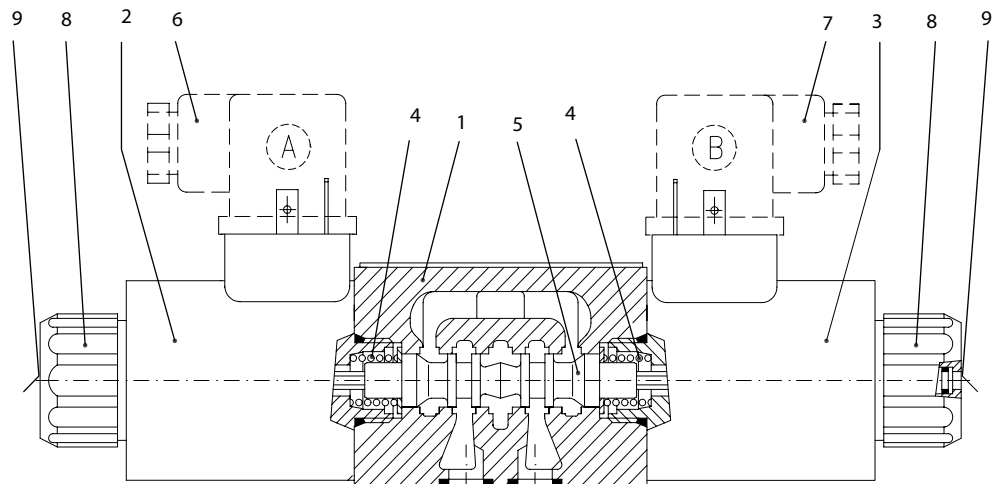


OVERVIEW



P104 435E

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 connectors.

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

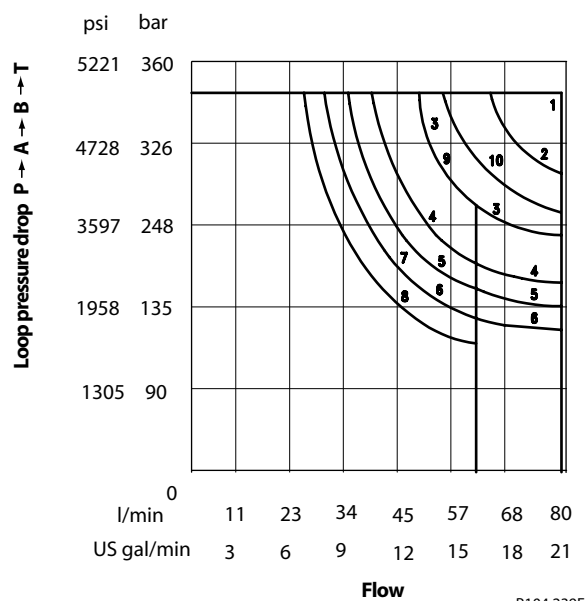
Specifications

Nominal size	mm [in.]	6.0 [0.24]
Maximum flow	l/min [US gal/min]	See p-Q characteristics below
Max. operating pressure	bar [psi]	320 [4640]
Max. back pressure (port T)	bar [psi]	160 [2320]
Pressure drop	bar [psi]	see Δ p-Q characteristics, page 4
Weight – with 1 solenoid with 2 solenoids	Kg [lb]	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 mm²/sec (cSt) [166 SUS] and temperature = 40°C [104°F].



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

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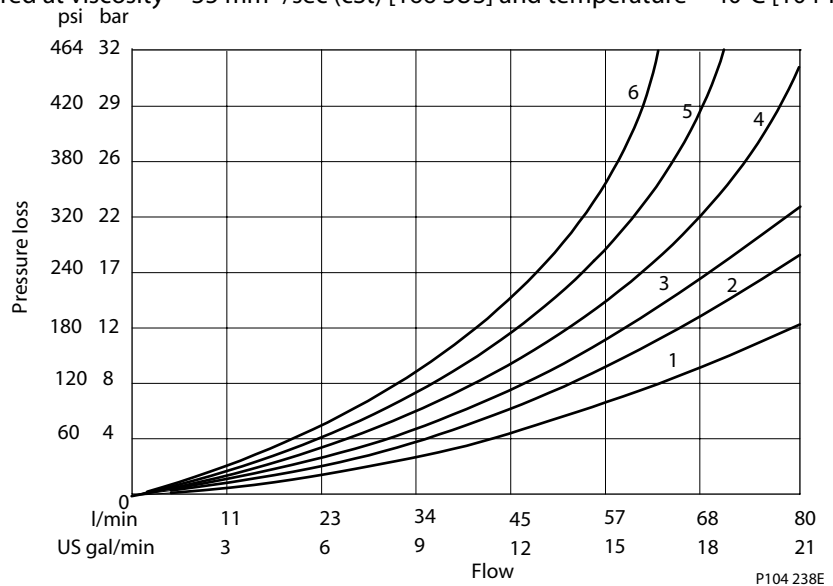
Cartridge Valves Technical Information

Directional Valves DCV 03

CHARACTERISTICS (continued)

Δp -Q Characteristics

Measured at viscosity = 35 mm²/sec (cSt) [166 SUS] and temperature = 40°C [104°F]



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			

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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
01000	10 VDC/ 3.02 A
01200	12 VDC/ 2.72 A
02000	20 VDC/ 1.51 A
02400	24 VDC / 1.29 A
12060	115 VAC / 0.35 A / 50(60) Hz
24060	230 VAC / 0.17 A / 50(60) Hz

The AC coils correspond with E5 connectors 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
E8	Lead wires
E9	Lead wires with diode
E12	Deutsch
E13	Deutsch with diode

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 connector

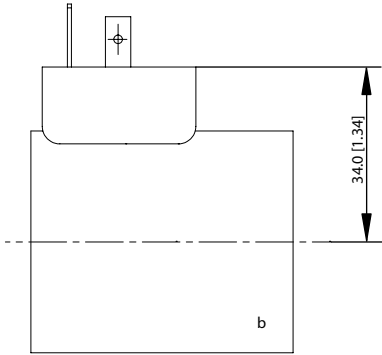
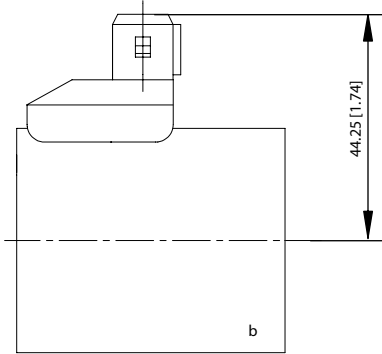
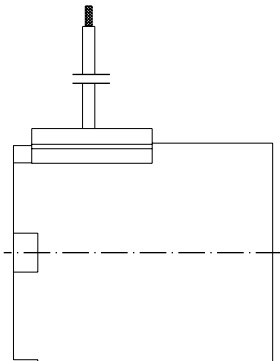
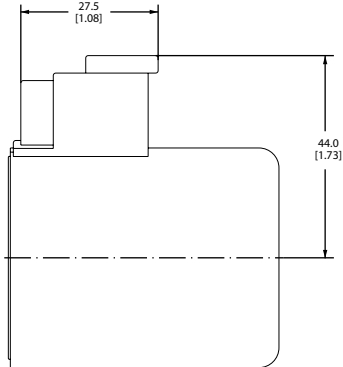
SPOOL OPTIONS

Functional Symbols

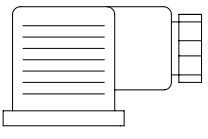
Code	Symbol	Transition	Code	Symbol	Transition
Z11*			Z51*		
C11*			Z71		
H11*			Z81		
P11			Z91		
Y11*			R31		
L21			H51		
B11			F51		
Y41			Z11*		
Z21			X11		
C41			C11		
F11			H11		
R11*			K11		
R21*			N11		
A51*			F11		
P51			J15*		
Y51*			J75		
C51*					

* standard spool options.

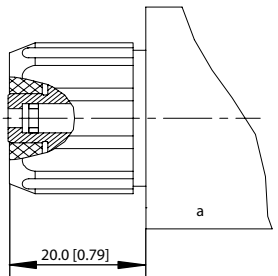
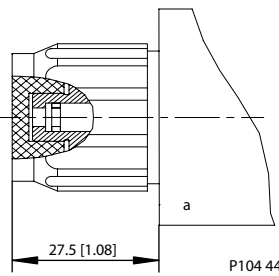
CONNECTORS

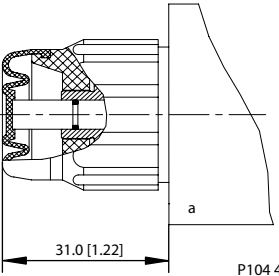
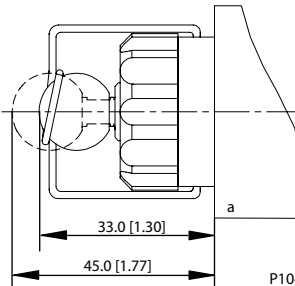
Code	Dimensional sketch
E1, E2, E5	 <p>P104 436E</p>
E3, E4	 <p>P104 437E</p>
E8, E9	 <p>P102 860E</p>
E12, E13	 <p>P102 857E</p>

CONNECTOR OPTIONS

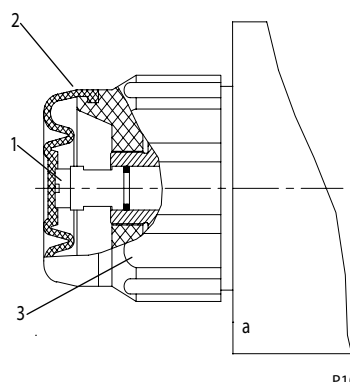
<i>DIN 43650</i>		Code	Type	Model	Max. input voltage
 <p>P104 439E</p>	K1	Plug B (black)	without rectifier	250 VDC 230 VAC	
		Plug A (grey)	without rectifier	250 VDC 230 VAC	
	K2	Plug B (black)	without rectifier and with LED	30 VDC 230 VAC	
		Plug A (grey)	without rectifier and with LED	30 VDC 230 VAC	

MANUAL OVERRIDE OPTIONS

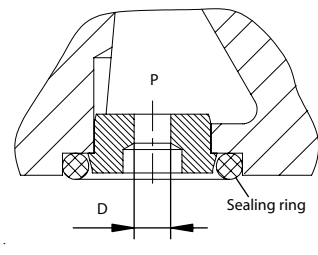
<i>Standard</i>	<i>Covered with coil nut</i>
code 00 mm[in]  <p>20.0 [0.79]</p> <p>P104 440E</p>	Code N1 mm[in]  <p>27.5 [1.08]</p> <p>P104 441E</p> <p>Manual override covered by coil nut</p>

<i>Rubber boot</i>	<i>Detent assembly</i>
Code N2 mm [in]  <p>31.0 [1.22]</p> <p>P104 442E</p> <p>Manual override protected by rubber boot</p>	Code N3 mm [in]  <p>33.0 [1.30]</p> <p>45.0 [1.77]</p> <p>P104 443E</p> <p>Manual override with detent</p>

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"> 1. Remove Boot (2) 2. Open Plug (1) 3. Tighten plug after air is removed 4. Replace boot

P-PORT ORIFICE OPTIONS

Code	D mm [in]	Description
None	None	
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]	

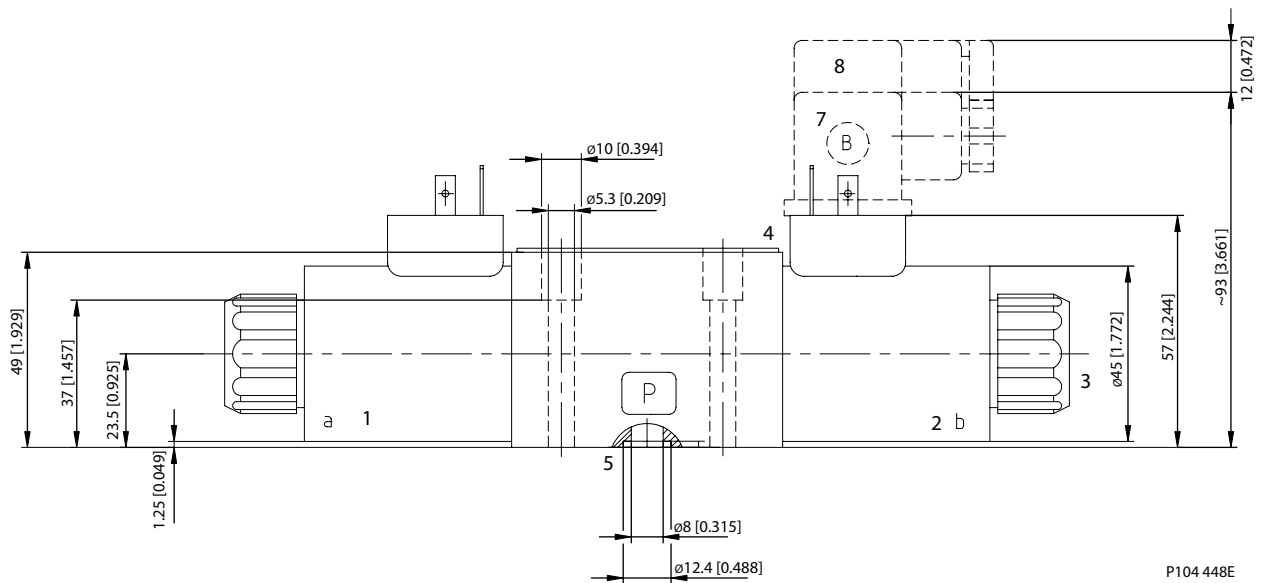
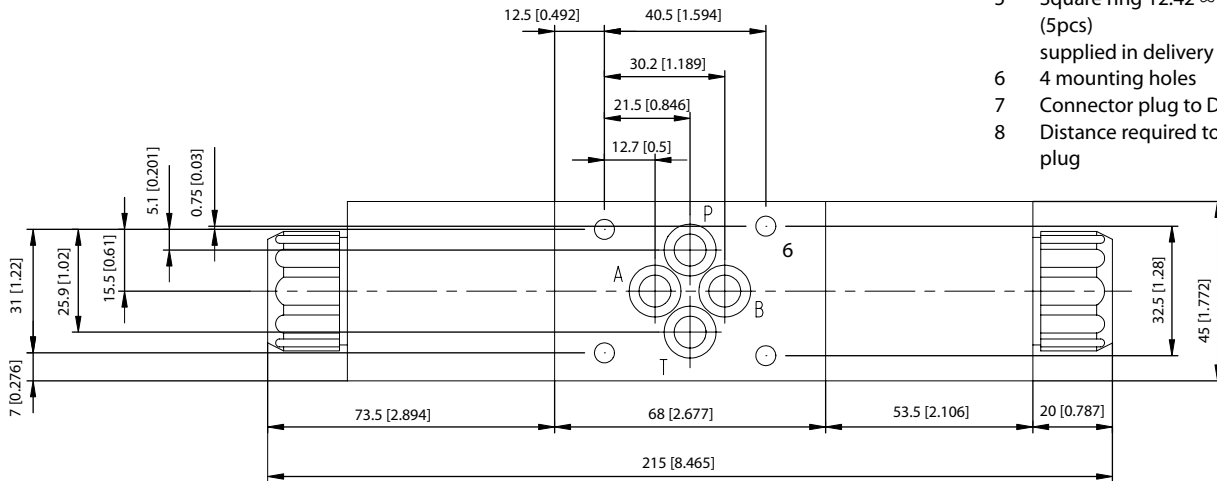
DIMENSIONS

Valve with two solenoids

Dimensions: mm [in]

- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square ring 12.42 ∞ 1.68
(5pcs)
supplied in delivery packet
- 6 4 mounting holes
- 7 Connector plug to DIN 43650
- 8 Distance required to remove plug

Directional control valves
DCV03

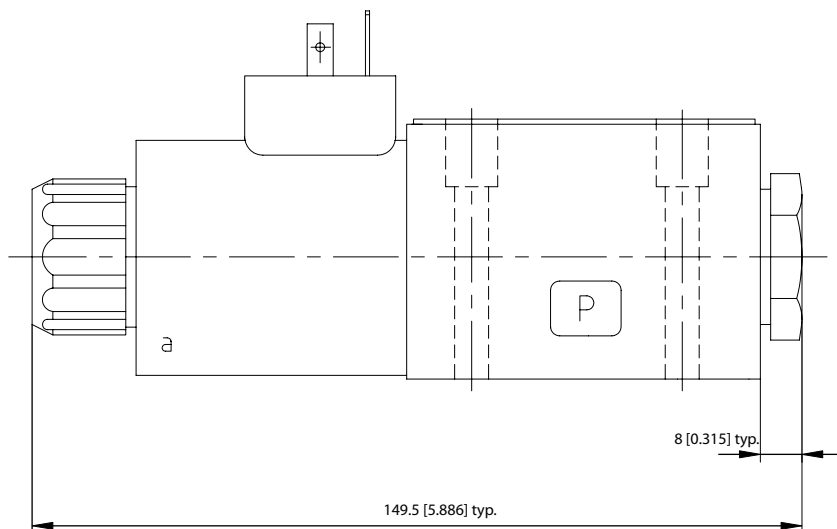


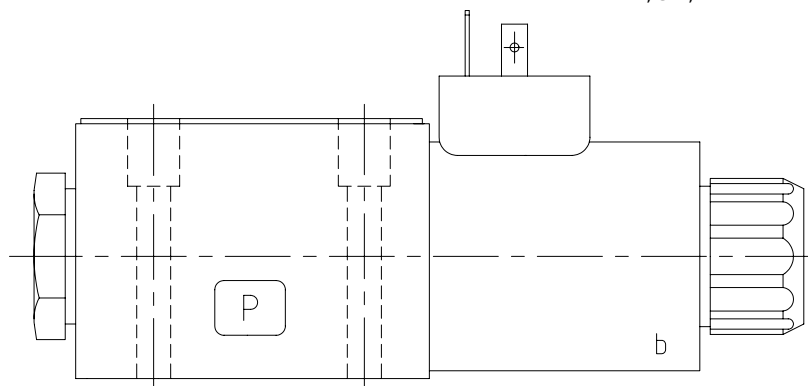
P104 448E

DIMENSIONS
 (continued)

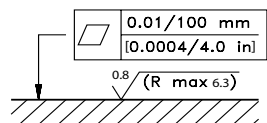
Valve with one solenoid - side a

Dimensions: mm [in]

 Functional symbols
 R11, R21, A51, P51, Y51,
 C51, Z51, H51, B51, M21,
 X25, J15, J75

Valve with one solenoid - size b

 Functional symbols
 X11, C11, H11


P104 449E

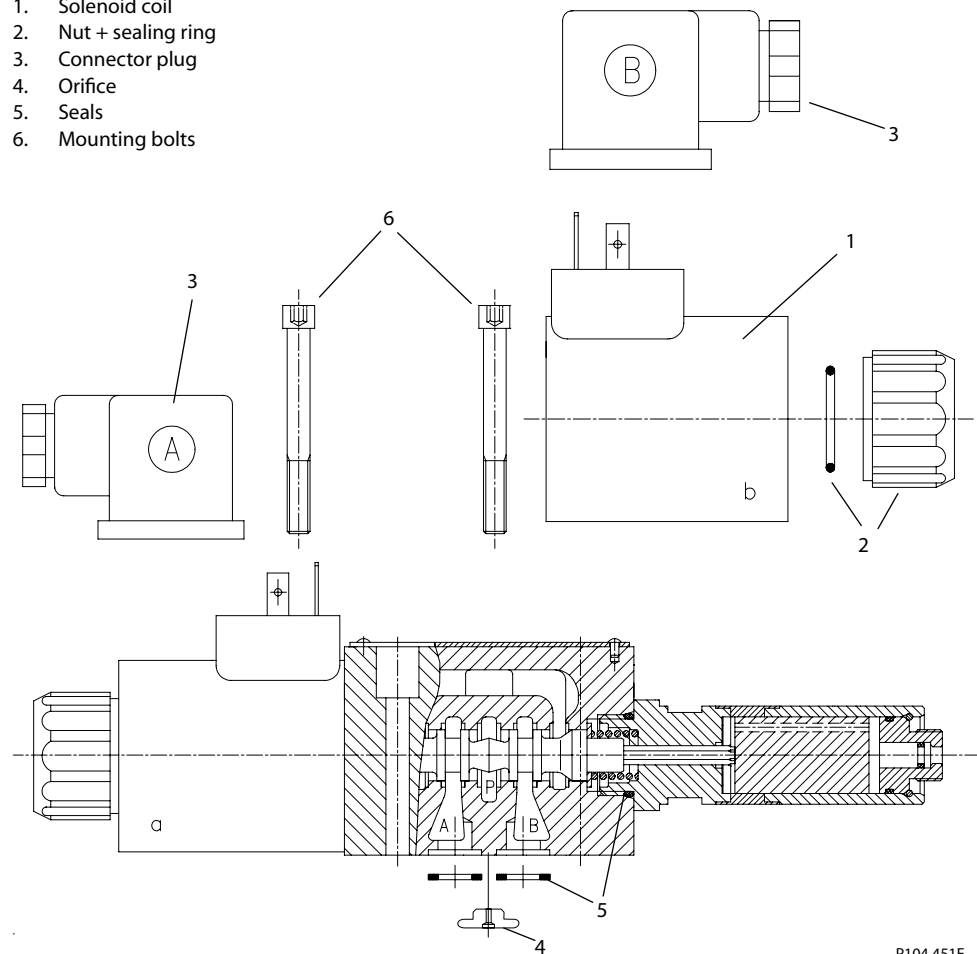


P104 450E

 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

Solenoid

Voltage	Connector								
	E1	E2	E3	E4	E5	E8	E9	E12	E13
Ordering number									
01000	158-8048	158-8050	Consult factory	Consult factory	Consult factory	158-8082	Consult factory	158-8054	Consult factory
01200	158-8004	158-8051	Consult factory	Consult factory	Consult factory	158-8083	Consult factory	158-8055	11030059
02000	158-8049	158-8052	Consult factory	Consult factory	Consult factory	158-8084	Consult factory	Consult factory	Consult factory
02400	158-8009	158-8053	Consult factory	Consult factory	Consult factory	158-8085	Consult factory	158-8057	Consult factory
11550	Consult factory	Consult factory	Not available		Consult factory	Not available			
23050	Consult factory	Consult factory			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	Ordering number
M5 x 45 bolts	158-8026
No 10-24 bolts	158-8064