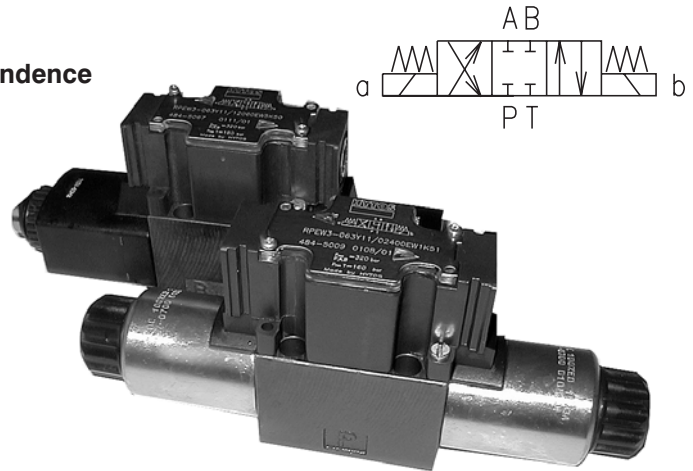


- 4/3-, 4/2- way directional control valves
- Four-land spool - reduced functional dependence on fluid viscosity
- Push button manual override
- Installation dimensions to DIN 24 340 / ISO 4401 / CETOP RP121-H
- Subplates see Data Sheet HA 0002
- CSA Upon request



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 (build 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.

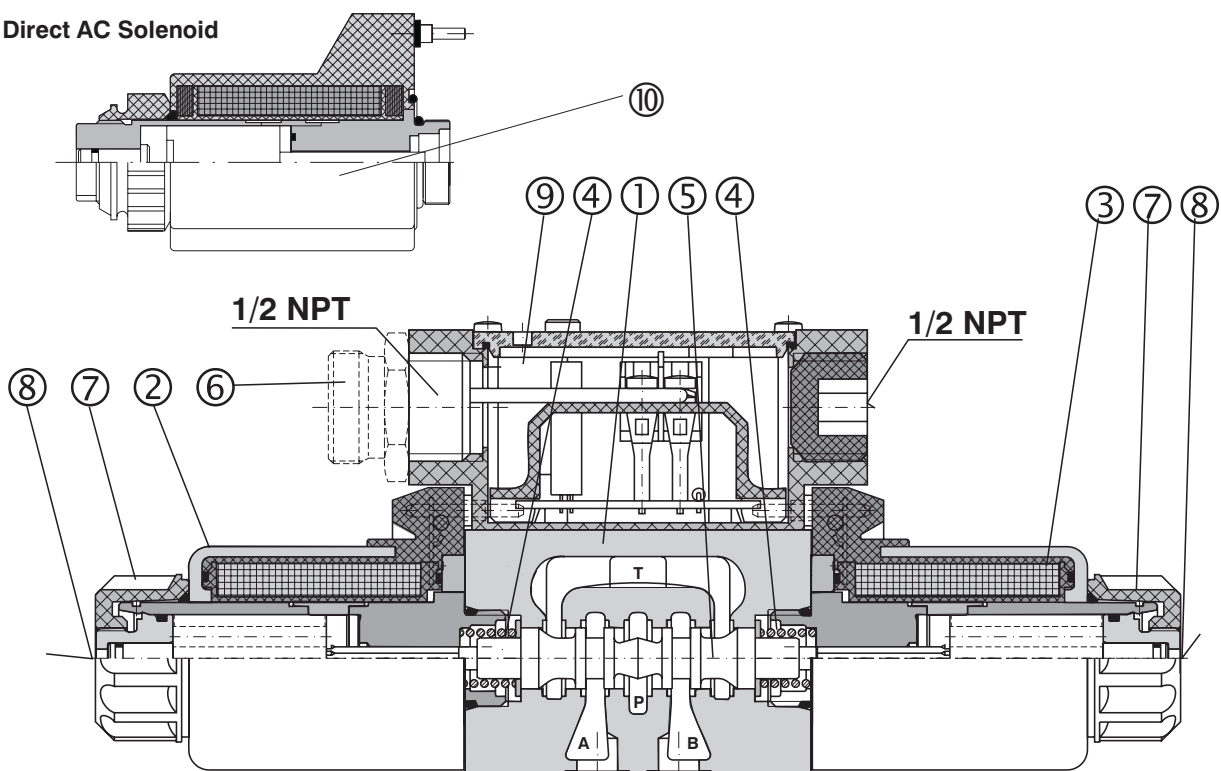
The solenoids are supplied with DC (2,3) and AC (10) - voltage through the 1/2 NPT Ports on the wirebox (standard on both sides) or through Connector Item

(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 363 PSI (25 bar).

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

Direct AC Solenoid



Order Code

RPEW4-06 /



**Solenoid Operated
Directional Control Valves
with Wirebox**

Valve Size D 03 (06)

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
120V AC / 60Hz*	** 12060

* AC coils only for type of wirebox **K**
or
DC coils with rectifier in wirebox only for
type of wirebox **R**
** CSA for DC voltage only

Note: For other voltages consult factory

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

DC solenoid (DC and AC - rectified)	EW1
DC solenoid with quenching diode	EW2
AC solenoid	EW5

Type of Wirebox
Wirebox for DC and AC **K**
Wirebox AC rectified (rectifier in wirebox) **R**

CSA Upon request 

Seals
no designation NBR
V FPM (Viton)

Orifice in P Port
no designation without orifice
D1 Ø0.039 inch (1.0 mm)
D2 Ø0.059 inch (1.5 mm)
D3 Ø0.079 inch (2.0 mm)
D4 Ø0.087 inch (2.2 mm)
D5 Ø0.098 inch (2.5 mm)

Spool Speed Control Orifice
no designation without damping
T1 orifice Ø0.003 inch (0.7 mm) in solenoid*
* for DC voltage only

Note: For soft shift details / performance
see HU 4010

Manual Override
no designation standard
N1 covered with retaining nut*
N2 covered with rubber boot*
* for DC voltage only

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	US (mm)	D 03 (06)		
Maximum flow	GPM (L/min)	see p-Q characteristics		
Max. operating pressure at porte P, A, B	PSI (bar)	4600 (320)		
Max. operating pressure at port T	PSI (bar)	3000 (210)		
Pressure drop	PSI (bar)	see Δp-Q characteristics		
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51 524		
Fluid temperature range for NBR seals	°F (°C)	-22 ... +176 (-30 ... +80)		
Fluid temperature range for FPM seals	°F (°C)	-4 ... +176 (-20 ... +80)		
Ambient temperature max.	°F (°C)	+122 (+50)		
Viscosity range	SUS (mm ² /s)	98 ... 1840 (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=156 SUS (32 mm ² /s)	ms	DC: 30 ... 50	AC direct: CF	AC rec.: 30 ... 40
Switching time, off: at v=156 SUS (32 mm ² /s)	ms	DC: 10 ... 50	AC direct: CF	AC rec.: 30 ... 70
Duty cycle	%	100		
Service life	cycles	10 ⁷		
Enclosure type to EN 60 529		IP 65		
Weight - valve with 1 solenoid	lbs (kg)	2.9 (1,3)		
- valve with 2 solenoids		4.2 (1,9)		
Mounting position		any		

Spool Symbols

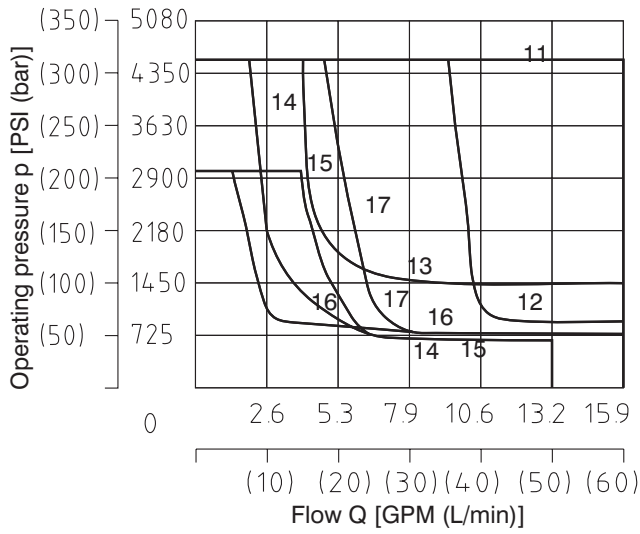
Type	Symbol	Crossover	Type	Symbol	Crossover
Z11			X25		
C11			Y51		
H11			C51		
P11			Z51		
Y11			H51		
L21			F51		
B11			Z11		
Z21			X11		
F11			C11		
R11			H11		
R21			N11		
A51			F11		
P51			J15		
			J75		

p-Q Characteristics

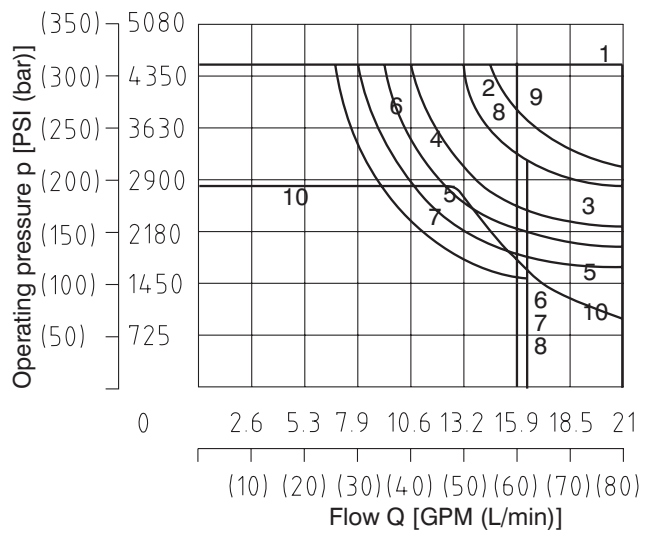
Measured at $v = 156 \text{ SUS (32 mm}^2/\text{s)}$

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

AC characteristics



DC characteristics



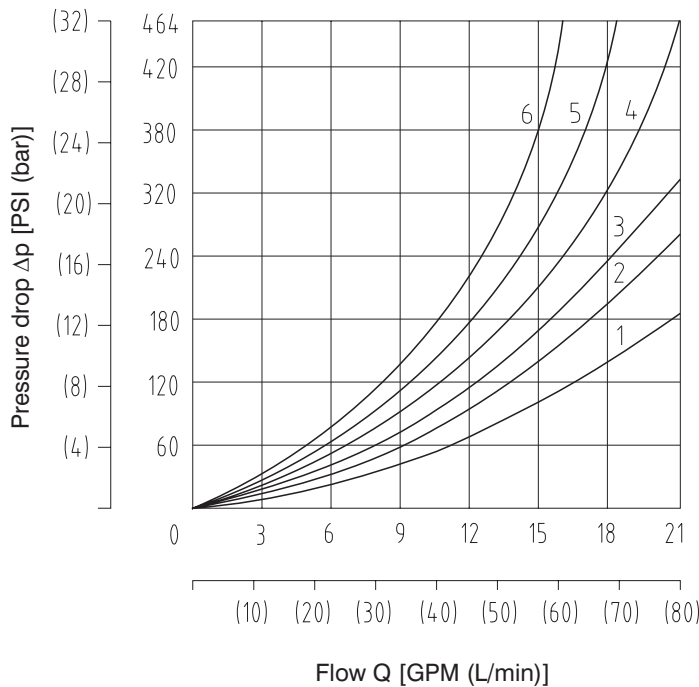
AC		AC		AC	
Z51	12	Z11	12	J15	11
Y11	12	C11	13	R21	15
Y51	12	X11	17	R11	17
C51	13	P11	11		
H11	14	L21	14		
H51	14	F11	14		
B11	12	F51	14		
N11	12	A51	16		
P51	11	J75	16		

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		

Δp -Q Characteristics

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

Pressure drop Δp related to flow rate.

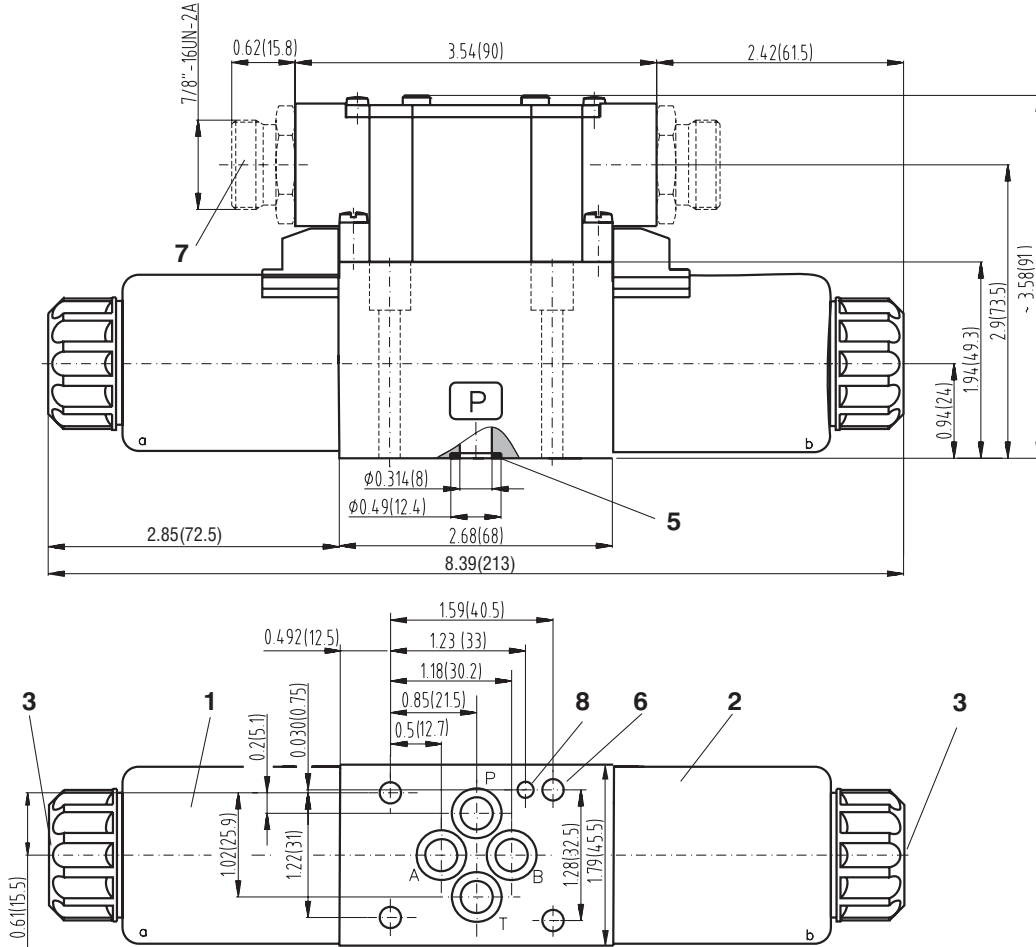


	P-A	P-B	A-T	B-T	P-T
Z11	2	2	3	3	
C11	5	5	5	6	3
H11	2	2	2	3	3
P11	1	1	3	3	
Y11	2	2	2	2	
L21	2	2	3	3	
B11	2	2	3	3	
Z21		2	3		
F11	1	2		3	3
R11	2	2	3	3	
R21	2	2	3	3	
A51	2	2			
P51		1	3		
Y51		2	2		
C51	2			3	4
Z51		2	3		
H51		2	3		
F51		2	3		
X11	2	2	3	3	
N11	2	2	3	3	
J15	2	2	3	3	
J75	2	2			

Valve Dimensions

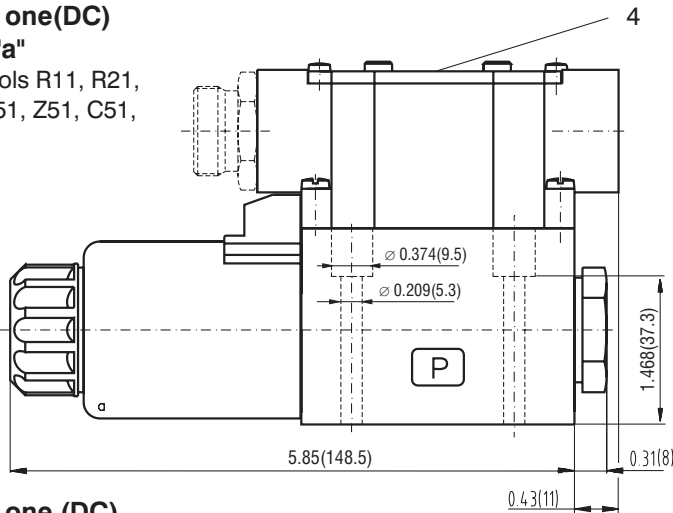
Dimensions in inches and millimeters

Valve with two DC voltage supplied solenoids and AC rectified (Code R)



Valve with one (DC) solenoid "a"

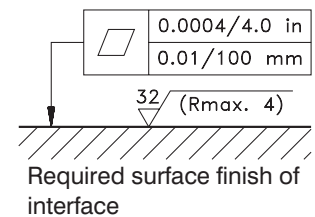
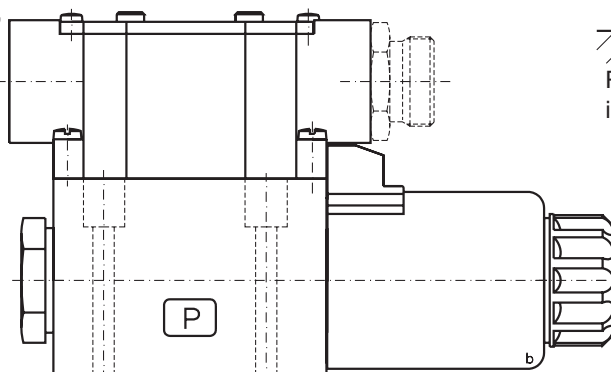
Spool symbols R11, R21, A51, P51, Y51, Z51, C51, H51, F51



- 1 Solenoid a [(Nut torque 2.21 ft-lbs. (3 Nm)]
- 2 Solenoid b [(Nut torque 2.21 ft-lbs. (3 Nm)]
- 3 Manual override
- 4 Name plate
- 5 Square ring (4 pcs.)
0,36 x 0,66 supplied with valve
- 6 4 mounting holes
- 7 Electrical connector
- 8 Pin Hole

Valve with one (DC) solenoid "b"

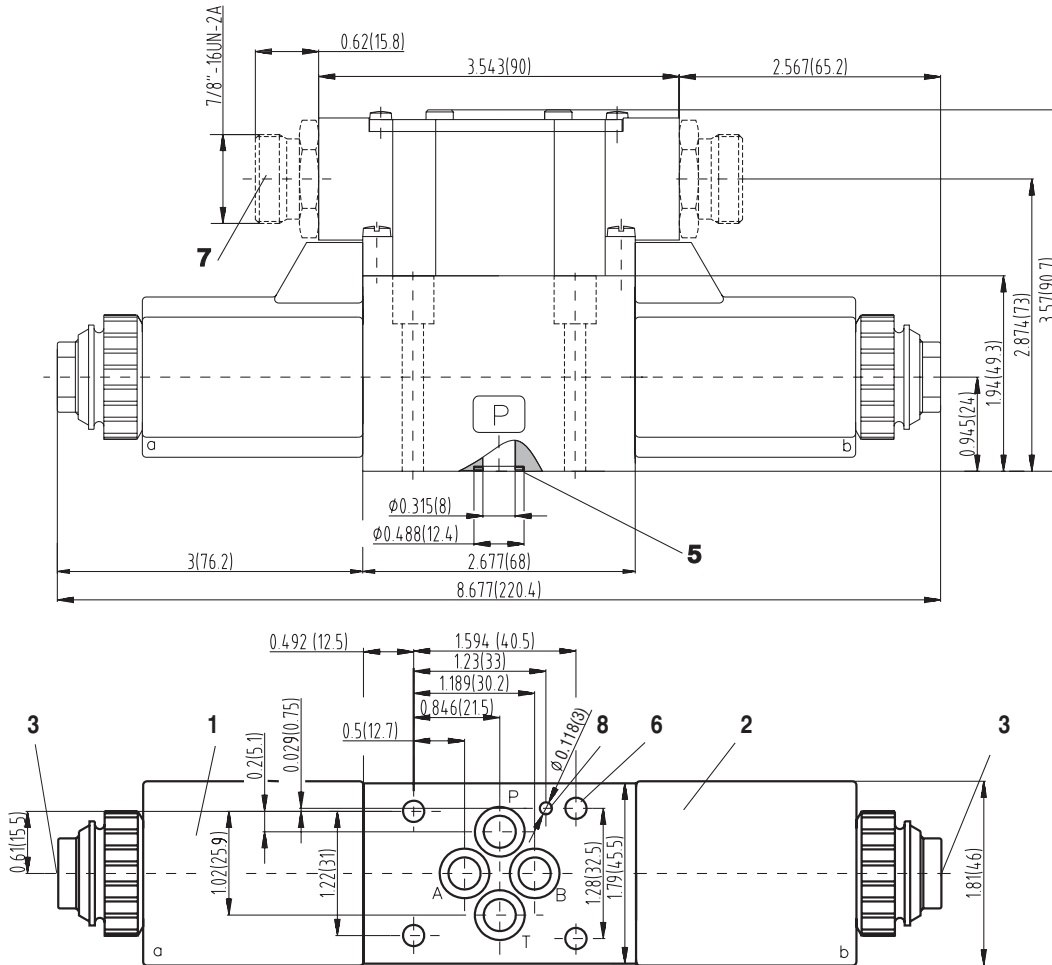
Spool symbols X11, Z11, C11, H11, N11, F11



Valve Dimensions

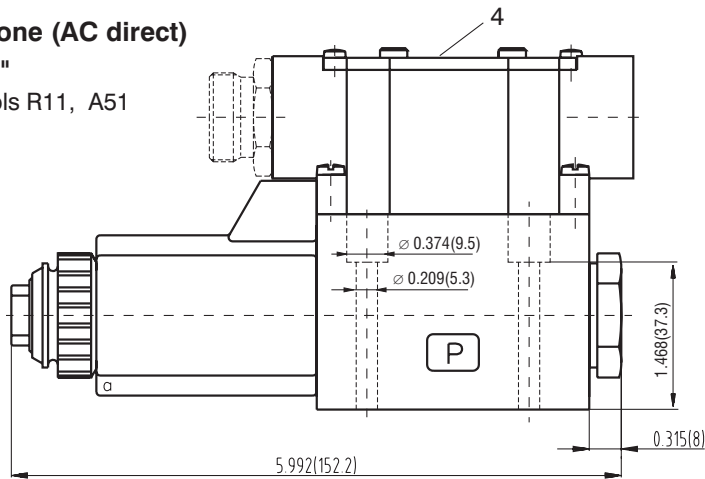
Dimensions in inches and millimeters

Valve with two AC direct voltage supplied solenoids



Valve with one (AC direct) solenoid "a"

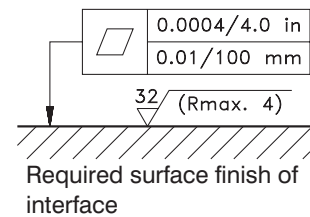
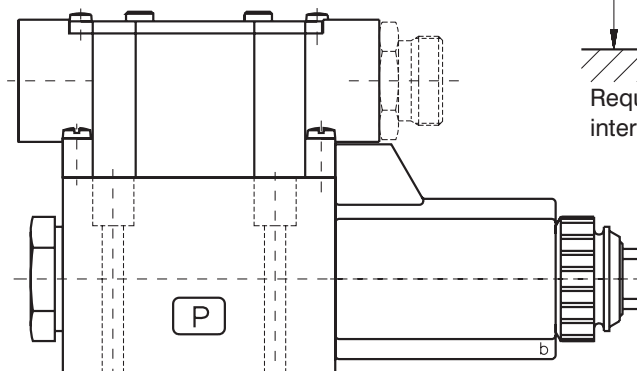
Spool symbols R11, A51



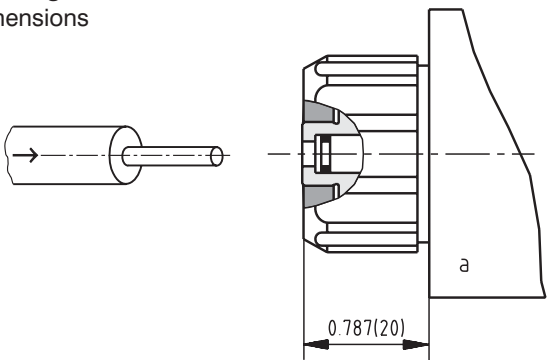
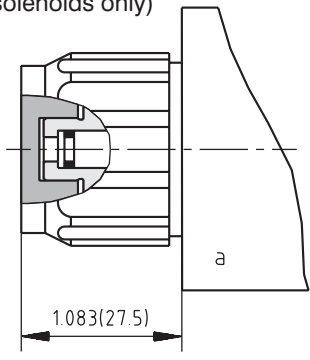
- 1 Solenoid a [Nut torque 2.21 ft-lbs. (3 Nm)]
- 2 Solenoid b [Nut torque 2.21 ft-lbs. (3 Nm)]
- 3 Manual override
- 4 Name plate
- 5 Square ring (4 pcs.)
0.36 x 0.66 supplied with valve
- 6 4 mounting holes
- 7 Electrical connector
- 8 Pin Hole

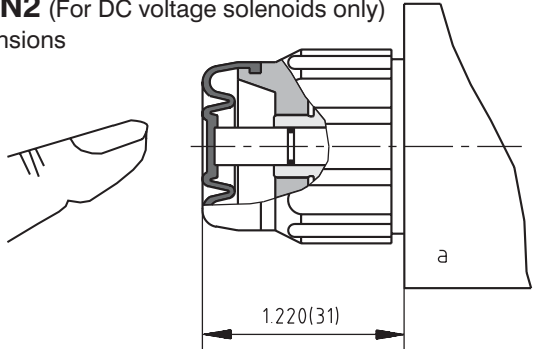
Valve with one (AC) solenoid "b"

Spool symbols Z11, C11, H11

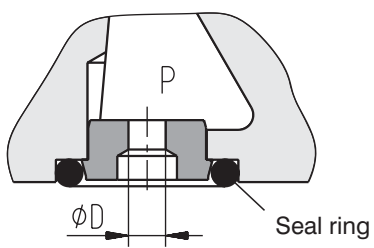


Manual Override

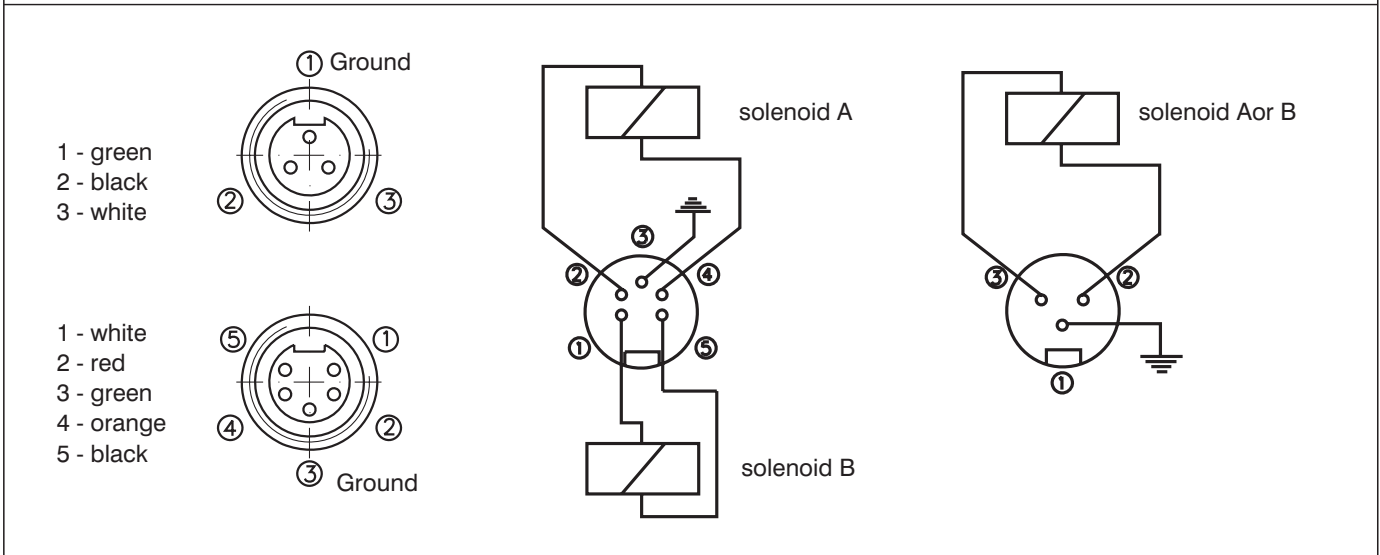
STANDARD	CLOSED NUT
<p>no designation Dimensions</p>  <p>Standard model of the manual override. Standard retaining nut of the solenoid.</p>	<p>Type N1 (For DC voltage solenoids only) Dimensions</p>  <p>Manual override with retaining nut. Can be used after removing nut.</p>

RUBBER BOOT	
<p>Type N2 (For DC voltage solenoids only) Dimensions</p>  <p>Manual override protected by rubber boot.</p>	

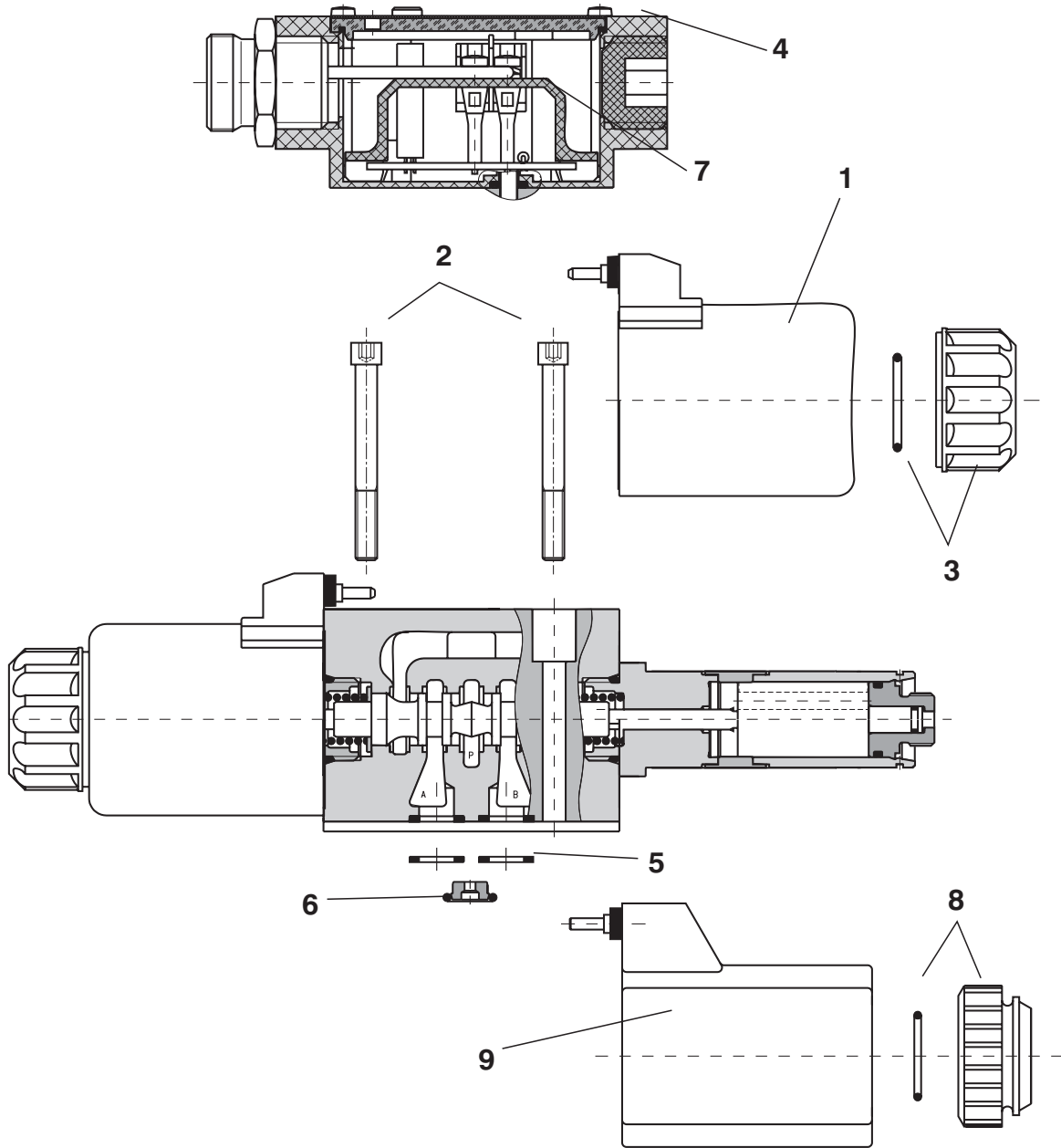
Orifice in P-Port

Type	ØD inch (mm)	Dimensions	Description
D1	0.039 (1.0)		<p>P-Port orifices limit the flow into the directional control valve.</p> <p>Attention: When the orifice in P port is additionally mounted the standard used square ring NBR is replaced with O-ring from Viton.</p>
D2	0.059 (1.5)		
D3	0.079 (2.0)		
D4	0.087 (2.2)		
D5	0.098 (2.5)		


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



Spare Parts



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

Wiringbox				
Type			Order number	
Wiring box without terminal plate			937-0668	
Terminal Plates				
Type			Order number	
Terminal plate - basic design A+B			937-0669	
Terminal plate 12V DC - lights A+B			937-0672	
Terminal plate 24V DC - lights A+B			937-0675	
Terminal plate 120V AC - lights A+B			937-0678	
Terminal plate 120V AC - rectifier A+B			937-0684	
Terminal plate 120V AC - rectifier A+B and lights A+B			937-0687	
Solenoid Coil				
Voltage rating		Type	Order number	
01200 DC		EW1	937-0701	
*01200 DC		EW1	944-0005	
02400 DC		EW1	937-0700	
*02400 DC		EW1	944-006	
10600 DC (120V/60Hz rectifier)		EW1	937-0702	
12060 AC		EW5	937-0703	
01200 DC		EW2	937-0710	
02400 DC		EW2	937-0711	
Solenoid Retaining Nut with Seal				
Type of the nut		Seal ring	Order number	
Standard nut		22 x 2	484-9951	
Nut with detent assembly (DC only)			484-9954	
Closed nut (DC only)			484-9952	
Nut with rubber boot (DC only)			484-9953	
Standard nut for AC voltage supplied solenoid		18 x 1.5	486-9010	
Electrical Connector, ANSI/B93.55M				
Type			Order number	
3 PIN			937-0616	
5 PIN			937-0617	
Orifice in P-Port				
Type	ØD inch (mm)	Seal ring	Order number	
D1	0.039 (1.0)	9.25 x 1.75	484-9973	
D2	0.059 (1.5)		484-9974	
D3	0.079 (2.0)		484-9975	
D4	0.087 (2.2)		484-9977	
D5	0.098 (2.5)		484-9976	
Seal Kit				
Type	Dimensions, quantity		Order number	
Standard - NBR70	9.25 x 1.68 (4 pcs.)	17 x 1.8 (2 pcs.)	9.25 x 1.75 (1 pc)	484-9965
Viton	9.25 x 1.78 (4 pcs.)	17.17 x 1.78 (2 pcs.)		484-9971
Bolt Kit (for studs see HU 0030)				
Dimensions, quantity		Bolt torque	Order number	
M5 x 45 DIN 912-10.9 (4 pcs.)		6.6 ft-lbs (8.9 Nm)	484-9958	
10-24 UNC x 1.75 (4 pcs.)			2 000 107	
			* CSA Upon request 	

Caution!

- 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 spool symbols on request.
- The plastic packaging foil is recyclable.
- Mounting bolts, studs and EN -connectors must be ordered separately.
- Certified documentation is available per request.

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