

4/3 Directional valve elements with or without secondary relief valves, with or without LS connections, and with PO check valves

RE 18300-53/07.12

Replaces: 10.09

1/8

B8_48... (EDBZ-VR)

Size 4

Series 00

Maximum operating pressure 250 bar [3625 psi]

Maximum flow 20 l/min [5.3 gpm]

Port connections G 3/8 SAE6 - M16x1.5



DVI0057

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General specifications

- Valve elements with 4 ways and 3 positions.
- Control spools directly 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; burnish surface treatment.
- Single or Dual cross piloted check valves on A and B ports.
- PO checks valves with 4:1 pilot ratio.
- Coils can be rotated 360° around the tube.
- Manual override (push-button or screw type) available as option.

Ordering Details

	B	8	_	4	8	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Family Directional valve element EDB																			
Type Size 4																			
Configuration Standard = 0 With secondary valve on A1 = 1 With ch. for Load Sensing = 4																			
Coil type C36																			
Spool Variants ¹⁾ 4/3 operated on both sides a and b = _ 2 _ _																			
Voltage supply Without coil 12V DC 13V DC 24V DC 27V DC 48V DC 110V DC (21.5 DC) 24V AC (98 DC) 110V AC (207 DC) 230V AC																			
	00	01	03	04	07	31													
	Available connections																		

Options

No code = No options

0 = Standard

P = Push-button type manual override

F = Screw type manual override

PO check valve position

1 = Check valve on port A

3 = Check valve on both ports A and B

Secondary valves setting

0 = 50-210bar [725-3045psi]

1 = 100-310bar [1450-4500psi]

2 = 25-50bar [362-725psi]

3 = Without secondary valve

Ports

3 = G 3/8 DIN 3852

U = M 16x1,5 DIN 3852

B = 9/16-18 UNF 2-B (SAE6)

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

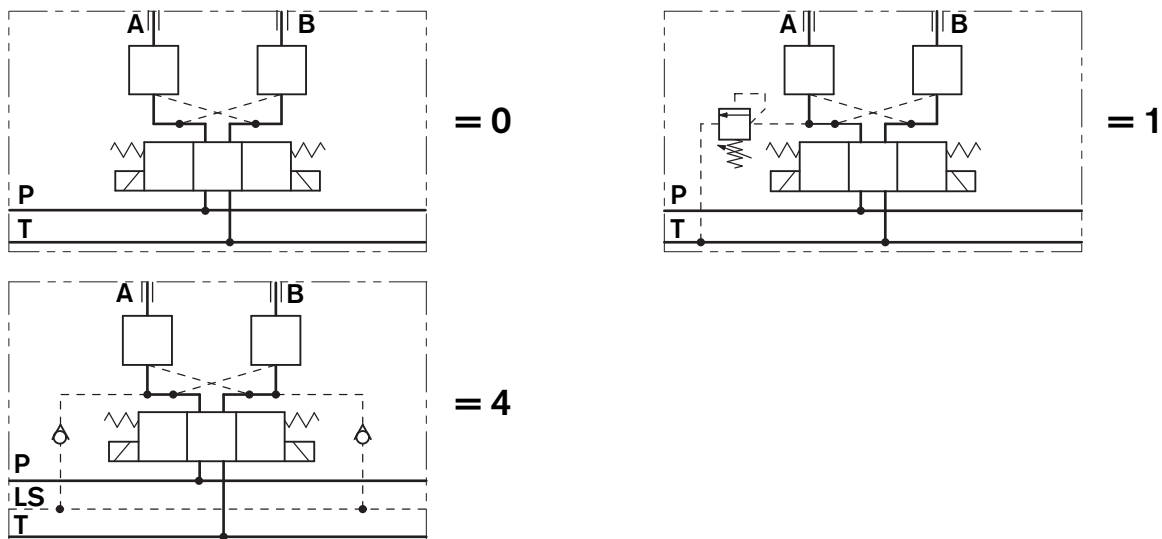
31 = With coils and bipolar sheathed lead 350mm [13,8 in] long

1) The required hydraulic symbol and spool variant can be chosen by consulting page 3.

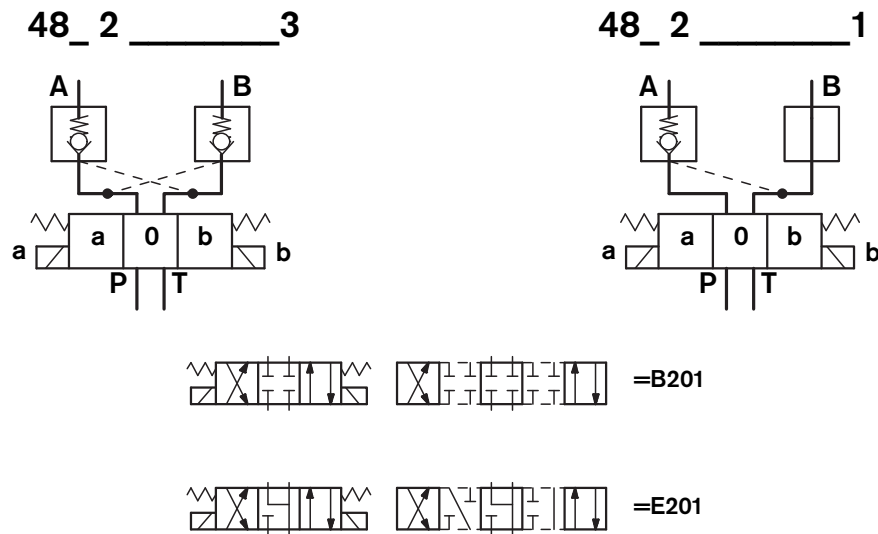
****** For connectors ordering code see data sheet RE 18325-90.

The secondary valves have a maximum flow capacity of

Configuration



Spool variants



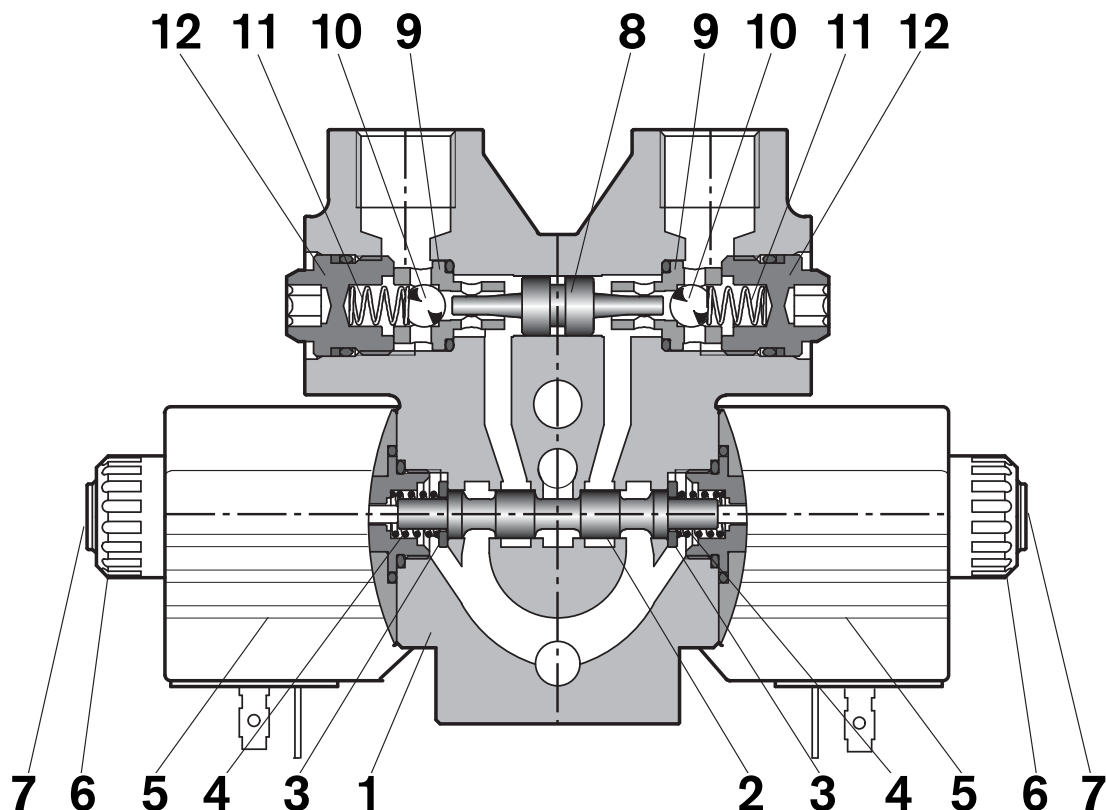
Principles of operation, cross section

The sandwich plate design directional valve elements B8_48... are very 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), two solenoids (5), and two return springs (4). The upper part of the housing is extended in order to provide space for the cavities where two PO check valves are fitted. They consist of two calibrated balls (10), with return springs (11), which allow upstream flow but lock on the respective seats (9) and prevent the return flow. The return flow is possible when they are opened by the pilot piston (8), if enough pilot pressure is present in the opposite line.

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 (2) 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]	1.75 [3.86]
Ambient Temperature	°C [°F]	-20....+50 [-4....+122] (NBR seals)

Hydraulic

Maximum pressure at P, A and B ports	bar [psi]	250 [3625]
Maximum pressure at T	bar [psi]	250 [3625]
Maximum inlet flow	l/min [gpm]	20 [5.3]
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

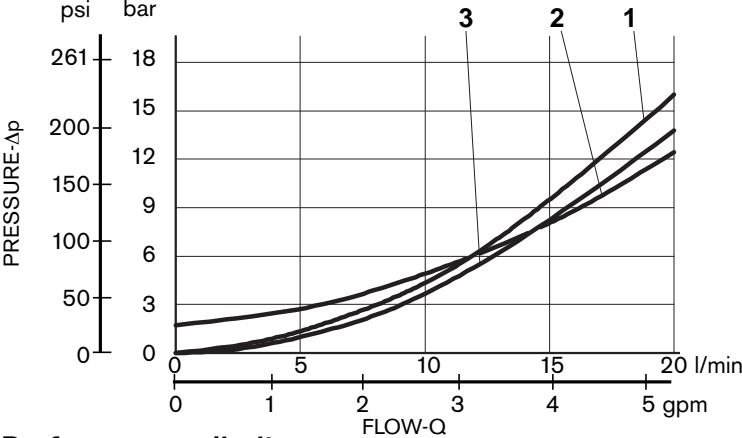
Electrical

Voltage type	DC (AC only with RAC connection)									
Voltage tolerance (nominal voltage)	%	-10 +10								
Duty		Continuous, with ambient temperature $\leq 50^\circ\text{C}$ [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	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	2.0	1.10	1.0	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

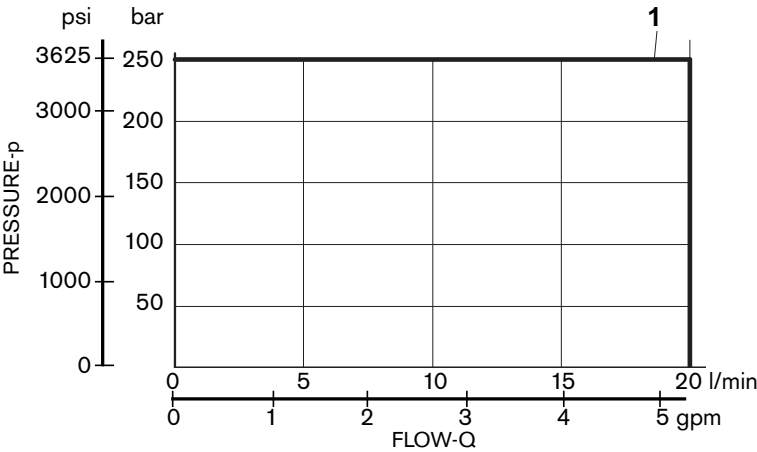
Characteristic curves

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



SPOOL VARIANT	Curve No.			
	P>A	P>B	A>T	B>T
B201	2	2	1	1
E201	2	2	3	3

Performances limits

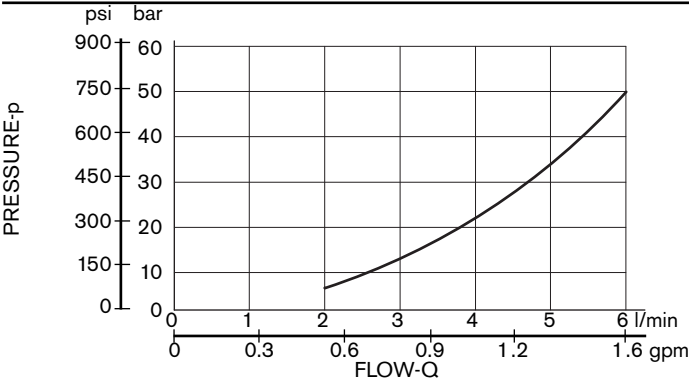


SPOOL VARIANT	Curve No.
B201	1
E201	1

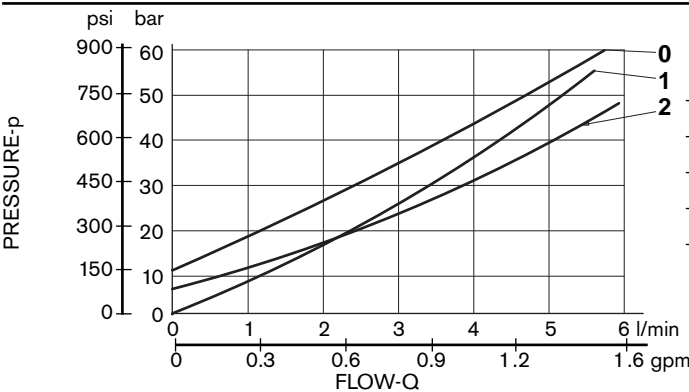
The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.

In case of special circuit connections, the performance limits can change.

Minimum flow for efficiency of LS control

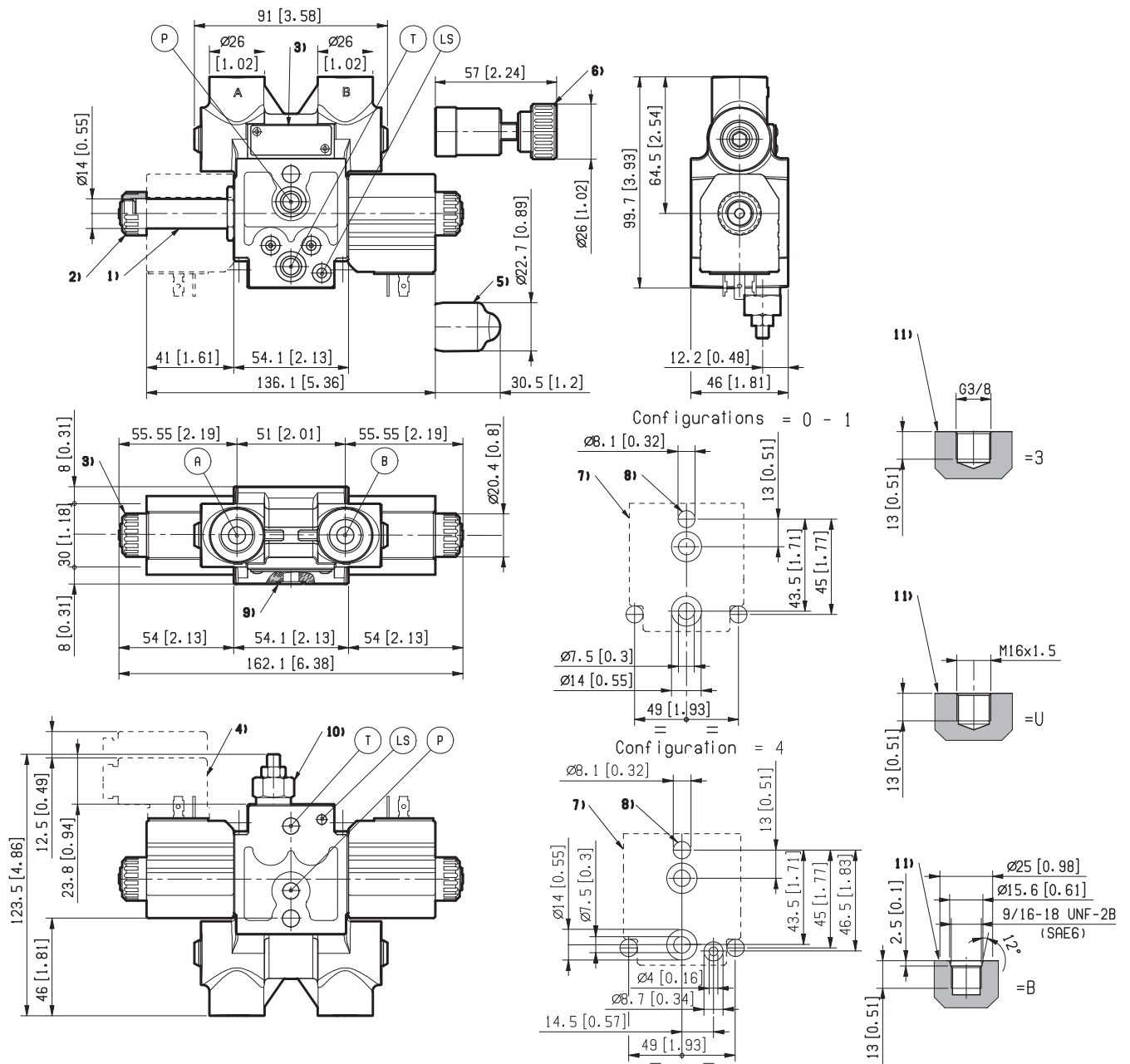


Lowest pressure setting curve for secondary valves



Secondary valve setting	Curve No.
50-210 bar [700-2950 psi]	0
100-310 bar [1400-4500 psi]	1
25-50 bar [350-700 psi]	2

External Dimensions and Fittings



1 Solenoid tube $\varnothing 14$ mm [0.55 inch].

2 Ring nut for coil locking (OD 20.5 mm);
torque 3-4Nm [2.2-3 ft-lb].

3 Identification label.

4 Clearance needed for connector removal.

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

6 Optional screw type manual override, EF 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.

7 Flange specifications for coupling to ED intermediate elements.

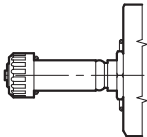
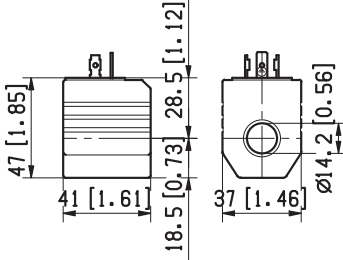
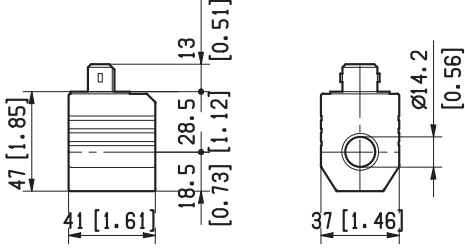
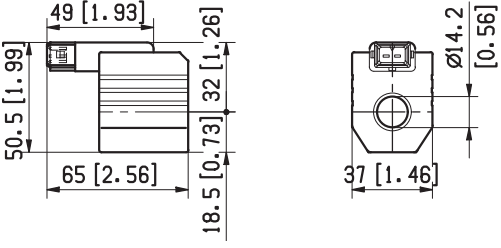
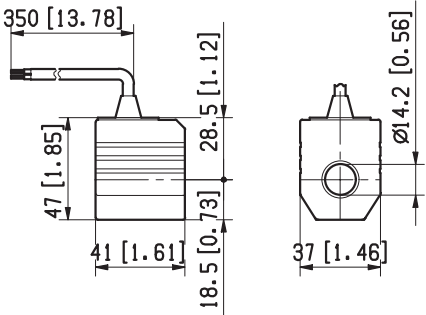
8 For tie rod and tightening torque information see data sheet RE 18301-90.

9 O-Rings for P and T ports.

10 Space needed for secondary valve, for configuration 1. Hex. 17, torque 9-10 Nm [6.6-7.4 lb-ft].

11 A and B ports.

Electric connections

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