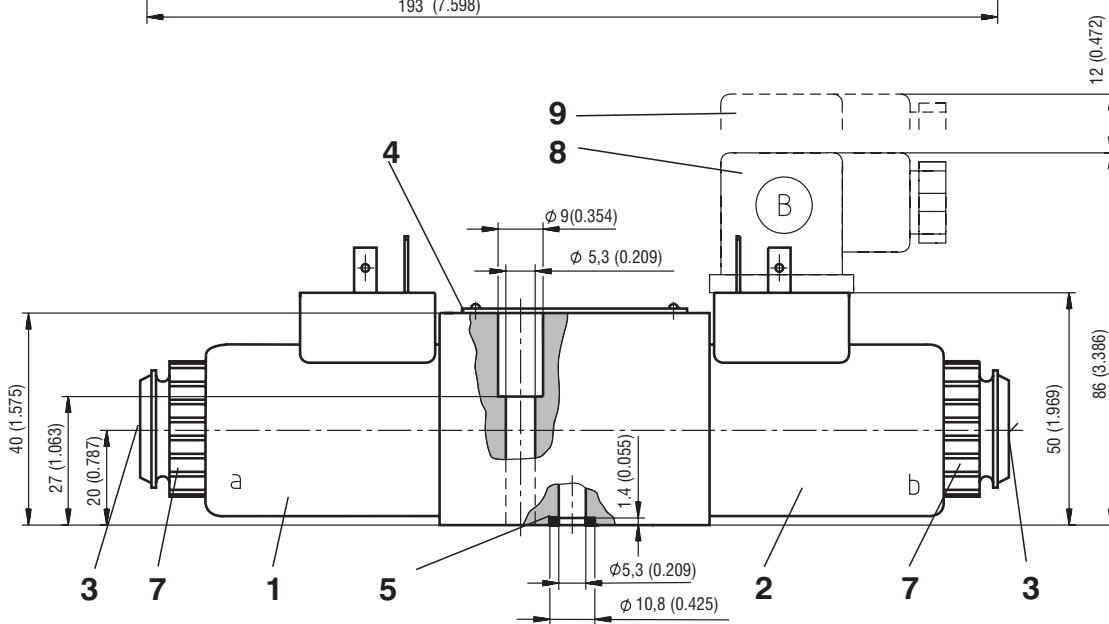
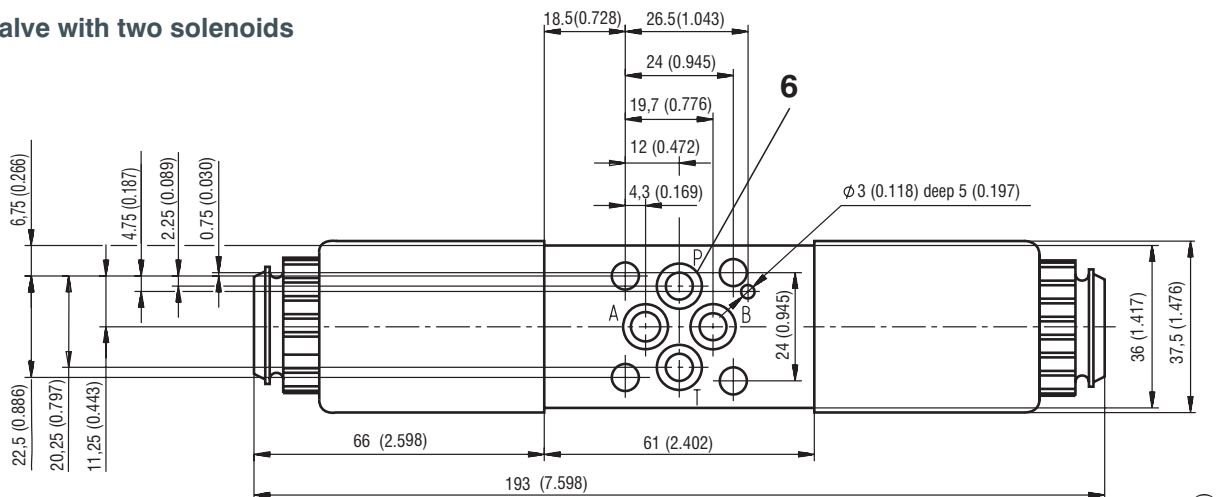


	Z11	C11	H11	P11	Y11	L21	B11	Y71	R11	R21	A51	P51	Y51	C51	Z51	X11	J15	J75
P-A	1	3	1	1	1	1	1	2	2	2	1			3		2	2	1
P-B	1	3	1	1	1	1	1		2	2	1	1	1		1	2	2	1
A-T	1	3	1	1	1	1	1	2	2	2		1	1		1	2	2	
B-T	1	3	1	1	1	1	1	1	2	2				3		2	2	
P-T		2	2											2				

# Valve Dimensions

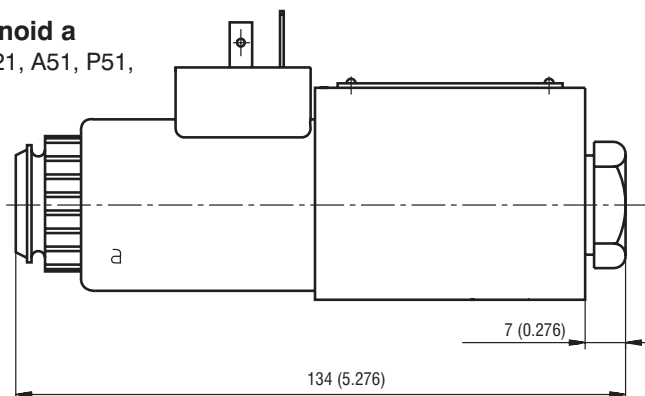
Dimensions in millimeters (inches)

## Valve with two solenoids



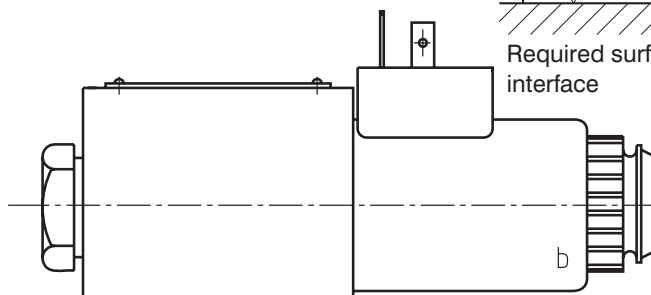
## Valve with one solenoid a

Spool symbols R11, R21, A51, P51, Y51, C51, Z51



## Valve with one solenoid b

Spool symbols Z11, X11, C11, H11



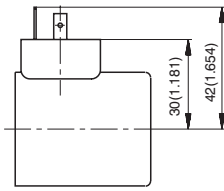
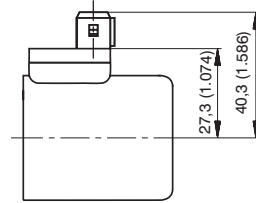
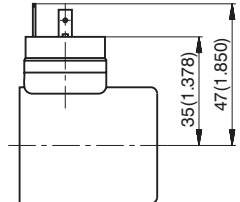
- 1 Solenoid a [(Nut torque 2.21 ft-lbs. (3Nm))]
- 2 Solenoid b [(Nut torque 2.21 ft-lbs. (3Nm))]
- 3 Manual override
- 4 Name plate
- 5 Square ring 7.65 x 1.68 (4 pcs.) supplied with valve
- 6 4 mounting holes
- 7 Retaining nut of the solenoid
- 8 Electrical connector, DIN EN1745301-803
- 9 Space required to remove connector

	0.0004 / 4.0 [in]
	0.01 / 100 [mm]


0,8(32) Rmax 6,3(248) [µm(µin)]

Required surface finish of interface

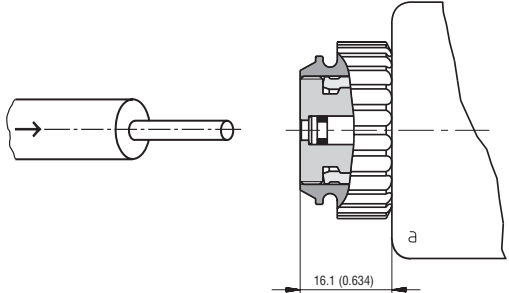
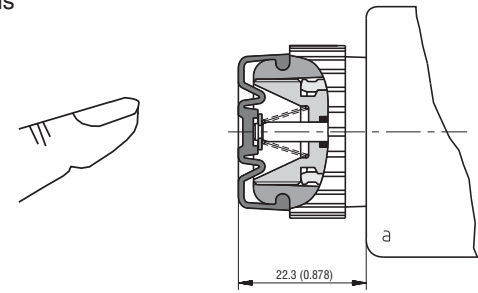
## Type of the Solenoid Coil

Type	Dimensions	Description
<b>E1</b>		Solenoid coil with terminal for the electrical connector, EN 1745301-803
<b>E2</b>		Solenoid coil with integrated quenching diode (bipolar transistor diode) and terminal for the electrical connector, EN 1745301-803
<b>E3</b>		Solenoid coil with terminal for AMP-Junior-Timer electrical connector.
<b>E4</b>		Solenoid coil with integrated quenching diode (bipolar transistor diode) and terminal for AMP-Junior-Timer electrical connector.
<b>E5</b>		Solenoid coil with integrated rectifier and terminal for the electrical connector, EN 1745301-803

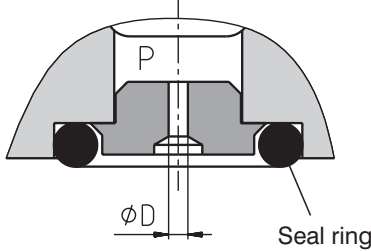
## Electrical connector, EN1745301-803

Description	Description (see page 8 for order numbers)	Max. input voltage	Model	
<b>K1</b>	Connector B (black)	230 V AC/DC	without rectifier - M16x1.5 bushing bore $\varnothing$ 6-8 mm (0.24-0.31 in)	
	Connector A (grey)			
<b>K5</b>	Connector B (black)	230 V AC/DC	without rectifier - M16x1.5 bushing bore $\varnothing$ 4-6 mm (0.16-0.24 in)	
	Connector A (grey)			
<b>K3</b>	Connector B (black)	230 V AC/DC	without rectifier 1/2 NPTF bushing bore $\varnothing$ 6-8 mm (0.24-0.31 in)	
	Connector A (grey)			
<b>K2</b>	Connector B (black)	230 V AC/DC	with rectifier M16x1.5 bushing bore $\varnothing$ 6-8 mm (0.24-0.31 in)	
	Connector A (grey)			
<b>K4</b>	Connector B (black)	12 ... 24 V DC	with rectifier 1/2 NPTF bushing bore $\varnothing$ 6-8 mm (0.24-0.31 in)	
	Connector A (grey)			

## Manual override

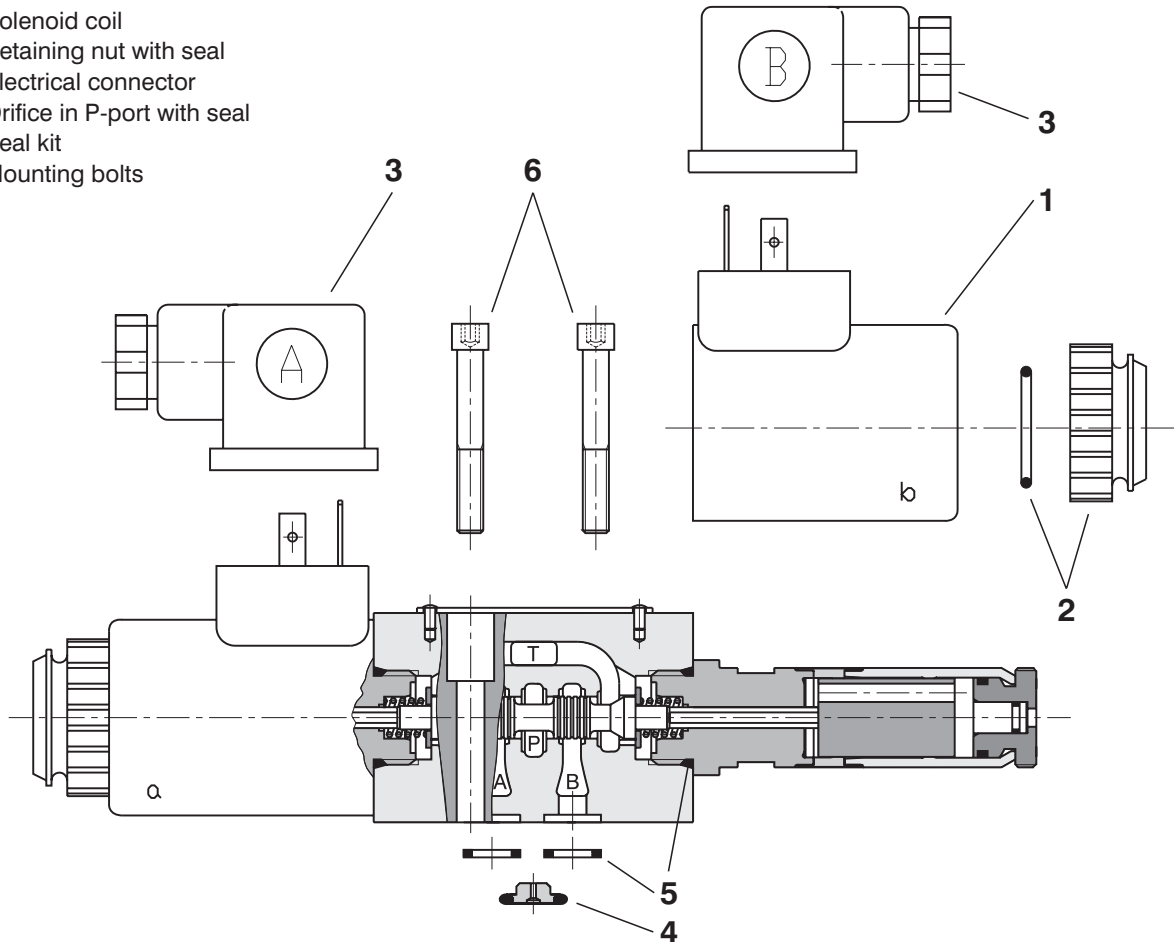
STANDARD	RUBBER BOOT
<p><b>no designation</b> Dimensions</p>  <p>Standard model of manual override. Standard retaining nut of the solenoid.</p>	<p>Type <b>N2</b> Dimensions</p>  <p>Manual override protected by rubber boot.</p>

### Orifice in P-Port

Type	∅D mm (inch)		P-port orifices limits the flow into the directional control valve. <b>Attention:</b> When the orifice in P port is additionally mounted the standard used square ring NBR is replaced with O-ring from Viton.
<b>D1</b>	0,8 (0.032)		
<b>D2</b>	1,0 (0.040)		
<b>D3</b>	1,2 (0.047)		
<b>D4</b>	1,5 (0.059)		
<b>D5</b>	0,7 (0.028)		

### Spare Parts

- 1 Solenoid coil
- 2 Retaining nut with seal
- 3 Electrical connector
- 4 Orifice in P-port with seal
- 5 Seal kit
- 6 Mounting bolts



#### Solenoid coil

Type designation	Type of the coil				
	E1	E2	E3	E4	E5
	Ordering number				
01200	27316600	27631400	27330200	27631600	
*01200	24140700				
02400	27316700	27632400	27449700	27633400	
*02400	24140800				
20500	27382400	-	-	-	
23050					27449900
*23050					24141000

#### Solenoid retaining nut with seal

Type of the nut	Seal ring	Ordering number
Standard nut	18 x 1.5	15874500
Nut with rubber boot		15874800

\* CSA Upon request 

Electrical connector, EN 175301-803		
Type designation	Connector A grey	Connector B black
	Ordering number	
K1	16202200	16202100
K5	16202600	16202500
K2	16202800	16202700
K3	16202400	16202300
K4	16203000	16202900

Orifice in P-Port			
Type designation	∅D mm (in)	Seal ring	Ordering number
D1	0.8 (0.031)	7.65 x 1.78	15874000
D2	1.0 (0.039)		15874100
D3	1.2 (0.047)		15874200
D4	1.5 (0.059)		15874300
D5	0.7 (0.027)		15874900

Seal kit			
Type	Dimensions, number		Ordering number
	Square ring	O-ring	
Standard NBR70	7.65 x 1.68 (4 pcs.)	16 x 2 (2 pcs.)	15873800
Viton	7.65 x 1.78 (4 pcs.)	16 x 2 (2 pcs.)	15874400

Mounting bolts		
Dimensions, number	Tightening torque	Ordering number
M5 x 35 DIN 912-10.9 (4 pcs.)	5 Nm (3.68 lbf . ft)	15874600

## Preferred Types of Valves

Type	Ordering number	Type	Ordering number
RPE3-042Z11/01200E1	16711100	RPE3-042R11/02400E1	15855300
RPE3-043Z11/01200E1	15849000	RPE3-042R21/02400E1	15855700
RPE3-043C11/01200E1	15849900	RPE3-042A51/02400E1	15855200
RPE3-043H11/01200E1	15850300	RPE3-042Y51/02400E1	15855100
RPE3-043Y11/01200E1	15850500	RPE3-042J15/02400E1	15856600
RPE3-042R11/01200E1	15851900	RPE3-042Z11/23050E5	21714900
RPE3-042R21/01200E1	16711000	RPE3-043Z11/23050E5	16712400
RPE3-042A51/01200E1	16710900	RPE3-043C11/23050E5	16712700
RPE3-042Y51/01200E1	15851800	RPE3-043H11/23050E5	15858800
RPE3-042J15/01200E1	16711400	RPE3-043Y11/23050E5	16712500
RPE3-042Z11/02400E1	15855900	RPE3-042R11/23050E5	15859100
RPE3-043Z11/02400E1	15852200	RPE3-042R21/23050E5	21764800
RPE3-043C11/02400E1	15852800	RPE3-042A51/23050E5	16712600
RPE3-043H11/02400E1	15853200	RPE3-042Y51/23050E5	21785500
RPE3-043Y11/02400E1	15853600	RPE3-042J15/23050E5	21785600

## Caution!

- When the distributor contains two electromagnets any of the two electromagnets can be switched on only after the other one switches off. The electromagnets switching time on distributors with locking arrangement must not be shorter than 60 ms.
- 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.
- Mounting screws M5 x 35 DIN 912-10.9 or bolts must be ordered separately.  
The screws tightening torque is 5 Nm (3.68 lbf . ft).
- 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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