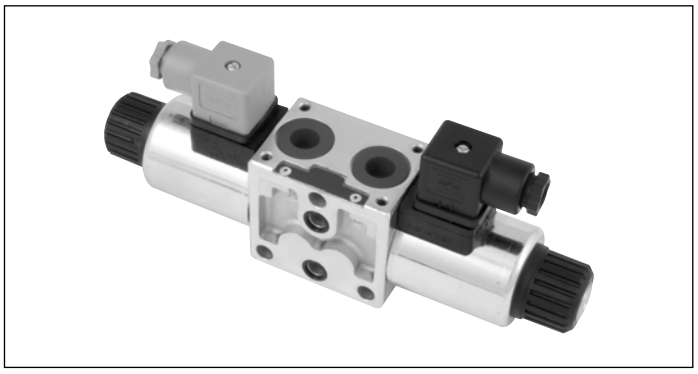
4/3 - 4/2 Directional valve elements with proportional control and with or without LS connections

L8_80... (ED4-P)

RE 18301-06
Edition: 12.2016
Replaces: 02.2016



Size 6
Series 00
Maximum operating pressure 310 bar (4500 psi)
Maximum flow 40 l/min (10.5 gpm)
Port connections G 3/8 - G 1/2 - SAE6 - SAE8

General specifications

Valve element with direct proportional control of spool.
Control spool operated by solenoid with removable coils.
In the de-energized condition, the control spool is held in the central position 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).

Contents

Ordering details

01	02	03	04	05	06	07	08	09	10		11
L	**8**		**80**		**S**					**00**	

Family

01	Directional Valve elements ED	**L**

Type

02	Size 6 proportional	**8**

Configuration

03	Standard	**0**
	With Load Sensing control	**4**

Coil type

04	D15	**80**

Spool variants

05	4/3 operated both sides a and b; P – T closed in neutral	**B2**
	4/2 operated on side a only; P – T closed in neutral	**B3**
	4/2 operated on side b only; P – T closed in neutral	**B4**
	4/3 operated on both sides a and b; A and B to T in neutral	**E2**
	4/2 operated on side a only; A and B to T in neutral	**E3**
	4/2 operated on side b only; A and B to T in neutral	**E4**

Flow pattern

06	Both meter in and out	**S**
	Meter in	**I**

Nominal flow [1)]

07	10 l/min (2.64 gpm)	**2**
	20 l/min (5.28 gpm)	**4**
	30 l/min (7.9 gpm)	**6**

Voltage supply		**07**	**03**	**01**	**00**	
08	Without coil	–	–	–	●	**00**
	12V DC	●	●	●	–	**OB**
	24V DC	●	●	●	–	**OC**

Electric connections

09	Without coils	**00**
	With coils, without mating connector DIN EN 175301-803	**01** [2)]
	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

10	G 3/8 DIN 3852	**0**
	9/16-18 UNF 2-B (SAE6)	**1**
	G 1/2 DIN 3852	**2**
	3/4-16 UNF 2-B (SAE8)	**3**

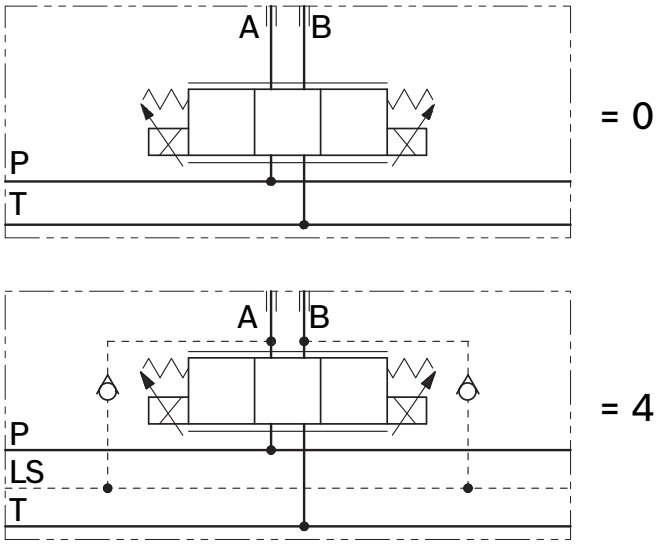
Options

11	No options	**No code**
	Push-button type manual override	**0P**
	Screw type manual override	**0F**
	Lever type manual override [3)]	**__**

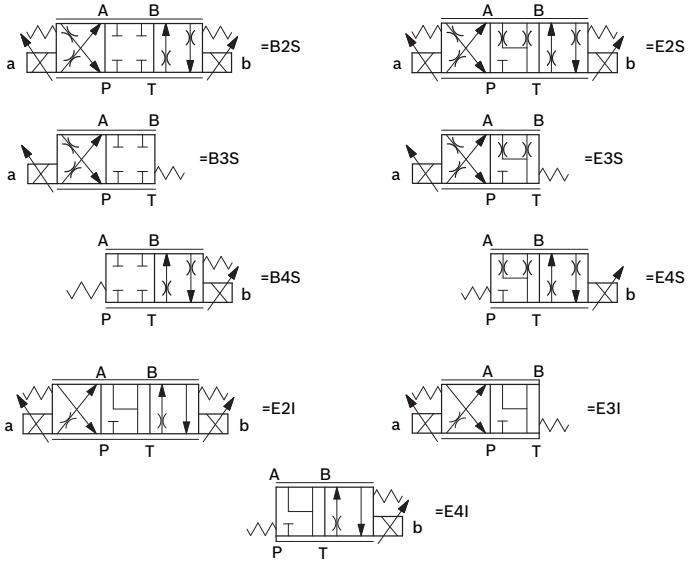
● = Available – = Not available

1) With Δp (P > T) 10 bar (145 psi), corresponding approx. to Δp P>A,B 5 bar (73 psi).
2) For connectors ordering code see data sheet RE 18325-90.
3) Each different option for the type of manual override chosen implies a specific ordering code (refer to page 7).

Symbols

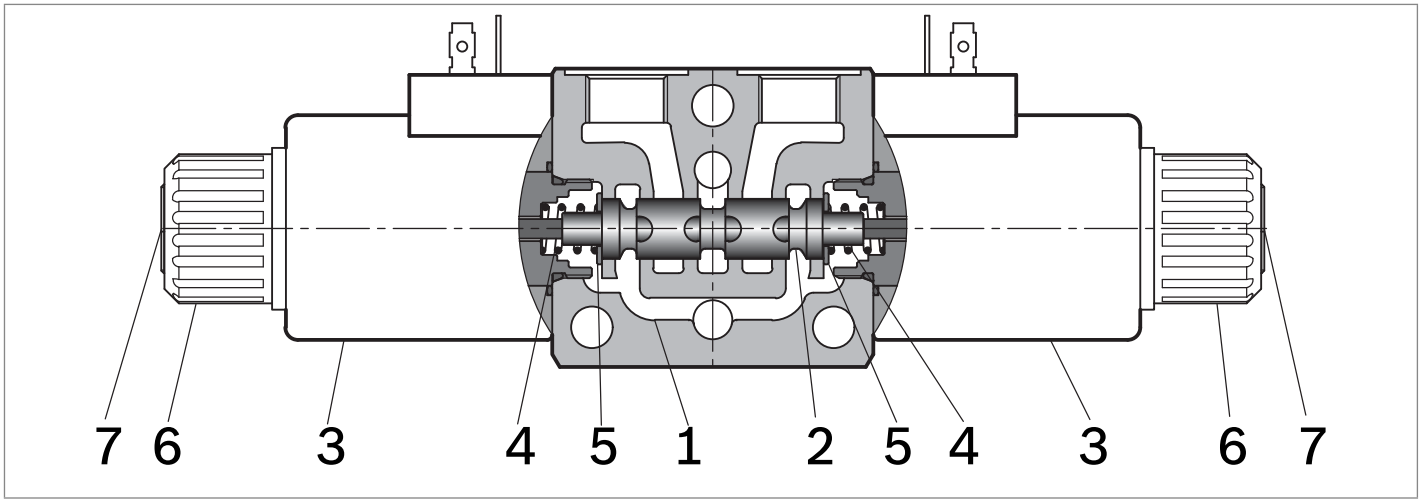


Spool variants



In neutal position, the valves cross section are as follows:
E_I ≥ 20% of nominal cross section.
E_S ≥ 2% of nominal cross section.

Functional description



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.

Technical data

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 pressure at T		bar (psi)	210 (3050)
Maximum inlet flow		l/min (gpm)	40 (10.5)
Nominal flow with DP P>T = 10 bar (145 psi)		l/min (gpm)	10, 20, 30, 40 (2.64, 5.28, 7.9, 10.5)
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=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	120 Hz
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		kg (lbs)	0.335 (0.739)
Voltage		V	12 24
Nominal 100% current		A	1.76 0.88
Coil resistance (nominal at 20°C (68°F))	- Cold value	Ω	4 16
	- Max. hot value	Ω	6.1 24.4
Electronic control			
Electronic feed regulators [1)]			Upon request

1) An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid directly. For valve elements with two solenoids, two electronic regulators are needed (refer to page 9).

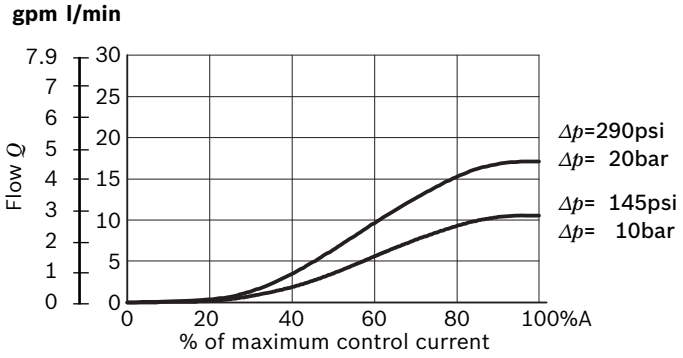
Note

For applications with different specifications consult us

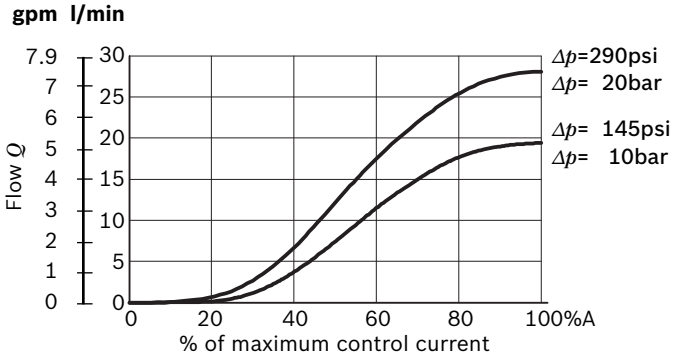
Code	Voltage [V]	Connector type	Coil description	Marking	Coil Mat no.
=OB 01	12 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	12 DC	R933000092
=OB 03	12 DC	AMP JUNIOR	D1530	12 DC	R933002877
=OB 07	12 DC	DEUTSCH DT 04-2P	D15 07	12 DC	R933000094
=OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	24 DC	R933000093
=OC 03	24 DC	AMP JUNIOR	D1530	24 DC	R933003515
=OC 07	24 DC	DEUTSCH DT 04-2P	D15 07	24 DC	R933002798

Characteristic curves

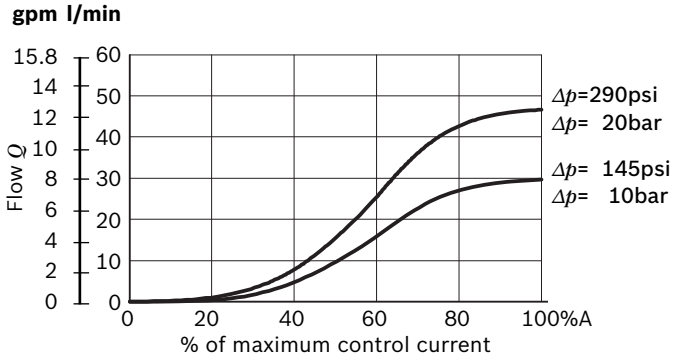
Ordering code 2: 10 l/min (2.64 gpm) with Δp 10 bar (145 psi).



Ordering code 4: 20 l/min (5.28 gpm) with Δp 10 bar (145 psi)

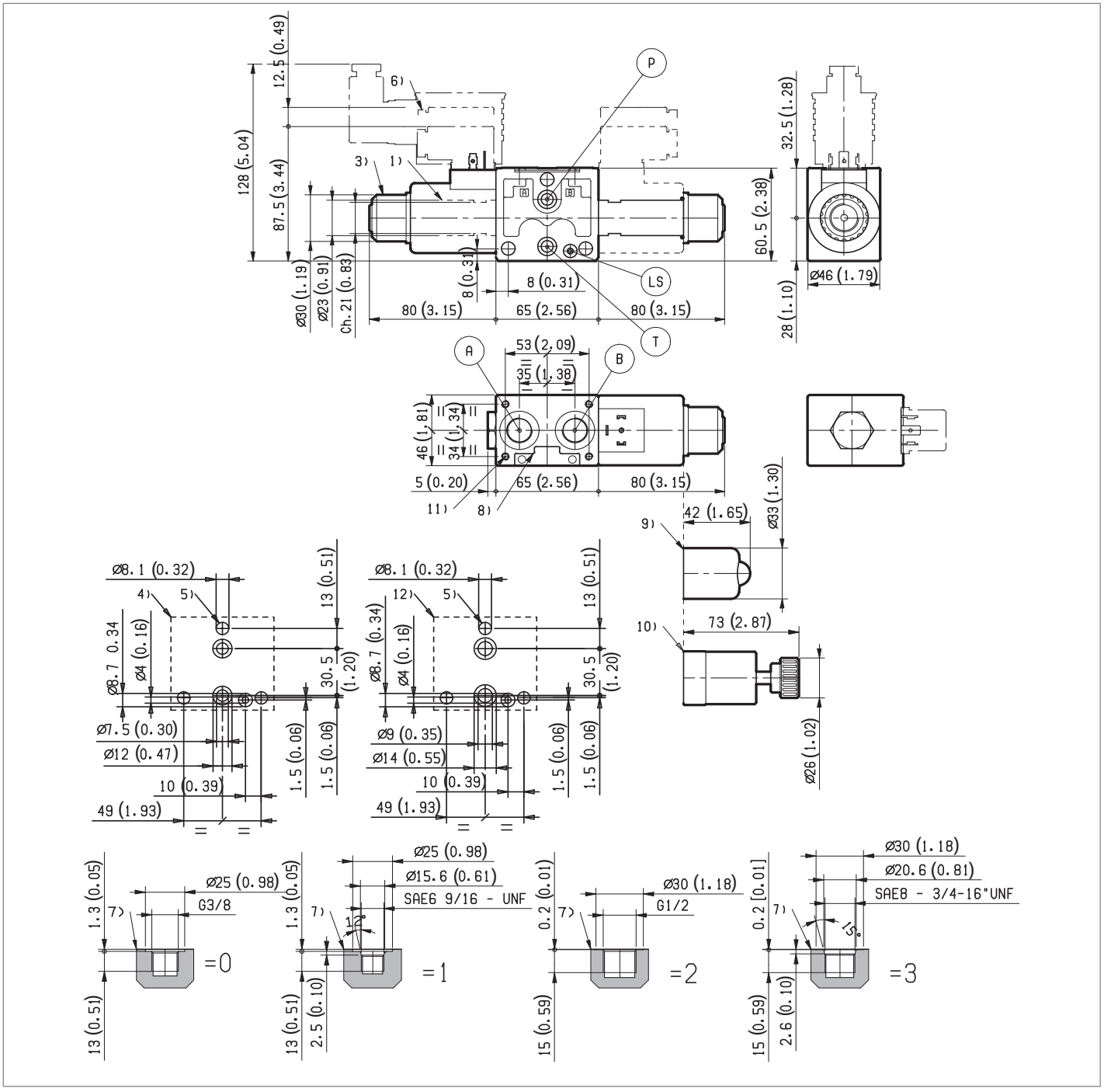


Ordering code 6: 30 l/min (7.92 gpm) with Δp 10 bar (145 psi)

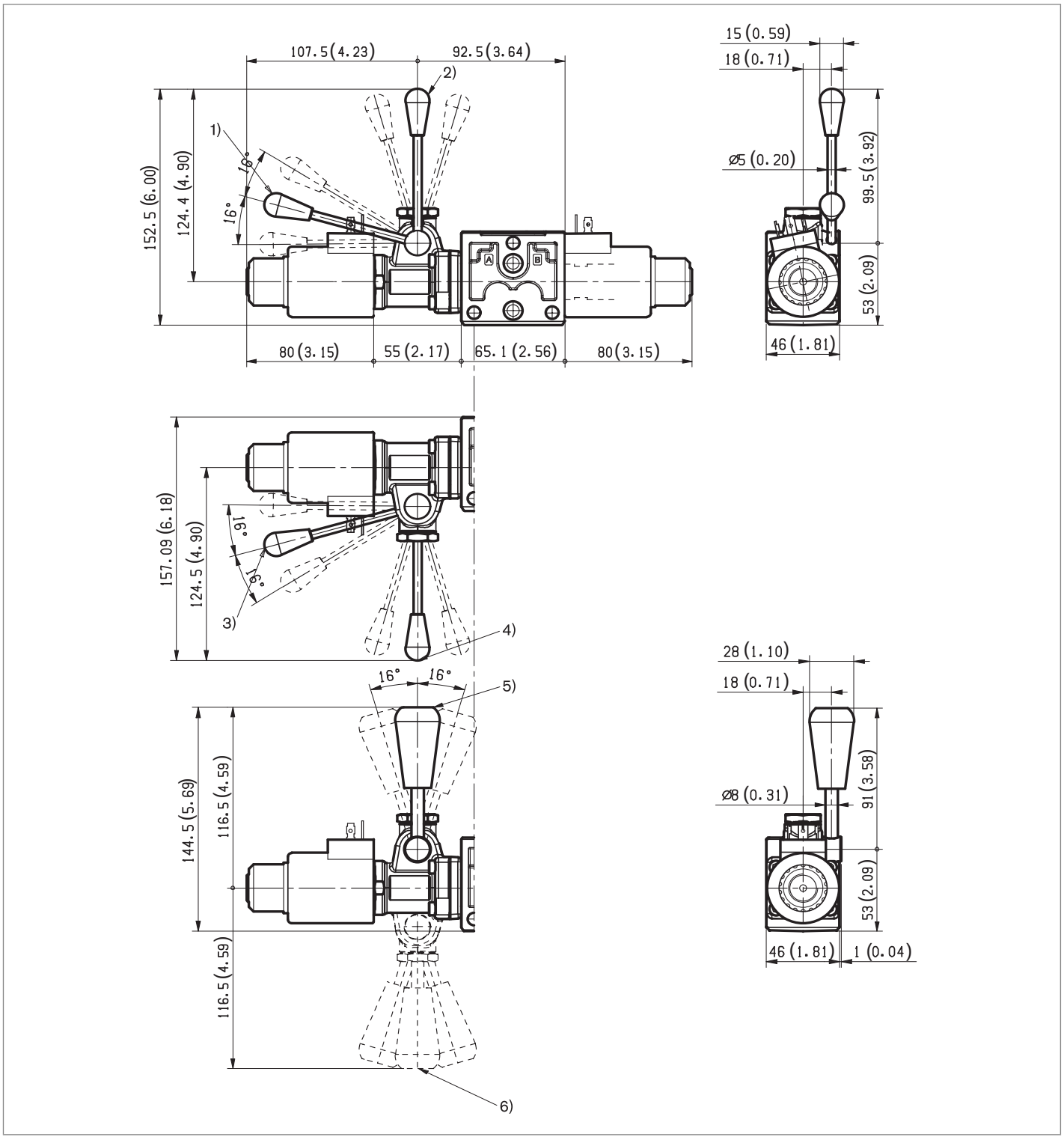


Δp= valve pressure differential (inlet pressure Pp minus load Pl and minus return pressure Pt).

External dimensions and fittings



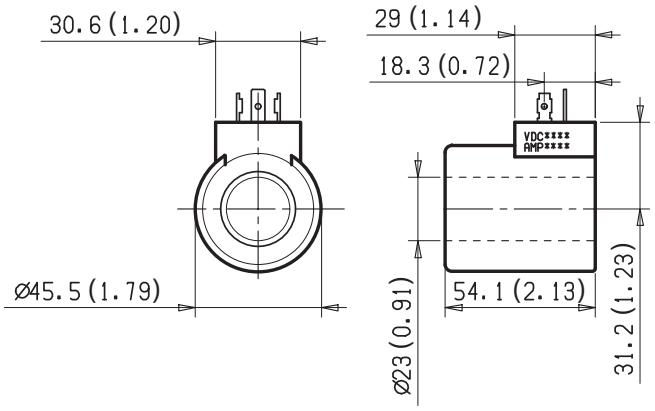
1 Solenoid tube Ø 23 mm (0.9 inch).
3 Ring nut for coil locking (Ø 30 mm); torque 6 – 7 Nm (4.4 – 5.2 ft-lb).
4 Flange specifications for coupling to ED intermediate elements with ports G 3/8 and SAE 6.
5 For tie rod and tightening torque information see data sheet RE 18301-90.
6 Clearance needed for connector removal.
7 A and B ports.
8 Identification label.
9 Optional push-button manual override, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003289.
10 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. 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.



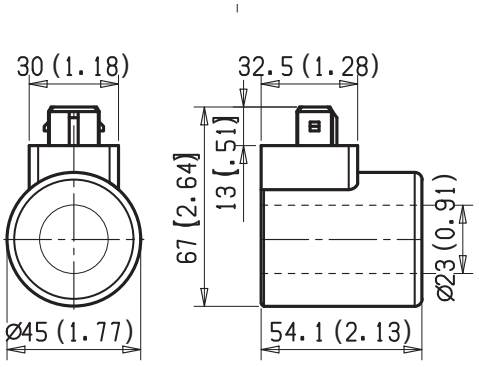
1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering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

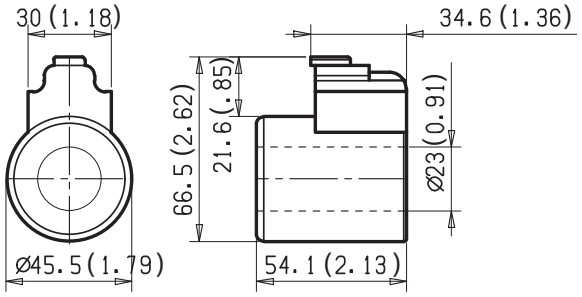
01 Protection class: IP 65 when connector with seal is properly screwed down.



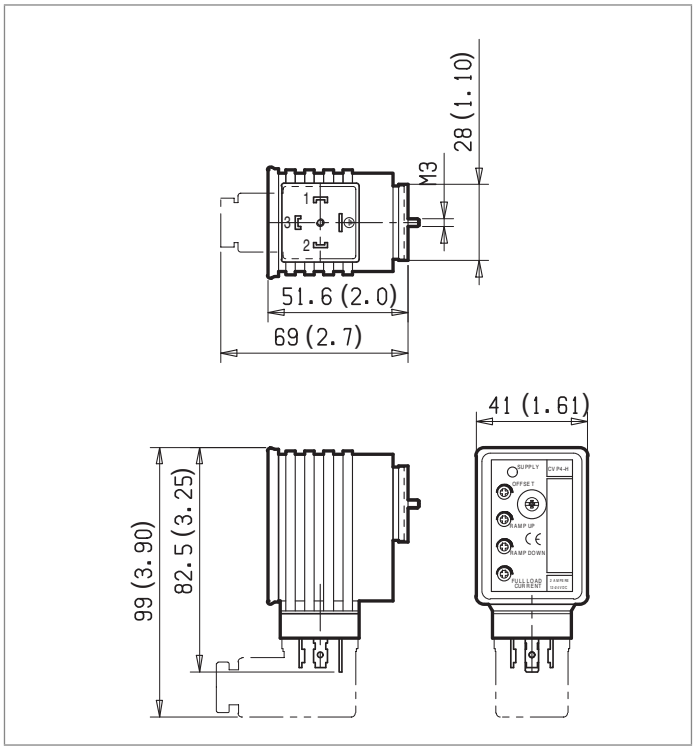
03 Protection class: IP 65 with female connector properly fitted (see drawing).



07 Protection class: IP 69 K with female connector properly fitted.



Electronic feed regulator



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.

Electronic feed regulator	
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	0.1....10 s
PWM Frequency adjustment (pre-set 120 Hz)	100....500 Hz
Ambient operating temperature	-10....+60 °C *(14....+140 °F)*
Weight	0.12 kg *(26.4 lbs)*
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 κ Ω

Bosch Rexroth Oil Control S.p.A.
Oleodinamica LC Division
Via Artigianale Sedrio, 12
42030 Vezzano sul Crostolo
Reggio Emilia - Italy
Tel. +39 0522 601 801
Fax +39 0522 606 226 / 601 802
compact-hydraulics-cdv@boschrexroth.com
www.boschrexroth.com/compacthydraulics