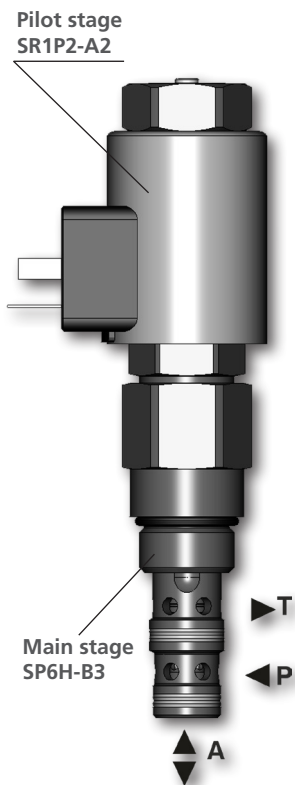


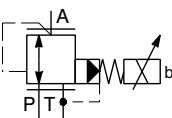
Proportional Pressure Reducing – Relieving Valve, Pilot Operated

**SP4P2-B3**

7/8-14 UNF •  $Q_{\max}$  60 l/min (16 GPM) •  $p_{\max}$  350 bar (5100 PSI)



Symbol



The volume flow, which is needed for control of output pressure and maintaining the adjusted value of reducing pressure, flows permanently through the pilot stage of valve.

**Technical Features**

- › Reducing pressure increases proportional to increasing electric command signal
- › Three-way valve protects the applicator against pressure overloading
- › Low hysteresis, accurate pressure control and low pressure drop
- › Wide pressure range up to 350 bar
- › High flow capacity up to 60 l/min
- › Optional electrical terminal of solenoid: EN 175301-803-A, AMP Junior Timer or Deutsch DT04-2P
- › Coil supply voltage 12 or 24 V DC
- › In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227.
- › Enhanced surface protection for mobile sector available for the steel parts (ISO 9227, 520 h salt spray)

**Functional Description**

Screw-in cartridge proportional pressure reducing valve, pilot operated. The complete valve consists of a pilot stage - valve SR1P2-A2 and a main stage with connection thread 7/8-14 UNF. The valve maintains the constant pressure in the applicator pipeline (A-port) proportional to the input command signal. When the applicator is overloaded, the circuit is connected to the tank (T-channel) and protected against pressure overloading (relieving function of the valve).

Air bleeding is necessary for the correct function of the valve. When possible, the valve should be mounted below the reservoir oil level. This will maintain oil in the actuator, preventing instability caused by air in the system. If possible, to achieve the best result, mount the valve vertically above the bleed screw.

**Technical Data**

| Valve size / Cartridge cavity                                                                                                        |                         | 7/8-14 UNF-2A / B3 (C-10-3)                |           |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------------------------|-----------|
| Max. operating pressure (port P)                                                                                                     | bar (PSI)               | 350 (5100)                                 |           |
| Max. operating pressure (port T)                                                                                                     | bar (PSI)               | 100 (1450)                                 |           |
| Max. flow rate P-A                                                                                                                   | l/min (GPM)             | 60 (15.9)                                  |           |
| Max. control flow                                                                                                                    | l/min (GPM)             | 0.2 (0.05)                                 |           |
| Fluid temperature range (NBR)                                                                                                        | °C (°F)                 | -30 ... 80 (-22 ... 176)                   |           |
| Fluid temperature range (FPM)                                                                                                        | °C (°F)                 | -20 ... 120 (-4 ... 248)                   |           |
| Ambient temperature range                                                                                                            | °C (°F)                 | -30 ...80 (-22 ...176)                     |           |
| Min. setting pressure                                                                                                                | bar (PSI)               | 6 (87) for 0 l/min (0 GPM)                 |           |
| Hysteresis                                                                                                                           | %                       | < 5                                        |           |
| Solenoid data                                                                                                                        |                         |                                            |           |
| Supply voltage                                                                                                                       | V                       | 12 DC                                      | 24 DC     |
| Limit current                                                                                                                        | A                       | 1                                          | 0.6       |
| Rated resistance at 20 °C (68 °F)                                                                                                    | Ω                       | 6.5                                        | 20.6      |
| Duty cycle                                                                                                                           | %                       | 100                                        |           |
| Optimal PWM frequency                                                                                                                | Hz                      | 160                                        |           |
| Quenching diode                                                                                                                      |                         | BZW06-19B                                  | BZW06-33B |
| Enclosure type acc.to EN 60529                                                                                                       |                         | (acc.to terminal type) IP65 / IP67 / IP69K |           |
| The specified IP rating applies only in the case of correctly connected connectors (male + female) with the corresponding IP rating. |                         |                                            |           |
| Weight with solenoid                                                                                                                 | kg (lbs)                | 0.6 (1.32)                                 |           |
|                                                                                                                                      | Datasheet               | Type                                       |           |
| General information                                                                                                                  |                         | Products and operating conditions          |           |
| Coil types                                                                                                                           | HA 0060                 | C19B*                                      |           |
| Valve bodies                                                                                                                         | In-line mounted HA 0018 | SB-B3*                                     |           |
| Cavity details / Form tools                                                                                                          | HA 0019                 | SMT-B3*                                    |           |
| Spare parts                                                                                                                          | HA 8010                 |                                            |           |
| Compatible control unit                                                                                                              |                         | EL7-E*                                     |           |

**Dimensions** in millimeters (inches)

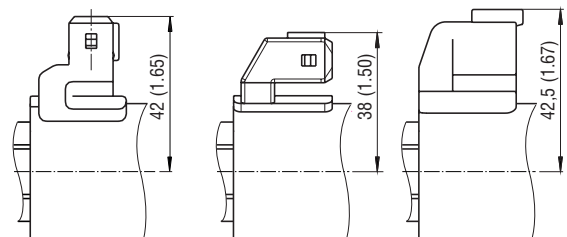
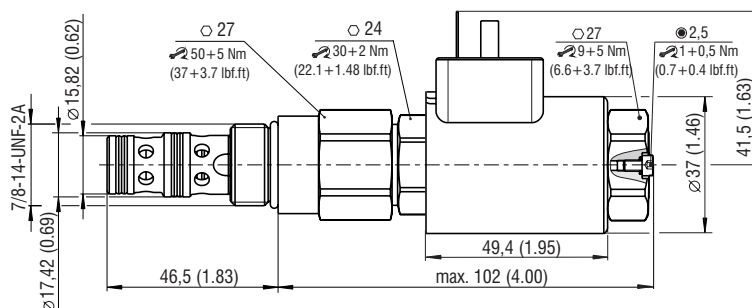
**Connector type**

E1, E2 - IP65  
EN 175301-803-A

E3, E4 - IP65 / IP67  
AMP Junior Timer  
- radial

E3A, E4A - IP65 / IP67  
AMP Junior Timer  
- axial

E12A, E13A  
- IP67 / IP69K  
Deutsch DT04-2P



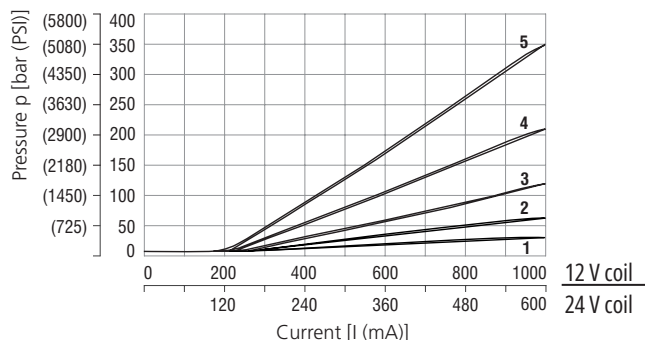
## Elektronic control unit EL7

An electronic control unit (ECU) EL7 is used for the valve control. The ECU converts the input command signal into an output current control PWM signal for solenoid coils. The ECU EL7 is available as external for connection to the DIN rail (EL7-E, see datasheet HA 9152) or integrated on the valve in the form of connector plug (EL7-I, see datasheet HA 9151).

### Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

#### Reduced pressure related to control signal

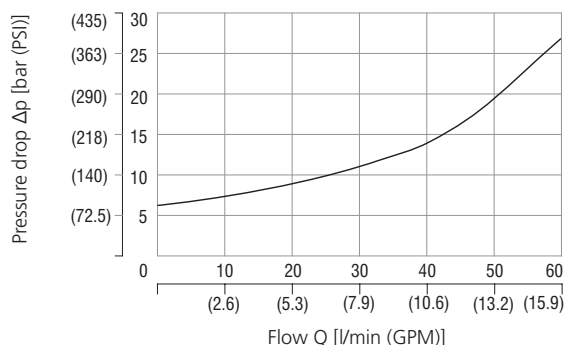
$Q = 0 \text{ l/min}$  (0 GPM), pressure in port T = 0 bar, PWM 160 Hz



| Pressure range | 3 | 6 | 12 | 21 | 35 |
|----------------|---|---|----|----|----|
|                | 1 | 2 | 3  | 4  | 5  |

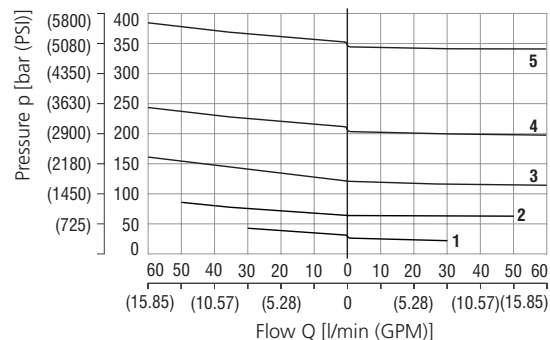
#### Pressure drop related to flow rate

0% of control current, A-T direction



#### Reducing - relieving pressure related to flow rate

relieving function A-T / reducing function P-A



| Pressure range | 3 | 6 | 12 | 21 | 35 |
|----------------|---|---|----|----|----|
|                | 1 | 2 | 3  | 4  | 5  |

## Ordering Code

SP4P2 - B3 / H - - - -

**Proportional Pressure  
Reducing - Relieving Valve,  
Pilot Operated**

**Valve cavity**  
7/8-14 UNF (C-10-3)

**Model**  
High performance

**Max. reduced pressure**  
up to 30 bar (435 PSI) **3**  
up to 60 bar (870 PSI) **6**  
up to 120 bar (1740 PSI) **12**  
up to 210 bar (3046 PSI) **21**  
up to 350 bar (5076 PSI) **35**

**Supply voltage / limit current**  
12 V DC / 1.0 A **12**  
24 V DC / 0.6 A **24**

**Surface treatment**  
**A** zinc-coated (ZnCr-3), ISO 9227 (240 h)  
**B** zinc-coated (ZnNi), ISO 9227 (520 h)

**Seals**  
**No designation** NBR  
**V** FPM (Viton)

**Connector**  
**E1** EN 175301-803-A  
**E2** E1 with quenching diode  
**E3** AMP Junior Timer - radial direction (2 pins; male)  
**E4** E3 with quenching diode  
**E3A** AMP Junior Timer - axial direction (2 pins; male)  
**E4A** E3A with quenching diode  
**E12A** Deutsch DT04-2P - axial direction  
**E13A** E12A with quenching diode

Main stage ordering key: SP6H-B3/HV

For other solenoid terminals see datasheet HA 8007.