4/3 and 4/2 on-off directional valve elements with or without secondary relief valves and with or without LS connections

D8_5... (EDD-XZ)

RE 18301-12
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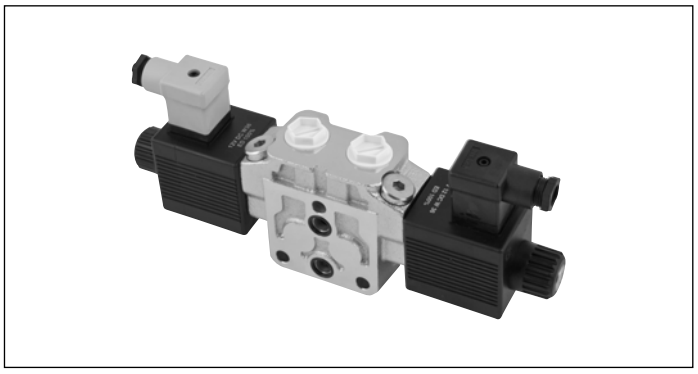
Replaces: 07.2012



Size 8
Series 00
Maximum pressure (pump side) 310 bar (4500 psi)
Maximum pressure (actuator side) 380 bar (5500 psi)
Maximum flow 80 l/min (21.1 gpm)
Port connections G 1/2 - SAE10 - Flangeable

General specifications

Valve elements with solenoid operated directional spool.
Control spools directly 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; zinc plated surface.
Coils can be rotated 180° around the tube; they can be energized by AC current throught special connection with rectifier (RAC).
Manual override (push-button, screw type) available as option.
Different plug-in connectors available: see ordering details.

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Ordering details

01	02	03	04	05	06	07	08	09	10		11
D	**8**		**5**							**0**	

Family

01	Directional Valve elements EDD	**D**

Type

02	Size 8	**8**

Configuration

03	Standard	**0**
	With channels for Load Sens.	**4**

Coil type

04	C48	**5**

Spool variants[1)]

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		**31**	**07**	**03**	**01**	**00**	
06	Without coil	–	–	–	–	–	**00**
	12V DC	●	●	●	●	–	**OB**
	13V DC	–	●	–	●	–	**AD**
	24V DC	●	●	●	●	–	**OC**
	27V DC	–	●	–	●	–	**AC**
	48V DC	–	–	–	●	–	**OD**
	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** [4)]
	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**
	With coils and bipolar sheathed lead 350mm (13,8 in) long	**31**

Ports

08	G 1/2 DIN 3852	**2**
	SAE 10	**D**
	Flangeable (A-B-T)	**M**

Secondary valve on A port [2)]

09	Without secondary valve	**0**
	Anti-cavitation function valve VUM	**1** [5)]
	Relief direct acting valve with anti-cavitation function VMA[3)] (for setting see table below)	**–**

Secondary valve on B port [2)]

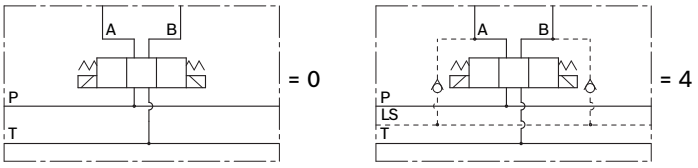
10	Without secondary valve	**0**
	Anti-cavitation function valve VUM	**1** [5)]
	Relief direct acting valve with anti-cavitation function VMA[3)] (for setting see table below)	**–**

Options

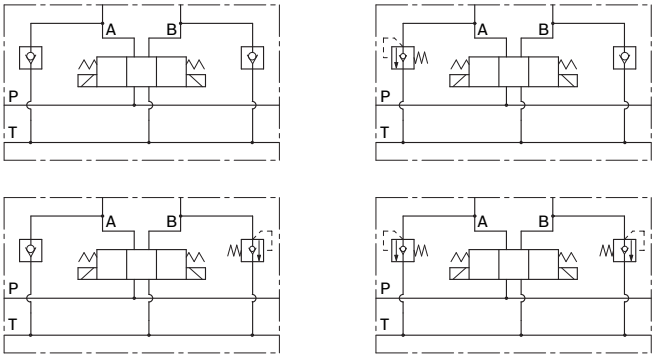
11	No options	**No code**
	Push-button type manual override	**0P**
	Screw type manual override	**0F**

● = Available – = Not available

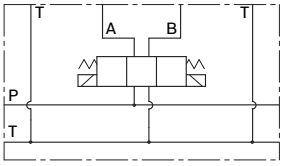
Symbols



Secondary valves possible configurations



Flangeable version =M

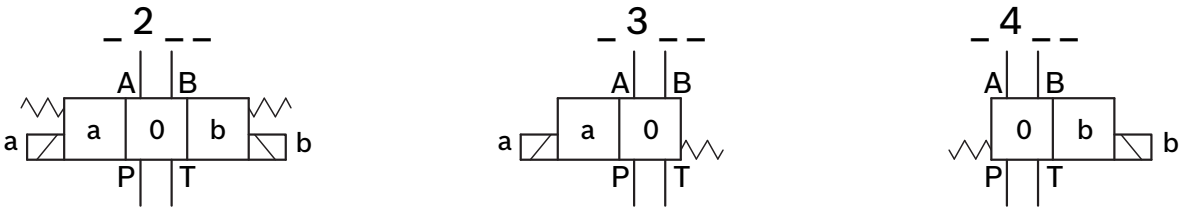


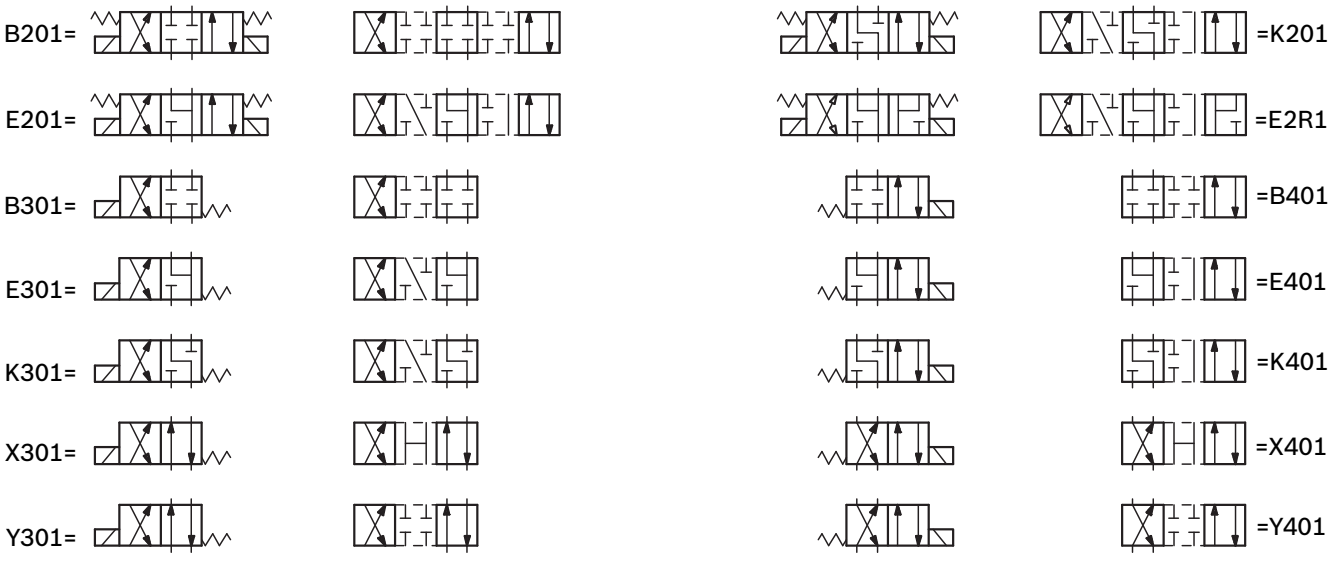
A	B	C	D	E	F	G	H	I	J	K	L
20 bar	30 bar	40 bar	50 bar	60 bar	70 bar	80 bar	90 bar	100 bar	110 bar	120 bar	130 bar
290 psi	435 psi	580 psi	725 psi	870 psi	1015 psi	1160 psi	1305 psi	1450 psi	1595 psi	1740 psi	1885 psi

M	N	O	P	Q	R	S	T	U	V	W	X
140 bar	150 bar	160 bar	170 bar	180 bar	190 bar	200 bar	210 bar	220 bar	230 bar	240 bar	250 bar
2030 psi	2175 psi	2320 psi	2465 psi	2611 psi	2756 psi	2901 psi	3046 psi	3191 psi	3336 psi	3481 psi	3626 psi

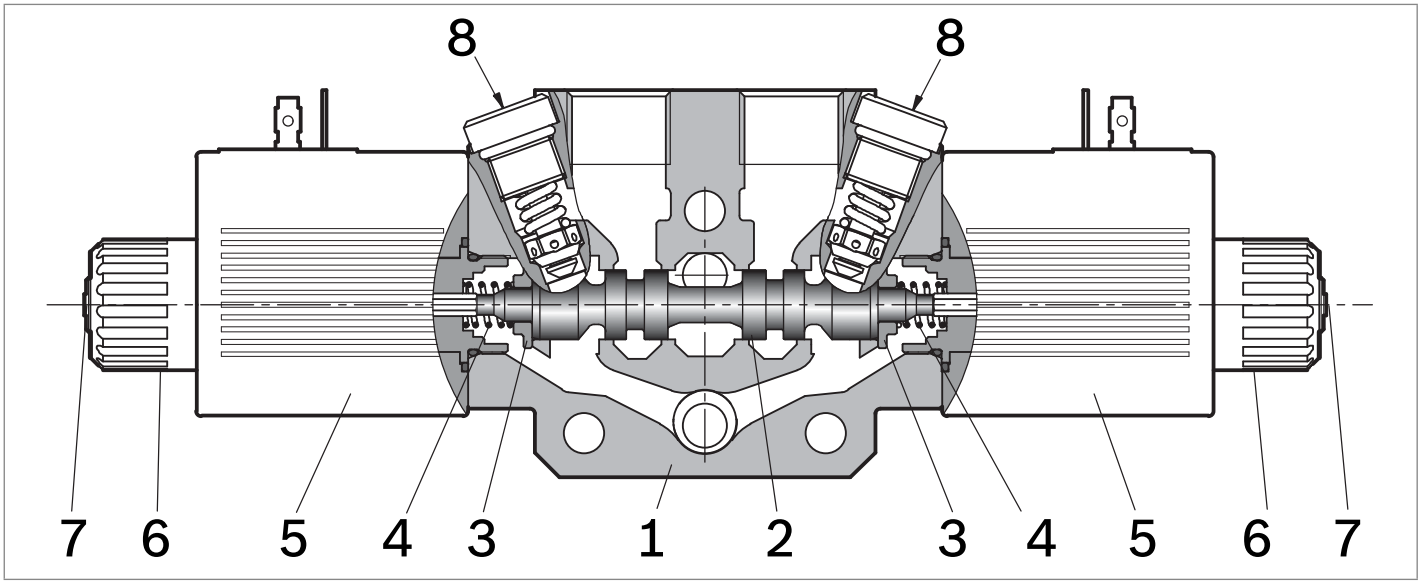
1) The required hydraulic symbol and spool variant can be chosen by consulting page 2.
2) The use of the secondary valve in one ports implies the use of secondary valve in both ports.
3) The relief direct acting valve have a maximum flow capacity of 30 l/min (7.93 gpm).
For the characteristic curves see data sheet RE18329-11.
4) For connectors ordering code see data sheet RE 18325-90.
5) For the Characteristic curves see data sheet RE18329-51.

Spool variant





Functional description



The sandwich plate design directional valve elements D8_5 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**). The spring chambre are connected to the tank port. When the coil is energized, the spool (**2**) travels and oil is pushed to tank from one of the spring chambers: if the cross section of the orifices changes, the switching time changes as well. Three orifice sizes are available: smaller orifice results in longer switching time, even though the actual time is dependent upon pressure, flow and viscosity.When energized, the force of the solenoid (**5**) pushes the control spool (**2**) from its neutral-central position to the required position, 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. The secondary cartridge valves are designed for quick response and stable pressure control (**8**); they also incorporate a reverse flow check for anti-cavitation.

Technical data

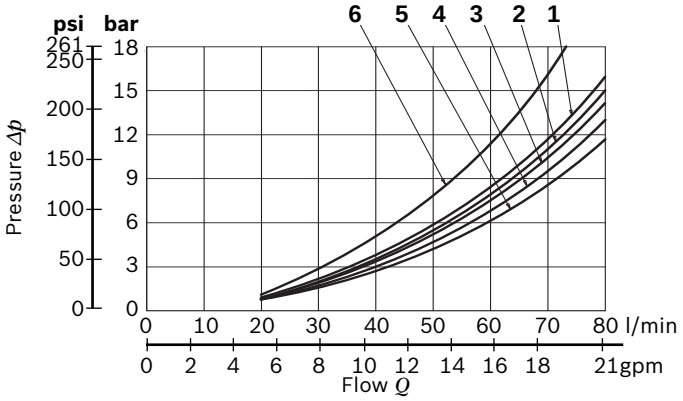
General									
Valve element with 2 solenoids	kg (lbs)	3.00 (6.61)							
Valve element with 1 solenoid	kg (lbs)	2.35 (5.18)							
Ambient Temperature	°C (°F)	–20....+50 (-4....+122) (NBR seals)							
Hydraulic									
Maximum pressure at P	bar (psi)	310 (4500)							
Maximum pressure at A and B ports	bar (psi)	380 (5500)							
Maximum pressure at T	bar (psi)	250 (3625)							
Maximum inlet flow	l/min (gpm)	80 (21.1)							
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...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)	0.5 (1.1)							
Voltage	V	12	13	24	27	48	24 +RAC (21,5)	110 +RAC (98)	230 +RAC (207)
Voltage type		DC	DC	DC	DC	DC	AC	AC	AC
Power consumption	W	36	36	36	36	36	36	36	36
Nominal 100% current	A	3.00	2.77	1.53	1.32	0.75	1.70	0.37	0.17
Coil resistance (nominal at 20°C (68°F))	Ω	3.97	4.68	15.67	20.42	63.6	12.61	261	1163

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)	C4801 12DC	12 DC	R933000063
OB 03	12 DC	AMP JUNIOR	C4803 12DC	12 DC	R933000065
OB 07	12 DC	DEUTSCH DT 04-2P	C4807 12DC	12 DC	R933000068
OB 31	12 DC	Cable 350 mm long	C4831 12DC	12 DC	R933000064
AD 01	13 DC	EN 175301-803 (Ex. DIN 43650)	C4801 13DC	13 DC	R933000069
AD 07	13 DC	DEUTSCH DT 04-2P	C4807 13DC	13 DC	R933000073
OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	C4801 24DC	24 DC	R933000076
OC 03	24 DC	AMP JUNIOR	C4803 24DC	24 DC	R933000071
OC 07	24 DC	DEUTSCH DT 04-2P	C4807 24DC	24 DC	R933000075
OC 31	24 DC	Cable 350 mm long	C4831 24DC	24 DC	R933000070
AC 01	27 DC	EN 175301-803 (Ex. DIN 43650)	C4801 27DC	27 DC	R933000077
AC 07	27 DC	DEUTSCH DT 04-2P	C4807 27DC	27 DC	R933000074
OD 01	48 DC	EN 175301-803 (Ex. DIN 43650)	C4801 48DC	48 DC	R933000078
OV 01	24 RAC	EN 175301-803 (Ex. DIN 43650)	C4801 21.5DC	21.5 DC	R933000079
OW 01	110 RAC	EN 175301-803 (Ex. DIN 43650)	C4801 98DC	98 DC	R933000080
OZ 01	230 RAC	EN 175301-803 (Ex. DIN 43650)	C4801 207DC	207 DC	R933000081

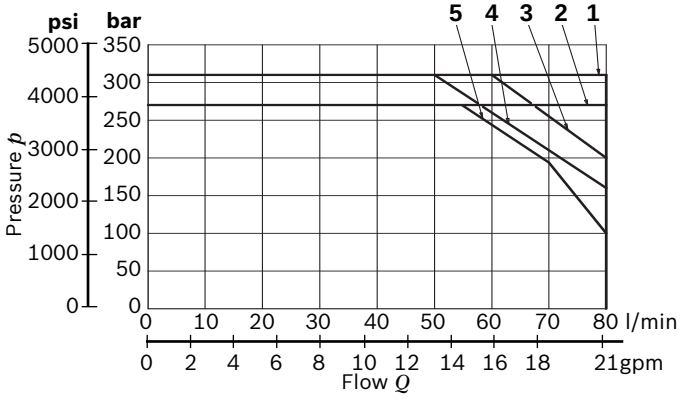
Characteristic curves



Spool Variant	Curve no.			
	P>A	P>B	A>T	B>T
B201 - B301 - B401	4	4	4	4
E201 - E301 - E401	3	3	5	5
K201 - K301 - K401	3	3	5	2
E2R1	3	6	5	-
X301 - X401	2	2	5	5
Y301 - Y401	2	2	1	1

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

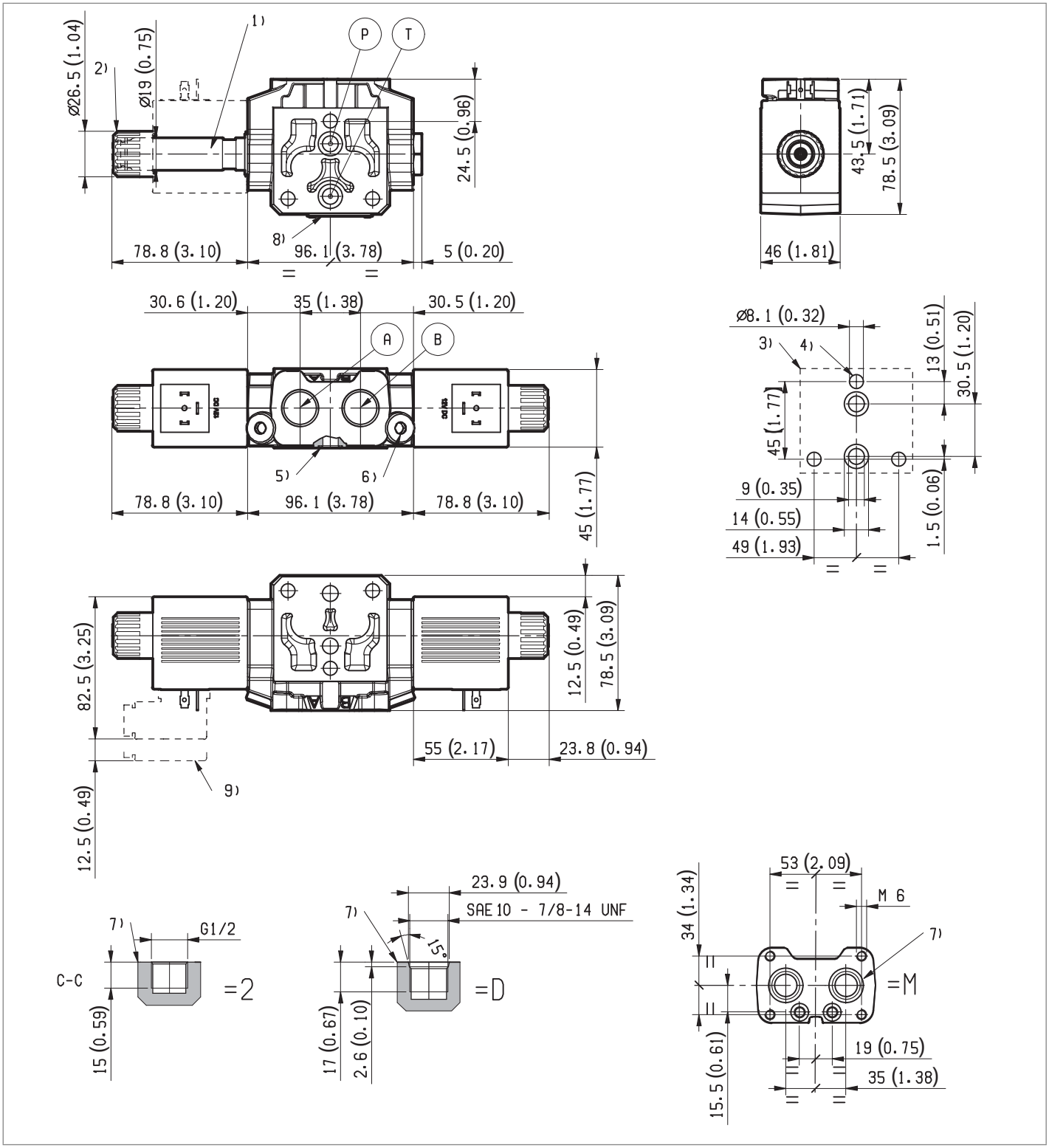
Performance limits



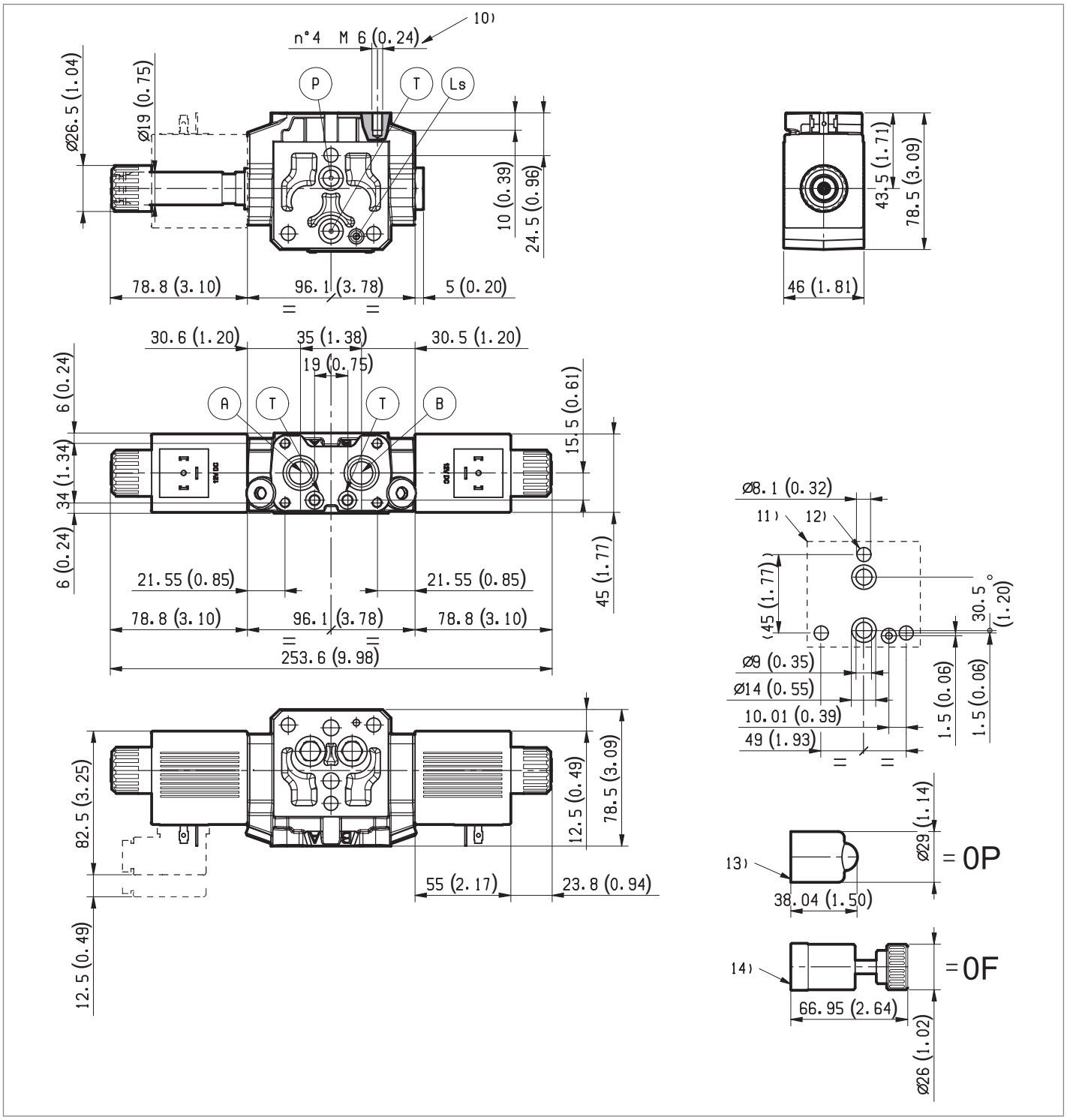
Spool Variant	Curve no.
B201 - B301 - B401	1
E201 - E301 - E401	4
K201 - K301 - K401	3
E2R1	3
X301 - X401	2
Y301 - Y401	5

The performance curves are measured with flow going across and coming back, like P>A and B>T, with symmetrical flow areas.
In case of special circuit connections, the performance limits can change.

External dimensions and fittings



1 Solenoid tube Ø 19mm (0.75 inch).
2 Ring nut for coil locking (Ø 26,5mm); torque 5 Nm ± 10% (3.68 ± 10% ft-lb).
3 Flange specification for coupling to ED intermediate elements.
4 For tie rod and tightening torque information see data sheet RE 18301-90.
5 O-Rings for P and T ports.
6 Secondary Pressure relief valve, hex 6mm (0.236 inch), torque 25-30 Nm (19-22 ft-lb).
7 A and B ports.
8 Identification label.
9 Clearance needed for connection removal.



10 Four threaded M6 for fitting secondary flangeable elements. Bolts M6 with minimum recommended strength class DIN8.8. Torque 9-10 Nm (6.6-7.4 ft-lb).

11 Flange specification for coupling to the ED intermediate elements with LS channels.

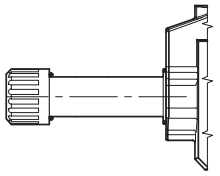
12 For tie rod and tightening torque information see data sheet RE 18301-90.

13 Optional push-button manual override, 0P type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no R933000043.

14 Optional screw 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 coils ring nut. Mat no. R933000022.

Electric connection

00



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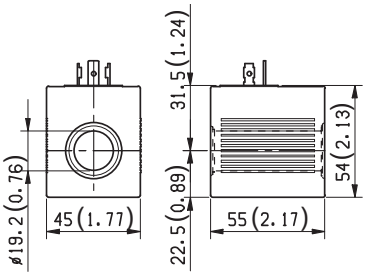
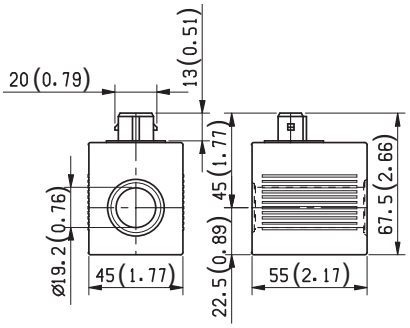
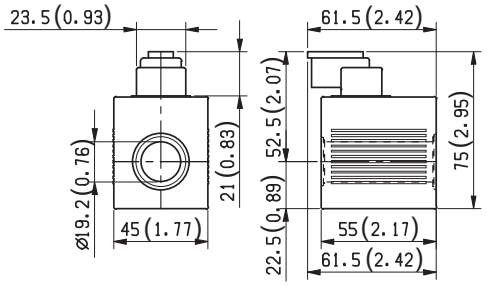


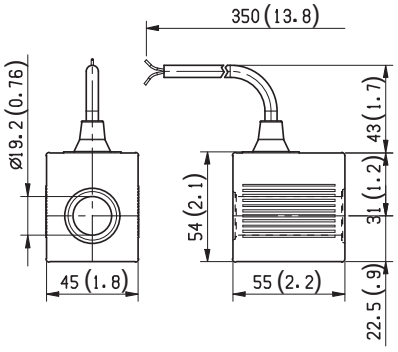
03 Protection class: IP 65 with female connector properly fitted (see drawing). With bi-directional diode



07 Protection class: IP 69 K with female connector properly fitted (see drawing). With bi-directional diode



31 With bi-directional diode



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