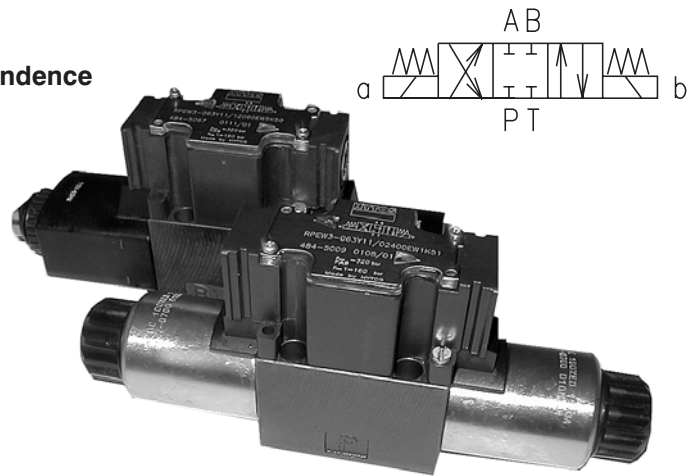


- 4/3-, 4/2- way directional control valves
- Four-land spool - reduced functional dependence on fluid viscosity
- Push button manual override
- Installation dimensions to DIN 24 340 / ISO 4401 / CETOP RP121-H
- Subplates see Data Sheet HA 0002
- CSA Upon request



## Functional Description

The RPEW4 directional control valves consist of housing (1), a control spool (5) with two centering springs (4) and cylindrical operating solenoids (2, 3), electric wirebox (9) and connector (6). 12 and 24 volt DC solenoids can be supplied with diodes (built in) the AC/DC rectifier is part of the terminal plate in the wirebox.

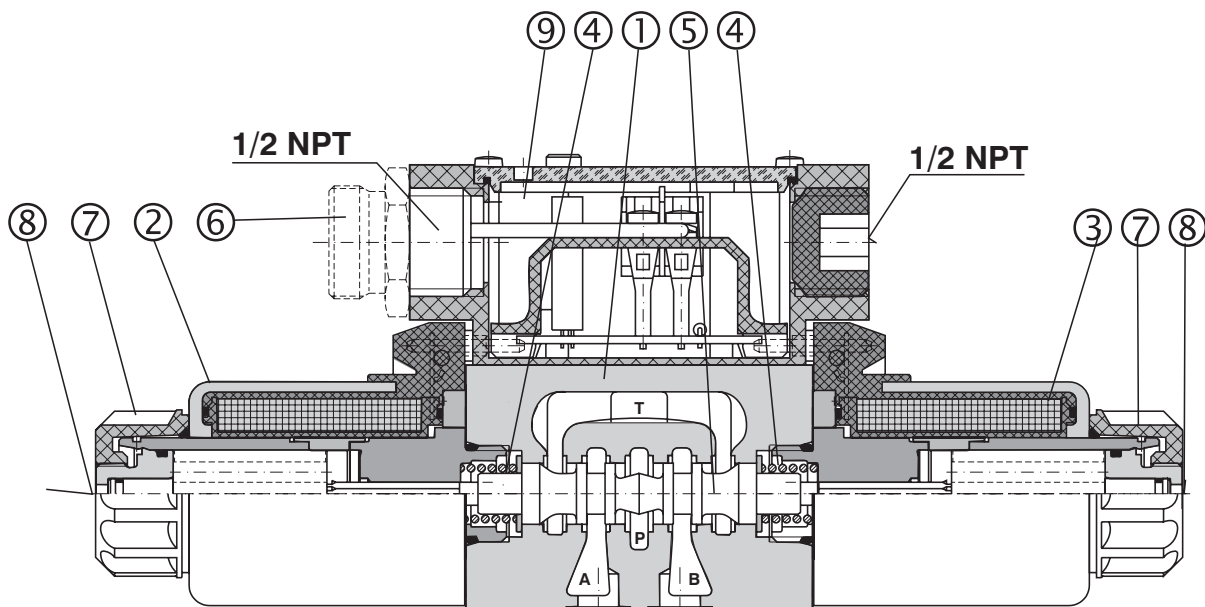
The three-position directional control valves are fitted with two solenoids and two springs. Two-position directional control valves have either one solenoid and one return spring or two solenoids and a detent assembly.

The solenoids are supplied with DC (2,3) voltage through the 1/2 NPT Ports on the wirebox (standard on both sides) or through Connector Item (3 - Pin single

solenoid, 5 - Pin - double solenoid) see wiring diagram (page 7). The wires are connected to a terminal plate inside the wirebox. Optional lights are installed on this terminal plate for shift indication. The lights are visible as raised arrows on the valve label. The solenoids are retained by the Nut (7) and plug-in to the wirebox. Plug-in design allows easy removal without wire change.

In the case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override (8), provided the pressure in T- port does not exceed 25 bar (362,5 PSI).

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



# Ordering Code



**RPEW4-06**   /

**Solenoid Operated  
Directional Control Valves  
with Wirebox**

**Valve Size 06 (D 03)**

**Number of Valve Positions**  
two positions **2**  
three positions **3**

**Spool Symbols**  
see the table spool symbols

**Rated Supply Voltage of Wirebox**  
(at the wirebox terminals)  
12 V DC / 2.64 A  **01200**  
24 V DC / 1.32 A  **02400**

\*\* CSA for DC voltage only

**Note:** For other voltages consult factory  
CSA Upon request 

**Type of Solenoid Coil for Wiring Box (Plug-In-Coil)**

DC solenoid (DC-rectified) **EW1**  
DC solenoid with quenching diode **EW2**

**Type of Wirebox**  
Wirebox for DC **K**

**Seals**  
no designation NBR  
**V** FPM (Viton)

**Orifice in P Port**  
no designation without orifice  
**D1** Ø1,0 mm (0.039 inch)  
**D2** Ø1,5 mm (0.059 inch)  
**D3** Ø2,0 mm (0.079 inch)  
**D4** Ø2,2 mm (0.087 inch)  
**D5** Ø2,5 mm (0.098 inch)

**Spool Speed Control Orifice**  
no designation without damping  
**T1** orifice Ø0.7 mm (0.003 inch) in solenoid

**Note:** For soft shift details / performance see HA 4010

**Manual Override**  
no designation standard  
**N1** covered with retaining nut  
**N2** covered with rubber boot

**Wirebox Configurations:**

- 50** Standard wiring box with 1/2 NPT both ends (Either side can be used for wiring, Remove cover -plug accordingly)
- 51** Standard wiring box with 1/2 NPT both ends and LED diodes (B- side plugged, A - side covert for shipping)
- 52** Wiring box with 3 PIN connector ANSI/B93.55M mounted on A-side (B-side plugged, only for single solenoid valves)
- 53** Wiring box with 3 PIN connector ANSI/B93.55M mounted on B-side (A-side plugged, only for single solenoid valves)
- 54** Wiring box with 3 PIN connector ANSI/B93.55M mounted on A-side with LED diode (B-side plugged, only for single solenoid valves)
- 55** Wiring box with 3 PIN connector ANSI/B93.55M mounted on B-side with LED diode (A-side plugged, only for single solenoid valves)
- 56** Wiring box with 5 PIN connector ANSI/B93.55M mounted on A-side (B-side plugged, only for double solenoid valves)
- 57** Wiring box with 5 PIN connector ANSI/B93.55M mounted on B-side (A-side plugged, only for double solenoid valves)
- 58** Wiring box with 5 PIN connector ANSI/B93.55M mounted on A-side with LED diode (B-side plugged, only for double solenoid valves)
- 59** Wiring box with 5 PIN connector ANSI/B93.55M mounted on B-side with LED diode (A-side plugged, only for double solenoid valves)

# Technical Data

Valve size	mm (US)	06 (D 03)
Maximum flow	L/min (GPM)	see p-Q characteristics
Max. operating pressure at porte P, A, B	bar (PSI)	350 (5076)
Max. operating pressure at port T	bar (PSI)	210 (3000)
Pressure drop	bar (PSI)	see Δp-Q characteristics
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51 524
Fluid temperature range for NBR seals	°C (°F)	-30 ... +80 (-22 ... +176)
Fluid temperature range for FPM seals	°C (°F)	-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
Max. allowable voltage variation	%	DC: ± 10 / AC: ± 10
Max. switching frequency	1/h	15 000
Switching time, on: at v=32 mm <sup>2</sup> /s (156 SUS)	ms	DC: 30 ... 50
Switching time, off: at v=32 mm <sup>2</sup> /s (156 SUS)	ms	DC: 10 ... 50
Duty cycle	%	100
Service life	cycles	10 <sup>7</sup>
Enclosure type to EN 60 529		IP 65
Weight - valve with 1 solenoid	kg (lbs)	1,3 (2.9)
- valve with 2 solenoids		1,9 (4.2)
Mounting position		unrestricted

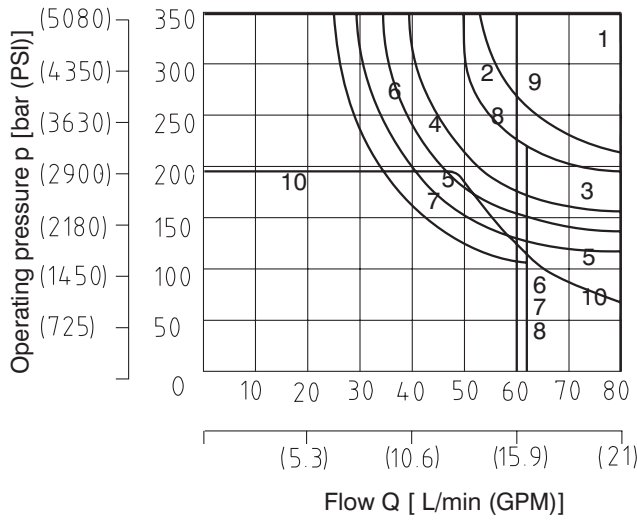
# Functional Symbols

Type	Symbol	Crossover	Type	Symbol	Crossover
Z11			X25		
C11			Y51		
H11			C51		
P11			Z51		
Y11			H51		
L21			F51		
B11			Z11		
Z21			X11		
F11			C11		
R11			H11		
R21			N11		
A51			F11		
P51			J15		
			J75		

## p-Q Characteristics

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 Functional Symbols.

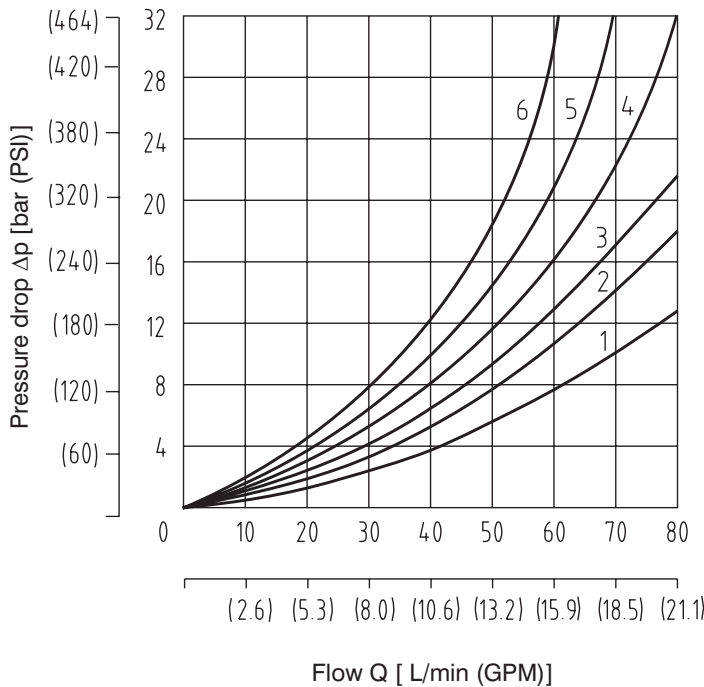


DC		DC		DC	
Z11	1	J75	9	H51	7
C11	6	F11	5	F51	7
H11	3	R11	3	X11	3
P11	1	R21	4	N11	7
Y11	2	A51	5	X25	10
L21	5	P51	1		
B11	8	Y51	2		
J15	1	C51	6		
Z21	1	Z51	1		

## $\Delta p$ -Q Characteristics

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

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

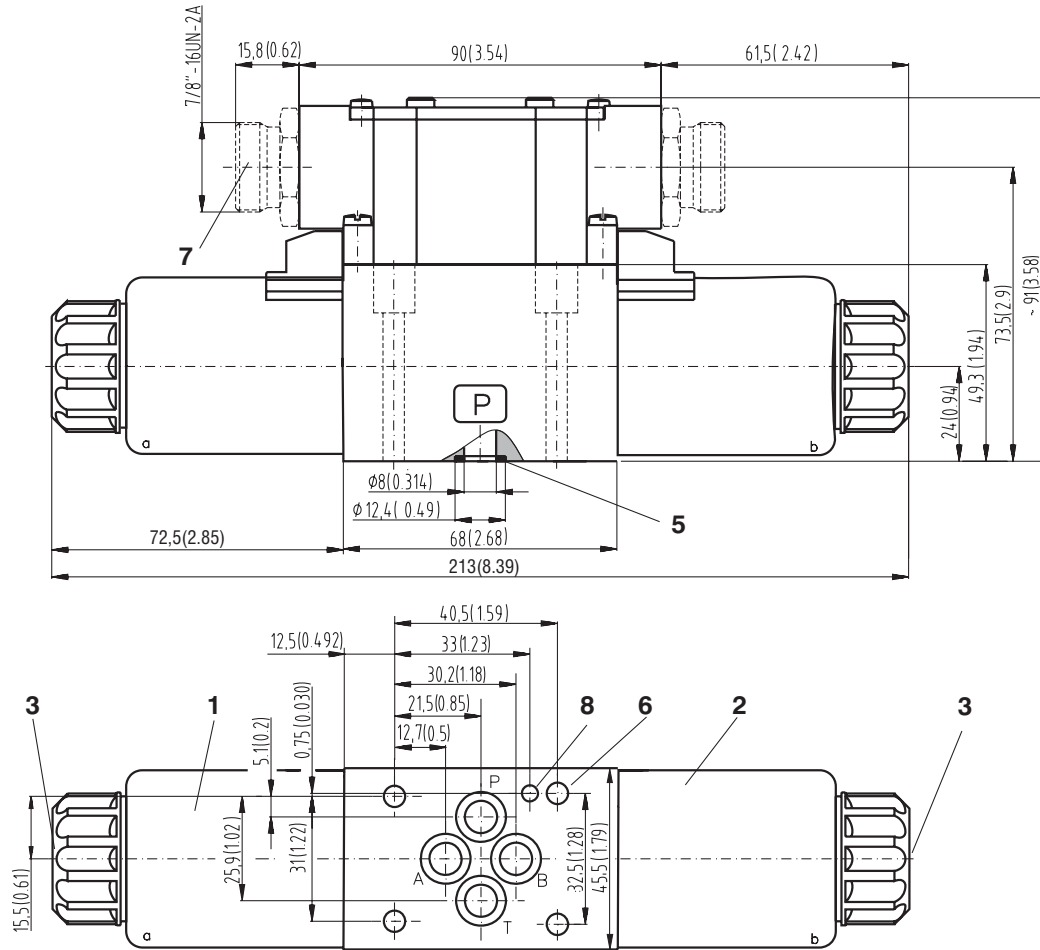


	P-A	P-B	A-T	B-T	P-T
Z11	2	2	3	3	
C11	5	5	5	6	3
H11	2	2	2	3	3
P11	1	1	3	3	
Y11	2	2	2	2	
L21	2	2	3	3	
B11	2	2	3	3	
Z21		2	3		
F11	1	2		3	3
R11	2	2	3	3	
R21	2	2	3	3	
A51	2	2			
P51		1	3		
Y51		2	2		
C51	2			3	4
Z51		2	3		
H51		2	3		
F51		2	3		
X11	2	2	3	3	
N11	2	2	3	3	
J15	2	2	3	3	
J75	2	2			

# Valve Dimensions

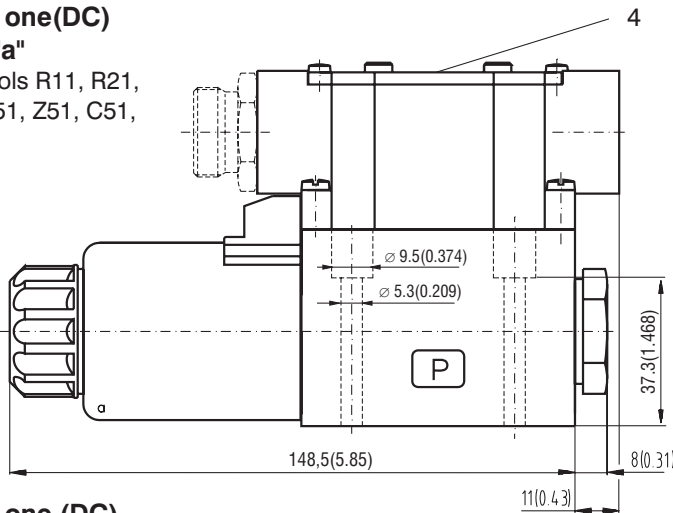
Dimensions in millimeters and inches

## Valve with two DC voltage supplied solenoids



## Valve with one (DC) solenoid "a"

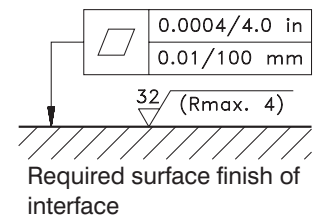
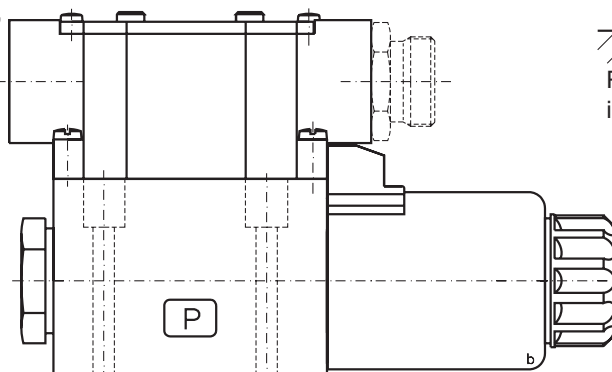
Spool symbols R11, R21, A51, P51, Y51, Z51, C51, H51, F51



- 1 Solenoid a [(Nut torque 3 Nm (2.21 ft-lbs.))]
- 2 Solenoid b [(Nut torque 3 Nm (2.21 ft-lbs.))]
- 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
- 8 Pin Hole

## Valve with one (DC) solenoid "b"

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



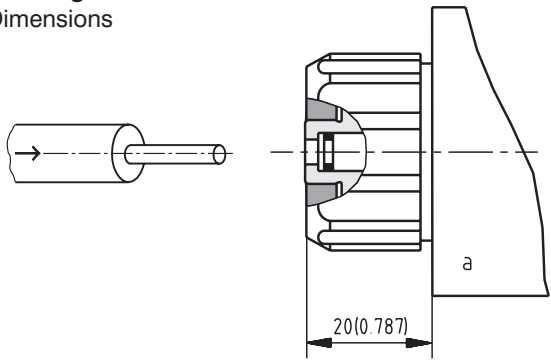
Required surface finish of interface

# Manual Override

## STANDARD

no designation

Dimensions

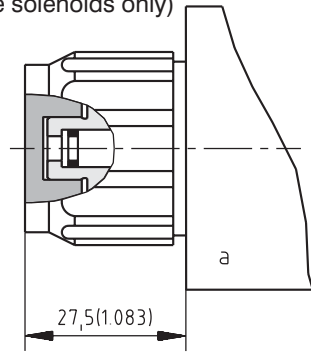


Standard model of the manual override.  
Standard retaining nut of the solenoid.

## CLOSED NUT

Type **N1** (For DC voltage solenoids only)

Dimensions

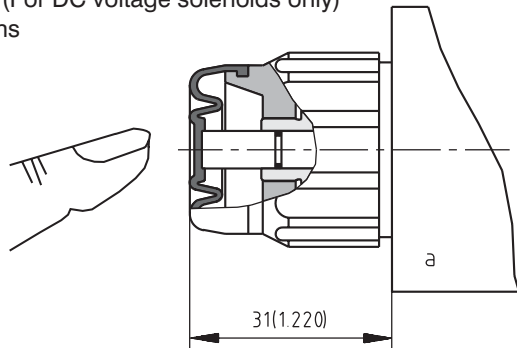


Manual override with retaining nut.  
Can be used after removing nut.

## RUBBER BOOT

Type **N2** (For DC voltage solenoids only)

Dimensions

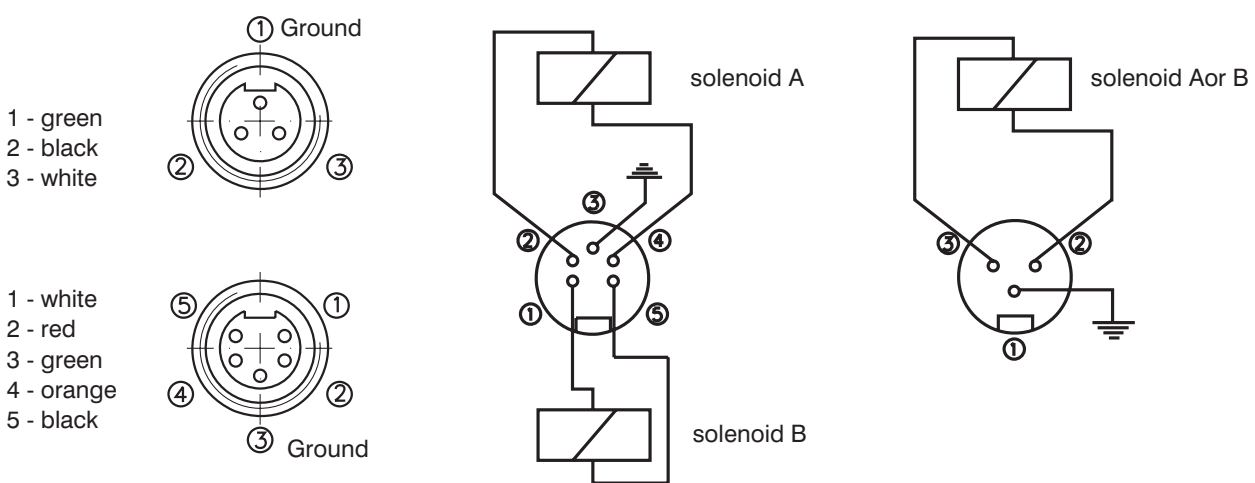


Manual override protected by rubber boot.

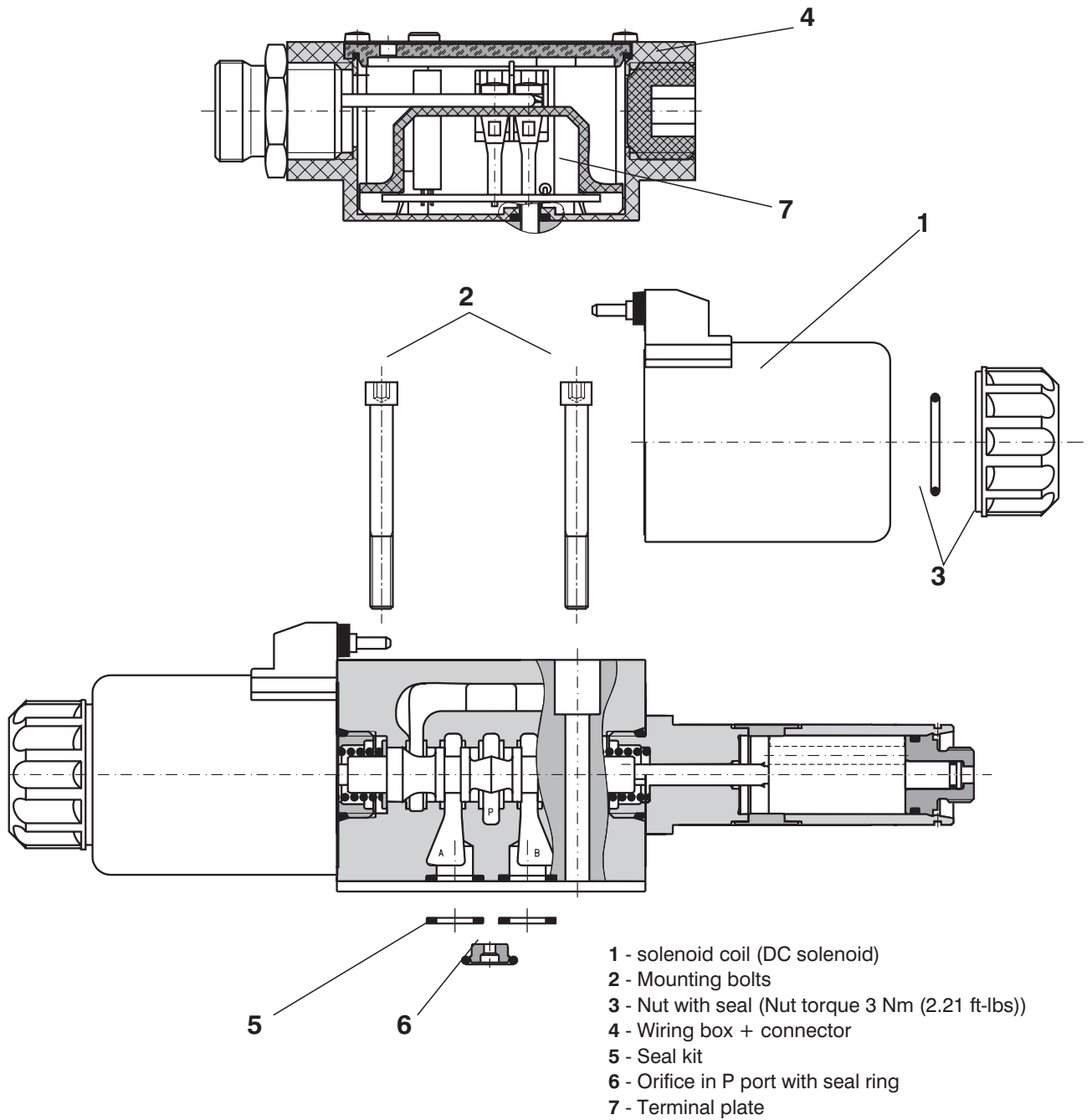
# Orifice in P-Port

Type	∅D mm(inch)	Dimensions	Description
<b>D1</b>	1,0 (0.039)		P-Port orifices limit 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>D2</b>	1,5 (0.059)		
<b>D3</b>	2,0 (0.079)		
<b>D4</b>	2,2 (0.087)		
<b>D5</b>	2,5 (0.098)		

# Connector - US - Standard - ANSI/B93.55M




# Spare Parts



- 1 - solenoid coil (DC solenoid)
- 2 - Mounting bolts
- 3 - Nut with seal (Nut torque 3 Nm (2.21 ft-lbs))
- 4 - Wiring box + connector
- 5 - Seal kit
- 6 - Orifice in P port with seal ring
- 7 - Terminal plate

<b>Wiringbox</b>		
Type		Ordering number
Wiring box without terminal plate		24008400
<b>Terminal Plates</b>		
Type		Ordering number
Terminal plate - basic design A+B		16204400
Terminal plate A - basic design		24010800
Terminal plate B - basic design		24008600
Terminal plate 12V DC - lights A+B		16204500
Terminal plate 24V DC - lights A+B		16204600
Terminal plate 12V DC - LED diode A		24008800
Terminal plate 12V DC -LED diode B		24008900
Terminal plate 24V DC - LED diode A		24009100
Terminal plate 24V DC - LED diode B		24009200

<b>Solenoid Coil</b>				
Voltage rating		Type	Ordering number	
01200 DC		EW1	16205100	
*01200 DC		EW1	24154700	
02400 DC		EW1	16205000	
*02400 DC		EW1	24154900	
10600 DC (120V/60Hz rectifier)		EW1	16205200	
01200 DC		EW2	16205400	
02400 DC		EW2	16205500	
<b>Solenoid Retaining Nut with Seal</b>				
Type of the nut		Seal ring	Ordering number	
Standard nut		22 x 2	15844600	
Nut with detent assembly			15844900	
Closed nut			15844700	
Nut with rubber boot			15844800	
<b>Electrical Connector, ANSI/B93.55M</b>				
Type		Ordering number		
3 PIN		24007300		
5 PIN		24007400		
<b>Orifice in P-Port</b>				
Type	ØD mm (inch)	Seal ring	Ordering number	
D1	1,0 (0.039)	9.25 x 1.75	15845600	
D2	1,5 (0.059)		15845700	
D3	2,0 (0.079)		15845800	
D4	2,2 (0.087)		15846000	
D5	2,5 (0.098)		15845900	
<b>Seal Kit</b>				
Type	Dimensions, quantity		Ordering number	
Standard - NBR70	9.25 x 1.68 (4 pcs.)	17 x 1.8 (2 pcs.)	9.25 x 1.75 (1 pc)	21483800
Viton	9.25 x 1.78 (4 pcs.)	17.17 x 1.78 (2 pcs.)		15845400
<b>Bolt Kit (for studs see HA 0030)</b>				
Dimensions, quantity		Bolt torque	Ordering number	
M5 x 45 DIN 912-10.9 (4 pcs.)		8.9 Nm(6.6 ft-lbs )	15845100	
10-24 UNC x 1.75 (4 pcs.)			2 000 107	
* CSA Upon request 				
<b>Caution!</b>				
<ul style="list-style-type: none"> <li>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. With directional valves with cushioned spool shifting, the switching time must correspond with the shifting time.</li> <li>Distributors with other interconnections than those shown in the catalogue can be supplied on request.</li> <li>The packaging foil can be recycled</li> <li>The transport base plate can be returned to the manufacturer.</li> <li>Mounting screws M5 x 45 DIN 912-10.9 or bolts must be ordered separately. The screws tightening torque is 8.9 Nm (6.6 ft-lbs).</li> <li>The mentioned data only serve to describe the product and in no case are to be understood in terms of law as guaranteed characteristics.</li> </ul>				
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