

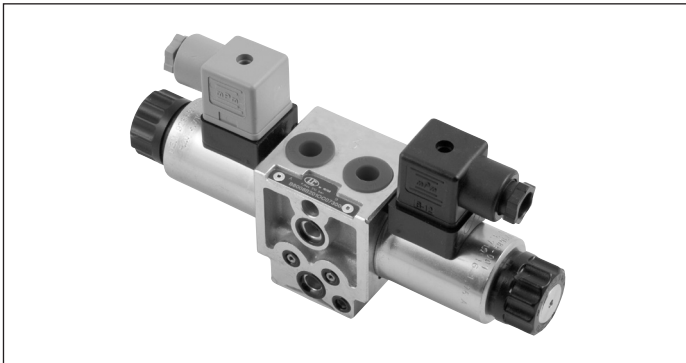
## 4/3 - 4/2 Directional valve elements with proportional control and with or without LS connections

B8\_80... (EDB-P)

**RE 18300-55**

Edition: 01.2024

Replaces: 08.2016



Size 4

Series 00

Maximum operating pressure 310 bar (4500 psi)

Maximum flow 17 l/min (4.5 gpm)

Port connections G 3/8 SAE6 - M16x1.5

### General specifications

Valve element with direct proportional control of 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 proportional tubes for DC coils, with push rod for mechanical override; nickel plated surface.

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

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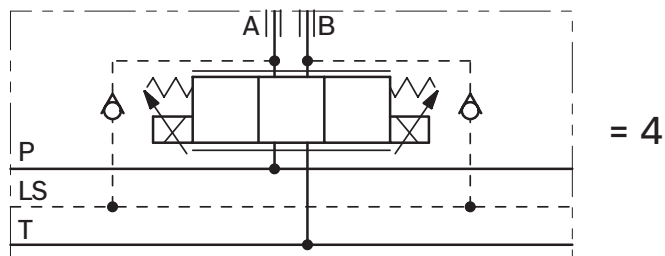
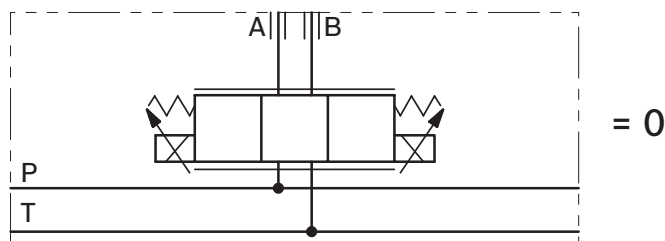
## Ordering details

|                            |   |    |    |    |    |    |    |    |    |                  |
|----------------------------|---|----|----|----|----|----|----|----|----|------------------|
| 01                         | 02  | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11               |
| B                          | 8   |    | 80 |    | S  |    |    |    |    | 00               |
| Family                     |   |    |    |    |    |    |    |    |    |                  |
| 01                         | Directional Valve elements EDB                              |    |    |    |    |    |    |    |    | B                |
| Type                       |   |    |    |    |    |    |    |    |    |                  |
| 02                         | Size 4 proportional   |    |    |    |    |    |    |    |    | 8                |
| Configuration              |   |    |    |    |    |    |    |    |    |                  |
| 03                         | Standard  |    |    |    |    |    |    |    |    | 0                |
|                            | With channel for Load Sensing                               |    |    |    |    |    |    |    |    | D                |
| Coil type                  |   |    |    |    |    |    |    |    |    |                  |
| 04                         | P45   |    |    |    |    |    |    |    |    | 80               |
| Spool variants             |   |    |    |    |    |    |    |    |    |                  |
| 05                         | 4/3 operated both sides a and b; P – T closed in neutral    |    |    |    |    |    |    |    |    | B2               |
|                            | 4/2 operated on side a only; P – T closed in neutral        |    |    |    |    |    |    |    |    | B3               |
|                            | 4/2 operated on side b only; P – T closed in neutral        |    |    |    |    |    |    |    |    | B4               |
|                            | 4/3 operated on both sides a and b; A and B to T in neutral |    |    |    |    |    |    |    |    | E2               |
|                            | 4/2 operated on side a only; A and B to T in neutral        |    |    |    |    |    |    |    |    | E3               |
|                            | 4/2 operated on side b only; A and B to T in neutral        |    |    |    |    |    |    |    |    | E4               |
| Flow pattern               |   |    |    |    |    |    |    |    |    |                  |
| 06                         | Symmetrical   |    |    |    |    |    |    |    |    | S                |
| Nominal flow <sup>1)</sup> |   |    |    |    |    |    |    |    |    |                  |
| 07                         | 4 l/min (1.06gpm)   |    |    |    |    |    |    |    |    | 3                |
|                            | 9 l/min (2.38gpm)   |    |    |    |    |    |    |    |    | 4                |
|                            | 17 l/min (4.50gpm)  |    |    |    |    |    |    |    |    | 5                |
| Voltage supply             |   |    |    |    |    |    |    |    |    |                  |
| 08                         | Without coil  |    |    |    |    |    |    |    |    | 00               |
|                            | 12V DC  |    |    |    |    |    |    |    |    | 0B               |
|                            | 24V DC  |    |    |    |    |    |    |    |    | 0C               |
| Electric connections       |   |    |    |    |    |    |    |    |    |                  |
| 09                         | Without coils   |    |    |    |    |    |    |    |    | 00               |
|                            | With coils, without mating connector DIN EN 175301-803      |    |    |    |    |    |    |    |    | 01 <sup>2)</sup> |
|                            | With coils, without mating connector vertical<br>Amp-Junior |    |    |    |    |    |    |    |    | 03               |
| Ports                      |   |    |    |    |    |    |    |    |    |                  |
| 10                         | G 3/8 DIN 3852  |    |    |    |    |    |    |    |    | 3                |
|                            | M 16x1,5 DIN 3852   |    |    |    |    |    |    |    |    | U                |
|                            | 9/16-18 UNF 2-B (SAE6)                                      |    |    |    |    |    |    |    |    | B                |
| Options                    |   |    |    |    |    |    |    |    |    |                  |
| 11                         | No options  |    |    |    |    |    |    |    |    | No code          |
|                            | Standard  |    |    |    |    |    |    |    |    | 0                |
|                            | Screw type manual override                                  |    |    |    |    |    |    |    |    | F                |

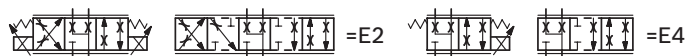
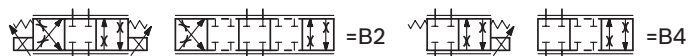
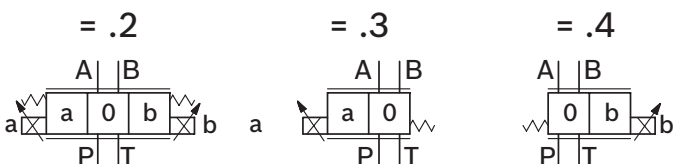
● = Available    - = Not available

- 1) With  $\Delta p$  ( $P > T$ ) 10 bar (145 psi), corresponding approx. to  $\Delta p$   $P > A, B$  5 bar (73 psi).  
2) For connectors ordering code see data sheet RE 18325-90.

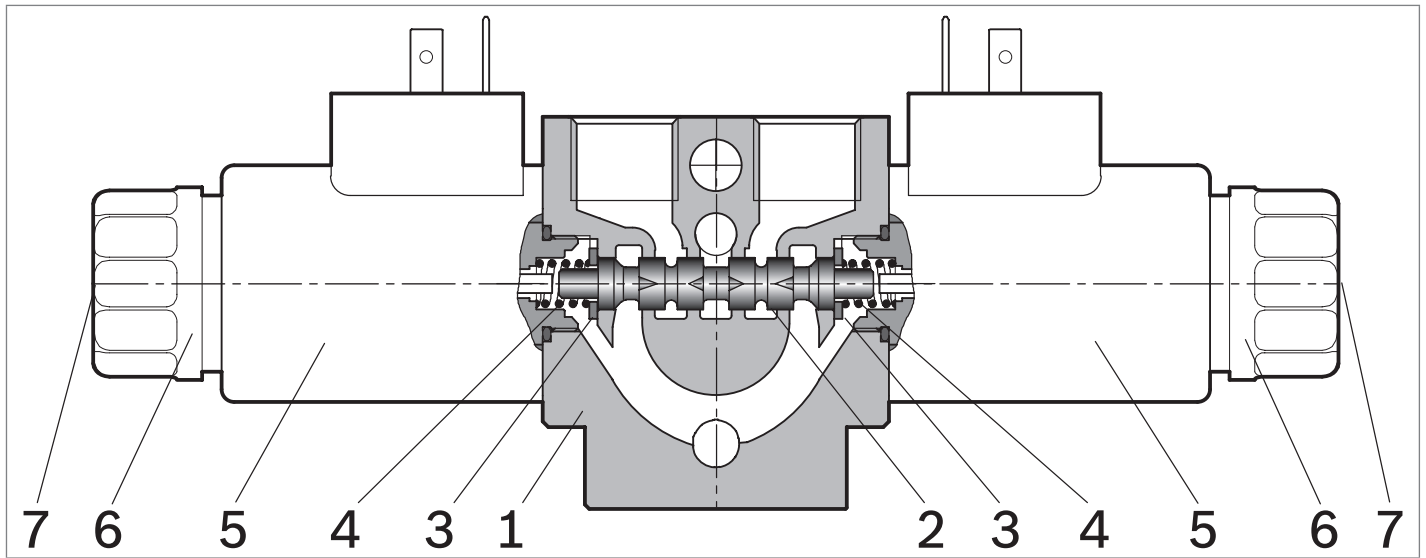
## Symbols



## Spool variants



## Functional description



The sandwich plate design directional valve elements B8080... are compact direct operated proportional solenoid valves which control the start, the stop, the direction and the quantity 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).

Energized by an electronic feed regulator, each solenoid (5) displaces the control spool (2) from its neutral-central position "0" proportionally to the current received, in open

loop mode; a regulated oil flow P to A , or P to B, 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 (2) returns in its neutral-central position "0".

Each coil is fastened to the solenoid tube (5) 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)           | 1.5 (3.3)  |      |
| Valve element with 1 solenoid  |                  | kg (lbs)           | 1.1 (2.5)  |      |
| 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)          | 180 (2610)   |      |
| Maximum inlet flow   |                  | l/min (gpm)        | 24 (6.3)   |      |
| E-schemes p closed in the neutral position<br>(connection from A to T and B to T)  |                  |                    | Approx. 2.3% of the nominal cross-section  |      |
| Hydraulic fluid<br>General properties: it must have physical lubricating<br>and chemical properties suitable for use in hydraulic<br>systems such as, for example: |                  |                    | Mineral oil based hydraulic fluids HL (DIN 51524 part 1).<br>Mineral oil based hydraulic fluids HLP (DIN 51524 part 2).<br>For use of environmentally acceptable fluids (vegetable or<br>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=10...12<br>ISO 4406: class 19/17/14<br>NAS 1638: class 8   |      |
| Viscosity range  |                  | mm <sup>2</sup> /s | 20....380 (optimal 30....46)   |      |
| 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)            | 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   |
| Nominal 100% current   |                  | A                  | 1.76   | 0.94 |
| Coil resistance<br>(nominal at 20°C (68°F))  | - Cold value     | Ω                  | 3.71   | 13   |
|  | - Max. hot value | Ω                  | 6.1  | 22.9 |
| Electronic control   |                  |                    |  |      |
| Electronic feed regulators <sup>3)</sup>   |                  |                    | Upon request   |      |

1) An electronic, open loop type, regulator with plug-in pins EN 175301-803 is available and can be fitted onto the solenoid directly.  
For valve elements with two solenoids, two electronic regulators are needed.

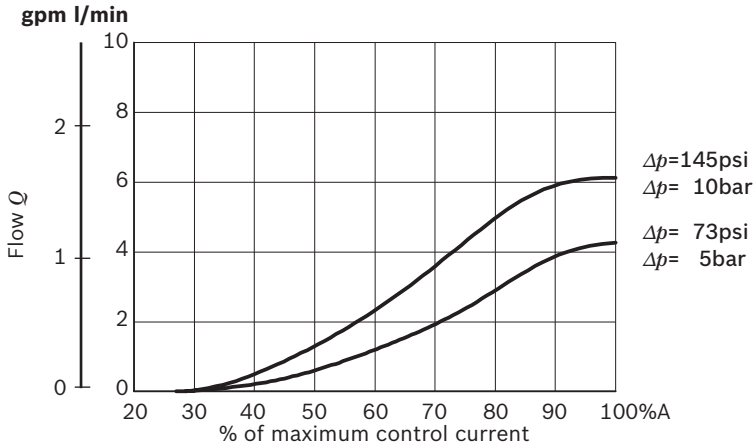
### Note

For applications with different specifications consult us

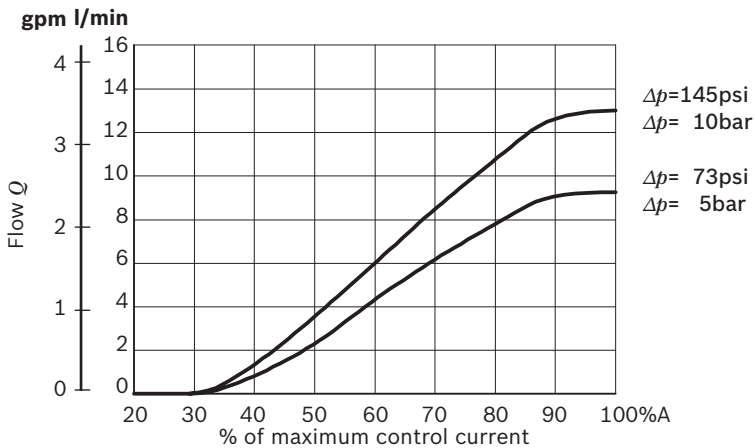
| Code          | Voltage [V] | Connector type                   | Coil description | Marking | Coil Mat no. |
|---------------|-------------|----------------------------------|------------------|---------|--------------|
| <b>=OB 01</b> | 12 DC       | EN 175301-803<br>(Ex. DIN 43650) | P45 01           | 12 DC   | R933000088   |
| <b>=OB 03</b> | 12 DC       | AMP JUNIOR                       | P45 03           | 12 DC   | R933000089   |
| <b>=OC 01</b> | 24 DC       | EN 175301-803<br>(Ex. DIN 43650) | P45 01           | 24 DC   | R933000090   |
| <b>=OC 03</b> | 24 DC       | AMP JUNIOR                       | P45 03           | 24 DC   | R933000091   |

## Characteristic curves

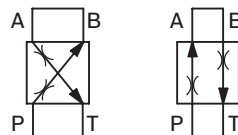
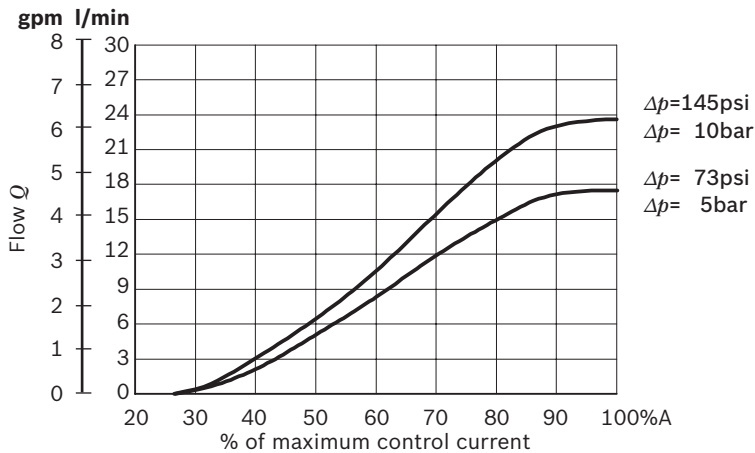
Ordering code S3: 4 l/min (1.06 gpm) with  $\Delta p$  5 bar (73 psi) P>A,B.



Ordering code S4: 9 l/min (2.38 gpm) with  $\Delta p$  5 bar (73 psi) P>A,B.

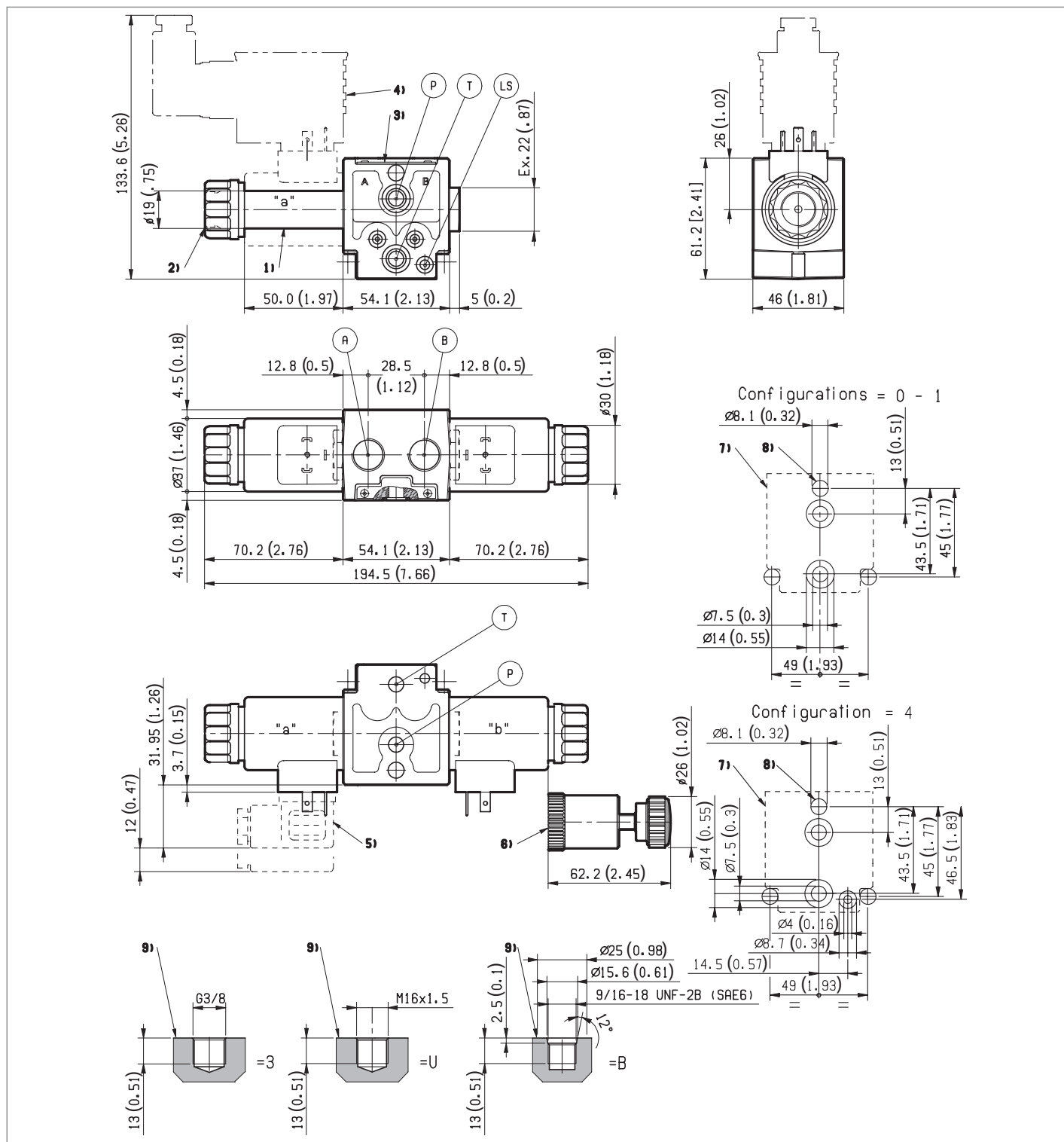


Ordering code S5: 17 l/min (4.50 gpm) with  $\Delta p$  5 bar (73 psi) P>A,B.



$\Delta p$  = valve pressure differential (inlet pressure  $P_p$  minus load  $P_l$  and minus return pressure  $P_t$ ).

## External dimensions and fittings



- 1 Solenoid tube  $\phi 19$  mm (0.75 inch).
- 2 Ring nut for coil locking  $\phi 30$  mm (1.18 in); torque 6-7 Nm (4.4 - 5.2 ft-lb).
- 3 Identification label.
- 4 Dimension with electronic feed regulator.
- 5 Clearance needed for connector removal.
- 6 Optional screw type manual override, EF 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. R933003848.

- 7 Flange specifications for coupling to ED intermediate elements.
- 8 For tie rod and tightening torque information see data sheet RE 18301-90.
- 9 A and B ports.

Electric connection

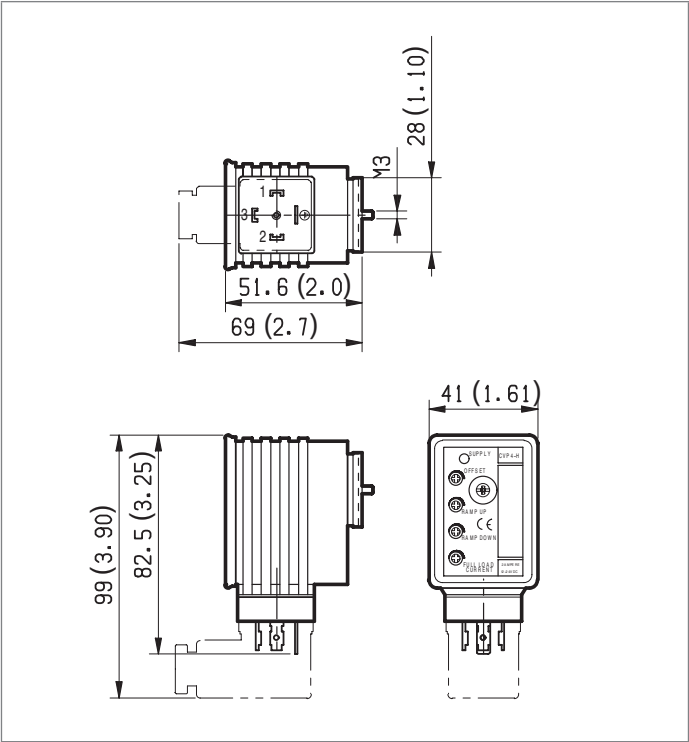
01

Protection class: IP 65 when connector with seal is properly screwed down.

03

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

Electronic feed regulator



**Supply:** yellow LED, lit up with power ON.

**Off Set:** minimum current adjustment. Adjust solenoid current so that the desired minimum value is obtained. Clockwise rotation increases current.

**Ramp up:** Ramping up time adjustment.

**Ramp down:** Ramping down time adjustment.

For longer ramping times, turn potentiometers clockwise; for shorter ramping times, turn the potentiometers counter-clockwise.

**Full load current:** Maximum current adjustment. Adjust solenoid current so that the desired maximum value is obtained (up to 2A). Clockwise rotation increases current.

**Frequency adjustment:** it is possible to set the PWM frequency obtaining the desired control sensitivity. After removing the external plastic cover, turn the adjusting screw; clockwise rotation increases frequency from 100 to 500 Hz.

| Electronic feed regulator                 |                                |
|---|--------------------------------|
| Regulator ordering code                   | R933003290                     |
| Supply voltage                            | 12-30 VDC                      |
| Control Signal                            | 0-10 VDC                       |
| Max. output current                       | 2 A                            |
| Minimum output current                    | 0....0.6 A                     |
| Ramp adjustment up/down                   | 0.1....10 s                    |
| PWM Frequency adjustment (pre-set 120 Hz) | 100....500 Hz                  |
| Ambient operating temperature             | -10....+60 °C (14....+140 °F)  |
| Weight                                    | 0.12 kg (26.4 lbs)             |
| Electromagnetic compatibility             | EN50081-1/2EN61000-4-2/3/4/5/6 |
| Potentiometer resistance                  | 5....10 kΩ                     |

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