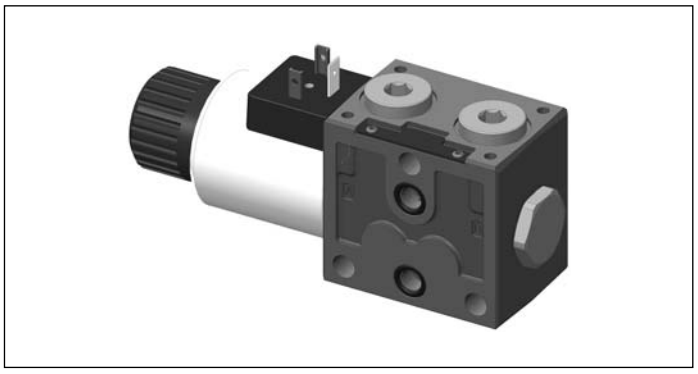
Directional valve elements with proportional control of Tank unloaded excess flow

L808103P... (ED4-PT1)

RE 18301-13
Edition: 09.2016
Replaces: 01.2016



Size 6
Series 00
Maximum operating pressure 310 bar (4500 psi)
Maximum flow 35 l/min (9.2 gpm)

General specifications

Valve element with direct proportional control of spool.
Proportional, non pressure compensated, valve element for partial or total unloading to Tank of P flow.
Control spool operated by solenoids with removable coils.
In the de-energized condition, the control spool is held in normal position by return spring.
Wet pin proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface.
Manual override (push-button, screw or lever type) available as option.

Contents

Ordering details

01	02	03	04	05	06	07		08
L	**80**	**81**	**03P**				**00**	

Family

01	Directional Valve elements ED	**L**

Type

02	Size 6 proportional	**80**

Coil type

03	GP45	**81**

Spool variants

04	2/2 normally open proportional P to T, controlled side a	**03P**

Nominal flow [1]

05	12 l/min (3.2 gpm)	**1**
	18 l/min (4.75 gpm)	**2**
	25 l/min (6.6 gpm)	**3**
	35 l/min (9.2 gpm)	**4**

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

Electric connections

07	Without coils	**00**
	With coils, without mating connector DIN EN 175301-803	**01** [2]
	With coils, without mating connector vertical Amp-Junior	**03**
	With coils, without mating connector DT04-2P	**07**

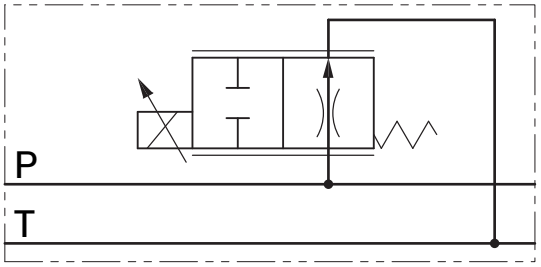
Options

08	No options	**No code**
	Push-button type manual override	**0P**
	Screw type manual override	**0F**
	Twist type manual override (180°)	**0T**
	Red push-button type manual override	**RP**
	Black push-button type manual override	**NP**
	Lever type manual override [3]	**– –**

● = Available – = Not available

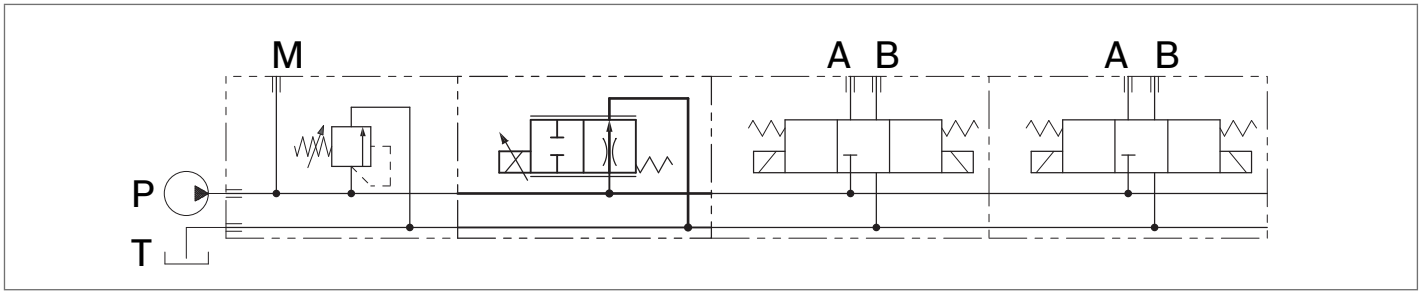
Symbols

Spool variants

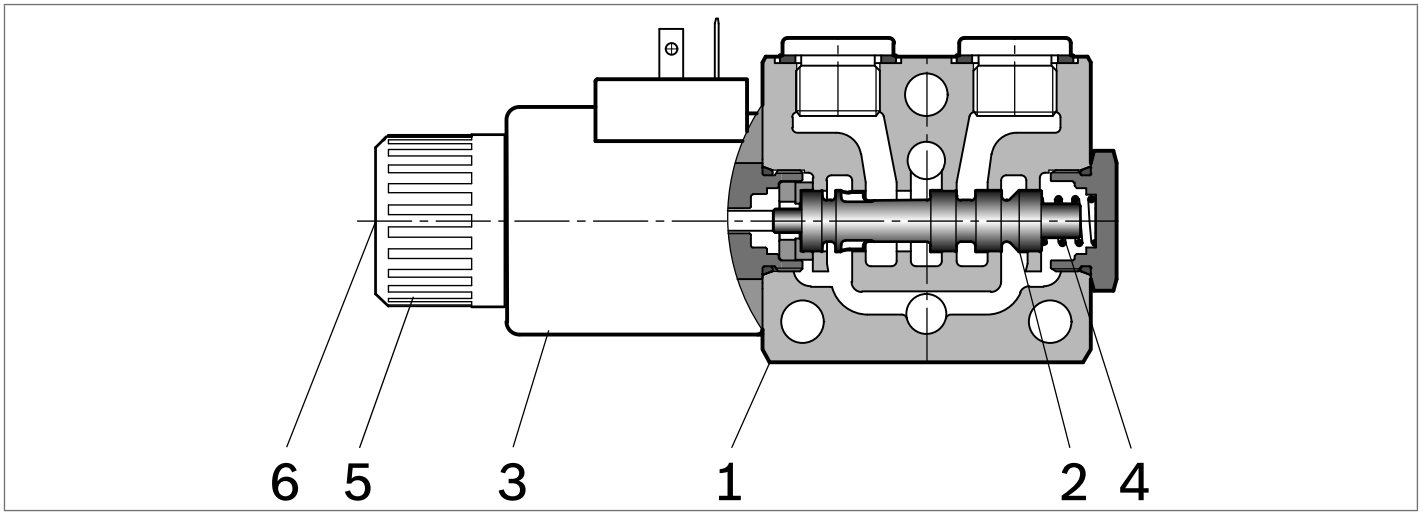


1) With ΔP (P > T) 10 bar (145 psi).
2) For connectors ordering code see data sheet RE 18325-90.
3) As lever type manual override a choice of options is available and each one implies a specific ordering code (refer to page 7).

Example of application



Functional description



The sandwich plate design valve elements L808103P... are compact direct operated proportional solenoid valves which divert totally or partially the inlet P flow to Tank.
These elements basically consist of a stackable housing (**1**) with a control spool (**2**), one solenoid (**3**), and one return spring (**4**).
With the solenoid de-energized, the return spring (**4**) keeps the spool (**2**) in its rest position “0” and all the inlet P flow passes through the valve and is unloaded to Tank. When energized by the electronic feed regulator, the solenoid (**3**) displaces the control spool (**2**) from its rest position proportionally to the current received and proportionally restricts the flow area to Tank. A regulated, non pressure compensated, oil flow is diverted from P to T and the remaining amount of inlet flow in the P line remains available for the downstream operators.
The coil (**3**) is fastened to the solenoid tube by a ring nut (**5**).
A pin (**6**) allows to push the spool (**2**) in emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.

Technical data

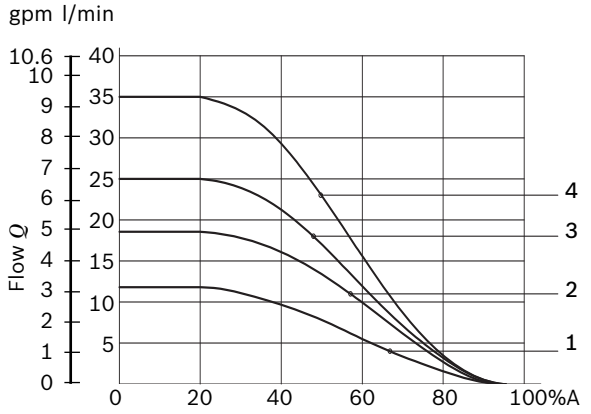
General		
Valve element with 1 solenoid, pins EN175301-803	kg (lbs)	1.7 (3.75)
Ambient Temperature	°C (°F)	–30....+90 (-22....+194) (NBR seals)
Hydraulic		
Maximum pressure at P	bar (psi)	310 (4500)
Maximum inlet flow	l/min (gpm)	35 (9.2)
Hydraulic fluid General properties: it must have physical lubricating 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)	–30....+100 (-22....+212) (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	20....380 (optimal 30....46)
Electrical		
Voltage type	PWM	120 Hz
Voltage tolerance (nominal voltage)	%	-10 .... +10
Duty		Continuous, with ambient temperature ≤ 90°C (194°F)
Coil wire temperature not to be exceeded	°C (°F)	180 (356)
Insulation class		H
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC
Coil weight	kg (lbs)	0.335 (0.732)
Voltage	V	12 24
Nominal 100% current	A	1.8 1.2
Coil resistance - Cold value (nominal at 20°C (68°F))	Ω	3.3 7.2

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)	GP45 01 - 45 K4	12 DC	R901022180
OB 03	12 DC	AMP JUNIOR	GP45 03 - 45 C4	12 DC	R901022680
OB 07	12 DC	DEUTSCH DT 04-2P	GP45 07 - 45 K40	12 DC	R901272648
OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	GP45 01 - 45 K4	24 DC	R901022174
OC 03	24 DC	AMP JUNIOR	GP45 03 - 45 C4	24 DC	R901022683
OC 07	24 DC	DEUTSCH DT 04-2P	GP45 07 - 45 K40	24 DC	R901272647

Characteristic curves

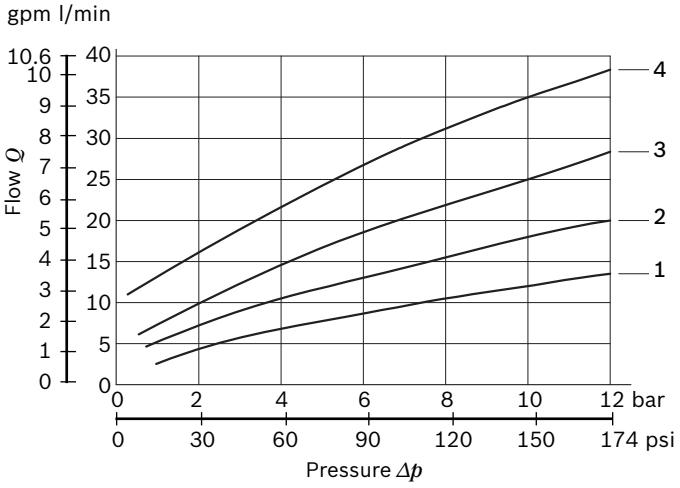
P -> T, vs %A = Percentage of the maximum current supplied to the coil



%A = Percentage of the maximum current supplied to the coil

Curve no.	Nominal Flow With Δp (P > T) 10bar (145psi)	Max flow	Max pressure at P
1	12 l/min (3.17gpm)	14 l/min (3.7gpm)	310 bar (4500psi)
2	18 l/min (4.75gpm)	20 l/min (5.3gpm)	310 bar (4500psi)
3	25 l/min (6.6 gpm)	28 l/min (7.4gpm)	310 bar (4500psi)
4	35 l/min (9.2 gpm)	40 l/min (10.57 gpm)	310 bar (4500psi)

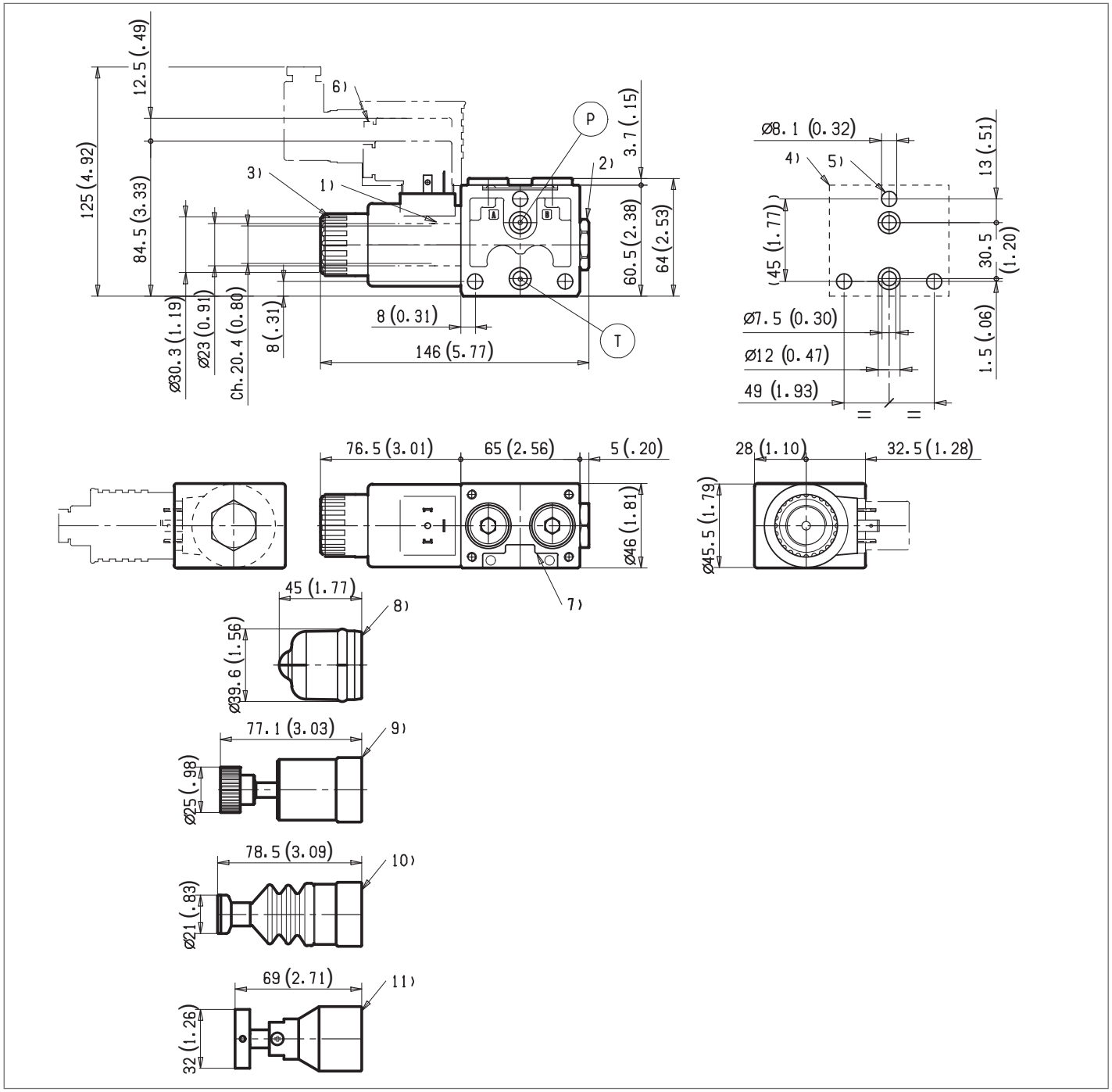
Pressure Drop



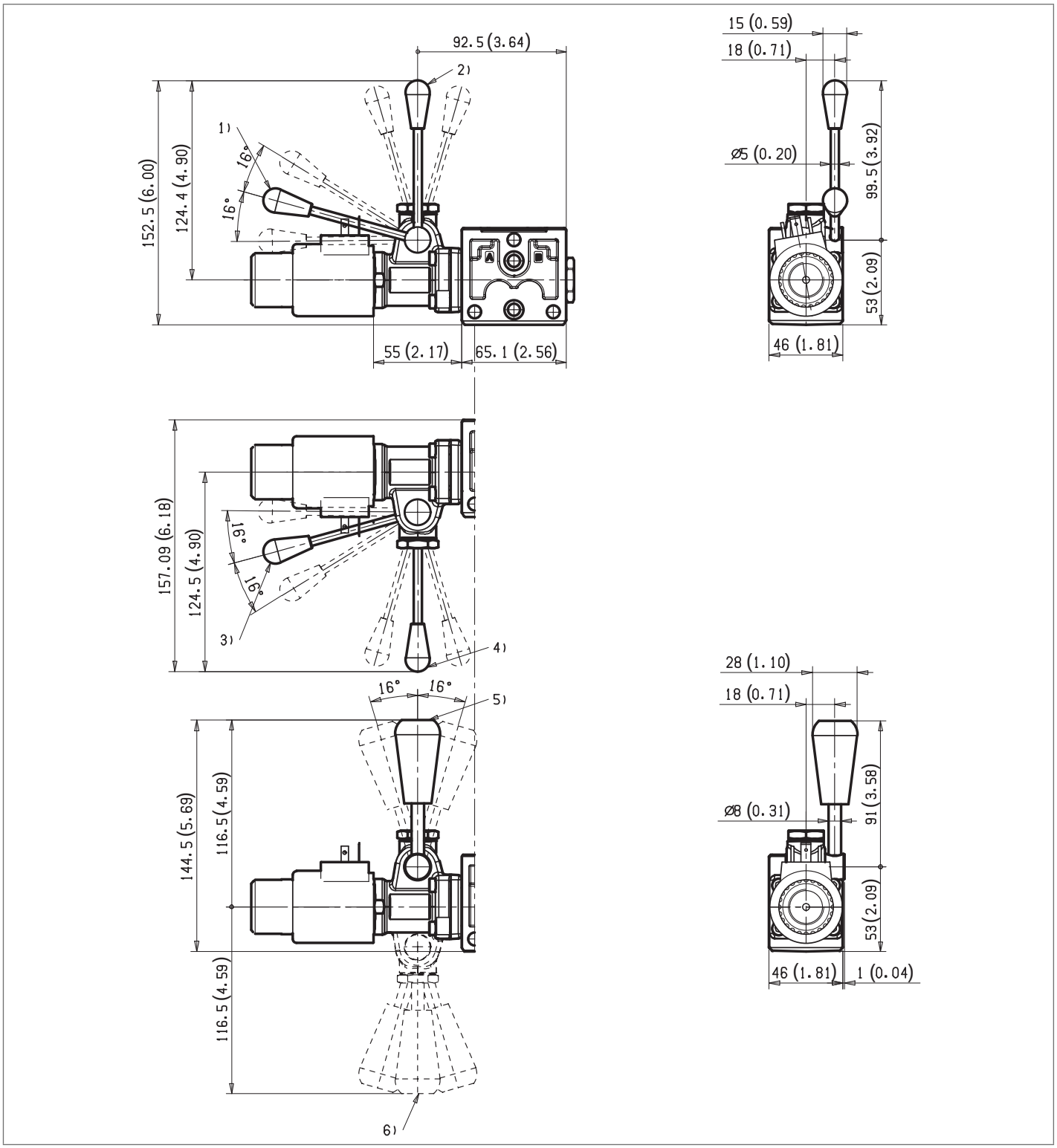
Curve no.	Nominal Flow With Δp (P > T) 10bar (145psi)	Max flow	Max pressure at P
1	12 l/min (3.17gpm)	14 l/min (3.7gpm)	310 bar (4500psi)
2	18 l/min (4.75gpm)	20 l/min (5.3gpm)	310 bar (4500psi)
3	25 l/min (6.6 gpm)	28 l/min (7.4gpm)	310 bar (4500psi)
4	35 l/min (9.2 gpm)	40 l/min (10.57 gpm)	310 bar (4500psi)

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

External dimensions and fittings



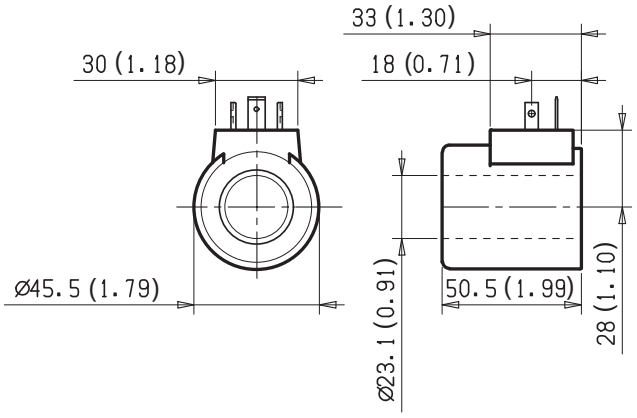
1 Solenoid tube Ø 23 (0.9 inch).
3 Ring nut for coil locking (Ø 30.3 mm (1.18 Inch)); torque 6–7 Nm (4.4 – 5.2 ft-lb).
4 Flange specifications for coupling to ED intermediate elements.
5 For tie rod and tightening torque information see data sheet RE 18301-90.
6 Clearance needed for connector removal.
7 Identification label.
8 Optional push-button manual override, 0P type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003424.
9 Optional screw type manual override, 0F 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. R930056486.
10 Optional push-button manual override NP (black) and RP (red) type, for spool opening. It is screwed (torque 6-7Nm (4.4-5.2 ft-lb) to the tube as replacement of the coil ring nut. Mat no. R930056488 (black) - R930056489 (red)
11 Optional twist type manual override, 0T type, for spool opening and locking in the energised position. It is screwed (torque 6-7Nm (4.4-5.2 ft-lb) to the tube as replacement of the coil ring nut. Mat no. R930056487



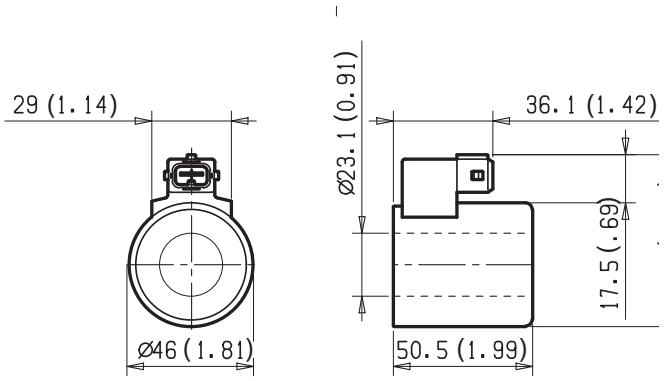
1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering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

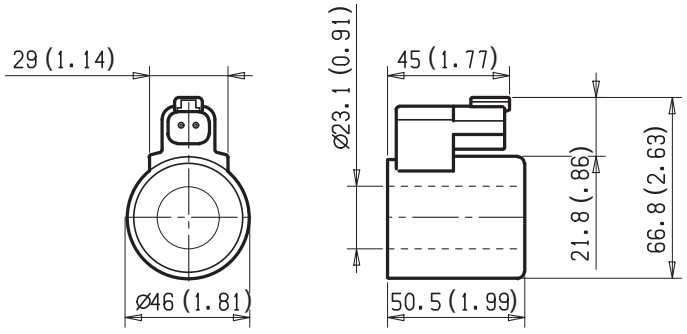
01 Protection class: IP 65 when connector with seal is properly screwed down.



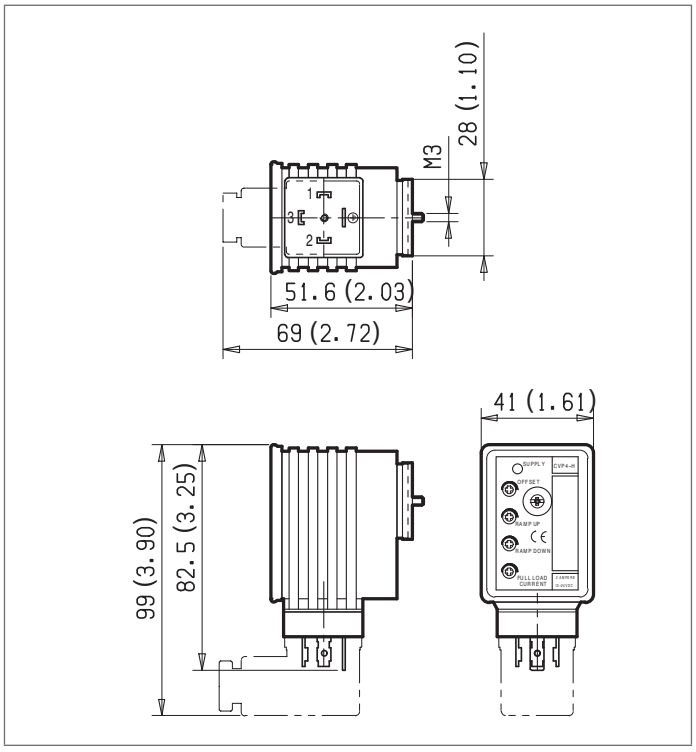
03 Protection class: IP 65 with female connector properly fitted (see drawing).



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
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