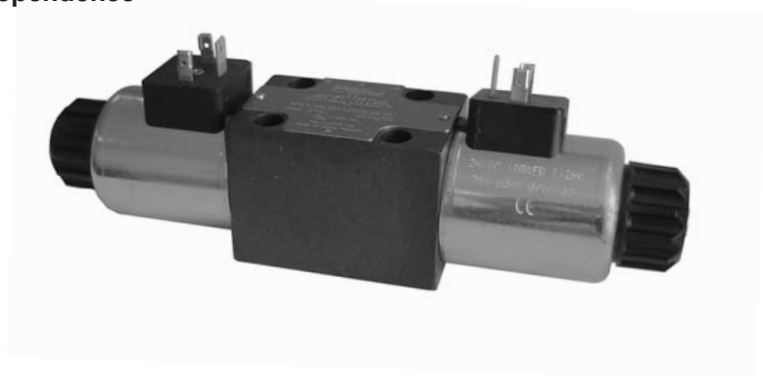
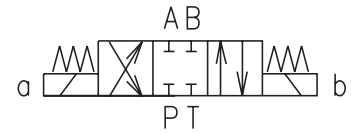


- 4/3, 4/2 way directional control valves
- Solenoids can be turned around their axis to any position
- Four-land spool - reduced functional dependence on fluid viscosity
- Push button manual override
- Installation dimensions to DIN 24 340 / ISO 4401 / CETOP RP121-H
- Subplates see data sheet HA 0002
- CSA Upon request



Functional Description

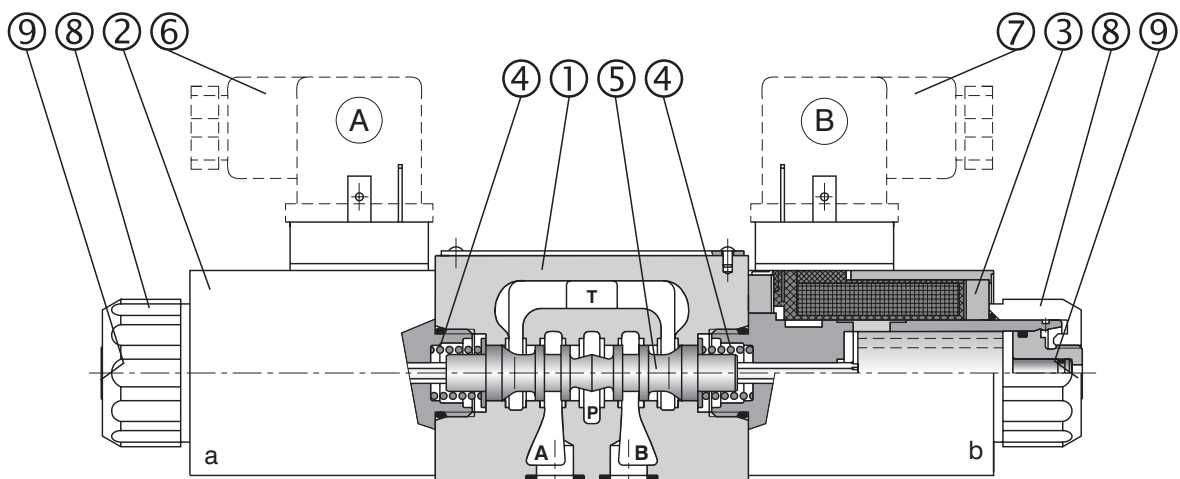
The RPE3 directional control valves consist of housing (1), a control spool (5) with two centering springs (4) and cylindrical operating solenoids (2, 3).

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

The operating solenoids are DC solenoids. For AC supply the solenoids are provided with a rectifier, which

is integrated directly into the connectors A, B (6, 7) or inside the coil. The connectors (6, 7) can be turned by 90°. By loosening the nut (8), the solenoids can be turned or replaced without interfering with any seals of the valve. In the case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override (9), provided the pressure in T-port does not exceed 25 bar.

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



Ordering Code

RPE3-06 /

Solenoid Operated Directional Control Valve




Nominal size

Number of operating positions
 two positions **2**
 three positions **3**

Functional symbols
 see the table Functional symbols

Rated supply voltage of solenoids

(at the coil terminals)

| | | |
|--------------------------------|---|--------------|
| 12 V DC / 2.72 A |  | 01200 |
| 24 V DC / 1.29 A |  | 02400 |
| 205 V DC / 0.15 A | | 20500 |
| 24 V AC / 1.54 A / 50 (60) Hz | | 02450 |
| 230 V AC / 0.17 A / 50 (60) Hz |  | 23050 |

The AC coils correspond with E5 type
 CSA Upon request 

Type of solenoid coil

| | |
|--|------------|
| with terminal for the connector, EN 1745301-803 | E1 |
| with integrated quenching diode and terminal for the connector, EN 1745301-803 | E2 |
| with AMP-Junior-Timer-connector | E3A |
| with integrated quenching diode and terminal for AMP-Junior-Timer connector | E4A |
| with integrated rectifier and terminal for the connector, EN 1745301-803 | E5 |

Sensing of the end position
no designation without sensor
S1 normally-open sensor to 50bar
S2 normally-open sensor to 210bar
S4 normally-closed sensor to 50bar

Seals
no designation NBR
V FPM (Viton)

Orifice in P port
no designation without orifice
D1 Ø1.0 mm
D2 Ø1.5 mm
D3 Ø2.0 mm
D4 Ø2.2 mm
D5 Ø2.5 mm

Spool speed control orifice
no designation without damping
T1 orifice Ø0.7 mm in solenoid

Manual override
no designation standard
N1 covered with retaining nut
N2 covered with rubber boot
N3 with detent assembly

Note: Connector of the position sensor **is not supplied**
 (see ordering number on page 10)

FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE, FUNCTIONAL SYMBOLS AND TABLE OF PREFERRED TYPES ON PAGE 10

Technical Data

| | | | |
|---|--------------------|---|---------------|
| Nominal size | mm | 06 | |
| Maximum flow | L/min | see p-Q characteristics | |
| Max. operating pressure at porte P, A, B | bar | 320 | |
| Max. operating pressure at port T | bar | 210, 50 for version S1 , S2 and 210 for version S4 | |
| Pressure drop | bar | see Δp-Q characteristics | |
| Hydraulic fluid | | Hydraulic oils of power classes (HL, HLP) to DIN 51524 | |
| Fluid temperature range for NBR/FPM seals | °C | -30 ... +80 / -20 ... +80 | |
| Ambient temperature, max. | °C | +50 | |
| Viscosity range | mm ² /s | 20 ... 400 | |
| Maximum degree of fluid contamination | | Class 21/18/15 to ISO 4406 (1999) | |
| Max. allowable voltage variation | % | DC: ±10 | AC: ±10 |
| Max. switching frequency | 1/h | 15 000 | |
| Switching time, on: at v=32 mm ² /s | ms | DC: 30 ... 50 | AC: 30 ... 40 |
| Switching time, off: at v=32 mm ² /s | ms | DC: 10 ... 50 | AC: 30 ... 70 |
| Duty cycle | % | 100 | |
| Service life | cycles | 10 ⁷ | |
| Enclosure type to EN 60 529 | | IP 65 | |
| Weight - valve with 1 solenoid | kg | 1.6 | |
| - valve with 2 solenoids | | 2.2 | |
| Mounting position | | optional | |

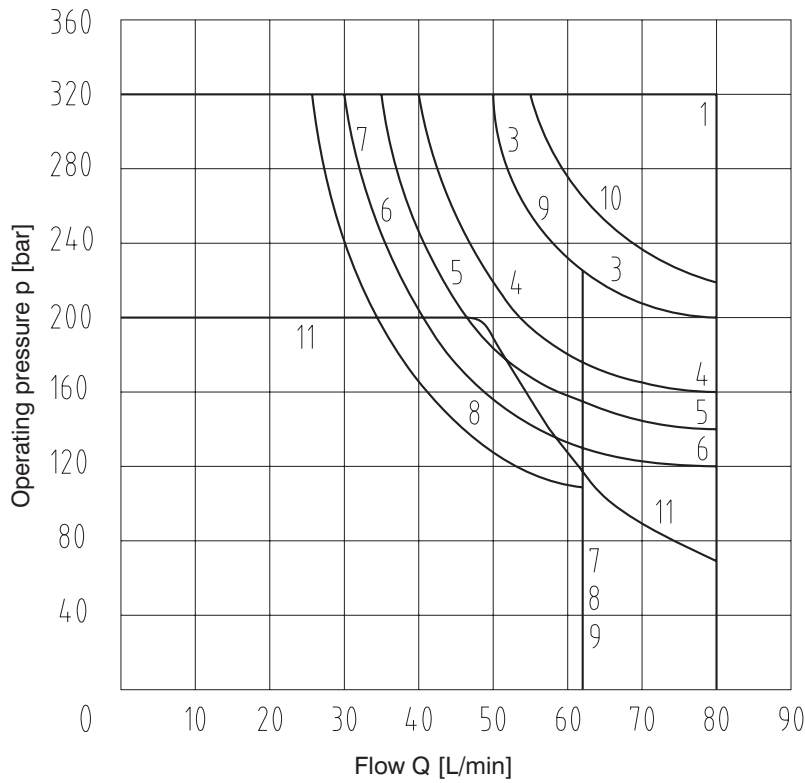
Functional Symbols

| Designation | Symbol | Interposition | Designation | Symbol | Interposition |
|-------------|--------|---------------|-------------|--------|---------------|
| Z11 | | | Z51 | | |
| C11 | | | Z71 | | |
| H11 | | | Z81 | | |
| P11 | | | Z91 | | |
| Y11 | | | R31 | | |
| L21 | | | H51 | | |
| B11 | | | F51 | | |
| Y41 | | | Z11 | | |
| Z21 | | | X11 | | |
| C41 | | | C11 | | |
| F11 | | | H11 | | |
| R11 | | | K11 | | |
| R21 | | | N11 | | |
| A51 | | | F11 | | |
| P51 | | | X25 | | |
| Y51 | | | J15 | | |
| C51 | | | J75 | | |

p-Q Characteristics

Measured at $v = 32 \text{ mm}^2/\text{s}$

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

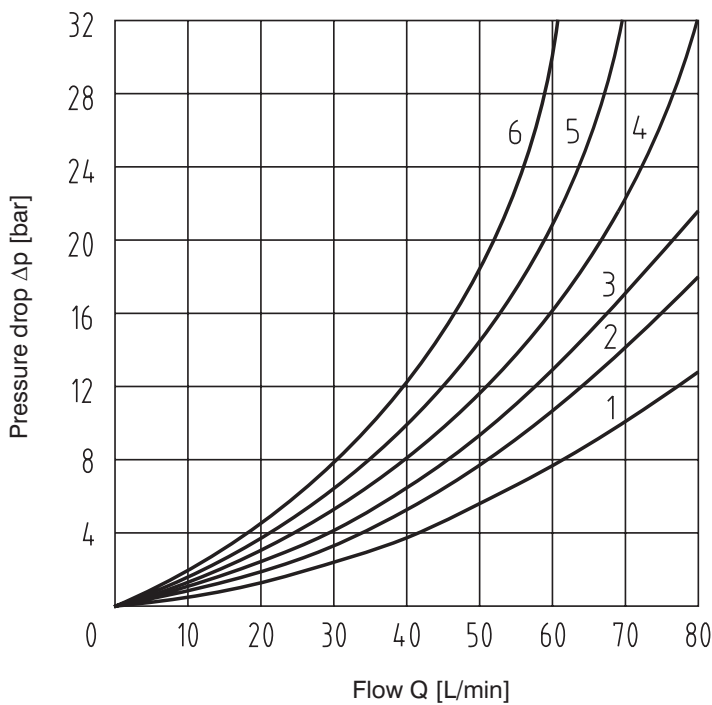


| | |
|-----|----|
| Z11 | 1 |
| C11 | 7 |
| H11 | 4 |
| P11 | 1 |
| Y11 | 3 |
| L21 | 6 |
| B11 | 9 |
| Y41 | 7 |
| Z21 | 1 |
| C41 | 6 |
| F11 | 6 |
| R11 | 4 |
| R21 | 5 |
| A51 | 6 |
| P51 | 1 |
| Y51 | 3 |
| C51 | 7 |
| Z51 | 1 |
| Z71 | 8 |
| Z81 | 8 |
| Z91 | 8 |
| R31 | 6 |
| H51 | 8 |
| F51 | 8 |
| X11 | 4 |
| K11 | 8 |
| N11 | 8 |
| X25 | 11 |
| J15 | 1 |
| J75 | 10 |

Δp-Q Characteristics

Measured at $v = 32 \text{ mm}^2/\text{s}$

Pressure drop Δp related to flow rate.

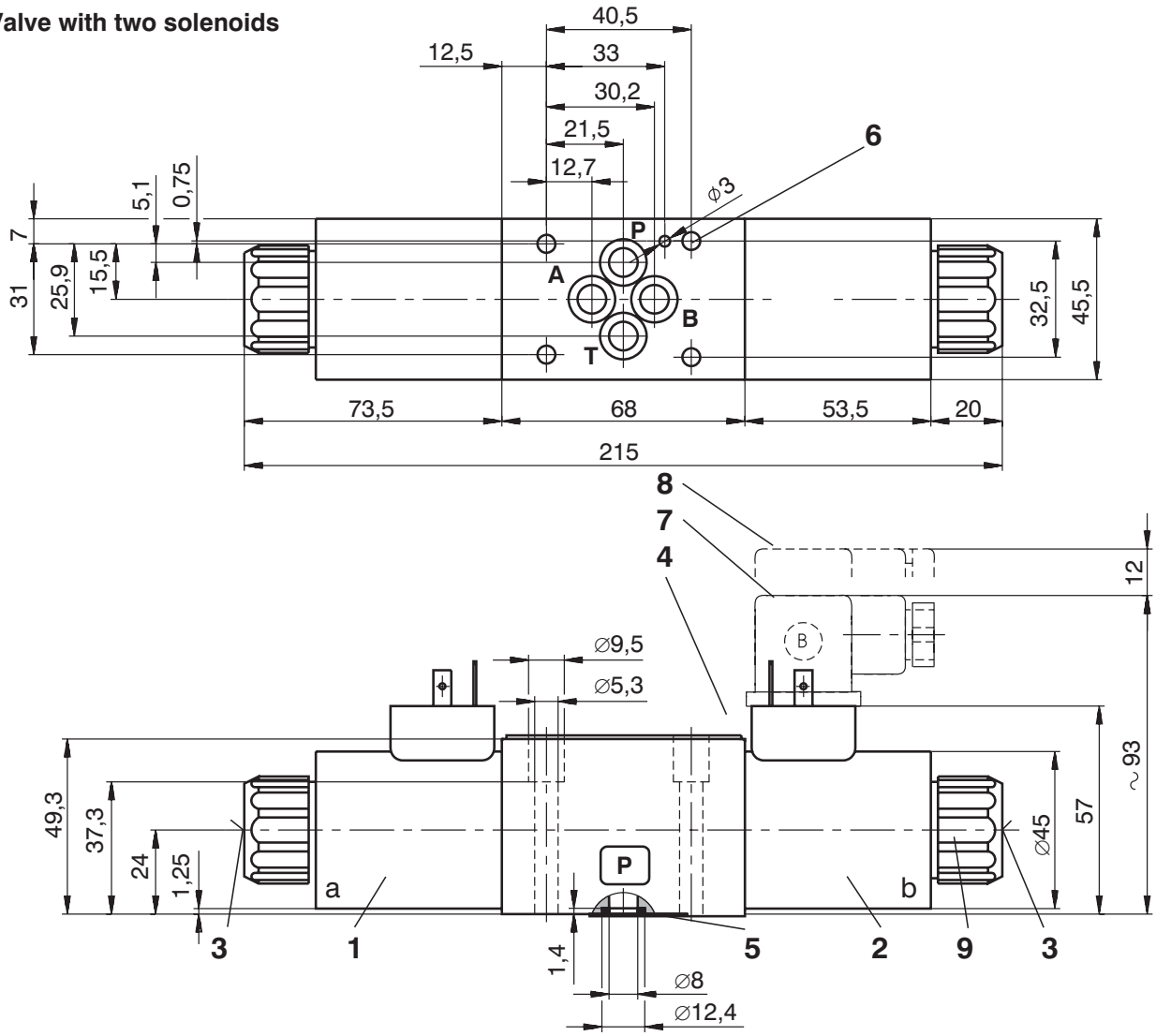


| | P-A | P-B | A-T | B-T | P-T |
|-----|-----|-----|-----|-----|-----|
| Z11 | 2 | 2 | 3 | 3 | |
| C11 | 5 | 5 | 5 | 6 | 3 |
| H11 | 2 | 2 | 2 | 3 | 3 |
| P11 | 1 | 1 | 3 | 3 | |
| Y11 | 2 | 2 | 2 | 2 | |
| L21 | 2 | 2 | 3 | 3 | |
| B11 | 2 | 2 | 3 | 3 | |
| Y41 | 3 | 3 | 3 | 3 | |
| Z21 | | 2 | 3 | | |
| C41 | 4 | 4 | | | 5 |
| F11 | 1 | 2 | | 3 | 3 |
| R11 | 2 | 2 | 3 | 3 | |
| R21 | 2 | 2 | 3 | 3 | |
| A51 | 2 | 2 | | | |
| P51 | | 1 | 3 | | |
| Y51 | | 2 | 2 | | |
| C51 | 2 | | | 3 | 4 |
| Z51 | | 2 | 3 | | |
| Z71 | 3 | 3 | | | |
| Z81 | | | 3 | 3 | |
| Z91 | 3 | | | 3 | 3 |
| R31 | 2 | | | 3 | |
| H51 | | 2 | 3 | | |
| F51 | | 2 | 3 | | |
| X11 | 2 | 2 | 3 | 3 | |
| K11 | | 2 | 3 | | |
| N11 | 2 | 2 | 3 | 3 | |
| X25 | 3 | 3 | 3 | | |
| J15 | 2 | 2 | 3 | 3 | |
| J75 | 2 | 2 | | | |

Valve Dimensions

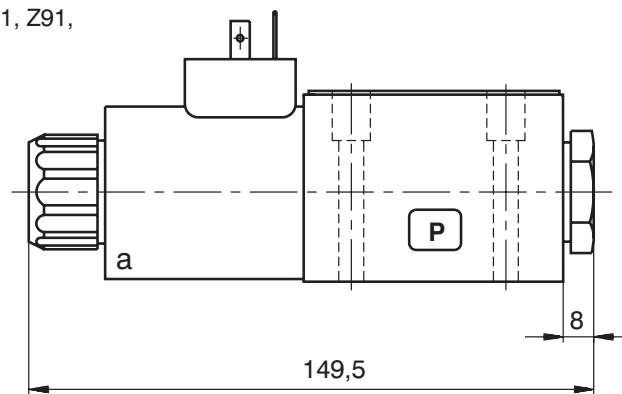
Dimensions in millimetres

Valve with two solenoids



Valve with one solenoid "a"

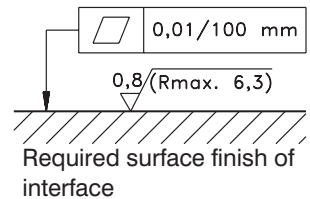
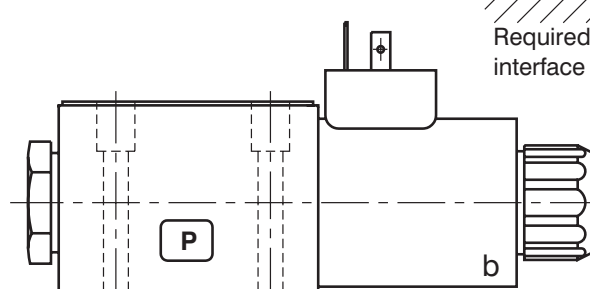
Spool symbols R11, R21, A51, P51, Y51, Z51, C51, Z71, Z81, Z91, R31, H51, F51, X25



- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square ring (4 pcs.)
9.25 x 1.68 supplied with valve
- 6 4 mounting holes
- 7 Electrical connector,
EN 1745301-803
- 8 Space required to remove connector
- 9 Retaining nut of the solenoid

Valve with one solenoid "b"

Spool symbols X11, Z11, C11, H11, K11, N11, F11



Type of the Solenoid Coil

| Designation | Dimensional sketch | Description |
|-------------|--------------------|--|
| E1 | | Solenoid coil with terminal for the electrical connector, EN 1745301-803. |
| E2 | | Solenoid coil with integrated quenching diode (bipolar transil diode) and terminal for the electrical connector, EN 1745301-803. |
| E3A | | Solenoid coil with terminal for AMP-Junior-Timer electrical connector. |
| E4A | | Solenoid coil with integrated quenching diode (bipolar transil diode) and terminal for AMP-Junior-Timer electrical connector. |
| E5 | | Solenoid coil with integrated rectifier and terminal for the electrical connector, EN 1745301-803. |

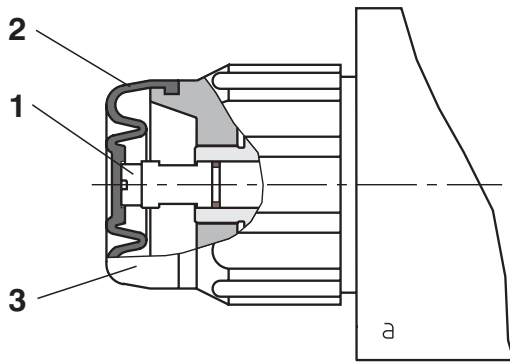
Manual Override

| STANDARD | CLOSED NUT |
|---|---|
| <p>no designation Dimensions</p> <p>Standard model of the manual override. Standard retaining nut of the solenoid.</p> | <p>Type N1 Dimensions</p> <p>Manual override with retaining nut. Can be used after removing nut.</p> |
| RUBBER BOOT | DETENT ASSEMBLY |
| <p>Type N2 Dimensions</p> <p>Manual override protected by rubber boot.</p> | <p>Type N3 Dimensions</p> <p>Manual override holds the spool in the shifted position.</p> |

Spool Speed Control Orifice

T1 - Dimension

Description



This directional valve provides control spool soft shifting by means of orifice situated in the solenoid armature. To ensure the proper function of the valve, perfect air bleeding of the solenoid is required (byus of bleeding plug (1)). The plugs are accessible after removing the rubber boot (2) from the solenoid retaining nut (3).

Switching times

Switching time, on and off

ms

300 ... 800

The switching times shown are valid for viscosity $\nu = 32 \text{ mm}^2/\text{s}$ and nominal voltage. They are dependent upon working pressure and flow rate of the directional control valve.

Orifice in P-Port

Type

$\varnothing D$ (mm)

Dimensions

Description

D1

1.0

D2

1.5

D3

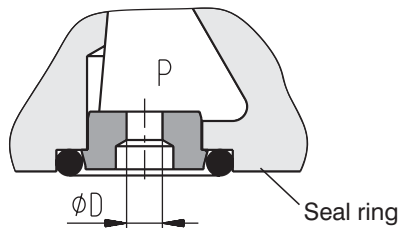
2.0

D4

2.2

D5

2.5



P-Port orifices limit the flow into the directional control valve.

Attention:

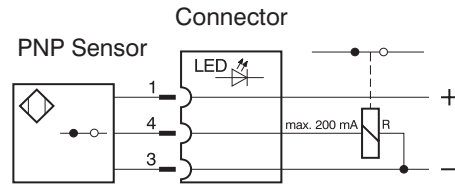
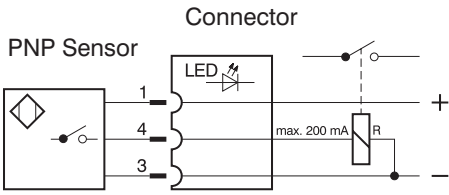
When the orifice in P port is additionally mounted the standard used square ring NBR is replaced with O-ring from Viton.

Spool Ship Position Sensor

S1, S2 - Circuit diagram of the normally-open sensor

S4 - Circuit diagram of the normally-closed sensor

The proximity sensor transforms the spool position into an electrical step signal. It can be used with directional control valves with one or two solenoids.



Technical Data of the Sensor

| | | S1, S4 | S2 |
|--------------------------------------|-----|---------------|--------------|
| Rated power supply voltage | V | | 24 DC |
| Power supply voltage range | V | | 10 ... 30 DC |
| Rated current | mA | | 200 |
| Enclosure type of sensor to EN 60529 | | | IP 67 |
| Max. operating pressure | bar | 50 | 210 |
| Switching frequency | Hz | | 1000 |
| Ambient temperature range | °C | | -25 ... +80 |

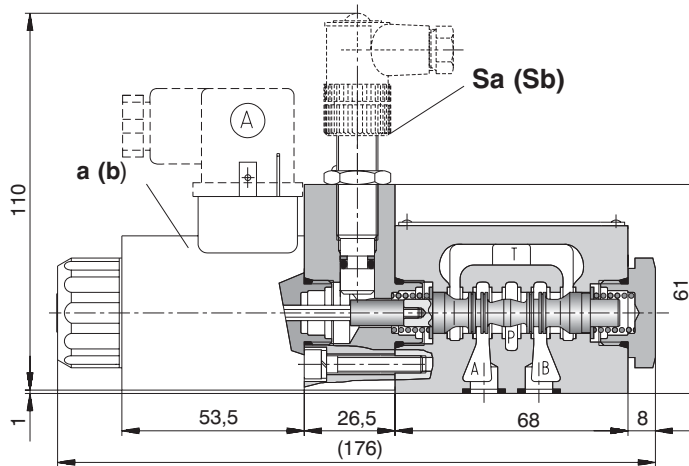
Technical Data of the Connector

| | | |
|----------------------------|----|--------------|
| Power supply voltage range | V | 10 ... 30 DC |
| Ambient temperature range | °C | -25 ... +80 |
| Indication | | yellow LED |

Two-Position Directional Control Valve

Dimensions in millimeters

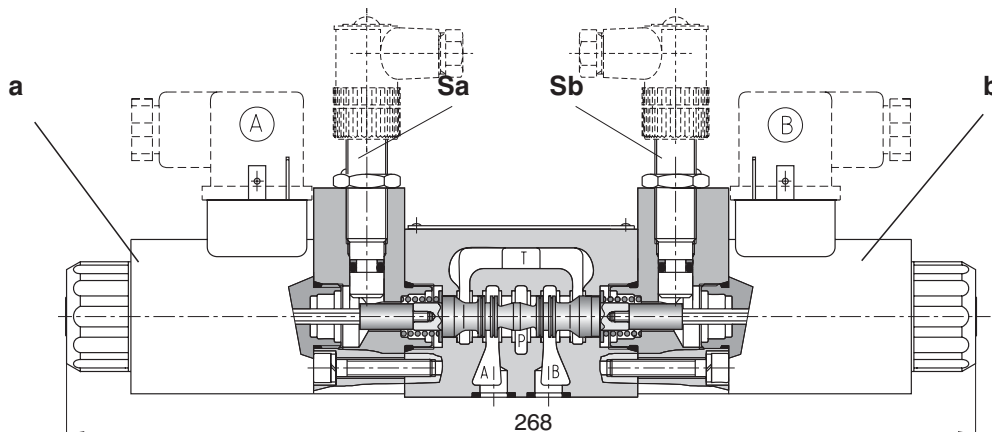
| Signal of solenoid a (b) | Signal of sensor Sa (Sb) | | LED | |
|--------------------------|-------------------------------|-----------------------------|---------------|-----------|
| | S1, S2 - normally-open | S4 - normally-closed | S1, S2 | S4 |
| 0 | 1 | 0 | ON | OFF |
| 1 | 0 | 1 | OFF | ON |



Three-Position Directional Control Valve

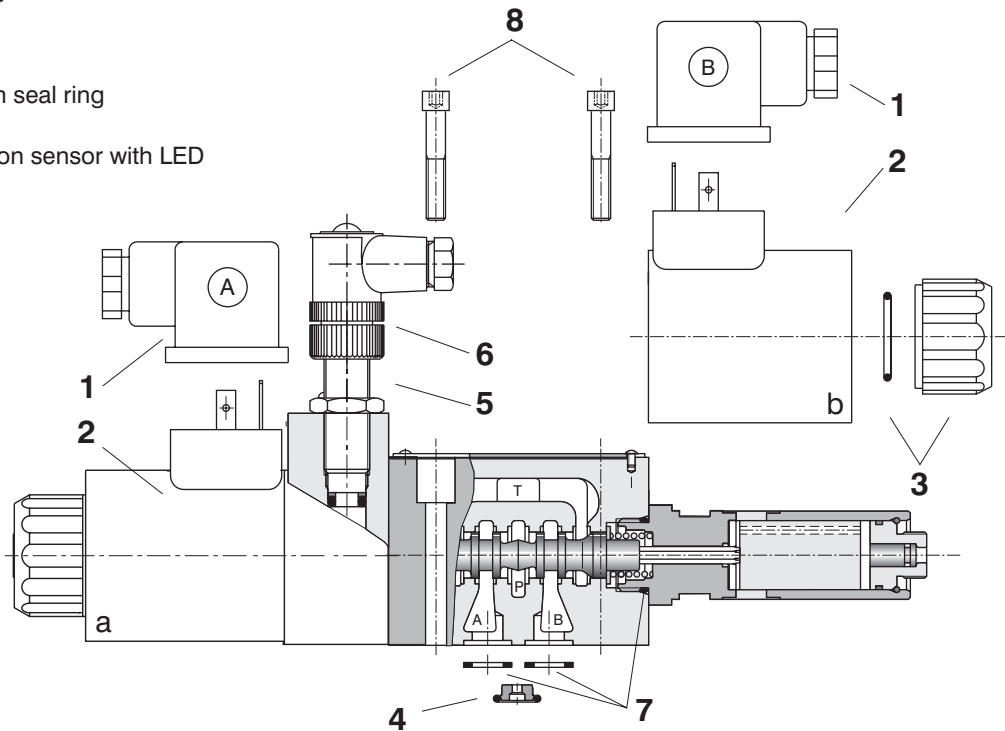
Dimensions in millimeters

| Signal of solenoid | | Signal of sensor Sa (Sb) | | | | LED | | | |
|--------------------|---|-------------------------------|----|-----------------------------|----|---------------|----------|-----------|----------|
| | | S1, S2 - normally-open | | S4 - normally-closed | | S1, S2 | | S4 | |
| a | b | Sa | Sb | Sa | Sb | Sa - LED | Sb - LED | Sa - LED | Sb - LED |
| 0 | 0 | 1 | 1 | 0 | 0 | ON | ON | OFF | OFF |
| 1 | 0 | 0 | 1 | 1 | 0 | OFF | ON | ON | OFF |



Spare Parts

- 1 Electrical connector
- 2 Solenoid coil
- 3 Nut with seal
- 4 Orifice in P port with seal ring
- 5 Sensor
- 6 Connector of position sensor with LED
- 7 Seal kit
- 8 Mounting bolts



Solenoid coil

| Solenoid type | Coil type | | | | |
|---------------|-----------------|----------|----------|----------|----------|
| | E1 | E2 | E3 | E4 | E5 |
| | Ordering number | | | | |
| 01200 | 944-0012 | 944-0013 | 936-4306 | 936-4305 | |
| 01200 | 944-0001 | - | - | - | |
| 02400 | 944-0024 | 944-0025 | 936-4327 | 936-4325 | |
| 02400 | 944-0002 | | | | |
| 20500 | 944-0014 | | | | |
| 23050 | | | | | 936-2385 |
| 23050 | | | | | 944-0004 |

Solenoid retaining nut with seal

| Type of the nut | Seal ring | Ordering number |
|--------------------------|-----------|-----------------|
| Standard nut | 22 x 2 | 484-9951 |
| Closed nut | | 484-9952 |
| Nut with rubber boot | | 484-9953 |
| Nut with detent assembly | | 484-9954 |

Orifice in P port

| Type | ∅D (mm) | Seal ring | Ordering number |
|------|---------|-------------|-----------------|
| D1 | 1.0 | 9.25 x 1.75 | 484-9973 |
| D2 | 1.5 | | 484-9974 |
| D3 | 2.0 | | 484-9975 |
| D4 | 2.2 | | 484-9977 |
| D5 | 2.5 | | 484-9976 |

Connector of position sensor

| Type designation | Model | Max. input voltage | Ordering number |
|------------------|---------------------------------------|--------------------|-----------------|
| K02 | connector of position sensor with LED | 10...30 V DC | 936-9940 |
| S1 | normally-open sensor | 10...30 V DC | 40511129213 |
| S2 | normally-open sensor | 10...30 V DC | 18838900 |
| S4 | normally-closed sensor | 10...30 V DC | 20725300 |

Seal kit

| Type | Dimensions, number | | Ordering number |
|------------------|----------------------|-----------------------|-----------------|
| Standard - NBR70 | 9.25 x 1.68 (4 pcs.) | 17 x 1.8 (2 pcs.) | 484-9961 |
| Viton | 9.25 x 1.78 (4 pcs.) | 17.17 x 1.78 (2 pcs.) | 484-9971 |

| Mounting bolts | | | |
|--|---------------------|---|--------------------|
| Dimensions, number | | Tightening torque | Ordering number |
| M5 x 45 DIN 912-10.9 (4 pcs.) | | 8.9 Nm | 484-9958 |
| Electrical connector, EN 1745301-803 | | | |
| Type designation | Connector A grey | Connector B black | |
| | Ordering number | | |
| K1 | 936-9902 | 936-9901 | |
| K5 | 936-9906 | 936-9905 | |
| K2 | 936-9908 | 936-9907 | |
| K3 | 936-9904 | 936-9903 | |
| Electrical Connector, EN 1745301-803 | | | |
| Designation | Type | Model | Max. input voltage |
| K1 | Connector B (black) | without rectifier - M16x1.5 (bushing bore \varnothing 6-8 mm) | 230 V AC/DC |
| | Connector A (grey) | | |
| K5 | Connector B (black) | without rectifier - M16x1.5 (bushing bore \varnothing 4-6 mm) | 230 V AC/DC |
| | Connector A (grey) | | |
| K2 | Connector B (black) | without rectifier with LED and quenching diode - M16x1.5 (bushing bore \varnothing 6-8) | 12...24 V DC |
| | Connector A (grey) | | |
| K3 | Connector B (black) | with rectifier - M16x1.5 (bushing bore \varnothing 6-8 mm) | 230 V AC |
| | Connector A (grey) | | |
| K4 | Connector B (black) | with rectifier with LED and quenching diode - M16x1.5 (bushing bore \varnothing 6-8 mm) | 230 V AC |
| | Connector A (grey) | | |
| Recommended solenoid coils used with electrical connector with rectifiers - type designation K3, K4 | | | |
| Rated supply source voltage (permissible rated voltage variation $\pm 10\%$) | | Type designation of the solenoid voltage | |
| 230 V AC / 0.17 A / 50 (60) Hz | | 20500 | |
| Preferred Types of Valves | | | |
| Type | Ordering Number | Type | Ordering Number |
| RPE3-062Z11/01200E1 | 484-0703 | RPE3-063Y11/02400E1 | 484-0785 |
| RPE3-063Z11/01200E1 | 484-0677 | RPE3-062R11/02400E1 | 484-0788 |
| RPE3-062Z51/01200E1 | 484-0699 | RPE3-062R21/02400E1 | 484-0793 |
| RPE3-063C11/01200E1 | 484-0678 | RPE3-062A51/02400E1 | 484-0789 |
| RPE3-062C51/01200E1 | 484-0700 | RPE3-062Y51/02400E1 | 484-0801 |
| RPE3-063H11/01200E1 | 484-0679 | RPE3-062J15/02400E1 | 484-0790 |
| RPE3-063Y11/01200E1 | 484-0681 | RPE3-062Z11/23050E5 | 484-1107 |
| RPE3-062R11/01200E1 | 484-0684 | RPE3-063Z11/23050E5 | 484-1034 |
| RPE3-062R21/01200E1 | 484-0689 | RPE3-062Z51/23050E5 | 484-1115 |
| RPE3-062A51/01200E1 | 484-0685 | RPE3-063C11/23050E5 | 484-1042 |
| RPE3-062Y51/01200E1 | 484-0697 | RPE3-062C51/23050E5 | 484-1066 |
| RPE3-062J15/01200E1 | 484-0686 | RPE3-063H11/23050E5 | 484-1043 |
| RPE3-062Z11/02400E1 | 484-0807 | RPE3-063Y11/23050E5 | 484-1044 |
| RPE3-063Z11/02400E1 | 484-0781 | RPE3-062R11/23050E5 | 484-1047 |
| RPE3-062Z51/02400E1 | 484-0803 | RPE3-062R21/23050E5 | 484-1113 |
| RPE3-063C11/02400E1 | 484-0782 | RPE3-062A51/23050E5 | 484-1048 |
| RPE3-062C51/02400E1 | 484-0804 | RPE3-062Y51/23050E5 | 484-1249 |
| RPE3-063H11/02400E1 | 484-0783 | RPE3-062J15/23050E5 | 484-1035 |
| Caution! | | | |
| <ul style="list-style-type: none"> For applications outside the given parameters, please consult us. For directional control valves with two solenoids, one solenoid must be without power before the other solenoid can be powered charged. Switching time for directional valves with detent assembly (impulse control) should not be shorter than 60 ms. With directional valves with cushioned spool shifting, the switching time must correspond with the shifting time. Other for spool symbols on request. The packing foil is recyclable. The protective plate can be returned to manufacturer. Mounting bolts or studs must be ordered separately. 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. | | | |
| ARGO-HYTOS s.r.o. CZ - 543 15 Vrchlabí Tel.: +420-499-403111, Fax: +420-499-403421 E-mail: sales.cz@argo-hytos.com www.argo-hytos.com | | | |

