Rexroth
Bosch Group

RE 18305-08/12.13 1/10

4/3 - 4/2 Directional valve with solenoid actuation

L5110 (LC1-Z)

Size NG6 ISO 4401-03 CETOP RP121 H-03 (CETOP 3)
Series 00
Maximum operating pressure 350 bar *[5076 psi]*
Maximum flow 30 l/min *[7.9 gpm]*


DVI0104

Summary

General specifications

- Valve elements with solenoid operated directional spool.
- Control spools operated by solenoids with removable coils.
- In the de-energized condition, the control spool is held in the central position by return springs.
- Wet pin tubes for DC coils, with push rod for mechanical override; nickel plated surface.
- Coils can be rotated 360° around the tube; they can be energized by AC current through special connectors with rectifier (RAC).
- Manual override (push-button or screw type) available as option.

Ordering Details

L	5 1	1 0	_ _ _ _	_ _	_ _	_ _

Family
Directional Valves
Cetop 3

Type
Size 6

Coil
C36

Circuit

4/3 operated on both sides A and B	= _ 2 _ _
4/2 operated on side A only	= _ 3 _ _
4/2 operated on side B only	= _ 4 _ _

Options

_ _ =	Lever type manual override [2]
00 =	Standard
0P =	Push-button type manual override
0F =	Screw type manual override

Electric connections

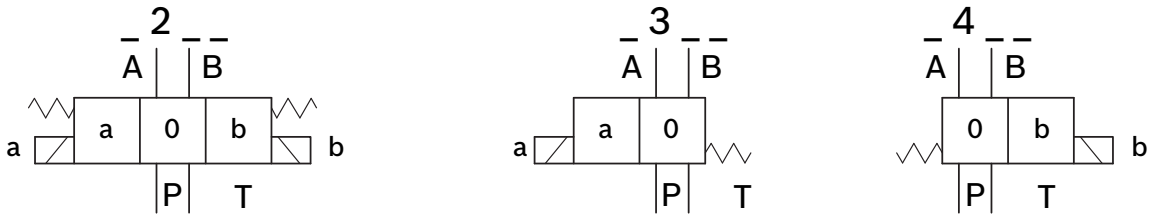
00 =	Without coils
01** =	With coils, without mating connector DIN EN 175301-803
03 =	With coils, with bi-directional diode, without mating connector vertical Amp-Junior
04 =	With coils, with bi-directional diode, without mating connector horizontal Amp-Junior
07 =	With coils, with bi-directional diode, without mating connector DT04-2P
31 =	With coils and bipolar sheathed lead 350mm *[13,8 in]* long
_ _ =	Special

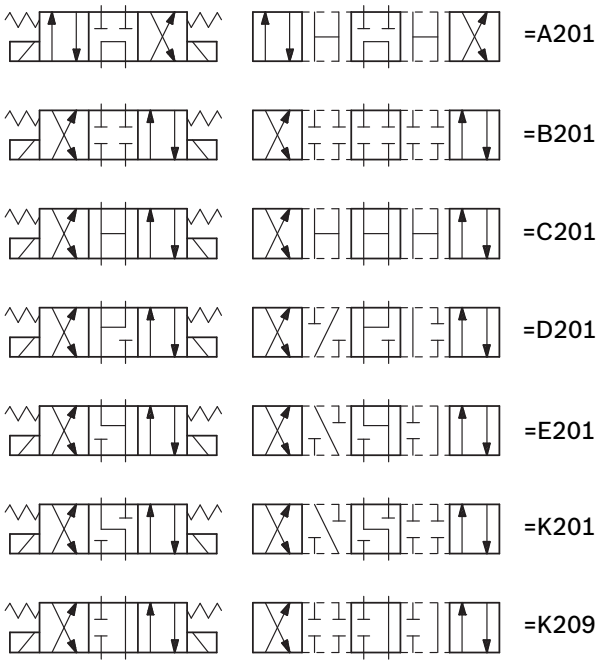
Voltage supply

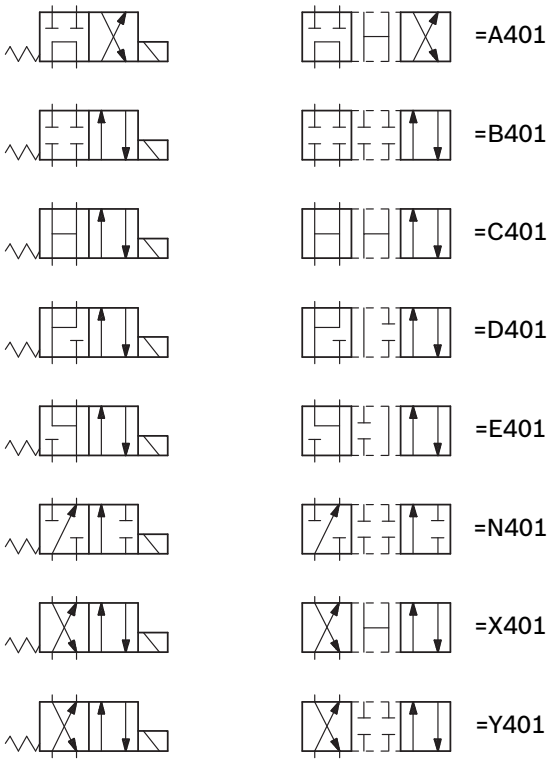
00 =							Without coils
OB =	■	■	■	■	■		12V DC
AD =		■			■		13V DC
OC =	■	■	■	■	■		24V DC
AC =		■			■		27V DC
OD =			■		■		48V DC
OE =					■		110V DC
OV =					■		(21.5 DC) 24V AC
OW =					■		(98 DC) 110V AC
OZ =					■		(207 DC) 230V AC
	31	07	04	03	01	00	

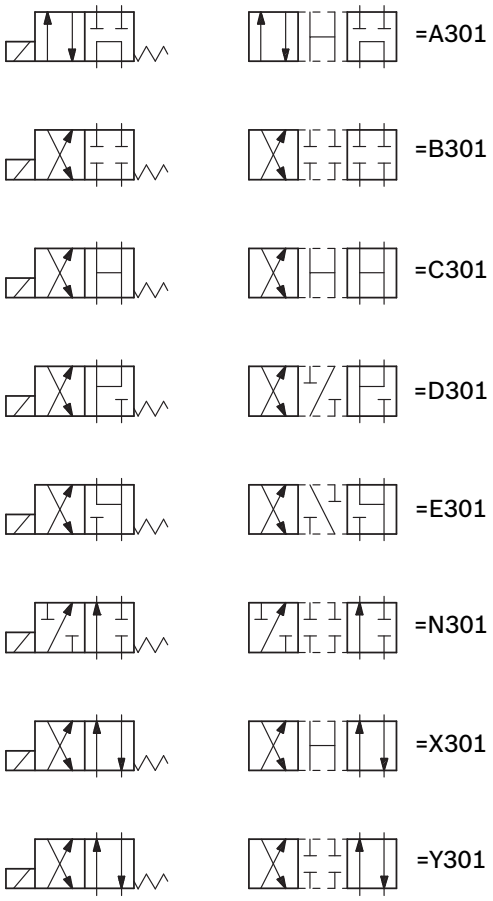
Available connections

Spool variants







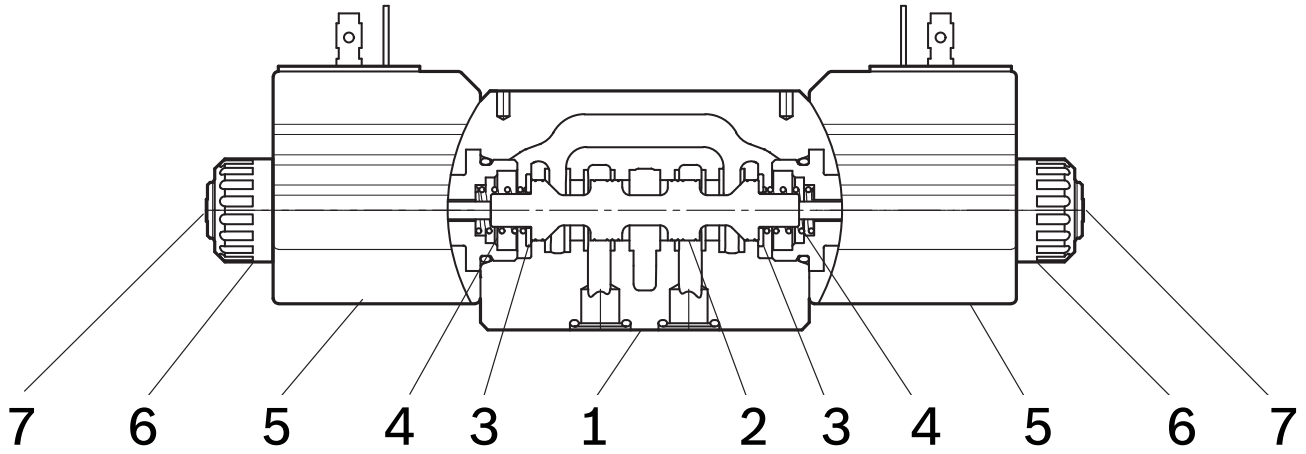


Principles of operation, cross section

The sandwich plate design directional valve elements L5110 are compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4).

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position “0” to the required end position “a” or “b”, and the required flow from P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil is fastened to the solenoid tube by a ring nut (6). A pin (7) allows to push the spool (2) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.



Technical Data (for applications with different specifications consult us)

General

Valve element with 2 solenoids	kg *[lbs]*	1.45 *[3.35]*
Valve element with 1 solenoid	kg *[lbs]*	1.20 *[2.70]*
Valve element with 2 solenoids, with lever type emergency	kg *[lbs]*	1.85 *[4.0]*
Valve element with 1 solenoid, with lever type emergency	kg *[lbs]*	1.5 *[3.35]*
Ambient Temperature	°C *[°F]*	–20....+50 *[-4....+122]* (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar *[psi]*	350 *[5076]*
Maximum pressure at T	bar *[psi]*	250 *[3625]*
Max pressure, with lever type emergency at T	bar *[psi]*	200 *[2800]*
Maximum inlet flow	l/min *[gpm]*	30 *[7.9]*
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]*	–20....+80 *[-4....+176]* (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

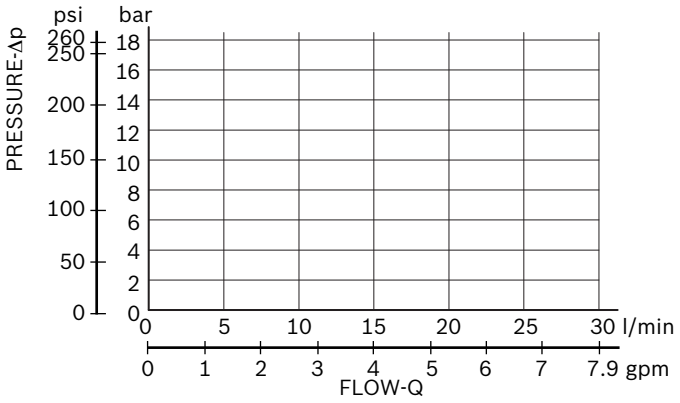
Electrical

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]*	150 *[302]*								
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]*	0.215 *[0.44]*								
Voltage	V	12	13	24	27	48	110	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	DC	AC	AC	AC
Power consumption	W	26	26	26	26	26	26	29	29	29
Current (nominal at 20°C *[68°F]*)	A	2.15	2.00	1.10	1.00	0.54	0.27	1.20	0.29	0.14
Resistance (nominal at 20°C *[68°F]*)	Ω	5.5	6.5	22	28	89	413	18	338	1430

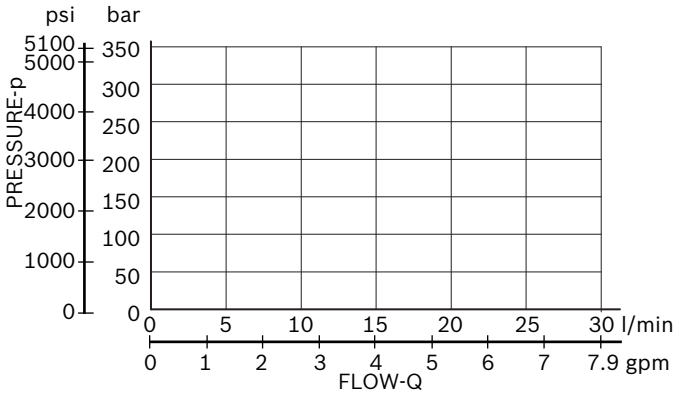
	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01	12 DC	EN 175301-803 (Ex. DIN 43650)	C3601 12DC	12 DC	R933000044
=OB 03	12 DC	AMP JUNIOR	C3603 12DC	12 DC	R933000047
=OB 04	12 DC	AMP JUNIOR Horizontal	C3604 12DC	12 DC	R933002913
=OB 07	12 DC	DEUTSCH DT 04-2P	C3607 12DC	12 DC	R933000048
=OB 31	12 DC	Cable 350 mm long	C3631 12DC	12 DC	R933000045
=AD 01	13 DC	EN 175301-803 (Ex. DIN 43650)	C3601 13DC	13 DC	R933000051
=AD 07	13 DC	DEUTSCH DT 04-2P	C3607 13DC	13 DC	R933000049
=OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	C3601 24DC	24 DC	R933000053
=OC 03	24 DC	AMP JUNIOR	C3603 24DC	24 DC	R933000057
=OC 04	24 DC	AMP JUNIOR Horizontal	C3604 24DC	24 DC	R933002914
=OC 07	24 DC	DEUTSCH DT 04-2P	C3607 24DC	24 DC	R933000058
=OC 31	24 DC	Cable 350 mm long	C3637 24DC	24 DC	R933000055
=AC 01	27 DC	EN 175301-803 (Ex. DIN 43650)	C3601 27DC	27 DC	R933000056
=AC 07	27 DC	DEUTSCH DT 04-2P	C3607 27DC	27 DC	R933000050
=OD 01	48 DC	EN 175301-803 (Ex. DIN 43650)	C3601 48DC	48 DC	R933000059
=OD 04	48 DC	AMP JUNIOR Horizontal	C3604 48DC	48 DC	R933002915
=OE 01	110 DC	EN 175301-803 (Ex. DIN 43650)	C3601 110DC	110 DC	R933000061
=OV 01	24 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 21.5DC	21.5 DC	R933000054
=OW 01	110 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 98DC	98 DC	R933000060
=OZ 01	230 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 207DC	207 DC	R933000062

Characteristic curves

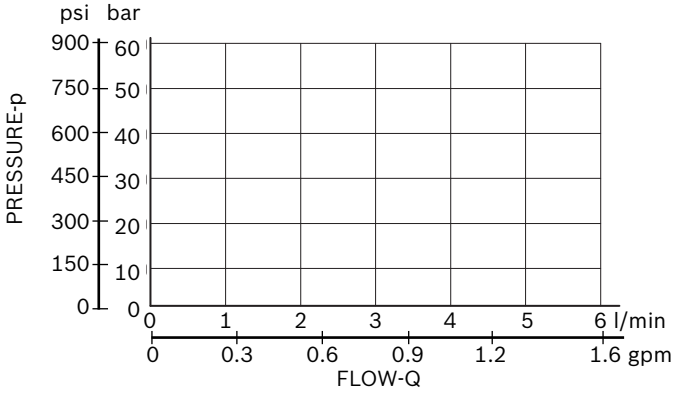
Measured with hydraulic fluid ISO-VG32 at 45° ± 5° C *[113° ± 9° F]*; ambient temperature 20° C *[68° F]*.



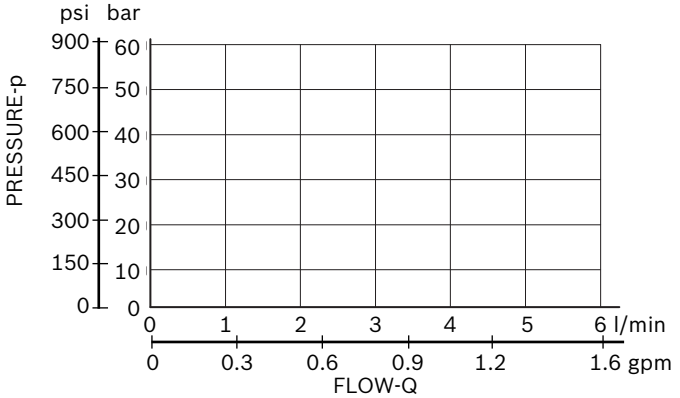
Performances limits



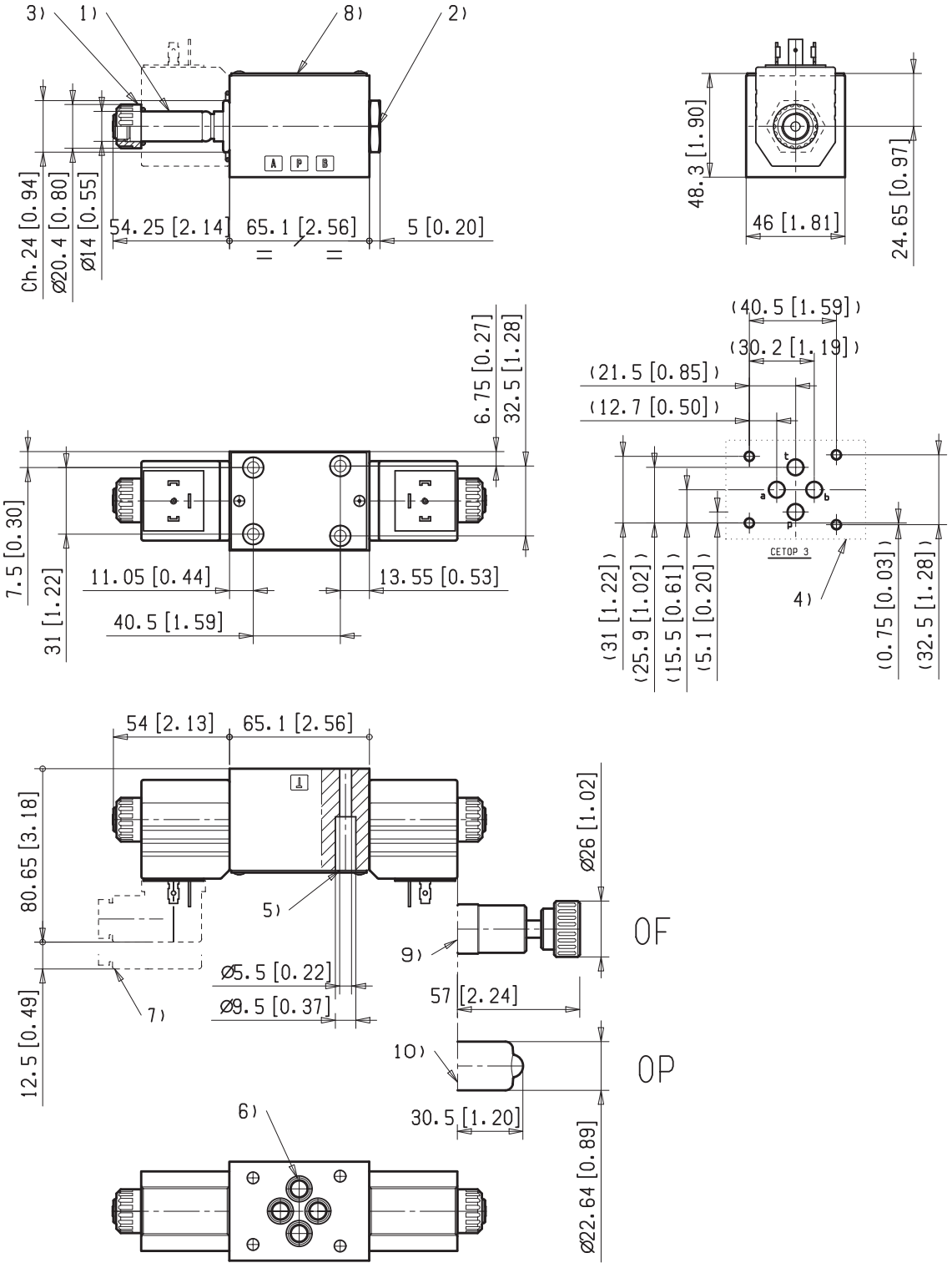
Minimum flow for efficiency of LS control



Lowest pressure setting curve for secondary valves



External Dimensions and Fittings



1 Solenoid tube Ø 14 mm *[0.55 inch].*

2 Plug for two position version.

3 Ring nut for coil locking (Ø 24 mm); torque 3-4Nm *[2.2-3 ft-lb]*.

4 Flange specifications Cetop3.

5 Four threaded holes M5 for fitting a secondary flangeable element. Bolts M5 with recommended strength class DIN 8.8: torque 5-6 Nm *[3.6-4.4 ft-lb]*.

6 O-Rings for P and T ports.

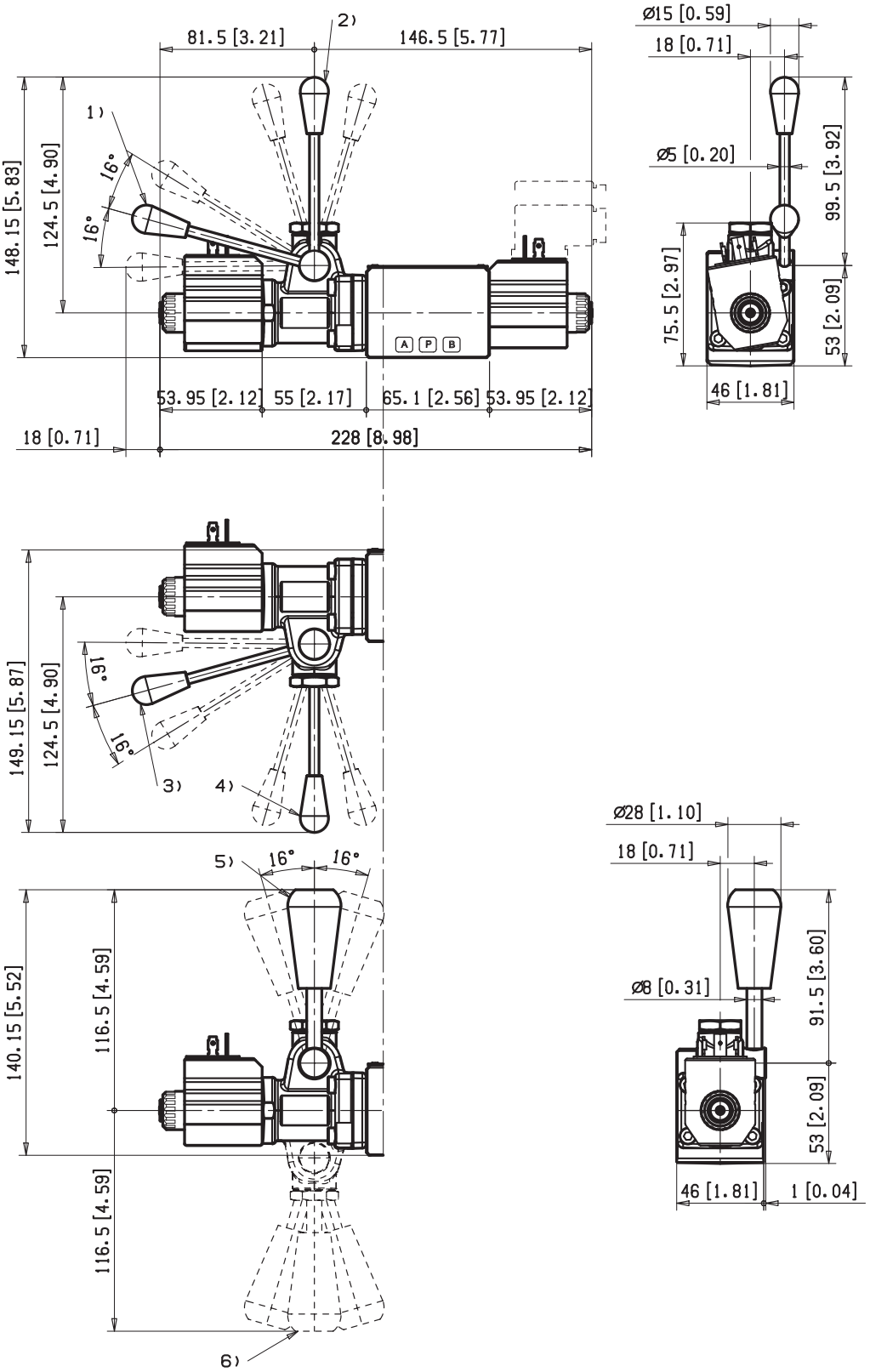
7 Clearance needed for connector removal.

8 Identification label.

9 Optional push-button manual override, 0P type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000042.

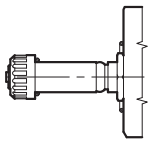
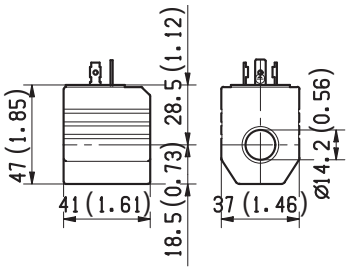
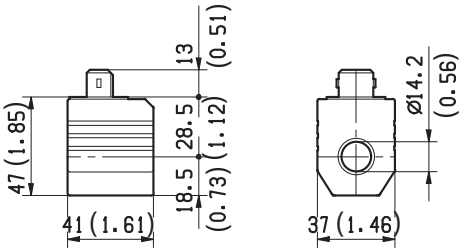
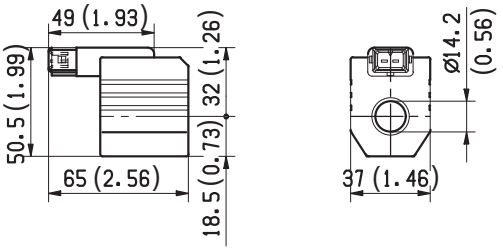
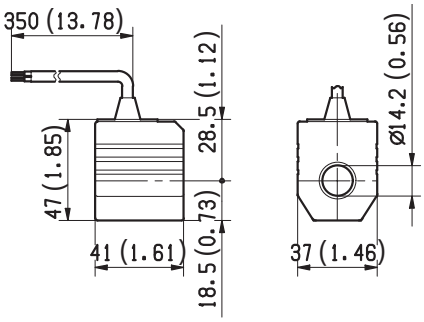
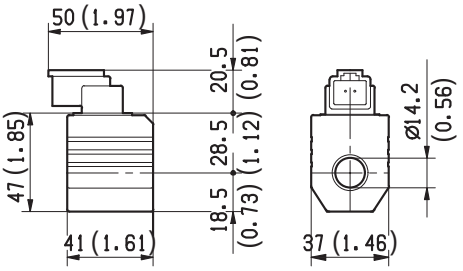
10 Optional screw type manual override, 0F type, for spool opening: it is screwed (torque 6-7 *[4.4-5.2 ft-lb]*) to the tube as replacement of the coil ring nut. Mat no. R933000021

External Dimensions and Fittings



1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering Details: XA (if fitted to side A) or XB (if fitted to side B)
6 Ordering Details: X1 (if fitted to side A) or X9 (if fitted to side B)

Electric connections

=00		=01	
=03	Protection class: IP 65 with female connector properly fitted (see drawing). 	=04	Protection class: IP 65 with female connector properly fitted (see drawing). 
=31		=07	Protection class: IP 69 K with female connector properly fitted (see drawing). 

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