Part number:

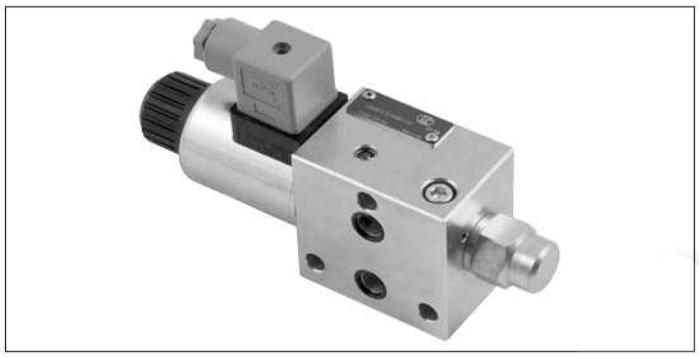
HYDROMA
HYDRAULICKÉ SYSTÉMY

HIDROMA SISTEMS
UKŁADY HYDRAULICZNE

HYDROMA
ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

Directional valve elements with compensated proportional control of Tank unloaded excess flow

L808003C... (ED4-PTC)



Size 6
Series 00
Maximum operating pressure 250 bar (3625 psi)
Maximum flow 40 l/min (10.6 gpm)

General specifications

Valve element with direct proportional pressure compensated control of inlet, P line, flow.
Three way pressure compensator included.
Wet pin proportional tube for removable DC coil.
In the de-energized condition, the control spool is held in normal position by return spring.
Solenoid tube with push rod for mechanical override; nickel plated surface.
Manual override (push-button, 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
L	**80**	**80**	**03**			**00**	

Family

01	Directional Valve elements ED	**L**

Type

02	Size 6 proportional	**80**

Coil type

03	D15	**80**

Spool variants

04	Proportional pressure compensated flow control	**03**

Nominal flow [1]

05	10 l/min (2.6 gpm)vw	**C2**
	20 l/min (5.3 gpm)	**C4**
	30 l/min (7.9 gpm)	**C6**
	40 l/min (10.6 gpm)	**C8**
	50 l/min (12.9 gpm)	**C9**

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

Electric connections

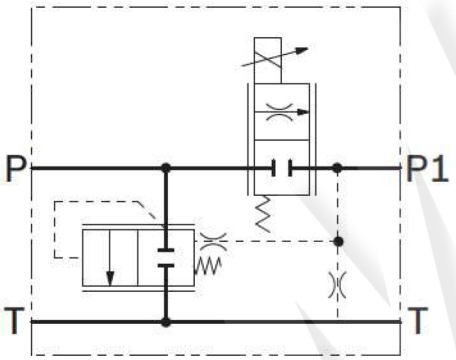
07	Without coils	**00**
	With coils, without mating connector DIN EN 175301-803	**01** [2]
	With coils, with bi-directional diode, without mating connector vertical Amp-Junior	**03**
	With coils, with bi-directional diode, without mating connector DT04-2P	**07**

Options

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

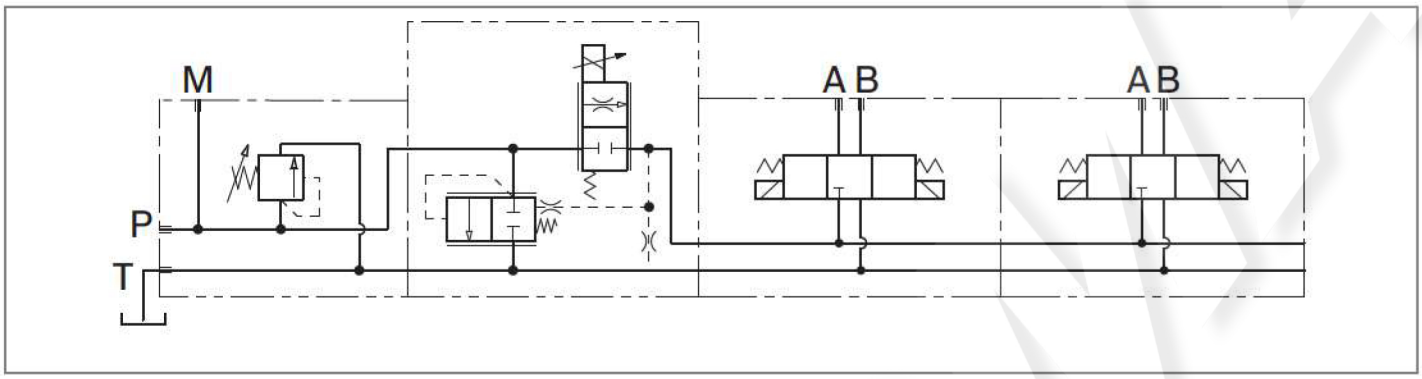
● = Available – = Not available

Symbols

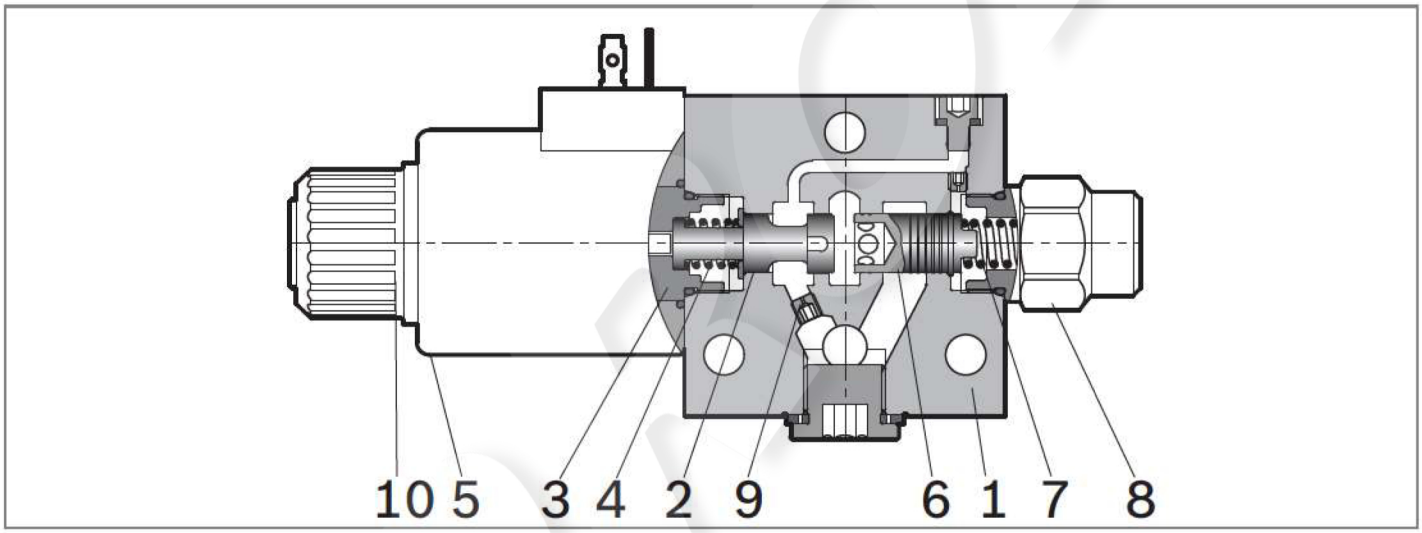


1) With ΔP (P > T) 10 bar (145 psi).
2) For connectors ordering code see data sheet RE 18325-90.
3) As lever type manual override a choice of options is available and each one implies a specific ordering code (refer to page 7).

Example of application



Functional description



The sandwich plate design elements L808003C... are 3 way proportional pressure compensated direct solenoid operated valves. They control the inlet (P) flow and allow through (out of P1) only the flow required by the downstream operators; the excess oil, pressurized at working pressure, is diverted from the inlet P line to Tank.
The combination of the proportional regulator with the unloading compensator guarantees stable and constant flow, independently from the working pressure.
The proportional control is achieved by a wet pin proportional screwed-in tube, with removable coil which is energized by an external electronic feed regulator; the electronic regulator performs an “open loop” control of the current supplied to the coil.
These elements basically consist of a stackable housing (**1**) with a control spool (**2**), a solenoid (**3**), and one return spring (**4**); additionally there is a compensator (**6**), with a preset spring (**7**), a spring retainer plug (**8**) and a drain orifice (**9**). A coil (**5**) is held to the solenoid tube by the ring nut (**10**).
With the solenoid de-energized, the spool stays in the closed position; the pressure overcomes the compensator spring (**7**) and the inlet (P) oil is unloaded to Tank at the Δp value shown by the characteristic curve. Pressure at (P1) is drained to Tank through the orifice and drops to zero.
By energizing the solenoid (**3**) through the electronic feed regulator, the control spool (**2**) is displaced from its rest position proportionally to the current; the corresponding opening allows a pressure compensated flow to proceed to P1, while the excess flow is diverted to Tank.

With the solenoid (**3**) de-energized, the return spring (**4**) pushes the spool (**2**) to its rest position “0” fully closed. No flow goes to P1 and any residual pressure at P1 is drained through the orifice. The compensator (**6**) is pushed fully open all the oil is unloaded to Tank.

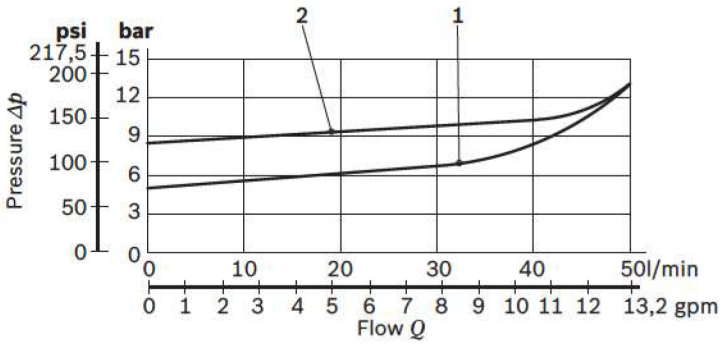
Technical data

General			
Valve element with 1 solenoid, pins EN175301-803		kg (lbs)	1.53 (3.37)
Ambient Temperature		°C (°F)	–20....+50 (-4....+122) (NBR seals)
Hydraulic			
Maximum pressure at P		bar (psi)	250 (3625)
Maximum flow rated at P1		l/min (gpm)	40 (10.6)
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=10...12 ISO 4406: class 19/17/14 NAS 1638: class 8
Viscosity range		mm²/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 (0.732)
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

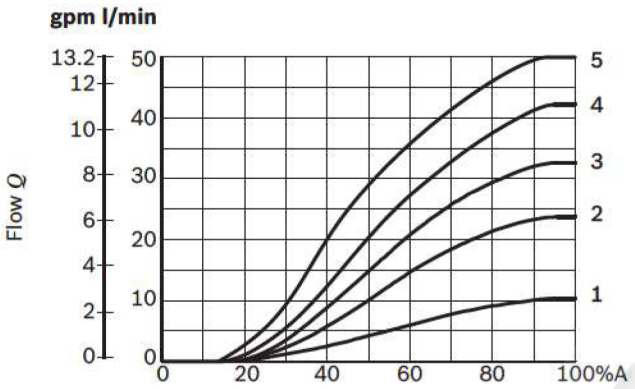
Note
For applications with different specifications consult us

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



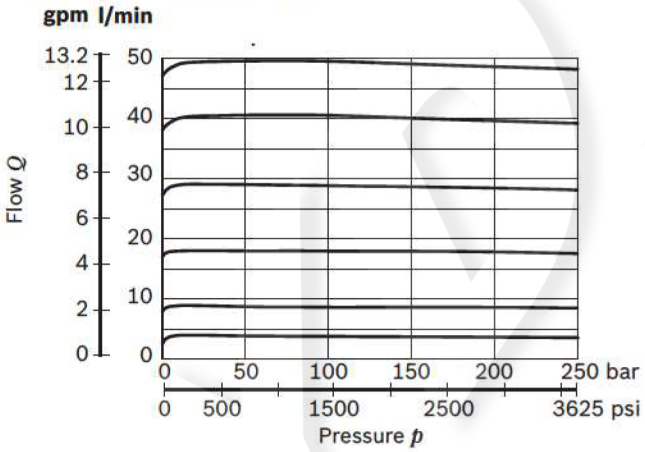
Curve no.	Nominal flow
1	C2 - C4 - C6
2	C8 - C9



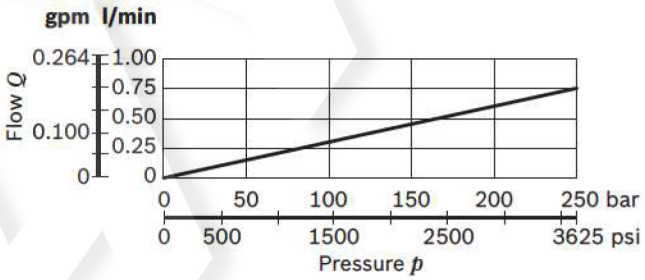
Curve no.	Nominal flow
1	C2
2	C4
3	C6
4	C8
5	C9

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

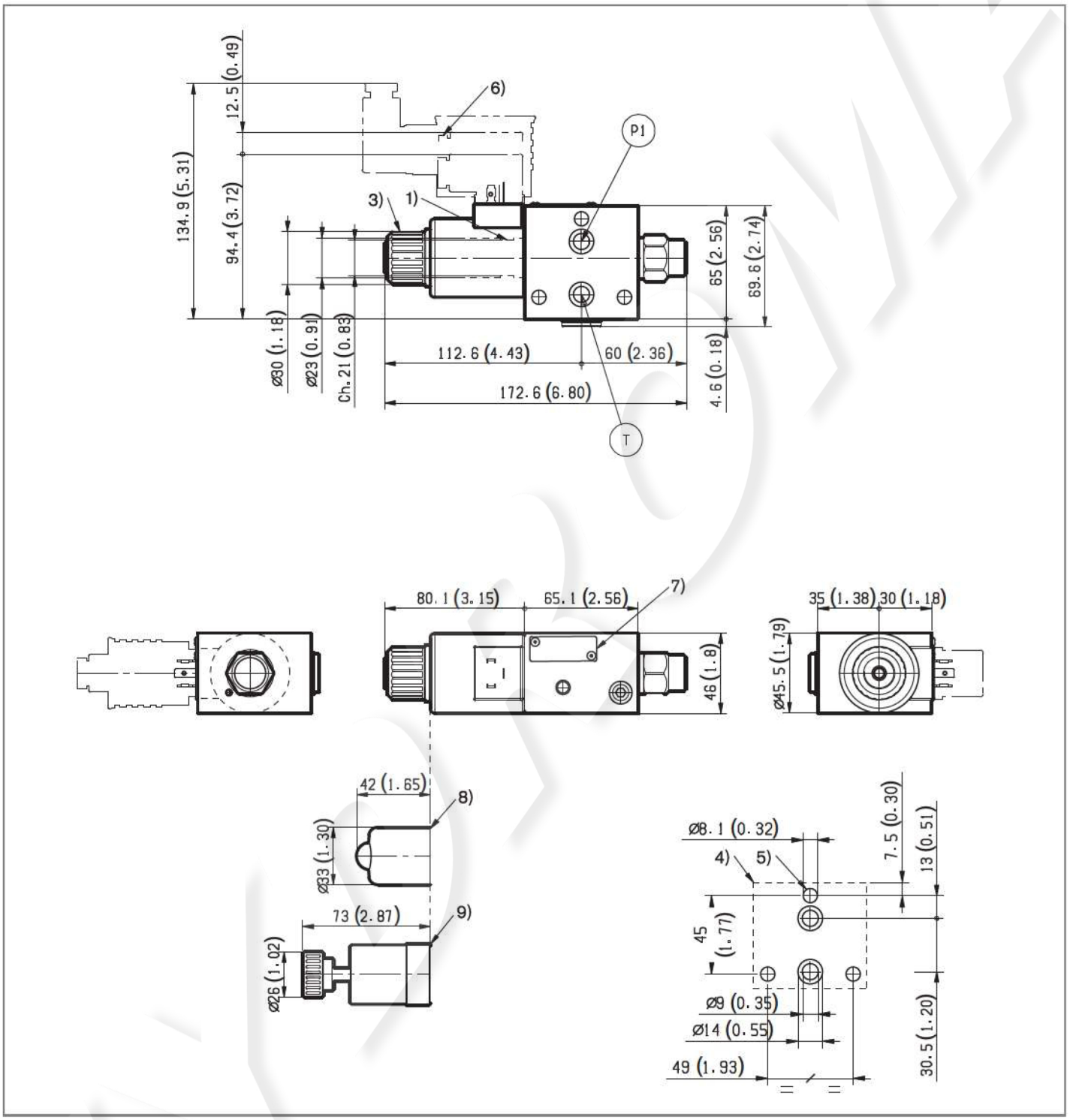
Compensated flow curves



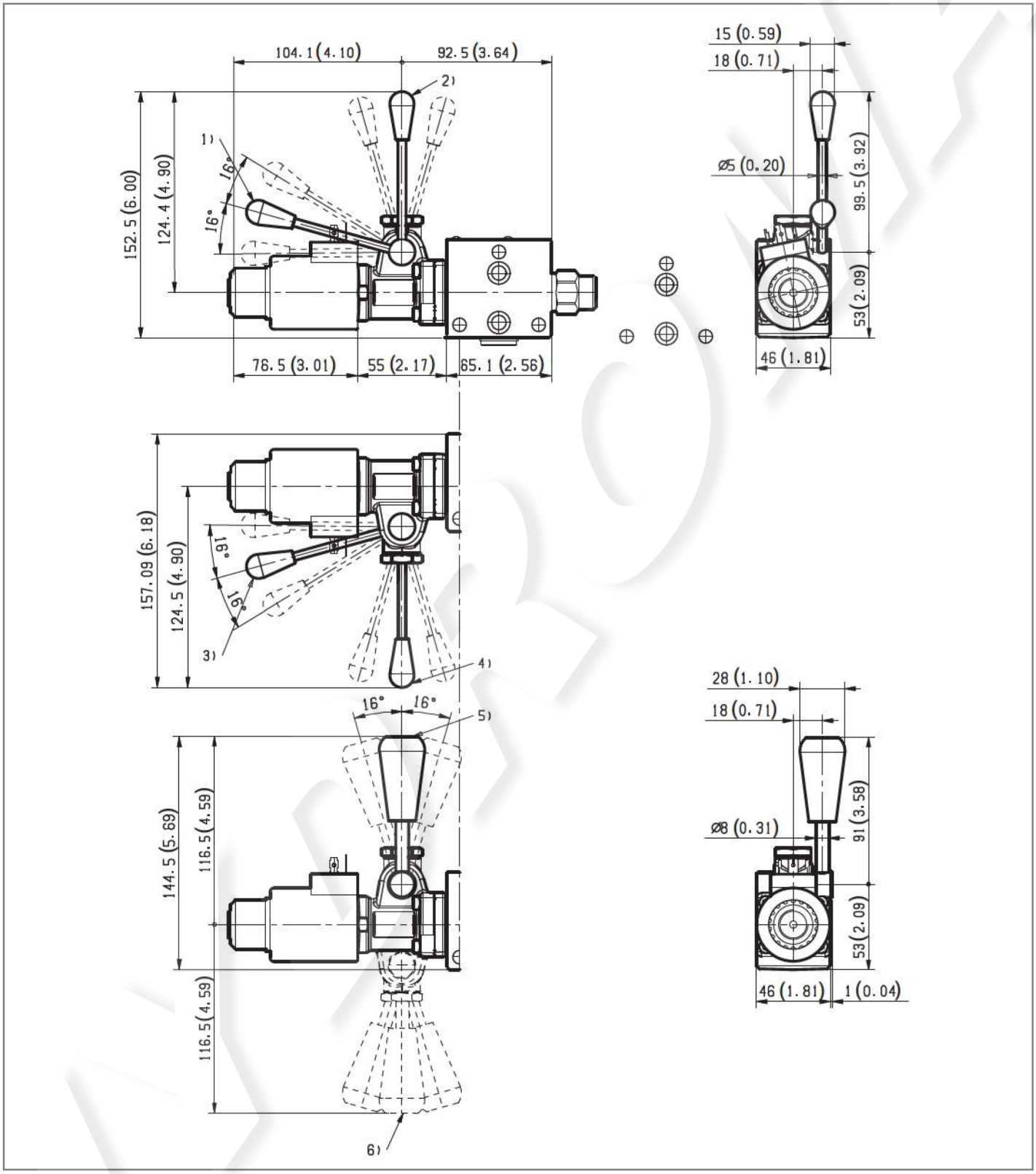
Drain to tank



External dimensions and fittings



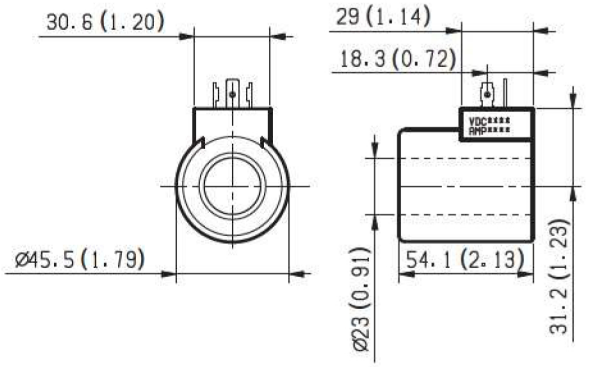
1 Solenoid tube Ø 23 (0.9 inch).
3 Ring nut for coil locking (Ø 30.3 mm (1.18 inch)); torque 6–7 Nm (4.4 – 5.2 ft-lb).
4 Flange specifications for coupling to ED intermediate elements.
5 For tie rod and tightening torque information see data sheet RE 18301-90.
6 Clearance needed for connector removal.
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. R933003289.
9 Optional screw type manual override, 0F 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.



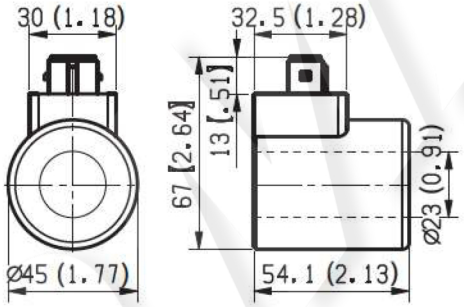
1 Ordering Details: HA (if fitted to side A) or HB (if fitted to side B)
2 Ordering Details: VA (if fitted to side A) or VB (if fitted to side B)
3 Ordering Details: H1 (if fitted to side A) or H9 (if fitted to side B)
4 Ordering Details: V1 (if fitted to side A) or V9 (if fitted to side B)
5 Ordering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

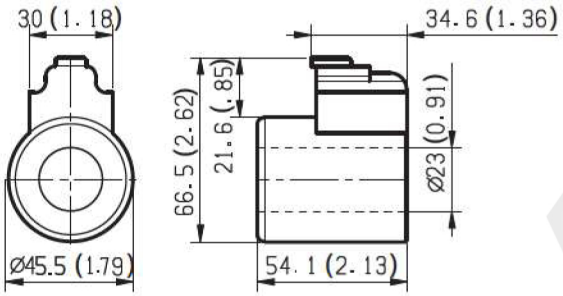
01 Protection class: IP 65 when connector with seal is properly screwed down.



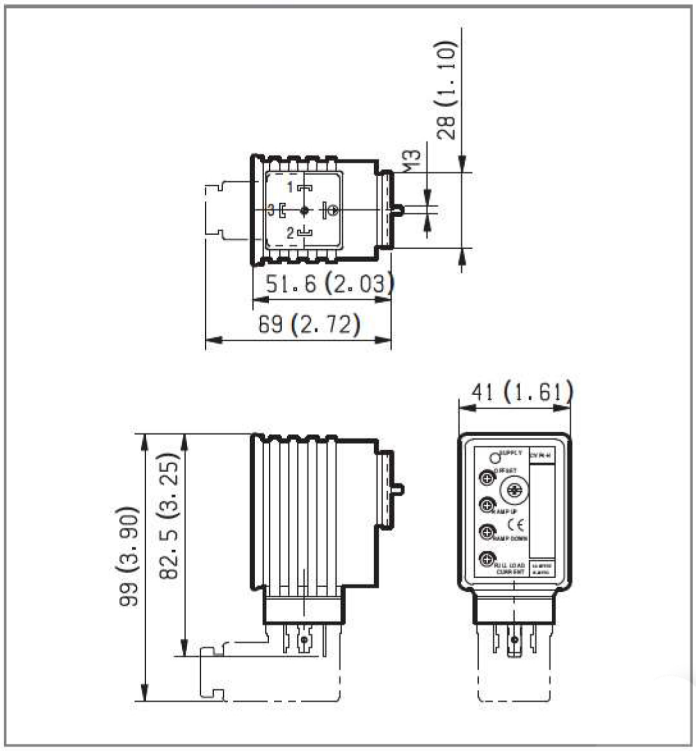
03 Protection class: IP 65 with female connector properly fitted (see drawing).



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