

L8_80... (ED4-P) Series

Directional Valve Elements



4/3 - 4/2 Directional valve elements with proportional control and with or without LS connections.

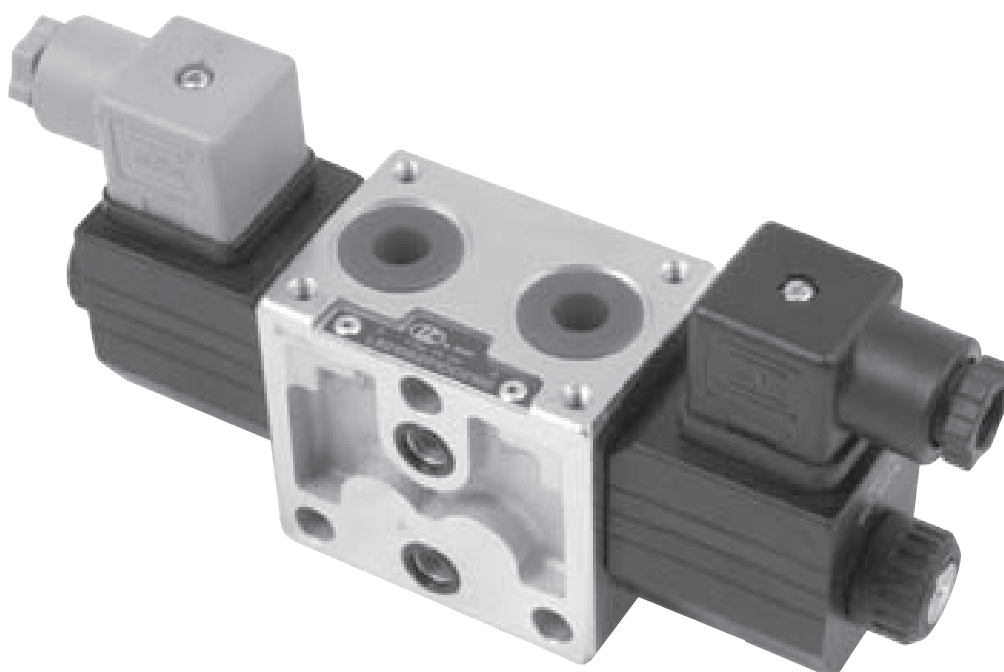
Size 6

Series 00

Maximum operating pressure 310 bar [4500 psi]

Maximum flow 45 l/min [11.9 gpm]

Port connection G 3/8 - SAE 6



General Specifications

Valve elements with direct proportional control of spool.

Control spools operated by screwed in solenoid with removable coils.

In the de-energized condition, the control spool is held in the central positions by return springs.

Wet pin proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface.

Manual override (push-button or screw type) available as option.

Plug-in connectors available: EN 175301-803 (Was DIN 43650) and DT04-2P (Deutsch).

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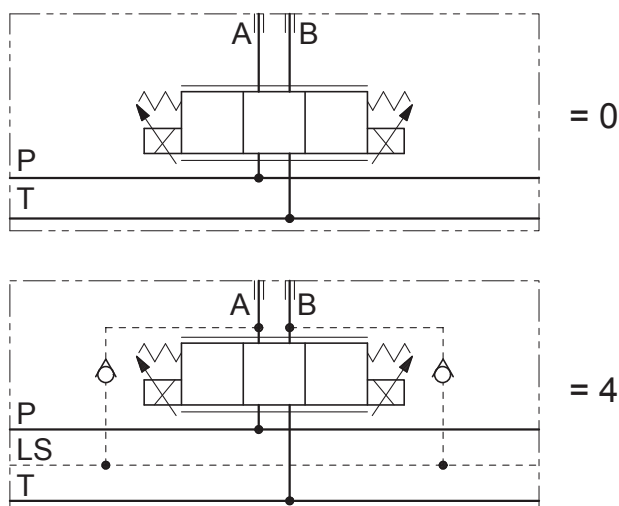


Ordering Details

L	8	8	0	S					0	
Family										
Directional valve elements ED										
Type										
Size 6, proportional										
Configurations										
Standard										
With Load Sensing control										
Coil type										
D15										
Spool variants ¹⁾										
4/3 operated both sides a and b; P – T closed in neutral										
4/2 operated on side a only; P – T closed in neutral										
4/2 operated on side b only; P – T closed in neutral										
4/3 operated on both sides a and b; A and B to T in neutral										
4/2 operated on side a only; A and B to T in neutral										
4/2 operated on side b only; A and B to T in neutral										
Flow pattern										
Symmetrical										
Nominal flow *										
10 l/min [2.64 gpm]										
20 l/min [5.28 gpm]										
30 l/min [7.9 gpm]										
Optional fittings										
Without emergency										
Screw type emergency										
Push-button type emergency										
Lever type emergency ²⁾										
Ports										
G 3/8 DIN 3852										
9/16-18 UNF 2-B (SAE6)										
G 1/2 DIN 3852										
3/4-16 UNF 2-B (SAE8)										
Electric connections										
With coils, without connectors										
With coils and with non-assembled connectors, type EN 175301-803										
With coils having AMP Junior connector										
With coils having DEUTSCH DT 04-2P connector										
Voltage supply										
12V DC										
24V DC										

* With Δp (P > T) 10 bar [145 psi].

Configuration

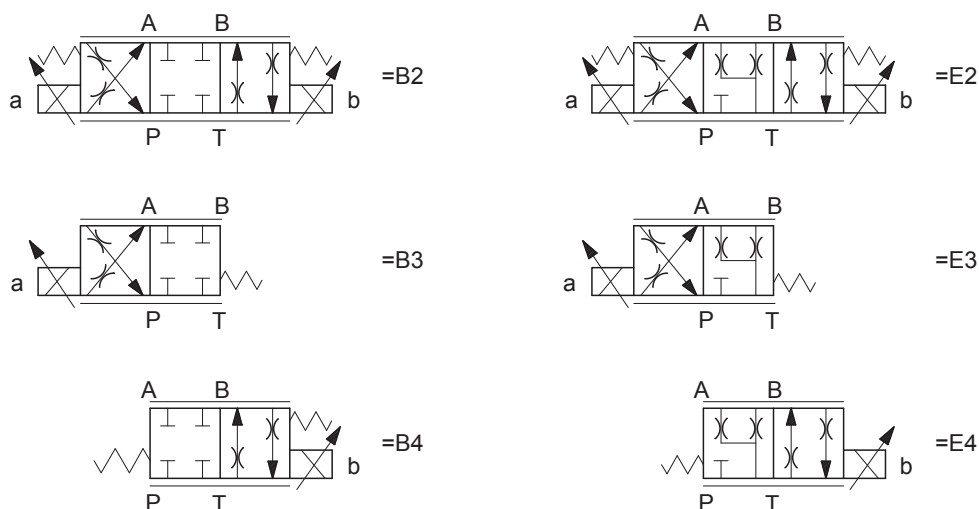


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Spool variants



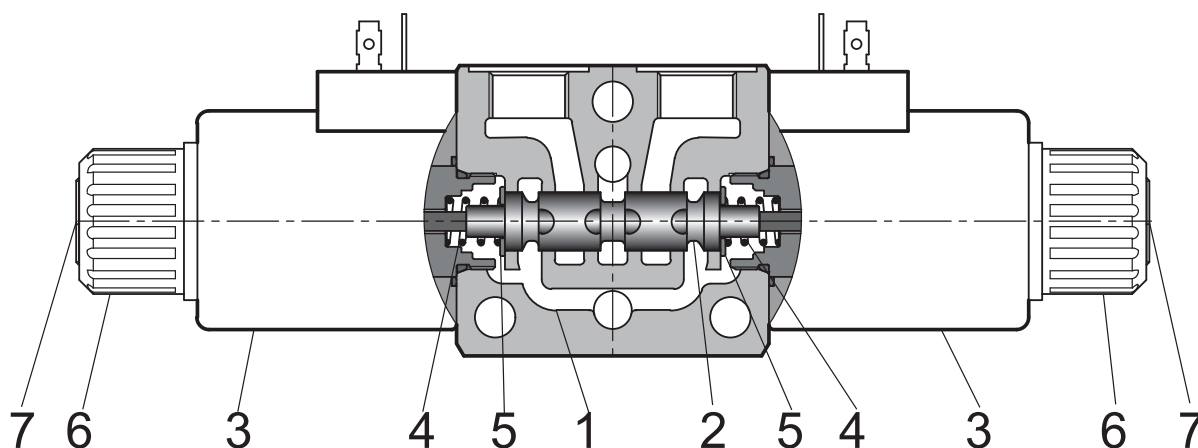
Principles of operation, cross section

The sandwich plate design directional valve elements L8080... are compact direct operated proportional solenoid valves which control the start, the stop, the direction and the quantity of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (3), and one or two return springs (4).

Energized by an electronic feed regulator, each solenoid (3) displaces the control spool (2) from its neutral-central position "0" proportionally to the current received; a regulated

oil flow P to A, or P to B, is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (5) back against the housing and the spool returns in its neutral-central position.

Each coil (3) 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.



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Technical Data (for applications with different specifications consult us)

General										
Valve element with 2 solenoids	kg [lbs]	2.20 [4.85]								
Valve element with 1 solenoid	kg [lbs]	1.70 [3.75]								
Ambient Temperature	°C [°F]	−20....+50 [−4....+122] (NBR seals)								
Hydraulic										
Maximum pressure at P	bar [psi]	310 [4500]								
Maximum dynamic pressure at T	bar [psi]	210 [3050]								
Maximum static pressure at T	bar [psi]	250 [3625]								
Maximum inlet flow	l/min [gpm]	45 [11.9]								
Nominal flow withΔP = 10 bar	l/min [gpm]	10, 20, 30 [2.64, 5.28, 7.9]								
E-schemes closed pass in the neutral position (connection from A to T and B to T)		Approx. 2% of the nominal cross-section								
Hydraulic fluid		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.								
General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems such as, for example:										
Fluid Temperature	°C [°F]	−20....+80 [−4....+176] (NBR seals)								
Permissible degree of fluid contamination		ISO 4572: β _x ≥75 X=10...12 ISO 4406: class 19/17/14 NAS 1638: class 8								
Viscosity range	mm ² /s	20....380 (optimal 30....46)								
Electrical										
Voltage type	PWM	Power Wave Modulation pre-set at 120 Hz								
Voltage tolerance (nominal voltage)	%	-10 +10								
Duty		Continuous, with ambient temperature ≤ 50°C [122°F]								
Maximum coil temperature	°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]	0.335 [0.739]								
Voltage	V	12	24							
Current ⁽¹⁾	A	1.76	0.88							
Coil resistance ⁽²⁾	- Cold value at 20°C	Ω	4	16						
	- Max. hot value	Ω	6.1	24.4						

¹⁾ Nominal - ²⁾ $\pm 7\%$ at temperature 20°C [68°F]

	Voltage (V)	Connector type	Coil description	Marking	Coil Mat no.
=OB 01	12 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	12 DC	R933000092
=OB 02					
=OB 03	12 DC	AMP JUNIOR	D1530	12 DC	R933002877
=OB 07	12 DC	DEUTSCH DT 04-2P	D15 07	12 DC	R933000094
=OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	24 DC	R933000093
=OC 02					
=OC 07	24 DC	DEUTSCH DT 04-2P	D15 07	24 DC	R933002798

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Electronic control

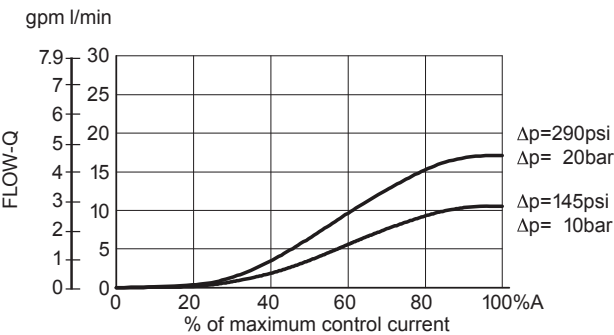
Electronic feed regulators ¹⁾	Upon request
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¹⁾ An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid body. For valve elements with two solenoids, two electronic regulators are needed.

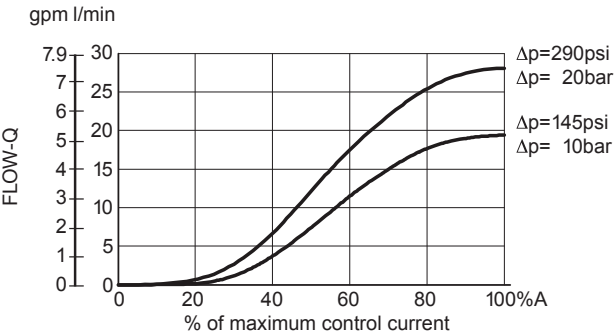
Characteristic curves

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

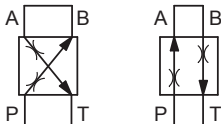
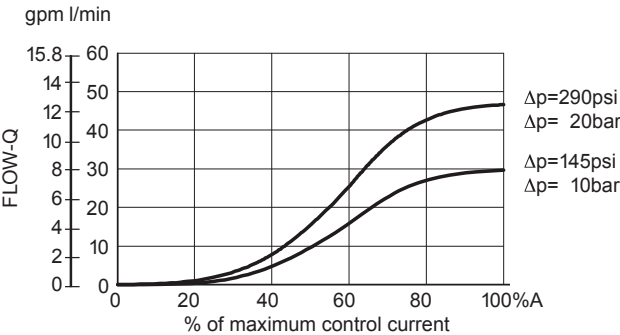
Ordering code 2: 10 l/min [2.64 gpm] with Δp = 10 bar [145 psi].



Ordering code 4: 20 l/min [5.28 gpm] with Δp = 10 bar [145 psi].



Ordering code 6: 30 l/min [7.92 gpm] with Δp = 10 bar [145 psi].



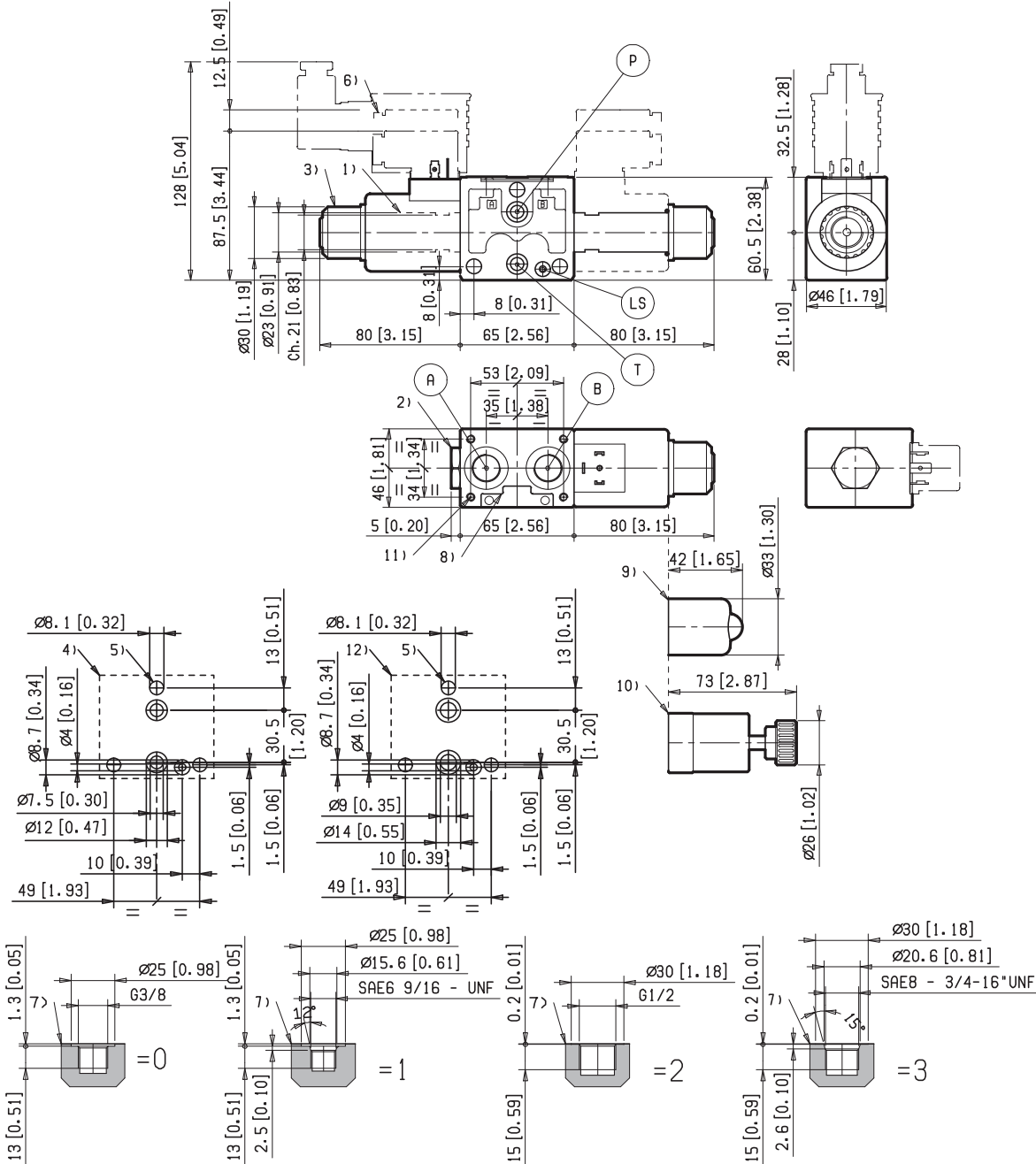
The curves refer to the spool fully open.

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External Dimensions and Fittings



1 Solenoid tube key 21 mm. Torque 22-24 Nm [16.2-17.7 ft-lb].

2 Plug for 2 positions versions (4/2); hex 24 mm, torque 22-24 Nm [16.2-17.7 ft-lb].

3 Ring nut for coil locking (OD 30 mm); torque 6 – 7 Nm [4.4 – 5.2 ft-lb].

4 Flange specifications for coupling to ED intermediate elements with ports G 3/8 and SAE 6.

5 Three through holes for coupling of the ED Directional Valve Elements. Recommended tie rods M8 with strength class DIN 8.8. Torque 20-22 Nm [14.7-16.2 ft-lb].

6 Clearance needed for connector removal.

7 A and B ports.

8 Identification label.

9 Optional push-button emergency, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003289.

10 Optional screw type emergency, 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. R933003116.

11 Four threaded holes M5 for fitting a secondary flangeable element (only for elements with ports G 3/8 and SAE 6). Bolts M5 with recommended strength class DIN 8.8: torque 5 – 6 Nm [3.6-4.4 ft-lb].

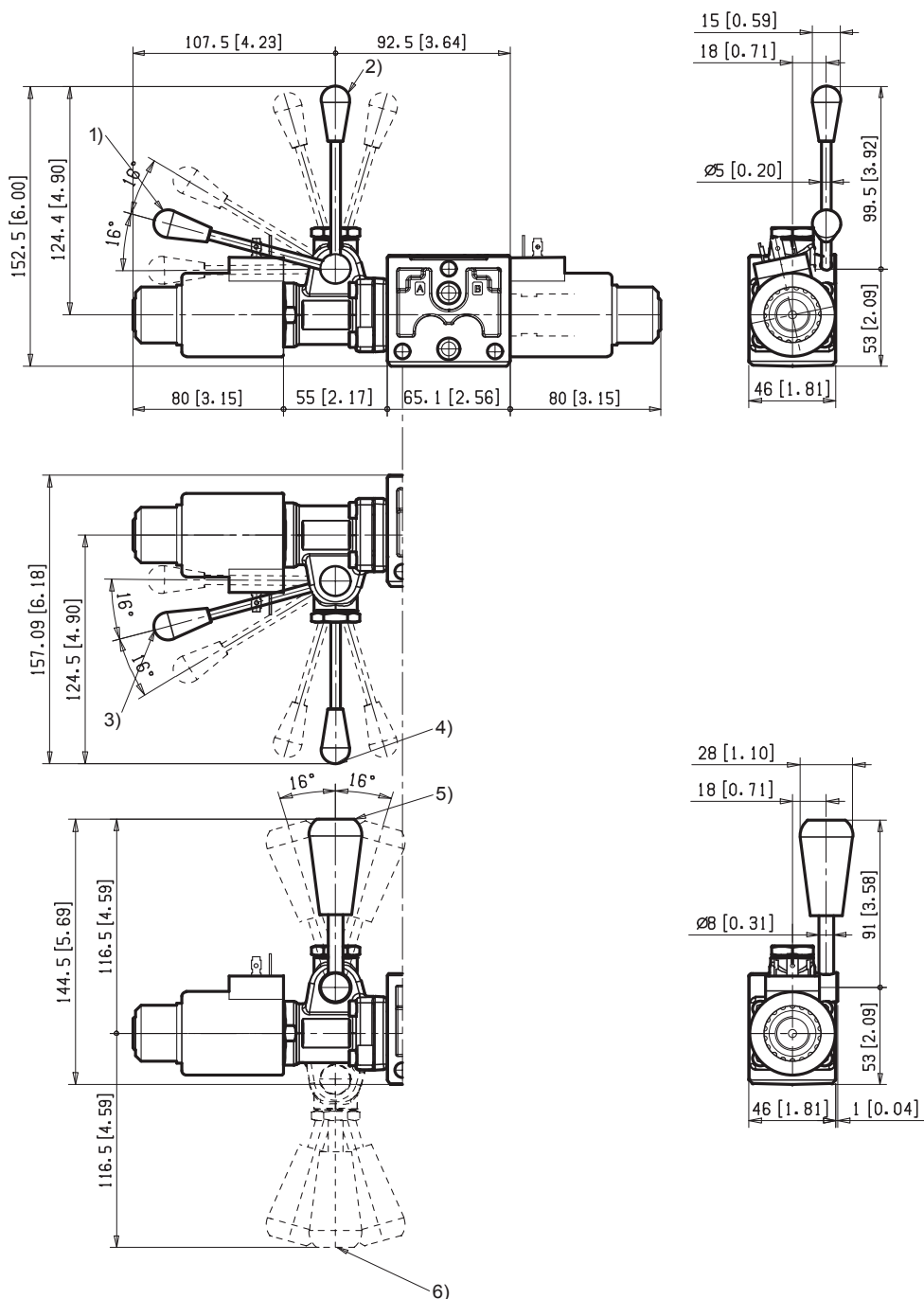
12 Flange specifications for coupling to ED intermediate elements with ports G 1/2 and SAE 8.

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Directional Valve Elements



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)

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Directional Valve Elements



Electric connection (or connections, in case of two solenoids)

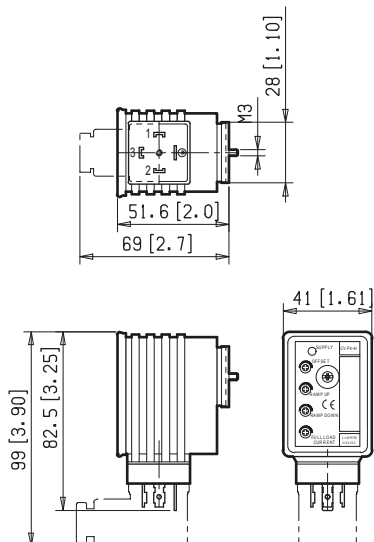
=01	With coils having plug-in pins DIN 43650 – ISO 4400, without connectors. Protection class: IP 65 when connector with seal is properly screwed down.						
=02	With coils and with connectors non-assembled, type DIN 43650 – ISO 4400. Protection class: IP 65 when connector with seal is properly screwed down. <table data-bbox="900 1332 1204 1413"> <thead> <tr> <th>Mat. No.</th><th>Description</th></tr> </thead> <tbody> <tr> <td>R933002885</td><td>182-09 GRAY</td></tr> <tr> <td>R933002889</td><td>182-09 BLACK</td></tr> </tbody> </table>	Mat. No.	Description	R933002885	182-09 GRAY	R933002889	182-09 BLACK
Mat. No.	Description						
R933002885	182-09 GRAY						
R933002889	182-09 BLACK						
=03	With coils having AMP Junior connector, and with bi-directional diode. Protection class: IP 65 with female connector properly fitted (see drawing). With coils having DEUTSCH DT 04-2P connector. Protection class: IP 69 K with female connector properly fitted (see drawing).						
	=07						

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Directional Valve Elements



Electronic feed regulator (or regulators, in case of two solenoids)



Supply: yellow LED, lit up with power ON.

Off Set: minimum current adjustment. Adjust solenoid current so that the desired minimum value is obtained. Clockwise rotation increases current.

Ramp up: Ramping up time adjustment.

Ramp down: Ramping down time adjustment.

For longer ramping times, turn potentiometers clockwise; for shorter ramping times, turn the potentiometers counter-clockwise.

Full load current: Maximum current adjustment. Adjust solenoid current so that the desired maximum value is obtained (up to 2A). Clockwise rotation increases current.

Frequency adjustment: it is possible to set the PWM frequency obtaining the desired control sensitivity. After removing the external plastic cover, turn the adjusting screw; clockwise rotation increases frequency from 100 to 500 Hz.

Regulator ordering code	R933003290
Supply voltage	12-30 VDC
Control Signal	0-10 VDC
Max. output current	2 A
Minimum output current	0....0.6 A
Ramp adjustment up/down	0.110 s
PWM Frequency adjustment (pre-set 120 Hz)	100....500 Hz
Ambient operating temperature	-10....+60 °C [14....+140 °F]
Weight	0.12Kg [26.4 lbs]
4 pins connector details	R933002888 (Grey) R933002890 (Black)
Electromagnetic compatibility	EN50081-1/2EN61000-4-2/3/4/5/6
Protection class with connector and seal correctly fitted and properly screwed down.	IP 65 (DIN40050 part 9)
Potentiometer resistance	5....10 k Ω