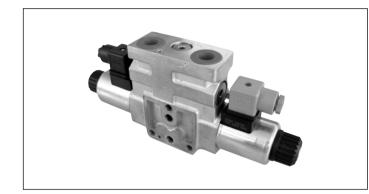


# 4/3 and 4/2 Proportional directional valve elements with flow sharing control (LUDV concept) **PATENT PENDING**

L8580... (EDC-P)

RE 18301-09

Edition: 02.2016 Replaces: 07.2012



# Size 6

Series 00

Maximum operating pressure 310 bar (4500 psi) Maximum flow at 14 bar (203 psi) 50 l/min (13.2 gpm) Maximum flow at 18 bar (261 psi) 58 l/min (15.3 gpm) Ports connections planned G 3/8 - G 1/2 - SAE8 and Modular

#### **General specifications**

Valve element with direct proportional flow sharing control.

It can achieve the simultaneous activation of different actuators by distributing the available flow proportionally to the speeds selected by the operator. All simultaneous movements go on at the same reciprocal speed also in case of flow shortage. Each energized actuator receives a pressure

compensated flow.

No shuttle valve fitted.

Wet pin proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface. Manual override (push-button, screw type or lever)

available as option.

Different plug-in connectors available: see ordering details.

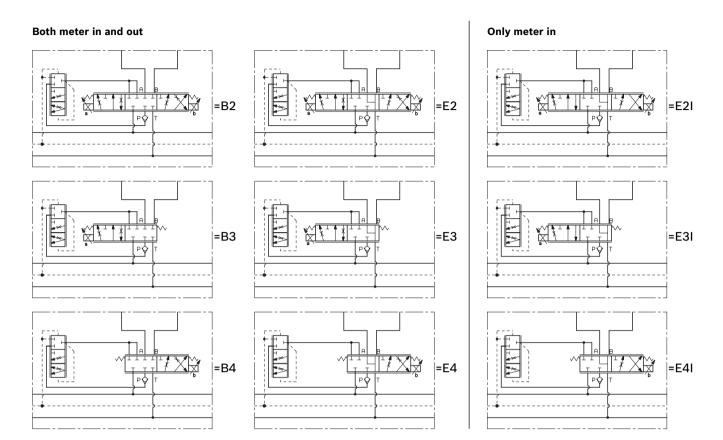
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## **Ordering details**

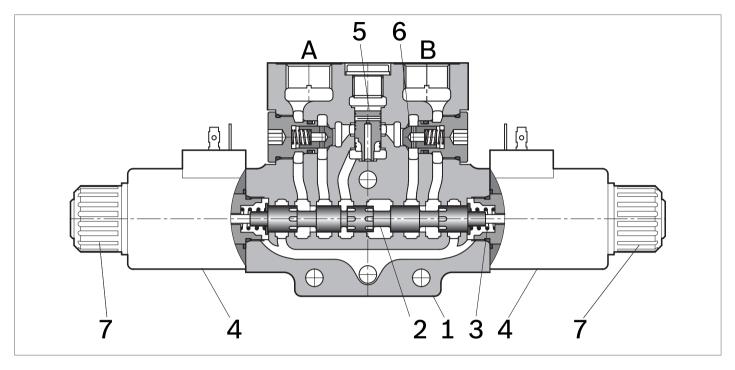
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		_														· · ·	
imil 01	Ĩ.	tional Valve e					г	L	Volta	<b>ige supply</b> Without co	vil		07	03	01	00	0
pr pe		LIONAL VAIVE	elements	ED				L		12V DC	711		•	•	•	-	0
-	Size 6 proportional					8		12V DC 24V DC			•		_	0			
	igurati						L	-	I Elect	ric connect	ions		•		•		
)3						5	08	Without co							0		
oil t	type							With coils, without mating connector DIN EN 175301-80					1-803	0			
)4	D15					80		With coils, without mating connector vertical Amp-					)-	0			
	1	variants				F		Junior							Ů		
)5	4/3 operated both sides a and b; P, A, B, T closed in neutral							B2		With coils, without mating connector DT04-2P						0	
H	4/2 operated on side a only; P, A, B, T closed in neutral 4/2 operated on side b only; P, A, B, T closed in neutral							B3	Ports								
		perated on s perated on b						B4	09 G 3/8 DIN 3852								
		n neutral	Join sides	a anu	D, 1 ClOS	eu, A an	uв	E2		G 1/2 DIN							
	4/3 op	perated on sic	le a only; F	o close	d; A and B	to T in ne	eutral	E3		3/4-16 UN	F 2-B (SA	E8)					M
		perated on sic			d; A and B	8 to T in ne	eutral	E4	Opti	ons							
-		n & Nomina	-				r			Without m	anual ove	erride					0
06	Both   B 4l/r	meter in and nin(1.06gpm	l out, A 4l, 1)	/min(1	L.06gpm)	-		S0		Push-butto			erride				0
	-	meter in and		/min(1	.85gpm)	-		S1	Screw type manual override							0	
	-	min(1.85gpm						51	Lever type manual override <sup>3)</sup>								_
	Both meter in and out, A 12l/min(3.17gpm) - B 12l/min(3.17gpm)						S2	• = Available - = Not available									
		Both meter in and out, A 16l/min(4.23gpm) - B 16l/min(4.23gpm)						S3		e required h		layout ar	nd spool	varian	t can b	e chos	en k
	Both meter in and out, A 25I/min(6.6gpm) - B 25I/min(6.6gpm)						<b>S</b> 4	consulting page 3. 2) Available only for E_ spool variant.									
	Both meter in and out, A 40l/min(10.57gpm) - B 40l/min(10.57gpm)							2) / (0		3) Each different option for the type of emergency chosen implies a specific ordering code (refer to page 8).							
				)l/min	(10.57gpr	m) -		<b>S</b> 8	з) Ea	ch different		or the typ	be of em		y chose	en imp	lies
	B 40l, Both		pm) I out, A 50					S8 S9	3) Ea sp 4) W	ich different ecific orderi ith Δp (P > A	ing code or P > B	or the typ (refer to ) 14 bar	pe of em page 8). (203 psi	).	-		lies
	B 401, Both B 501,	/min(10.57g meter in and	pm)   out, A 50 m)	)l/min	(13.2gpm	) -	m) <sup>2)</sup>		3) Ea sp 4) W 5) Se	ch different ecific orderi	ing code or P > B	or the typ (refer to ) 14 bar	pe of em page 8). (203 psi	).	-		lies
	B 40l/ Both B 50l/ Only r Only r	/min(10.57g) meter in and /min(13.2gp)	pm)   out, A 50 m)  /min(1.85 2 /min(3.	)l/min ōgpm)	(13.2gpm - B 8l/mir	) -	m) <sup>2)</sup>	S9	3) Ea sp 4) W 5) Se ele	ch different ecific orderi ith Δp (P > A ee RE18301-	ing code or P > B 45, RE18	or the typ (refer to ) 14 bar 301-46, F	be of em page 8). (203 psi RE18301	). -47, fo	r flange	eable	lies
	B 40l/ Both B 50l/ Only r Only r B 12l/	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1	pm)   out, A 50 m)  /min(1.85 2 /min(3. m) <sup>2)</sup>	)l/min 5gpm) 17gpn	(13.2gpm - B 8l/mir n) -	) - n(1.85gp		S9	3) Ea sp 4) W 5) Se ele	ich different lecific orderi ith Δp (P > A lee RE18301- lements.	ing code or P > B 45, RE18	or the typ (refer to ) 14 bar 301-46, F	be of em page 8). (203 psi RE18301	). -47, fo	r flange	eable	lies
	B 40l, Both B 50l, Only r B 12l, Only r Only r B 40l,	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 4 /min(10.57g	pm)   out, A 50 m)  /min(1.85 2 /min(1.85 2]/min(3. m) <sup>2)</sup> 5 /min(6.6 pm) <sup>2)</sup>	)l/min 5gpm) 17gpn 5gpm) 0.57gp	(13.2gpm - B 8l/mir n) - - B 25l/m m) -	) - n(1.85gp		S9  1  2	3) Ea sp 4) W 5) Se ela 6) Fo	ich different lecific orderi ith Δp (P > A lee RE18301- lements.	ing code or P > B 45, RE18	or the typ (refer to ) 14 bar 301-46, F	be of em page 8). (203 psi RE18301	). -47, fo	r flange	eable	lies
	B 40l, Both B 50l, Only r B 12l, Only r B 40l, Only r B 50l,	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp	pm)   out, A 50 m)  /min(1.85 21/min(3. m) <sup>2)</sup> 51/min(6.6 01/min(10 pm) <sup>2)</sup> 01/min(13 m) <sup>2)</sup>	0l/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn	(13.2gpm - B 8l/mir n) - - B 25l/m m) -	) - n(1.85gpi in(6.6gpi		S9  1  2  4	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	ing code or P > B 45, RE18	or the typ (refer to ) 14 bar 301-46, F	be of em page 8). (203 psi RE18301	). -47, fo	r flange	eable	lies
	B 40l, Both B 50l, Only r B 12l, Only r D 19 r B 40l, Only r B 50l, Both B 8l/r	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp meter in and min(1.85gpm	pm) l out, A 50 m) l/min(1.85 2l/min(3. m) <sup>2)</sup> 5l/min(6.6 0l/min(10 pm) <sup>2)</sup> 0l/min(13 m) <sup>2)</sup> l out, A 4l <sub>j</sub>	)l/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn /min(1	(13.2gpm - B 8l/mir n) - - B 25l/m m) - n) -	) - n(1.85gpi iin(6.6gpi -		S9 11 12 14 18	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	s orderin	or the typ (refer to ) 14 bar 301-46, F	pe of em page 8). (203 psi RE18301 ee data s	). -47, fo sheet F	r flange	eable	lies
	B 40l, Both B 50l, Only r Only r B 12l, Only r B 40l, Only r B 50l, Both B 8l/r Both B 12l,	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp meter in and min(1.85gpm meter in and /min(3.17gp	pm) l out, A 50 m) l/min(1.85 2l/min(3. m) <sup>2)</sup> 5l/min(6.6 0l/min(10 pm) <sup>2)</sup> 0l/min(13 m) <sup>2)</sup> l out, A 4l, n) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup>	0l/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn /min(1 /min(1	(13.2gpm - B 8l/mir n) - - B 25l/m m) - n) - L.06gpm)	) - n(1.85gpi iin(6.6gpi -		S9 11 12 14 18 19	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	ing code or P > B 45, RE18	or the typ (refer to ) 14 bar 301-46, f g code so	pe of em page 8). (203 psi RE18301 ee data s ee data s	0 2	r flange	eable	lies
	B 40l, Both B 50l, Only r Only r B 12l, Only r B 40l, Only r B 50l, Both B 8l/r B 12l, Both B 12l,	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp meter in and min(1.85gpm meter in and /min(3.17gp meter in and /min(4.23gp	pm) l out, A 50 m) l/min(1.85 2l/min(3. m) <sup>2)</sup> 5l/min(6.6 0l/min(10 pm) <sup>2)</sup> 0l/min(13 m) <sup>2)</sup> l out, A 4l, n) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup>	01/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn /min(1 /min(1 /min(1	(13.2gpm - B 8l/mir - B 25l/m - B 25l/m - D 25l/m	) - n(1.85gp) iin(6.6gp) - -		S9 11 12 14 18 19 01	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	s orderin	or the typ (refer to ) 14 bar 301-46, f g code so	De of em page 8). (203 psi RE18301 Dee data s	0 2	r flange	eable	lies
	B 401, Both B 501, Only r Only r B 121, Only r B 401, Only r B 401, B 501, B 81/r B 121, B 121, Conly r Conly r	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp meter in and min(1.85gpm meter in and /min(3.17gp meter in and /min(4.23gp	pm) l out, A 50 m) l/min(1.85 2l/min(3. m) <sup>2)</sup> 5l/min(6.6 0l/min(10 pm) <sup>2)</sup> 0l/min(13 m) <sup>2)</sup> l out, A 4l, n) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 12 m) <sup>2)</sup>	01/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn /min(1 /min(1 /min(1	(13.2gpm - B 8l/mir n) - - B 25l/m m) - n) - 1.06gpm) 1.85gpm) 1.85gpm) (3.17gpm	) - n(1.85gp) iin(6.6gp) - - - - - ) -		S9       11       12       14       18       19       01       12	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	s orderin	or the typ (refer to ) 14 bar 301-46, f g code so	pe of em page 8). (203 psi RE18301 ee data s ee data s	0 2	r flange	eable	lies
	B 401, Both B 501, Only r Only r B 121, Only r B 401, Only r B 401, Only r B 501, B 81/r B 121, Both B 121, Both B 121, B 121, B 121, B 121, Conly r	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp meter in and min(1.85gpm meter in and /min(4.23gp meter in and /min(4.23gp meter in and /min(4.23gp	pm) l out, A 50 m) l/min(1.85 2l/min(3. m) <sup>2)</sup> 5l/min(6.6 0l/min(10 pm) <sup>2)</sup> 0l/min(13 m) <sup>2)</sup> l out, A 4l, n) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 12 m) <sup>2)</sup> l out, A 12 m) <sup>2)</sup>	01/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn /min(1 /min(1 /min(1 21/min	(13.2gpm - B 8l/mir n) - - B 25l/m m) - n) - 1.06gpm) 1.85gpm) 1.85gpm) (3.17gpm (3.17gpm	) - n(1.85gp) iin(6.6gp) - - - - ) -		S9       11       12       14       18       19       01       12       13	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	s orderin	br the typ (refer to ) 14 bar 301-46, f g code so	pe of em page 8). (203 psi RE18301 ee data s ee data s	0 2	r flange	eable	lies
	B 401, Both B 501, Only r Only r B 121, Only r B 401, Only r B 501, B 501, B 501, B 501, B 161, B 161, B 161, B 251,	/min(10.57g meter in and /min(13.2gp meter in, A 8 meter in, A 1 /min(3.17gp meter in, A 2 meter in, A 2 meter in, A 4 /min(10.57g meter in, A 5 /min(13.2gp meter in and min(1.85gpm meter in and /min(4.23gp meter in and /min(4.23gp meter in and /min(4.23gp meter in and /min(6.6gpm meter in and /min(6.6gpm	pm) l out, A 50 m) l/min(1.85 2l/min(3. m) <sup>2)</sup> 5l/min(6.6 0l/min(10 pm) <sup>2)</sup> 0l/min(13 m) <sup>2)</sup> l out, A 4l, n) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 8l, m) <sup>2)</sup> l out, A 12 m) <sup>2)</sup> l out, A 12 n) <sup>2)</sup>	01/min 5gpm) 17gpn 5gpm) 0.57gp 3.2gpn 3.2gpn /min(1 /min(1 21/min 21/min	(13.2gpm - B 8l/mir n) - - B 25l/m m) - m) - 1.06gpm) 1.85gpm) 1.85gpm) (3.17gpm (3.17gpm (4.23gpm)	) - n(1.85gp) iin(6.6gp) - - - - ) - ) -		S9       11       12       14       18       19       01       12       13       23	3) Ea sp 4) W 5) Se ela 6) Fo	the different recific orderi ith $\Delta p$ (P > A re RE18301- ements. or connector	s orderin	br the typ (refer to ) 14 bar 301-46, F g code so b b b code so code so	De of em page 8). (203 psi RE18301 De data s De data s De data s De data s De data s	0 2	r flange	eable	lies
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#### Spool variant and Flow pattern



4 **L8580... (EDC-P)** | 4/3 and 4/2 Proportional directional valve elements Functional description

## **Functional description**



The sandwich plate design directional valve elements L8580... are compact direct operated pressure compensated proportional solenoid valves which control the start, the stop, the direction and the quantity of the oil flow, with a FLOW SHARING principle. These elements basically consist of a stackable housing (1) with a control spool, two solenoids (4), two return springs. Energized by an electronic feed regulator, each solenoid (4) 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 3 way pressure compensator followed by a check valve for each port A and B. The compensator, balanced by the LS pressure at the opposite end, lifts up and unloads a regulated flow which is sent to the A (or B) port through the relevant check valve; at the same time the opposite port allows oil return to tank. LS pressure reaches the compensator "dead end" directly from the A or B port, while the check valves lock eventual pressure oscillations which could affect the compensator function.

When the solenoid is de-energized, the return spring pushes the spool thrust washer back against the housing and the spool returns in its neutral-central position. Each coil (4) is fastened to the solenoid tube by the ring nut (7). A pin allows to push the spool under emergency conditions, when the solenoid cannot be energized, like in case of voltage shortage.

## **Technical data**

General							
Valve element with 2 solen	oids	kg (lbs)	3.95 (8.71)				
Valve element with 1 solen	oid	kg (lbs)	3.60 (7.91)				
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)	210 (3050)				
Maximum pressure with lev	ver emergency at T	bar (psi)	140 (2030)				
Max. regulated flow at 14 b	oar (203 psi)	l/min (gpm)	50 (13.2)				
Max. regulated flow at 18 b	oar (261 psi)	l/min (gpm)	58 (15.3)				
Hydraulic fluid General properties: it must and chemical properties su systems such as, for examp	itable for use in hydraulic		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: β <sub>x</sub> ≥75 X=1012 ISO 4406: class 19/17/14 NAS 1638: class 8				
Viscosity range		mm²/s	20380 (optimal 3046)				
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			Н				
Compliance with			Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/				
Coil weight		kg (lbs)	0.335 (0.739)				
Voltage		V	12 24				
Nominal 100% current		A	1.76 0.88				
Coil resistance	- Cold value	Ω	4 16				
(nominal at 20°C (68°F))	- Max. hot value	Ω	6.1 24.4				

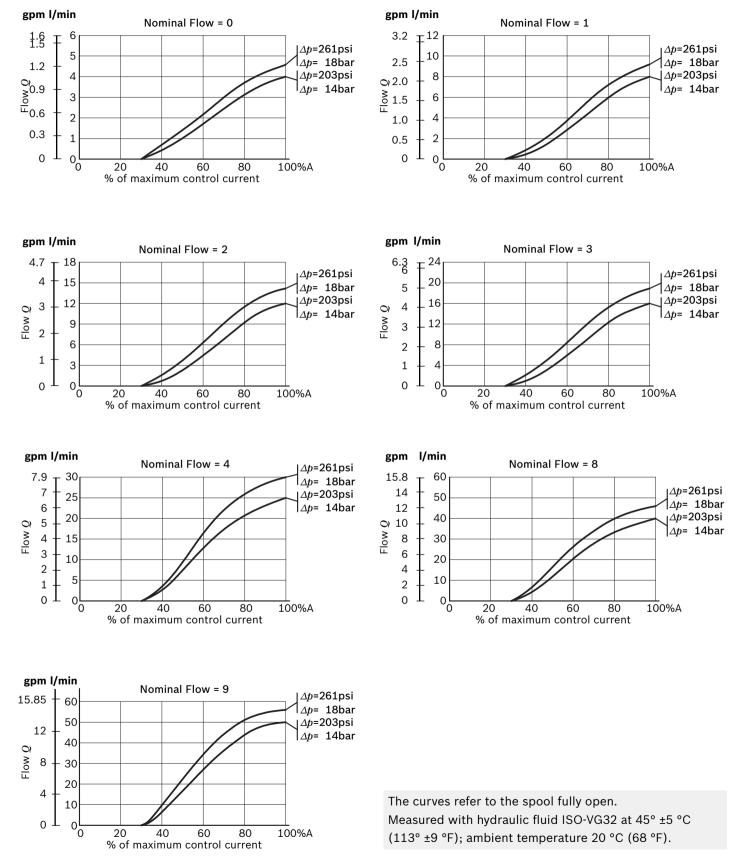
### Note

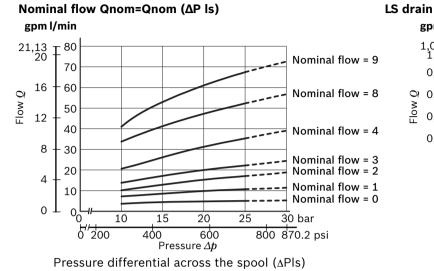
For applications with different specifications consult us

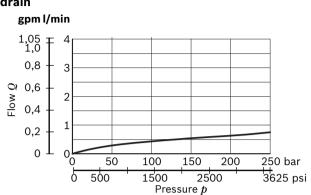
Code	Voltage [V]	Connector type	Coil description	Marking	Coil Mat no.
=OB 01	12 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	12 DC	R933000092
=OB 03	12 DC	AMP JUNIOR	D1530	12 DC	R933002877
=OB 07	12 DC	DEUTSCH DT 04-2P	D15 07	12 DC	R933000094
=OC 01	24 DC	EN 175301-803 (Ex. DIN 43650)	D15 01	24 DC	R933000093
=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**

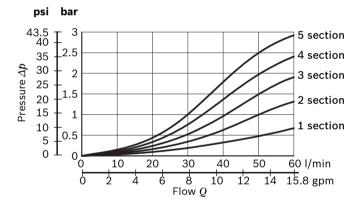
#### Characteristic curves Q=Q (I)



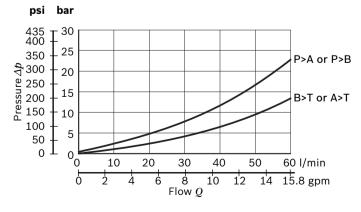




Pressure drop  $\Delta p = \Delta p(Q)$  (P<sub>IN</sub>- P<sub>OUT</sub>) to the next section



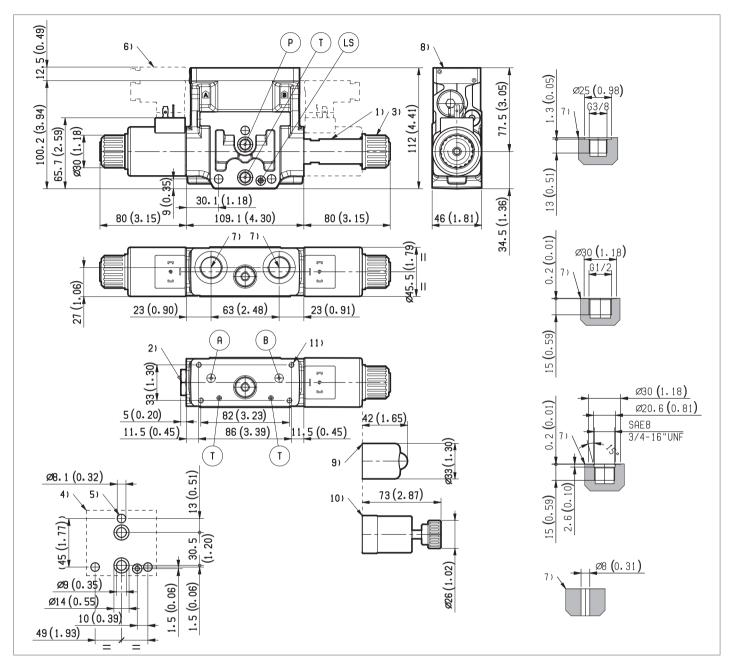




The curves refer to the spool fully open. Measured with hydraulic fluid ISO-VG32 at 45° ±5 °C (113° ±9 °F); ambient temperature 20 °C (68 °F).

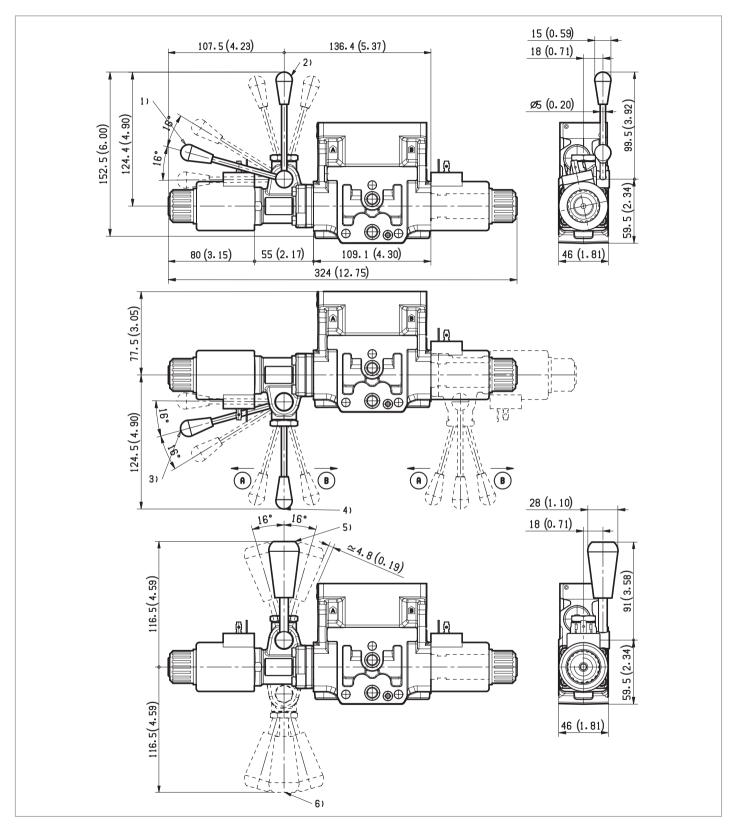
RE 18301-09/02.2016, Bosch Rexroth AG

## **External dimensions and fittings**



- 1 Solenoid tube Ø 23 mm (0.91 inch).
- **2** Plug for 2 positions versions (4/2).
- Ring nut for coil locking (Ø 30.3 mm). 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 A and B ports.
- 8 Identification label.

- 9 Optional push-button manual override, OP type, for spool opening: it is pressure stuck to the ring nut for coil locking. Mat no. R933003289.
- **10** Optional screw type manual override, OF 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. R933003116.
- **11** Four threaded holes M5 deepth 12mm (0.47 inch) for fitting a secondary flangeable element. Bolts M5 with recommended strength class DIN8.8: torque 5-6 Nm (3.6-4.4 ft-lb) (only for version with modular secondary valves).



- **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)

10 **L8580... (EDC-P)** | 4/3 and 4/2 Proportional directional valve elements Electric connection

#### Electric connection

01 Protection class: IP 65 when connector with seal is properly screwed down. 29 (1.14) 30.6(1.20) 18.3 (0.72) 6 ſ 23) Ø45.5(1.79) ø23 (0.91) 54.1 (2.13) 07 Protection class: IP 69 K with female connector properly fitted (see drawing). 30 (1.18) 34.6(1.36) 6.(.85) 91) 66.5 (2.62) 0 21.1 ø23/ ø45.5(1.79) 54.1 (2.13)

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

 30 (1.18)
 32.5 (1.28)

 50 (1.18)
 50.5 (1.28)

 50 (1.18)
 50.5 (1.28)

 50 (1.18)
 50.5 (1.28)

#### Bosch Rexroth Oil Control S.p.A.

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Subject to change.