Part number:

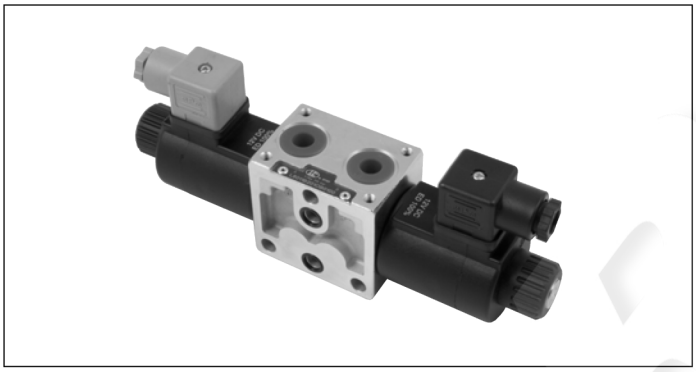
HYDROMA HYDRAULICKÉ SYSTÉMY

HIDROMA SISTEMS UKŁADY HYDRAULICZNE

HYDROMA ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

4/3 - 4/2 Directional valve elements with soft-shift

L8011... (ED2S-DZ)



Size 6
Series 00
Maximum operating pressure 310 bar (4500 psi)
Maximum flow 50 l/min (13.2 gpm)
Port connections G 3/8

General specifications

Valve elements with solenoid operated directional spool.
Switching time adjustment by calibrated orifices.
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.

Contents

Ordering details

01	02	03	04	05	06	07	08		09	10
L	**8**	**0**	**11**				**0**	**0**		

Family

01	Directional Valve elements ED	**L**

Type

02	Size 6	**8**

Configuration

03	Standard	**0**

Coil type

04	C45	**11**

Spool variants

05	4/3 operated on both sides a and b	**_ 2 _ _**
	4/2 operated on side a only	**_ 3 _ _**

Voltage supply		**07**	**03**	**01**	**00**	
06	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

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 DT04-2P	**07**

Ports

08	G 3/8 DIN 3852	**0**

Orefice Type

09	0.4 mm (0,016inch) hole	**E**
	0.5 mm (0,020inch) hole	**G**

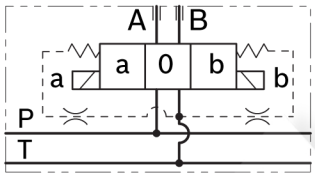
Options

10	No options	**No code**
	Standard	**0**
	Push-button type manual override	**P**
	Screw type manual override	**F**

● = Available – = Not available

Symbols

_ 2 _ _



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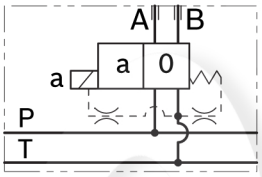
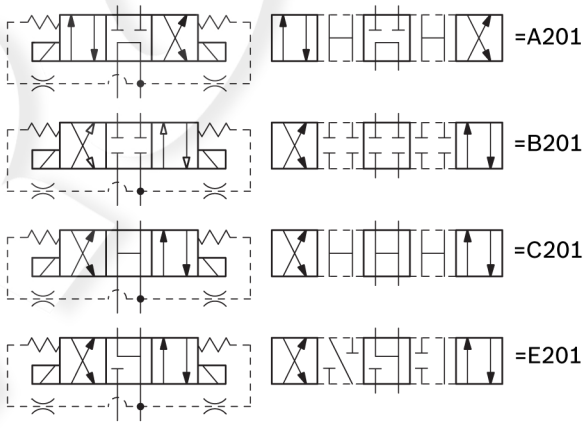
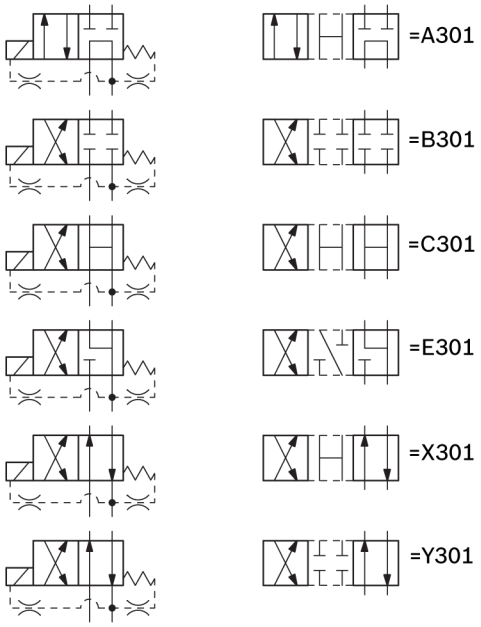


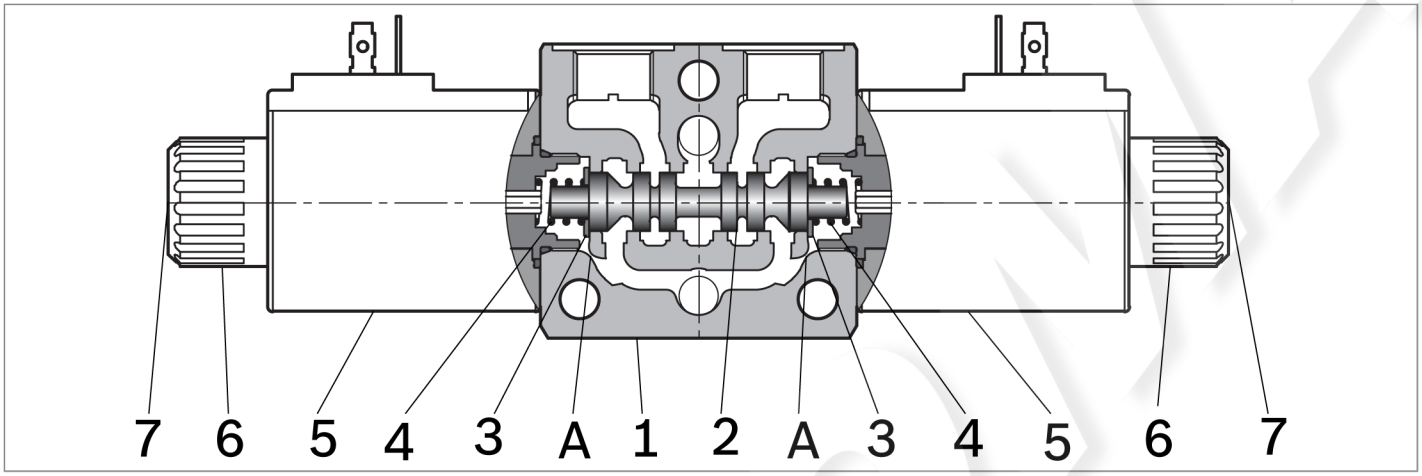
Spool variants





Installation note: in order to garantee the soft-shift function, it is reccomended to install in the „T“ line a check valve with the minimum cracking pressure of 1 bar (14,5 psi).

Functional description



The sandwich plate design directional valve elements L8011... are compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow, with the option to adjust the spool switching time.
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**).
The spring chambers are connected to the tank port through orifices. When energized, the spool (**2**) travels and oil is pushed to tank from one of the spring chambers: if the cross section of the orifices changes, the switching time changes as well. Three orifice sizes are available: smaller orifice diameter results in longer switching time, even though the actual time is dependent upon pressure, flow and viscosity.
When energized, the force of the solenoid (**5**) pushes the control spool (**2**) from its neutral-central position to the required end position, 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

General		
Valve element with 2 solenoids	kg (lbs)	1.95 (4.3)
Valve element with 1 solenoid	kg (lbs)	1.45 (3.2)
Ambient Temperature	°C (°F)	–20....+50 (-4....+122) (NBR seals)
Not Available with lever emergency		
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)	50 (13.2)
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

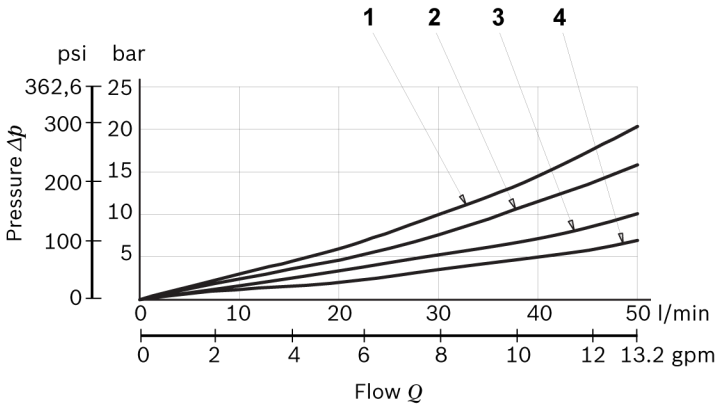
Orifice sizes available in A position	Orifice type	Ø mm (inch)	Code
	E	0,4 (0,016)	18-0093
	G	0,5 (0,020)	18-0094

Electrical										
Voltage type		DC (AC only with RAC connection)								
Voltage tolerance (nominal voltage)	%	-10 .... +10								
Duty		Continuous, with ambient temperature ≤ 50°C (122°F)								
Switching time	ms	max 400, depending from orifice diameter								
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)	0.335 (0.74)								
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	33	31	33	33	33	35	33	33	35
Current (nominal at 20 °C (68 °F))	A	2.8	2.3	1.4	1.2	0.7	0.32	1.6	0.34	0.16
Resistance (nominal at 20 °C (68 °F))	Ω	4.24	5.42	17	21.8	69.8	341.8	13.6	285	1229

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)	C4501 12DC	12 DC	R933000026
OB 03	12 DC	AMP JUNIOR	C4503 12DC	12 DC	R933000027
OB 07	12 DC	DEUTSCH DT 04-2P	C4507 12DC	12 DC	R933000030
AD 01	13 DC	EN 175301-803 (Ex. DIN 43650)	C4501 13DC	13 DC	R933000028
AD 03	13 DC	AMP JUNIOR	C4503 13DC	13 DC	R933000029
AD 07	13 DC	DEUTSCH DT 04-2P	C4507 13DC	13 DC	R933000031
OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	C4501 24DC	24 DC	R933000034
OC 03	24 DC	AMP JUNIOR	C4503 24DC	24 DC	R933003630
OC 07	24 DC	DEUTSCH DT 04-2P	C4507 24DC	24 DC	R933000032
AC 01	27 DC	EN 175301-803 (Ex. DIN 43650)	C4501 27DC	27 DC	R933000035
AC 03	27 DC	AMP JUNIOR	C4503 27DC	27 DC	R933000036
AC 07	27 DC	DEUTSCH DT 04-2P	C4507 27DC	27 DC	R933000033
OD 01	48 DC	EN 175301-803 (Ex. DIN 43650)	C4501 48DC	48 DC	R933000037
OE 01	110 DC	EN 175301-803 (Ex. DIN 43650)	C4501 110DC	110 DC	R933000040
OV 01	24 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 21.5DC	21.5 DC	R933000038
OW 01	110 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 98DC	98 DC	R933000039
OZ 01	230 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 207DC	207 DC	R933000041

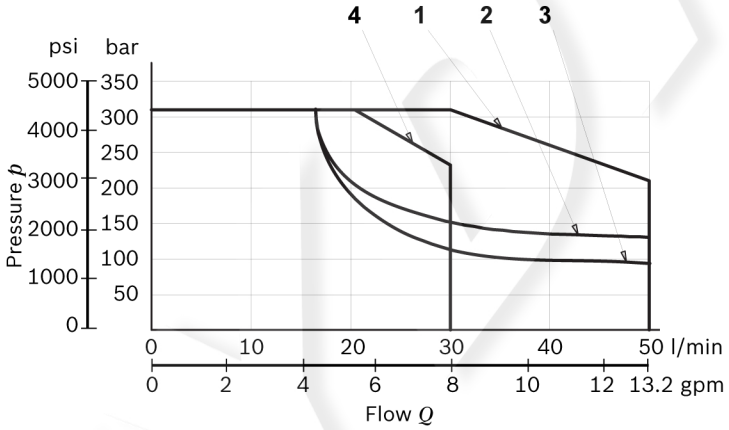
Characteristic curves



Spool Variant	Curve no.				
	P>T	P>A	P>B	A>T	B>T
A201, A301	2	1	1	1	1
B201, B301		3	3	3	3
C201, C301	4	3	3	4	4
E201, E301		3	3	4	4
X301, Y301		3	3	3	3

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

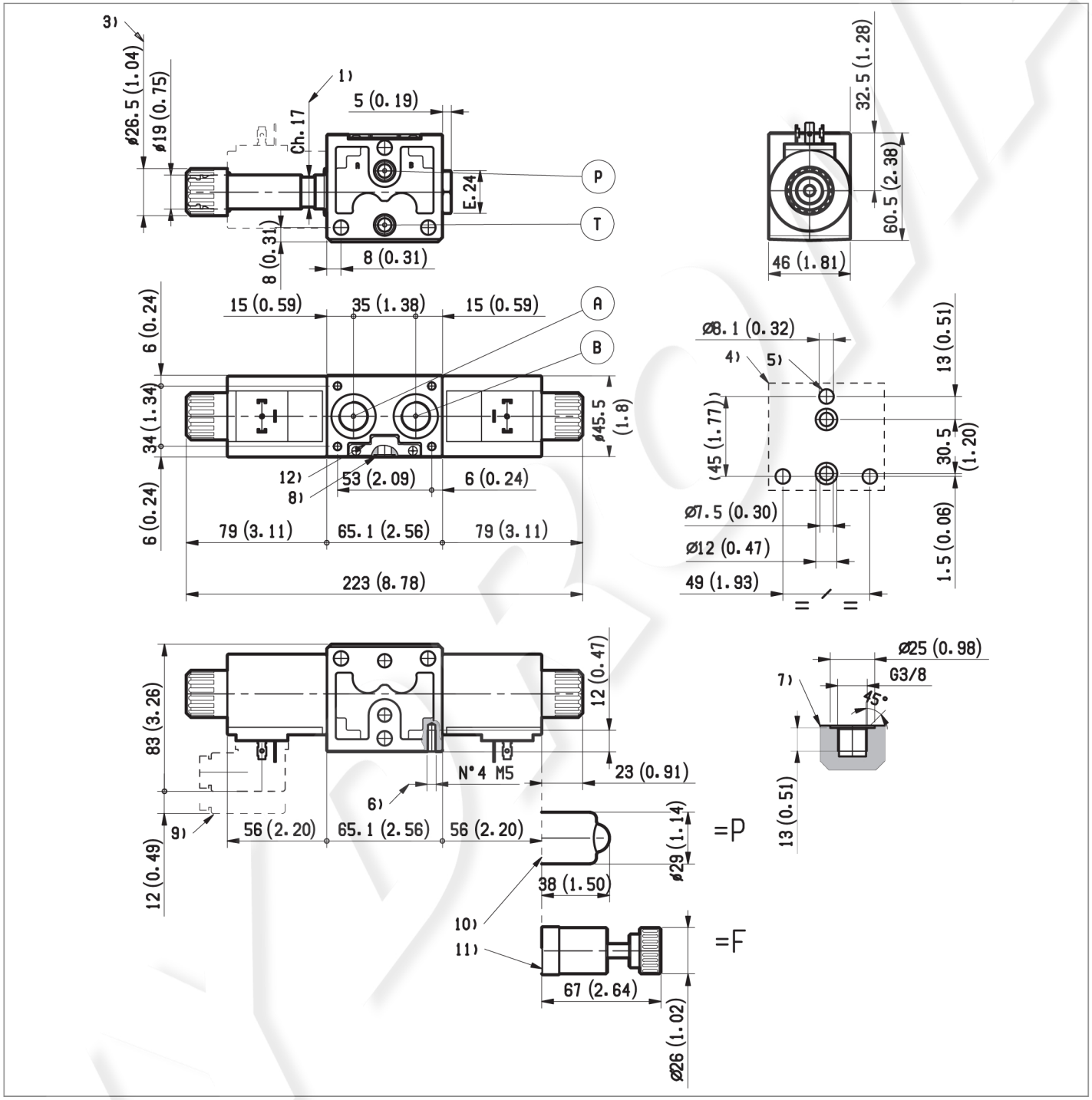
Performance limits



Spool Variant	Curve no.
A201, A301	1
B201, B301, C201, C301	2
E201, E301	3
X301, Y301	4

The performance curves are measured with flow going across and coming back, like P>A and B>T. With “lever type” emergency control, the performance limits are slightly lower.

External dimensions and fittings



1 Solenoid tube Ø 19 mm (0.75 inch).
3 Ring nut for coil locking (Ø 26,5 mm); torque 5-6 Nm (3.7-4.4 ft-lb).
4 Flange specifications for coupling to ED intermediate elements.
5 For tie rod and tightening torque information see data sheet RE 18301-90.
6 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).
7 A and B ports.
8 O-Rings for P and T ports.
9 Clearance needed for connector removal.
10 Optional push-button, P type, for emergency spool opening: it is pressure stuck to the ring nut for coil locking. Mat. Number R933000043.
11 Optional screw type emergency, F type, for spool opening: it is screwed (torque 6-7 Nm (4.4-5.2 ft-lb)) to the tube as replacement of the coil ring nut. Mat no. R933007215.
12 Identification label..

Electric connection

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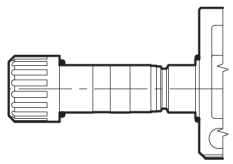

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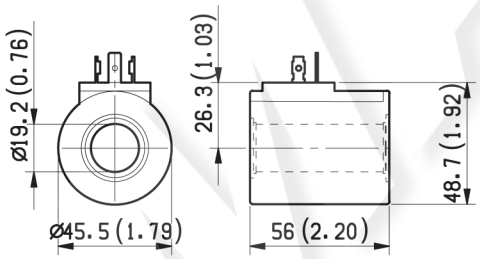
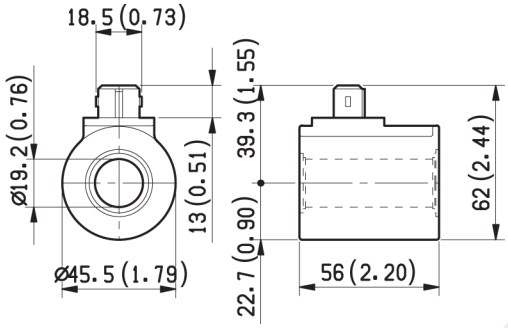


03 Protection class: IP 65 with female connector properly fitted (see drawing).



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