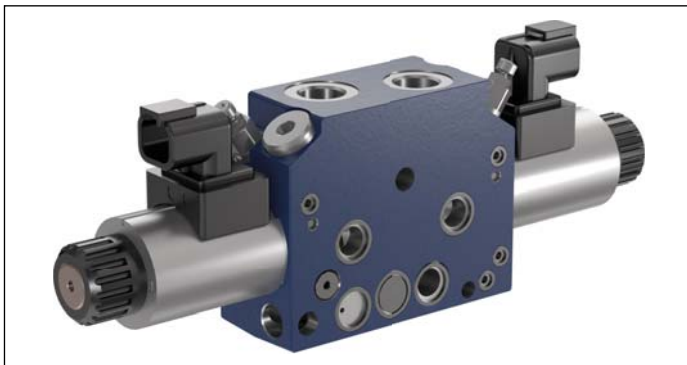


# 4/3 and 4/2 Proportional directional valve elements with LS

EDG-DP  
Component Series 1

**RE 18301-19**  
Edition: 01.2025  
Replaces: 06.2024



- ▶ Size 6
- ▶ Series 1
- ▶ Maximum operating pressure\*:  
350 bar (5000 psi) on pump side  
350 bar (5000 psi) on consumer side
- ▶ Maximum flow at 6 bar (87 psi) 40 l/min (10.6 gpm)
- ▶ Ports connections G 3/8 - G 1/2 - SAE6 - SAE8

#### Note

Spool position sensor available for this valve.  
See RE18300-30

#### General specifications

The inlet section can be configured for either a fixed displacement pump or load-sense variable displacement pump. When simultaneous machine functions are actuated, the pre-compensators will automatically adjust to the highest load pressure via a shuttle arrangement, making the system circuit independent of variations in loads and pump pressures.

#### Main Field of Application

- ▶ Truck mounted applications
- ▶ Forestry machinery
- ▶ Forklifts and Telehandler
- ▶ Municipal vehicles
- ▶ Cranes
- ▶ Construction machines
- ▶ Aerial working platforms
- ▶ Heavy duty vehicles
- ▶ Agricultural machines

#### Contents

Ordering details	2
Functional description	4
Technical data	5
Characteristic curves	6
External dimensions and fittings:	7
- Electric connection	8

\* For detailed information about duty cycles or specific requirements please contact factory.

## Ordering details

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	
EDG	-	D	P	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	1

### Family

01	Directional Valve elements EDG Size 6	EDG
----	---------------------------------------	-----

### Type

02	Direct Acting	D
----	---------------	---

### Configuration

03	Proportional	P
----	--------------	---

### Ports & Connections

04	G 3/8 DIN 3852	G38
	G 1/2 DIN 3852	G12
	9/16-18 UNF 2-B (SAE6)	S06
	3/4-16 UNF 2-B (SAE8)	S08

### Local compensator bias spring

05	4 bar (58 psi)	1
	6 bar (87 psi)	2

### Flange configuration

06	With P-Ta-Tb-LS-Ya-Yb-X-Y lines	2
	With P-Ta-Tb-LS-Ya-Yb-X-Y lines and LS return line	3

### Hydraulic connections in neutral

07	P, A, B closed and LS to T	B
	P closed and A, B, LS to T	E

### Spool variants

08	4/3 operated both sides A and B	2
	4/2 operated on side A only	3
	4/2 operated on side B only	4

### Flow rates over valve connection (from 1 to 9 according to table 1 and table 2)

09	Flow rate P>A	-
10	Flow rate P>B	-
11	Nominal flow rate (A>T)	- <sup>6)</sup>
12	Nominal flow rate (B>T)	- <sup>6)</sup>

### Voltage supply

13	Without coil	-	-	-	●	00
	12V DC	●	●	●	-	OB
	24V DC	●	●	●	-	OC

● = Available - = Not available

### Electric connections

14	Without coils	00
	With coils, with connection DIN EN 175301-803	01 <sup>1)</sup>
	With coils, with connection vertical Amp - Junior	03
	With coils, with connection horizontal DT04-2P	07

### Secondary valve types

15	Without secondary valve	00
	Double or single full relief valve with Anticavitation (VMA) or anticavitation only (VUM) or plug	M0 <sup>3)</sup>
	Double or single LS relief valve (VMGLS) or plug	OM <sup>4)</sup>
	Combination of M0 and OM options together	MM

### Secondary valve config. setting:

#### Full Relief or Anticavitation selection (according to table 3)

16	A>Ta setting @5lpm	- <sup>2)</sup>
17	B>Tb setting @5lpm	- <sup>2)</sup>

#### Secondary valve config. setting: LS Relief (VMGLS) (according to table 4)

18	LSa>T setting range @1.5lpm	- <sup>2)</sup>
19	LSb>T setting range @1.5lpm	- <sup>2)</sup>

#### Override option & Emergency Lever

20	Push pin type override	00
	Push button override on both sides A and B	EP
	Screw type override on both sides A and B	EF
	Lever type manual override on A side – Horizontal <sup>5)</sup>	HA
	Lever type manual override on A side – Vertical <sup>5)</sup>	VA
	Lever type manual override on A side – Horizontal <sup>5)</sup> 180° rotated	H1
	Lever type manual override on A side – Vertical <sup>5)</sup> 180° rotated	V1

#### Component Series

21	Series 1	1
----	----------	---

- For mating connectors ordering code see data sheet RE 18325-90.
- "0" option is the only one available for "Without secondary valves" selection.
- For fixed setting relief valve data sheet see Data Sheet RE 18329-11.  
For anticavitation valve data sheet see Data Sheet RE 18329-51.
- See Table 4.
- See page 10.
- "I" for only meter in option.

## Ordering details

**Table 1**

Notches dimension selection --> Flow Rate	Local compensator bias spring	
	4bar	6bar
1 *	4 l/min	6 l/min
2 *	8 l/min	10 l/min
3 *	12 l/min	14 l/min
4 *	16 l/min	18 l/min
6 *	24 l/min	30 l/min
9 *	32 l/min	40 l/min

\*Note: standard spool types (symmetrical):  
1111 - 2222 - 3333 - 4444 - 6666 - 9999

**Table 3**

Full relief valve configuration setting

0			9			8					
Without valve cavity on both sides (not drilled)			With valve cavity plugged (Normally closed plug)			With anti-cavitation valve					
A	B	C	D	E	F	G	H	I	J	K	
50 bar	60 bar	70 bar	80 bar	90 bar	100 bar	110 bar	120 bar	130 bar	140 bar	150 bar	
725 psi	870 psi	1015 psi	1160 psi	1305 psi	1450 psi	1595 psi	1740 psi	1885 psi	2030 psi	2175 psi	
L	M	N	O	P	Q	R	S	T	U	V	X
160 bar	170 bar	180 bar	190 bar	200 bar	210 bar	220 bar	230 bar	240 bar	250 bar	270 bar	290 bar
2320 psi	2465 psi	2611 psi	2756 psi	2901 psi	3046 psi	3191 psi	3336 psi	3481 psi	3626 psi	3916 psi	4206 psi

**Note**

For pressure higher than 290 bar (4206 psi), contact factory.

**Table 2**

Spool size selection guide						
P->A (corresponding A->T same size or "I" size)						
Notch size	1	2	3	4	6	9
P->B (corresponding B->T same size or "I" size)	1	X	X	●	●	●
	2	X	X	X	◇	●
	3	●	X	X	X	◇
	4	●	◇	X	X	X
	6	●	●	◇	X	X
	9	●	●	●	◇	X

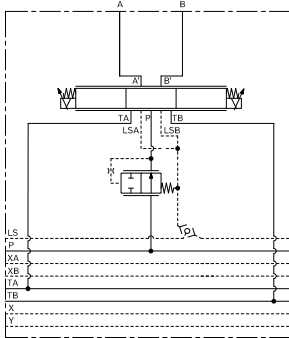
X = Standard spool flow rate configuration  
◇ = Special spool flow rate configuration, contact factory  
● = Not available

**Table 4**

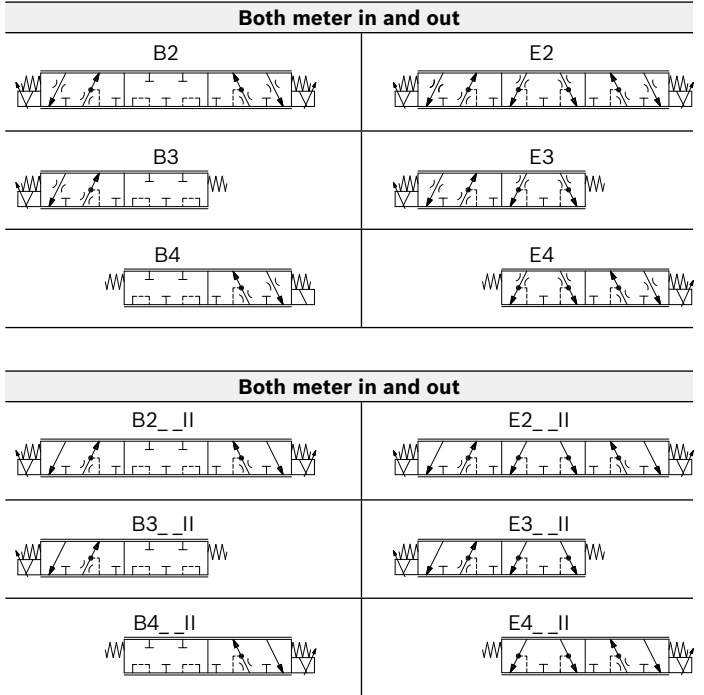
LS relief valve configuration setting

Option selection	Description	Standard setting (bar)
0	without valve cavity	-
1	30-90 bar (Setting range)	70
2	80-140 bar (Setting range)	110
3	135-225 bar (Setting range)	180
4	210-310 bar (Setting range)	250
5	290-380 bar (Setting range)	300
9	Normally closed plug	R930082023

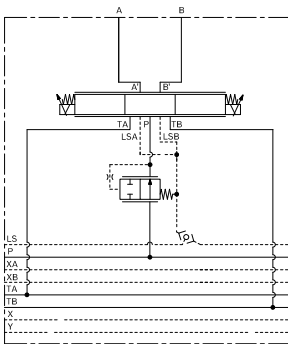
**Hydraulic layouts**



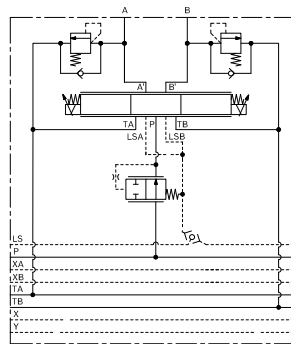
**07 - Spool variants**



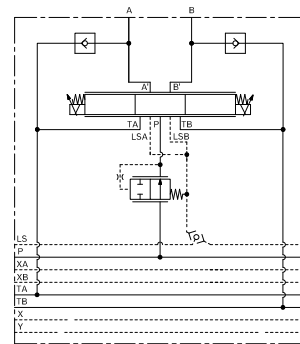
**14 - Secondary valve types**



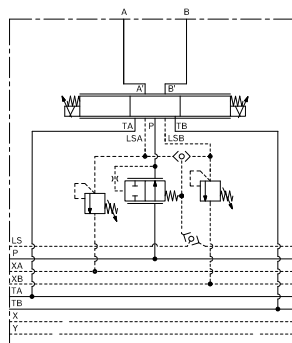
00  
No secondary valves



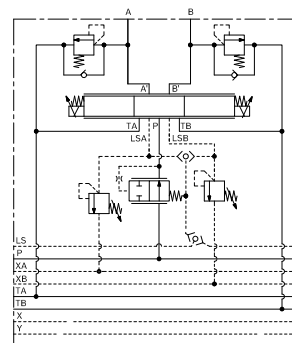
M0  
Relief valves with  
anticavitation option



M0  
Anticavitation  
valves option

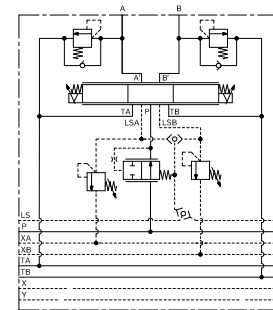
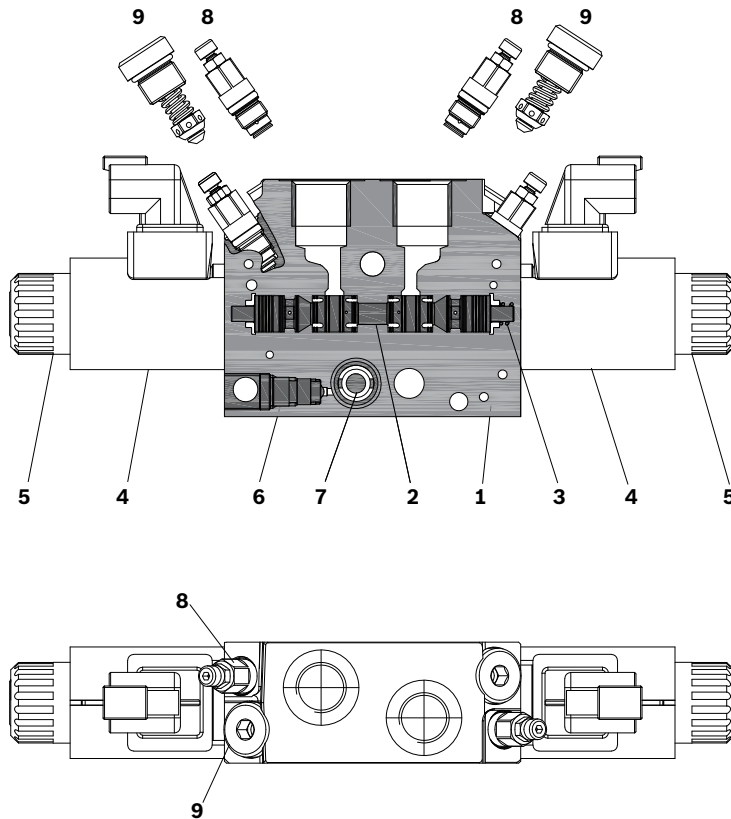


OM  
LS relief valve option



MM  
Combination of  
M0 and M0 option

## Functional description



- 1 Housing
- 2 Main spool
- 3 Return Spring
- 4 Coil
- 5 Ring nut
- 6 LS shuttle valve
- 7 Compensator spool
- 8 LS relief valve (VMGLS)
- 9 Secondary valve with anticavitation option

The EDG direct acting proportional solenoid sectional valves with pressure compensation control the oil flow to actuators. These elements consist of a stackable housing (1) with a control spool (2), two solenoids (4), two return springs (3). Each solenoid (4), energized by PWM regulator, displaces the control spool from its neutral-central position "0" proportionally to the current received. When the spool is shifted and the metering notch is open, flow delivery starts and is controlled by a 2 way pressure compensator (7) ( $P > A$ ;  $P > B$ ). When the solenoid is de-energized, the return spring pushes the spool back in its neutral-central position. Each coil (4) is fastened to the solenoid tube by the ring

nut (5). A push-pin manual override is included to actuate the valve without electrical power as needed.

### Load pressure compensation

The pressure compensator (7) keeps the pressure differential on the main spool (2). The flow to the consumers remains constant, despite varying loads. The highest load pressure on the pump is signaled via the LS line and the integrated shuttle valve (6). Port relief valves with anti-cavitation function on A and B (9) protect the system against pressure peaks and cavitation. LS relief valves (8), for each consumer port, can be adjusted according to specific application requirements.

## Technical data

General		
Valve element with 2 solenoids	kg (lbs)	2.2 (4.85)
Valve element with 1 solenoid	kg (lbs)	1.7 (3.75)
Ambient Temperature	°C (°F)	-30....+90 (-22....+194)
Hydraulic		
Maximum pressure at P, A and B ports	bar (psi)	350 (5000)
Maximum static pressure at T*	bar (psi)	210 (3050) [in case of Emergency Lever option, max. pressure is limited up to 30 bar at T]
Max. regulated flow at 6 bar (87 psi)	l/min (gpm)	40 (10.6)
For E schemes symmetrical spool pattern in neutral position (connection A to T and B to T) E-schemes flow pattern with only meter IN (spool type E___I I) in neutral position: the opening area is approx the 50% of nominal cross-section. This spool type is suitable in combination with load holding valves applications.		Approx. 2% of the nominal cross-section
Hydraulic fluid General properties: it must have physical lubricating and chemical properties suitable for use in hydraulic systems.		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: $\beta_{x \geq 75} X = 12 \dots 15$ ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm <sup>2</sup> /s	20....380 (optimal 30....46)
Electrical		
Voltage type	PWM	120 Hz
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)	180 (356)
Insulation class		H
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC
Coil weight	kg (lbs)	0.228 (0.503)
Voltage	V	12 24
Nominal 100% current	A	1.76 0.94
Nominal Coil Resistance at 20°C (68°F)	$\Omega$	4.05 13.6

### Note

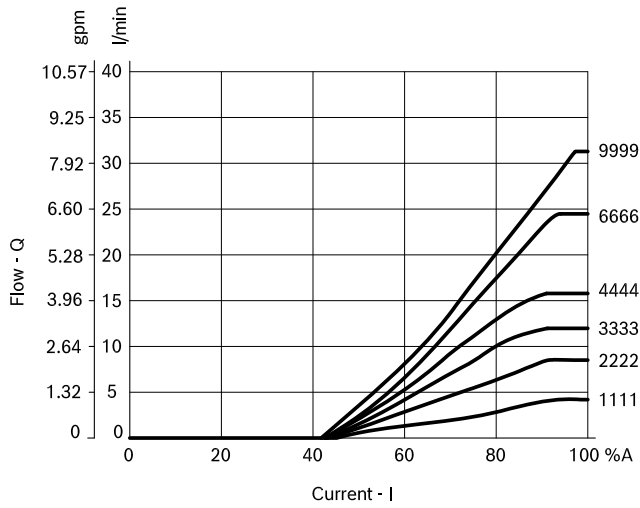
For applications with different specifications consult us.

\* In addition to relief valve pressure setting value.

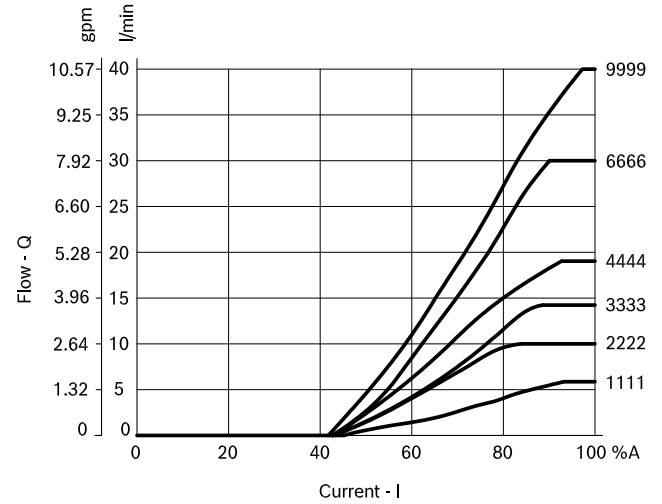
Code	Voltage [V]	Connector type	Coil description	Marking	Coil Mat no.
<b>=OB 01</b>	12 DC	EN 175301-803 (Ex. DIN 43650)	C37 01	12 DC	R930077022
<b>=OB 03</b>	12 DC	AMP JUNIOR	C37 03	12 DC	R930063954
<b>=OB 07</b>	12 DC	DEUTSCH DT 04-2P	C37 07	12 DC	R930077020
<b>=OC 01</b>	24 DC	EN 175301-803 (Ex. DIN 43650)	C37 01	24 DC	R930077023
<b>=OC 03</b>	24 DC	AMP JUNIOR	C37 03	24 DC	R930063955
<b>=OC 07</b>	24 DC	DEUTSCH DT 04-2P	C37 07	24 DC	R930077021

## Characteristic curves

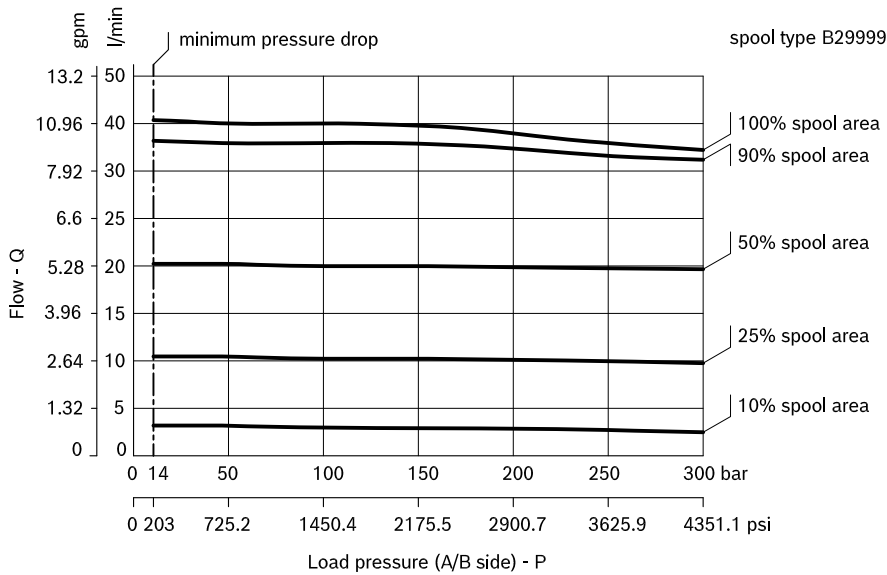
Characteristic curves Q=Q (I) at 4 bar



Characteristic curves Q=Q (I) at 6 bar

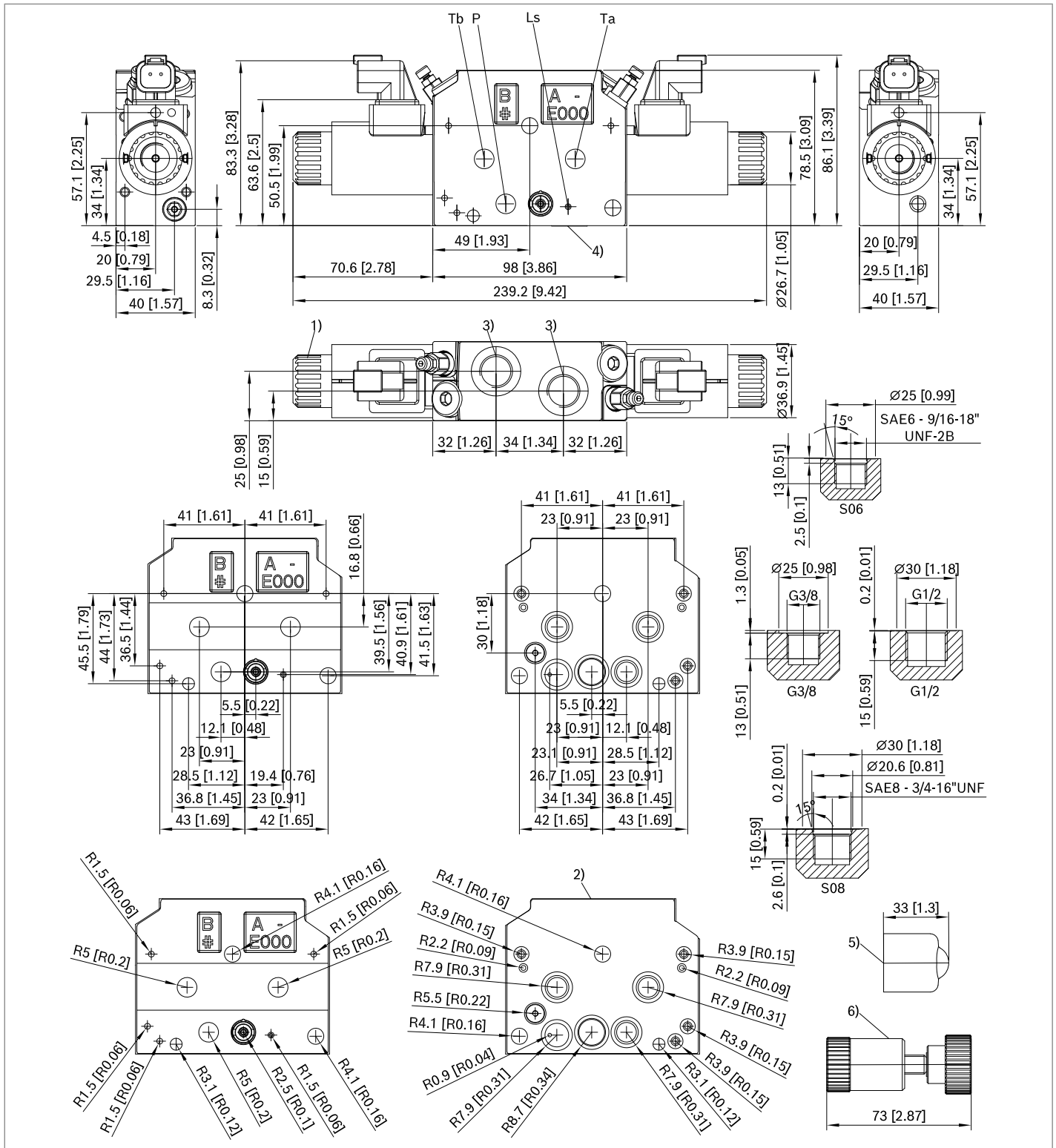


## 2-way inflow controller



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

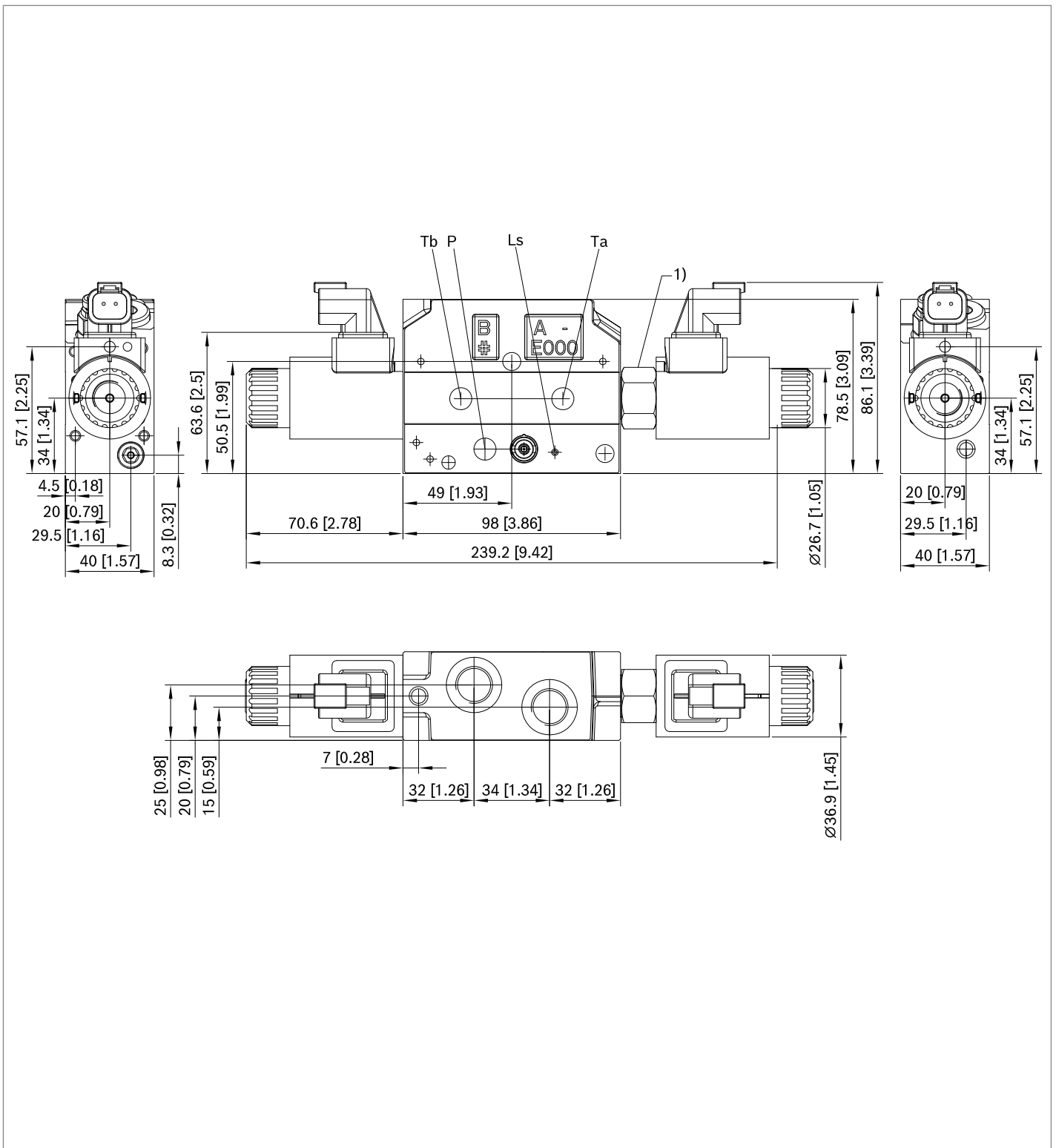
### External dimensions and fittings



- 1 Ring nut for coil locking (Ø 30.3 mm).  
Torque 6 – 7 Nm (4.4 – 5.2 ft-lb).
- 2 Flange specifications. For tie rod and tightening torque information see data sheet RE 18301-90.
- 3 A and B ports.
- 4 Identification label.
- 5 Optional push-button manual override, EP type, for spool opening: it is pressure stuck to the ring nut for coil locking.  
Mat no. R933002705
- 6 Optional screw type manual override, EF 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. R930084529.

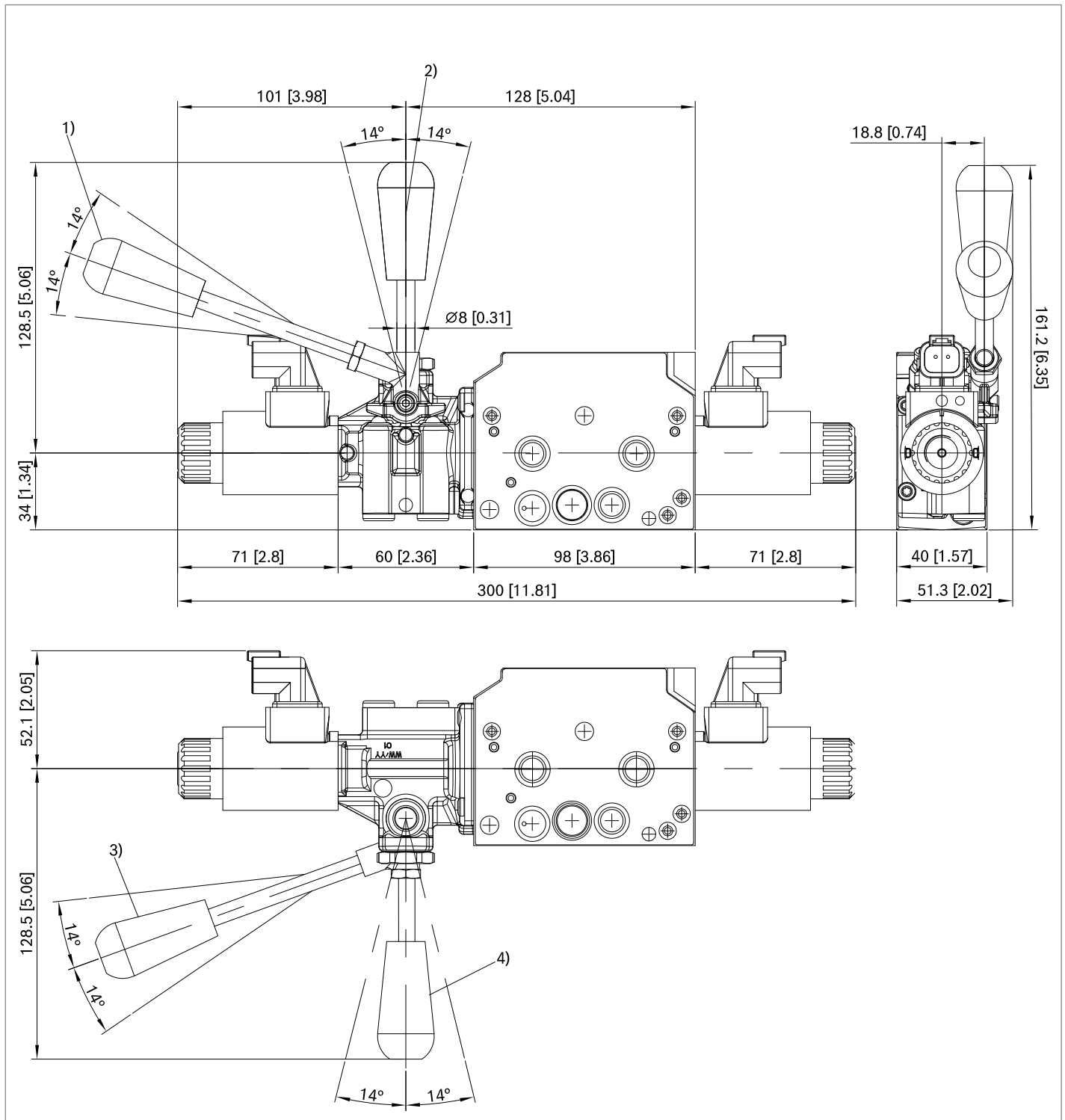


**External dimensions for spool with nominal flow 9**



1 Flow-boost system only for spool with nominal flow 9.  
It always mounted on "a" side of the valve.

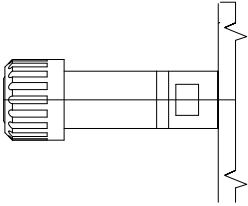
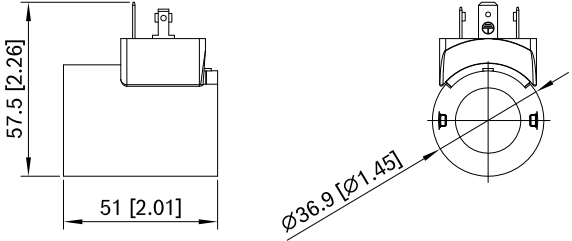
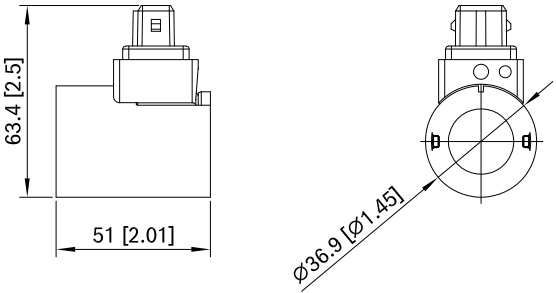
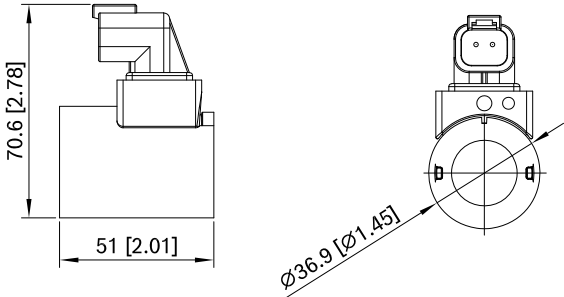
**External dimensions with lever**



- 1 Order detail: HA Horizontal lever manual override option
- 2 Order detail: VA Vertical lever manual override option
- 3 Order detail: H1 Horizontal lever manual override option, 180° rotated
- 4 Order detail: V1 Vertical lever manual override option, 180° rotated

**Note**  
Not possible to switch from HA or VA to H1 or V1 and viceversa.

**Electric connections**

<p><b>00</b> Without coil.</p> 	<p><b>01</b> Protection class: IP 65 when connector with seal is properly screwed down.</p> 
<p><b>03</b> Protection class: IP 65 with female connector properly fitted (see drawing).</p> 	<p><b>07</b> Protection class: IP 69 with female connector properly fitted (see drawing).</p> 

**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

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth Oil Control S.p.a.. It may not be reproduced or given to third parties without its consent. The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.  
Subject to change.