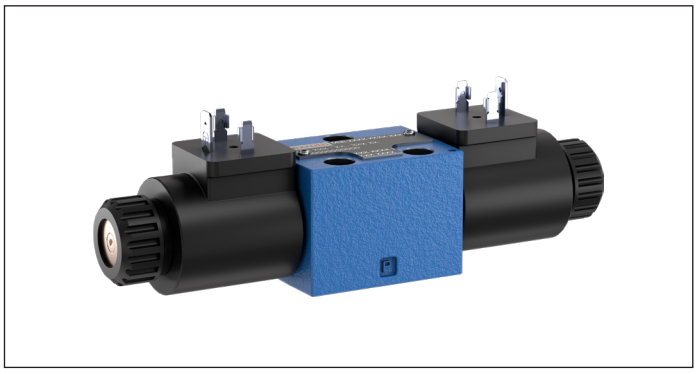
rexroth
A Bosch Company

4/3 - 4/2 Directional valves solenoid operated

LC04-A / LC02-A

RE 18305-11
Edition: 11.2024
Replaces: 06.2022



- Size 4
- Series 00
- Maximum operating pressure 310 bar (4500 psi)
- Maximum flow 25 l/min (6.6 gpm)

General specifications

- Direct solenoid operated spool valve, standard version.
- Spool switching is by on off solenoids with a central tube and removable coil.
- Spring centered control spool.
- For mounting on industry standard surface port pattern to CETOP RP121 H-4.2-P02.
- Wet pin DC solenoids with removable coil and manual override.
- Manual override as option (push or screw-in type).
- Coil can be rotated through 360°.
- Available electrical connections: DIN 43650 – ISO 4400, AMP JUNIOR, DT04-2P (Deutsch), Free leads.

Contents

Ordering details

01	02	03	04	05	06	07	08
L	**5**		**A0**				

Family

01	Directional Valves	**L**

Type

02	CETOP Valves	**5**

Size

03	NG 4 (P02)	**0**
	NG 4 (R02)	**4**

Operation

04	Solenoid operated D36 coil	**A0**

Spool variants

05	4/3 operated A and B side	**_ 2 _ _**
	4/2 operated A and B side	**_ 2 _ _**
	4/2 operated A side	**_ 3 _ _**
	4/2 operated B side	**_ 4 _ _**
	4/2 operated A and B side with detent	**_ 5 _ _**

Voltage supply		**31**	**07**	**04**	**03**	**01**	**00**	
06	Without coil	–	–	–	–	–	●	**00**
	12 V DC	●	●	●	●	●	–	**OB**
	24 V DC	●	●	●	●	●	–	**OC**
	48 V DC	–	●	●	●	●	–	**OD**
	96 V DC	–	–	–	–	●	–	**OU**
	205 V DC	–	–	–	–	●	–	**AH**

Electric connections

07	Without coils	**00**
	With coils, without mating connector DIN EN 175301-803	**01**[1)]
	With coils, with bi-directional diode, without mating connector vertical Amp-Junior	**03**
	With coils, with bi-directional diode, without mating connector horizontal Amp-Junior	**04**
	With coils, with bi-directional diode, without mating connector DT04-2P	**07**
	With coils and bipolar sheathed lead 300mm (11,8 in) long	**31**

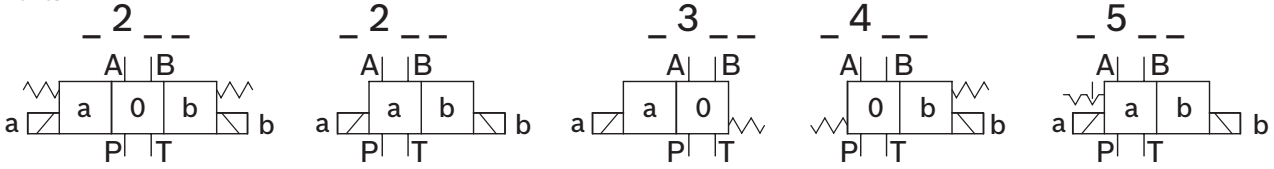
Options

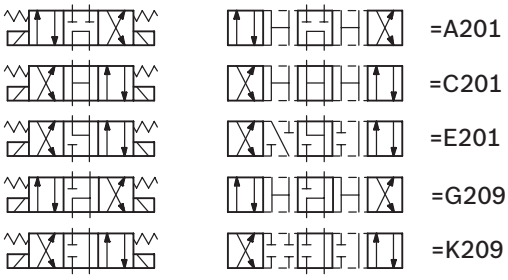
08	Standard	**00**
	External push button manual override	**EP**
	Screw-in type manual override	**EF**

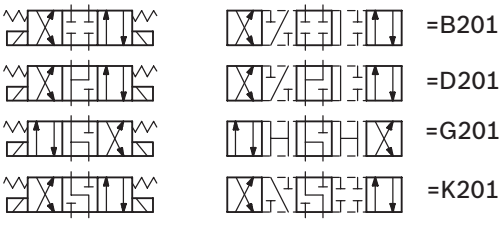
● = Available – = Not available

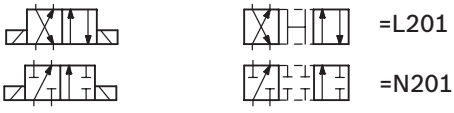
1) For connectors ordering code see data sheet RE 18325-90.

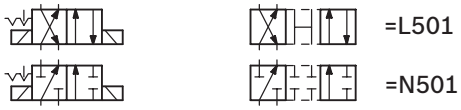
Spool variants

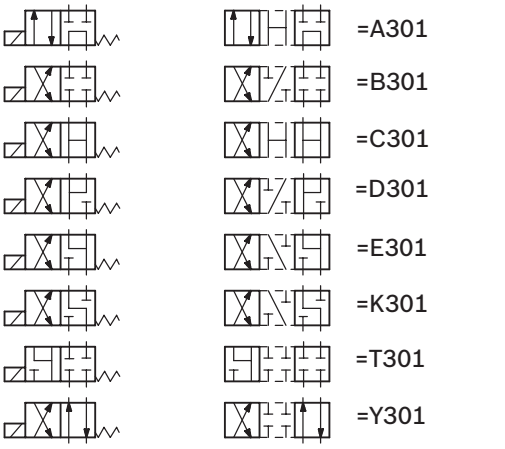


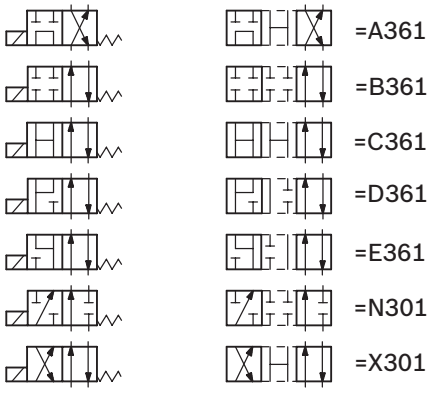


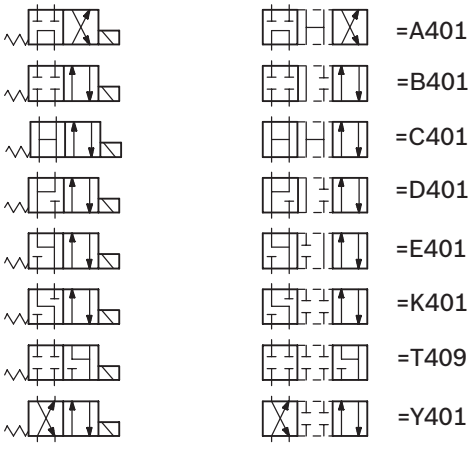


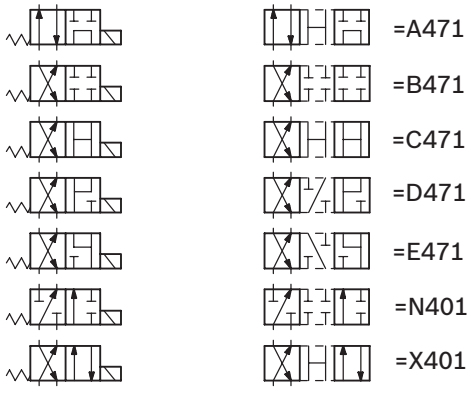




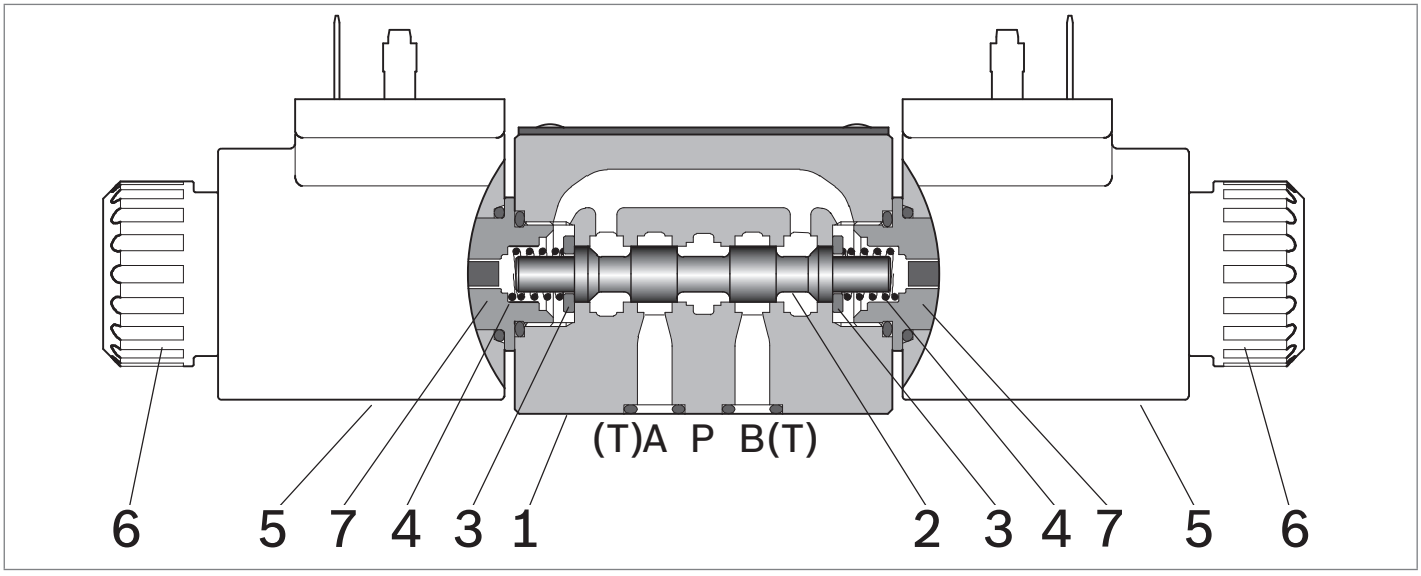








Functional description



Type L50A0

The solenoid operated valves type L 50A0 provide 3-way or 4-way flow control, usually from port **P** to either port **A** or **B**, and the consequent flow return to T from **B** or **A** respectively.

The valves are composed by a central cast iron body (**1**) which mounts on industry standard surfaces where the flow ports and the installation holes are located; the central body houses the precisely machined directional control spool (**2**) which is held in the neutral or initial position by the return springs (**4**). One or two solenoids, composed by a central tube and a surrounding coil (**5**), are fitted to the body at the spool's ends: when the coils are energized, their magnetic field develops a force on the oil immersed mobile plunger incorporated in the tube which pushes the control spool from the initial position into a shifted position where oil flow is allowed from **P** to either **A** or **B**.

With coils (**5**) de-energized, the control spool (**2**) returns to the central or initial position pushed by the washers (**3**) supported by the return springs (**4**).

The coils (**5**) are locked on the tube by threaded plastic nuts (**6**); the tube incorporates an externally reachable push rod (**7**) which can pushed for emergency spool shifting in case of electric failure.

Type L50A0L201_, L50A0M201_, L50A0N201_

These valves do not have return springs (**4**) for the directional control spool (**2**): the spool can shift between two positions, driven only by the magnetic force developed by the two solenoids (**5**), and, when the solenoids are not energized, the neutral position of the spool is not defined. The directional control spool holds a specific position only when one of the solenoids is maintained energized.

Type L50A0L501_, L50A0M501_, L50A0N501_

In these valves the directional control spool has two switched positions, each one with a mechanical detent. Shifting of the spool's position is achieved by energizing one of the solenoids, but it is unnecessary to maintain the coil energized in order to keep the spool shifted.

Technical data

General						
Valve element with 2 solenoids	kg (lbs)	1.14 (2.5)				
Valve element with 1 solenoid	kg (lbs)	0.82 (1.7)				
Valve installation positions		Unrestricted				
Ambient Temperature	°C (°F)	–30....+90 (-22....+194) (NBR seals)				
Hydraulic						
Maximum pressure at P, A and B ports	bar (psi)	310 (4500)				
Maximum pressure at T	bar (psi)	250 (3625)				
Maximum flow	l/min (gpm)	25 (6.6)				
Maximum flow when using spool type A201, A301, A401, A361, A471, G201, G209	l/min (gpm)	18 (4.7)				
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:		Mineral oil based hydraulic fluids HL (DIN 51524 part 1). Mineral oil based hydraulic fluids HLP (DIN 51524 part 2). For use of environmentally acceptable fluids (vegetable or polyglycol base) please consult us.				
Fluid Temperature	°C (°F)	–30....+100 (-22....+212) (NBR seals)				
Permissible degree of fluid contamination		ISO 4572: $\beta_x \geq 75$ X=12...15 ISO 4406: class 20/18/15 NAS 1638: class 9				
Viscosity range	mm^2/s	5....420				
Electrical						
Voltage type		DC (AC only with RAC connection)				
Voltage tolerance (nominal voltage)	%	-10 .... +10				
Duty		Continuous, with ambient temperature ≤ 50°C (122°F)				
Coil wire temperature not to be exceeded	°C (°F)	180 (356)				
Insulation class		H				
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC				
Coil weight with connection EN 175301-803	kg (lbs)	0.18 (0.40)				
Voltage	V	12	24	48	96	205
Voltage type		DC	DC	DC	DC	DC
Power consumption	W	20	20	20	20	20
Current (nominal at 20 °C (68 °F))	A	1.62	0.84	0.45	0.21	0.01
Resistance (nominal at 20 °C (68 °F))	Ω	7.4	28.4	106.4	451	2062

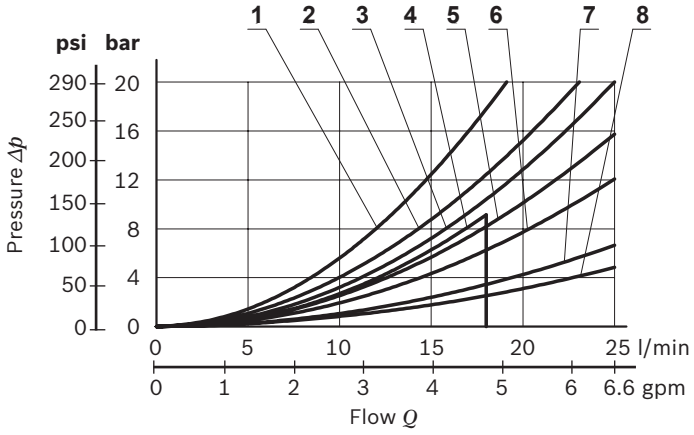
Note

For applications with different specifications consult us.

Code	Voltage [V]	Connector type	Coil description	Marking	Coil Mat no.
OB 01	12 DC	EN 175301-803 (Ex. DIN 43650)	D3601 12DC	12V DC	R901393412
OB 03	12 DC	AMP JUNIOR	D3603 12DC	12V DC	R901435507
OB 04	12 DC	AMP JUNIOR Horizontal	D3604 12DC	12V DC	R901395031
OB 07	12 DC	DEUTSCH DT 04-2P	D3607 12DC	12V DC	R901394397
OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	D3601 24DC	24V DC	R901393577
OC 03	24 DC	AMP JUNIOR	D3603 24DC	24V DC	R901435494
OC 04	24 DC	AMP JUNIOR Horizontal	D3604 24DC	24V DC	R901395035
OC 07	24 DC	DEUTSCH DT 04-2P	D3607 24DC	24V DC	R901394399
OD 01	48 DC	EN 175301-803 (Ex. DIN 43650)	D3601 48DC	48V DC	R901394117
OU 01	96 DC	EN 175301-803 (Ex. DIN 43650)	D3601 96DC	96V DC	R901394229
AH 01	205 DC	EN 175301-803 (Ex. DIN 43650)	D3601 205DC	205V DC	R901394231

Note
For further versions (i.e. cable single lead) contact factory.

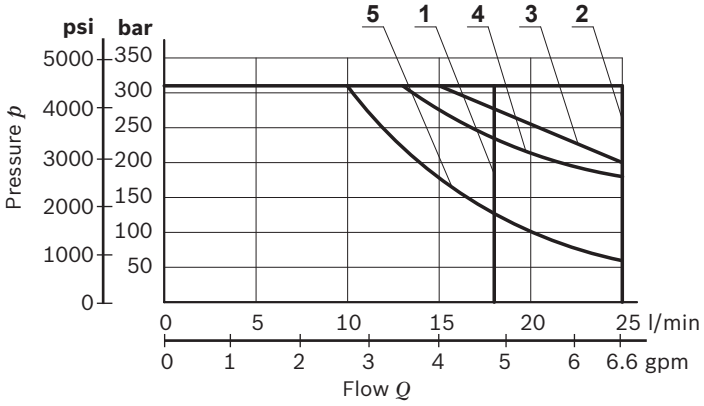
Characteristic curves - NG 4 (P02)



Spool Variant	Curve no.				
	P>T	P>A	P>B	A>T	B>T
A201, A301, A401, A361, A471, G201, G209	4	1	1	2	2
B201, B301, B401		5	5	7	7
B361, B471		5	5	8	8
C201, C301, C401, C361, C471, D201, D301, D401; D361, D471	6	6	6	8	8
E201, E301, E401, E361, E471, K201, K209, K301, K401		5	5	8	8
L201		5	5	8	7
L501		3	5	7	7
M201		3	3	7	6
M501		2	3	6	5
N201		3	3		
N301		2	5		
N401		5	2		
N501		2	3		
T301, T409				5	5
X301, Y301		3	5	8	6
X401, Y401		5	3	6	8

Measured with hydraulic fluid ISO-VG32 at 45° ±5 °C (113° ±9 °F); ambient temperature 20 °C (68 °F).

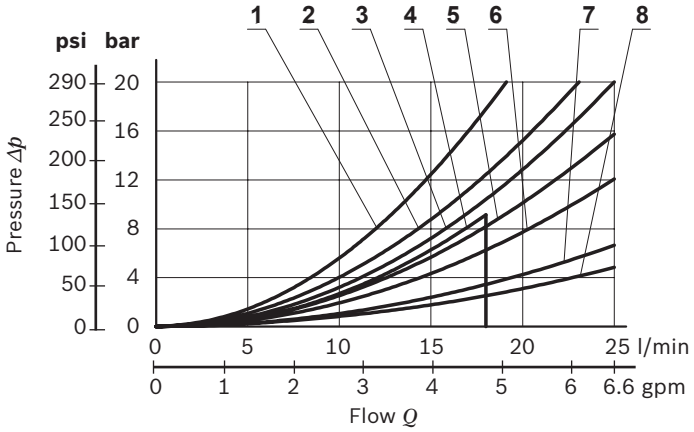
Performance limits



Spool Variant	Curve no.
A201; A301; A401; A361; A471; G201; G209	1
B201; B301; B401; B361; B471; C201; C301; C401; C361; C471; L201; L501; M201; M501	2
E201, E301, E401; E361; E471; D201, D301, D401; D361; D471; K201, K209; K301; K401; T301; T409	3
X301; X401; Y301; Y401	4
N201; N301; N401; N501	5

The performance curves here shown are applicable when oil flow is travelling in both directions, example P>A and B>T. In special circuit schemes the performance limits can be lower.

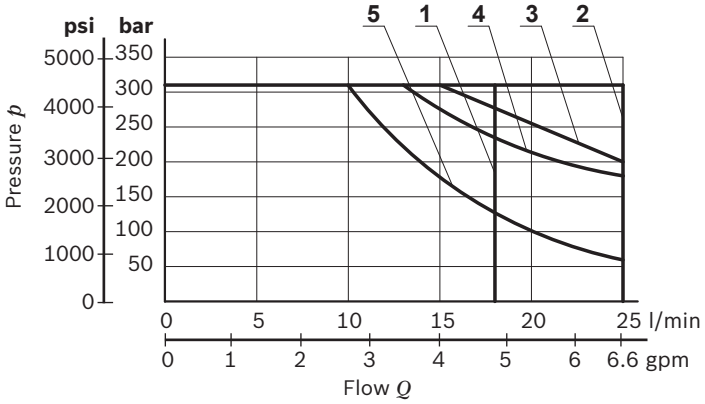
Characteristic curves - NG 4 (R02)



Spool Variant	Curve no.				
	P>T	P>A	P>B	A>T	B>T
A201; A301; A401; A361; A471; G201; G209	1	3	3	3	3
B201; B301; B401		2	2	2	2
B361; B471		2			2
C201; C301; C401; C361; C471; D201; D301; D401; D361; D471	2	7	7	7	7
E201; E301; E401; E361; E471; K201; K209; K301; K401		2	2	7	7
L201		7	5	9	6
L501		7	5	9	6
M201		8	7	6	2
M501		8	7	6	2
N201		8	7		
N301		4	5		
N401		5	4		
N501		8	7		
T301; T409				2	2
X301		2	2	2	2
X401			7	6	
Y301		8	2	2	8
Y401		2	8	8	2

Measured with hydraulic fluid ISO-VG32 at 45° ±5 °C (113° ±9 °F); ambient temperature 20 °C (68 °F).

Performance limits



Spool Variant	Curve no.
A201; A301; A401; A361; A471; G201; G209	1
B201; B301; B401; B361; B471; C201; C301; C401; C361; C471; L201; L501; M201; M501	2
E201, E301, E401; E361; E471; D201, D301, D401; D361; D471; K201, K209; K301; K401; T301; T409	3
X301; X401; Y301; Y401	4
N201; N301; N401; N501	5

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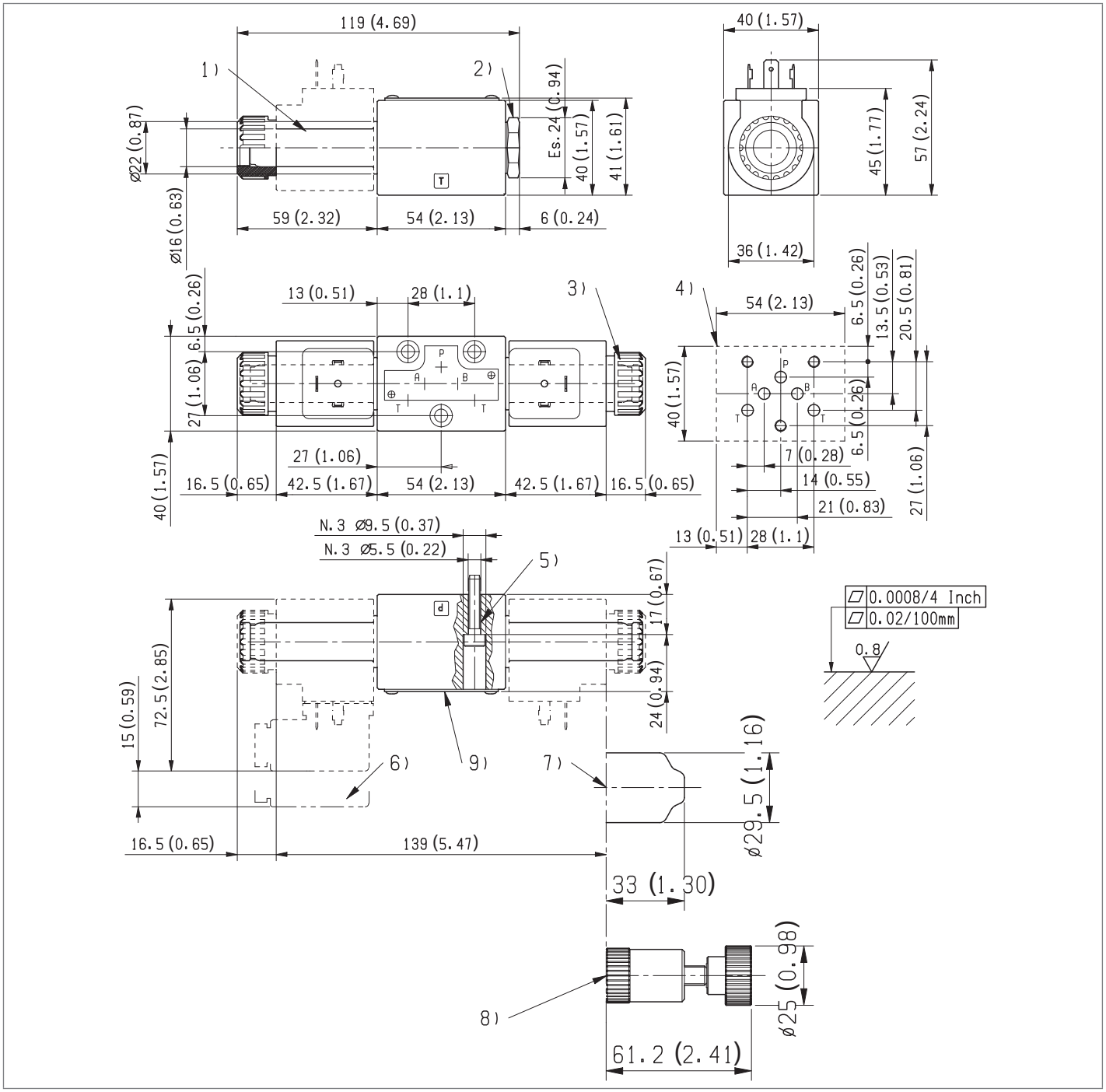
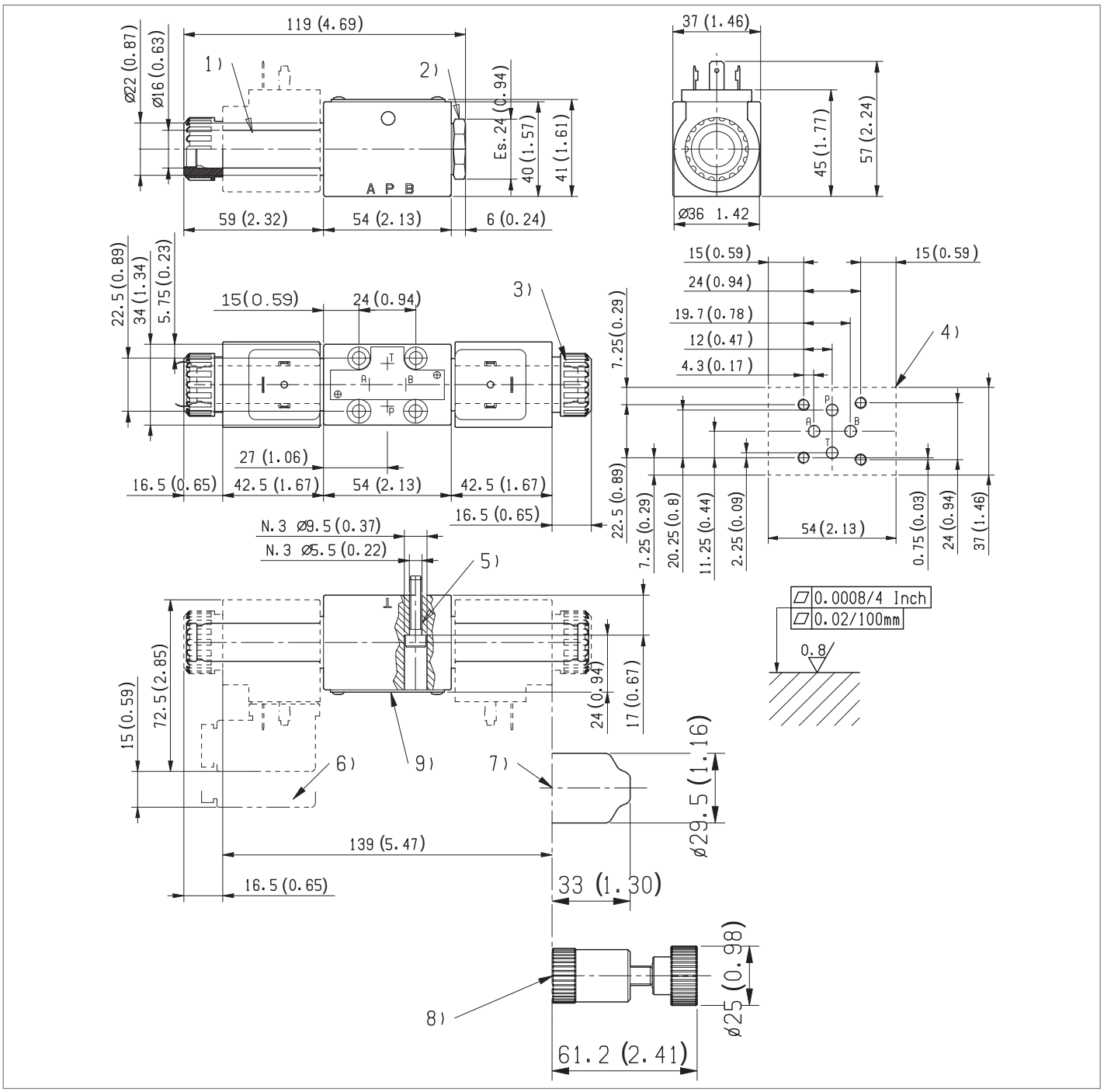
External dimensions and fittings - NG 4 (P02)



1 Solenoid tube O 16mm (0.63inch).
2 Blinding plug for 2 positions version.
3 Ring nut for coil locking O 26,5 mm (1,04inch). Torque 3 – 4 Nm (2.2 – 3.0 ft-lb).
4 Drilling specifications of standard mounting surface according to CETOP RP 121 H-4.2 4-P02.
5 Locking screws 3 pieces: UNI 5931 (ISO 4762) hexagon socket head cap screw M 5x25, recommended specific strength 8.8 class. Torque 5 ÷ 6 Nm (3.7÷4.4 ft-lbs).
6 Gap needed for connector removal.
7 Optional push-button type manual override for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R930059524.
8 Optional screw type manual override for spool opening: it is screwed torque 6-7Nm (4.4-5.2 ft-lb) to the tube as replacement of the coil ring nut. Mat no. R930059561.
9 Identification label.

External dimensions and fittings NG 4 (R02)



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Electric connection

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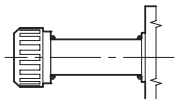

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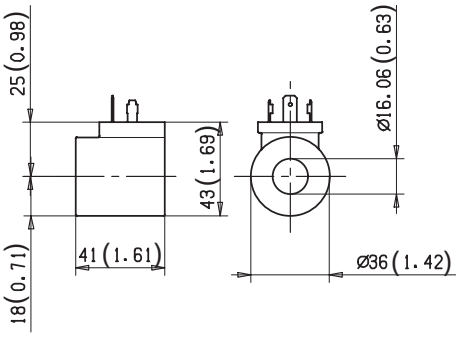
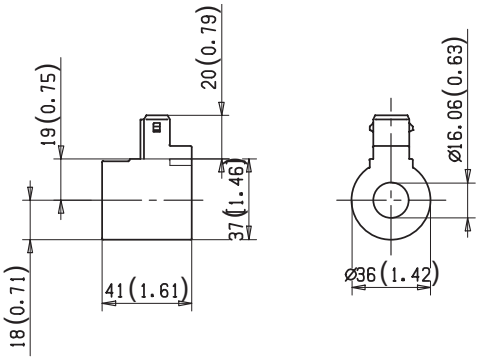
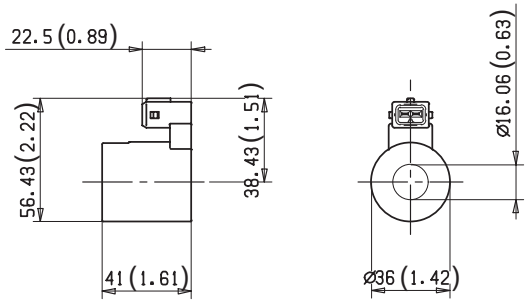


03 Protection class: IP 65 with female connector properly fitted (see drawing).



04 Protection class: IP 65 with female connector properly fitted (see drawing).



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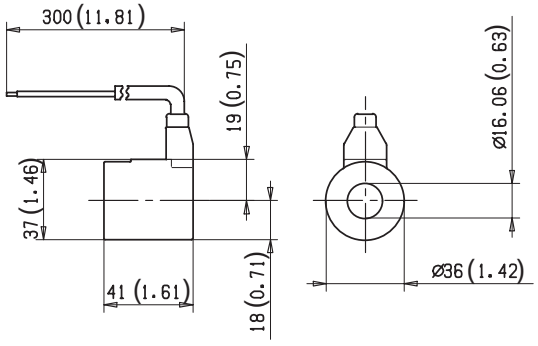
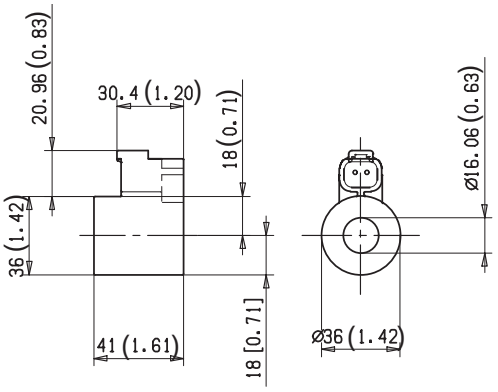


07 Protection class: IP 69 K with female connector properly fitted (see drawing).



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