Proportional Pressure Control Valve, Reducing - Relieving, Pilot Operated, Inverted

SPN4P1-B3
7/8-14 UNF • \( Q_{\text{max}} \) 60 l/min (16 GPM) • \( p_{\text{max}} \) 350 bar (5100 PSI)

Technical Features
- Decreasing pressure output proportional with increasing DC current input
- Low hysteresis, accurate pressure control and low pressure drop
- Wide pressure range up to 350 bar
- Mechanical adjustment of minimum cracking pressure
- High flow capacity
- Solenoid electrical terminal acc. to EN 175301-803-A, AMP Junior Timer, 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 SRN1P1-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>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Valve size / Cartridge cavity</td>
</tr>
<tr>
<td></td>
<td>Valve size / Cartridge cavity</td>
</tr>
<tr>
<td></td>
<td>7/8-14 UNF-2A / B3 (C-10-3)</td>
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<tr>
<td></td>
<td>Max. operating pressure (port P) bar (PSI)</td>
</tr>
<tr>
<td></td>
<td>350 (5080)</td>
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<tr>
<td></td>
<td>Max. operating pressure (port T) bar (PSI)</td>
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<tr>
<td></td>
<td>100 (1450)</td>
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<tr>
<td></td>
<td>Max. flow l/min (GPM)</td>
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<tr>
<td></td>
<td>60 (15.9)</td>
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<tr>
<td></td>
<td>Max. control flow l/min (GPM)</td>
</tr>
<tr>
<td></td>
<td>0.2 (0.05)</td>
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<tr>
<td></td>
<td>Fluid temperature range (NBR) °C (°F)</td>
</tr>
<tr>
<td></td>
<td>-30 ... +80 (-22 ... 176)</td>
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<tr>
<td></td>
<td>Fluid temperature range (FPM) °C (°F)</td>
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<tr>
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<td>-20 ... +120 (-4 ... 248)</td>
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<tr>
<td></td>
<td>Ambient temperature range °C (°F)</td>
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<td>-30 ... +80 (-22 ... 176)</td>
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<td></td>
<td>Min. setting pressure bar (PSI)</td>
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<tr>
<td></td>
<td>6 (87) for 0 l/min (0 GPM)</td>
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<tr>
<td></td>
<td>Hysteresis %</td>
</tr>
<tr>
<td></td>
<td>&lt; 5</td>
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<tr>
<td></td>
<td>Solenoid data</td>
</tr>
<tr>
<td></td>
<td>Supply voltage V</td>
</tr>
<tr>
<td></td>
<td>12 DC</td>
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<tr>
<td></td>
<td>24 DC</td>
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<tr>
<td></td>
<td>Max. current A</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
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<tr>
<td></td>
<td>Rated resistance at 20 °C (68 °F) Ω</td>
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<tr>
<td></td>
<td>6.5±5 %</td>
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<tr>
<td></td>
<td>20.6±5 %</td>
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<tr>
<td></td>
<td>Duty cycle %</td>
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<tr>
<td></td>
<td>100</td>
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<tr>
<td></td>
<td>Optimal PWM frequency Hz</td>
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<td>250</td>
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<td></td>
<td>Quenching diode</td>
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<tr>
<td></td>
<td>BZW06-198</td>
</tr>
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<td></td>
<td>BZW06-238</td>
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<td></td>
<td>Enclosure type acc. to EN 60529**</td>
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<tr>
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<td>(acc. to terminal type) IP65 / IP67 / IP69K</td>
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<tr>
<td></td>
<td>Weight with solenoid kg (lbs)</td>
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<tr>
<td></td>
<td>0.6 (1.32)</td>
</tr>
</tbody>
</table>

Solenoid data
- Supply voltage
  - V: 12 DC
  - 24 DC
- Max. current
  - A: 1
  - 0.6
- Rated resistance at 20 °C (68 °F)
  - Ω: 6.5±5 %
  - 20.6±5 %
- Duty cycle
  - %: 100
- Optimal PWM frequency
  - Hz: 250
- Quenching diode
  - BZW06-198
  - BZW06-238
- Enclosure type acc. to EN 60529**
  - (acc. to terminal type) IP65 / IP67 / IP69K
- Weight with solenoid
  - kg (lbs): 0.6 (1.32)

Dimensions in millimeters (inches)

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

General information
- GI_0060
- Products and operating conditions
- Coil types
  - C_8007
  - C198*%
- Valve bodies
  - SB_0018
  - SB-B3*%
- Cavity details / Form tools
  - SMT_0019
  - SMT-B3*
- Spare Parts
  - SP_8010

Connector type
- E1, E2 - IP65
- EN 175301-803-A
- E1, E2 - IP65
  - AMP Junior Timer - radial
- E3, E4 - IP67
  - AMP Junior Timer - axial
- E3A, E4A - IP67
  - AMP Junior Timer - axial
- E12A, E13A
  - IP67 / IP69K
  - Deutsch DT04-2P

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Subject to change · SPN4P1-B3_5139_4en_11/2020
Characteristics measured at $v = 32 \text{ mm}/s$ (156 SUS)

Reduced pressure related to control signal

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

Reducing - relieving pressure related to flow rate

Pressure range 35, Input 400 bar, various control currents

Pressure drop related to flow rate

100% of control current, A-T direction

Ordering Code

Proportional pressure control valve, reducing - relieving, pilot operated, inverted

Valve cavity

7/8-14 UNF (C-10-3)

Model

High performance

Max. reduced pressure

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

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

Seals

NBR
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)
EAA E3A with quenching diode
E12A Deutsch DT04-2P - axial direction
E13A E12A with quenching diode

For other solenoid terminals see data sheet No. 8007