Proportional Pressure Control Valve, Reducing - Relieving, Pilot Operated

**SP4P2-B3**

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

### Technical Features

- Increasing pressure output proportional with increasing DC current input
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 350 bar
- The valve manual override allows the setting of a relief pressure when power supply is lost
- High flow capacity
- Solenoid electrical terminal acc. to EN 175301-803-A, AMP Junior Timer, or Deutsch DT04-2P
- 12 or 24 V DC coils
- In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

### Functional Description

A pilot-operated proportional pressure reducing valve in the form of a screw-in cartridge. The valve is designed for continuous regulation of pressure in the consumer port. The complete valve consists of a pilot stage valve SR1P2-A2 and a main stage with connection 7/8-14 UNF. Due to its 3-way design the valve is capable to relief the secondary pressure to the tank port. To set the minimum cracking pressure use the adjusting screw (s=5) which incorporates also an air bleed screw. Back pressure on port T becomes additive to the pressure setting of the valve. Air bleeding is necessary for the correct function of the valve.

Installation: 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 this is not possible, mount the valve for best results vertically downward coil and ensure proper air bleeding.

### Technical Data

<table>
<thead>
<tr>
<th>Valve size / Cartridge cavity</th>
<th>7/8-14 UNF-2A / B3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. operating pressure (port P)</td>
<td>bar (PSI)</td>
</tr>
<tr>
<td>Max. operating pressure (port T)</td>
<td>bar (PSI)</td>
</tr>
<tr>
<td>Max. flow rate P-A</td>
<td>l/min (GPM)</td>
</tr>
<tr>
<td>Max. control flow</td>
<td>l/min (GPM)</td>
</tr>
<tr>
<td>Fluid temperature range (NBR)</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Fluid temperature range (FPM)</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Min. setting pressure</td>
<td>bar (PSI)</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>%</td>
</tr>
<tr>
<td>Solenoid data</td>
<td></td>
</tr>
<tr>
<td>Supply voltage</td>
<td>V</td>
</tr>
<tr>
<td>Max. current</td>
<td>A</td>
</tr>
<tr>
<td>Rated resistance at 20 °C (68 °F)</td>
<td>Ω</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>%</td>
</tr>
<tr>
<td>Optimal PWM frequency</td>
<td>Hz</td>
</tr>
<tr>
<td>Quenching diode</td>
<td>BZW06-19B / BZW06-33B</td>
</tr>
<tr>
<td>Enclosure type acc.to EN 60529**</td>
<td>(acc.to terminal type) IP65 / IP67 / IP69K</td>
</tr>
<tr>
<td>Weight with solenoid</td>
<td>kg (lbs)</td>
</tr>
<tr>
<td>0.6 (1.32)</td>
<td></td>
</tr>
</tbody>
</table>

### Connector type

<table>
<thead>
<tr>
<th>Connector type</th>
<th>E1, E2 - IP65</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 175301-803-A</td>
<td>E3, E4 - IP67</td>
</tr>
<tr>
<td>AMP Junior Timer - radial</td>
<td>E3A, E4A - IP67 / IP69K</td>
</tr>
<tr>
<td>E12A, E13A - IP67</td>
<td>Deutsch DT04-2P</td>
</tr>
</tbody>
</table>

**The indicated IP protection level is only reached with a properly mounted connector.**
Characteristics measured at $v = 32 \text{ mm/s} (156 \text{ SUS})$

**Reduced pressure related to control signal**

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

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\begin{figure}
\centering
\includegraphics[width=\textwidth]{chart1}
\end{figure}
```

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

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\begin{figure}
\centering
\includegraphics[width=\textwidth]{chart2}
\end{figure}
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**Reducing - relieving pressure related to flow rate**

relieving function A-T / reducing function P-A

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\begin{figure}
\centering
\includegraphics[width=\textwidth]{chart3}
\end{figure}
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Pressure range: 3 6 12 21 35

1 2 3 4 5

**Ordering Code**

- Proportional pressure control valve, reducing - relieving, pilot operated
- Valve cavity: 7/8-14 UNF
- 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 / max. current:
  - 12 V DC / 1.0 A: 12
  - 24 V DC / 0.6 A: 24

Main stage ordering key: SP6H-B3/HV

**Surface treatment**

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

**Seals**

- NBR
- FPM (Viton)

**Connector**

- E1
- 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

For other solenoid terminals see data sheet No. 8007