

## 6/2 ways/positions flow diverters with ports C1, C2, C3 and C4 single side L725.... (VS161-VS165)

**RE 18302-06**

Edition: 02.2016

Replaces: 05.2014



Size 6

Series 00

Maximum operating pressure 310 bar (4500 psi)

Maximum flow 60 l/min (15.85 gpm)

Ports G 3/8 - SAE8

**NEW** spool position sensor available for this valve.

See RE18300-30

### General specifications

- 6 way 2 position valve.
- Directional spool valve with direct solenoid control.
- Hydraulic / pneumatic pilot, or manual push and twist control available as option.
- Control spool operated by solenoid, with easily removable coil fastened by a ring nut.
- Wet pin tube for DC coil, with push rod for mechanical override in case of voltage shortage.
- Unrestricted 360° orientation of DC coil.
- Control spool held in normal position by return spring.
- Optional manual override (push-button or screw type).
- Connectors available: DIN 43650 – ISO 4400, AMP Junior, DT04-2P (Deutsch), Free leads.

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## Ordering details

01	02	03	04	05	06	07	08
L	7	25					0

### Family

01	Compact directional valve	L
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### Type

02	Flow diverters	7
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### Ports

03	G 3/8 DIN 3852	3
	3/4-16 UNF (SAE8)	C

### Control type

04	Solenoid (coil C48) without manual override	11
	Solenoid (coil C48) with push-button type manual override	1P
	Solenoid (coil C48) with screw type manual override	1F
	Hydraulic / pneumatic control <sup>1)</sup>	P1
	Manual push and twist control	H1

### Spool variants

05	6 way / 2 position P1 side	6_
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### Drain type

	6A	6B	6E	6F	6G	
06	Internal drain	●	●	-	●	I
	External drain	●	●	●	-	E

### Voltage supply

	31	07	03	01	00	
07	Manual push and twist control	-	-	-	-	SG
	Without coil	-	-	-	●	00
	12 V DC	●	●	●	●	OB
	13 V DC	-	●	-	●	AD
	24 V DC	●	●	●	●	OC
	27 V DC	-	●	-	●	AC
48 V DC	-	-	-	●	OD	

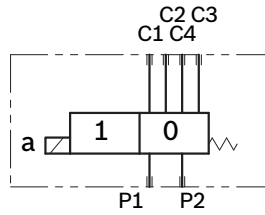
### Electric connections

08	Without coils	00
	With coils, without mating connector DIN EN 175301-803 <sup>2)</sup>	01
	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

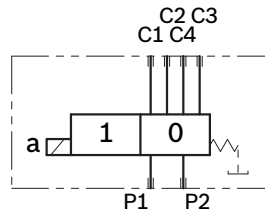
● = Available    - = Not available

## Symbols

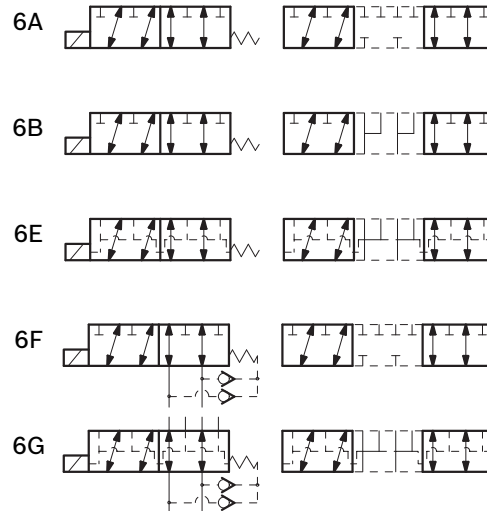
### Drain type I



### Drain type E

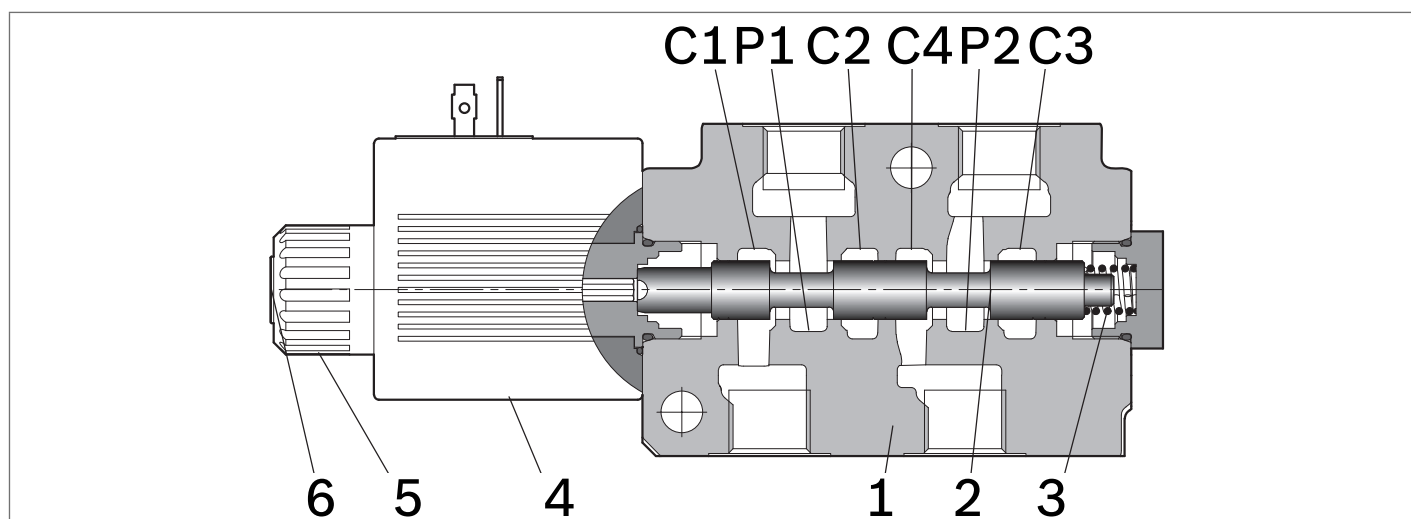


### Spool variants



- Minimum pressure 4 bar (58psi) with external drain (E), maximum pressure 200 bar (2901psi). With internal drain (I), at the minimum pressure (4 bar - 58psi), add the working pressure with ratio of 6,5:1. Example: With working pressure 100 bar (1450psi), minimum pilot pressure is 19.38 bar (281psi)  $((100:6,5) + 4 \text{ bar (58psi)})$ .
- For connectors ordering code see data sheet RE 18325-90.

## Functional description



A valve basically consists of a housing (1), a control spool (2), a return spring (3) and a solenoid (5). It is designed to connect two inlet lines P1 – P2 (normally a set of hoses) and divert them to either the outlet ports (C1 – C4) with spool in position “0”, when the solenoid is de-energized, or to the outlet ports (C2 – C3) with spool in position “1”, when the solenoid is energized.

With the coil de-energized, the return spring (3) pushes

back the spool (2) and holds it in position “0”

The coil (4) is fastened to the tube by the ring nut (5).

The manual override (6) allows to shift the spool (2) also in case of voltage shortage.

An external drain, to be connected to tank, ensures shifting operations also at higher working pressure.

Hydraulic / pneumatic pilot control, or manual push and twist control for spool shifting are available upon request.

## Technical data

General		
Valve weight	kg (lbs)	3.0 (6.6)
Mounting position		unrestricted
Ambient Temperature	°C (°F)	-20...+50 (-4...+122) (NBR seals)
Hydraulic		
Maximum pressure with external drain (“E” type)	bar (psi)	310 (4500)
Maximum pressure with internal drain (“I” type)	bar (psi)	250 (3625)
Maximum pressure with internal drain and 6F or 6G scheme	bar (psi)	310 (4500)
Maximum inlet flow	l/min (gpm)	60 (15.85)
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 <sup>2</sup> /s	5...420
Internal leakage with 100 bar (1450 psi) secondary pressure at C	cc/min (in <sup>3</sup> /min)	min. 10 (0.61) - max. 20 (1.2)

4 **L725.... (VS161-VS165) | 6/2 ways/positions flow diverters**  
 Technical data

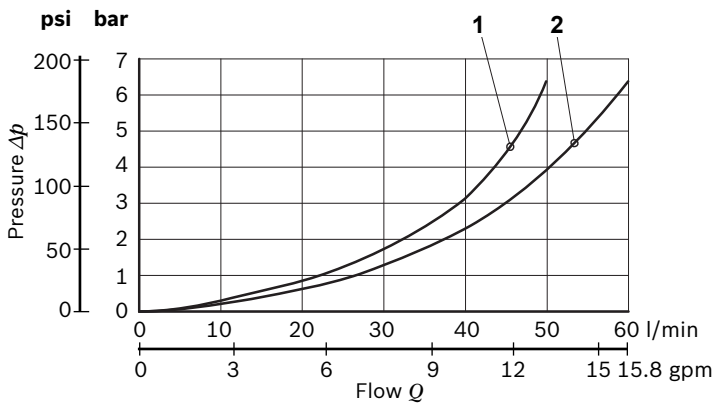
<b>Electrical</b>						
Voltage type		DC				
Voltage tolerance (nominal voltage)	%	-10 .... +10				
Duty		Continuous, with ambient temperature ≤ 50°C (122°F)				
Coil wire temperature not to be exceeded	°C (°F)	150 (302)				
Insulation class		H				
Compliance with		Low Voltage Directive LVD 73/23/EC (2006/95/EC), 2004/108/EC				
Coil weight with DIN 43650 – ISO 4400 connector	kg (lbs)	0.5 (1.1)				
Voltage	V	12	13	24	27	48
Voltage type		DC	DC	DC	DC	DC
Power consumption	W	36	36	36	36	36
Current (nominal at 20 °C (68 °F))	A	3.0	2.77	1.53	1.32	0.75
Resistance (nominal at 20 °C (68 °F))	Ω	3.97	4.68	15.67	20.42	63.60

**Note**

For applications with different specifications consult us

<b>Code</b>	<b>Voltage [V]</b>	<b>Connector type</b>	<b>Coil description</b>	<b>Marking</b>	<b>Coil Mat no.</b>
<b>OB 01</b>	12 DC	EN 175301-803 (Ex. DIN 43650)	C4801 12DC	12 DC	R933000063
<b>OB 03</b>	12 DC	AMP JUNIOR	C4803 12DC	12 DC	R933000065
<b>OB 07</b>	12 DC	DEUTSCH DT 04-2P	C4807 12DC	12 DC	R933000068
<b>OB 31</b>	12 DC	Cable 350 mm long	C4831 12DC	12 DC	R933000064
<b>AD 01</b>	13 DC	EN 175301-803 (Ex. DIN 43650)	C4801 13DC	13 DC	R933000069
<b>AD 07</b>	13 DC	DEUTSCH DT 04-2P	C4807 13DC	13 DC	R933000073
<b>OC 01</b>	24 DC	EN 175301-803 (Ex. DIN 43650)	C4801 24DC	24 DC	R933000076
<b>OC 03</b>	24 DC	AMP JUNIOR	C4803 24DC	24 DC	R933000071
<b>OC 07</b>	24 DC	DEUTSCH DT 04-2P	C4807 24DC	24 DC	R933000075
<b>OC 31</b>	24 DC	Cable 350 mm long	C4831 24DC	24 DC	R933000070
<b>AC 01</b>	27 DC	EN 175301-803 (Ex. DIN 43650)	C4801 27DC	27 DC	R933000077
<b>AC 07</b>	27 DC	DEUTSCH DT 04-2P	C4807 27DC	27 DC	R933000074
<b>OD 01</b>	48 DC	DIN EN 175301-803 ISO 4400	C4801 48DC	48 DC	R933000078

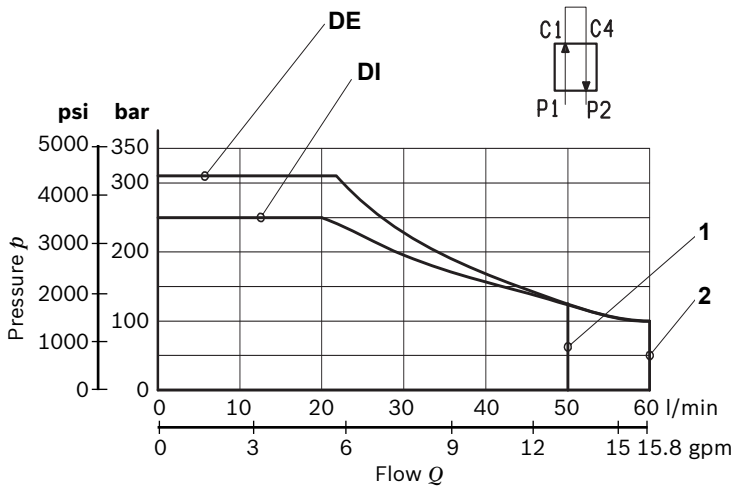
### Characteristic curves



Model	Curve no.			
	P1>C1	P1>C2	P2>C4	P2>C3
VS 161	1	1	1	1
VS 165	2	2	2	2

Measured with hydraulic fluid ISO-VG32 at  $45^\circ \pm 5^\circ \text{C}$  ( $113^\circ \pm 9^\circ \text{F}$ ); ambient temperature  $20^\circ \text{C}$  ( $68^\circ \text{F}$ ).

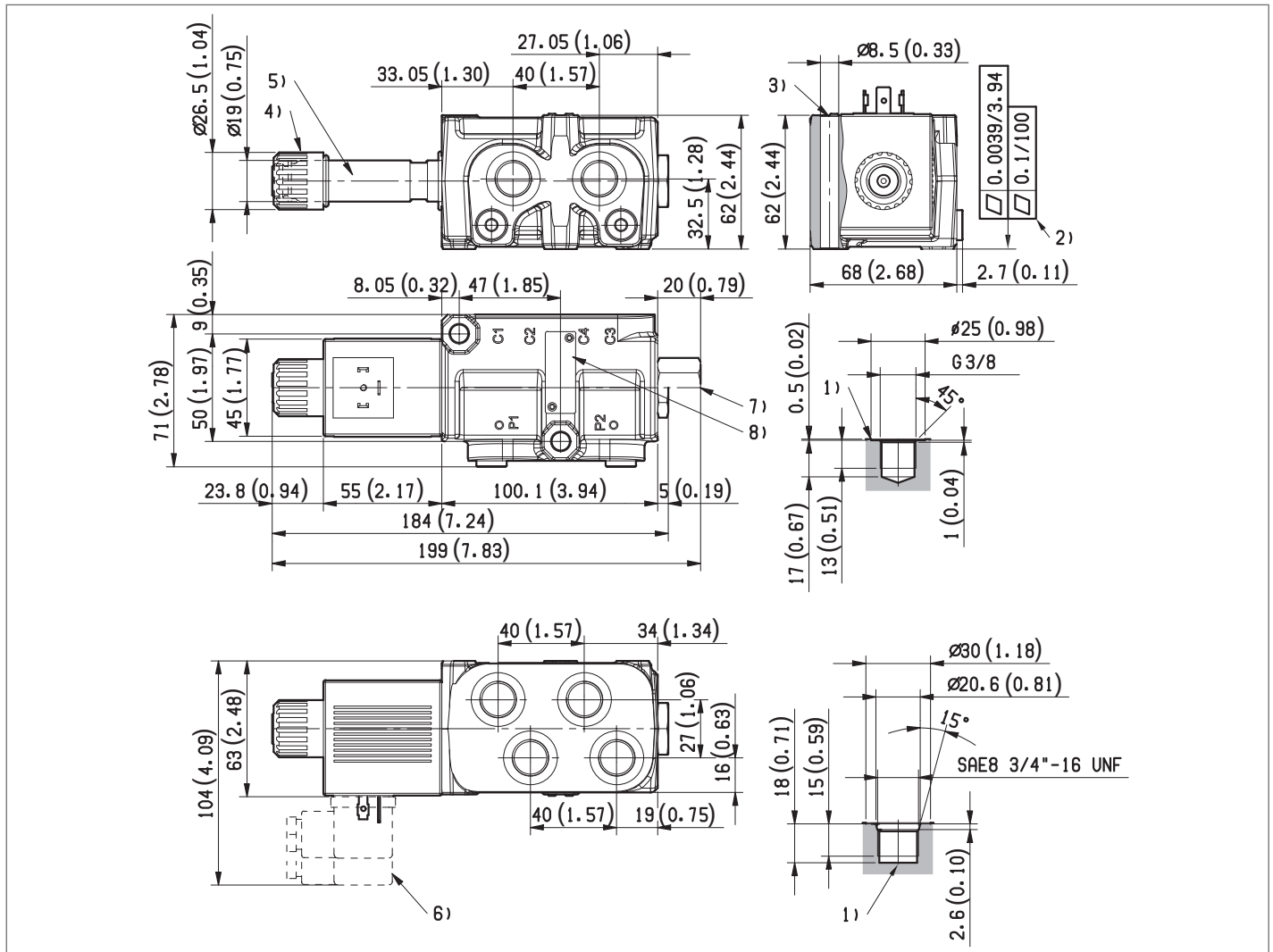
### DI-DE performance limits



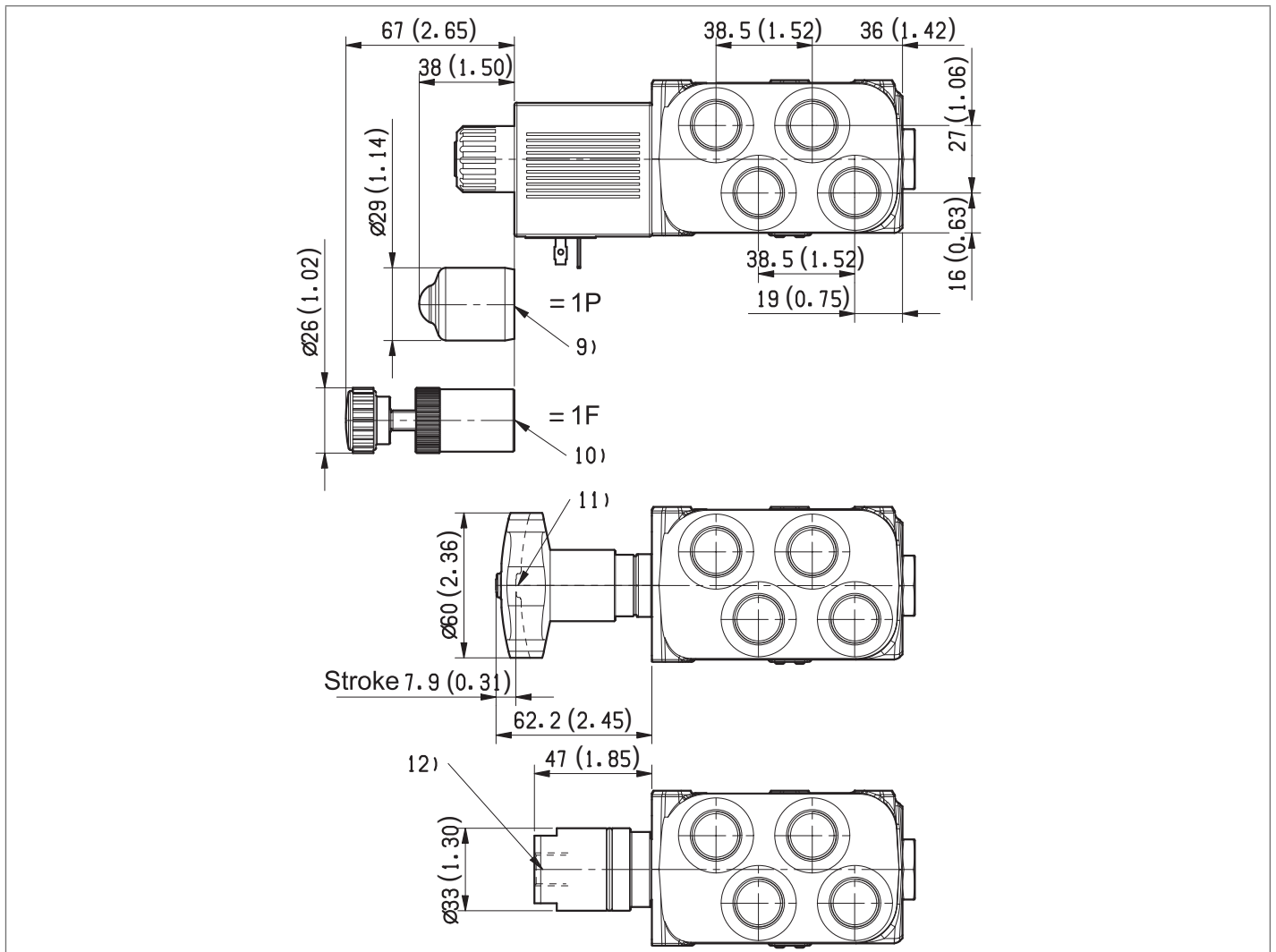
Model	Curve no.
VS 161	1
VS 165	2

Flow across both ways: forward across P1>C1 and reverse across C4>P2

**External dimensions and fittings**

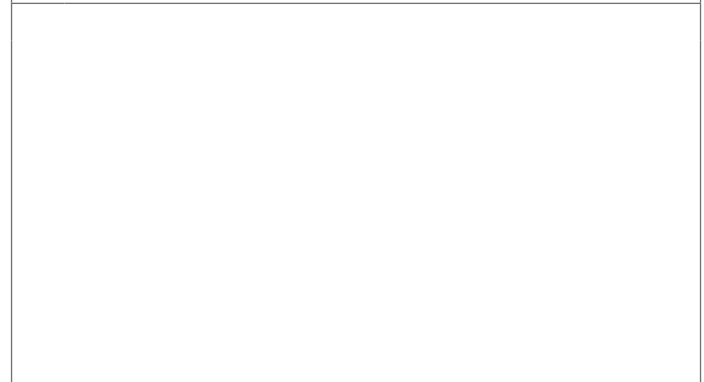
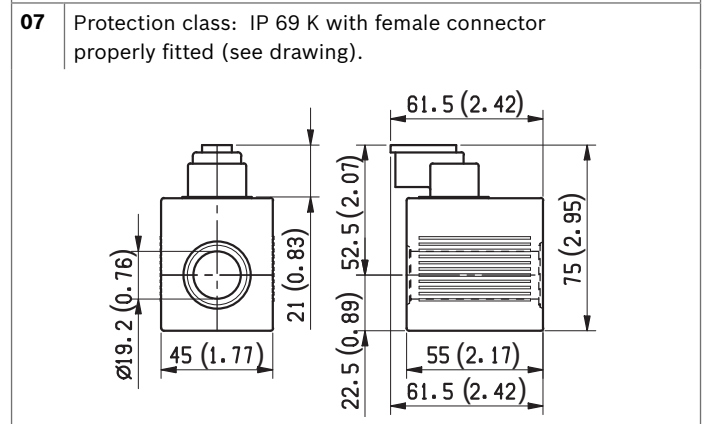
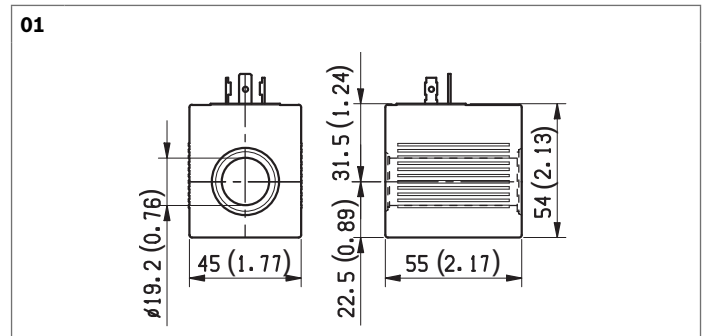
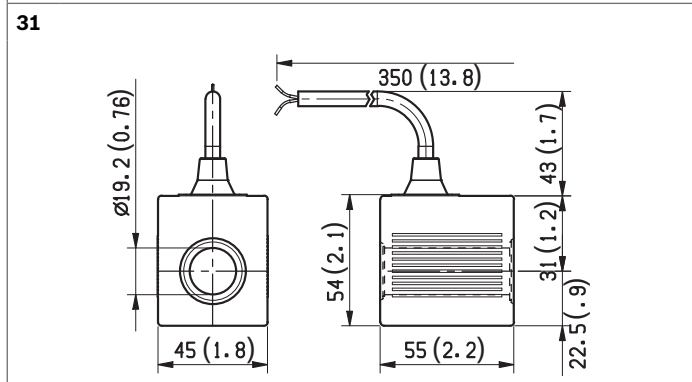
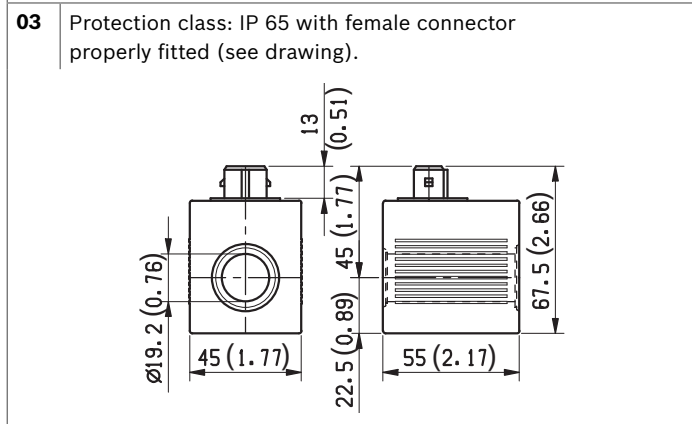
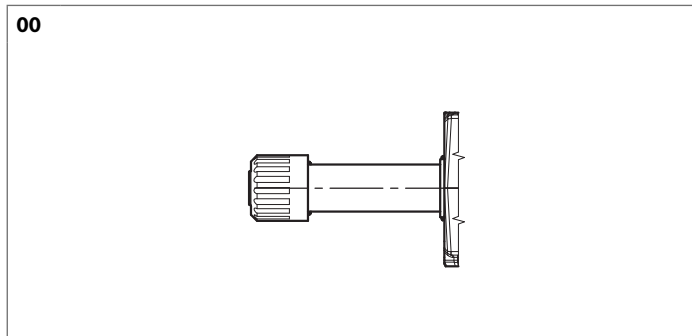


- 1 Ports P1, P2, C1, C2, C3, C4.
- 2 The mounting surface flatness must comply with specifications.
- 3 Two through installation holes recommended screws M8x70 with strength class DIN 8.8.  
Torque 15 – 16 Nm (11.1-11.8 ft-lb).
- 4 Ring nut for coil locking  $\varnothing 26.5$  mm (1.04 inch).  
Torque 5-6 Nm (3.6-4.4 ft-lb).
- 5 Solenoid tube  $\varnothing 19$  mm (0.75 inch).
- 6 Minimum clearance needed for connector removal.
- 7 External drain plug available with G 1/4 and SAE 4 port.
- 8 Identification label.



- 9** Optional push-button, 1P type, manual override for spool opening:  
it is pressure stuck to the ring nut for coil locking.  
Mat no. R933000043
- 10** Optional screw type manual override, 1F type, for spool opening:  
it is screwed (torque 6-7Nm (4.4-5.2 ft-lb)) to the tube as  
replacement of the coil ring nut. (Mat no. R9 33007215)
- 11** Dimensions of manual version, push and twist type.
- 12** Dimensions of hydraulic / pneumatic piloted version. Pilot port  
plug available with G 1/4.

**Electric connection**



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