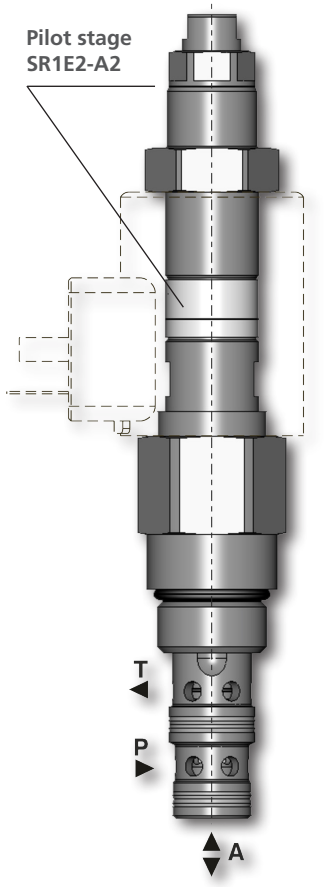
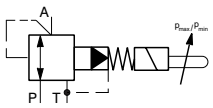
# SP4E1-B3

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

- Screw-in cartridge pilot operated valve with combined function of pressure reducing and relief valve
- Solenoid operated remote switching between minimum and maximum set pressure
- Possible combined function of pressure reducing and unloading valve
- Five pressure ranges with a maximum settable pressure of 350 bar
- Excellent stability throughout the flow range to 60 l/min
- Accurate pressure control
- Easily interchangeable solenoid coil and easy connector positioning
- In the standard version, the valve is zinc-coated with corrosion protection 240 h in NSS acc. to ISO 9227 the reinforced protection 520 h in NSS is designed for demanding environment

## Functional Description

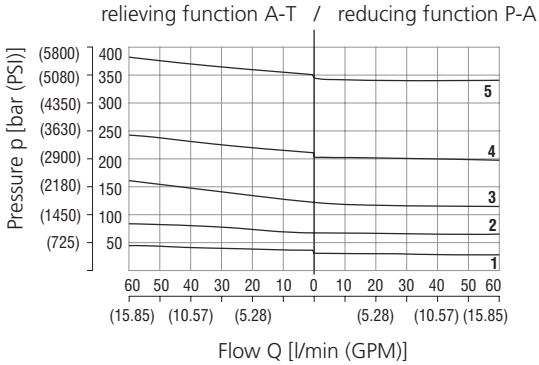
Screw-in cartridge pressure valve, pilot operated, combines function of reducing and relief valve. The valve continuously controls a pressure in A-port (connected to actuator) maintains the set pressure constant. When the A-line is overloaded by external load, A-port is connected to T-port and thanks to back flow to the tank the A-line is unloaded and protected (relief function). Additionally, it is possible to mechanically adjust two pressure values in A-port with adjusting screws built into the end plug of the solenoid actuating system. The two set pressure values can be remotely switched by solenoid. When the solenoid is switched on the valve is set to maximum pressure. The maximum adjustable pressure is defined by pressure range of valve. The minimum circuit pressure can be set from 6 bar to the set maximum pressure. The valve can be used in two ways – as a switcher between two set pressure values or as a combined reducing – unloading valve when one pressure value is adjusted on min. system pressure.
The complete valve consists of poppet pilot valve, main spool valve with connected thread 7/8-14 UNF and a control solenoid with adjusting screws.

## Technical Data

| | | |
|---|---|---|
| Valve size / Cartridge cavity | | 7/8-14 UNF-2A / B3 (C-10-3) |
| Max. flow | l/min (GPM) | 60 (15.9) |
| Max. operating pressure | bar (PSI) | 350 (5080) |
| Max. pressure (port T) | bar (PSI) | 100 (1450) |
| Min. adjustable pressure | bar (PSI) | 6 (87) |
| Fluid temperature range (NBR) | °C (°F) | -30 ... +80 (-22 ... 176) |
| Fluid temperature range (FPM) | °C (°F) | -20 ... +80 (-4 ... 176) |
| Ambient temperature range (NBR) | °C (°F) | -30 ... +50 (-22 ... 122) |
| Ambient temperature range (FPM) | °C (°F) | -20 ... +50 (-4 ... 122) |
| Supply voltage tolerance | % | AC, DC ± 10 |
| Max. switching frequency | 1/h | 5 000 |
| Weight | kg (lbs) | 0.6 (1.32) |
| Mounting position: If possible, the valve should be mounted with the coil vertically downward. | | |
| | Datasheet | Type |
| General information | GI_0060 | Products and operating conditions |
| Coil types | C_8007 | C19B* |
| Valve bodies – In-line mounted | SB_0018 | SB-B3* |
| Valve bodies – Sandwich mounted | SB-04(06)_0028 | SB-*B3* |
| Cavity details / Form tools | SMT_0019 | SMT-B3* |
| Spare parts | SP_8010 | |

## Characteristics measured at ν = 32 mm2/s (156 SUS)

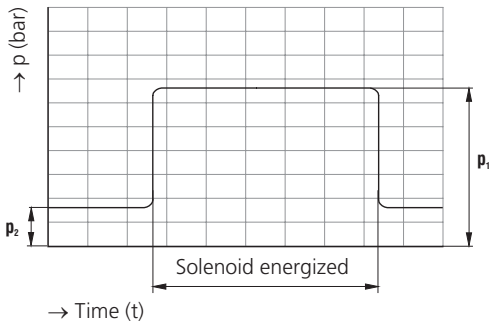
### Reducing - relieving pressure related to flow rate




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

### Example showing the adjustable pressures $p_1$ and $p_2$ ($p_1 \geq p_2$)

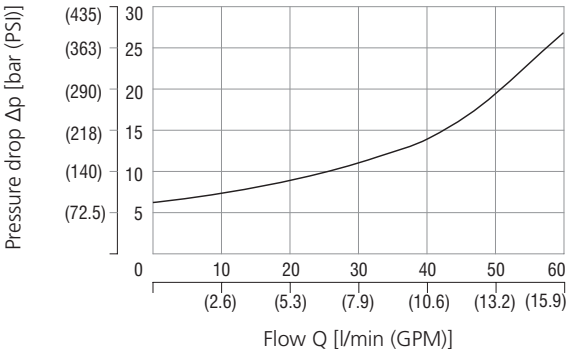
$p_1$ (p_max, relief pressure) is set as the higher working pressure (solenoid energized)
$p_2$ (p_min, vented pressure) is set as a lower working pressure (solenoid de–energized)



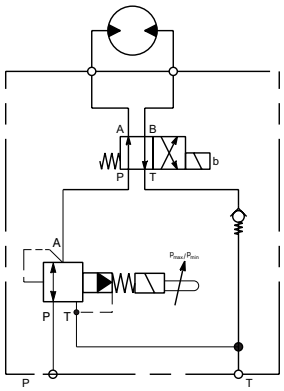
## Characteristics measured at ν = 32 mm2/s (156 SUS)

**Pressure drop related to flow rate**

0 % of control current, A-T direction

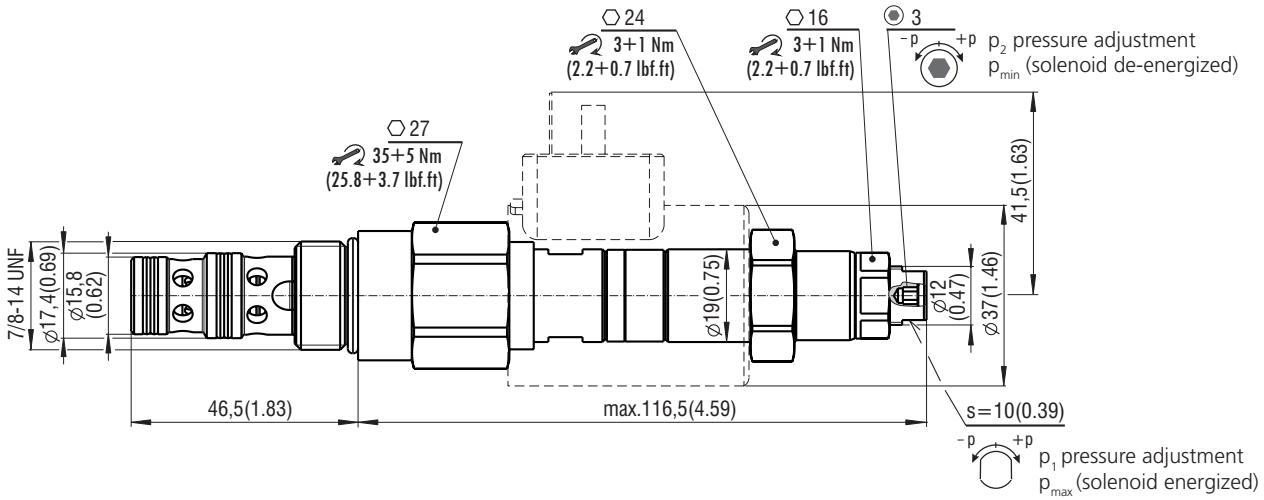



## Application example




The valve is used to switch between two different set pressure values and to protect the applicator against pressure overloading. When $p_2$ is set on min. pressure, the pump and applicator are unloaded to the tank with a very low pressure drop. This results in less heating of the oil and therefore lower energy costs for the user.
The pressure $p_1$ (p_max) must be set before the pressure $p_2$ (p_min). To set $p_1$, the solenoid is energized and the pressure adjusted with a flat wrench (size 10). The solenoid is then de-energized and the lower pressure adjusted with an allen key (hex. 3).

## Dimensions in millimeters (in)




## Ordering Code

**SP4E1 - B3 / H □ □ - □**

**Pressure reducing-relieving solenoid-operated On/Off valve, piloted**

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

**Model**
High performance

**Max. reduced pressure**

| | |
|---|---|
| up to 30 bar (440 PSI) | **3** |
| up to 60 bar (870 PSI) | **6** |
| up to 120 bar (1740 PSI) | **12** |
| up to 210 bar (3050 PSI) | **21** |
| up to 350 bar (5080 PSI) | **35** |

**Seals**

| | |
|---|---|
| **No designation** | NBR |
| **V** | FPM (Viton) |

**Surface treatment**

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