

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

**HIDROMA
SYSTEMS**

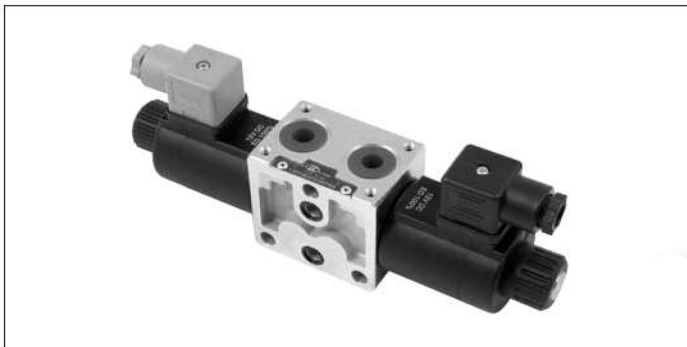
UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

4/3 - 4/2 Directional valve elements
with or without secondary relief valves,
with or without LS connections

L8_11... (ED2-DZ)



Size 6

Series 00

Maximum operating pressure 310 bar (4500 psi)

Maximum flow 50 l/min (13.2 gpm)

Port connections G 3/8 - SAE6 - G 1/2 - SAE8

General specifications

Valve elements with solenoid operated directional spool.
Control spools operated by solenoids with removable coils.

In the de-energized condition, the control spool is held in the central position by return springs.

Wet pin tubes for DC coils, with push rod for mechanical override; nickel plated surface.

Coils can be rotated 360° around the tube; they can be energized by AC current through special connectors with rectifier (RAC).

Manual override (push-button or screw type) available as option.

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Ordering details

01	02	03	04	05	06	07	08	09	10
L	8	-	11	---	--	--	-	-	---

Family	
01 Directional Valve elements ED	L

Type	
02 Size 6	8

Configuration	
03 Standard	0
With secondary valve on A ³⁾	1
With secondary valve on B ³⁾	2
With sec. valves on A and B	3
With channels for Load Sens.	4

Coil type	
04 C45	11

Spool variants¹⁾	
05 4/3 operated on both sides a and b	2
4/2 operated on side a only	3
4/2 operated on side b only	4

Voltage supply		07	03	01	00	
06 Without coil	-	-	-	•	-	00
12V DC	•	•	•	-	-	0B
13V DC	•	•	•	-	-	AD
24V DC	•	•	•	-	-	OC
27V DC	•	•	•	-	-	AC
48V DC	-	-	•	-	-	OD
110V DC	-	-	•	-	-	OE
24V AC (21.5 DC)	-	-	•	-	-	OV
110V AC (98 DC)	-	-	•	-	-	OW
230V AC (207 DC)	-	-	•	-	-	OZ

Electric connections	
07 Without coils	00
With coils, without mating connector DIN EN 175301-803	01 ⁵⁾
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

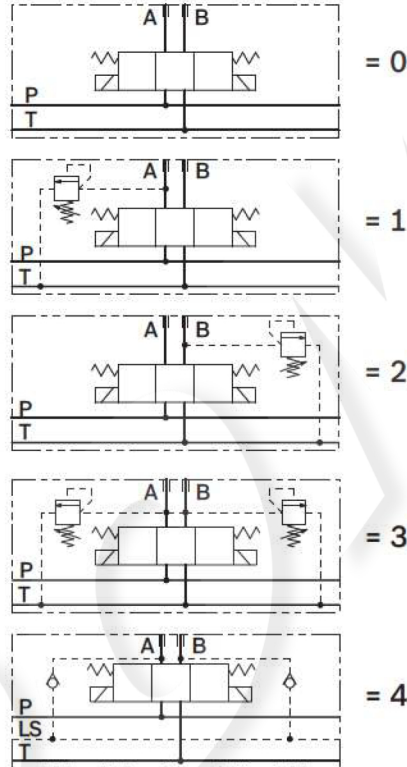
Ports	
08 G 3/8 DIN 3852	0
9/16-18 UNF 2-B (SAE6)	1
G 1/2 DIN 3852	2
3/4-16 UNF 2-B (SAE8)	3

Secondary valves setting	
09 50-210 bar (725-3045 psi)	0 ⁴⁾
100-310 bar (1450-4500 psi)	1
25-50 bar (362-725 psi)	2
50-100 bar (725-1450 psi)	3

Options	
10 No options	No code
Lever type manual override ²⁾	---
Push-button type manual override	0P
Screw type manual override	0F

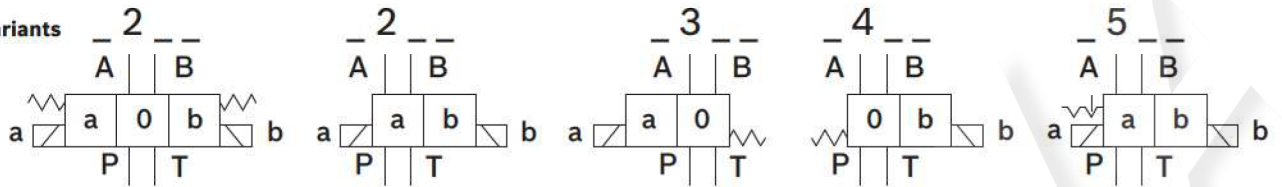
• = Available - = Not available

Symbols



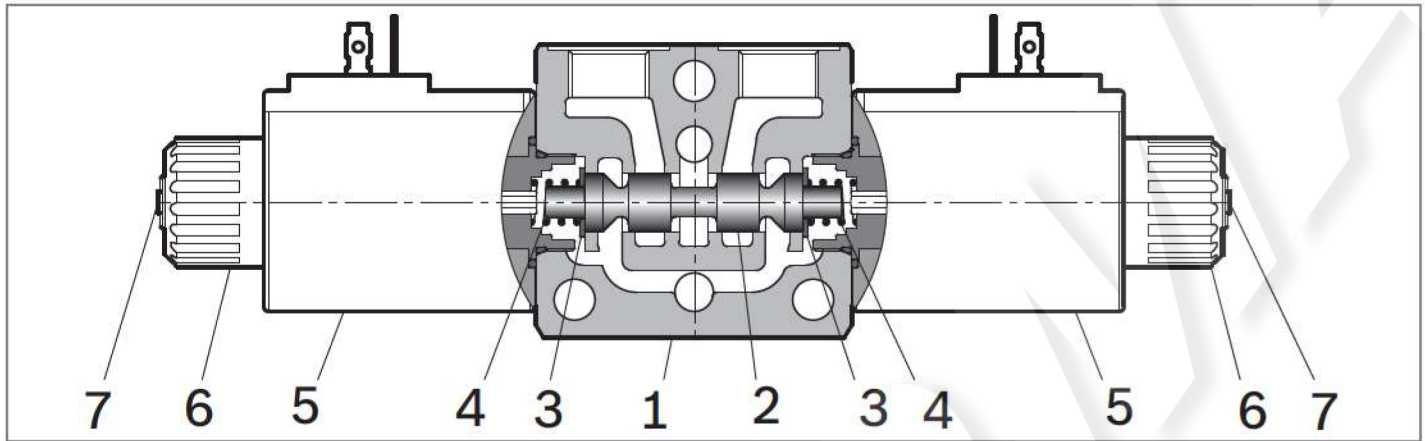
- 1) The required hydraulic symbol and spool variant can be chosen by consulting page 3.
- 2) Available only for A, B, E and F spool configurations. See page 9 for code details.
- 3) The secondary valves, with maximum flow capacity of 6 l/min (1.6 gpm), are available only for elements with port sizes G 3/8 and SAE 6.
- 4) Without secondary valves (versions L80_ ; L84_), the standard configuration corresponds to "0".
- 5) For connectors ordering code see data sheet RE 18325-90.

Spool variants



		=A201		=L201
		=B201		=M201
		=C201		=N201
		=D201		=L501
		=E201		=N501
		=F201		=A581
		=G201		=M501
		=K201		=A361
		=U201		=B361
		=E2R1		=C361
		=G209		=D361
				=E361
		=A301		=N301
		=B301		=T361
		=C301		=Y301
		=D301		
		=E301		=A471
		=K301		=B471
		=T301		=C471
		=X301		=D471
				=E471
		=A401		=N401
		=B401		=T479
		=C401		=Y401
		=D401		
		=E401		
		=K401		
		=T409		
		=X401		

Functional description



The sandwich plate design directional valve elements L8_11... are compact direct operated solenoid valves which control the start, the stop and the direction of the oil flow. These elements basically consist of a stackable housing (1) with a control spool (2), one or two solenoids (5), and one or two return springs (4).

When energized, the force of the solenoid (5) pushes the control spool (2) from its neutral-central position "0" to the required end position "a" or "b", and the required flow from

P to A (with B to T), or P to B (with A to T) is achieved. Once the solenoid is de-energized, the return spring (4) pushes the spool thrust washer (3) back against the housing and the spool returns in its neutral-central position.

Each coil 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)	1.95 (4.3)
Valve element with 1 solenoid	kg (lbs)	1.45 (3.2)
Valve element with 2 solenoids, with lever type emergency	kg (lbs)	2.2 (4.85)
Valve element with 1 solenoid, with lever type emergency	kg (lbs)	1.7 (3.75)
Ambient Temperature	°C (°F)	-20....+50 (-4....+122) (NBR seals)
Hydraulic		
Maximum pressure at P, A and B ports	bar (psi)	310 (4500)
Maximum pressure at T	bar (psi)	250 (3625)
Max pressure, with lever type emergency at T	bar (psi)	200 (2900)
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: $\beta_{x \geq 75} X = 12 \dots 15$ ISO 4406: class 20/18/15 NAS 1638: class 9
Viscosity range	mm ² /s	5....420

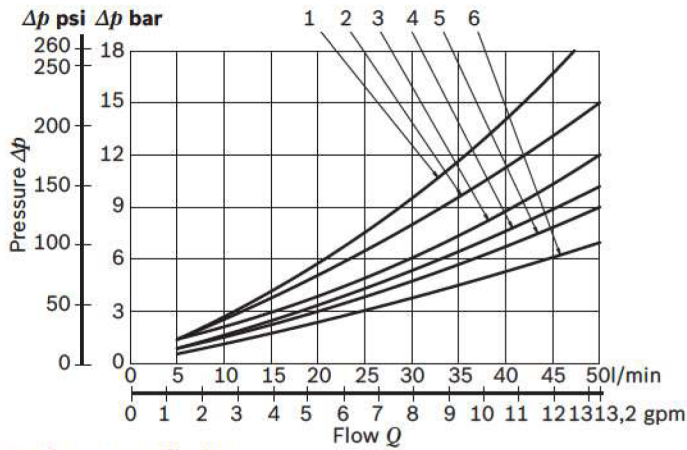
Electrical										
Voltage type	DC (AC only with RAC connection)									
Voltage tolerance (nominal voltage)	%	-10 +10								
Duty	Continuous, with ambient temperature ≤ 50°C (122°F)									
Coil wire temperature not to be exceeded	°C (°F)	150 (302)								
Insulation class	H									
Compliance with	Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC									
Coil weight with connection EN 175301-803	kg (lbs)	0.335 (0.74)								
Voltage	V	12	13	24	27	48	110	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	DC	DC	DC	DC
Power consumption	W	33	31	33	33	33	35	33	33	35
Current (nominal at 20 °C (68 °F))	A	2.8	2.3	1.4	1.2	0.7	0.32	1.6	0.34	0.16
Resistance (nominal at 20 °C (68 °F))	Ω	4.24	5.42	17	21.8	69.8	341.8	13.6	285	1229

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)	C4501 12DC	12 DC	R933000026
OB 03	12 DC	AMP JUNIOR	C4503 12DC	12 DC	R933000027
OB 07	12 DC	DEUTSCH DT 04-2P	C4507 12DC	12 DC	R933000030
AD 01	13 DC	EN 175301-803 (Ex. DIN 43650)	C4501 13DC	13 DC	R933000028
AD 03	13 DC	AMP JUNIOR	C4503 13DC	13 DC	R933000029
AD 07	13 DC	DEUTSCH DT 04-2P	C4507 13DC	13 DC	R933000031
OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	C4501 24DC	24 DC	R933000034
OC 03	24 DC	AMP JUNIOR	C4503 24DC	24 DC	R933003630
OC 07	24 DC	DEUTSCH DT 04-2P	C4507 24DC	24 DC	R933000032
AC 01	27 DC	EN 175301-803 (Ex. DIN 43650)	C4501 27DC	27 DC	R933000035
AC 03	27 DC	AMP JUNIOR	C4503 27DC	27 DC	R933000036
AC 07	27 DC	DEUTSCH DT 04-2P	C4507 27DC	27 DC	R933000033
OD 01	48 DC	EN 175301-803 (Ex. DIN 43650)	C4501 48DC	48 DC	R933000037
OE 01	110 DC	EN 175301-803 (Ex. DIN 43650)	C4501 110DC	110 DC	R933000040
OV 01	24 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 21.5DC	21.5 DC	R933000038
OW 01	110 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 98DC	98 DC	R933000039
OZ 01	230 RAC	EN 175301-803 (Ex. DIN 43650)	C4501 207DC	207 DC	R933000041

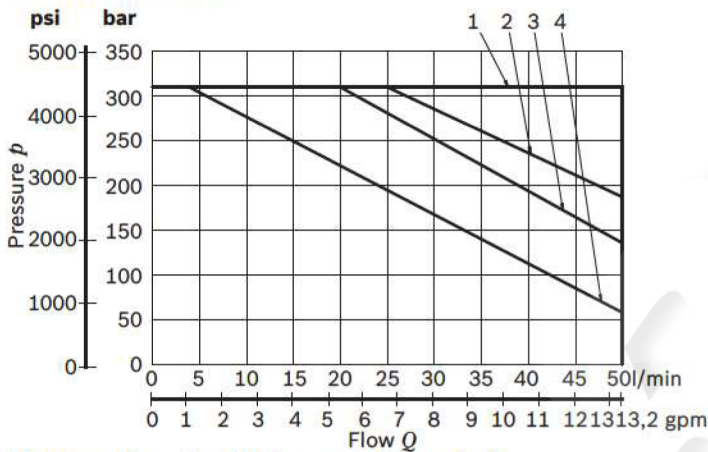
Characteristic curves



Spool Variant	Curve no.				
	P>T	P>A	P>B	A>T	B>T
A201-A301-A401-A401-A471-A361-G201-G209	2	1	1	1	1
B201-B301-B401-B471-B361-L201-M201-U201-L501-M501		4	4	4	4
C201-C301-C401-C471-C361	6	5	5	6	6
D201-D301-D471-D401-D361		6	6	5	5
E201-E301-E401-E471-E361-E2R1-T301-T409		5	5	6	6
K201-K209-K301-T361-K401-T479		5	5	3	3
X301-X401-Y301-Y401		4	4	4	4
N301-N201-N401-F201-U361-N501		4	4		

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

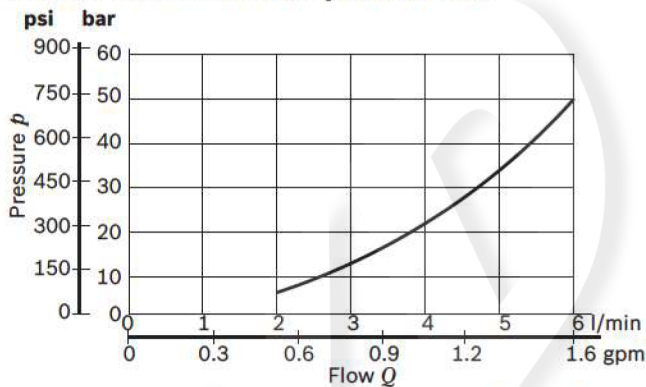
Performance limits



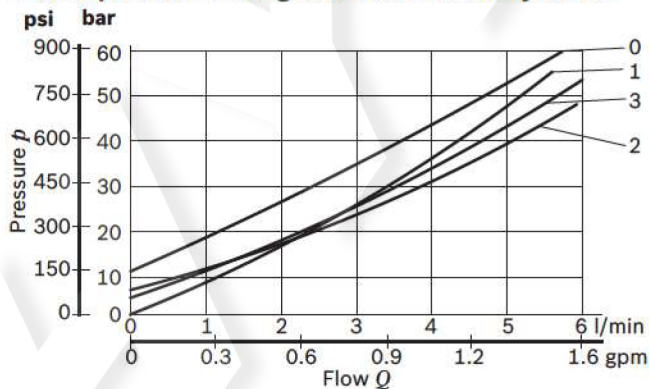
Spool Variant	Curve no.
A201-A301-A401-A471-A361- C201-C301-C401-C471-C361-G201-G209 - T301- T401-T479- T361	1
B201-B301-B401-B471-B361- D201-D301-D401-D471-D361 -K201-K209-K301-K401	2
X301-X401-Y301-Y401-M201-L201-U201-U369 -E201-E301-E401-E471-E361-E2R1	3
N301-N401-N201-N501-L501-M501-F201	4

The performance curves are measured with flow going across and coming back, like P>A and B>T. With "lever type" emergency control, the performance limits are slightly lower.

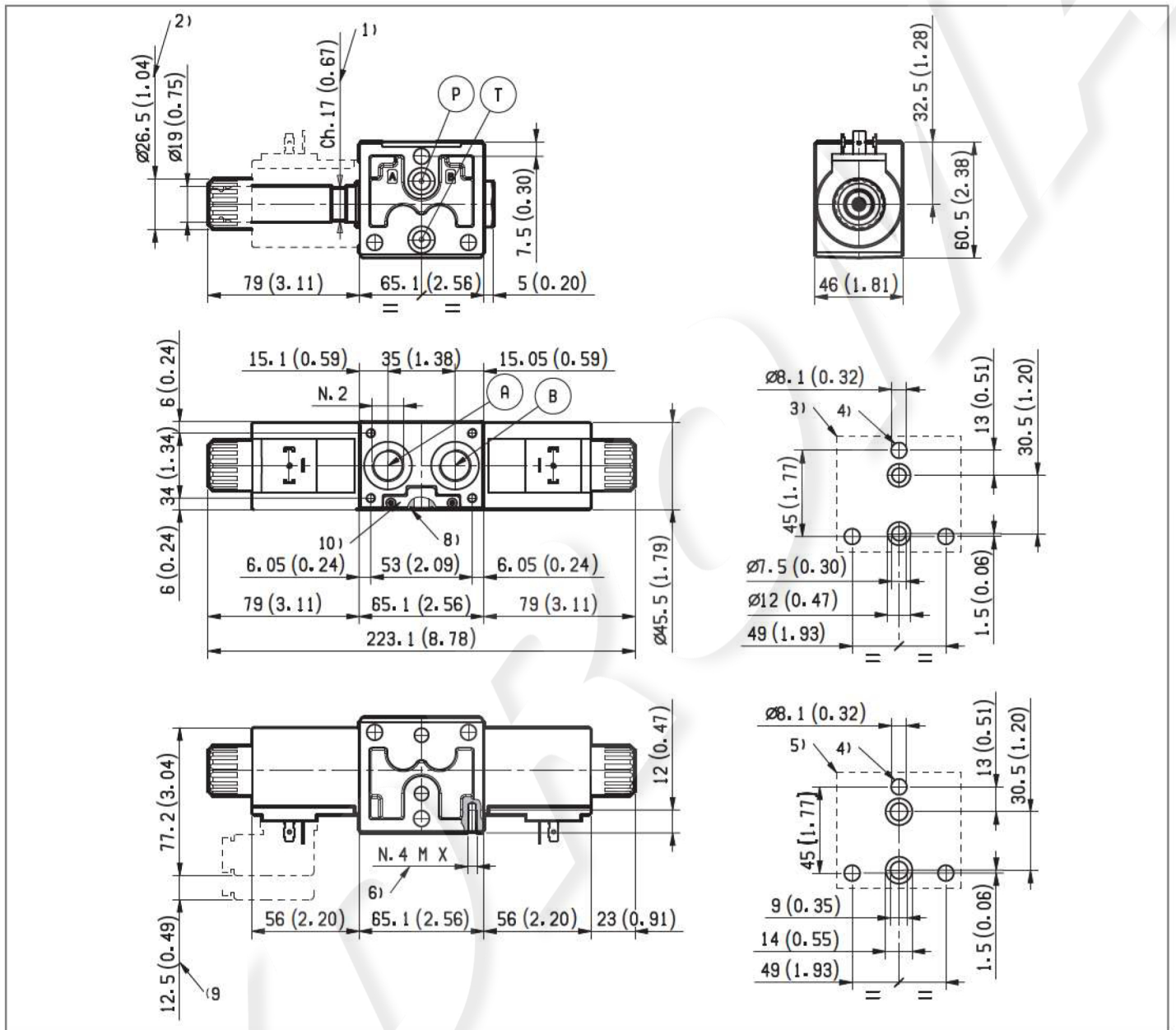
Minimum flow for efficiency of LS control



Lowest pressure setting curve for secondary valves

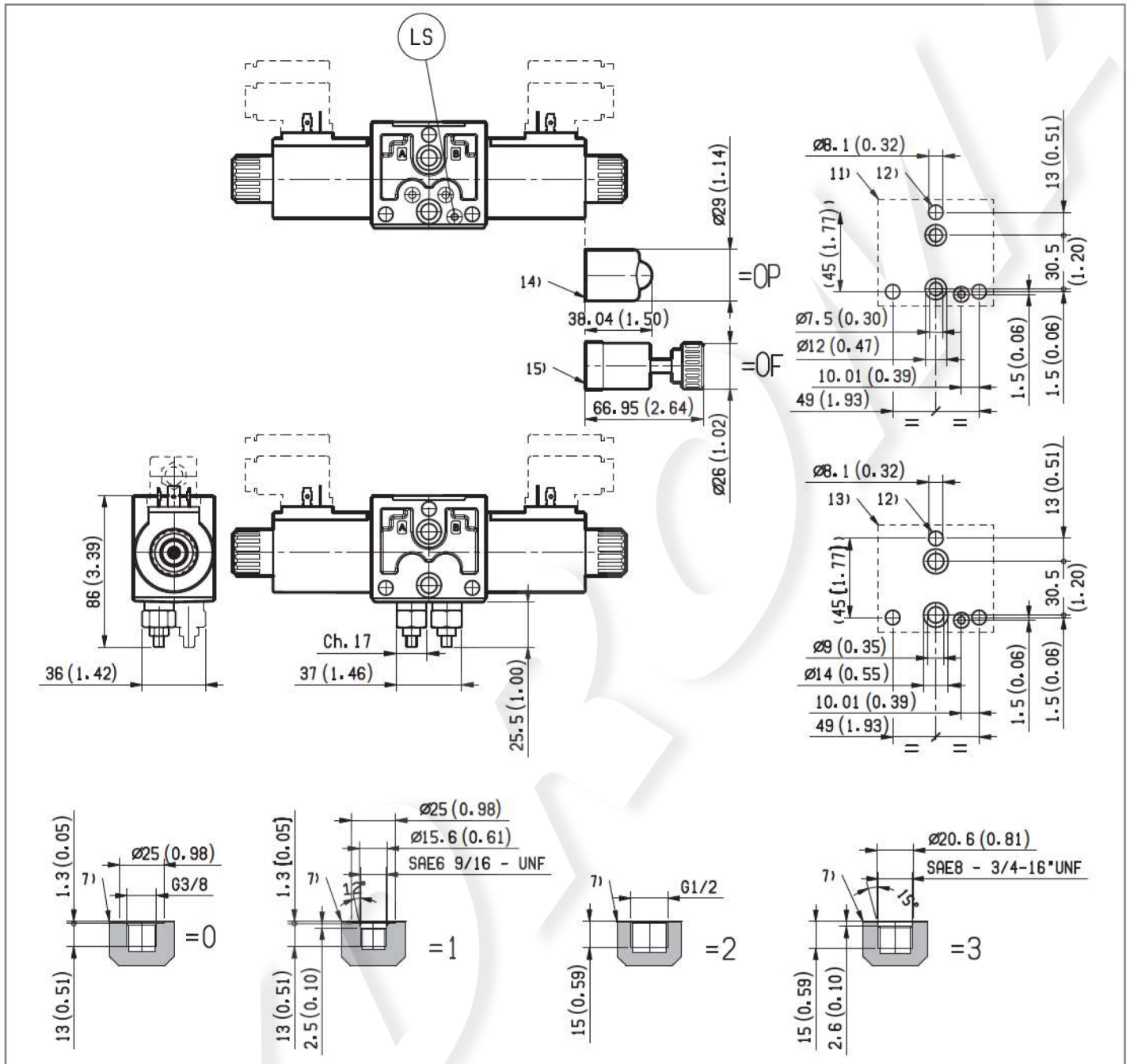


Secondary valve setting	Curve no.
50-210 bar (700-2950 psi)	0
100-310 bar (1400-4500 psi)	1
25-50 bar (350-700 psi)	2
50-100 bar (700-2950 psi)	3

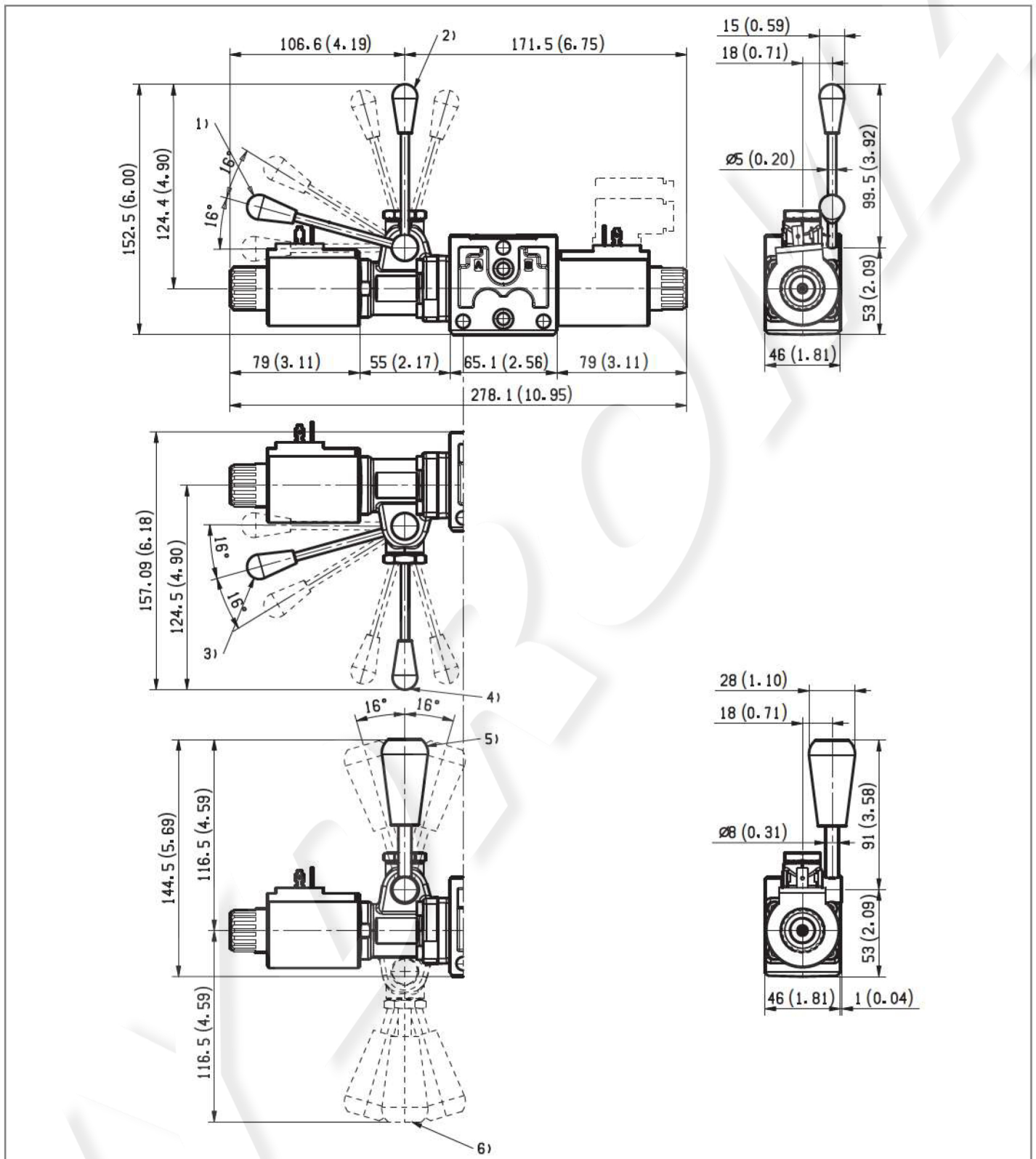
External dimensions and fittings

- 1 Solenoid tube $\varnothing 19$ mm (0.75 inch).
- 2 Ring nut for coil locking ($\varnothing 26.5$ mm); torque 3 – 4 Nm (2.2-3 ft-lb).
- 3 Flange specifications for coupling to ED intermediate elements with ports G 3/8 and SAE 6.
- 4 For tie rod and tightening torque information see data sheet RE 18301-90.
- 5 Flange specifications for coupling to ED intermediate elements with ports G 1/2 and SAE 8.
- 6 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).
- 7 A and B ports.
- 8 O-Rings for P and T ports.
- 9 Clearance needed for connector removal.

- 10 Identification label.



- 11** Flange specifications for coupling to the ED intermediate elements with LS channels (for port sizes G 3/8 and SAE6).
- 12** For tie rod and tightening torque information see data sheet RE 18301-90.
- 13** Flange specifications for coupling to the ED intermediate elements with LS channels (for port sizes G 1/2 and SAE 8).
- 14** Optional push-button manual override, OP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933000043.
- 15** Optional screw type manual override, OF 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. R933007215.



- 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

