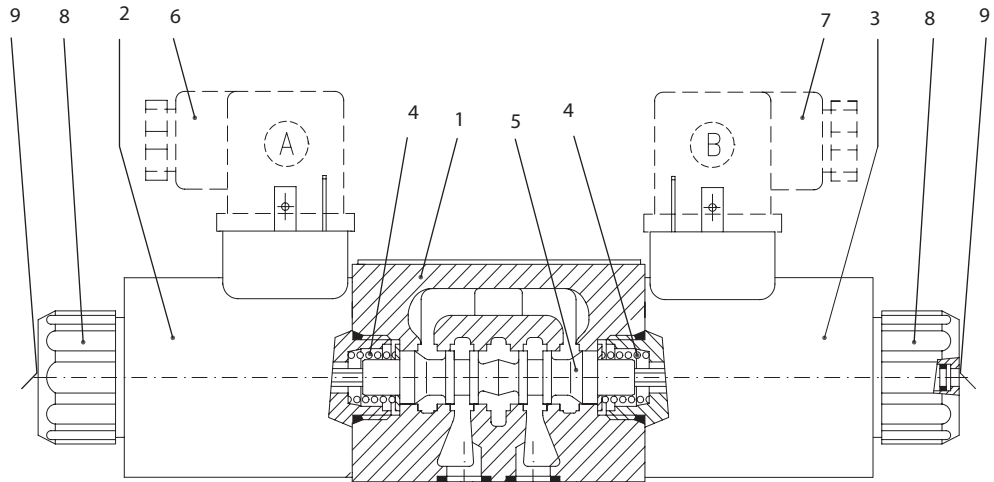


**OVERVIEW**



P104 435E

Directional control valves  
 DCV03

DCV 03 directional control valves consist of: housing (1), control spool (5), with two centering springs (4), and cylindrical operating solenoids (2, 3).

The three-position directional valves have 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. For AC supply the solenoids are provided with a rectifier, which is integrated directly into the coil.

The plug connectors (6, 7) can be rotated 90°. By loosening the nut (8), the solenoids can be rotated 360°. This enables the solenoids to be replaced without opening the valves.

In the case of solenoid malfunction or power failure, the spool can be actuated by manual override (9), provided the pressure in T-port does not exceed 25 bar [360 psi].

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

**FEATURES**

- 3 position, 4-way, and 2 position, 4-way directional valves
- Cylindrical operating solenoids with separate operating coils – connector can be rotated 90°
- 4-land spool – reduced functional dependence on fluid viscosity
- Push button manual override
- Installation dimensions to ISO 4401-03-02-0-94 and DIN 24340-A6



**TECHNICAL DATA**

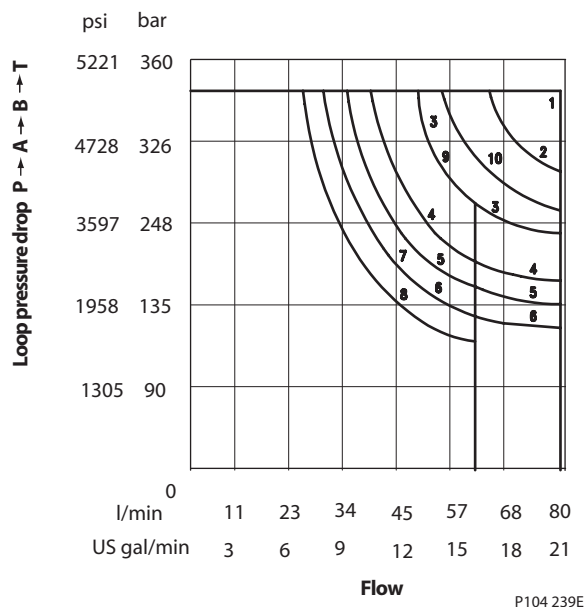
*Specifications*

<b>Nominal size</b>	<b>mm [in.]</b>	6.0 [0.24]
<b>Maximum flow</b>	<b>l/min [US gal/min]</b>	See p-Q characteristics below
<b>Maximum operating pressure</b>	<b>bar [psi]</b>	320 [4640]
<b>Maximum back pressure (port T)</b>	<b>bar [psi]</b>	210 [3050]
<b>Pressure drop</b>	<b>bar [psi]</b>	see $\Delta$ p-Q characteristics, page 4
<b>Weight – with 1 solenoid with 2 solenoids</b>	<b>Kg [lb]</b>	1.6 [3.52] 2.2 [4.84]

**CHARACTERISTICS**

*p - Q Characteristics*

Operating limits for maximum hydraulic power transferred by the directional valve. Measured at viscosity = 35 mm<sup>2</sup>/sec (cSt) [166 SUS].

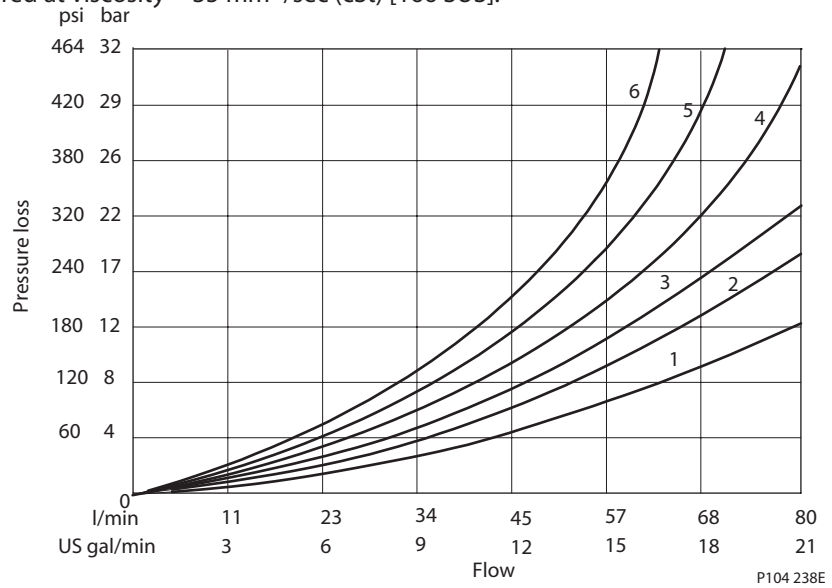


Spool	Curve
Z11	1
C11	7
H11	4
P11	1
Y11	3
B11	9
Y41	7
Z21	1
C41	6
R11	4
R21	5
A51	6
P51	1
Y51	3
C51	7
Z51	1
Z71	8
Z81	8
Z91	8
R31	6
H51	8
F51	8
X11	4
K11	8
N11	8
J15	1
J75	10
L21	6
F11	6

**CHARACTERISTICS**  
 (continued)

*Δp-Q Characteristics*

Measured at viscosity = 35 mm<sup>2</sup>/sec (cSt) [166 SUS].



P104 238E

Spool	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	2	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					
J15	2	2	3	3	
J75	2	2			

**ORDER CODE**

DCV 03 - □ - □□□□ - □□□□ - □□ - □□ - □□ - □□

Directional control valve

Nominal size

Operating positions

Code	Description
2	Two position
3	Three position

Spool

See *Spool options*, page 5

Voltage

Code	Description
01200	12 VDC / 2.72 A
02400	24 VDC / 1.29 A
12060	115 VAC / 0.35 A / 50(60) Hz
23050	230 VAC / 0.17 A / 50(60) Hz

The AC coils correspond with E5 coils only.

Connector

Code	Description
E1	DIN 43650
E2	DIN 43650 with diode
E3	AMP junior
E4	AMP junior with diode
E5	DIN 43650 with rectifier in coil
E8	Lead wires
E9	Lead wires with diode in coil
E12	Deutsch
E13	Deutsch with diode in coil

Seals

Code	Description
B	Buna-N
V	Viton

P port orifice

Code	Description
Omit	None
D1	1.0 mm [0.04 in]
D2	1.5 mm [0.06 in]
D3	2.0 mm [0.08 in]
D4	2.2 mm [0.09 in]
D5	2.5 mm [0.10 in]

Spool speed control orifice

Code	Description
Omit	None
T1	0.7 [0.03 in] orifice

Manual override

Code	Description
00	Standard
N1	Covered with coil nut
N2	Protective rubber boot.
N3	Detent assembly

Connector plug (DIN 43650)

Code	Description
Omit	No plug
K1	Connector plug
K2	Connector plug with LED

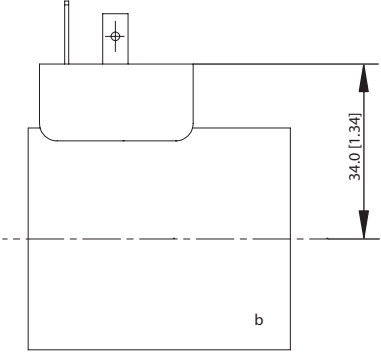
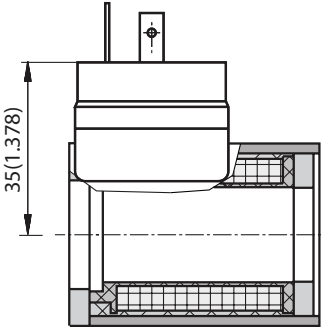
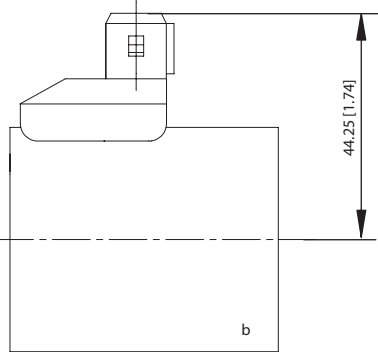
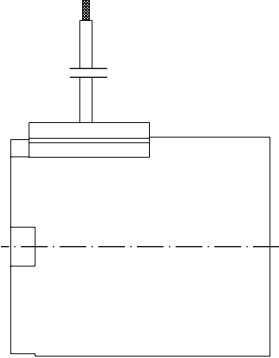
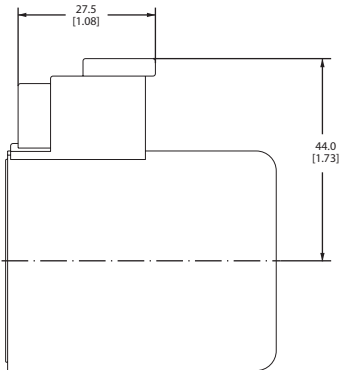
Requires E1, E2, or E5 coil connection

**SPOOL OPTIONS**


*Functional Symbols*

Code	Symbol	Transition	Code	Symbol	Transition
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			J15*		
Y51*			J75		
C51*					

\* standard spool options.

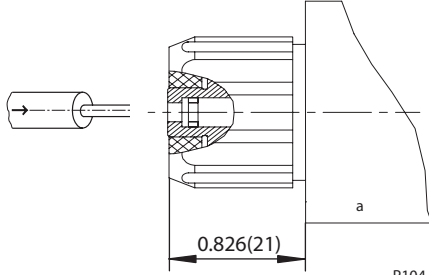
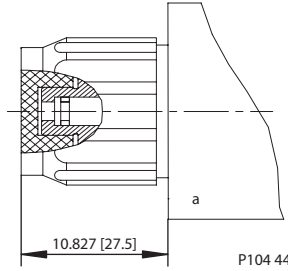
Code	Dimensional sketch	
E1, E2	 <p>P104 436E</p>	<p>E5</p> 
E3, E4	 <p>P104 437E</p>	
E8, E9	 <p>P102 860E</p>	
E12, E13	 <p>P102 857E</p>	

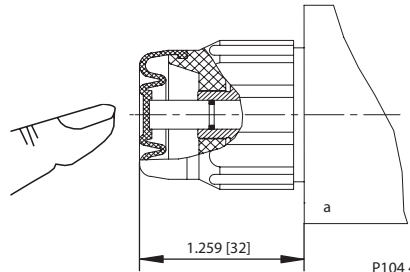
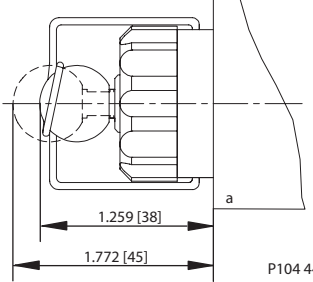
**CONNECTOR  
 OPTIONS**

<i>DIN 43650</i>   P104 439E	Code	Type	Model	Max. input voltage
	K1	Plug B (black)	without rectifier	without rectifier
Plug A (grey)		without rectifier	without rectifier	250 VDC 230 VAC
K2	Plug B (black)	without rectifier and with LED	without rectifier and with LED	30 VDC 230 VAC
	Plug A (grey)	without rectifier and with LED	without rectifier and with LED	30 VDC 230 VAC

Directional control valves  
DCV03

**MANUAL OVERRIDE  
 OPTIONS**

<i>Standard</i>	<i>Covered with coil nut</i>
code 00 mm[in]   P104 440E	Code N1 mm[in]   P104 441E  Manual override covered by coil nut

<i>Rubber boot</i>	<i>Detent assembly</i>
Code N2 mm [in]   P104 442E  Manual override protected by rubber boot	Code N3 mm [in]   P104 443E  Manual override with detent

**SPOOL SPEED CONTROL ORIFICE**

Code	Sketch	Description
T1		<p>This directional valve provides cushioned control spool shifting by means of orifice situated in the solenoid armature.</p> <p>To ensure proper function, air bleeding required. To bleed :</p> <ol style="list-style-type: none"> <li>1. Remove Boot (2)</li> <li>2. Open Plug (1)</li> <li>3. Tighten plug after air is removed</li> <li>4. Replace boot</li> </ol>

**P-PORT ORIFICE OPTIONS**

Code	D mm [in]		Description
None	None		<p>The orifice installed in the P port restricts the input flow..</p> <p>Orifices can also be used in all ports. Flow can be bidirectional.</p>
D1	1.0 [0.04]		
D2	1.5 [0.06]		
D3	2.0 [0.08]		
D4	2.2 [0.09]		
D5	2.5 [0.10]		

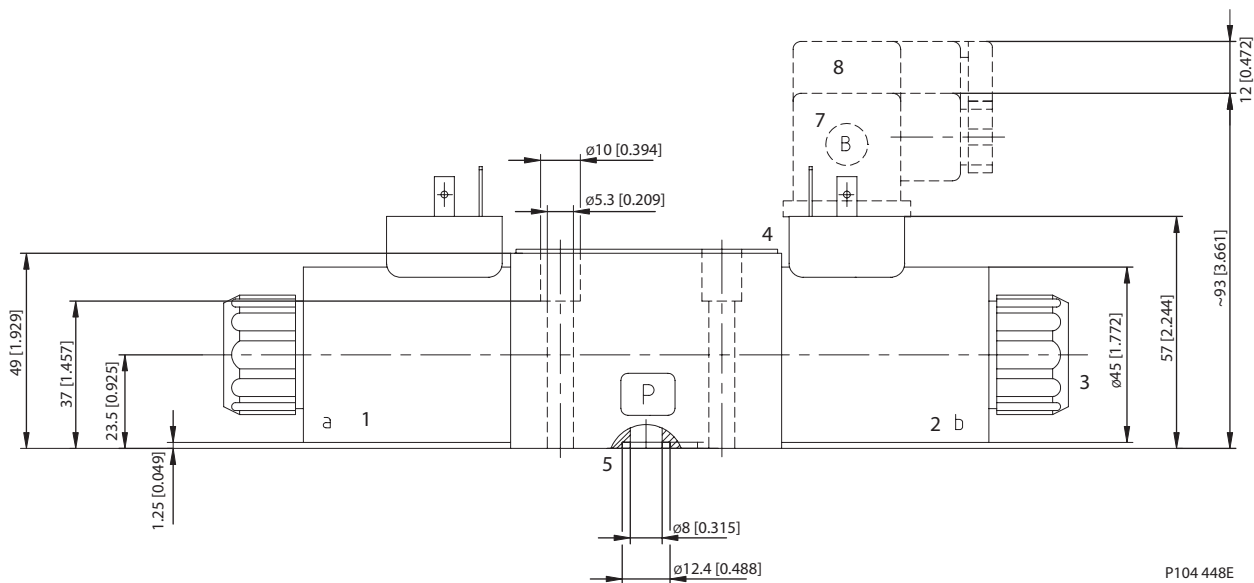
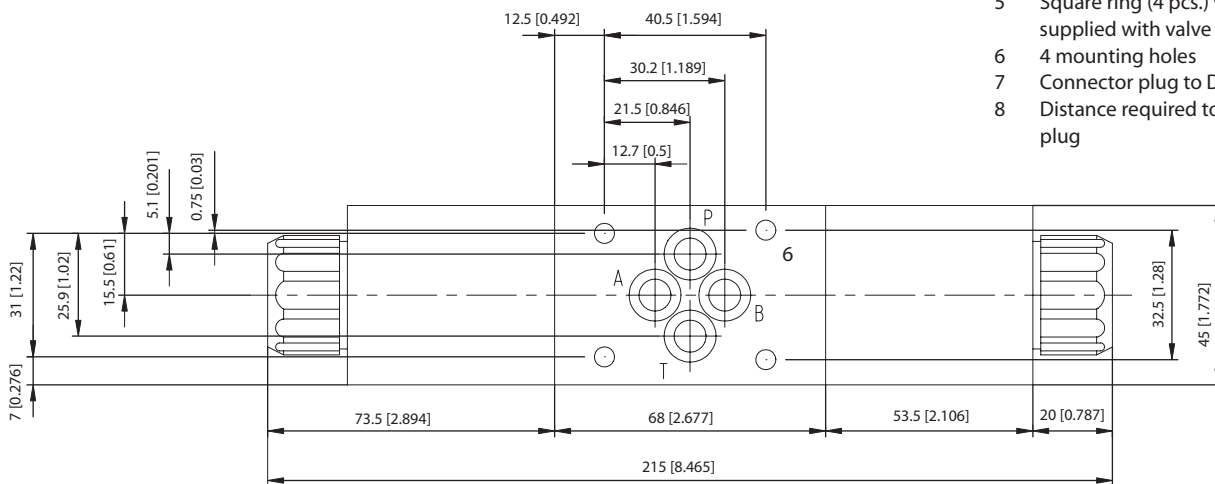


**DIMENSIONS**

*Valve with two solenoids*

Dimensions: mm [in]

- 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 Connector plug to DIN 43650
- 8 Distance required to remove plug



P104 448E

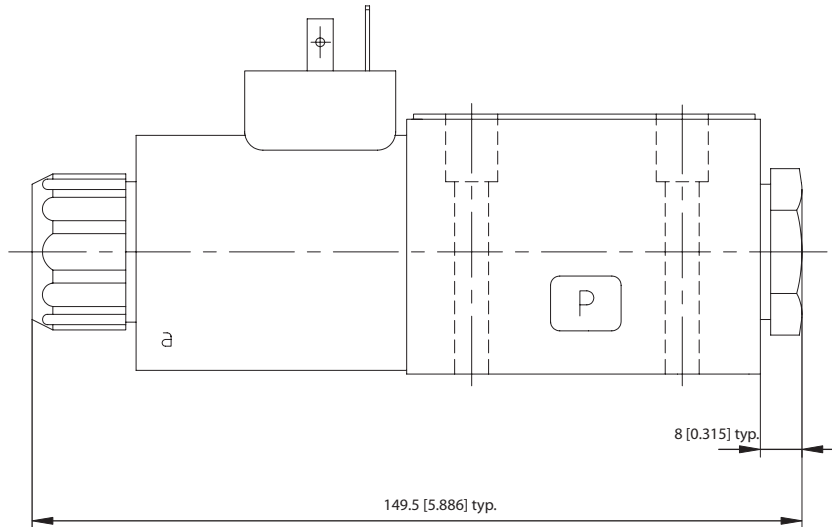
Directional control valves  
DCV03

**DIMENSIONS**  
 (continued)

*Valve with one solenoid - side a*

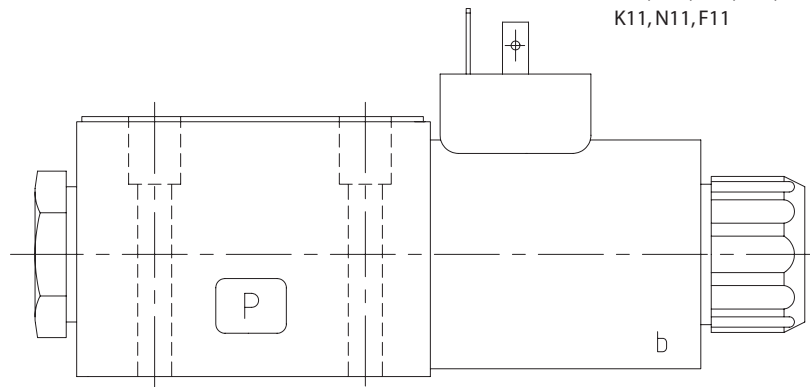
Dimensions: mm [in]

Functional symbols  
 R11, R21, A51, P51, Y51,  
 C51, Z51, H51, J15, J75, Z71,  
 Z81, Z91, F51

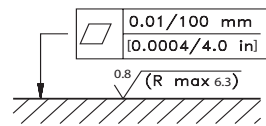


*Valve with one solenoid - size b*

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



P104 449E

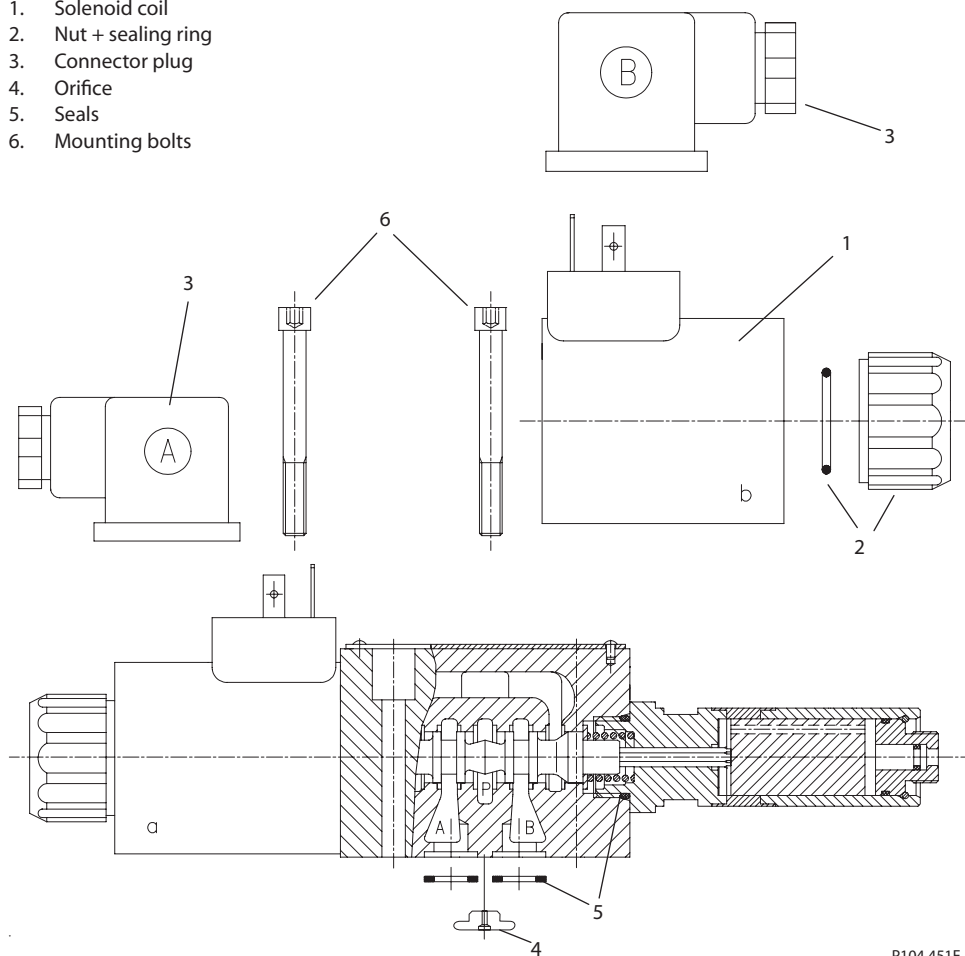


P104 450E

Required surface finish of  
 interface

**REPLACEMENT PARTS**

1. Solenoid coil
2. Nut + sealing ring
3. Connector plug
4. Orifice
5. Seals
6. Mounting bolts



P104 451E

Directional control valves  
DCV03

*Solenoid*

Voltage	E1 DIN 43650	E2 DIN 43650 w/Diode	E3 Amp Jr.	E4 Amp Jr. w/Diode	E5 DIN w/Rectifier	E8 Lead Wires	E9 Lead Wires w/Diode	E12 Deutsch	E13 Deutsch w/Diode
Ordering Number									
01200	158-8004	11051915	***	158-8139	***	158-8083	***	158-8055	11030059
02400	158-8009	158-8053	***	***	***	***	***	158-8057	158-8129
12060	***	***	Not Available		158-8028	Not Available			
23050	***	***			158-8018				

\*\*\* Consult Factory

**REPLACEMENT PARTS  
 (continued)**

*Solenoid nut*

M/O code	Type of nut	Ordering number
No Code	Standard nut	158-8005
N1	Closing nut	Consult factory
N2	Nut with rubber cap	Consult factory
N3	Nut with detent assembly	Consult factory

*Connector (DIN 43650)*

Code	Model	Connector plug A gray	Connector plug B black
		Ordering number	
K1	No rectifier or LED	158-8076	088010080
K2	with LED	Consult factory	Consult factory

*Orifice*

Code	Diameter mm [in]	Ordering number
D1	1.0 [0.039]	158-8013
D2	1.5 [0.059]	158-8003
D3	2.0 [0.078]	158-8079
D4	2.2 [0.87]	158-8080
D5	2.5 [0.098]	158-8081

*Seal kit*

Type	Ordering number
Buna-N	158-8007
Viton	158-8062

*Mounting bolts – set*

Type, Qty	Ordering number
M5 x 45 DIN 912-10.9 (4 pcs)	158-8026
10-24 UNC x 1.75 (4 pcs)	158-8064