

4/3 and 4/2 On-Off directional valve elements with LS

EDG-DO...
Component Series 1

RE 18301-21

Edition: 11.2021

Replaces: 06.2019



- ▶ 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
- ▶

NEW spool position sensor available for this valve.
See RE18300-30

General specifications

- ▶ In an assembly EDG block, 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	5
Technical data	6
Characteristic curves	7
External dimensions and fittings	8
Electric connection	11

New Series 1 features:

- Label
- Flange with drain line for VMGLS and combination for EDG Electrohydraulic actuation
- Lever Manual override option
- Body valve zinc plating treatment for higher corrosion resistance protection up to 500h

Ordering details

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

Family

00	Directional Valve elements EDG Size 6 On-Off	EDG
----	--	-----

Type

01	Direct Acting	D
----	---------------	---

Configuration

02	On-Off	O
----	--------	---

Ports & Connections

03	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
	Schäfer DN8-10-STH	R08

Local compensator bias spring

04	4 bar (58 psi)	1
	6 bar (87 psi)	2

Flange configuration

05	With P-TA-TB-LS-Xa-Xb-X-Y lines	2
----	---------------------------------	---

Hydraulic connections in neutral

06	P, A, B closed LS to T	B
	P closed A, B, LS to T	E

Spool variants

07	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)

08	Flow rate P>A	-
09	Flow rate P>B	-
10	Nominal flow rate (A>T)	- ⁶⁾
11	Nominal flow rate (B>T)	- ⁶⁾

Voltage supply

		07	03	01	00
12	Without coil	-	-	-	●
	12V DC	●	●	●	-
	24V DC	●	●	●	-

● = Available - = Not available

Electric connections

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

Secondary valve types

14	Without secondary valve	00
	Double or single full relief valve with Anticavitation (VMA) or anticavitation only (VUM) or plug	M0 ³⁾
	Double or single LS relief valve (VMGLS) or plug	0M ⁴⁾
	Combination of M0 and 0M options together	MM

Secondary valve config. setting:

Full Relief or Anticavitation selection (according to table 3)

15	A>Ta setting @5lpm	- ²⁾
16	B>Tb setting @5lpm	- ²⁾

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

17	LSA>T setting range @1.5lpm	- ²⁾
18	LSB>T setting range @1.5lpm	- ²⁾

Override option & Emergency Lever

19	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 ⁵⁾	HA
	Lever type manual override on A side – Vertical ⁵⁾	VA
	Lever type manual override on A side – Horizontal ⁵⁾ 180° rotated	H1
	Lever type manual override on A side – Vertical ⁵⁾ 180° rotated	V1

Component Series

20	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	Local compensator bias spring	
--> Flow Rate	4bar	6bar
1 *	3 l/min	5 l/min
2 *	6 l/min	8 l/min
3 *	9 l/min	11 l/min
4 *	13 l/min	14 l/min
6 *	18 l/min	23 l/min
9 *	24 l/min	31 l/min
M *	-	40 l/min

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

Table 2

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

X = Standard spool flow rate configuration

◇ = Special spool flow rate configuration, contact factory

● = Not available

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

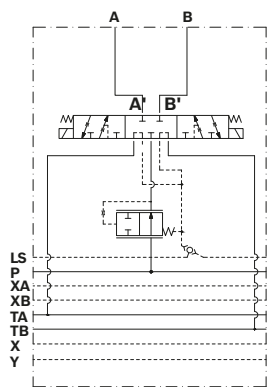
For pressure higher than 290 bar (4206 psi), contact factory.

Table 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

General hydraulic layout

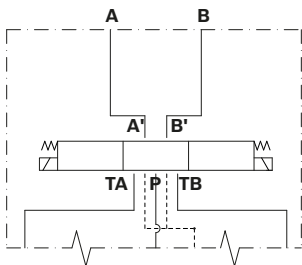


07 - Spool Variants

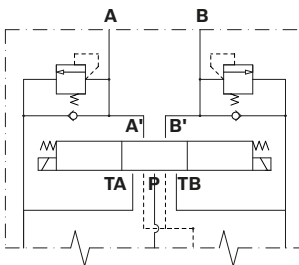
Both meter in and out	
B2	E2
B3	E3
B4	E4

Only meter in	
B2_II	E2_II
B3_II	E3_II
B4_II	E4_II

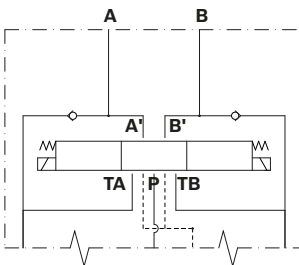
14 - Secondary valve types



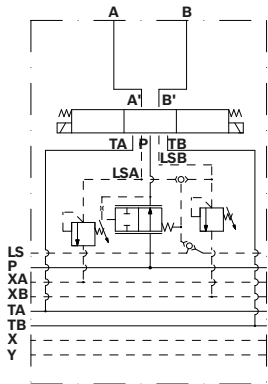
= **00** (No secondary valves)



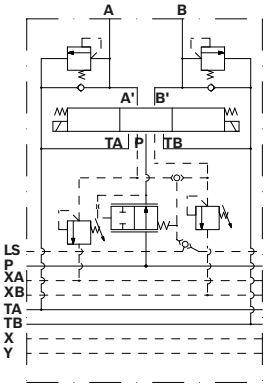
= **M0** (Relief valve with anticavitation option)



= **M0** (Anticavitation valve option)

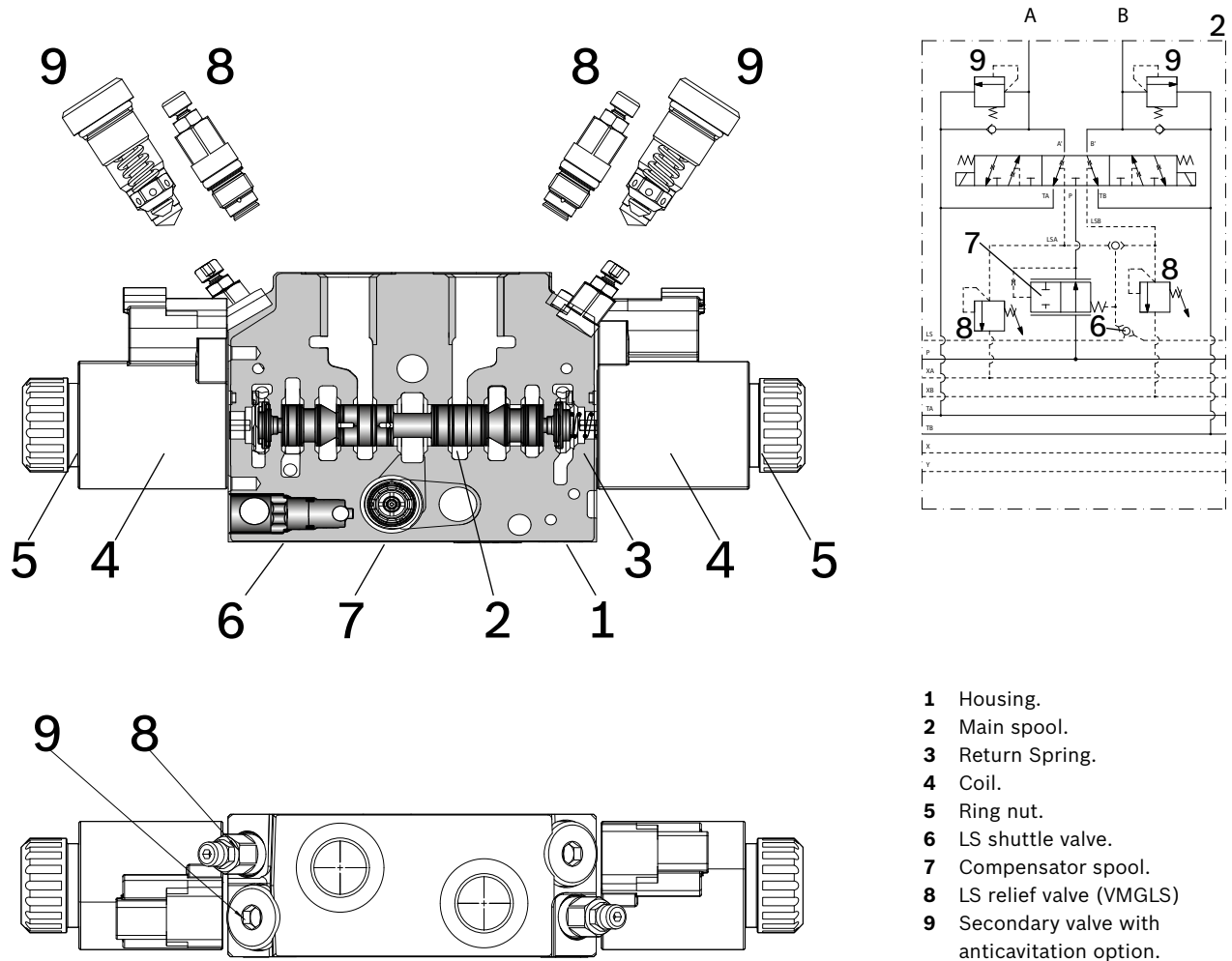


=**0M** (LS relief valve option)



=**MM** (Combination of M0 and 0M options)

Functional description



The EDG direct acting On-Off 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, displaces the control spool from its neutral-central position. When the spool is shifted, 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...15 ISO 4406: class 20/18/15 NAS 1638: class 9	
Viscosity range	mm²/s	20....380 (optimal 30....46)	
Electrical			
Voltage type		DC	
Voltage tolerance (nominal voltage)	%	-10....+10	
Duty		Continuous, with ambient temperature $\leq 50^{\circ}$ (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
Power consumption	W	20	20
Current (nominal at 20°C (68°F))	A	1.04	0.54
Resistance (nominal at 20°C (68°F))	Ω	7.4	28.4

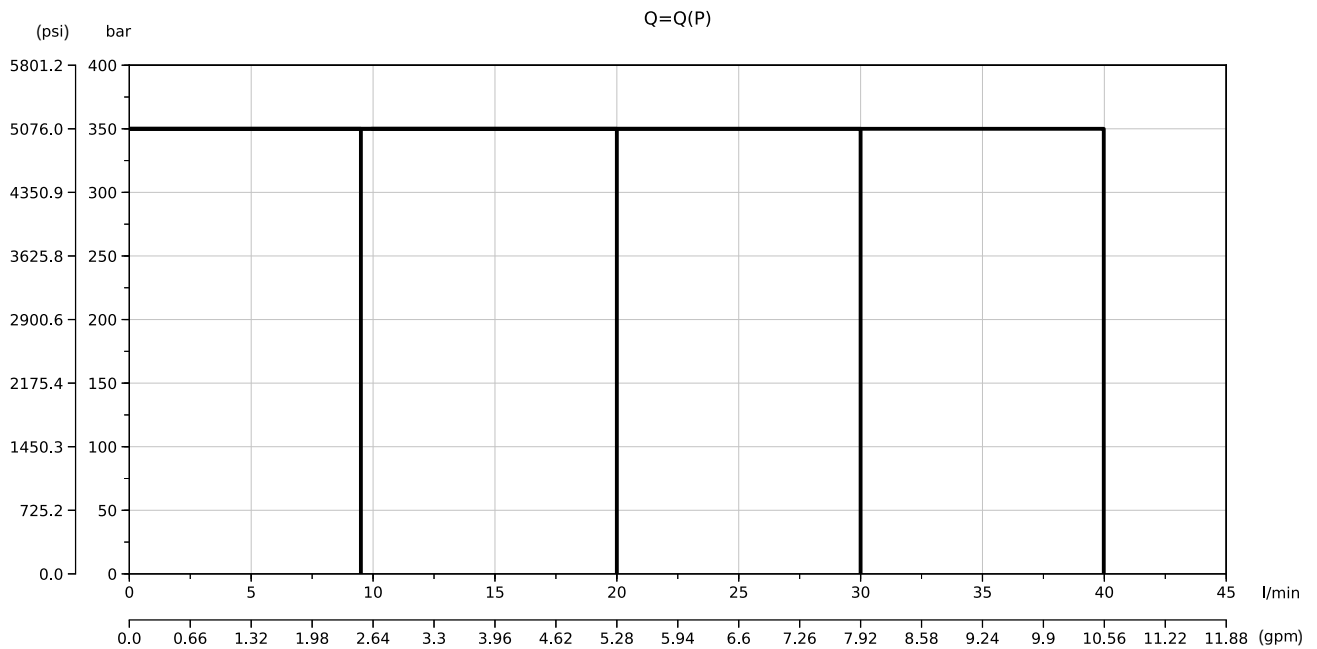
Note

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)	D3601 12DC	12 DC	R901393412
=OB 03	12 DC	AMP JUNIOR	D3603 12DC	12 DC	R901435507
=OB 04	12 DC	AMP JUNIOR Horizontal	D3604 12DC	12 DC	R901395031
=OB 07	12 DC	DEUTSCH DT 04-2P	D3607 12DC	12 DC	R901394397
=OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	D3601 24DC	24 DC	R901393577
=OC 03	24 DC	AMP JUNIOR	D3603 24DC	24 DC	R901435494
=OC 04	24 DC	AMP JUNIOR Horizontal	D3604 24DC	24 DC	R901395035
=OC 07	24 DC	DEUTSCH DT 04-2P	D3607 24DC	24 DC	R901394399

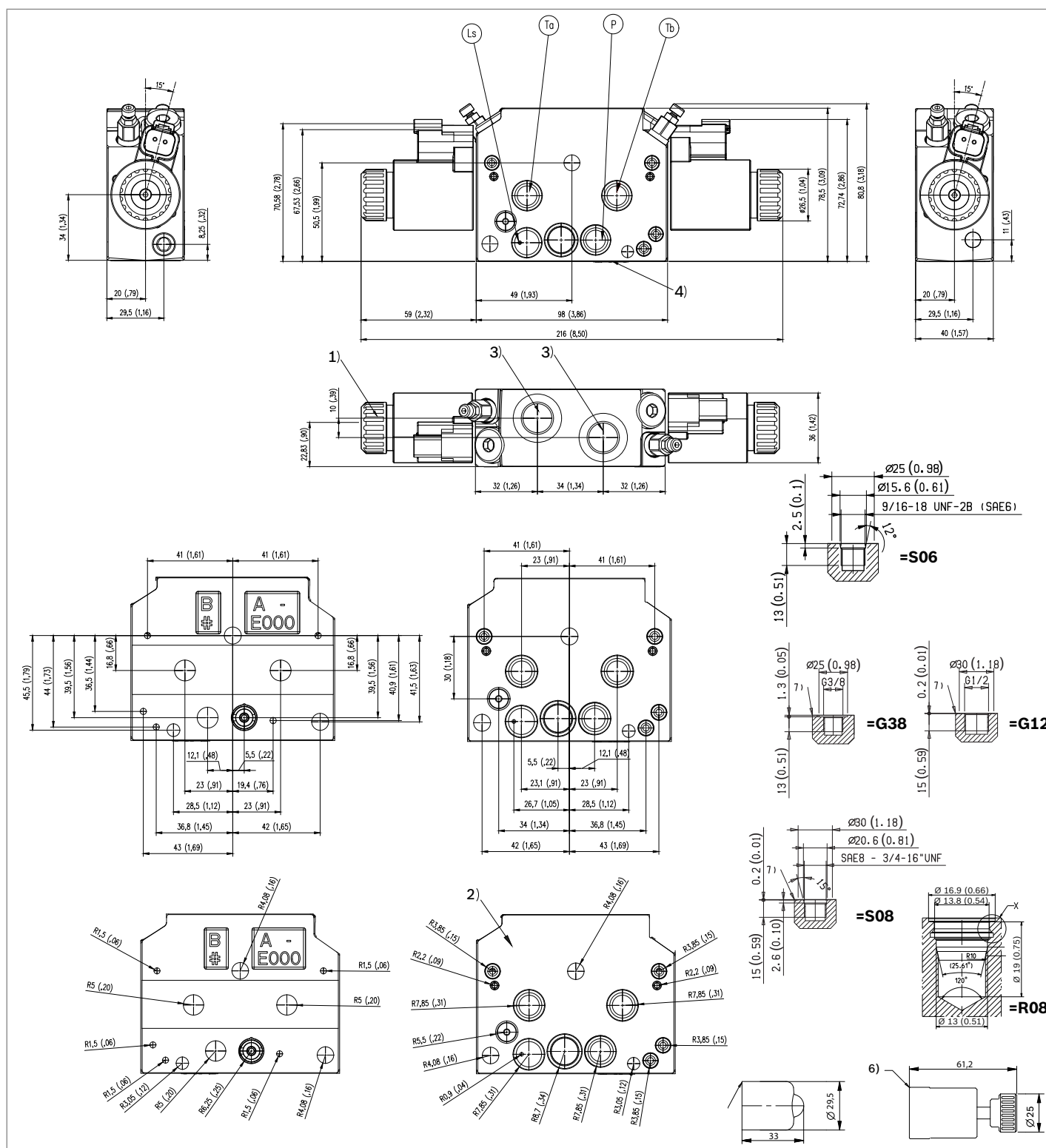
Characteristic curves

Performance limits



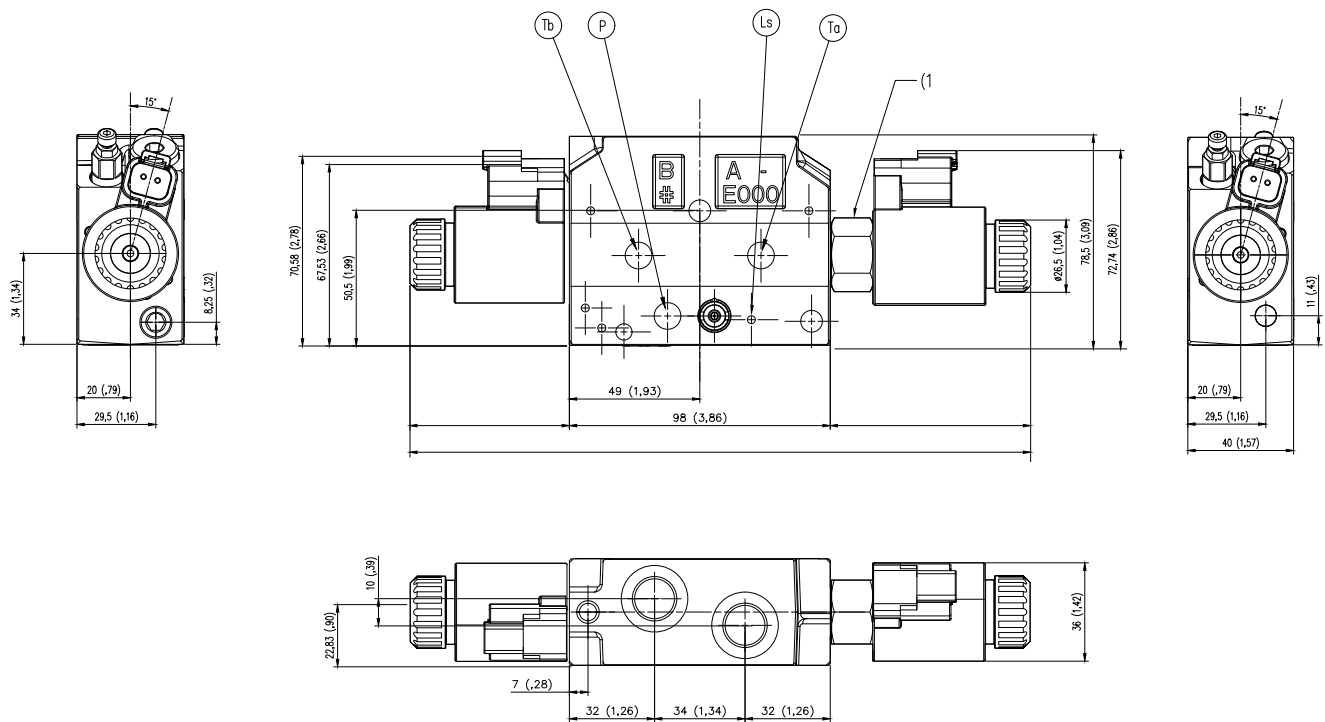
Measured with hydraulic fluid ISO-VG32 at 45° ±5 °C (113° ±9 °F); ambient temperature 20 °C (68 °F).

External dimensions and fittings



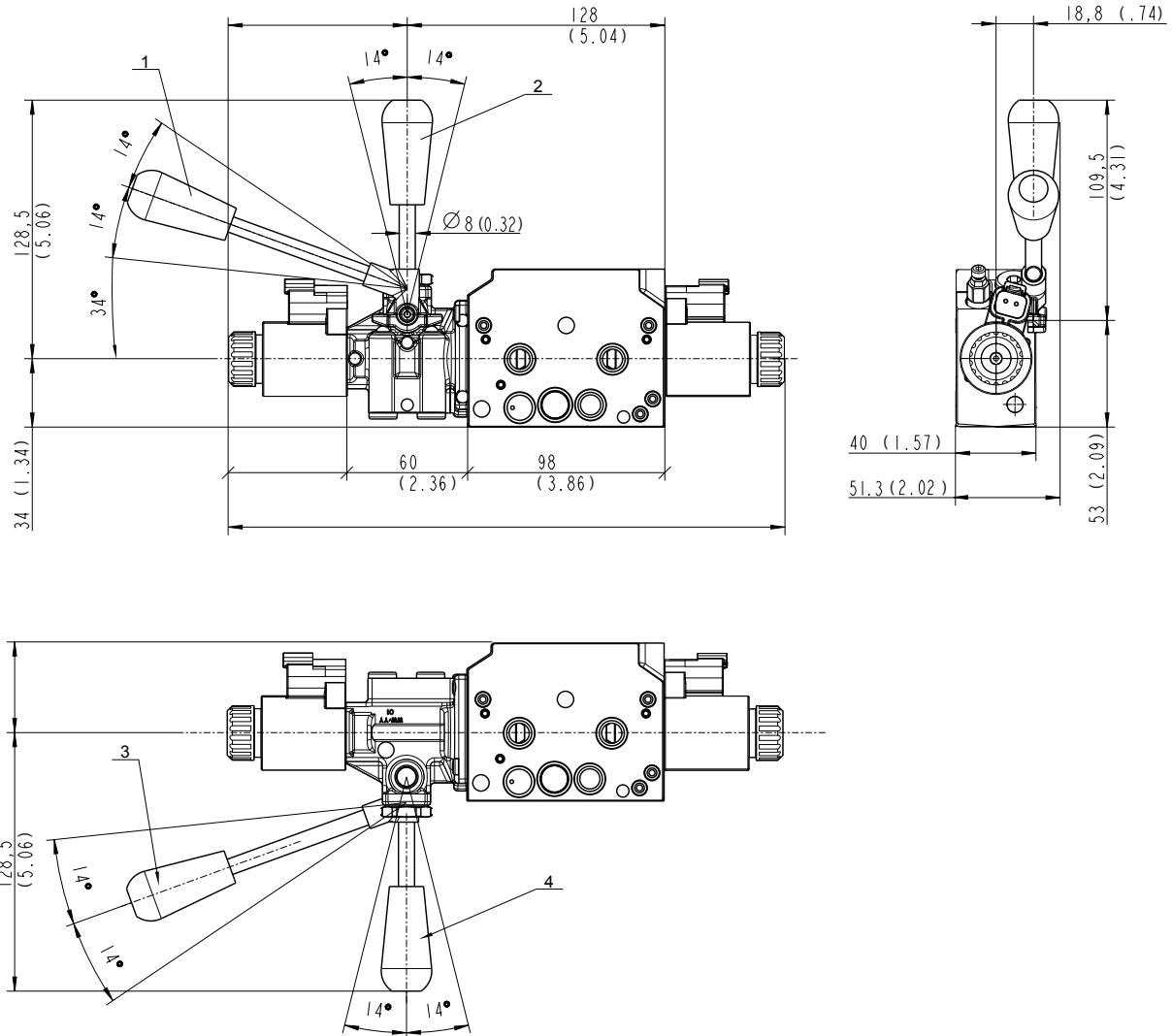
- 1 Ring nut for coil locking (\varnothing 30.3 mm).
Torque 6 – 7 Nm (4.4 – 5.2 ft-lb).
- 2 Flange specifications. For tie rod and tightening torque information see data sheet RE 18301-90.
- 3 A and B ports.
- 4 Identification label.
- 5 Optional push-button manual override, EP type, for spool opening:
it is pressure stuck to the ring nut for coil locking.
Mat no. R930059524
- 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. R930059561.

External dimensions for spool with nominal flow M



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

Lever type manual override available on A side only

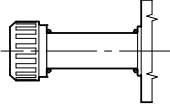
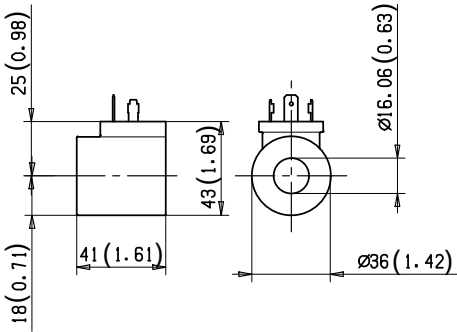
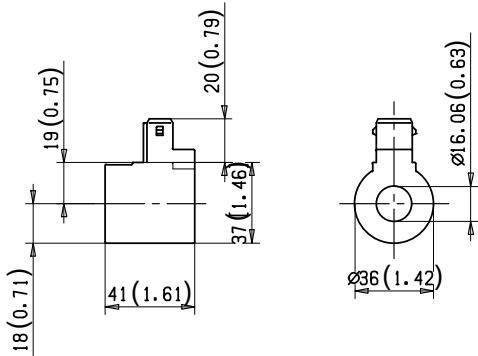
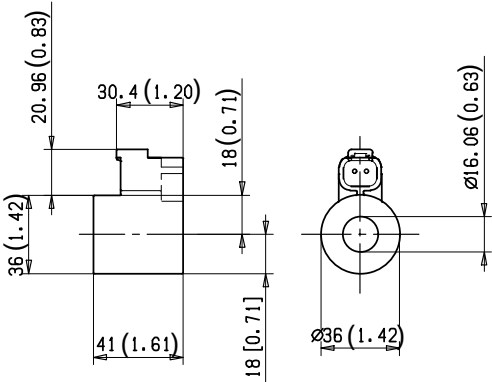


- 1 Order detail: HA Horizontal lever manual override option
- 2 Order detail: VA Vertical lever manual override option
- 3 Order detail: H1 Horizontal lever manual override option, 180° rotated
- 4 Order detail: V1 Vertical lever manual override option, 180° rotated

Note

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

Electric connection

00	Without coil	
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 (see drawing).	

12 **EDG-DO...** | 4/3 and 4/2 On-Off directional valve elements
Electric connection

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.