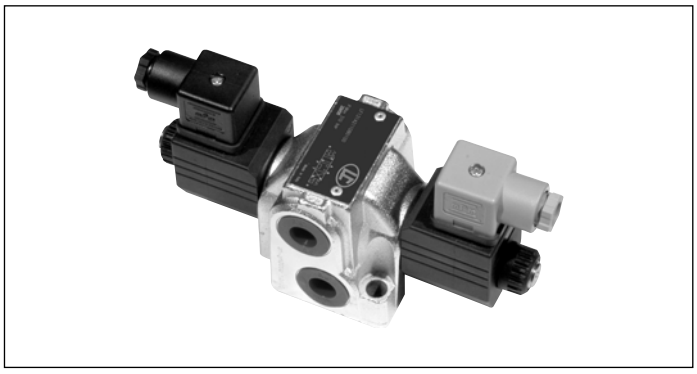
4/3 - 4/2 Directional valve elements LF1_1... (LC1F-Z)

RE 18305-01
Edition: 02.2016
Replaces: 07.2012



Size 6
Series 00
Maximum operating pressure 310 bar (4500 psi)
Maximum flow 35 l/min (9.25 gpm)
Ports connection G 3/8 - SAE8

General specifications

4 way, 2 or 3 position spool type solenoid operated directional valves.
Stand-alone valve body intended for “in-line” application. Available with a choice of threaded ports; mounting surface with installation holes for direct fitting on the machine structure.
Zinc plated body with yellow trivalent chrome treatment.
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).
Plug-in connectors available: EN 175301-803 (was DIN 43650); AMP Junior; DT04-2P (Deutsch), free leads.
Coils removable.
Manual override (push button or lever type) available as option.
Spool variants (for different hydraulic schemes) are available for both 2 and 3 position versions.

Contents

Ordering details

01	02	03	04	05	06	07	08	09
L	**F**	**1**		**1**				

Family

01	Directional Valve elements CDV	**L**

Type

02	Directional valve 4/3, 4/2	**F**

Size

03	6	**1**

Ports

04	G 3/8	**3**
	SAE 8	**C**

Coil Type

05	C 36	**1**

Spool variants

06	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 _ _**

Voltage supply

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

Electric connections

08	Without coils	**00**
	With coils, without mating connector DIN EN 175301-803 [2]	**01**
	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 350mm (13,8 in) long	**31**

Options

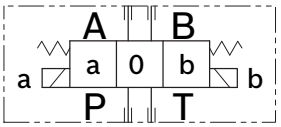
09	Standard	**00**
	Push-button type manual override	**0P**
	Screw type manual override	**0F**

● = Available – = Not available

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

Symbols

Spool variants



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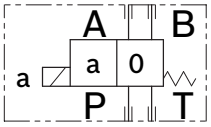

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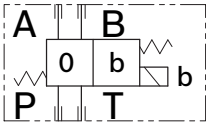

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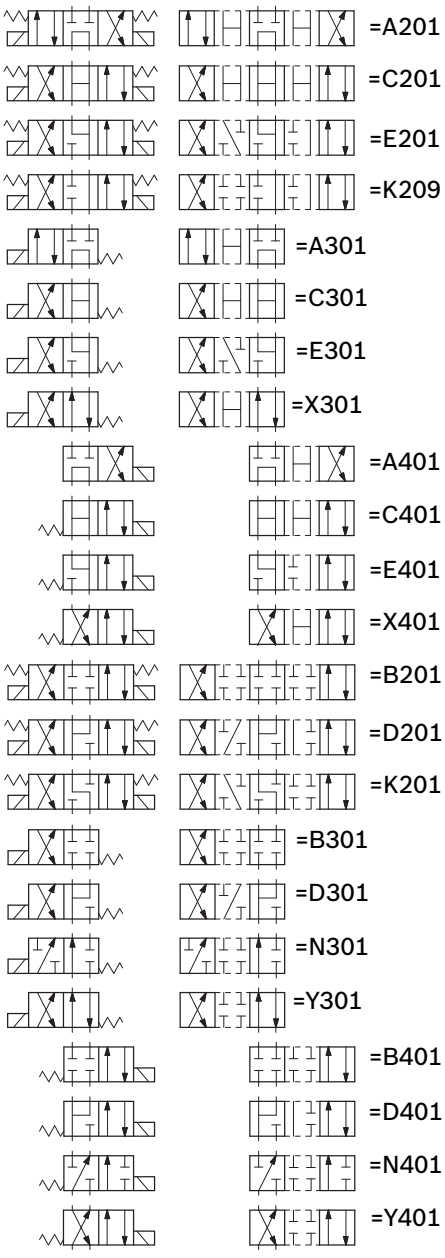
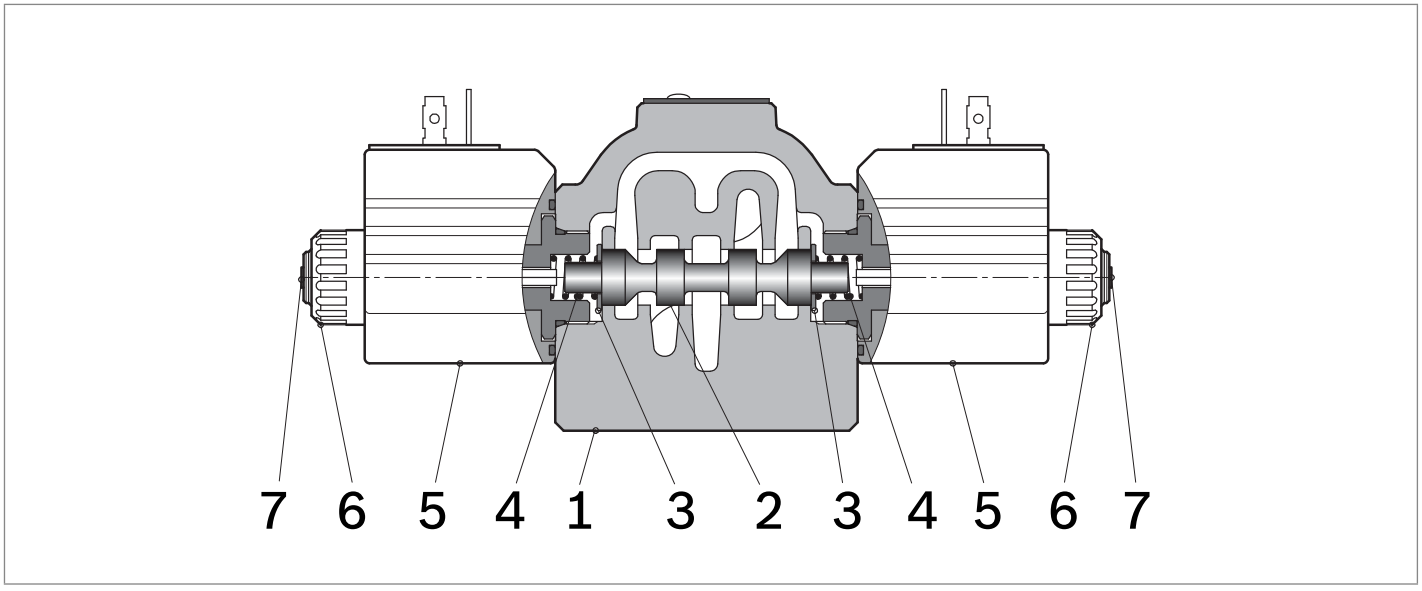


Functional description



The directional valves LC1F_Z...are compact direct operated solenoid valves which control the start, the stop, the direction of the oil flow. They basically consist of a housing (**1**) with a control spool (**2**), one or two solenoids (**5**), and one or two return springs (**4**).
When energized, each solenoid (**5**) displaces the control spool (**2**) from its neutral-central position to the “a” or “b” position and the oil flow P is diverted to A, or to B. Once the solenoid is de-energized, the return spring (**4**) pushes the spool thrust washer back against the housing and the spool (**2**) returns in its neutral-central position “0”.
Each coil is fastened to the solenoid tube (**5**) 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

General		
Valve weight with 2 solenoids	kg (lbs)	1.85 (4.01)
Valve weight with 1 solenoid	kg (lbs)	1.55 (3.42)
Mounting position		Unrestricted
Ambient Temperature	°C (°F)	–20....+50 (-4....+122) (NBR seals)
Hydraulic		
Maximum pressure at P, A and B ports	bar (psi)	310 (4500)
Maximum pressure at T	bar (psi)	250 (3625)
Maximum inlet flow	l/min (gpm)	35 (9.25)
Maximum flow when using spool type **A201-A301-A401**	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

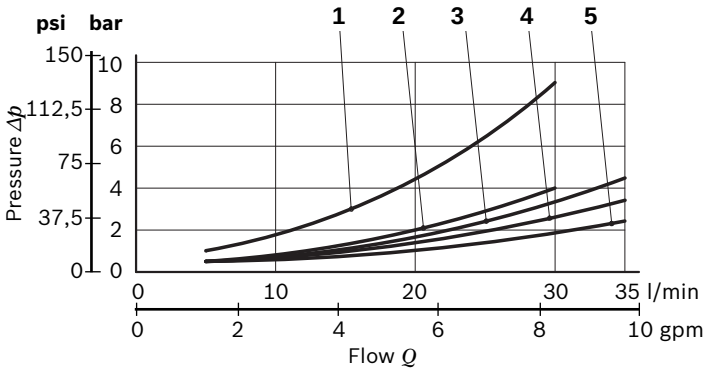
Viscosity range	mm^2/s	5....420								
Electrical										
Voltage type		DC (AC only with RAC connection)								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C (122°F)								
Coil wire temperature not to be exceeded	°C (°F)	150 (302)								
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	DC	DC	DC
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

Note
For applications with different specifications consult us.

OZ 01	230 RAC	EN 175301-803 (Ex. DIN 43650)	C3601 207

Code	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

Characteristic curves

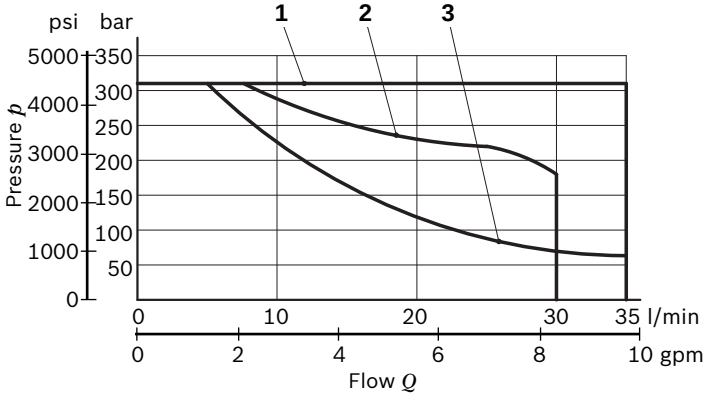


Spool Variant	Curve no.				
	P>T	P>A	P>B	A>T	B>T
A201, A301, A401	2	1	1	1	1
B201, B301, B401	-	4	4	3	3
C201. C301, C401	5	5	5	5	5
D201, D301, D401	-	4	4	3	3
E201, E301, E401	-	3	3	5	5
K201, K209	-	4	4	4	4
N301, N401	-	4	4	-	-
X301, X401, Y301, Y401	-	4	3	3	3

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

7DC	207 DC	R933000062

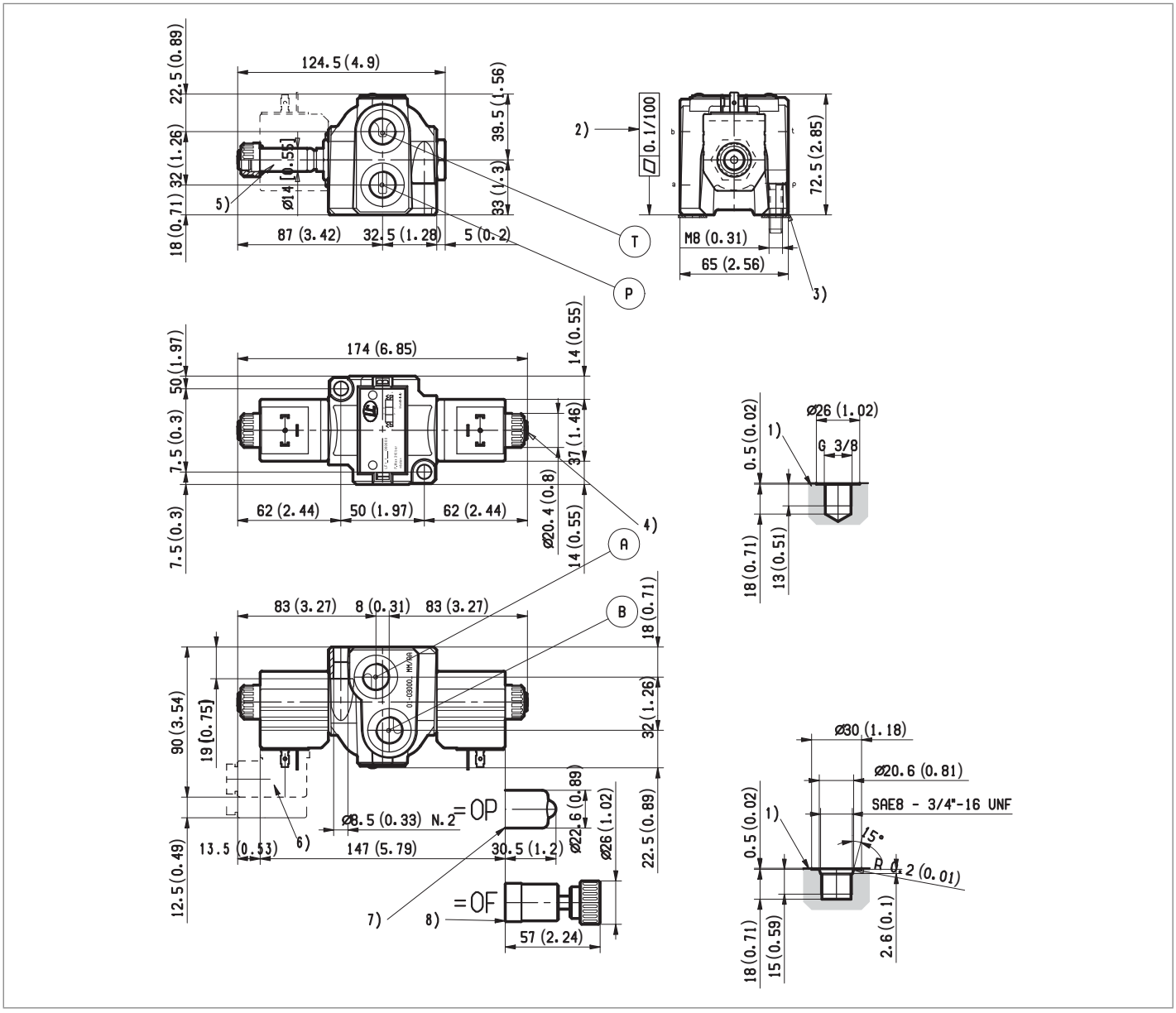
Performance limits



Spool Variant	Curve no.
B201, B301, B401, C201. C301, C401, D201, D301, D401, E201, E301, E401, K201, K209, X301, X401, Y301, Y401	1
A201, A301, A401	2
N301, N401	3

The performance curves are measured with flow going across and coming back, like P>A and B>T. With unequal IN and OUT flow, the actual total Δp can be considerably lower.

External dimensions and fittings



1 Work ports A, B, P, and T.
2 Flatness needed for mounting surface.
3 Two through installation holes reccomended screws M8x30 DIN 8.8: torque 20-22 Nm (14.7-16.2 ft-lb).
Must be ordered separately.
4 Ring nut for coil locking. Torque 3-4 Nm (2.2-3.0 ft-lb).
5 Solenoid tube Ø 14 mm (0.55 inch).
6 Clearance needed for connector removal.
7 Optional push-button manual override, 0P type, for spool opening: it is pressure stuck to the ring nut for coil locking.
Mat no. R933000042.
8 Optional screw 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.

Electric connection

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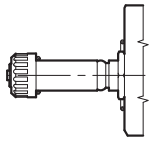
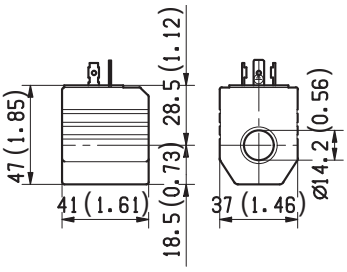
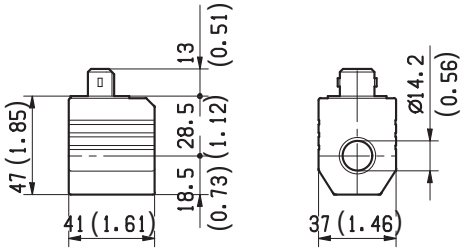


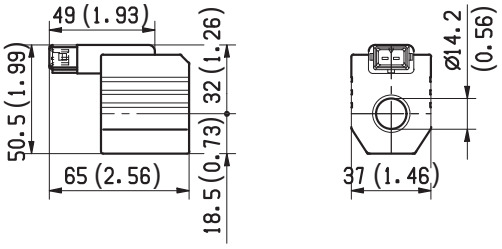
01



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



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



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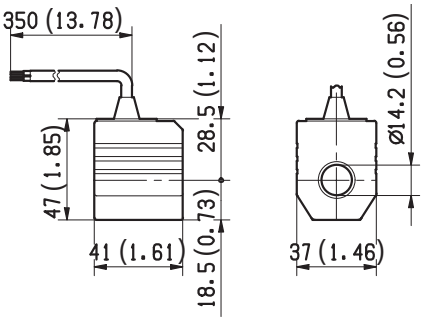
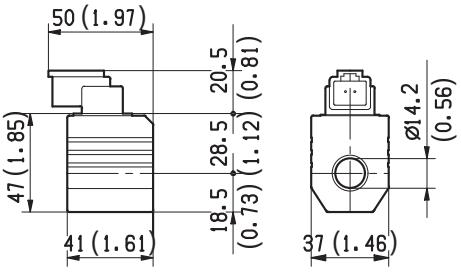


07 Protection class: IP 69 K with female connector properly fitted (see drawing).



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