Proportional Pressure Control Valve, Reducing - Relieving, Pilot Operated, Screw-In Style

**SP4P1-B4**

7/8-14 UNF • Q_{max} 40 l/min (11 GPM) • p_{max} 30 bar (435 PSI)

### Technical Features

› Excellent stability throughout flow range with rapid response to proportional current input change
› Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
› Precise pressure control vs current and excellent repeatability
› Integrated relief function for protection against pressure peaks
› Solenoid electrical terminal: AMP Junior Timer or Deutsch DT04-2P
› 12 or 24 V DC coils
› Compact design with reduced solenoid dimensions for production cost saving
› High flow capacity and low coil power consumption
› Optional mesh screen
› In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

### Functional Description

A pilot-operated, spool-type hydraulic pressure reducing valve in the form of a screw-in cartridge. Reduced pressure output is proportional to DC current input. This valve is intended for use as a pressure limiting device.

Note: Consult factory for special OEM versions of this product.

### Technical Data

#### Valve size / Cartridge cavity
7/8-14 UNF-2A / B4 (C-10-4)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. operating pressure (port P)</td>
<td>30 (435) bar (PSI)</td>
</tr>
<tr>
<td>Max. reducing pressure (port A)</td>
<td>25 (363) bar (PSI)</td>
</tr>
<tr>
<td>Max. flow rate P-A</td>
<td>40 (11) l/min (GPM)</td>
</tr>
<tr>
<td>Max. control flow</td>
<td>0.4 (0.12) l/min (GPM)</td>
</tr>
<tr>
<td>Fluid temperature range (NBR)</td>
<td>5°C (41°F) - 90°C (-38°F), +100 °C (212°F) short time</td>
</tr>
<tr>
<td>Fluid temperature range (FPM)</td>
<td>5°C (41°F) - 90°C (-38°F), +100 °C (212°F) short time</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>5°C (41°F) - 90°C (-38°F), +100 °C (212°F) short time</td>
</tr>
<tr>
<td>Response time at 100% signal</td>
<td>&lt; 50 ms</td>
</tr>
</tbody>
</table>

#### Solenoid data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>12 DC</td>
</tr>
<tr>
<td>Max. current</td>
<td>0.7</td>
</tr>
<tr>
<td>Rated resistance at 20 °C (68 °F)</td>
<td>7.82+5 %</td>
</tr>
<tr>
<td>Duty cycle</td>
<td>100</td>
</tr>
<tr>
<td>Optimal PWM frequency</td>
<td>200</td>
</tr>
</tbody>
</table>

#### Quenching diode

BZW06-288  BZW06-33B

#### Enclosure type acc.to EN 60529**
(acc.to terminal type) IP67 / IP69K

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight with solenoid</td>
<td>0.3 (0.66) kg (lbs)</td>
</tr>
</tbody>
</table>

**The indicated IP protection level is only reached with a properly mounted connector.

### Characteristics measured at v = 32 mm/s (156 SUS)

#### Reduced pressure related to control signal

Port A of range 0 - 25 bar (363 PSI), Q = 0 lpm (GPM)
Port P inlet pressure 30 bar ( 435 PSI)
measured without mesh screen

#### Pressure drop related to flow rate

A-T Valve coil de-energized ( relieving function)
P-A Valve coil energized (reducing function)
measured without mesh screen

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*Subject to change · SP4P1-B4_5124_Zen_02/2019*
Characteristics measured at $\nu = 32 \text{ mm/s} (156 \text{ SUS})$

Reducing - relieving pressure related to flow rate
Reducing pressure range 0 - 25 bar (0 - 363 PSI), input 30 bar (435 PSI)
various control currents
measured without mesh screen
relieving function A-T / reducing function P-A

Frequency response characteristics
Inlet pressure at port $P$ - 30 bar (435 PSI), flow = 0 lpm (GPM)

Characteristic curves:
- 70 ± 25%
- 55 ± 40%

Dimensions in millimeters (inches)

Connector type
E3A, E4A - IP67
AMP Junior Timer

Ordering Code
Proportional pressure control valve, reducing - relieving, pilot operated, screw-in style

Valve cavity
7/8-14 UNF (C-10-4)

Max. reducing pressure
20 bar (290 PSI)
25 bar (363 PSI)

Supply voltage / max. current
12 V DC / 0.7 A
24 V DC / 0.35 A

Frequency $\nu$ 

Gain (Amplitude) $\nu$ 

Flow $Q$ 

Pressure $p$ 

Table:

<table>
<thead>
<tr>
<th>$Q$ [l/min (GPM)]</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p$ [bar (PSI)]</td>
<td>24%</td>
<td>35%</td>
<td>47%</td>
<td>59%</td>
<td>70%</td>
<td>82%</td>
<td>94%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Seals
- NBR
- FPM (Viton)

Valve cavity
7/8-14 UNF (C-10-4)

Max. reducing pressure
20 bar (290 PSI)
25 bar (363 PSI)

Supply voltage / max. current
12 V DC / 0.7 A
24 V DC / 0.35 A

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

Mesh screen
No designation
without mesh screen
port $P$, 300 microns

Seals
- NBR
- FPM (Viton)

Connector type
E3A
E4A
E12A
E13A
E13A - IP67 / IP69K
Deutsch DT04-2P

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

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