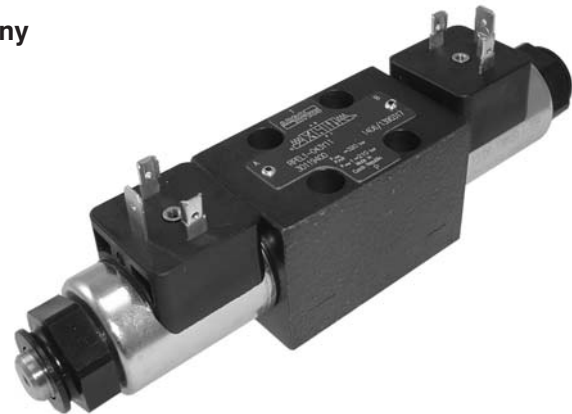
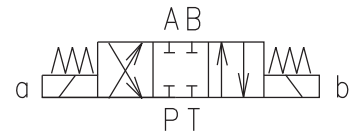


- 4/3-, 4/2- and 3/2-way directional control valves with solenoid control
- Solenoids can be turned around their axis to any position
- Push button manual override
- Installation dimensions according to ISO 4401 CETOP - RP 121H
- Subplates see data sheet HA 0002



## Functional Description

The RPEL1-04 directional control valves consist of cast iron housing (1), control spool (5) with two centering springs (4) and operating solenoids (2, 3).

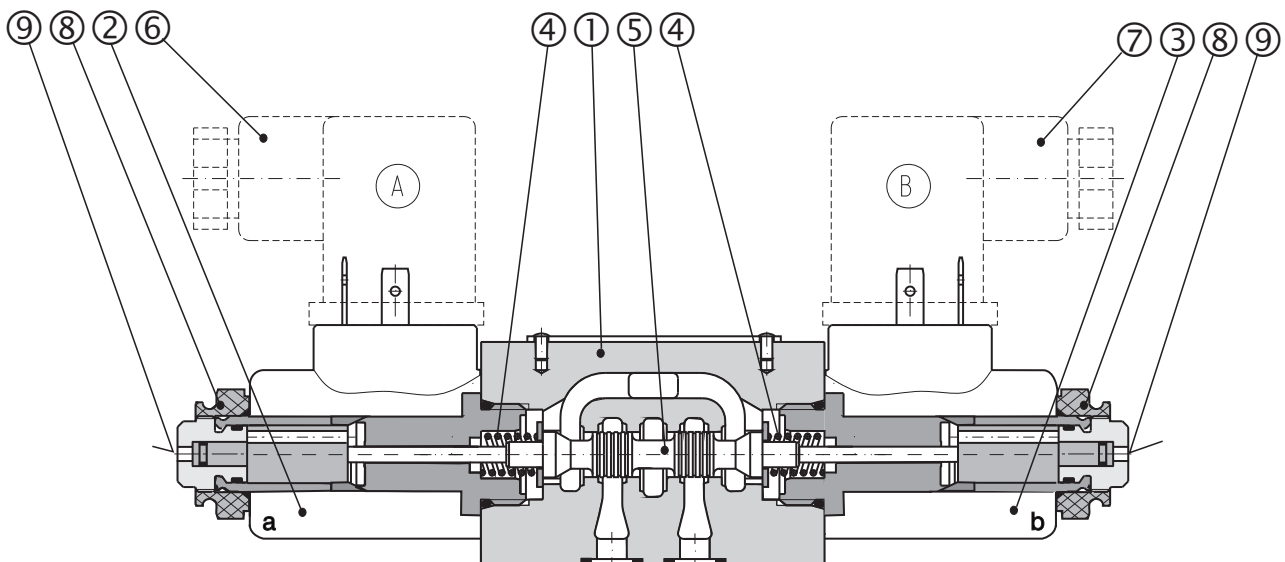
The three-position directional valves are fitted with two solenoids and two springs. Two-position directional valves have either one solenoid and one return spring or two solenoids and a detent assembly.

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 25 bar (363 PSI).

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



# Ordering Code

RPEL1-04   /

**Solenoid Operated  
Directional Control Valve**

**Nominal size**

**Number of valve positions**

two positions  
three positions

**2**  
**3**

**Functional symbols**

see the table functional symbols

**Rated supply voltage of solenoids**

(at the coil terminals)

12 V DC / 1,83 A

24 V DC / 0,92 A

\*205 V DC / 0,08 A

Other voltages per request

**01200**

**02400**

**20500**

No designation

**V**

**Seals**

NBR

FPM (Viton)

**Type of the solenoid coil**

**E1**

with the connector to EN 1745301-803-A

**E2**

with the integrated quenching diode and

the connector to EN 1745301-803-A

**E3**

with the connector AMP-Junior-Timer 2 PIN

**E4**

with integrated quenching diode and

the connector AMP-Junior-Timer 2 PIN

**E12**

with the connector Deutsch DT04-2P

**E13**

with integrated quenching diode and

the connector Deutsch DT04-2P

For selection of the solenoid coil and the terminal box type  
use catalogue HA 8007.

Voltage of Recommended solenoid coils used with electrical connector with rectifiers - see page 3

Rated supply source voltage  
(permissible rated voltage variation  $\pm 10\%$ )

Type designation of the solenoid voltage

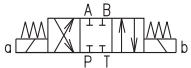
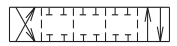


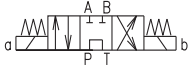
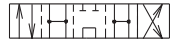





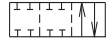



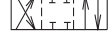
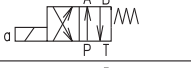







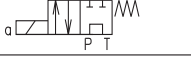


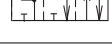
230 V AC / 0.20 A / 50 (60) Hz

20500

## Technical Data

Nominal size	mm(US)	04 (D 02)	
Maximum flow	l/min (GPM)	see p-Q characteristics	
Maximum operating pressure at ports P, A, B	bar (PSI)	250 (3600)	
Maximum operating pressure at port T	bar (PSI)	100 (1450)	
Pressure drop	bar (PSI)	see $\Delta p$ -Q characteristics	
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524	
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 (1999)	
Maximum allowable voltage variation	%	AC: $\pm 10$	DC: $\pm 10$
Coil design see HA 8007		C14B	
Maximum switching frequency	1/h	15 000	
Switching time, ON; at n = 156 SUS (32 mm <sup>2</sup> /s)	ms	30 ... 50	
Switching time, OFF; at n = 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		E1; E2	E3A; E4A
		IP 65	IP 65
Weight	- valve with 1 solenoid	0,75 (1.65)	
	- valve with 2 solenoid	0,9 (1.98)	
Mounting position	kg (lbs)	unrestricted	

# Functional Symbols

Type	Symbol	Crossover	Type	Symbol	Crossover
Z11			Z51		
C11			H51		
H11			Z11		
Y11			X11		
R11			C11		
Y51			H11		
C51			Y11		

## Dimensions of Coils C14

Dimensions in millimeters (inches)

### Connector design

#### E1, E2

EN 175301-803-A

Protection degree IP65

#### E3A, E4A

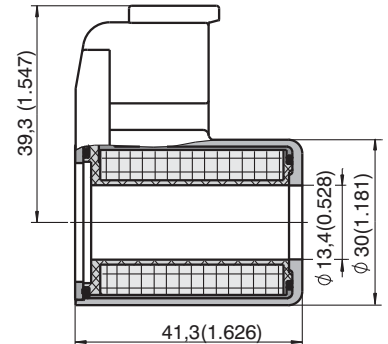
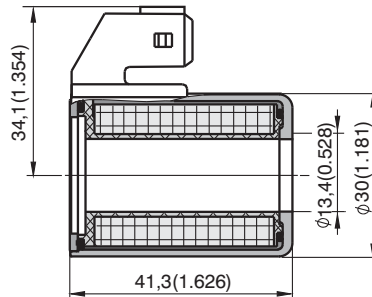
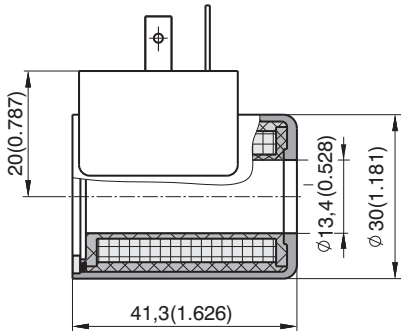
AMP Junior Timer

Protection degree IP65

#### E12, E13

Deutsch DT04-2P

Protection degree IP67, IP69



### Coils C14B

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

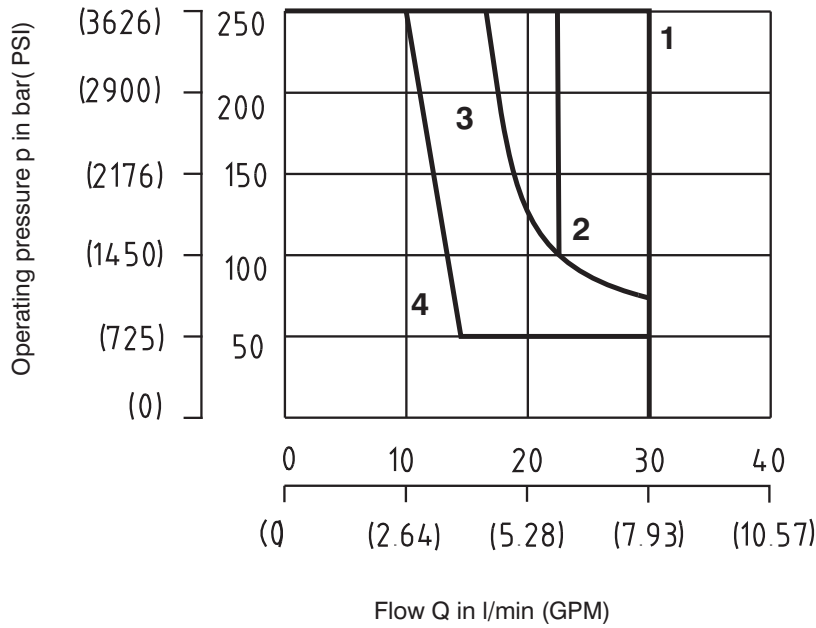
#### Note:

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

### p-Q Characteristic

Measured at  $v = 32 \text{ mm}^2/\text{s}$  (156 SUS) and  $t = 40 \text{ }^\circ\text{C}$  (104  $^\circ\text{F}$ )

Operating limits for maximum hydraulic power transferred by the directional valve. For respective spool type - see spool symbols.

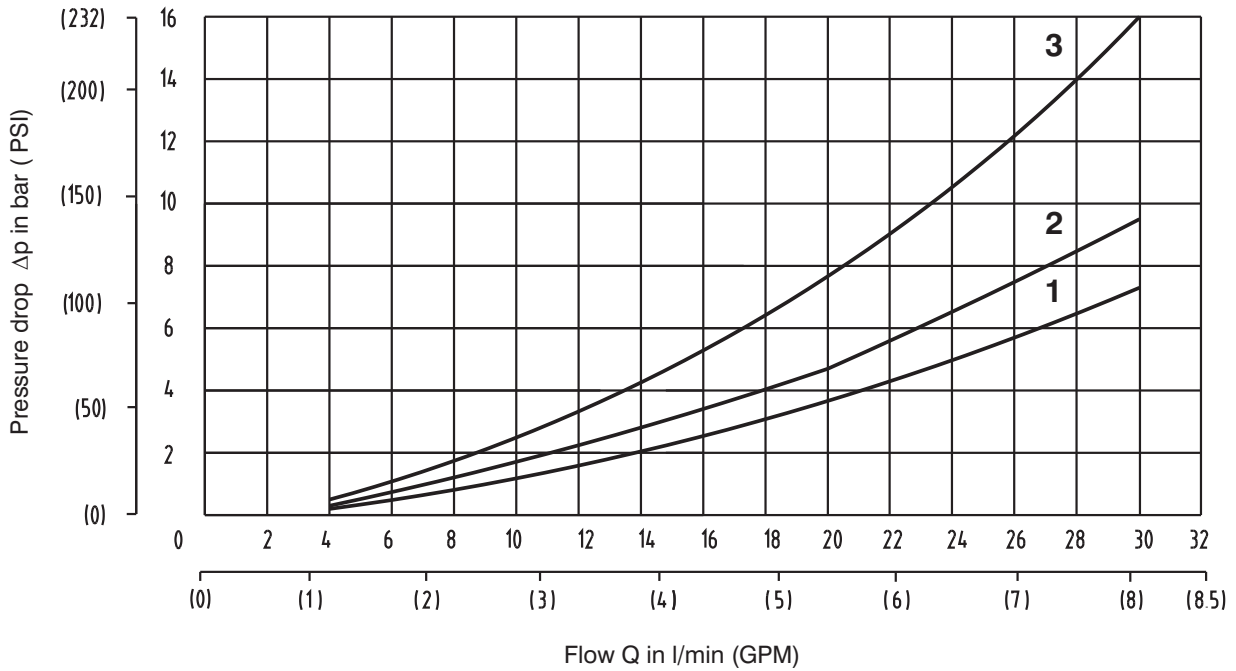


Z11	C11	H11	Y11	R11	X11	Z51	C51	H51	Y51
1	4	1	3	2	2	1	4	1	3

### $\Delta p$ -Q Characteristic

Measured at  $v = 32 \text{ mm}^2/\text{s}$  (156 SUS) and  $t = 40 \text{ }^\circ\text{C}$  (104  $^\circ\text{F}$ )

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

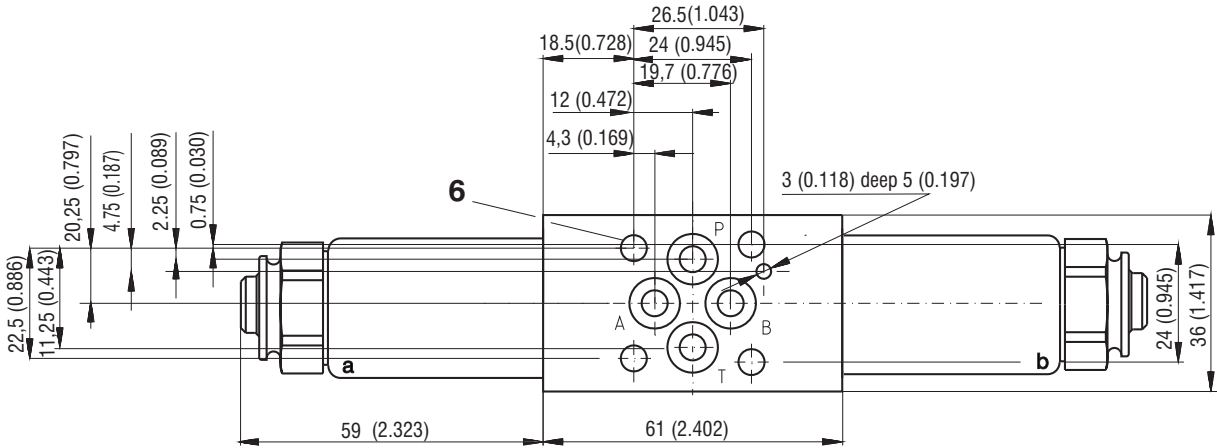


	Z11	C11	H11	Y11	R11	X11	Z51	C51	H51	Y51
P-A	1	3	1	1	2	2		3		
P-B	1	3	1	1	2	2	1		1	1
A-T	1	3	1	1	2	2	1		1	1
B-T	1	3	1	1	2	2		3		
P-T		2	2					2		

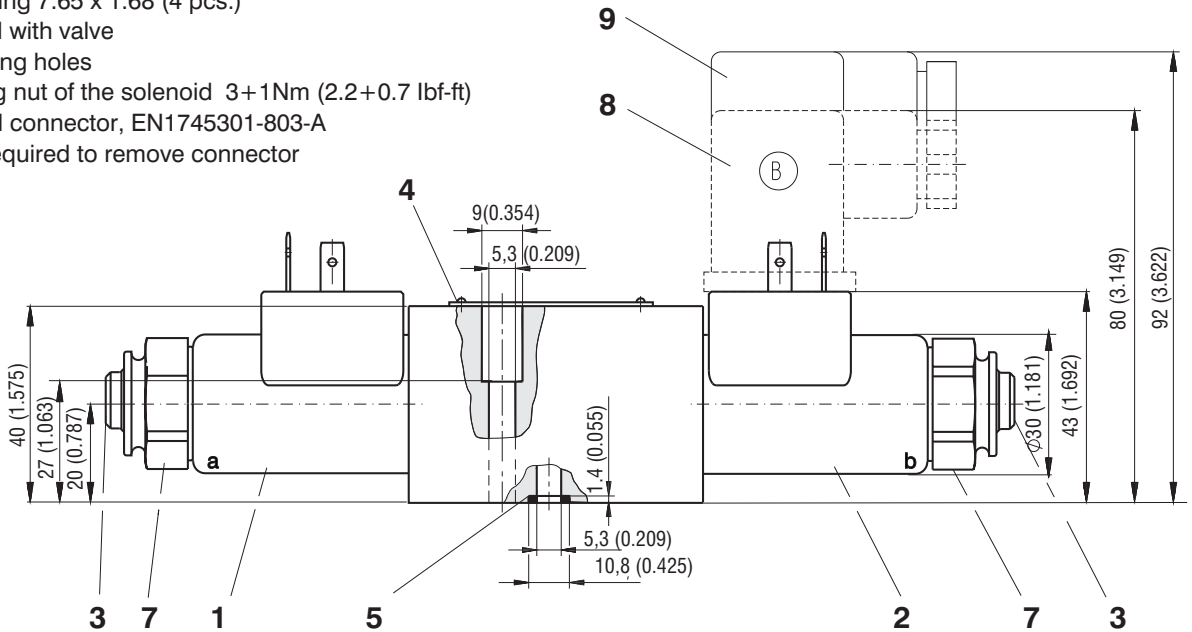
# Valve Dimensions

Dimensions in millimeters and inches

## Valve with two solenoids

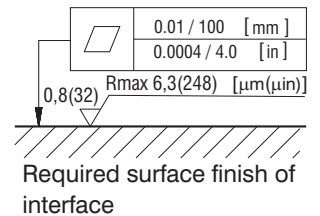
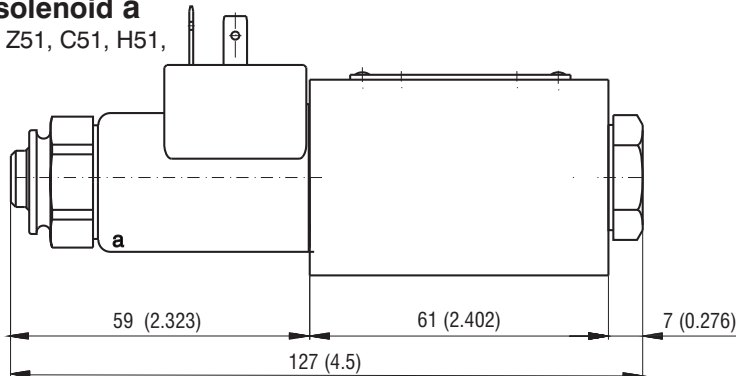


- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square ring 7.65 x 1.68 (4 pcs.)  
supplied with valve
- 6 4 mounting holes
- 7 Retaining nut of the solenoid 3+1Nm (2.2+0.7 lbf-ft)
- 8 Electrical connector, EN1745301-803-A
- 9 Space required to remove connector



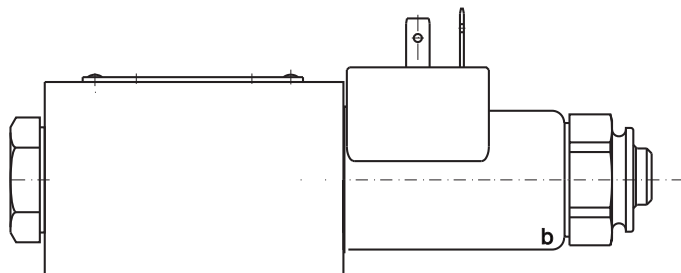
## Valve with one solenoid a

Spool symbols R11, Z51, C51, H51, Y51



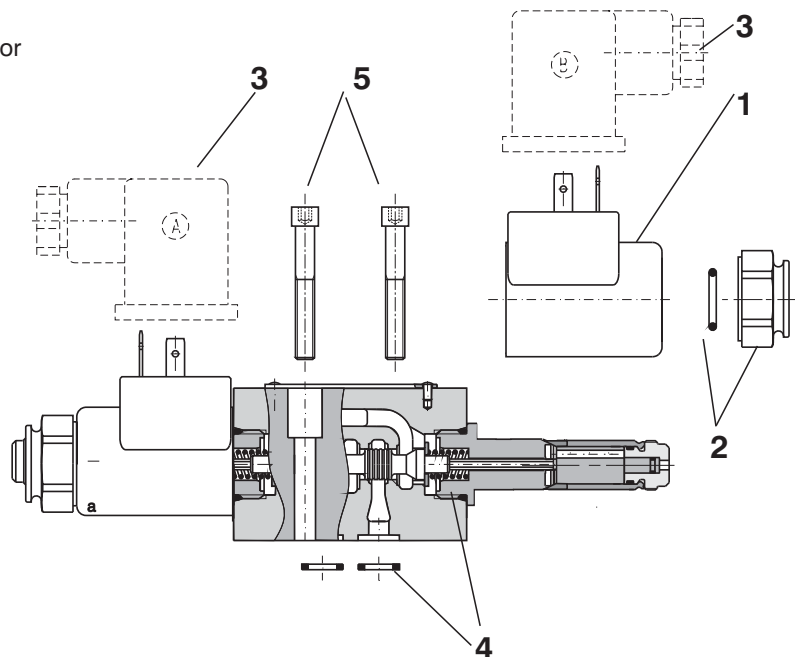
## Valve with one solenoid b

Spool symbols X11, Z11, C11, H11, Y11



## Spare Parts

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



### Electrical connector, EN 1745301-803-A

Type designation	Model	Max. input voltage	Connector A	Connector B
			Gray	Black
Ordering number (kit)				
K1	without rectifier - M16x1.5, bushing bore $\varnothing$ 0.24-0.31 in ( $\varnothing$ 6-8 mm)	230 V AC/DC	16202200	16202100
K2	without rectifier with LED and quenching diode - M16x1.5, bushing bore $\varnothing$ 0.24-0.31 in ( $\varnothing$ 6-8 mm)	12...24 V DC	16202800	16202700
K3	with rectifier - M16x1.5, bushing bore $\varnothing$ 0.24-0.31 in ( $\varnothing$ 6-8 mm)	230 V AC	16202400	16202300
K4	with rectifier with LED and quenching diode - M16x1.5, bushing bore $\varnothing$ 0.24-0.31 in ( $\varnothing$ 6-8 mm)	230 V AC	16203000	16202900
K5	without rectifier - M16x1.5, bushing bore $\varnothing$ 0.16-0.24 in ( $\varnothing$ 4-6 mm)	230 V AC/DC	16202600	16202500

### Seal kit

Type	Dimensions, quantity		Ordering number (kit)
	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 (kit)

Dimensions, number	Bolt torque	Ordering number (kit)
M5 x 35 DIN 912-10.9 (4 pcs)	5+2 Nm (3.7+1.5 lbf-ft)	15874600

## Caution!

- For directional valves with two solenoids, one solenoid must be without power before the other solenoid can be powered. Switching time for directional valves with detent assembly (impulse control) should not be shorter than 60 ms.
- Other functional symbols on request.
- The packing foil is recyclable.
- Mounting bolts M5 x 35 EN 1745301-803-A or studs must be ordered separately.
- Tightening torque of the bolts is 5+2 Nm (3.7+1.5 lbf-ft).
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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